LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 7

2020

Bate Stamp Numbers
00960607 – 00962507

Prepared for

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Longhorn Army Ammunition Plant

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LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 7

2020

A. Title: (cont'd) Report – Appendix F to Quarterly Evaluation Report 4th Quarter (October-December) 2019 Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, April 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: April 21, 2020
Bate Stamp: 00960607 – 00962439

B. Title: Report – Final Year 3 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01, Longhorn Army Ammunition Plant, April 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: April 29, 2020
Bate Stamp: 00962440 – 00962473

C. Title: Report – Final Post Screening Investigation Addendum No. 2 Work Plan Addendum, LHAAP-47 Building 46A, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas, May 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: May 6, 2020
Bate Stamp: 00962474 – 00962495

D. Title: Minutes – Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP), April 22, 2020
Author(s): Department of the Army
Recipient: All Parties
Date: May 19, 2020
Bate Stamp: 00962496 – 00962507

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Environmental
ALS Group USA, Corp
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November 19, 2019

Analytical Report for Service Re uest No: K1910578

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19110208

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory November 08, 2019
For your reference, these analyses have been assigned our service request number **K1910578.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Kelley Lovejoy
Project Manager

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS19110208
Sample Matrix: Water

Service Request: K1910578
Date Received: 11/08/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 11/08/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Noe D. Dan Date 11/19/2019

Chain of Custody

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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12564**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

KL910578

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19110208
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19110208-01**	**LH18/24-SP650_110519**	**Water**	**05 Nov 2019 14:00**
	TOC Analysis for DOD Level IV			14 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 11/7/19 1800

Received By: _____ Date/Time: 11/8/19 1000

Cooler ID(s): _____ Temperature(s): _____

PC KL

Cooler Receipt and Preservation Form

Client ALS - Houston Service Request *K19* 10578

Received: 11/8/19 Opened: 11/8/19 By: BR Unloaded: 11/8/19 By: BR

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
-0.2	0.1	—	—	+0.3	379		1Z51029915190	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1910578
Project:	HS19110208	**Date Collected:**	11/5/19
Sample Matrix:	Water	**Date Received:**	11/8/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_110519	K1910578-001	**1.98**	0.50	0.20	0.07	1	11/13/19 23:50	
Method Blank	K1910578-MB	ND U	0.50	0.20	0.07	1	11/14/19 02:12	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910578
Project	HS19110208	**Date Collected:**	11/05/19
Sample Matrix:	Water	**Date Received:**	11/08/19
		Date Analyzed:	11/13/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_110519	**Units:**	mg/L
Lab Code:	K1910578-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1910578-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	1.98	1.92	1.95	3	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910578
Project:	HS19110208	**Date Analyzed:**	11/14/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	659771

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1910578-LCS	24.5	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1910578
Project: HS19110208

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	659771	KQ1916975-04	11/13/19 14:12	25.0	24.7	99	90-110
CCV2	659771	KQ1916975-05	11/13/19 20:33	25.0	24.1	97	90-110
CCV3	659771	KQ1916975-06	11/14/19 01:43	25.0	24.3	97	90-110
CCV4	659771	KQ1916975-07	11/14/19 06:26	25.0	24.2	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1910578
Project: HS19110208

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	659771	KQ1916975-09	11/13/19 14:27	0.50	0.20	0.07	ND	U
CCB2	659771	KQ1916975-10	11/13/19 20:47	0.50	0.20	0.07	ND	U
CCB3	659771	KQ1916975-11	11/14/19 01:57	0.50	0.20	0.07	ND	U
CCB4	659771	KQ1916975-12	11/14/19 06:41	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original (K1910)070, 025, 062, 087, 095, 170, 292, 325, 578, 114, 137, 138, 152, 425, 483, T1901876

Tier: IV II II I II II II II IV II II II V II II IV

Date Analyzed: 11/13/19

Analyst: HLM for BCD

Analysis: TOC/DOC

DOC: 659770
659771

TOC: 659773
659774

Run #

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	(yes)/no/NA
2.	Holding times met for all analyses and for all samples?	(yes)/no/NA
3.	Are calculations correct?	(yes)/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/(NA)
5.	All quality control criteria met?	(yes)/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	(yes)/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	(yes)/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	(yes)/no/NA
9.	Are results for methods blanks all ND?	(yes)/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/(no)/NA
11.	Are all exceptions explained?	(yes)/no/NA
12.	Have all applicable service requests been reviewed?	(yes)/no/NA
13.	Are all samples labeled correctly?	(yes)/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	(yes)/no/NA
15.	Are detection limits and units reported correctly?	(yes)/no/NA
16.	Is the unused space on the benchsheet crossed out?	(yes)/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/(no)/NA

COMMENTS:
K1910025-3,3D, K1910137-2,2D & K1910425-5,5D have high % RPD, however, they are less than 5x the MRL

K1910070, K1910325, T1901876, K1910025, K1910062, K1910292, K1910087, K1910095, K1910578, K1910114, K1910137, K1910138, & K1910152 were all turned in past their due date

Final Approved by: [signature] Date: 11/18/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659770 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1910070-012	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.00 mg/L	10 ml	1.00 mg/L	1		0.50			11/13/19 16:48	N	IV
KQ1916974-01	Carbon, Dissolved Organic (DOC)	MS	K1910070-012	Pore Water	26.07 mg/L	10 ml	26.1 mg/L	1		0.50	100		11/13/19 17:44	N	IV
KQ1916974-02	Carbon, Dissolved Organic (DOC)	MS	K1910070-012	Pore Water	25.92 mg/L	10 ml	25.9 mg/L	1		0.50	100		11/13/19 17:44	N	IV
KQ1916974-03	Carbon, Dissolved Organic (DOC)	MS	K1910070-012	Pore Water	26.00 mg/L	10 ml	26.0 mg/L	1		0.50	100		11/13/19 17:44	N	IV
KQ1916974-04	Carbon, Dissolved Organic (DOC)	MS	K1910070-012	Pore Water	26.03 mg/L	10 ml	26.0 mg/L	1		0.50	100		11/13/19 17:44	N	IV
KQ1916974-05	Carbon, Dissolved Organic (DOC)	DUP	K1910070-012	Pore Water	0.94 mg/L	10 ml	0.94 mg/L	1		0.50		7	11/13/19 16:48	N	IV
KQ1916974-06	Carbon, Dissolved Organic (DOC)	TRP	K1910070-012	Pore Water	0.91 mg/L	10 ml	0.91 mg/L	1		0.50		5	11/13/19 16:48	N	IV
KQ1916974-07	Carbon, Dissolved Organic (DOC)	QUAD	K1910070-012	Pore Water	0.88 mg/L	10 ml	0.88 mg/L	1		0.50		6	11/13/19 16:48	N	IV
KQ1916974-08	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 ml	0.50 mg/L U	1		0.50			11/13/19 14:42	N	IV
KQ1916974-09	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 ml	0.50 mg/L U	1		0.50			11/13/19 14:42	N	IV
KQ1916974-10	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 ml	0.50 mg/L U	1		0.50			11/13/19 14:42	N	IV
KQ1916974-11	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 ml	0.50 mg/L U	1		0.50			11/13/19 14:42	N	IV
KQ1916974-12	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	25.09 mg/L	10 ml	25.1 mg/L	1		0.50	100		11/13/19 15:37	N	IV
KQ1916974-13	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.86 mg/L	10 ml	24.9 mg/L	1		0.50	99		11/13/19 15:37	N	IV
KQ1916974-14	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.90 mg/L	10 ml	24.9 mg/L	1		0.50	100		11/13/19 15:37	N	IV
KQ1916974-15	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.77 mg/L	10 ml	24.8 mg/L	1		0.50	99		11/13/19 15:37	N	IV
KQ1916974-16	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.67 mg/L	10 ml	24.7 mg/L	1					11/13/19 14:12	N	IV
KQ1916974-17	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.14 mg/L	10 ml	24.1 mg/L	1					11/13/19 20:33	N	IV
KQ1916974-18	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 ml	0.50 mg/L U	1		0.50			11/13/19 14:27	N	IV
KQ1916974-19	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 ml	0.50 mg/L U	1		0.50			11/13/19 20:47	N	IV

11/18/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

NCM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659771 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1910025-001	Carbon, Total Organic	N/A		Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50			11/13/19 21:02	N	II
K1910025-002	Carbon, Total Organic	N/A		Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50			11/13/19 21:30	N	II
K1910025-003	Carbon, Total Organic	N/A		Water	0.67 mg/L	10 ml	0.67 mg/L	1	0.07	0.50			11/13/19 21:58	N	II
K1910062-001	Carbon, Total Organic	N/A		Ground Water	2.85 mg/L	10 ml	2.85 mg/L	1	0.07	0.50			11/13/19 22:26	N	II
K1910062-002	Carbon, Total Organic	N/A		Ground Water	1.12 mg/L	10 ml	1.12 mg/L	1	0.07	0.50			11/13/19 22:54	N	II
K1910087-002	Carbon, Total Organic	N/A		Drinking Water	0.59 mg/L	10 ml	0.59 mg/L	1	0.07	0.50			11/14/19 00:18	N	I
K1910095-001	Carbon, Total Organic	N/A		Water	4.20 mg/L	10 ml	4.20 mg/L	1	0.07	0.50			11/14/19 00:47	N	II
K1910095-002	Carbon, Total Organic	N/A		Water	13.80 mg/L	10 ml	13.8 mg/L	1	0.07	0.50			11/14/19 01:15	N	II
K1910095-003	Carbon, Total Organic	N/A		Water	21.10 mg/L	10 ml	21.1 mg/L	1	0.07	0.50			11/14/19 02:41	N	II
K1910095-004	Carbon, Total Organic	N/A		Water	17.59 mg/L	10 ml	17.6 mg/L	1	0.07	0.50			11/14/19 03:10	N	II
K1910095-005	Carbon, Total Organic	N/A		Water	9.89 mg/L	10 ml	9.89 mg/L	1	0.07	0.50			11/14/19 03:38	N	II
K1910095-006	Carbon, Total Organic	N/A		Water	16.17 mg/L	10 ml	16.2 mg/L	1	0.07	0.50			11/14/19 04:06	N	II
K1910095-007	Carbon, Total Organic	N/A		Water	6.41 mg/L	10 ml	25.6 mg/L	4	0.3	2.0			11/14/19 04:34	N	II
K1910095-008	Carbon, Total Organic	N/A		Water	25.32 mg/L	10 ml	25.3 mg/L	1	0.07	0.50			11/14/19 05:02	N	II
K1910095-009	Carbon, Total Organic	N/A		Water	4.49 mg/L	10 ml	4.49 mg/L	1	0.07	0.50			11/14/19 05:30	N	II
K1910170-002	Carbon, Total Organic	N/A		Water	7.47 mg/L	10 ml	747 mg/L	100	7	50			11/13/19 18:54	N	II
K1910170-003	Carbon, Total Organic	N/A		Water	8.19 mg/L	10 ml	819 mg/L	100	7	50			11/13/19 19:22	N	II
K1910292-001	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/13/19 23:22	N	II
K1910325-001	Carbon, Total Organic	N/A		Water	2.29 mg/L	10 ml	2.29 mg/L	1	0.07	0.50			11/13/19 19:50	N	II
K1910578-001	Carbon, Total Organic	N/A		Water	1.98 mg/L	10 ml	1.98 mg/L	1	0.07	0.50			11/13/19 23:50	N	IV
KQ1916975-01	Carbon, Total Organic	MS	K1910325-001	Water	26.72 mg/L	10 ml	26.7 mg/L	1	0.07	0.50	98		11/13/19 20:18	N	II
KQ1916975-02	Carbon, Total Organic	LCS		Water	24.50 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	98		11/14/19 02:27	N	II
KQ1916975-03	Carbon, Total Organic	MB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 02:12	N	II
KQ1916975-04	Carbon, Total Organic	CCV		Water	24.67 mg/L	10 ml	24.7 mg/L	1					11/13/19 14:12	N	II
KQ1916975-05	Carbon, Total Organic	CCV		Water	24.14 mg/L	10 ml	24.1 mg/L	1					11/13/19 20:33	N	II
KQ1916975-06	Carbon, Total Organic	CCV		Water	24.27 mg/L	10 ml	24.3 mg/L	1					11/14/19 01:43	N	II
KQ1916975-07	Carbon, Total Organic	CCV		Water	24.23 mg/L	10 ml	24.2 mg/L	1					11/14/19 06:26	N	II
KQ1916975-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/13/19 14:27	N	II
KQ1916975-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/13/19 20:47	N	II
KQ1916975-11	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 01:57	N	II
KQ1916975-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 06:41	N	II
KQ1916975-14	Carbon, Total Organic	DUP	K1910025-003	Water	0.75 mg/L	10 ml	0.75 mg/L	1	0.07	0.50		11*	11/13/19 21:58	N	II
KQ1916975-15	Carbon, Total Organic	DUP	K1910025-002	Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50		4	11/13/19 21:30	N	II
KQ1916975-16	Carbon, Total Organic	DUP	K1910025-001	Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50		<1	11/13/19 21:02	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/18/19

HLM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659771 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916975-17	Carbon, Total Organic	DUP	K1910062-001	Ground Water	2.90 mg/L	10 ml	2.90 mg/L	1	0.07	0.50		2	11/13/19 22:26	N	II
KQ1916975-18	Carbon, Total Organic	DUP	K1910062-002	Ground Water	1.08 mg/L	10 ml	1.08 mg/L	1	0.07	0.50		3	11/13/19 22:54	N	II
KQ1916975-19	Carbon, Total Organic	DUP	K1910087-002	Drinking Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		5	11/14/19 00:18	N	I
KQ1916975-20	Carbon, Total Organic	DUP	K1910095-001	Water	4.14 mg/L	10 ml	4.14 mg/L	1	0.07	0.50		1	11/14/19 00:47	N	II
KQ1916975-21	Carbon, Total Organic	DUP	K1910095-002	Water	13.77 mg/L	10 ml	13.8 mg/L	1	0.07	0.50		<1	11/14/19 01:15	N	II
KQ1916975-22	Carbon, Total Organic	DUP	K1910095-007	Water	6.39 mg/L	10 ml	25.6 mg/L	4	0.3	2.0		<1	11/14/19 04:34	N	II
KQ1916975-23	Carbon, Total Organic	DUP	K1910095-003	Water	20.58 mg/L	10 ml	20.6 mg/L	1	0.07	0.50		3	11/14/19 02:41	N	II
KQ1916975-24	Carbon, Total Organic	DUP	K1910095-004	Water	17.54 mg/L	10 ml	17.5 mg/L	1	0.07	0.50		<1	11/14/19 03:10	N	II
KQ1916975-25	Carbon, Total Organic	DUP	K1910095-005	Water	9.68 mg/L	10 ml	9.68 mg/L	1	0.07	0.50		2	11/14/19 03:38	N	II
KQ1916975-26	Carbon, Total Organic	DUP	K1910095-006	Water	16.13 mg/L	10 ml	16.1 mg/L	1	0.07	0.50		<1	11/14/19 04:06	N	II
KQ1916975-27	Carbon, Total Organic	DUP	K1910095-008	Water	25.47 mg/L	10 ml	25.5 mg/L	1	0.07	0.50		<1	11/14/19 05:02	N	II
KQ1916975-28	Carbon, Total Organic	DUP	K1910095-009	Water	4.41 mg/L	10 ml	4.41 mg/L	1	0.07	0.50		2	11/14/19 05:30	N	II
KQ1916975-29	Carbon, Total Organic	DUP	K1910170-002	Water	7.55 mg/L	10 ml	755 mg/L	100	7	50		1	11/13/19 18:54	N	II
KQ1916975-30	Carbon, Total Organic	DUP	K1910170-003	Water	8.17 mg/L	10 ml	817 mg/L	100	7	50		<1	11/13/19 19:22	N	II
KQ1916975-31	Carbon, Total Organic	DUP	K1910292-001	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/13/19 23:22	N	II
KQ1916975-32	Carbon, Total Organic	DUP	K1910325-001	Water	2.14 mg/L	10 ml	2.14 mg/L	1	0.07	0.50		7	11/13/19 19:50	N	II
KQ1916975-33	Carbon, Total Organic	DUP	K1910578-001	Water	1.92 mg/L	10 ml	1.92 mg/L	1	0.07	0.50		3	11/13/19 23:50	N	II

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HLM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659773 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1910095-010	Carbon, Total Organic	N/A		Water	9.94 mg/L	10 ml	9.94 mg/L	1	0.07	0.50			11/14/19 05:58	N	II
K1910095-011	Carbon, Total Organic	N/A		Water	21.49 mg/L	10 ml	21.5 mg/L	1	0.07	0.50			11/14/19 06:56	N	II
K1910095-012	Carbon, Total Organic	N/A		Water	12.31 mg/L	10 ml	12.3 mg/L	1	0.07	0.50			11/14/19 07:24	N	II
K1910095-013	Carbon, Total Organic	N/A		Water	12.28 mg/L	10 ml	12.3 mg/L	1	0.07	0.50			11/14/19 07:52	N	II
K1910095-016	Carbon, Total Organic	N/A		Water	8.77 mg/L	10 ml	8.77 mg/L	1	0.07	0.50			11/14/19 08:20	N	II
K1910114-001	Carbon, Total Organic	N/A		Ground Water	6.43 mg/L	10 ml	6.43 mg/L	1	0.07	0.50			11/14/19 09:44	N	II
K1910114-002	Carbon, Total Organic	N/A		Ground Water	7.46 mg/L	10 ml	7.46 mg/L	1	0.07	0.50			11/14/19 10:12	N	II
K1910137-001	Carbon, Total Organic	N/A		Water	1.18 mg/L	10 ml	1.18 mg/L	1	0.07	0.50			11/14/19 10:40	N	II
K1910137-002	Carbon, Total Organic	N/A		Water	0.33 mg/L	10 ml	0.33 mg/L J	1	0.07	0.50			11/14/19 12:21	N	II
K1910137-003	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 12:49	N	II
K1910137-004	Carbon, Total Organic	N/A		Water	2.78 mg/L	10 ml	2.78 mg/L	1	0.07	0.50			11/14/19 13:18	N	II
K1910137-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 13:46	N	II
K1910137-006	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 14:14	N	II
K1910137-007	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 14:42	N	II
K1910137-008	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 15:10	N	II
K1910138-001	Carbon, Total Organic	N/A		Water	8.98 mg/L	10 ml	8.98 mg/L	1	0.07	0.50			11/14/19 15:38	N	II
K1910152-002	Carbon, Total Organic	N/A		Water	20.61 mg/L	10 ml	20.6 mg/L	1	0.07	0.50			11/14/19 16:36	N	II
KQ1916976-01	Carbon, Total Organic	MS	K1910137-001	Water	26.45 mg/L	10 ml	26.5 mg/L	1	0.07	0.50	101		11/14/19 11:08	N	II
KQ1916976-02	Carbon, Total Organic	MB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 11:52	N	II
KQ1916976-03	Carbon, Total Organic	LCS		Water	24.30 mg/L	10 ml	24.3 mg/L	1	0.07	0.50	97		11/14/19 12:07	N	II
KQ1916976-04	Carbon, Total Organic	CCV		Water	24.27 mg/L	10 ml	24.3 mg/L	1					11/14/19 01:43	N	II
KQ1916976-05	Carbon, Total Organic	CCV		Water	24.23 mg/L	10 ml	24.2 mg/L	1					11/14/19 06:26	N	II
KQ1916976-06	Carbon, Total Organic	CCV		Water	23.93 mg/L	10 ml	23.9 mg/L	1					11/14/19 11:23	N	II
KQ1916976-07	Carbon, Total Organic	CCV		Water	23.81 mg/L	10 ml	23.8 mg/L	1					11/14/19 16:06	N	II
KQ1916976-08	Carbon, Total Organic	CCV		Water	23.70 mg/L	10 ml	23.7 mg/L	1					11/14/19 21:04	N	II
KQ1916976-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 01:57	N	II
KQ1916976-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 06:41	N	II
KQ1916976-11	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 11:37	N	II
KQ1916976-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 16:21	N	II
KQ1916976-13	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 21:18	N	II
KQ1916976-14	Carbon, Total Organic	DUP	K1910095-010	Water	9.84 mg/L	10 ml	9.84 mg/L	1	0.07	0.50		<1	11/14/19 05:58	N	II
KQ1916976-15	Carbon, Total Organic	DUP	K1910095-012	Water	12.14 mg/L	10 ml	12.1 mg/L	1	0.07	0.50		1	11/14/19 07:24	N	II
KQ1916976-16	Carbon, Total Organic	DUP	K1910095-013	Water	12.23 mg/L	10 ml	12.2 mg/L	1	0.07	0.50		<1	11/14/19 07:52	N	II
KQ1916976-17	Carbon, Total Organic	DUP	K1910095-016	Water	8.76 mg/L	10 ml	8.76 mg/L	1	0.07	0.50		<1	11/14/19 08:20	N	II
KQ1916976-20	Carbon, Total Organic	DUP	K1910095-011	Water	21.06 mg/L	10 ml	21.1 mg/L	1	0.07	0.50		2	11/14/19 06:56	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/18/19

ULM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659773 **Method/Testcode:** SM 5310 C/TOC-T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916976-21	Carbon, Total Organic	DUP	K1910114-001	Ground Water	6.51 mg/L	10 ml	6.51 mg/L	1	0.07	0.50		1	11/14/19 09:44	N	II
KQ1916976-22	Carbon, Total Organic	DUP	K1910114-002	Ground Water	7.50 mg/L	10 ml	7.50 mg/L	1	0.07	0.50		<1	11/14/19 10:12	N	II
KQ1916976-23	Carbon, Total Organic	DUP	K1910137-007	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/14/19 14:42	N	II
KQ1916976-24	Carbon, Total Organic	DUP	K1910137-008	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/14/19 15:10	N	II
KQ1916976-25	Carbon, Total Organic	DUP	K1910137-001	Water	1.13 mg/L	10 ml	1.13 mg/L	1	0.07	0.50		4	11/14/19 10:40	N	II
KQ1916976-26	Carbon, Total Organic	DUP	K1910137-004	Water	2.79 mg/L	10 ml	2.79 mg/L	1	0.07	0.50		<1	11/14/19 13:18	N	II
KQ1916976-27	Carbon, Total Organic	DUP	K1910137-002	Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50		32*	11/14/19 12:21	N	II
KQ1916976-28	Carbon, Total Organic	DUP	K1910137-005	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/14/19 13:46	N	II
KQ1916976-29	Carbon, Total Organic	DUP	K1910137-003	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/14/19 12:49	N	II
KQ1916976-30	Carbon, Total Organic	DUP	K1910137-006	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/14/19 14:14	N	II
KQ1916976-31	Carbon, Total Organic	DUP	K1910138-001	Water	9.01 mg/L	10 ml	9.01 mg/L	1	0.07	0.50		<1	11/14/19 15:38	N	II
KQ1916976-32	Carbon, Total Organic	DUP	K1910152-002	Water	20.09 mg/L	10 ml	20.1 mg/L	1	0.07	0.50		3	11/14/19 16:36	N	V

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

HLM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659774 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1910425-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.72 mg/L	10 ml	0.72 mg/L	1	0.07	0.50			11/15/19 00:23	N	II
K1910425-002	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.83 mg/L	10 ml	0.83 mg/L	1	0.07	0.50			11/15/19 00:51	N	II
K1910425-003	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/15/19 01:19	N	II
K1910425-004	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.33 mg/L	10 ml	0.33 mg/L J	1	0.07	0.50			11/15/19 02:17	N	II
K1910425-005	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.50 mg/L	10 ml	0.50 mg/L	1	0.07	0.50			11/15/19 02:45	N	II
K1910425-006	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.63 mg/L	10 ml	0.63 mg/L	1	0.07	0.50			11/15/19 03:13	N	II
K1910425-007	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.71 mg/L	10 ml	0.71 mg/L	1	0.07	0.50			11/15/19 03:41	N	II
K1910425-008	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.63 mg/L	10 ml	0.63 mg/L	1	0.07	0.50			11/15/19 04:09	N	II
K1910483-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.17 mg/L	10 ml	3.17 mg/L	1	0.07	0.50			11/14/19 23:27	N	II
K1910483-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.12 mg/L	10 ml	2.12 mg/L	1	0.07	0.50			11/14/19 23:55	N	II
KQ1916986-01	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 21:33	N	IV
KQ1916986-02	Carbon, Dissolved Organic (DOC)	LCS		Water	24.48 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	98		11/14/19 21:48	N	IV
KQ1916986-03	Carbon, Dissolved Organic (DOC)	CCV		Water	23.81 mg/L	10 ml	23.8 mg/L	1					11/14/19 16:06	N	IV
KQ1916986-04	Carbon, Dissolved Organic (DOC)	CCV		Water	23.70 mg/L	10 ml	23.7 mg/L	1					11/14/19 21:04	N	IV
KQ1916986-05	Carbon, Dissolved Organic (DOC)	CCV		Water	23.56 mg/L	10 ml	23.6 mg/L	1					11/15/19 01:47	N	IV
KQ1916986-06	Carbon, Dissolved Organic (DOC)	CCV		Water	23.64 mg/L	10 ml	23.6 mg/L	1					11/15/19 04:38	N	IV
KQ1916986-07	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 16:21	N	IV
KQ1916986-08	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 21:18	N	IV
KQ1916986-09	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/15/19 02:02	N	IV
KQ1916986-10	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/15/19 04:52	N	IV
KQ1916986-11	Carbon, Dissolved Organic (DOC)	MS	T1901876-007	Water	29.73 mg/L	10 ml	29.7 mg/L	1	0.07	0.50	103		11/14/19 20:49	N	IV
KQ1916986-12	Carbon, Dissolved Organic (DOC)	DUP	T1901876-010	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/14/19 22:59	N	IV
KQ1916986-13	Carbon, Dissolved Organic (DOC)	DUP	T1901876-009	Water	4.19 mg/L	10 ml	4.19 mg/L	1	0.07	0.50		1	11/14/19 22:31	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/18/19

HLM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659774 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916986-14	Carbon, Dissolved Organic (DOC)	DUP	T1901876-008	Water	4.18 mg/L	10 ml	4.18 mg/L	1	0.07	0.50		<1	11/14/19 22:02	N	IV
KQ1916986-15	Carbon, Dissolved Organic (DOC)	DUP	T1901876-007	Water	4.08 mg/L	10 ml	4.08 mg/L	1	0.07	0.50		<1	11/14/19 20:21	N	IV
KQ1916986-16	Carbon, Dissolved Organic (DOC)	DUP	T1901876-006	Water	4.57 mg/L	10 ml	4.57 mg/L	1	0.07	0.50		1	11/14/19 19:53	N	IV
KQ1916986-17	Carbon, Dissolved Organic (DOC)	DUP	T1901876-005	Water	4.14 mg/L	10 ml	4.14 mg/L	1	0.07	0.50		1	11/14/19 19:25	N	IV
KQ1916986-18	Carbon, Dissolved Organic (DOC)	DUP	T1901876-004	Water	4.07 mg/L	10 ml	4.07 mg/L	1	0.07	0.50		3	11/14/19 18:57	N	IV
KQ1916986-19	Carbon, Dissolved Organic (DOC)	DUP	T1901876-003	Water	3.95 mg/L	10 ml	3.95 mg/L	1	0.07	0.50		2	11/14/19 18:29	N	IV
KQ1916986-20	Carbon, Dissolved Organic (DOC)	DUP	T1901876-002	Water	3.88 mg/L	10 ml	3.88 mg/L	1	0.07	0.50		<1	11/14/19 18:01	N	IV
KQ1916986-21	Carbon, Dissolved Organic (DOC)	DUP	T1901876-001	Water	3.79 mg/L	10 ml	3.79 mg/L	1	0.07	0.50		2	11/14/19 17:32	N	IV
KQ1916986-22	Carbon, Dissolved Organic (DOC)	DUP	K1910425-001	Surface Water	0.69 mg/L	10 ml	0.69 mg/L	1	0.07	0.50		4	11/15/19 00:23	N	II
KQ1916986-23	Carbon, Dissolved Organic (DOC)	DUP	K1910425-002	Surface Water	0.83 mg/L	10 ml	0.83 mg/L	1	0.07	0.50		<1	11/15/19 00:51	N	II
KQ1916986-24	Carbon, Dissolved Organic (DOC)	DUP	K1910425-003	Surface Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	11/15/19 01:19	N	II
KQ1916986-25	Carbon, Dissolved Organic (DOC)	DUP	K1910425-004	Surface Water	0.37 mg/L	10 ml	0.37 mg/L J	1	0.07	0.50		9	11/15/19 02:17	N	II
KQ1916986-26	Carbon, Dissolved Organic (DOC)	DUP	K1910425-005	Surface Water	0.58 mg/L	10 ml	0.58 mg/L	1	0.07	0.50		14*	11/15/19 02:45	N	II
KQ1916986-27	Carbon, Dissolved Organic (DOC)	DUP	K1910425-006	Surface Water	0.65 mg/L	10 ml	0.65 mg/L	1	0.07	0.50		3	11/15/19 03:13	N	II
KQ1916986-28	Carbon, Dissolved Organic (DOC)	DUP	K1910425-007	Surface Water	0.71 mg/L	10 ml	0.71 mg/L	1	0.07	0.50		<1	11/15/19 03:41	N	II
KQ1916986-29	Carbon, Dissolved Organic (DOC)	DUP	K1910425-008	Surface Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50		9	11/15/19 04:09	N	II
KQ1916986-30	Carbon, Dissolved Organic (DOC)	DUP	K1910483-004	Water	2.11 mg/L	10 ml	2.11 mg/L	1	0.07	0.50		<1	11/14/19 23:55	N	II
KQ1916986-31	Carbon, Dissolved Organic (DOC)	DUP	K1910483-002	Water	3.18 mg/L	10 ml	3.18 mg/L	1	0.07	0.50		<1	11/14/19 23:27	N	II
T1901876-001	Carbon, Dissolved Organic (DOC)	N/A		Water	3.86 mg/L	10 ml	3.86 mg/L	1	0.07	0.50			11/14/19 17:32	N	IV
T1901876-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.89 mg/L	10 ml	3.89 mg/L	1	0.07	0.50			11/14/19 18:01	N	IV
T1901876-003	Carbon, Dissolved Organic (DOC)	N/A		Water	4.02 mg/L	10 ml	4.02 mg/L	1	0.07	0.50			11/14/19 18:29	N	IV
T1901876-004	Carbon, Dissolved Organic (DOC)	N/A		Water	4.21 mg/L	10 ml	4.21 mg/L	1	0.07	0.50			11/14/19 18:57	N	IV
T1901876-005	Carbon, Dissolved Organic (DOC)	N/A		Water	4.19 mg/L	10 ml	4.19 mg/L	1	0.07	0.50			11/14/19 19:25	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

HLM 11/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 659774 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
T1901876-006	Carbon, Dissolved Organic (DOC)	N/A		Water	4.51 mg/L	10 ml	4.51 mg/L	1	0.07	0.50			11/14/19 19:53	N	IV
T1901876-007	Carbon, Dissolved Organic (DOC)	N/A		Water	4.08 mg/L	10 ml	4.08 mg/L	1	0.07	0.50			11/14/19 20:21	N	IV
T1901876-008	Carbon, Dissolved Organic (DOC)	N/A		Water	4.22 mg/L	10 ml	4.22 mg/L	1	0.07	0.50			11/14/19 22:02	N	IV
T1901876-009	Carbon, Dissolved Organic (DOC)	N/A		Water	4.14 mg/L	10 ml	4.14 mg/L	1	0.07	0.50			11/14/19 22:31	N	IV
T1901876-010	Carbon, Dissolved Organic (DOC)	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/14/19 22:59	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

HLM 11/16/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	CCV	1	24.669	0.0000	24.6693	24.6693	24.7	11/13/2019
3	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
4	MB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
5	MB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
6	MB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
7	MB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
8	LCS	1	25.094	0.0000	25.0935	25.0935	25	11/13/2019
9	LCS	1	24.863	0.0000	24.8627	24.8627	24.86	11/13/2019
10	LCS	1	24.901	0.0000	24.9011	24.9011	24.90	11/13/2019
11	LCS	1	24.768	0.0000	24.7683	24.7683	24.8	11/13/2019
12	K1910070-012	1	1.004	0.0000	1.0043	1.0043	1.00	11/13/2019
13	K1910070-012	1	0.935	0.0000	0.9354	0.9354	0.94	11/13/2019
14	K1910070-012	1	0.907	0.0000	0.9073	0.9073	0.91	11/13/2019
15	K1910070-012	1	0.876	0.0000	0.8757	0.8757	0.9	11/13/2019
16	K1910070-012 MS	1	26.067	0.0000	26.0666	26.0666	26.1	11/13/2019
17	K1910070-012 MS	1	25.920	0.0000	25.9199	25.9199	25.92	11/13/2019
18	K1910070-012 MS	1	25.999	0.0000	25.9987	25.9987	26.0	11/13/2019
19	K1910070-012 MS	1	26.030	0.0000	26.0302	26.0302	26.0	11/13/2019
20	CCV	1	24.139	0.0000	24.1392	24.1392	24.14	11/13/2019
21	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: HLM & BCD	Date Analyzed 11/13/19	
Reviewed By: [signature]	Date Reviewed 11/18/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	CCV	1	24.669	0.0000	24.6693	24.6693	24.7	11/13/2019
3	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
4	K1910170-002	100	7.472	0.0000	7.4715	747.15	747.2	11/13/2019
5	K1910170-002D	100	7.548	0.0000	7.5479	754.79	754.8	11/13/2019
6	K1910170-003	100	8.187	0.0000	8.1874	818.74	818.74	11/13/2019
7	K1910170-003D	100	8.166	0.0000	8.1659	816.59	816.6	11/13/2019
8	K1910325-001	1	2.287	0.0000	2.2869	2.2869	2	11/13/2019
9	K1910325-001D	1	2.141	0.0000	2.1411	2.1411	2.14	11/13/2019
10	K1910325-001MS	1	26.721	0.0000	26.7207	26.7207	26.72	11/13/2019
11	CCV	1	24.139	0.0000	24.1392	24.1392	24.1	11/13/2019
12	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
13	K1910025-001	1	0.564	0.0000	0.5637	0.5637	0.56	11/13/2019
14	K1910025-001D	1	0.561	0.0000	0.5608	0.5608	0.56	11/13/2019
15	K1910025-002	1	0.682	0.0000	0.6822	0.6822	0.7	11/13/2019
16	K1910025-002D	1	0.656	0.0000	0.6558	0.6558	0.7	11/13/2019
17	K1910025-003	1	0.670	0.0000	0.6699	0.6699	0.67	11/13/2019
18	K1910025-003D	1	0.751	0.0000	0.7514	0.7514	0.8	11/13/2019
19	K1910062-001	1	2.852	0.0000	2.8523	2.8523	2.9	11/13/2019
20	K1910062-001D	1	2.903	0.0000	2.9030	2.903	2.90	11/13/2019
21	K1910062-002	1	1.120	0.0000	1.1198	1.1198	1.12	11/13/2019
22	K1910062-002D	1	1.084	0.0000	1.0836	1.0836	1.1	11/13/2019
23	K1910292-001	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
24	K1910292-001D	1	0.000	0.0000	0.0000	0	<0.5	11/13/2019
25	K1910578-001	1	1.977	0.0000	1.9768	1.9768	1.98	11/13/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: HLM Co. BCD	Date Analyzed 11/13/19	
Reviewed By: [signature]	Date Reviewed 11/18/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1910578-001D	1	1.922	0.0000	1.9221	1.9221	1.92	11/13/2019
27	K1910087-002	1	0.590	0.0000	0.5895	0.5895	0.59	11/14/2019
28	K1910087-002D	1	0.623	0.0000	0.6228	0.6228	0.6	11/14/2019
29	K1910095-001	1	4.196	0.0000	4.1956	4.1956	4.2	11/14/2019
30	K1910095-001D	1	4.143	0.0000	4.1427	4.1427	4.1	11/14/2019
31	K1910095-002	1	13.800	0.0000	13.8000	13.8	13.8	11/14/2019
32	K1910095-002D	1	13.766	0.0000	13.7657	13.7657	13.8	11/14/2019
33	CCV	1	24.273	0.0000	24.2734	24.2734	24.3	11/14/2019
34	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
35	MB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
36	LCS	1	24.499	0.0000	24.4987	24.4987	24.5	11/14/2019
37	K1910095-003	1	21.098	0.0000	21.0981	21.0981	21.1	11/14/2019
38	K1910095-003D	1	20.577	0.0000	20.5766	20.5766	20.6	11/14/2019
39	K1910095-004	1	17.585	0.0000	17.5854	17.5854	17.6	11/14/2019
40	K1910095-004D	1	17.543	0.0000	17.5426	17.5426	17.5	11/14/2019
41	K1910095-005	1	9.890	0.0000	9.8895	9.8895	9.9	11/14/2019
42	K1910095-005D	1	9.681	0.0000	9.6806	9.6806	9.7	11/14/2019
43	K1910095-006	1	16.174	0.0000	16.1739	16.1739	16.2	11/14/2019
44	K1910095-006D	1	16.134	0.0000	16.1344	16.1344	16.1	11/14/2019
45	K1910095-007	4	6.412	0.0000	6.4123	25.6492	25.6	11/14/2019
46	K1910095-007D	4	6.394	0.0000	6.3938	25.5752	25.6	11/14/2019
47	K1910095-008	1	25.317	0.0000	25.3166	25.3166	25.3	11/14/2019
48	K1910095-008D	1	25.473	0.0000	25.4733	25.4733	25.5	11/14/2019
49	K1910095-009	1	4.492	0.0000	4.4919	4.4919	4.5	11/14/2019
50	K1910095-009D	1	4.409	0.0000	4.4085	4.4085	4.4	11/14/2019

Analyzed By: HCM for BCD	Date Analyzed 11/13/19
Reviewed By: [signature]	Date Reviewed 11/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	CCV	1	24.229	0.0000	24.2291	24.2291	24.23	11/14/2019
52	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: UCM for BCD	Date Analyzed 11/13/19
Reviewed By:	Date Reviewed 11/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	CCV	1	24.273	0.0000	24.2734	24.2734	24.3	11/14/2019
3	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
4	K1910095-010	1	9.939	0.0000	9.9386	9.9386	9.9	11/14/2019
5	K1910095-010D	1	9.842	0.0000	9.8422	9.8422	9.8	11/14/2019
6	CCV	1	24.229	0.0000	24.2291	24.2291	24.23	11/14/2019
7	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
8	K1910095-011	1	21.490	0.0000	21.4899	21.4899	21	11/14/2019
9	K1910095-011D	1	21.055	0.0000	21.0552	21.0552	21.06	11/14/2019
10	K1910095-012	1	12.312	0.0000	12.3119	12.3119	12.31	11/14/2019
11	K1910095-012D	1	12.135	0.0000	12.1350	12.135	12.1	11/14/2019
12	K1910095-013	1	12.281	0.0000	12.2805	12.2805	12.28	11/14/2019
13	K1910095-013D	1	12.226	0.0000	12.2257	12.2257	12.23	11/14/2019
14	K1910095-016	1	8.774	0.0000	8.7743	8.7743	8.77	11/14/2019
15	K1910095-016D	1	8.756	0.0000	8.7562	8.7562	8.8	11/14/2019
16	K1910114-001	1	6.430	0.0000	6.4297	6.4297	6.4	11/14/2019
17	K1910114-001D	1	6.512	0.0000	6.5115	6.5115	6.51	11/14/2019
18	K1910114-002	1	7.465	0.0000	7.4649	7.4649	7.5	11/14/2019
19	K1910114-002D	1	7.497	0.0000	7.4972	7.4972	7.5	11/14/2019
20	K1910137-001	1	1.183	0.0000	1.1833	1.1833	1.18	11/14/2019
21	K1910137-001D	1	1.132	0.0000	1.1322	1.1322	1.13	11/14/2019
22	K1910137-001MS	1	26.454	0.0000	26.4539	26.4539	26.5	11/14/2019
23	CCV	1	23.926	0.0000	23.9259	23.9259	23.9	11/14/2019
24	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
25	MB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: HLN for BCD	Date Analyzed 11/13/19	
Reviewed By: [signature]	Date Reviewed 11/18/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	LCS	1	24.300	0.0000	24.3004	24.3004	24.30	11/14/2019
27	K1910137-002	1	0.331	0.0000	0.3308	0.3308	<0.5	11/14/2019
28	K1910137-002D	1	0.238	0.0000	0.2384	0.2384	<0.5	11/14/2019
29	K1910137-003	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
30	K1910137-003D	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
31	K1910137-004	1	2.782	0.0000	2.7823	2.7823	2.8	11/14/2019
32	K1910137-004D	1	2.793	0.0000	2.7928	2.7928	2.8	11/14/2019
33	K1910137-005	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
34	K1910137-005D	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
35	K1910137-006	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
36	K1910137-006D	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
37	K1910137-007	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
38	K1910137-007D	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
39	K1910137-008	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
40	K1910137-008D	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
41	K1910138-001	1	8.984	0.0000	8.9841	8.9841	9.0	11/14/2019
42	K1910138-001D	1	9.011	0.0000	9.0113	9.0113	9.0	11/14/2019
43	CCV	1	23.810	0.0000	23.8097	23.8097	23.8	11/14/2019
44	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
45	K1910152-002	1	20.614	0.0000	20.6141	20.6141	20.6	11/14/2019
46	K1910152-002D	1	20.090	0.0000	20.0895	20.0895	20.1	11/14/2019
47	CCV	1	23.700	0.0000	23.7003	23.7003	23.7	11/14/2019
48	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: HLM for BCD	Date Analyzed 11/13/19
Reviewed By:	Date Reviewed 11/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	CCV	1	23.810	0.0000	23.8097	23.8097	23.8	11/14/2019
3	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
4	T1901876-001	1	3.861	0.0000	3.8612	3.8612	3.9	11/14/2019
5	T1901876-001D	1	3.786	0.0000	3.7863	3.7863	3.8	11/14/2019
6	T1901876-002	1	3.895	0.0000	3.8949	3.8949	3.89	11/14/2019
7	T1901876-002D	1	3.876	0.0000	3.8759	3.8759	3.9	11/14/2019
8	T1901876-003	1	4.022	0.0000	4.0222	4.0222	4	11/14/2019
9	T1901876-003D	1	3.947	0.0000	3.9466	3.9466	3.95	11/14/2019
10	T1901876-004	1	4.211	0.0000	4.2112	4.2112	4.21	11/14/2019
11	T1901876-004D	1	4.067	0.0000	4.0667	4.0667	4.1	11/14/2019
12	T1901876-005	1	4.192	0.0000	4.1924	4.1924	4.19	11/14/2019
13	T1901876-005D	1	4.144	0.0000	4.1437	4.1437	4.14	11/14/2019
14	T1901876-006	1	4.514	0.0000	4.5141	4.5141	4.51	11/14/2019
15	T1901876-006D	1	4.570	0.0000	4.5699	4.5699	4.6	11/14/2019
16	T1901876-007	1	4.076	0.0000	4.0763	4.0763	4.1	11/14/2019
17	T1901876-007D	1	4.075	0.0000	4.0751	4.0751	4.08	11/14/2019
18	T1901876-007MS	1	29.728	0.0000	29.7275	29.7275	29.7	11/14/2019
19	CCV	1	23.700	0.0000	23.7003	23.7003	23.7	11/14/2019
20	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
21	MB	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
22	LCS	1	24.476	0.0000	24.4764	24.4764	24.5	11/14/2019
23	T1901876-008	1	4.221	0.0000	4.2212	4.2212	4.2	11/14/2019
24	T1901876-008D	1	4.182	0.0000	4.1816	4.1816	4.18	11/14/2019
25	T1901876-009	1	4.143	0.0000	4.1429	4.1429	4.14	11/14/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: HLM for BCL	Date Analyzed 11/15/19	
Reviewed By:	Date Reviewed 11/18/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	T1901876-009D	1	4.189	0.0000	4.1887	4.1887	4.19	11/14/2019
27	T1901876-010	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
28	T1901876-010D	1	0.000	0.0000	0.0000	0	<0.5	11/14/2019
29	K1910483-002	1	3.172	0.0000	3.1722	3.1722	3.2	11/14/2019
30	K1910483-002D	1	3.185	0.0000	3.1845	3.1845	3.2	11/14/2019
31	K1910483-004	1	2.119	0.0000	2.1187	2.1187	2.1	11/14/2019
32	K1910483-004D	1	2.114	0.0000	2.1140	2.114	2.1	11/14/2019
33	K1910425-001	1	0.719	0.0000	0.7185	0.7185	0.7	11/15/2019
34	K1910425-001D	1	0.690	0.0000	0.6900	0.69	0.7	11/15/2019
35	K1910425-002	1	0.830	0.0000	0.8304	0.8304	0.8	11/15/2019
36	K1910425-002D	1	0.833	0.0000	0.8327	0.8327	0.8	11/15/2019
37	K1910425-003	1	0.000	0.0000	0.0000	0	<0.5	11/15/2019
38	K1910425-003D	1	0.000	0.0000	0.0000	0	<0.5	11/15/2019
39	CCV	1	23.559	0.0000	23.5591	23.5591	23.6	11/15/2019
40	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/15/2019
41	K1910425-004	1	0.334	0.0000	0.3342	0.3342	<0.5	11/15/2019
42	K1910425-004D	1	0.367	0.0000	0.3667	0.3667	<0.5	11/15/2019
43	K1910425-005	1	0.503	0.0000	0.5033	0.5033	0.5	11/15/2019
44	K1910425-005D	1	0.581	0.0000	0.5814	0.5814	0.6	11/15/2019
45	K1910425-006	1	0.629	0.0000	0.6290	0.629	0.6	11/15/2019
46	K1910425-006D	1	0.648	0.0000	0.6477	0.6477	0.6	11/15/2019
47	K1910425-007	1	0.710	0.0000	0.7096	0.7096	0.7	11/15/2019
48	K1910425-007D	1	0.708	0.0000	0.7081	0.7081	0.7	11/15/2019
49	K1910425-008	1	0.626	0.0000	0.6259	0.6259	0.6	11/15/2019
50	K1910425-008D	1	0.682	0.0000	0.6817	0.6817	0.7	11/15/2019

Analyzed By: HLM for BCD	Date Analyzed 11/13/19
Reviewed By: [signature]	Date Reviewed 11/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	CCV	1	23.644	0.0000	23.6441	23.6441	23.64	11/15/2019
52	CCB	1	0.000	0.0000	0.0000	0	<0.5	11/15/2019
~~53~~		~~1~~		~~0.0000~~	~~0.0000~~	~~0~~	~~<0.5~~	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		~~1~~		~~0.0000~~	~~0.0000~~	~~0~~	~~<0.5~~	

Analyzed By: HLM for BCD	Date Analyzed 11/13/19
Reviewed By:	Date Reviewed 11/18/19

Schedule: 11132019

Version: 1
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/11/13 12:19 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1910070-012.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1910070-012.06 ms doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1910170-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1910170-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1910325-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1910325-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1910025-001.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1910025-002.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1910025-003.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1910062-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1910062-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1910292-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1910578-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1910087-002.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1910095-001.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1910095-002.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1910095-003.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1910095-004.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1910095-005.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1910095-006.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1910095-007.05 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1910095-008.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1910095-009.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1910095-010.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1910095-011.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1910095-012.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1910095-013.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1910095-016.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1910095-017.08 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1910095-018.08 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1910114-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1910114-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1910137-001.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1910137-001.05 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

11/18/19

Schedule: 11132019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1910137-002.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1910137-003.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1910137-004.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1910137-005.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1910137-006.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1910137-007.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1910137-008.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1910138-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1910152-002.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1910157-001.02 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	T1901876-001.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	T1901876-002.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	T1901876-003.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	T1901876-004.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	T1901876-005.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	T1901876-006.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	T1901876-007.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	T1901876-007.05 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	T1901876-008.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	T1901876-009.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	T1901876-010.05 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1910483-002.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1910483-004.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	K1910425-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1910425-002.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1910425-003.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1910425-004.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1910425-005.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1910425-006.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample	K1910425-007.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1910425-008.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - Daily Run Method 010711 Wednesday, November 13, 2019 12:18 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/11/15 08:31 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	Daily Run Method 010711	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v76)		
Comment:			

Report Results

11/18/19

Sample Type: Clean — From Schedule Version 76

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/13 12:18

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.33	17.15	3.82	49.62	05:21
2	TC Clean	5.23	8.97	3.74	50.07	04:06
3	TC Clean	2.42	6.11	3.69	50.07	03:50
4	TC Clean	1.63	5.36	3.73	50.07	03:58

Sample Type: Clean — From Schedule Version 76

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/13 12:40

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.06	4.61	3.55	49.64	05:24
2	TC Clean	4.62	8.36	3.74	50.06	04:01
3	TC Clean	1.65	5.36	3.71	50.06	03:46
4	TC Clean	1.61	5.12	3.52	50.08	03:57

Sample Type: Clean From Schedule Version 76

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/13 13:02

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.04	4.50	3.46	49.67	05:22
2	TC Clean	4.59	8.18	3.59	50.06	04:04
3	TC Clean	1.77	5.28	3.51	50.07	03:47
4	TC Clean	1.50	5.04	3.54	50.08	03:47

Sample Type: Blank (Creating v1319) From Schedule Version 76

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/11/13 13:24

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.23	4.68	3.44	49.66	05:22
2	TC Clean	4.59	8.12	3.53	50.05	04:02
3	TC Clean	1.83	5.58	3.75	50.07	03:49
4	TC Clean	1.88	5.55	3.67	50.06	03:48
5	Reagent Blank	2.76	6.46	3.70	50.06	05:06
6	Acid Blank	1.02	4.56	3.54	49.68	05:30

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.6402 ppm	0.0000 ppm	0.0000%	2019/11/13 13:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6402	6.4017	13.05	16.70	3.65	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6693 ppm (PASS)	0.0000 ppm	0%	2019/11/13 14:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6693	246.6927	176.92	180.57	3.65	50.03	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/13 14:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.24	12.08	3.85	50.02	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/13 14:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.00	10.56	3.56	50.02	10:26
2	TOC	0.0000	0.0000	7.16	10.70	3.54	50.02	10:24
3	TOC	0.0000	0.0000	6.88	10.33	3.44	50.00	10:29
4	TOC	0.0000	0.0000	6.82	10.41	3.58	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.9064 ppm	0.1367 ppm	0.55%	2019/11/13 15:37

							(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0935	250.9355	179.80	183.29	3.49	50.02	10:26
C	TOC	25.0 ppm	2	24.8627	248.6270	178.23	181.77	3.54	50.05	10:27
C	TOC	25.0 ppm	3	24.9011	249.0115	178.49	182.04	3.55	50.08	10:25
C	TOC	25.0 ppm	4	24.7683	247.6826	177.59	181.05	3.46	50.10	10:27

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.0146 ppm	0.0000 ppm	0.0000%	2019/11/13 16:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0146	0.1465	8.80	12.45	3.65	50.11	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1910070-012.06 doc	0.9307 ppm	0.0548 ppm	5.8900%	2019/11/13 16:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0043	10.0434	15.52	18.94	3.43	50.13	10:27
2	TOC	0.9354	9.3540	15.05	18.65	3.60	50.15	10:28
3	TOC	0.9073	9.0726	14.86	18.56	3.70	50.15	10:27
4	TOC	0.8757	8.7573	14.64	18.23	3.59	50.17	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1910070-012.06 ms doc	26.0038 ppm	0.0625 ppm	0.2400%	2019/11/13 17:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.0666	260.6658	185.64	189.25	3.61	50.19	10:26
2	TOC	25.9199	259.1985	184.64	188.26	3.61	50.19	10:27
3	TOC	25.9987	259.9867	185.18	188.59	3.41	50.22	10:31
4	TOC	26.0302	260.3020	185.39	189.08	3.68	50.23	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/13 18:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.78	10.43	3.65	50.24	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1910170-002.01 100x	7.5097 ppm	0.0540 ppm	0.7200%	2019/11/13 18:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4715	74.7155	59.42	63.00	3.59	50.24	10:29
2	TOC	7.5479	75.4786	59.93	63.42	3.49	50.25	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1910170-003.01 100x	8.1766 ppm	0.0152 ppm	0.1900%	2019/11/13 19:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.1874	81.8738	64.28	67.74	3.46	50.25	10:27
2	TOC	8.1659	81.6587	64.13	67.57	3.44	50.27	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1910325-001.01	2.2140 ppm	0.1031 ppm	4.6600%	2019/11/13 19:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2869	22.8691	24.22	27.89	3.66	50.28	10:28
2	TOC	2.1411	21.4107	23.23	26.98	3.75	50.31	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1910325-001.01 ms	26.7207 ppm	0.0000 ppm	0.0000%	2019/11/13 20:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	26.7207	267.2069	190.08	193.79	3.71	50.34	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1392 ppm (PASS)	0.0000 ppm	0%	2019/11/13 20:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1392	241.3921	173.32	176.81	3.49	50.35	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/13 20:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.21	9.77	3.56	50.37	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1910025-001.07	0.5622 ppm	0.0021 ppm	0.3700%	2019/11/13 21:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5637	5.6371	12.53	16.10	3.57	50.40	10:28
2	TOC	0.5608	5.6076	12.51	16.14	3.63	50.37	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◆	11	TOC	K1910025-002.07	0.6690 ppm	0.0186 ppm	2.7900%	2019/11/13 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6822	6.8215	13.33	16.89	3.56	50.35	10:28
2	TOC	0.6558	6.5578	13.15	16.79	3.64	50.40	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K1910025-003.07	0.7107 ppm	0.0576 ppm	8.1100%	2019/11/13 21:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6699	6.6993	13.25	16.78	3.53	50.37	10:25
2	TOC	0.7514	7.5140	13.80	17.39	3.59	50.34	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K1910062-001.08	2.8777 ppm	0.0358 ppm	1.2500%	2019/11/13 22:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8523	28.5233	28.06	31.70	3.64	50.29	10:31
2	TOC	2.9030	29.0301	28.41	31.94	3.54	50.31	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K1910062-002.08	1.1017 ppm	0.0256 ppm	2.3300%	2019/11/13 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1198	11.1984	16.30	19.79	3.49	50.27	10:26
2	TOC	1.0836	10.8360	16.06	19.72	3.66	50.26	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K1910292-001.03	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/13 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.84	9.32	3.48	50.29	10:28
2	TOC	0.0000	0.0000	6.05	9.50	3.45	50.27	10:25

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K1910578-001.01	1.9495 ppm	0.0386 ppm	1.9800%	2019/11/13 23:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9768	19.7680	22.12	25.69	3.57	50.25	10:26
2	TOC	1.9221	19.2215	21.75	25.34	3.60	50.26	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1910087-002.07	0.6061 ppm	0.0235 ppm	3.8800%	2019/11/14 00:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5895	5.8949	12.70	16.21	3.51	50.23	10:27
2	TOC	0.6228	6.2278	12.93	16.40	3.47	50.26	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1910095-001.05	4.1691 ppm	0.0374 ppm	0.9000%	2019/11/14 00:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1956	41.9559	37.18	40.81	3.63	50.23	10:24
2	TOC	4.1427	41.4270	36.82	40.47	3.65	50.24	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1910095-002.05	13.7828 ppm	0.0243 ppm	0.1800%	2019/11/14 01:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.8000	137.9998	102.37	106.06	3.68	50.22	10:27
2	TOC	13.7657	137.6565	102.14	105.71	3.56	50.25	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2734 ppm (PASS)	0.0000 ppm	0%	2019/11/14 01:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2734	242.7342	174.23	177.89	3.66	50.22	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/14 01:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.36	9.77	3.41	50.21	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 02:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.30	8.86	3.55	50.24	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.4987 ppm (PASS)	0.0000 ppm	0%	2019/11/14 02:27

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	24.4987	244.9867	175.76	179.34	3.58	50.22	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K1910095-003.05	20.8373 ppm	0.3688 ppm	1.7700%	2019/11/14 02:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.0981	210.9807	151.91	155.48	3.56	50.24	10:28
2	TOC	20.5766	205.7655	148.37	152.06	3.69	50.21	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1910095-004.05	17.5640 ppm	0.0302 ppm	0.1700%	2019/11/14 03:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.5854	175.8537	128.07	131.70	3.64	50.22	10:28
2	TOC	17.5426	175.4264	127.78	131.26	3.48	50.19	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K1910095-005.05	9.7851 ppm	0.1477 ppm	1.5100%	2019/11/14 03:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8895	98.8951	75.83	79.46	3.63	50.22	10:27
2	TOC	9.6806	96.8061	74.41	78.08	3.67	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K1910095-006.05	16.1542 ppm	0.0279 ppm	0.1700%	2019/11/14 04:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.1739	161.7389	118.49	121.92	3.43	50.22	10:28
2	TOC	16.1344	161.3441	118.22	121.89	3.67	50.19	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K1910095-007.05 4x	6.4030 ppm	0.0131 ppm	0.2000%	2019/11/14 04:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4123	64.1232	52.23	55.85	3.63	50.20	10:30
2	TOC	6.3938	63.9375	52.10	55.72	3.62	50.18	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K1910095-008.05	25.3950 ppm	0.1108 ppm	0.4400%	2019/11/14 05:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.3166	253.1658	180.55	184.14	3.59	50.23	10:30
2	TOC	25.4733	254.7333	181.61	185.33	3.72	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K1910095-009.05	4.4502 ppm	0.0590 ppm	1.3200%	2019/11/14 05:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4919	44.9185	39.19	42.87	3.68	50.20	10:28
2	TOC	4.4085	44.0847	38.62	42.24	3.62	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K1910095-010.05	9.8904 ppm	0.0681 ppm	0.6900%	2019/11/14 05:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.9386	99.3857	76.16	79.79	3.63	50.19	10:26
2	TOC	9.8422	98.4222	75.51	79.31	3.80	50.18	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2291 ppm (PASS)	0.0000 ppm	0%	2019/11/14 06:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2291	242.2907	173.93	177.68	3.75	50.17	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/14 06:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.35	9.02	3.67	50.20	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K1910095-011.05	21.2726 ppm	0.3074 ppm	1.4500%	2019/11/14 06:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.4899	214.8994	154.57	158.23	3.66	50.20	10:29
2	TOC	21.0552	210.5520	151.62	155.43	3.80	50.16	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K1910095-012.05	12.2234 ppm	0.1251 ppm	1.0200%	2019/11/14 07:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.3119	123.1190	92.27	95.96	3.68	50.19	10:27
2	TOC	12.1350	121.3497	91.07	94.69	3.62	50.17	10:28

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1910095-013.05	12.2531 ppm	0.0388 ppm	0.3200%	2019/11/14 07:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.2805	122.8052	92.06	95.75	3.69	50.18	10:28
2	TOC	12.2257	122.2571	91.69	95.40	3.71	50.19	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1910095-016.08	8.7652 ppm	0.0128 ppm	0.1500%	2019/11/14 08:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.7743	87.7430	68.26	71.92	3.66	50.20	10:29
2	TOC	8.7562	87.5618	68.14	71.68	3.54	50.19	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1910095-017.08 400x	0.1435 ppm	0.0489 ppm	34.0500%	2019/11/14 08:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1089	1.0893	9.44	13.24	3.80	50.21	10:27
2	TOC	0.1780	1.7803	9.91	13.41	3.50	50.20	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1910095-018.08 400x	0.1100 ppm	0.0313 ppm	28.4200%	2019/11/14 09:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1321	1.3206	9.60	13.14	3.54	50.20	10:25
2	TOC	0.0879	0.8787	9.30	12.96	3.66	50.20	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1910114-001.08	6.4706 ppm	0.0578 ppm	0.8900%	2019/11/14 09:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4297	64.2970	52.34	55.95	3.61	50.22	10:31
2	TOC	6.5115	65.1146	52.90	56.44	3.54	50.24	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	36	TOC	K1910114-002.08	7.4811 ppm	0.0228 ppm	0.3000%	2019/11/14 10:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4649	74.6492	59.37	62.84	3.47	50.26	10:29
2	TOC	7.4972	74.9718	59.59	63.08	3.49	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K1910137-001.05	1.1578 ppm	0.0361 ppm	3.1200%	2019/11/14 10:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1833	11.8334	16.73	20.14	3.40	50.27	10:30
2	TOC	1.1322	11.3222	16.39	19.94	3.56	50.26	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1910137-001.05 ms	26.4539 ppm	0.0000 ppm	0.0000%	2019/11/14 11:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.4539	264.5389	188.27	192.04	3.77	50.26	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.9259 ppm (PASS)	0.0000 ppm	0%	2019/11/14 11:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

B	TOC	25 ppm	1	23.9259	239.2589	171.87	175.42	3.55	50.29	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/14 11:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.29	8.86	3.57	50.28	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample — From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 11:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.52	8.11	3.60	50.27	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.3004 ppm (PASS)	0.0000 ppm	0%	2019/11/14 12:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.3004	243.0038	174.41	178.11	3.70	50.29	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1910137-002.05	0.2846 ppm	0.0653 ppm	22.9500%	2019/11/14 12:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3308	3.3080	10.95	14.63	3.69	50.29	10:25
2	TOC	0.2384	2.3843	10.32	13.89	3.57	50.30	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K1910137-003.13	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 12:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.11	8.65	3.54	50.29	10:32
2	TOC	0.0000	0.0000	5.10	8.48	3.38	50.31	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K1910137-004.13	2.7876 ppm	0.0074 ppm	0.2700%	2019/11/14 13:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7823	27.8235	27.59	31.13	3.55	50.30	10:26
2	TOC	2.7928	27.9281	27.66	31.15	3.49	50.27	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K1910137-005.13	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 13:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.02	8.63	3.61	50.25	10:31
2	TOC	0.0000	0.0000	5.21	8.79	3.58	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K1910137-006.13	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 14:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0000	0.0000	5.33	8.91	3.57	50.22	10:30
2	TOC	0.0000	0.0000	5.26	8.73	3.47	50.29	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K1910137-007.13	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 14:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.69	8.27	3.58	50.23	10:29
2	TOC	0.0000	0.0000	4.90	8.55	3.65	50.19	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K1910137-008.13	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 15:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.65	8.24	3.59	50.19	10:29
2	TOC	0.0000	0.0000	5.09	8.61	3.51	50.21	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	K1910138-001.01	8.9977 ppm	0.0193 ppm	0.2100%	2019/11/14 15:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9841	89.8408	69.68	73.30	3.61	50.21	10:29
2	TOC	9.0113	90.1134	69.87	73.60	3.73	50.28	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8097 ppm (PASS)	0.0000 ppm	0%	2019/11/14 16:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8097	238.0965	171.08	174.70	3.62	50.26	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/14 16:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.86	8.51	3.65	50.24	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1910152-002.04	20.3518 ppm	0.3710 ppm	1.8200%	2019/11/14 16:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.6141	206.1412	148.63	152.22	3.60	50.30	10:27
2	TOC	20.0895	200.8951	145.07	148.84	3.78	50.26	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1910157-001.02 100x	0.4233 ppm	0.0171 ppm	4.0400%	2019/11/14 17:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4354	4.3539	11.66	15.33	3.68	50.29	10:29
2	TOC	0.4112	4.1123	11.49	14.99	3.50	50.34	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	T1901876-001.05 doc	3.8238 ppm	0.0529 ppm	1.3800%	2019/11/14 17:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8612	38.6117	34.91	38.49	3.58	50.31	10:29

2	TOC	3.7863	37.8634	34.40	37.93	3.52	50.32	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	51	TOC	T1901876-002.05 doc	3.8854 ppm	0.0134 ppm	0.3500%	2019/11/14 18:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8949	38.9491	35.14	38.67	3.53	50.33	10:27
2	TOC	3.8759	38.7591	35.01	38.52	3.51	50.32	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	52	TOC	T1901876-003.05 doc	3.9844 ppm	0.0534 ppm	1.3400%	2019/11/14 18:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0222	40.2220	36.00	39.44	3.44	50.34	10:26
2	TOC	3.9466	39.4662	35.49	39.08	3.59	50.36	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	53	TOC	T1901876-004.05 doc	4.1389 ppm	0.1022 ppm	2.4700%	2019/11/14 18:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2112	42.1121	37.29	40.83	3.54	50.35	10:30
2	TOC	4.0667	40.6669	36.30	40.07	3.77	50.36	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	T1901876-005.05 doc	4.1680 ppm	0.0344 ppm	0.8200%	2019/11/14 19:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1924	41.9235	37.16	40.85	3.70	50.37	10:29
2	TOC	4.1437	41.4373	36.83	40.56	3.74	50.37	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	55	TOC	T1901876-006.05 doc	4.5420 ppm	0.0395 ppm	0.8700%	2019/11/14 19:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5141	45.1410	39.34	43.09	3.75	50.41	10:25
2	TOC	4.5699	45.6993	39.72	43.33	3.61	50.42	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	T1901876-007.05 doc	4.0757 ppm	0.0008 ppm	0.0200%	2019/11/14 20:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0763	40.7626	36.37	40.00	3.63	50.37	10:29
2	TOC	4.0751	40.7508	36.36	40.13	3.76	50.43	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	T1901876-007.05 ms doc	29.7275 ppm	0.0000 ppm	0.0000%	2019/11/14 20:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.7275	297.2749	210.49	214.00	3.51	50.37	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.7003 ppm (PASS)	0.0000 ppm	0%	2019/11/14 21:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.7003	237.0034	170.34	174.02	3.68	50.39	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration	Dil	Sample ID	Min / Max	Result	Std. Dev.	RSD	Start Time

			(ppm)			(% dev)				
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/14 21:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.48	9.01	3.53	50.40	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample — From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 21:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.70	8.39	3.69	50.37	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.4764 ppm (PASS)	0.0000 ppm	0%	2019/11/14 21:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.4764	244.7642	175.61	179.17	3.57	50.34	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample — From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	T1901876-008.05 doc	4.2014 ppm	0.0280 ppm	0.6700%	2019/11/14 22:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2212	42.2123	37.35	41.10	3.74	50.30	10:28
2	TOC	4.1816	41.8160	37.08	40.64	3.56	50.32	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	T1901876-009.05 doc	4.1658 ppm	0.0324 ppm	0.7800%	2019/11/14 22:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1429	41.4285	36.82	40.49	3.67	50.28	10:25
2	TOC	4.1887	41.8867	37.13	40.57	3.44	50.36	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	T1901876-010.05 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/14 22:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.85	9.53	3.68	50.25	10:29
2	TOC	0.0000	0.0000	5.92	9.58	3.66	50.27	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1910483-002.02 doc	3.1783 ppm	0.0088 ppm	0.2800%	2019/11/14 23:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1722	31.7216	30.23	33.85	3.61	50.27	10:31
2	TOC	3.1845	31.8453	30.32	34.00	3.69	50.24	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1910483-004.02 doc	2.1163 ppm	0.0033 ppm	0.1600%	2019/11/14 23:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1187	21.1867	23.08	26.93	3.85	50.23	10:27
2	TOC	2.1140	21.1396	23.05	26.71	3.66	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1910425-001.01 doc	0.7043 ppm	0.0202 ppm	2.8700%	2019/11/15 00:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7185	7.1854	13.58	17.32	3.74	50.22	10:27
2	TOC	0.6900	6.8996	13.38	17.12	3.73	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1910425-002.01 doc	0.8315 ppm	0.0017 ppm	0.2000%	2019/11/15 00:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8304	8.3036	14.34	17.96	3.62	50.21	10:28
2	TOC	0.8327	8.3272	14.35	18.04	3.69	50.20	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1910425-003.01 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/15 01:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.05	11.67	3.62	50.25	10:30
2	TOC	0.0000	0.0000	7.95	11.59	3.64	50.21	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.5591 ppm (PASS)	0.0000 ppm	0%	2019/11/15 01:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.5591	235.5906	169.38	173.16	3.78	50.21	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/15 02:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.83	8.64	3.81	50.22	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 76

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1910425-004.01 doc	0.3505 ppm	0.0230 ppm	6.5700%	2019/11/15 02:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3342	3.3418	10.97	14.53	3.56	50.23	10:32
2	TOC	0.3667	3.6674	11.19	14.71	3.52	50.20	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1910425-005.01 doc	0.5423 ppm	0.0552 ppm	10.1800%	2019/11/15 02:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5033	5.0331	12.12	15.80	3.68	50.20	10:29
2	TOC	0.5814	5.8139	12.65	16.24	3.59	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1910425-006.01 doc	0.6383 ppm	0.0132 ppm	2.0700%	2019/11/15 03:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6290	6.2897	12.97	16.72	3.75	50.22	10:29
2	TOC	0.6477	6.4768	13.10	16.77	3.67	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1910425-007.01 doc	0.7088 ppm	0.0010 ppm	0.1500%	2019/11/15 03:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7096	7.0956	13.52	17.17	3.65	50.22	10:30
2	TOC	0.7081	7.0808	13.51	17.22	3.71	50.21	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1910425-008.01 doc	0.6538 ppm	0.0395 ppm	6.0400%	2019/11/15 04:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6259	6.2588	12.95	16.54	3.59	50.26	10:28
2	TOC	0.6817	6.8171	13.33	16.86	3.53	50.24	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7006 (IC) (v1319)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.6441 ppm (PASS)	0.0000 ppm	0%	2019/11/15 04:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6441	236.4406	169.96	173.60	3.64	50.23	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 76

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/15 04:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.88	8.44	3.56	50.22	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1318	0.8517	0.9170	0.0000	0.0000	0.0000	2019/11/12 20:04	Fusion1 (Fusion1)
v1319	0.9217	1.0210	0.0000	0.0000	0.0000	2019/11/13 13:58	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v30

Ver Creation: 2019/03/05 17:42

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 6.788x + 9.463

r^2 value: TOC: r^2 = 0.99963

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4

Ver Creation: 2019/02/21 17:57

Comment:

Operator: Fusion1 (Fusion1)

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7

DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/15 05:08

StarLIMS Run: 659770, 659771,659773, 659774

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-82O

21 % H3PO4: 11-GEN-05-82G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: HLM for BCD	Date Analyzed: 11/13/19
Reviewed By:	Date Reviewed: 11/18/19

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 15, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19110211**

Laboratory Results for: **Longhorn GW Treatment Plant Monthly Effluent Samples**

Dear Marcia,

ALS Environmental received 2 sample(s) on Nov 06, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19110211

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19110211-01	LH18/24-SP650_110519	Water		05-Nov-2019 14:00	06-Nov-2019 08:45	☐
HS19110211-02	LH18/24-SP650_110519_AIX	Water		05-Nov-2019 14:00	06-Nov-2019 08:45	☐

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19110211

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 147273

Sample ID: LCS/LCSD147273

• LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch. The batch quality control criteria were met

Metals by Method SW6020

Batch ID: 147466

Sample ID: HS19110207-01MS

• MS and MSD are for an unrelated sample

WetChemistry by Method SW7196

Batch ID: R350105

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19110211

Sample ID: LH18/24-SP650_110519 Lab ID:HS19110211-01

Collection Date: 05-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 07-Nov-2019		Analyst: LG
1,4-Dioxane	**11**		**0.52**	**0.52**	**0.52**	**ug/L**	50	15-Nov-2019 17:16
Surr: 2-Fluorobiphenyl	*115*			**0**	*40-140*	*%REC*	*50*	*15-Nov-2019 17:16*
Surr: 4-Terphenyl-d14	*130*			**0**	*40-140*	*%REC*	*50*	*15-Nov-2019 17:16*
Surr: Nitrobenzene-d5	*132*			**0**	*40-140*	*%REC*	*50*	*15-Nov-2019 17:16*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 13-Nov-2019		Analyst: JC
Barium	**0.214**		**0.00190**	**0.00250**	**0.00500**	**mg/L**	1	13-Nov-2019 13:16
Lead	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	13-Nov-2019 13:16
Selenium	0.00250	U	0.00110	0.00250	0.00500	mg/L	1	13-Nov-2019 13:16
Silver	0.000500	U	0.000200	0.000500	0.00500	mg/L	1	13-Nov-2019 13:16
HEXAVALENT CHROMIUM BY SW7196A		**Method:SW7196**						Analyst: KVL
Chromium, Hexavalent	0.0100	U	0.00600	0.0100	0.0100	mg/L	1	06-Nov-2019 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19110211

Sample ID: LH18/24-SP650_110519_AIX Lab ID:HS19110211-02

Collection Date: 05-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-Nov-2019 17:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110211

Batch ID: 147273 **Start Date:** 07 Nov 2019 08:55 **End Date:** 07 Nov 2019 13:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_SIM

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19110211-01	1	970 (mL)	1 (mL)	0.001031

Batch ID: 147466 **Start Date:** 13 Nov 2019 07:30 **End Date:** 13 Nov 2019 11:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19110211-01		10 (mL)	10 (mL)	1

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110211

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 147273 (0)	**Test Name :** SEMIVOLATILES SIM				**Matrix:** Water	
HS19110211-01	LH18/24-SP650_110519	05 Nov 2019 14:00		07 Nov 2019 08:55	15 Nov 2019 17:16	50
Batch ID: 147466 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Water	
HS19110211-01	LH18/24-SP650_110519	05 Nov 2019 14:00		13 Nov 2019 07:30	13 Nov 2019 13:16	1
Batch ID: R350105 (0)	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A				**Matrix:** Water	
HS19110211-01	LH18/24-SP650_110519	05 Nov 2019 14:00			06 Nov 2019 12:00	1
Batch ID: R350525 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19110211-02	LH18/24-SP650_110519_AIX	05 Nov 2019 14:00			14 Nov 2019 17:57	1

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110211

QC BATCH REPORT

Batch ID: 147466 (0) **Instrument: ICPMS04** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-147466** Units: **mg/L** Analysis Date: **13-Nov-2019 12:58**
Client ID: Run ID: **ICPMS04_350354** SeqNo: **5341762** PrepDate: **13-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.00250	0.00500								U
Lead	0.00100	0.00500								U
Selenium	0.00250	0.00500								U
Silver	0.000500	0.00500								U

LCS Sample ID: **LCS-147466** Units: **mg/L** Analysis Date: **13-Nov-2019 13:00**
Client ID: Run ID: **ICPMS04_350354** SeqNo: **5341753** PrepDate: **13-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.04778	0.00500	0.05	0	95.6	86 - 114				
Lead	0.04708	0.00500	0.05	0	94.2	88 - 115				
Selenium	0.05316	0.00500	0.05	0	106	80 - 120				
Silver	0.0484	0.00500	0.05	0	96.8	85 - 116				

MS Sample ID: **HS19110207-01MS** Units: **mg/L** Analysis Date: **13-Nov-2019 13:07**
Client ID: Run ID: **ICPMS04_350354** SeqNo: **5341756** PrepDate: **13-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.6383	0.00500	0.05	0.6093	58.0	86 - 114				SO
Lead	0.04797	0.00500	0.05	0.00035	95.2	88 - 115				
Selenium	0.04941	0.00500	0.05	0.000493	97.8	80 - 120				
Silver	0.04604	0.00500	0.05	0.000033	92.0	85 - 116				

MSD Sample ID: **HS19110207-01MSD** Units: **mg/L** Analysis Date: **13-Nov-2019 13:09**
Client ID: Run ID: **ICPMS04_350354** SeqNo: **5341757** PrepDate: **13-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.6546	0.00500	0.05	0.6093	90.6	86 - 114	0.6383	2.53	20	O
Lead	0.04818	0.00500	0.05	0.00035	95.7	88 - 115	0.04797	0.422	20	
Selenium	0.05208	0.00500	0.05	0.000493	103	80 - 120	0.04941	5.26	20	
Silver	0.04703	0.00500	0.05	0.000033	94.0	85 - 116	0.04604	2.12	20	

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110211

QC BATCH REPORT

Batch ID: 147466 (0) **Instrument: ICPMS04** **Method: METALS BY ICPMS BY SW6020A**

PDS Sample ID: **HS19110207-01PDS** Units: **mg/L** Analysis Date: **13-Nov-2019 13:11**
Client ID: Run ID: **ICPMS04_350354** SeqNo: **5341758** PrepDate: **13-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.7199	0.00500	0.1	0.6093	111	80 - 120				O
Lead	0.1075	0.00500	0.1	0.00035	107	80 - 120				
Selenium	0.1167	0.00500	0.1	0.000493	116	80 - 120				
Silver	0.08561	0.00500	0.1	0.000033	85.6	80 - 120				

SD Sample ID: **HS19110207-01SD** Units: **mg/L** Analysis Date: **13-Nov-2019 13:05**
Client ID: Run ID: **ICPMS04_350354** SeqNo: **5341755** PrepDate: **13-Nov-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	0.5677	0.0250					0.6093	6.82	10	
Lead	0.00500	0.0250					0.00035	0	10	U
Selenium	0.0125	0.0250					0.000493	0	10	U
Silver	0.00250	0.0250					0.000033	0	10	U

The following samples were analyzed in this batch: HS19110211-01

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110211

QC BATCH REPORT

Batch ID: 147273 (0) **Instrument: SV-6** **Method: SEMIVOLATILES SIM**

MBLK Sample ID: **MBLK-147273** Units: **ug/L** Analysis Date: **15-Nov-2019 15:55**
Client ID: Run ID: **SV-6_350626** SeqNo: **5346694** PrepDate: **07-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.08234*	*0*	*0.08*	*0*	*103*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.07561*	*0*	*0.08*	*0*	*94.5*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.08422*	*0*	*0.08*	*0*	*105*	*40 - 140*				

LCS Sample ID: **LCS-147273** Units: **ug/L** Analysis Date: **15-Nov-2019 16:14**
Client ID: Run ID: **SV-6_350626** SeqNo: **5346695** PrepDate: **07-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.09382	0.010	0.08	0	117	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08576*	*0*	*0.08*	*0*	*107*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.07641*	*0*	*0.08*	*0*	*95.5*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.09269*	*0*	*0.08*	*0*	*116*	*40 - 140*				

LCSD Sample ID: **LCSD-147273** Units: **ug/L** Analysis Date: **15-Nov-2019 16:34**
Client ID: Run ID: **SV-6_350626** SeqNo: **5346696** PrepDate: **07-Nov-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08351	0.010	0.08	0	104	40 - 140	0.09382	11.6	20	
Surr: 2-Fluorobiphenyl	*0.09094*	*0*	*0.08*	*0*	*114*	*40 - 140*	*0.08576*	*5.86*	*20*	
Surr: 4-Terphenyl-d14	*0.09182*	*0*	*0.08*	*0*	*115*	*40 - 140*	*0.07641*	*18.3*	*20*	
Surr: Nitrobenzene-d5	*0.09943*	*0*	*0.08*	*0*	*124*	*40 - 140*	*0.09269*	*7.01*	*20*	

The following samples were analyzed in this batch: HS19110211-01

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110211

QC BATCH REPORT

Batch ID: R350105 (0) **Instrument: UV-2450** **Method: HEXAVALENT CHROMIUM BY SW7196A**

MBLK Sample ID: **MBLK-R350105** Units: **mg/L** Analysis Date: **06-Nov-2019 12:00**
Client ID: Run ID: **UV-2450_350105** SeqNo: **5336215** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.0100	0.0100								U

LCS Sample ID: **LCS-R350105** Units: **mg/L** Analysis Date: **06-Nov-2019 12:00**
Client ID: Run ID: **UV-2450_350105** SeqNo: **5336214** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.258	0.0100	0.25	0	103	90 - 111				

MS Sample ID: **HS19110211-01MS** Units: **mg/L** Analysis Date: **06-Nov-2019 12:00**
Client ID: **LH18/24-SP650_110519** Run ID: **UV-2450_350105** SeqNo: **5336217** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.267	0.0100	0.25	0.004	105	90 - 111				

MSD Sample ID: **HS19110211-01MSD** Units: **mg/L** Analysis Date: **06-Nov-2019 12:00**
Client ID: **LH18/24-SP650_110519** Run ID: **UV-2450_350105** SeqNo: **5336216** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.266	0.0100	0.25	0.004	105	90 - 111	0.267	0.375	20	

The following samples were analyzed in this batch: HS19110211-01

ALS Houston, US Date: 15-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: **HS19110211**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 15-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19110211
Date/Time Received: **06-Nov-2019 08:45**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature 6-Nov-2019 Date
Reviewed by: *RJ Modashia* eSignature 6-Nov-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4c U/c	IR25	
Cooler(s)/Kit(s):	6026		
Date/Time sample(s) sent to storage:	11/6/19 11:15		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd., Suite 210 Houston, TX 77099 (281) 530 – 5656 ATTN: RJ Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job:
GROUNDWATER TREATMENT PLANT MONTHLY EFFLUENT SAMPLES

Prepared By: Scott Beesinger

P.O. Number

HS19110211
Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Monthly Effluent Sample

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOLATILES	SILVER, SELENIUM, LEAD, BARIUM	HEXAVALENT CHROMIUM	1, 4 - DIOXANE	PERCHLORATE						Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_110519	Water	11/05/19 / 14:00		2			X	X							NONE	
LH18/24-SP650_110519_AIX	Water	11/05/19 / 14:00		1					X						NONE	
LH18/24-SP650_1110519	Water	11/05/19 / 14:00		1		X									HNO3	

Additional Remarks: **STANDARD TURN AROUND TIME**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	11/05/19	14:30	NA	11/6/19	08:45						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

6026 Tem dcc 1.4
IR # 25
cf 0

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

ALS	CUSTODY SEAL	Seal Broken By:
ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887 6026	Date: 11/5/19 Time: 1430 Name: Scott Beesinger Company: BHA IT	8M Date: 11/06/19

6026 NOV 0 6 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

6026

ALS

ORIGIN ID:SGRA (903) 930-6183
ATT: SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRAST. INC
1209-B EAST GRAND AVE PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 12FEB19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-46-BO 63777-RJ

RMA:

FedEx Express

RETURNS MON-SAT

FedEx
TRK# 0221 4809 7830 8102

WED - 06 NOV 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID 162785 05NOV19 GGGA 56AC1/F330/05A2

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1931243; 1931587; 1931589; 1931592

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2315 (251590)

General Set Information: There were nine field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1931587001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 683380) was less than 1/2 the CRDL. The recovery for the LCS (683377) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1931243001 (Client ID: LH18/24-SP650_110519). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (681876/77) percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 683378) is reported from the analysis of the Laboratory Control Sample (LCS – 683377) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch November 11, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: November 12, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1931589**
Project ID: HS19110211
Purchase Order: HS19110211
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_110519_AIX	1931589001	11/05/19	11/07/19	

ANALYTICAL REPORT

Workorder: 34-1931589
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_110519_AIX**	Sampling Site: NA	Collected: 11/05/2019
Lab ID: 1931589001	Media: 125 mL Nalgene	Received: 11/07/2019
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2315 (HBN: 251590)	**%Solids:** NA
	Analyzed: 11/11/2019 11:45	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 11/11/2019 13:51	/S/ Stephen Brose 11/12/2019 11:07

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1931589
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1931589

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2315 (HBN: 251590)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 683380
Analyzed: 11/11/2019 09:54
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 683377
Analyzed: 11/11/2019 09:27
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	2.87	3.00	95.6	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1931592001	**MS:**	683381	**MSD:**	683382
Analyzed:	11/11/2019 11:58	**Analyzed:**	11/11/2019 12:12	**Analyzed:**	11/11/2019 12:26
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	2.82	3	94.1	78.8	123.8	2.92	97.2	3.17	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
11/11/2019 13:52	11/12/2019 11:07

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

18698#2

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12565**

SUBCONTRACT TO:

1931589

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19110211
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19110211-02**	**LH18/24-SP650_110519_AIX**	**Water**	**05 Nov 2019 14:00**
	SUB_Perch-6850			14 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: D. Mashmar Date/Time: 11/6/19 18:00

Received By: Date/Time: 11.7.19 0940

Cooler ID(s): Temperature(s):

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS HOUSTON

Project/Task/Site: HS19110211

Date/Time of Receipt: _____

Number of Coolers Received: 1

193589

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	GOOD	1 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: _____ (Signature) KAYLEEN COATES (Printed Name) 11.7.19 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 06NOV19
ACTWGT: 11.50 LB
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19110207/208/211 RJ

FedEx Express

RT 907 5
ST 15 15:00 A
4676
11.07

THU - 07 NOV 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0231 4676

AX BTFA

84123
UT-US SLC

Seal Broken By:
Date:

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19110211	***Split:***	**Workorder ID:** 1931589	**Level:** ENV_LVL4	**Requested Analysis**	
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly		
Comments:			**Preservatives**		
			COOL		
			Containers		

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6850, DoD QSM
1	11/05/2019 14:00	LH18/24-SP650_110519_AIX	1931589001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

26 of 104

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	11/07/2019 09:40	ALS Sample Receiving	Sample Login
[signature]	11/7/19 1400	YC	Storage
R.33.1	11.11.19/08:05	T. Bush	COC analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00906099

Batch Worklist

Batch: ELMS/ 2315 | Created: 11/11/2019 09:05 | Instrument: | HBN: 251590

Rule: EPA 6850, DoD QSM Water | Analyst: T. Bosch | Status: WP

Workorder: 1931243 [ENV_LVL4]
Workorder: 1931587 [ENV_LVL4]
Workorder: 1931589 [ENV_LVL4]
Workorder: 1931592 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	683376	CCV for HBN 251590 [ELMS/2315]				CCV	3		E685041C3Q	5311		11/14/2019	
2	683377	LCS for HBN 251590 [ELMS/2315]				LCS	3		E6850Q413Q	5311		11/14/2019	
3	683378	RLVS for HBN 251590 [ELMS/2315				RLVS	3		E685041C3Q	5311		11/14/2019	
4	683379	ICS for HBN 251590 [ELMS/2315]				ICS	3		E6850..D3Q	5311		11/14/2019	
5	683380	LMB for HBN 251590 [ELMS/2315]				LMB	3		E6850Q413Q	5311		11/14/2019	
6	1931243001	HBW7_103119				SAMPLE	3	1931243001-A	E6850Q41.3	5480	11/28/2019	11/14/2019	
7	1931243002	HBW10_103119				SAMPLE	3	1931243002-A	E6850Q41.3	5480	11/28/2019	11/14/2019	
8	1931243003	HBW1_103119				SAMPLE	3	1931243003-A	E6850Q41.3	5480	11/28/2019	11/14/2019	
9	1931243004	HBW1_103119_a				SAMPLE	3	1931243004-A	E6850Q41.3	5480	11/28/2019	11/14/2019	
10	1931243005	GPW3_103119				SAMPLE	3	1931243005-A	E6850Q41.3	5480	11/28/2019	11/14/2019	
11	1931243006	GPW1_103119				SAMPLE	3	1931243006-A	E6850Q41.3	5480	11/28/2019	11/14/2019	
12	1931587001	LH18/24-SP140_110519				SAMPLE	3	1931587001-A	E6850Q41.3	5480	12/3/2019	11/20/2019	
13	1931589001	LH18/24-SP650_110519_AIX				SAMPLE	3	1931589001-A	E6850Q41.3	5480	12/3/2019	11/20/2019	
14	1931592001	LH18/24-SP650_110519				SAMPLE	3	1931592001-A	E6850Q41.3	5480	12/3/2019	11/20/2019	
15	683381	LH18/24-SP650...(1931592001MS)				MS	3		E6850Q413Q	5311		11/14/2019	
16	683382	LH18/24-SP65...(1931592001MSD)				MSD	3		E6850Q413Q	5311		11/14/2019	
17	683383	CCV for HBN 251590 [ELMS/2315]				CCV	3		E685041C3Q	5311		11/14/2019	

00960700

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1931243 (001-06); 1931587 (001); 1931589 (001); 1931592 (001)
ELMS Batch/HBN ID: 2315 (251590)
Prep Date: 11/11/2019 Analysis Date: 11/11/2019 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\NOV\11NOV19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 7 Injection Volume: 30µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 683377; Target = 3.0µg/L. ASTM type II water was used for LMB 683380.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1931592001 (Client ID's: LH18/24-SP650_110519. 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1931587001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\NOV\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\251590-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 683378) is reported from the analysis of the Laboratory Control Sample (LCS – 683377) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2315 HBN: 251590 **Sample Set IDs if Applicable:** 1931243/1931587/1931589/1931592	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK		Description - 6850 WKG Std 100.ug/L
Standard: 49948	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/20/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/23/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 05/06/2019 03:05PM **Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

AccuStandard

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ACCREDITATION 36 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ACCREDITATION 36 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 9001 ISO GUIDE 34 ISO 17025 ULTRA

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: * For isotopically labeled compounds, MW listed is for the fully enriched product.	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\11NOV19D\11NOV19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	683376 CCV@25	Vial 71	1	Control	1	1.41625e6	7.617	25.90411
*	683377 QC@3.0	Vial 72	1	Control	2	1.84151e5	7.616	2.86887
*	683379 ICS@3.0	Vial 73	1	Control	3	1.51199e5	7.437	2.85555
*	683380 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1931243001	Vial 75	1	Sample	5	1.09434e5	7.550	1.63920
*	1931243002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	1931243003	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	1931243004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1931243005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1931243006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1931587001 1K	Vial 81	1	Sample	11	5.18902e5	7.709	1.01804e4
*	1931589001	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	1931592001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	683381 315921S	Vial 84	1	Sample	14	1.43683e5	7.355	2.82421
*	683382 315921D	Vial 85	1	Sample	15	1.36416e5	7.340	2.91526
*	683383 CCV@25	Vial 71	1	Control	16	1.53592e6	7.637	25.74431

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	683376 CCV@25	Vial 71	1	Control	1	1.86117e5	7.636	5.00000
*	683377 QC@3.0	Vial 72	1	Control	2	2.36033e5	7.647	5.00000
*	683379 ICS@3.0	Vial 73	1	Control	3	1.94687e5	7.462	5.00000
*	683380 LMB	Vial 74	1	Control	4	2.14662e5	7.652	5.00000
*	1931243001	Vial 75	1	Sample	5	2.41744e5	7.595	5.00000
*	1931243002	Vial 76	1	Sample	6	1.99280e5	7.575	5.00000
*	1931243003	Vial 77	1	Sample	7	2.45933e5	7.602	5.00000
*	1931243004	Vial 78	1	Sample	8	2.77014e5	7.613	5.00000
*	1931243005	Vial 79	1	Sample	9	2.06933e5	7.675	5.00000
*	1931243006	Vial 80	1	Sample	10	2.08438e5	7.663	5.00000
*	1931587001 1K	Vial 81	1	Sample	11	1.84987e5	7.729	5000.00000
*	1931589001	Vial 82	1	Sample	12	1.79883e5	7.433	5.00000
*	1931592001	Vial 83	1	Sample	13	1.60081e5	7.390	5.00000
*	683381 315921S	Vial 84	1	Sample	14	1.87030e5	7.399	5.00000
*	683382 315921D	Vial 85	1	Sample	15	1.72107e5	7.365	5.00000
*	683383 CCV@25	Vial 71	1	Control	16	2.03231e5	7.654	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	683376 CCV@25	Vial 71	1	Control	1	4.27538e5	7.631	25.67562
*	683377 QC@3.0	Vial 72	1	Control	2	6.18317e4	7.616	3.07140
*	683379 ICS@3.0	Vial 73	1	Control	3	5.17735e4	7.459	3.11978
*	683380 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1931243001	Vial 75	1	Sample	5	3.24669e4	7.610	1.50458
*	1931243002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	1931243003	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	1931243004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1931243005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1931243006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1931587001 1K	Vial 81	1	Sample	11	1.55449e5	7.734	9919.43518
*	1931589001	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	1931592001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	683381 315921S	Vial 84	1	Sample	14	5.09993e4	7.390	3.20197
*	683382 315921D	Vial 85	1	Sample	15	4.84316e4	7.346	3.30816
*	683383 CCV@25	Vial 71	1	Control	16	4.72008e5	7.655	25.93427

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\NOV\11NOV19D.S

Sequence Table:

Method and Injection Info Part:

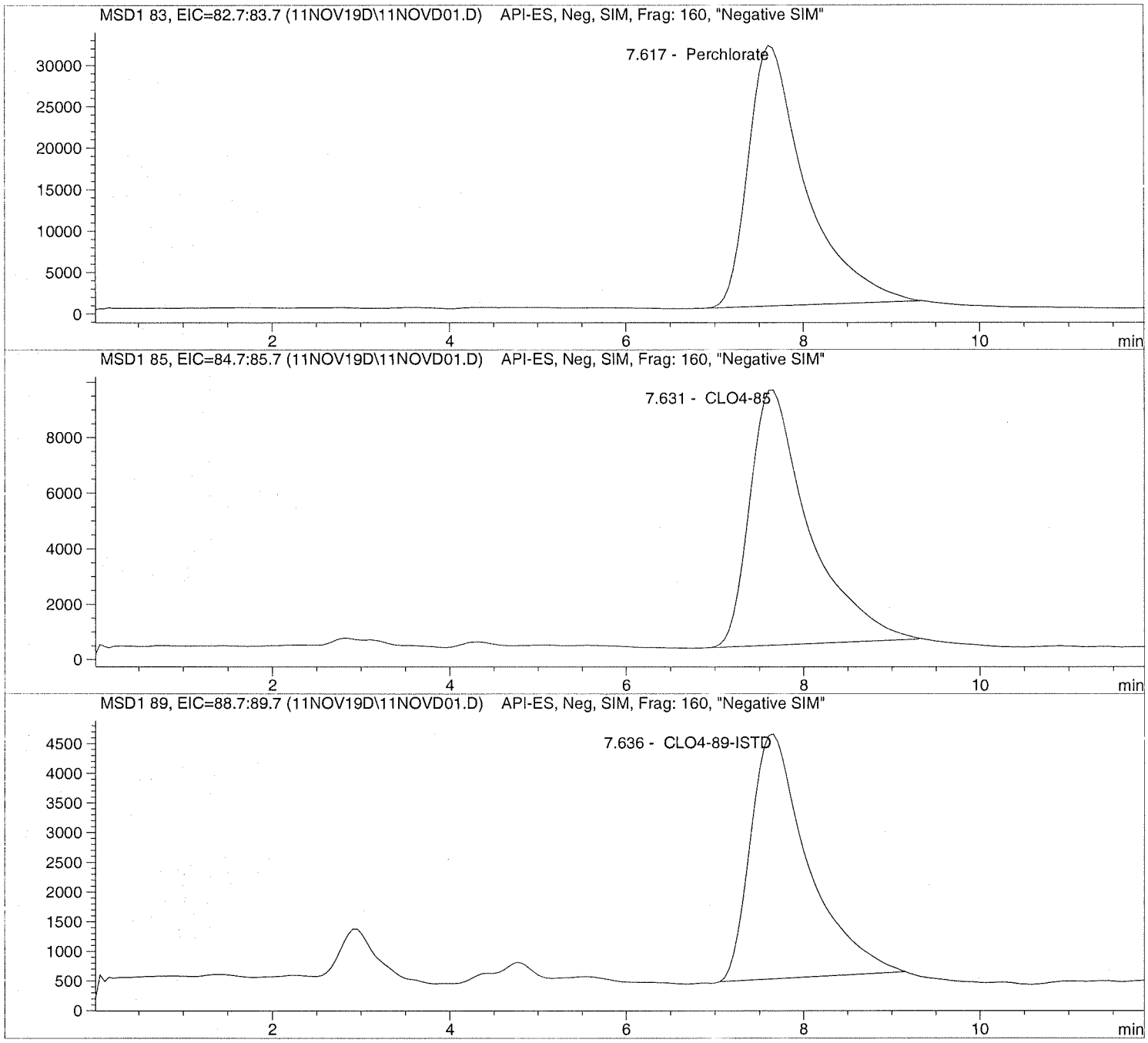
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	683376	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	683377	QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	683379	ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	683380	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1931243001		CLO4-AQN	1	Sample		
6	Vial 76	1931243002		CLO4-AQN	1	Sample		
7	Vial 77	1931243003		CLO4-AQN	1	Sample		
8	Vial 78	1931243004		CLO4-AQN	1	Sample		
9	Vial 79	1931243005		CLO4-AQN	1	Sample		
10	Vial 80	1931243006		CLO4-AQN	1	Sample		
11	Vial 81	1931587001	1K	CLO4-AQN	1	Sample		
12	Vial 82	1931589001		CLO4-AQN	1	Sample		
13	Vial 83	1931592001		CLO4-AQN	1	Sample		
14	Vial 84	683381	315921S	CLO4-AQN	1	Sample		
15	Vial 85	683382	315921D	CLO4-AQN	1	Sample		
16	Vial 71	683383	CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD01.D Sample Name: 683376 CCV@25

Injection Date:	11/11/2019 09:12:09	Seq Line:	1
Sample Name:	683376 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD01.D Sample Name: 683376 CCV@25

Injection Date:	11/11/2019 09:12:09	Seq Line:	1
Sample Name:	683376 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.617	PBA	1416249.7	25.9041	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.631	PBA	427538.1	25.6756	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.636	PBA	186117.5	5.0000	CLO4-89-ISTD

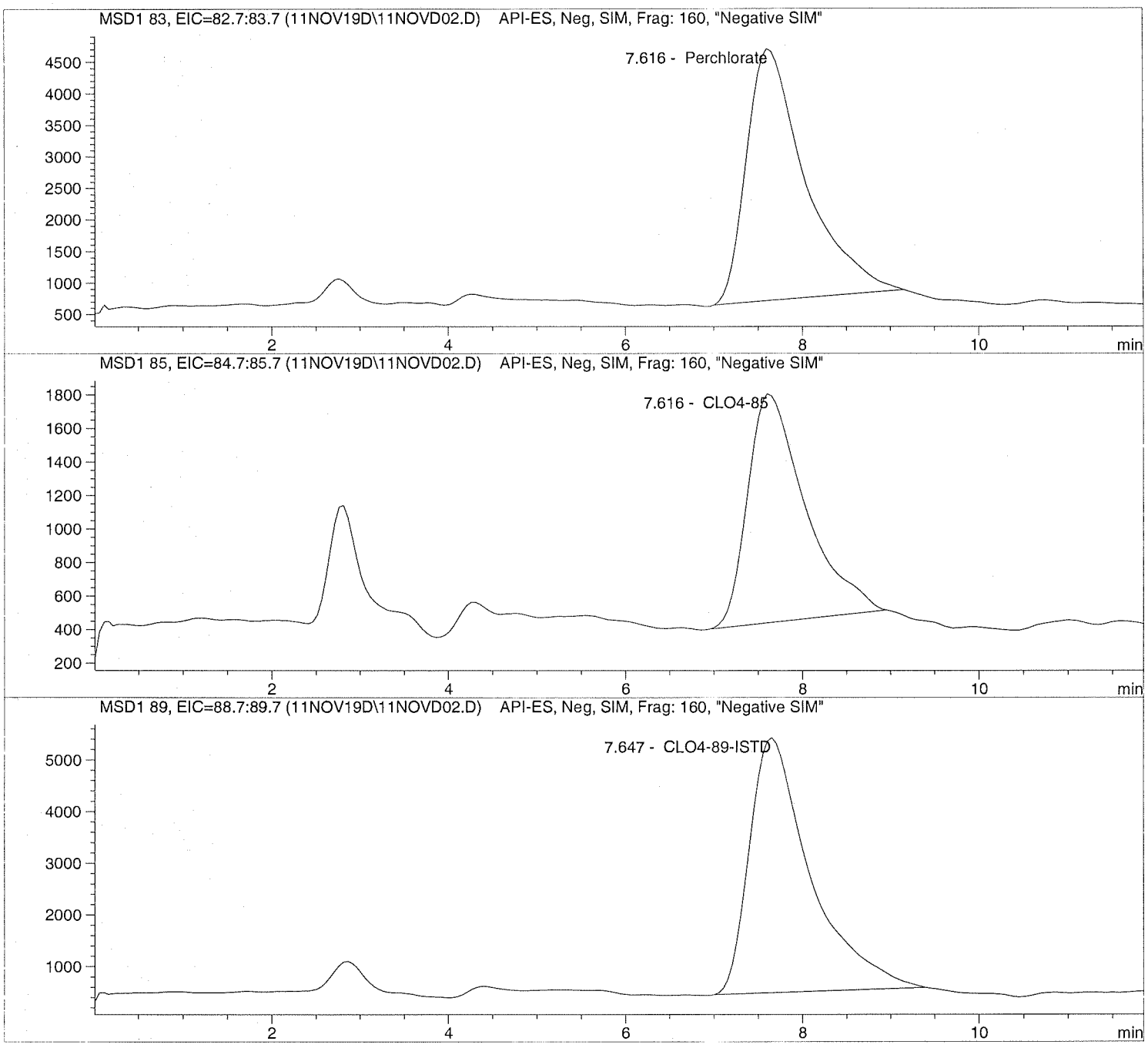
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD02.D Sample Name: 683377 QC@3.0

Injection Date:	11/11/2019 09:27:09	Seq Line:	2
Sample Name:	683377 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD02.D Sample Name: 683377 QC@3.0

Injection Date:	11/11/2019 09:27:09	Seq Line:	2
Sample Name:	683377 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.616	PBA	184151.3	2.8689	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.616	PBA	61831.7	3.0714	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.647	PBA	236032.8	5.0000	CLO4-89-ISTD

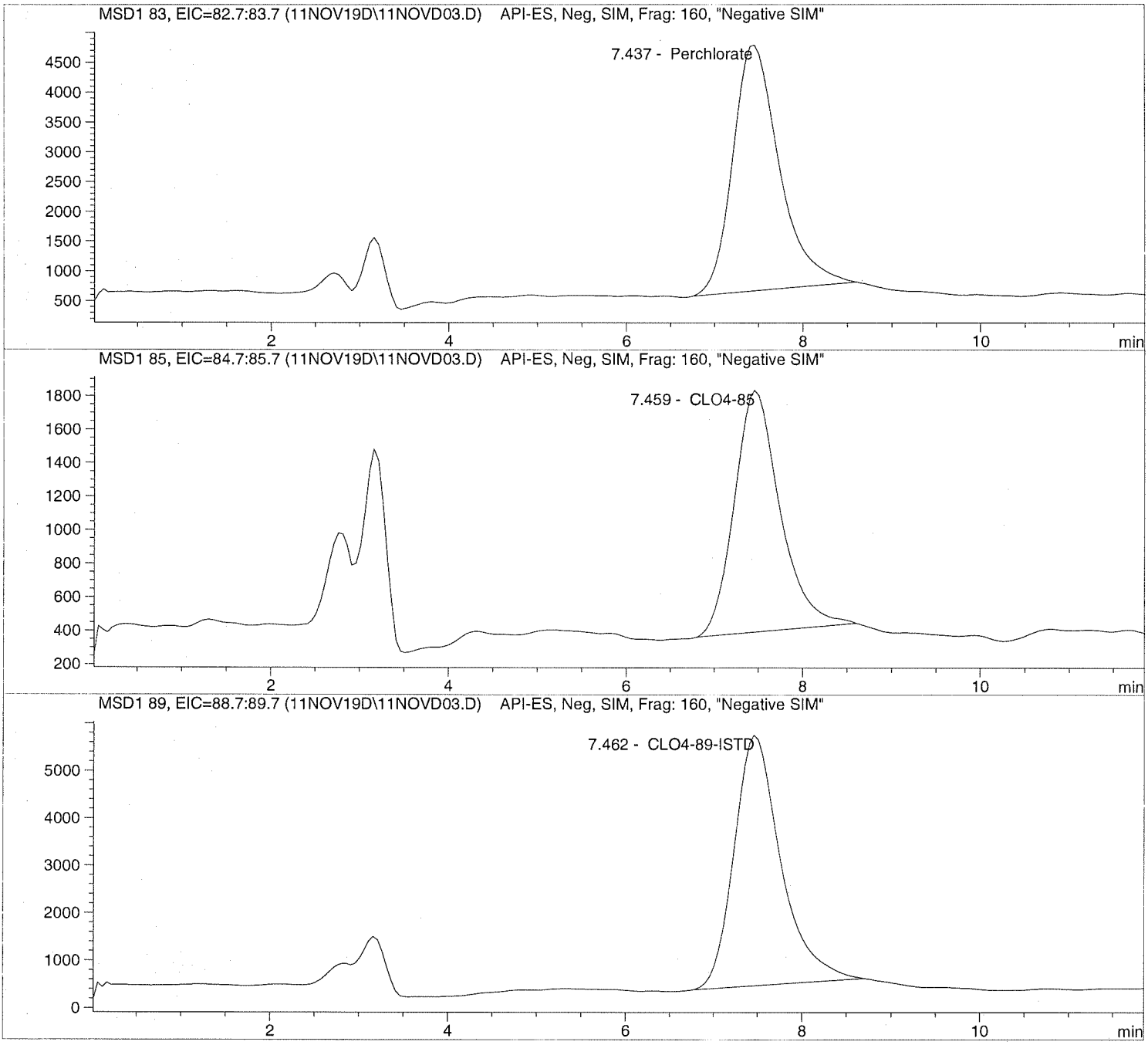
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD03.D Sample Name: 683379 ICS@3.0

Injection Date:	11/11/2019 09:40:56	Seq Line:	3
Sample Name:	683379 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD03.D Sample Name: 683379 ICS@3.0

Injection Date:	11/11/2019 09:40:56	Seq Line:	3
Sample Name:	683379 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.437	PBA	151199.3	2.8556	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.459	PBA	51773.5	3.1198	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.462	PBA	194687.2	5.0000	CLO4-89-ISTD

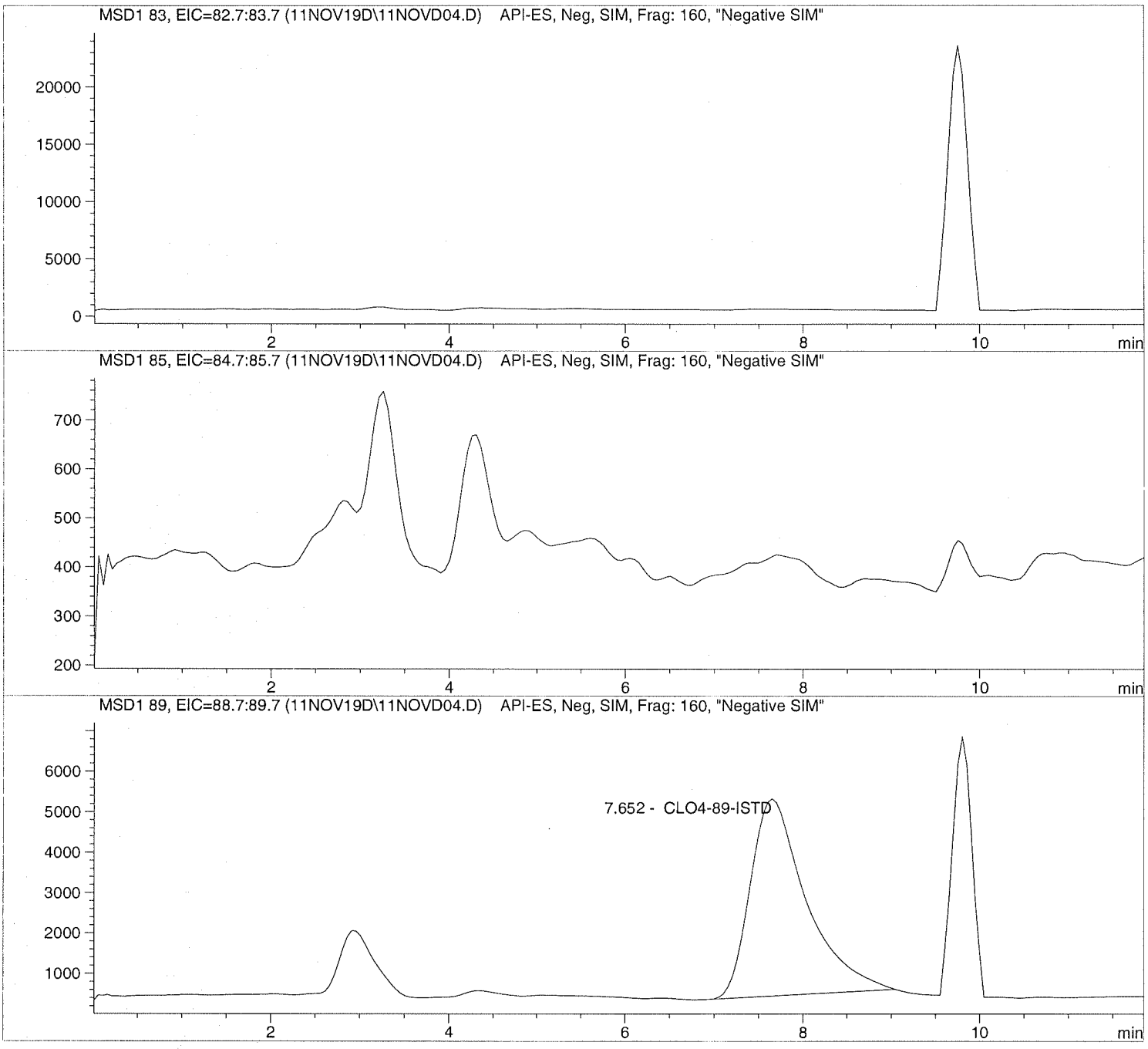
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD04.D Sample Name: 683380 LMB

Injection Date:	11/11/2019 09:54:51	Seq Line:	4
Sample Name:	683380 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD04.D Sample Name: 683380 LMB

Injection Date:	11/11/2019 09:54:51	Seq Line:	4
Sample Name:	683380 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.652	PBA	214661.8	5.0000	CLO4-89-ISTD

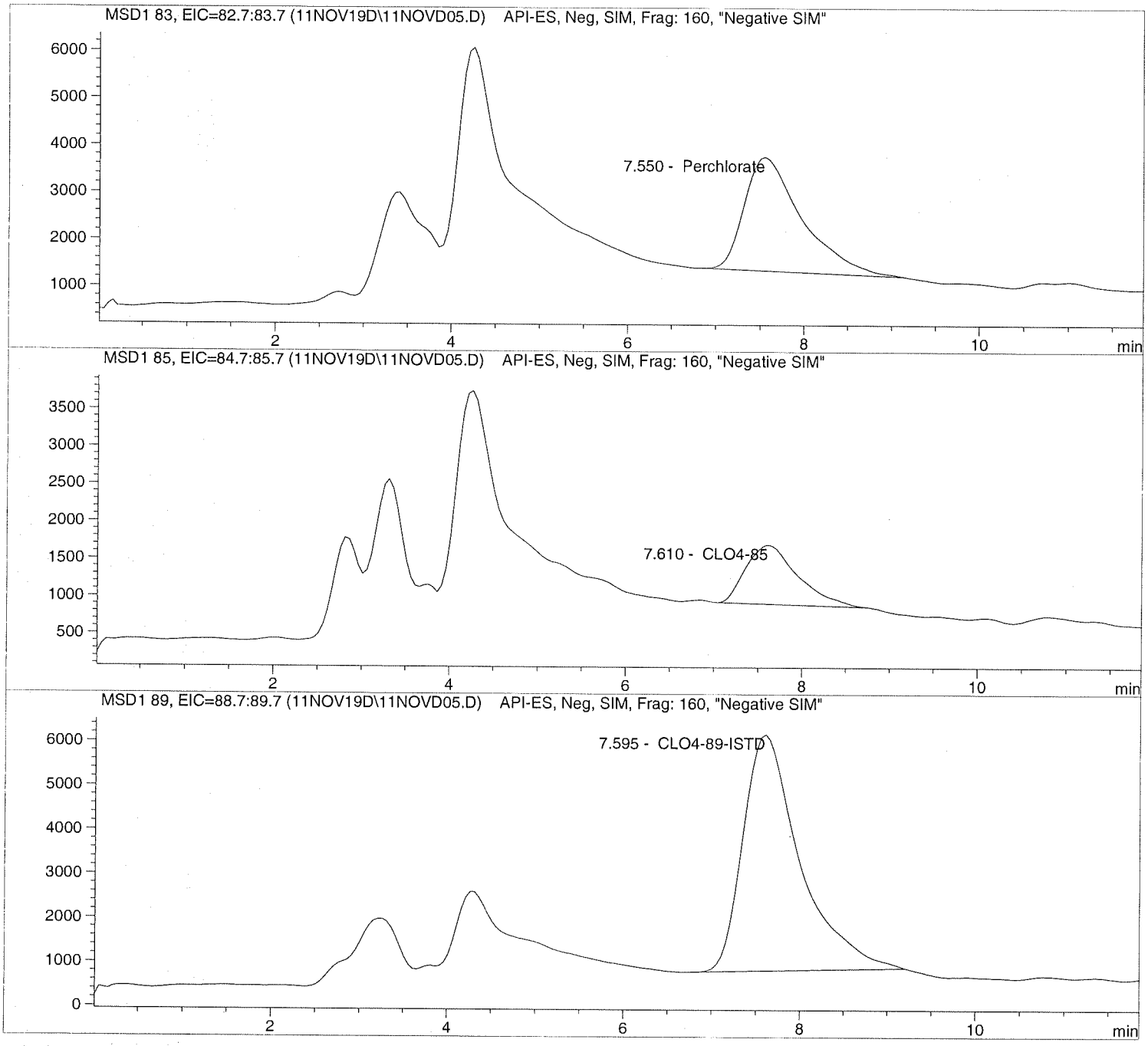
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD05.D Sample Name: 1931243001

Injection Date:	11/11/2019 10:08:37	Seq Line:	5
Sample Name:	1931243001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD05.D Sample Name: 1931243001

Injection Date:	11/11/2019 10:08:37	Seq Line:	5
Sample Name:	1931243001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.550	PBA	109434.2	1.6392	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.610	PBA	32466.9	1.5046	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.595	PBA	241743.8	5.0000	CLO4-89-ISTD

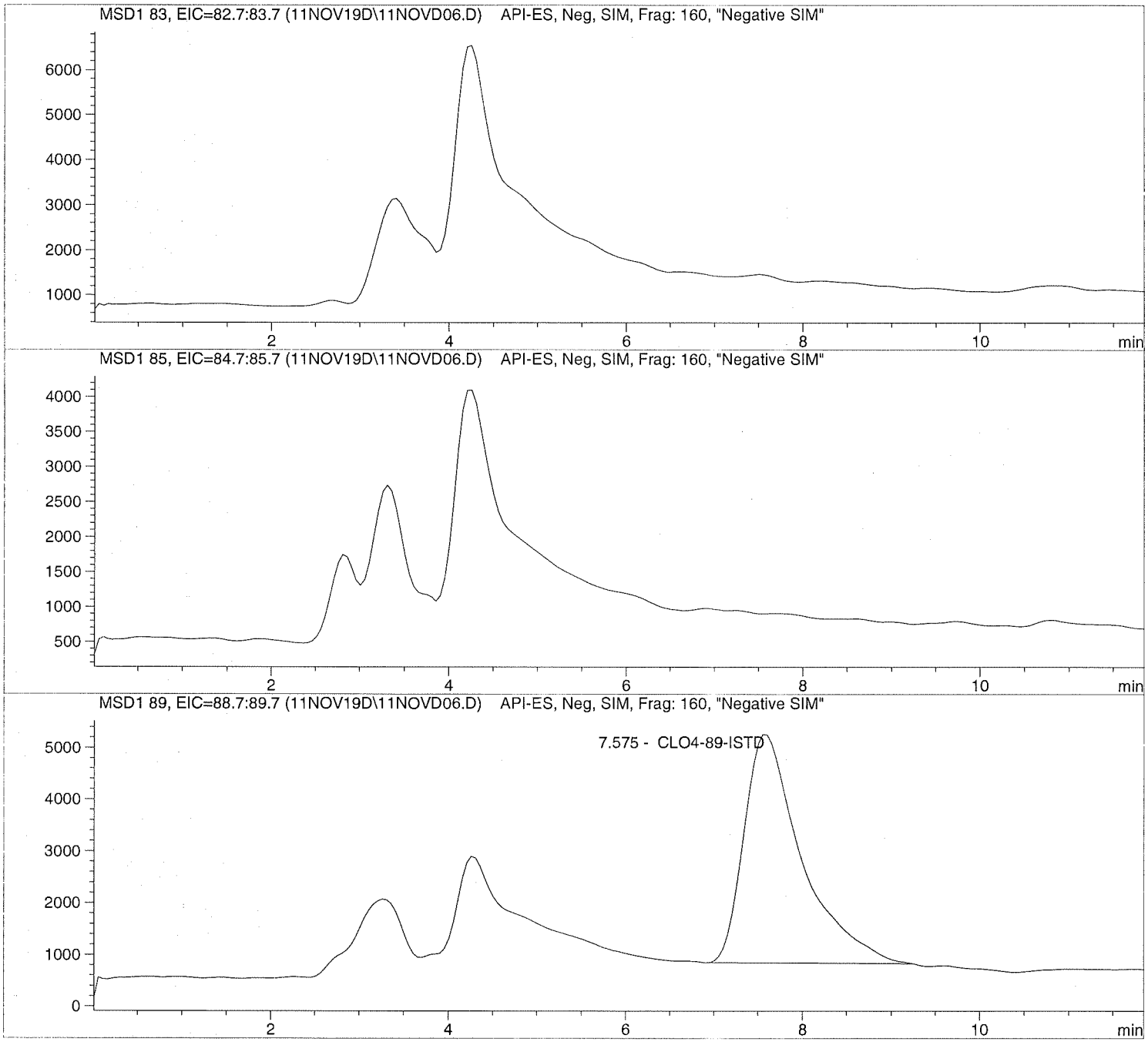
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD06.D Sample Name: 1931243002

Injection Date:	11/11/2019 10:22:24	Seq Line:	6
Sample Name:	1931243002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD06.D Sample Name: 1931243002

Injection Date:	11/11/2019 10:22:24	Seq Line:	6
Sample Name:	1931243002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	199279.9	5.0000	CLO4-89-ISTD

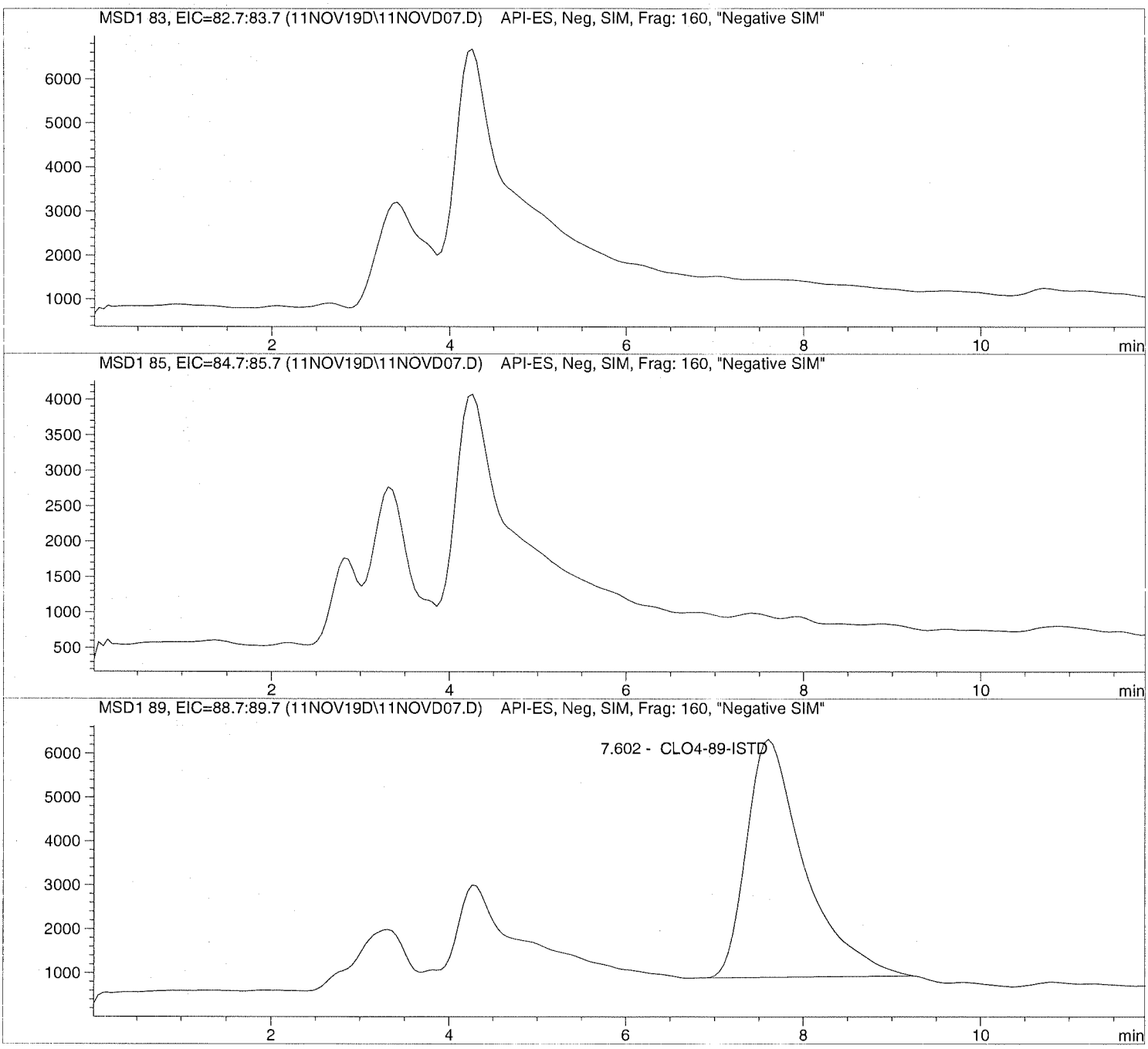
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD07.D Sample Name: 1931243003

Injection Date:	11/11/2019 10:36:16	Seq Line:	7
Sample Name:	1931243003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD07.D Sample Name: 1931243003

Injection Date:	11/11/2019 10:36:16	Seq Line:	7
Sample Name:	1931243003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.602	PBA	245933.3	5.0000	CLO4-89-ISTD

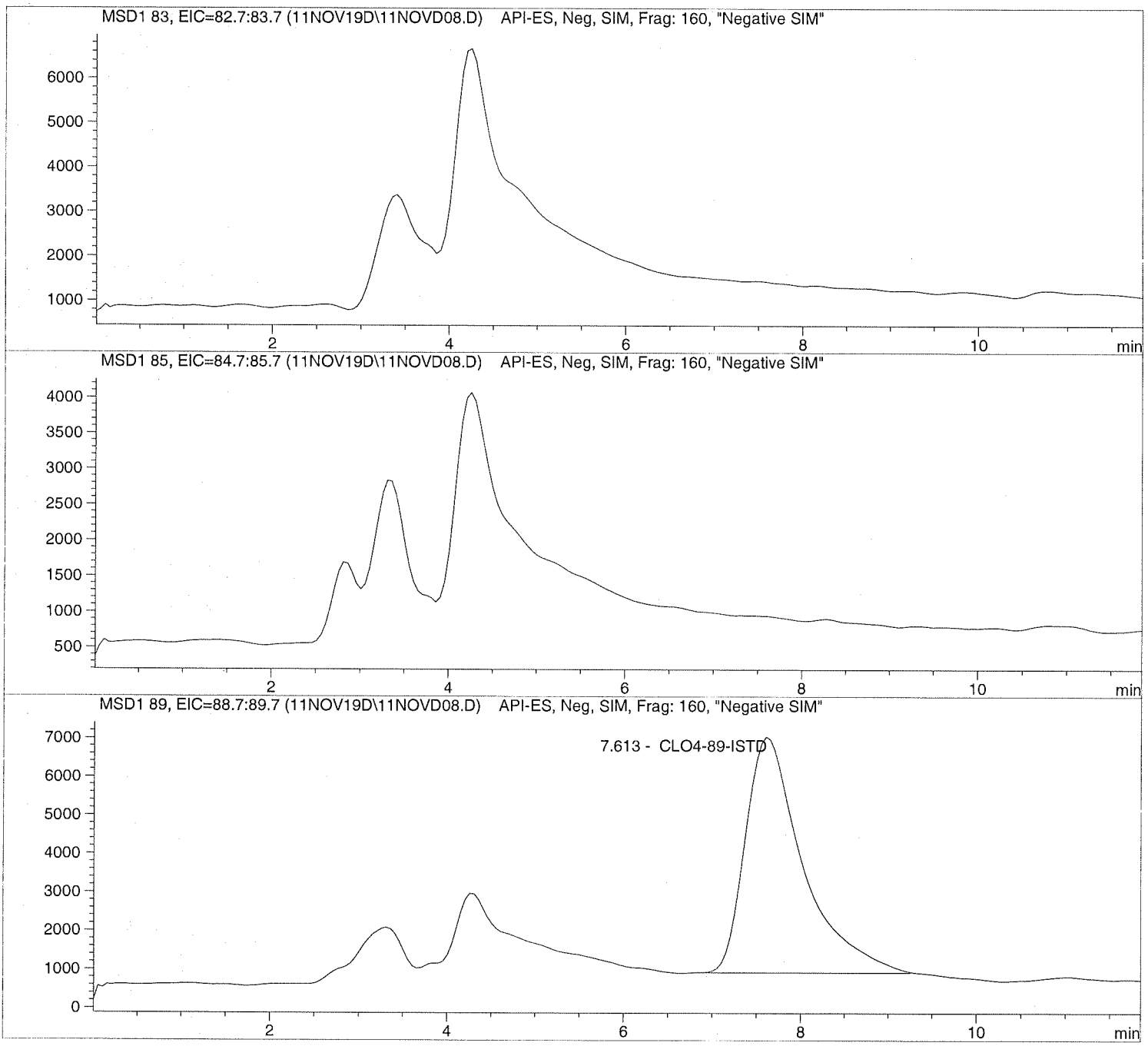
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD08.D Sample Name: 1931243004

Injection Date:	11/11/2019 10:50:03	Seq Line:	8
Sample Name:	1931243004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD08.D Sample Name: 1931243004

Injection Date:	11/11/2019 10:50:03	Seq Line:	8
Sample Name:	1931243004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.613	PBA	277013.9	5.0000	CLO4-89-ISTD

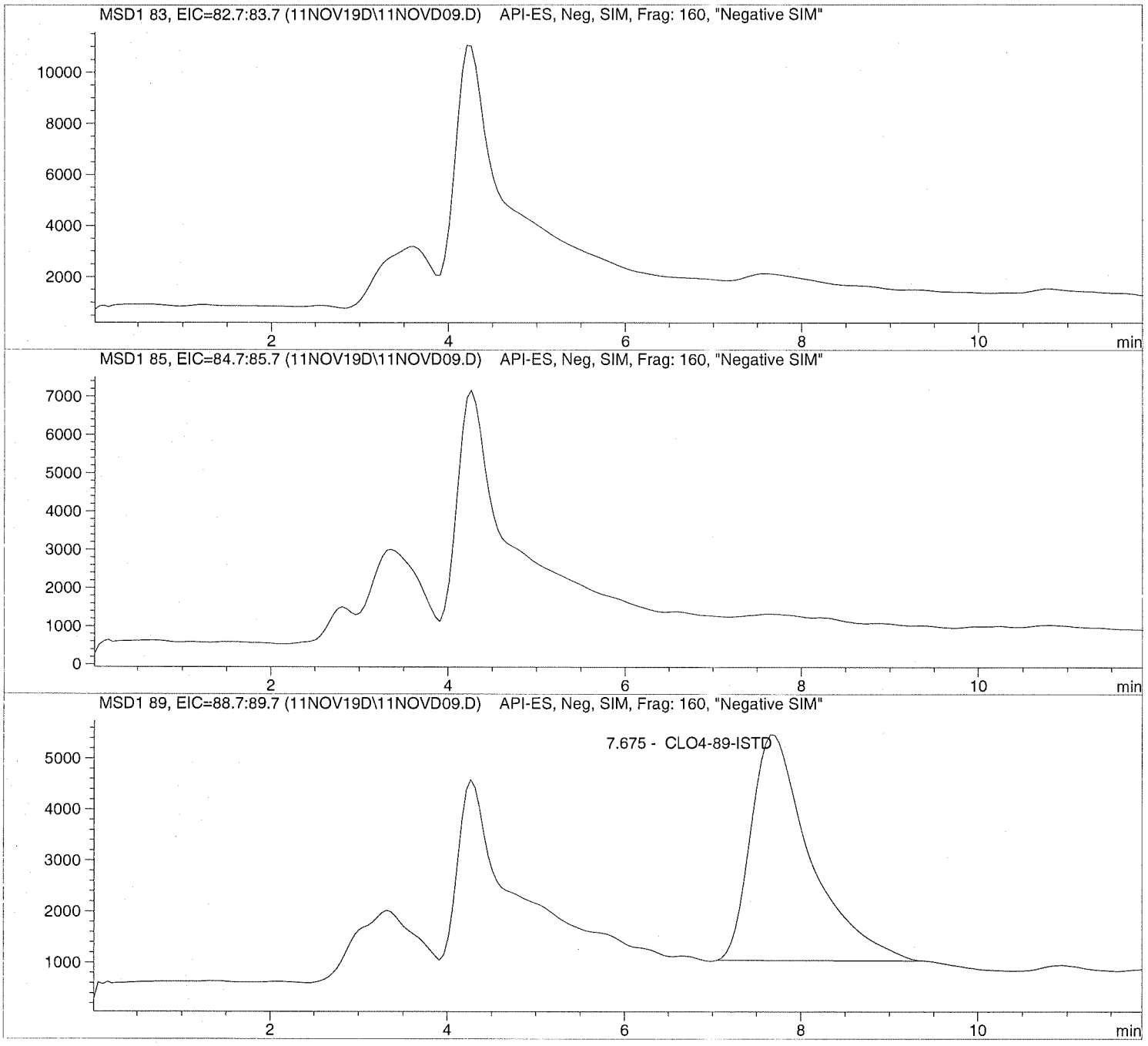
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD09.D Sample Name: 1931243005

Injection Date:	11/11/2019 11:03:50	Seq Line:	9
Sample Name:	1931243005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD09.D Sample Name: 1931243005

Injection Date:	11/11/2019 11:03:50	Seq Line:	9
Sample Name:	1931243005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.675	PBA	206932.9	5.0000	CLO4-89-ISTD

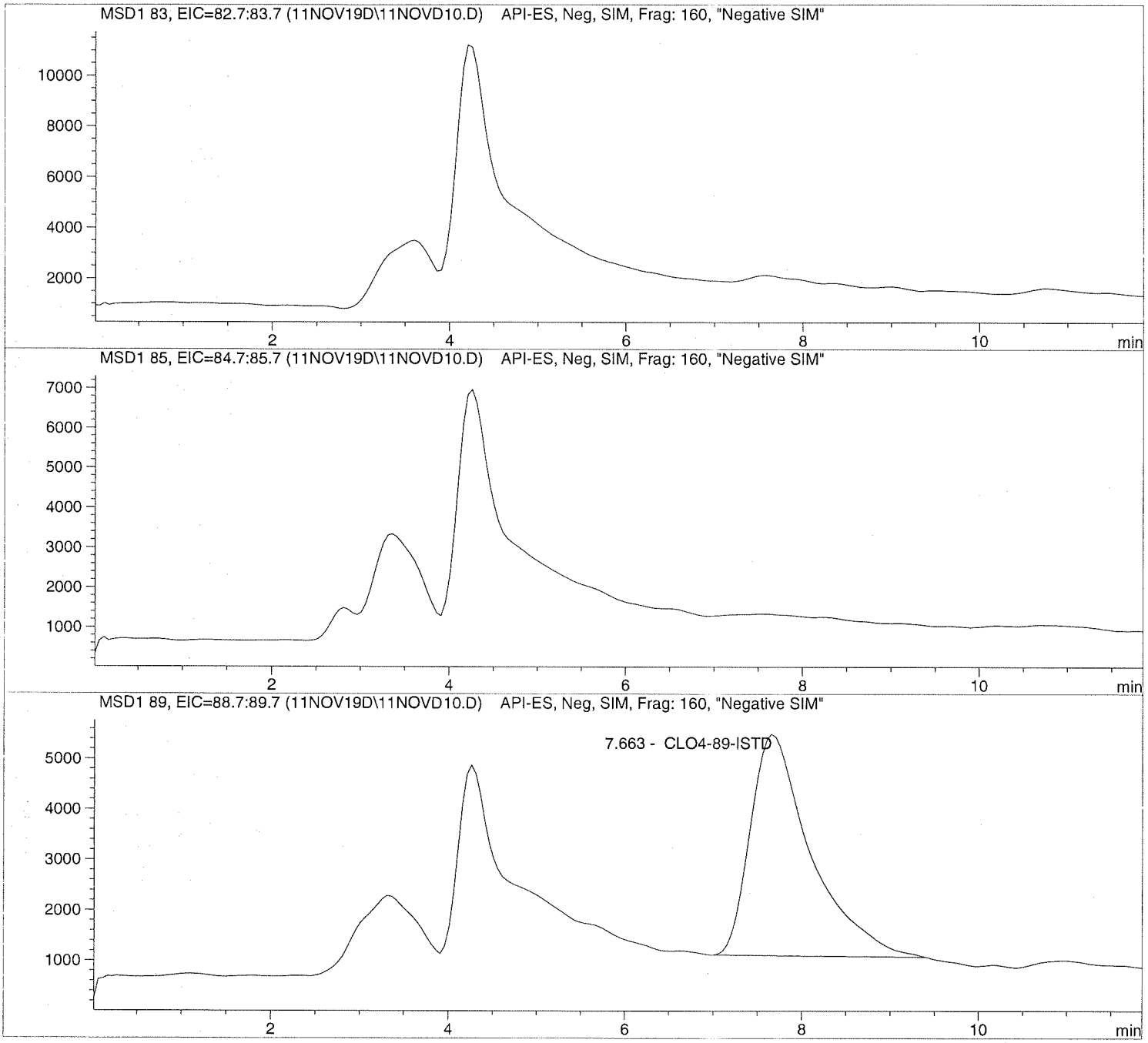
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD10.D Sample Name: 1931243006

Injection Date:	11/11/2019 11:17:41	Seq Line:	10
Sample Name:	1931243006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD10.D Sample Name: 1931243006

Injection Date:	11/11/2019 11:17:41	Seq Line:	10
Sample Name:	1931243006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.663	PBA	208438.4	5.0000	CLO4-89-ISTD

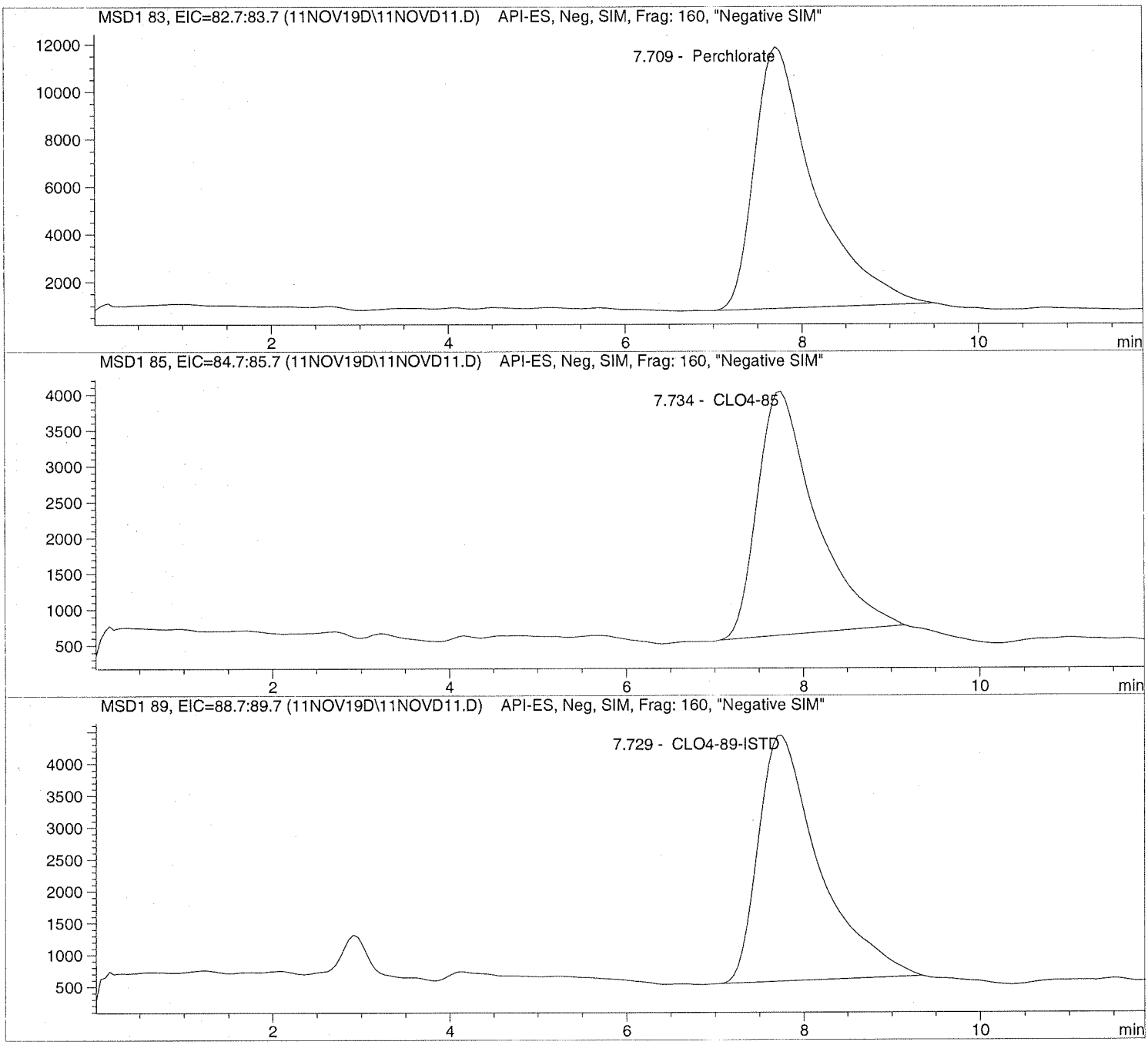
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD11.D Sample Name: 1931587001 1K

Injection Date:	11/11/2019 11:31:27	Seq Line:	11
Sample Name:	1931587001 1K	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD11.D Sample Name: 1931587001 1K

Injection Date:	11/11/2019 11:31:27	Seq Line:	11
Sample Name:	1931587001 1K	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.709	PBA	518901.9	10180.4025	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.734	PBA	155448.7	9919.4352	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.729	PBA	184987.1	5000.0000	CLO4-89-ISTD

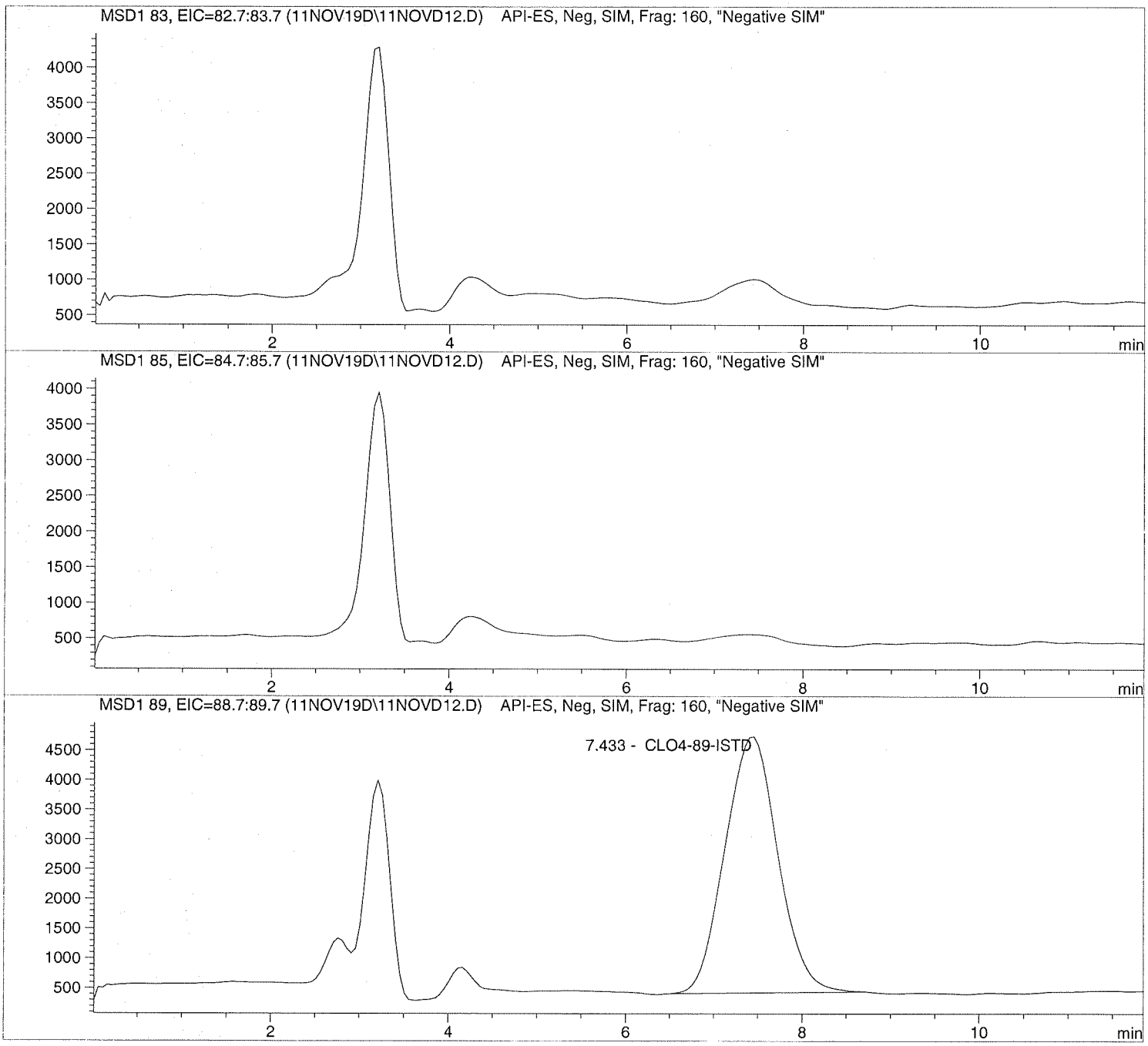
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD12.D Sample Name: 1931589001

Injection Date:	11/11/2019 11:45:10	Seq Line:	12
Sample Name:	1931589001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD12.D Sample Name: 1931589001

Injection Date:	11/11/2019 11:45:10	Seq Line:	12
Sample Name:	1931589001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.433	PBA	179882.8	5.0000	CLO4-89-ISTD

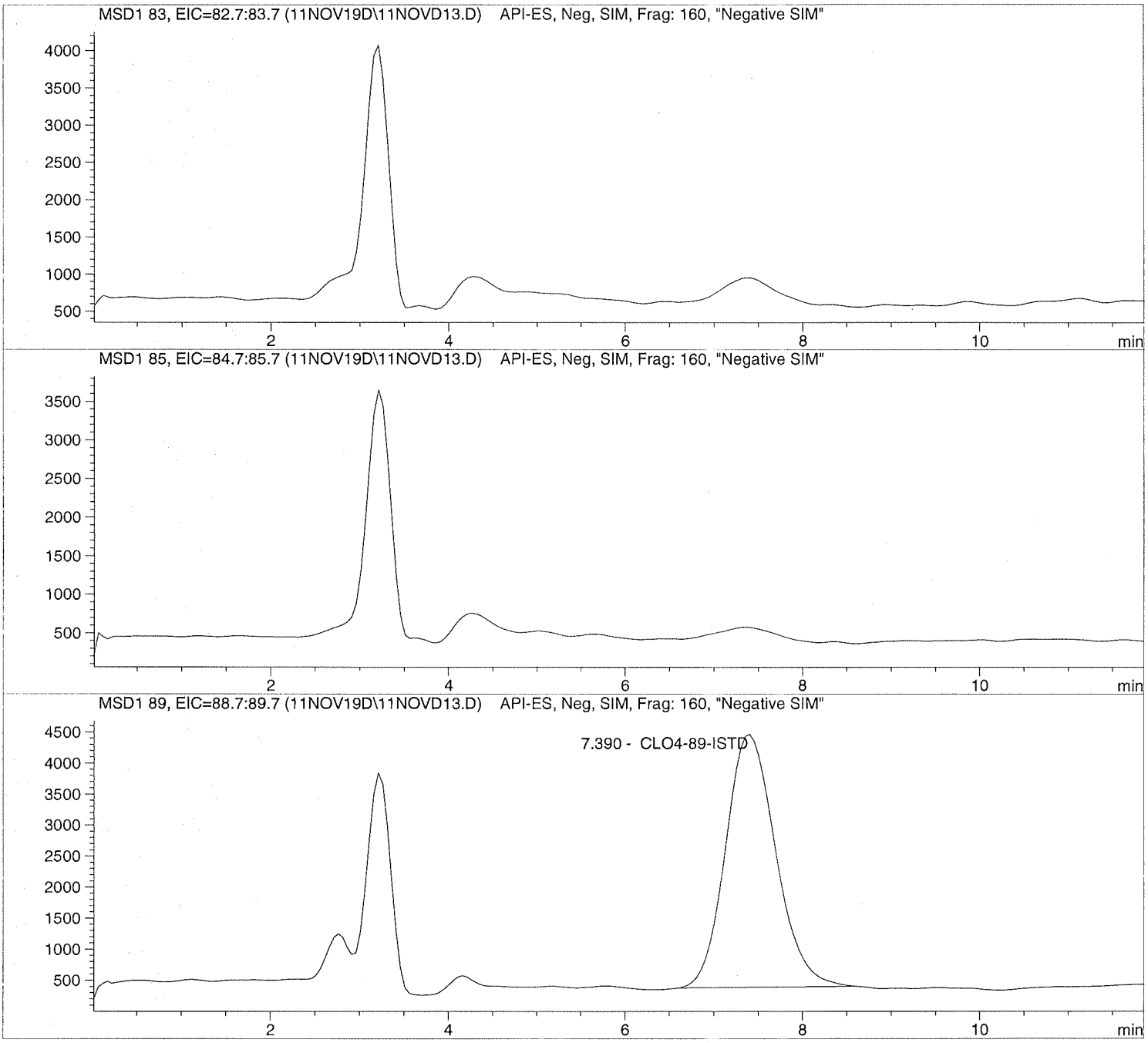
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD13.D Sample Name: 1931592001

Injection Date:	11/11/2019 11:58:58	Seq Line:	13
Sample Name:	1931592001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD13.D Sample Name: 1931592001

Injection Date:	11/11/2019 11:58:58	Seq Line:	13
Sample Name:	1931592001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.390	PBA	160080.7	5.0000	CLO4-89-ISTD

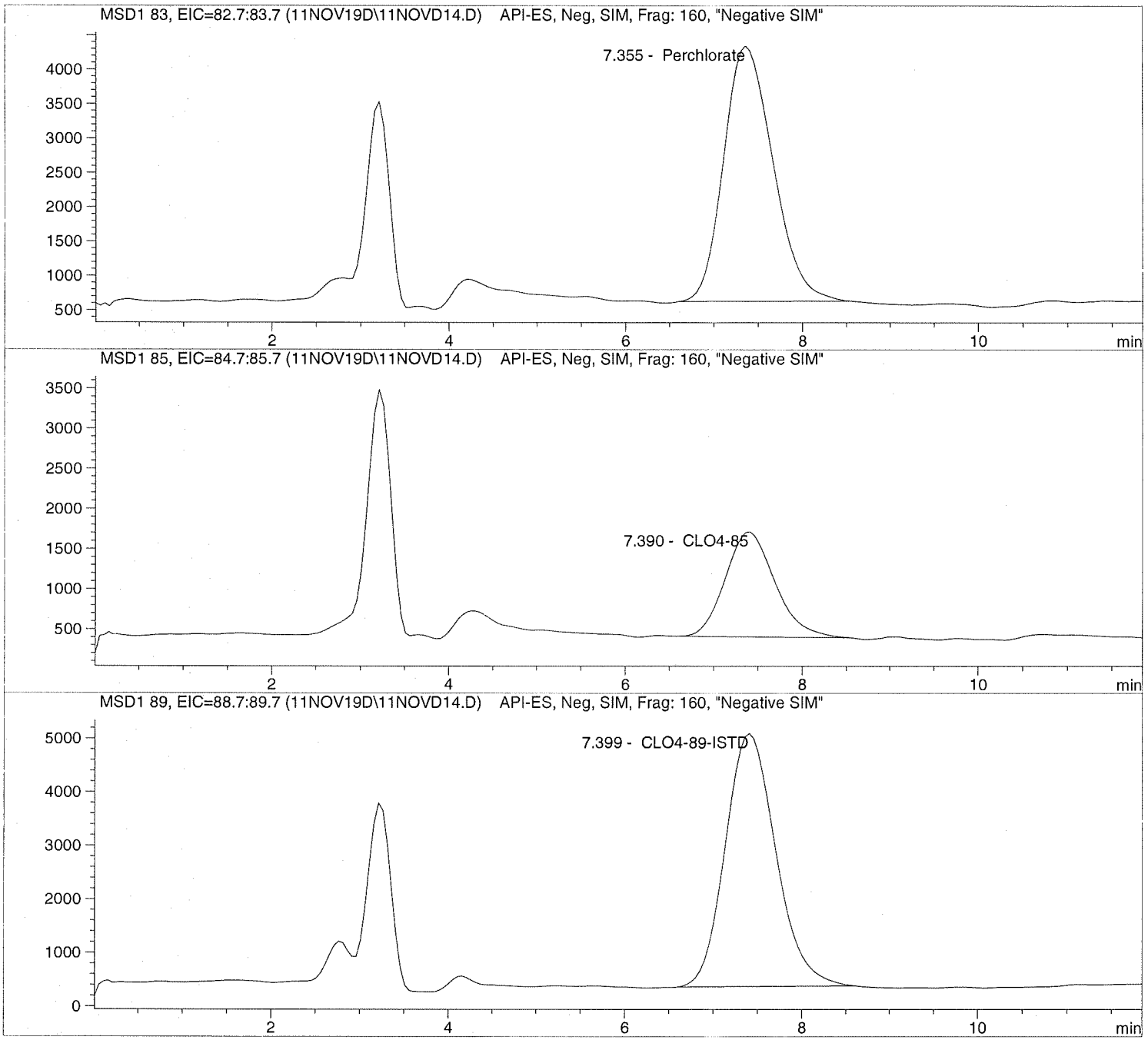
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD14.D Sample Name: 683381 315921S

Injection Date:	11/11/2019 12:12:42	Seq Line:	14
Sample Name:	683381 315921S	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD14.D Sample Name: 683381 315921S

Injection Date:	11/11/2019 12:12:42	Seq Line:	14
Sample Name:	683381 315921S	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.355	PBA	143683.0	2.8242	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.390	PBA	50999.3	3.2020	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.399	PBA	187030.5	5.0000	CLO4-89-ISTD

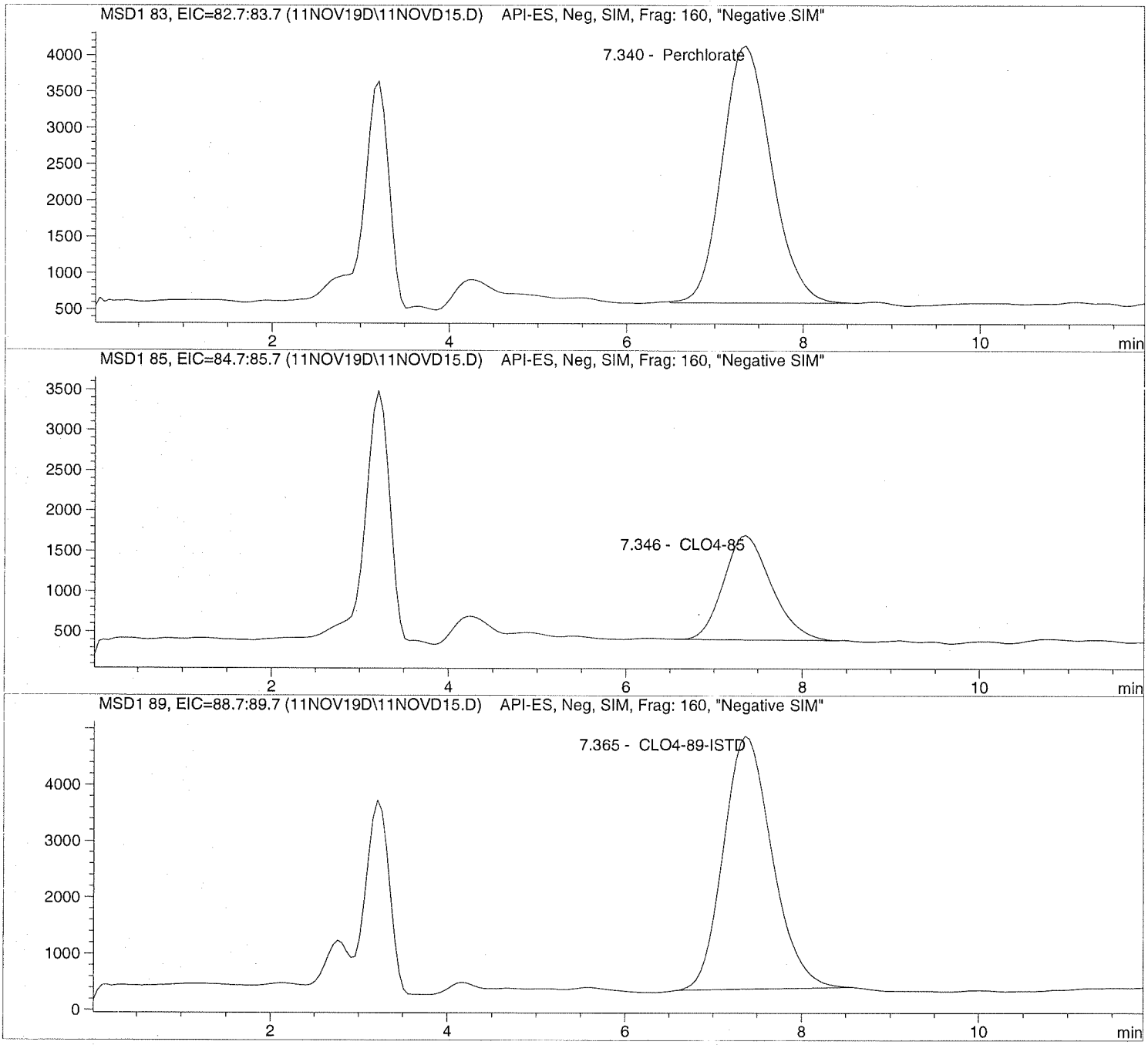
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD15.D Sample Name: 683382 315921D

Injection Date:	11/11/2019 12:26:30	Seq Line:	15
Sample Name:	683382 315921D	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD15.D Sample Name: 683382 315921D

Injection Date:	11/11/2019 12:26:30	Seq Line:	15
Sample Name:	683382 315921D	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.340	BBA	136415.9	2.9153	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.346	BBA	48431.6	3.3082	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.365	PBA	172106.9	5.0000	CLO4-89-ISTD

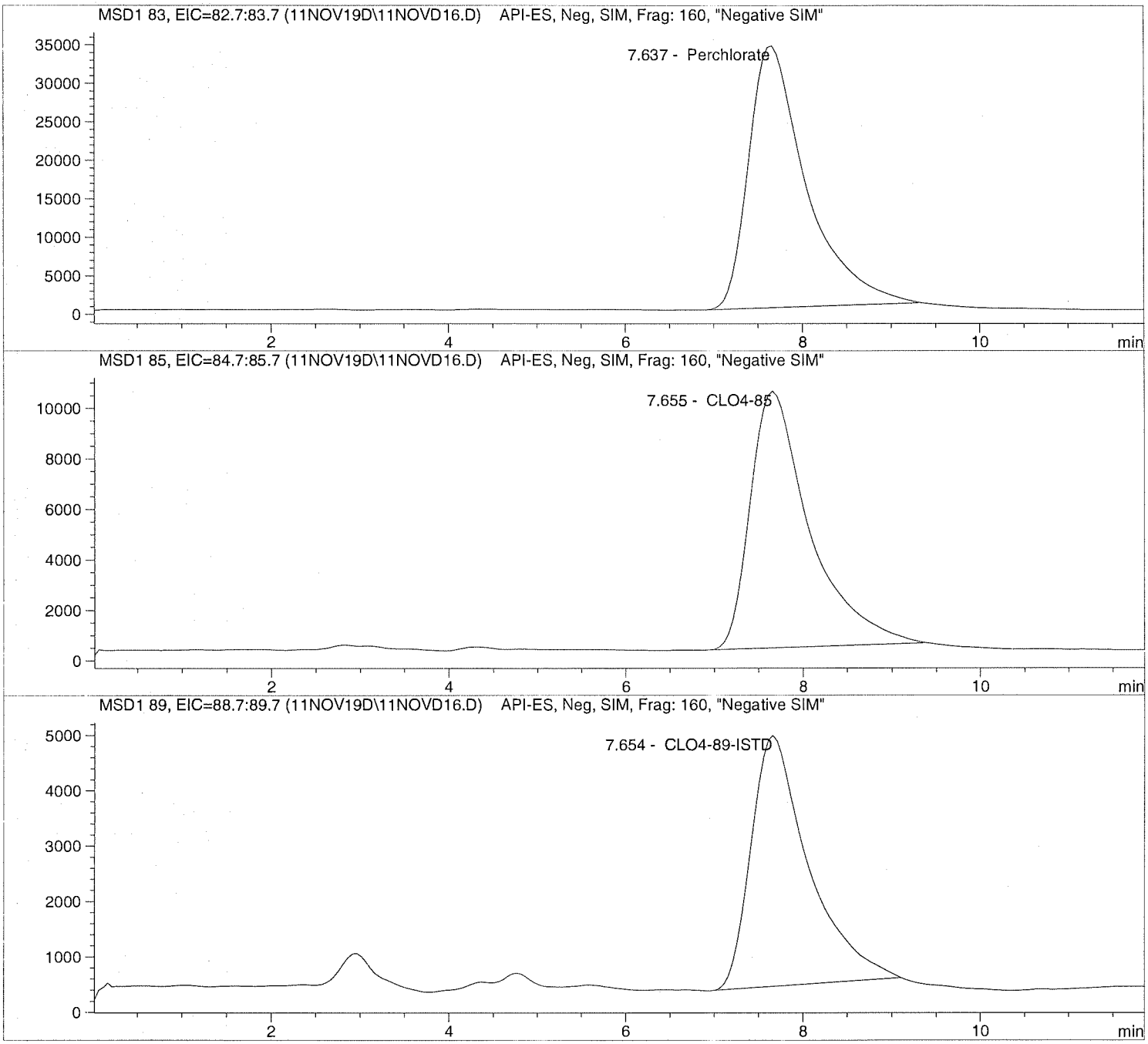
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD16.D Sample Name: 683383 CCV@25

Injection Date:	11/11/2019 12:44:18	Seq Line:	16
Sample Name:	683383 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\11NOV19D\11NOVD16.D Sample Name: 683383 CCV@25

Injection Date:	11/11/2019 12:44:18	Seq Line:	16
Sample Name:	683383 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.637	PBA	1535921.6	25.7443	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.655	PBA	472007.8	25.9343	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.654	PBA	203230.7	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5	1		Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5	1		CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

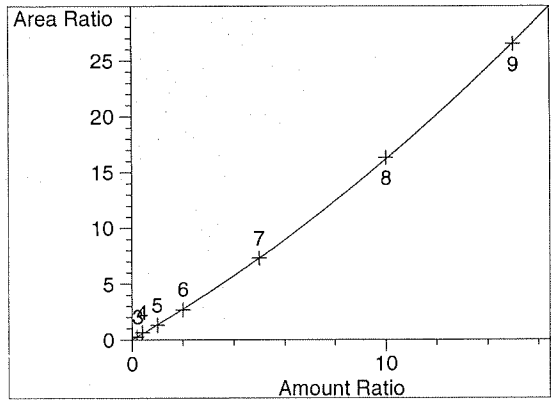
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

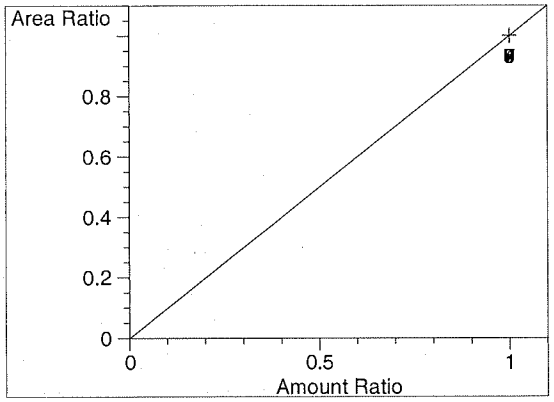
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

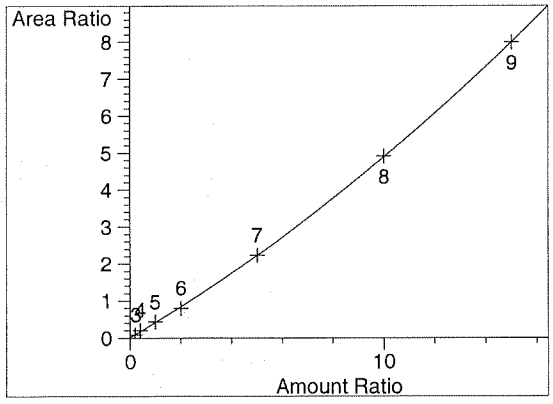
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

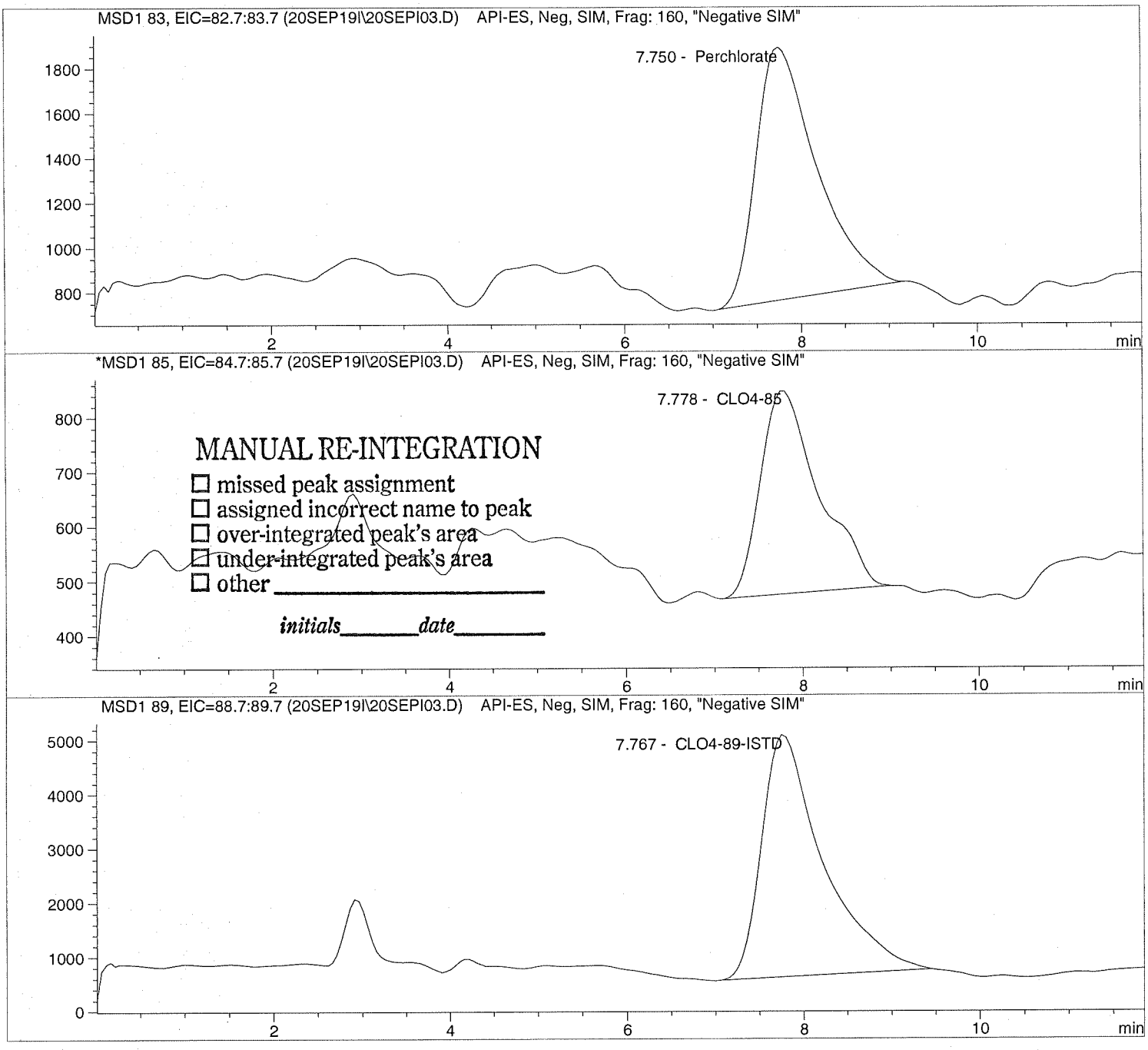
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

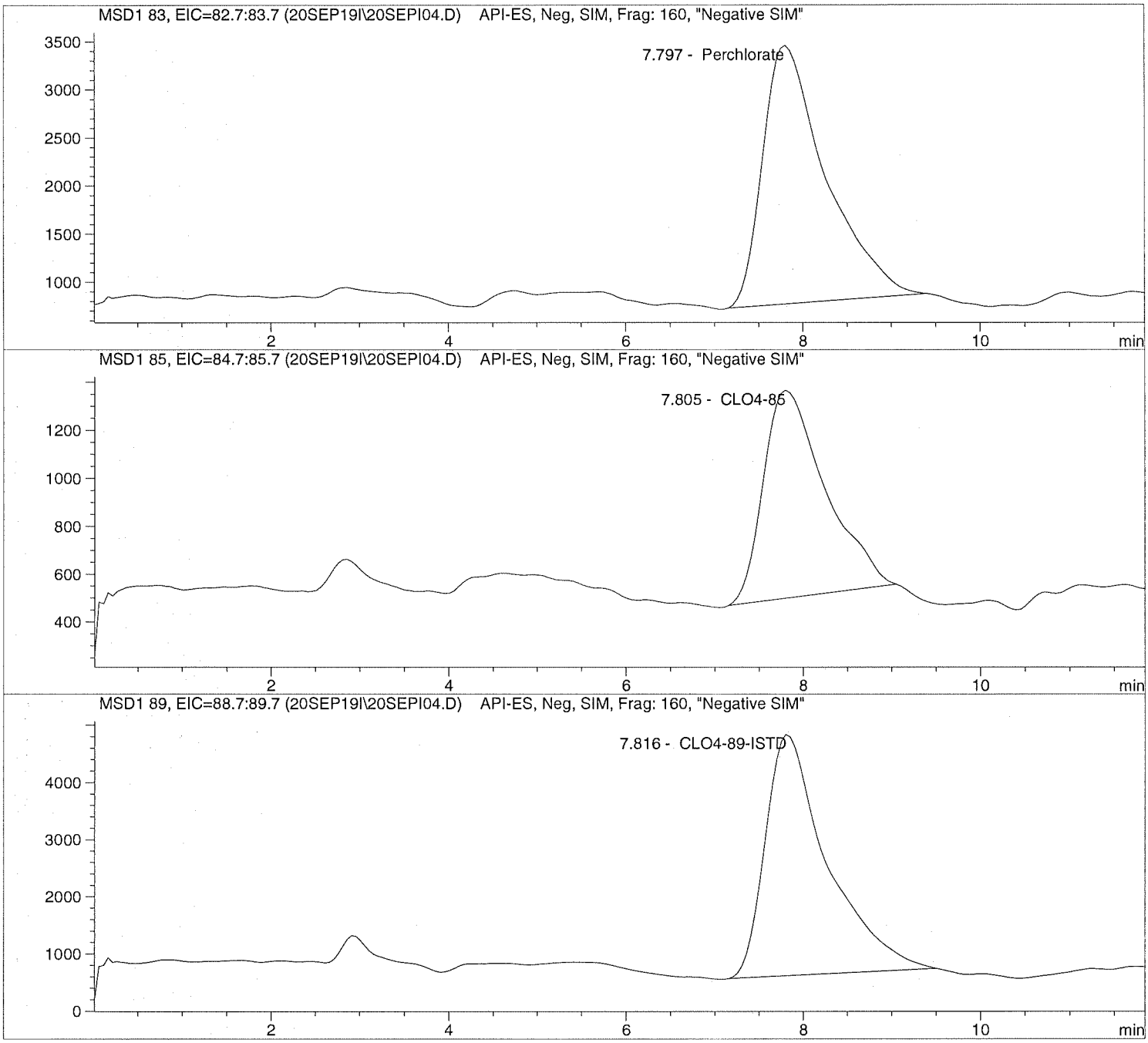
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

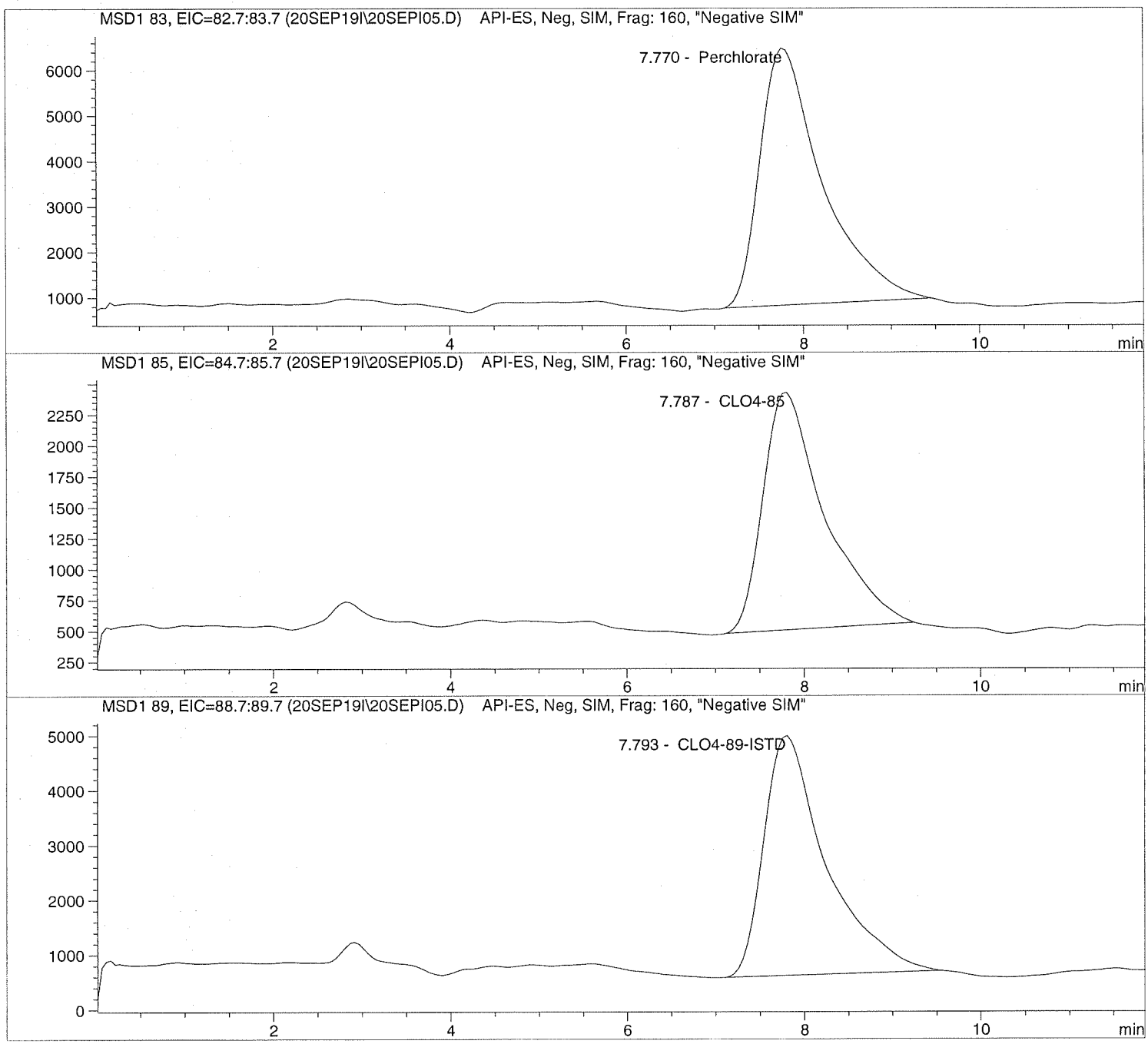
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

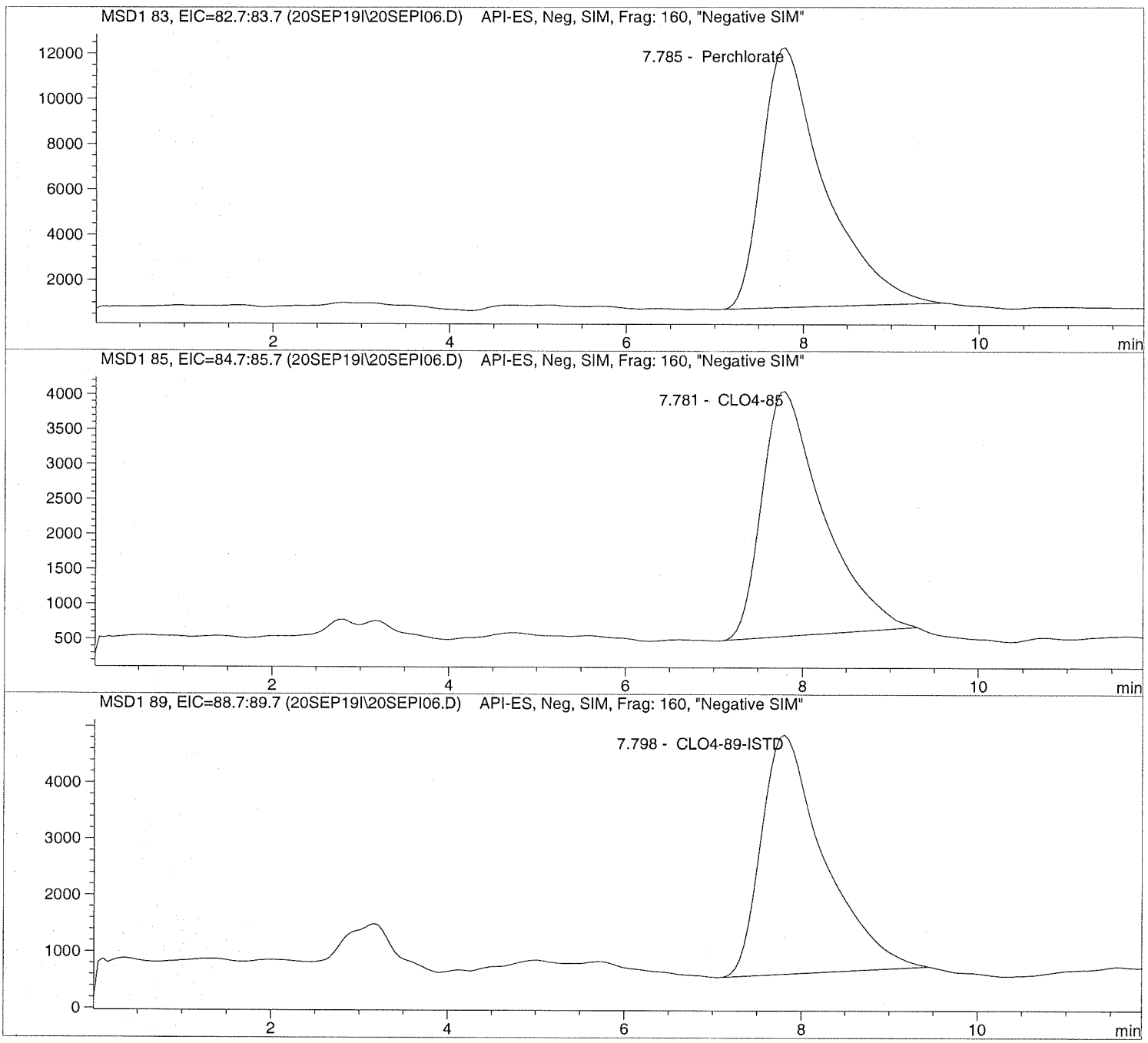
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

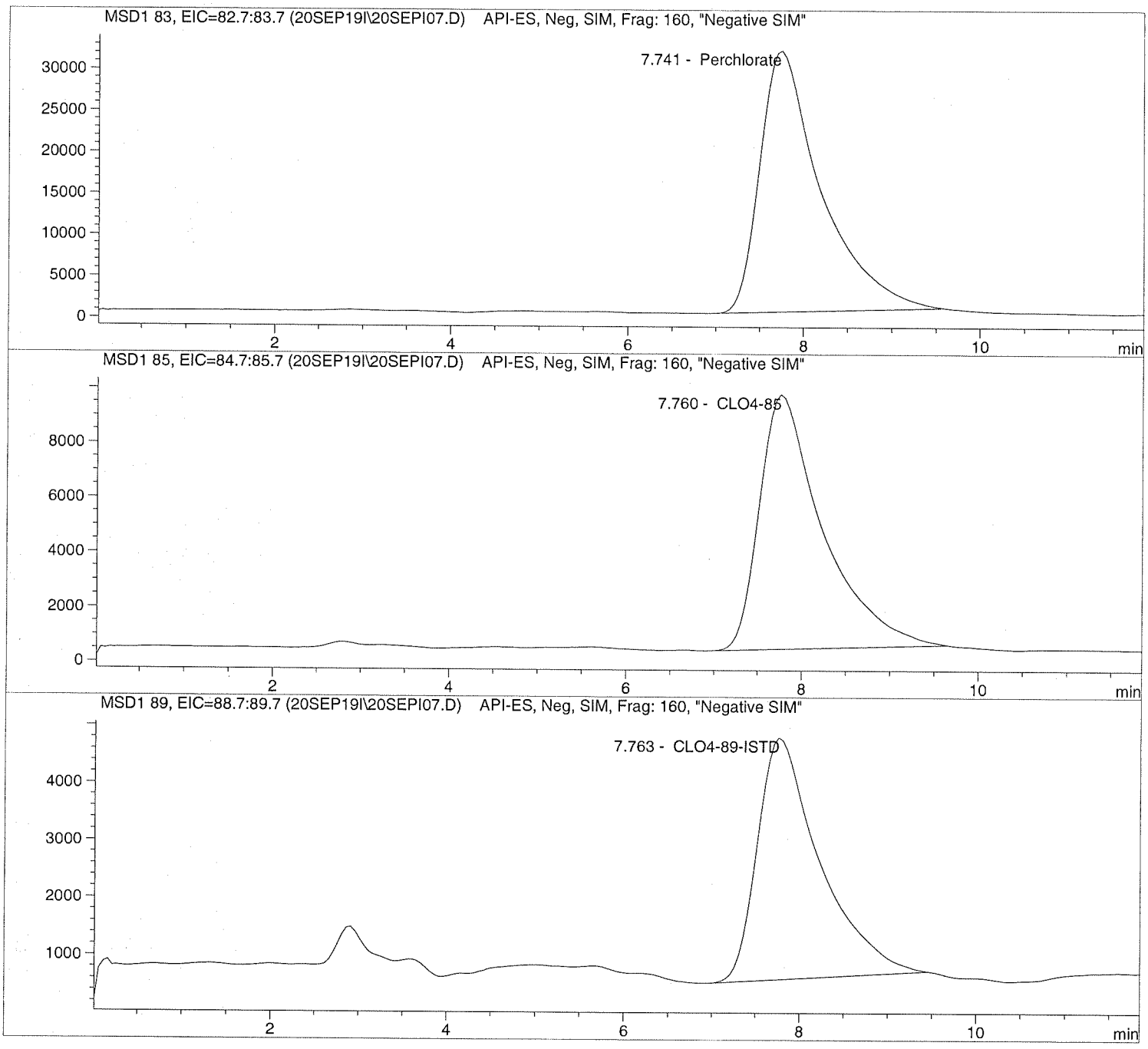
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

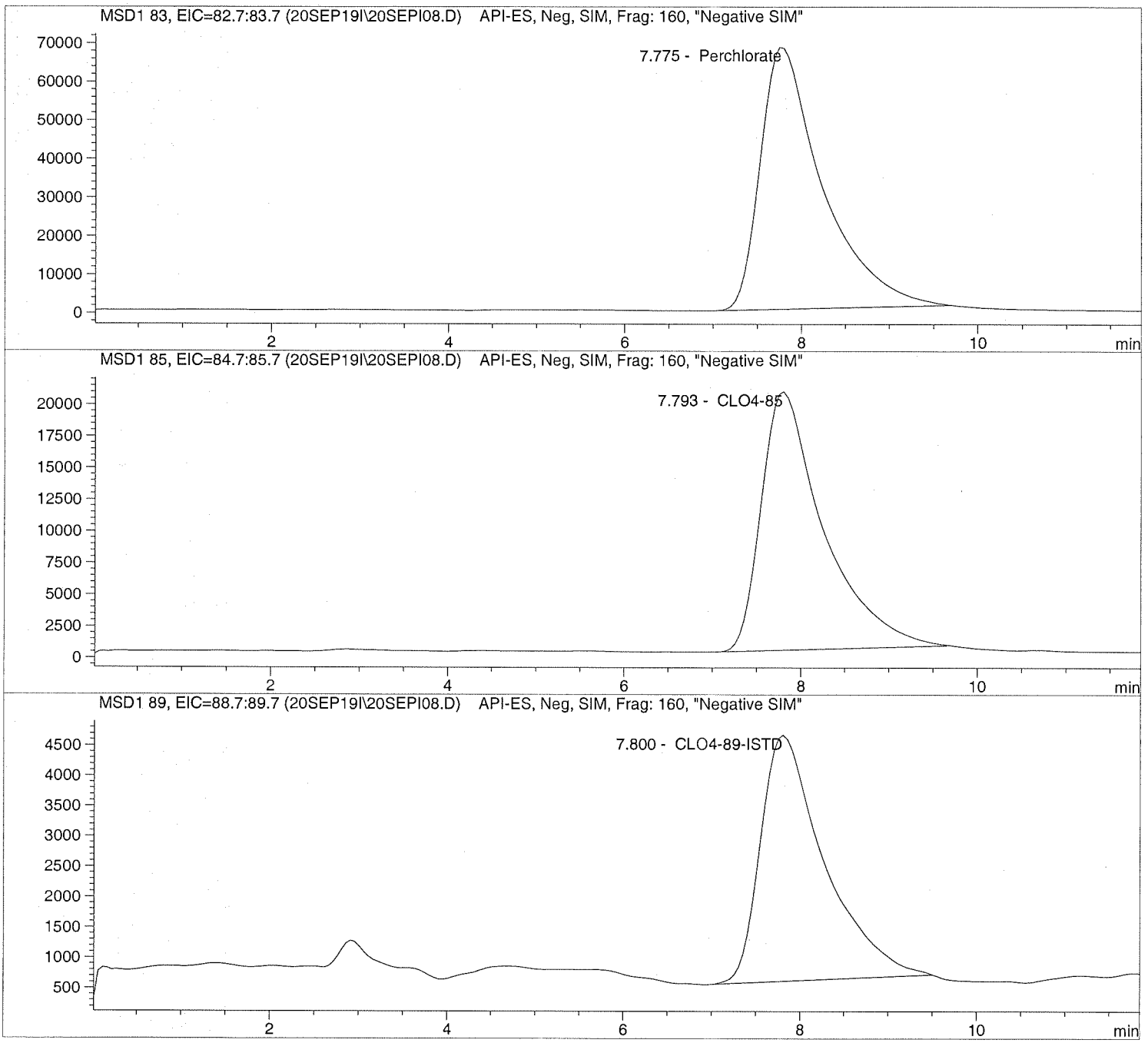
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

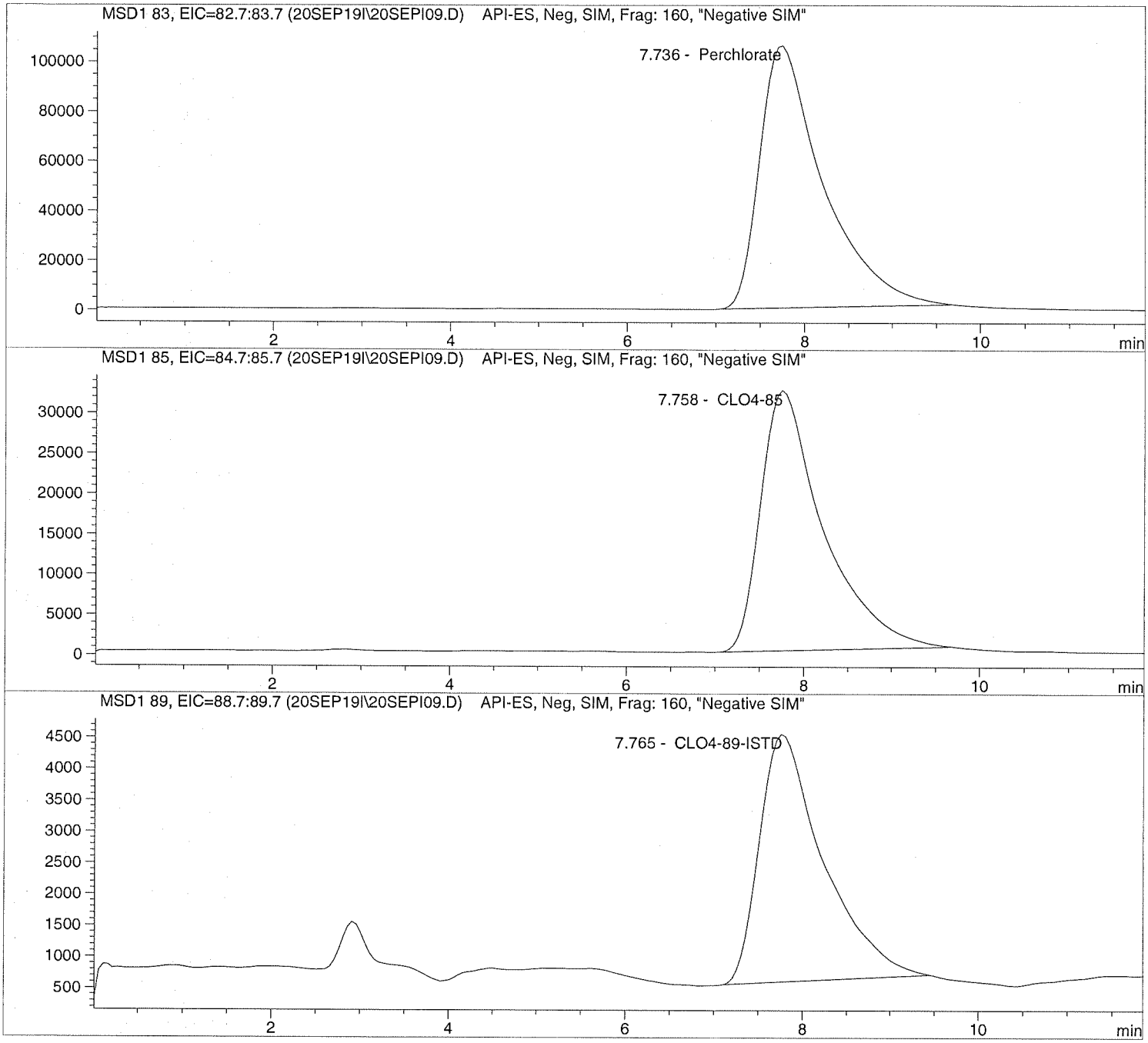
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

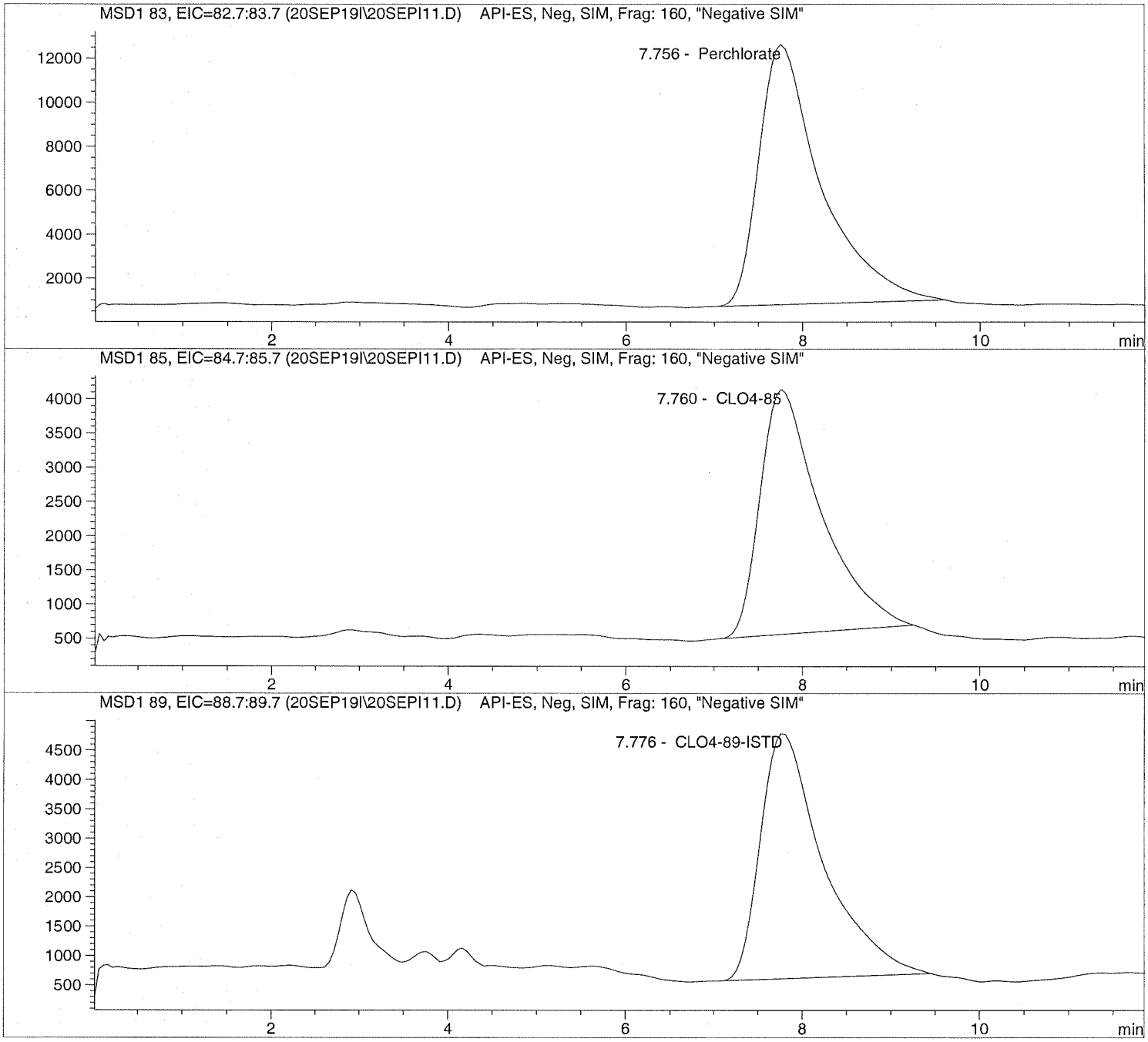
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

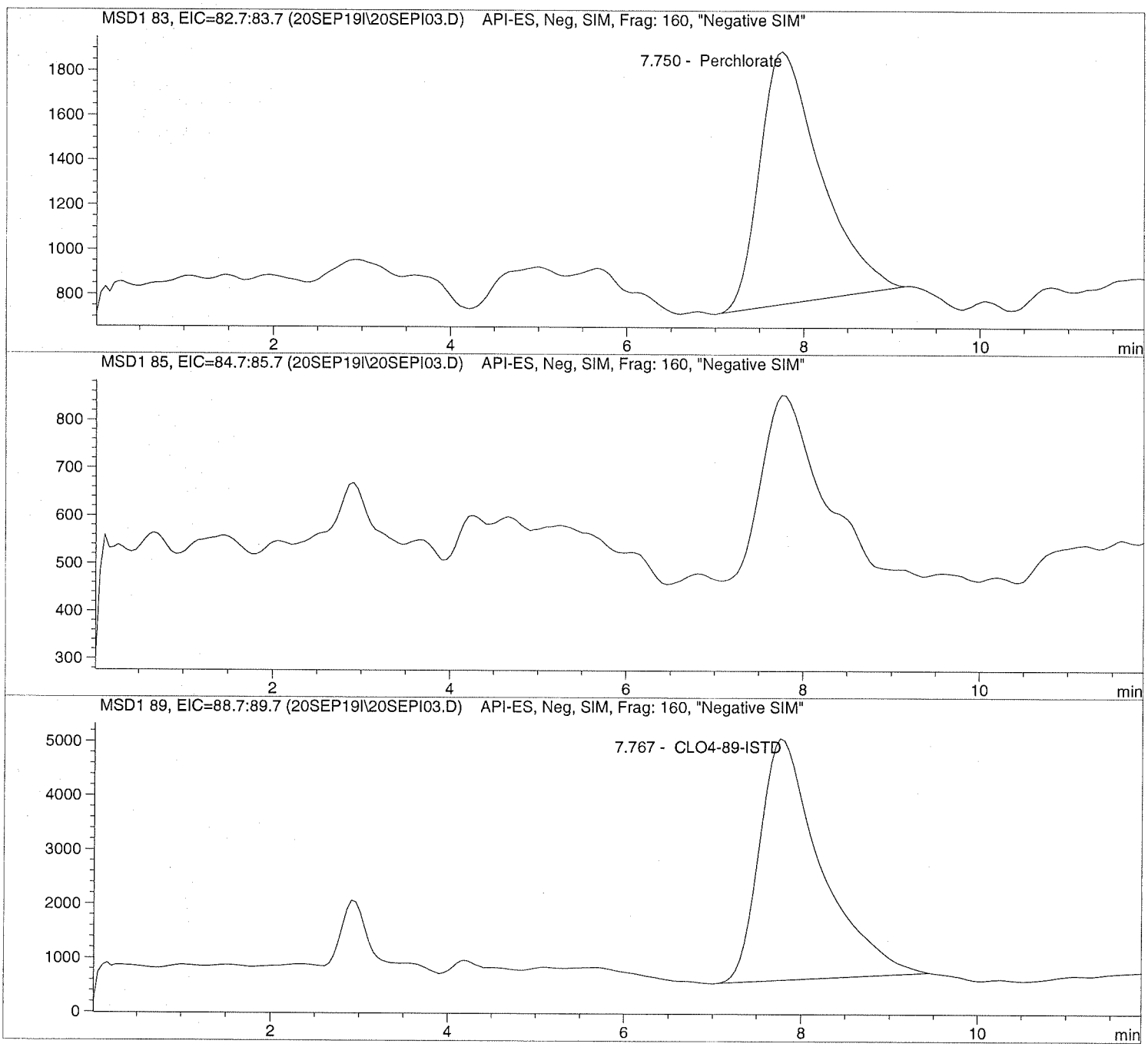
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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November 07, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19110215**

Laboratory Results for: **Longhorn GW Treatment Plant Monthly Effluent Samples**

Dear Marcia,

ALS Environmental received 3 sample(s) on Nov 06, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19110215

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19110215-01	LH18/24-SP650_110519_BIX	Water		05-Nov-2019 14:00	06-Nov-2019 08:45	☐
HS19110215-02	LH18/24-SP650_110519_AIX	Water		05-Nov-2019 14:00	06-Nov-2019 08:45	☐
HS19110215-03	Trip Blank	Water	C&G-080519-1126	05-Nov-2019 00:00	06-Nov-2019 08:45	☑

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19110215

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R349962

Sample ID: CCV

- 1,2,3_Trichlorobenzene exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: CCV-END

- Closing CCV failed responses for some compounds.

Sample ID: LH18/24-SP650_110519_BIX (HS19110215-01MS)

- MS/MSD failed QC limits for some compounds

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19110215
Sample ID: LH18/24-SP650_110519_BIX Lab ID:HS19110215-01
Collection Date: 05-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,2-Dichloroethane	**2.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Nov-2019 19:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Nov-2019 19:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Nov-2019 19:34
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Nov-2019 19:34
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Nov-2019 19:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19110215
Sample ID: LH18/24-SP650_110519_BIX Lab ID:HS19110215-01
Collection Date: 05-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
cis-1,2-Dichloroethene	**53**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Nov-2019 19:34
Methylene chloride	**21**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Nov-2019 19:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Trichloroethene	**15**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:34
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*81-118*	*%REC*	*1*	*06-Nov-2019 19:34*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Nov-2019 19:34*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*06-Nov-2019 19:34*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*06-Nov-2019 19:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19110215
Sample ID: LH18/24-SP650_110519_AIX Lab ID:HS19110215-02
Collection Date: 05-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,2-Dichloroethane	**1.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Nov-2019 19:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Nov-2019 19:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Nov-2019 19:58
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Nov-2019 19:58
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Nov-2019 19:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19110215
Sample ID: LH18/24-SP650_110519_AIX Lab ID:HS19110215-02
Collection Date: 05-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
cis-1,2-Dichloroethene	**38**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Nov-2019 19:58
Methylene chloride	**16**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Nov-2019 19:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Nov-2019 19:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Trichloroethene	**7.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Nov-2019 19:58
Vinyl chloride	**0.87**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Nov-2019 19:58
Surr: 1,2-Dichloroethane-d4	*97.8*			**0**	*81-118*	*%REC*	*1*	*06-Nov-2019 19:58*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Nov-2019 19:58*
Surr: Dibromofluoromethane	*90.3*			**0**	*80-119*	*%REC*	*1*	*06-Nov-2019 19:58*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*06-Nov-2019 19:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R349962 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19110215-01	LH18/24-SP650_110519_BIX	05 Nov 2019 14:00			06 Nov 2019 19:34	1
HS19110215-02	LH18/24-SP650_110519_AIX	05 Nov 2019 14:00			06 Nov 2019 19:58	1

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191106** Units: **UG/L** Analysis Date: **06-Nov-2019 19:10**
Client ID: Run ID: **VOA6_349962** SeqNo: **5333167** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191106** Units: **UG/L** Analysis Date: **06-Nov-2019 19:10**
Client ID: Run ID: **VOA6_349962** SeqNo: **5333167** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.15*	*1.0*	*50*	*0*	*98.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.98*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*46.14*	*1.0*	*50*	*0*	*92.3*	*80 - 119*				
Surr: Toluene-d8	*50.45*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191106** Units: **UG/L** Analysis Date: **06-Nov-2019 18:21**
Client ID: Run ID: **VOA6_349962** SeqNo: **5333166** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.59	1.0	20	0	108	78 - 124				
1,1,1-Trichloroethane	22.54	1.0	20	0	113	74 - 131				
1,1,2,2-Tetrachloroethane	18.17	1.0	20	0	90.8	71 - 121				
1,1,2-Trichloroethane	19.39	1.0	20	0	97.0	80 - 119				
1,1-Dichloroethane	18.48	1.0	20	0	92.4	77 - 125				
1,1-Dichloroethene	17.88	1.0	20	0	89.4	71 - 131				
1,1-Dichloropropene	20.36	1.0	20	0	102	78 - 125				
1,2,3-Trichlorobenzene	25.17	1.0	20	0	126	69 - 129				
1,2,3-Trichloropropane	20.02	1.0	20	0	100	73 - 122				
1,2,4-Trichlorobenzene	20.62	1.0	20	0	103	69 - 130				
1,2,4-Trimethylbenzene	20.44	1.0	20	0	102	76 - 124				
1,2-Dibromo-3-chloropropane	20.19	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	20.93	1.0	20	0	105	77 - 121				
1,2-Dichlorobenzene	20.08	1.0	20	0	100	80 - 119				
1,2-Dichloroethane	23.27	1.0	20	0	116	73 - 128				
1,2-Dichloropropane	17.5	1.0	20	0	87.5	78 - 122				
1,3,5-Trimethylbenzene	20.91	1.0	20	0	105	75 - 124				
1,3-Dichlorobenzene	19.92	1.0	20	0	99.6	80 - 119				
1,3-Dichloropropane	19.63	1.0	20	0	98.2	80 - 119				
1,4-Dichlorobenzene	19.99	1.0	20	0	100.0	79 - 118				
2,2-Dichloropropane	21.65	1.0	20	0	108	60 - 139				
2-Butanone	33.51	2.0	40	0	83.8	56 - 143				
2-Chlorotoluene	20.02	1.0	20	0	100	79 - 122				
2-Hexanone	34.04	2.0	40	0	85.1	57 - 139				
4-Chlorotoluene	20.49	1.0	20	0	102	78 - 122				
4-Isopropyltoluene	20.7	1.0	20	0	103	77 - 127				
4-Methyl-2-pentanone	34.47	2.0	40	0	86.2	67 - 130				
Acetone	32.33	2.0	40	0	80.8	39 - 160				
Benzene	18.93	1.0	20	0	94.7	79 - 120				
Bromobenzene	20.29	1.0	20	0	101	80 - 120				
Bromochloromethane	20.18	1.0	20	0	101	78 - 123				
Bromodichloromethane	21.8	1.0	20	0	109	79 - 125				
Bromoform	22.53	1.0	20	0	113	66 - 130				
Bromomethane	17.75	1.0	20	0	88.7	53 - 141				

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191106** Units: **UG/L** Analysis Date: **06-Nov-2019 18:21**
Client ID: Run ID: **VOA6_349962** SeqNo: **5333166** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	35.98	2.0	40	0	89.9	64 - 133				
Carbon tetrachloride	22.82	1.0	20	0	114	72 - 136				
Chlorobenzene	20.56	1.0	20	0	103	82 - 118				
Chloroethane	16.97	1.0	20	0	84.9	60 - 138				
Chloroform	20.85	1.0	20	0	104	79 - 124				
Chloromethane	15.28	1.0	20	0	76.4	50 - 139				
cis-1,2-Dichloroethene	19.79	1.0	20	0	99.0	78 - 123				
cis-1,3-Dichloropropene	20.53	1.0	20	0	103	75 - 124				
Dibromochloromethane	21.69	1.0	20	0	108	74 - 126				
Dibromomethane	21.76	1.0	20	0	109	79 - 123				
Dichlorodifluoromethane	20.02	1.0	20	0	100	32 - 152				
Ethylbenzene	19.93	1.0	20	0	99.7	79 - 121				
Hexachlorobutadiene	24	1.0	20	0	120	66 - 134				
Isopropylbenzene	20.87	1.0	20	0	104	72 - 131				
m,p-Xylene	41.49	2.0	40	0	104	80 - 121				
Methylene chloride	18.77	2.0	20	0	93.8	74 - 124				
Naphthalene	21.15	1.0	20	0	106	61 - 128				
n-Butylbenzene	20.44	1.0	20	0	102	75 - 128				
n-Propylbenzene	19.51	1.0	20	0	97.6	76 - 126				
o-Xylene	20.37	1.0	20	0	102	78 - 122				
sec-Butylbenzene	20.49	1.0	20	0	102	77 - 126				
Styrene	20.67	1.0	20	0	103	78 - 123				
tert-Butylbenzene	20.57	1.0	20	0	103	78 - 124				
Tetrachloroethene	21.91	1.0	20	0	110	74 - 129				
Toluene	20.21	1.0	20	0	101	80 - 121				
trans-1,2-Dichloroethene	19.51	1.0	20	0	97.5	75 - 124				
trans-1,3-Dichloropropene	21.73	1.0	20	0	109	73 - 127				
Trichloroethene	21.65	1.0	20	0	108	79 - 123				
Trichlorofluoromethane	20.74	1.0	20	0	104	65 - 141				
Vinyl chloride	15.84	1.0	20	0	79.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*57.23*	*1.0*	*50*	*0*	*114*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.21*	*1.0*	*50*	*0*	*108*	*85 - 114*				
Surr: Dibromofluoromethane	*51.09*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*48.51*	*1.0*	*50*	*0*	*97.0*	*89 - 112*				

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19110215-01MS** Units: **UG/L** Analysis Date: **06-Nov-2019 20:22**
Client ID: **LH18/24-SP650_110519_BIX** Run ID: **VOA6_349962** SeqNo: **5333170** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.81	1.0	20	0	94.1	78 - 124				
1,1,1-Trichloroethane	19.05	1.0	20	0	95.3	74 - 131				
1,1,2,2-Tetrachloroethane	16.63	1.0	20	0	83.2	71 - 121				
1,1,2-Trichloroethane	16.74	1.0	20	0	83.7	80 - 119				
1,1-Dichloroethane	15.49	1.0	20	0	77.5	77 - 125				
1,1-Dichloroethene	15.62	1.0	20	0	78.1	71 - 131				
1,1-Dichloropropene	18.34	1.0	20	0	91.7	78 - 125				
1,2,3-Trichlorobenzene	22.92	1.0	20	0	115	69 - 129				
1,2,3-Trichloropropane	17.97	1.0	20	0	89.9	73 - 122				
1,2,4-Trichlorobenzene	20.73	1.0	20	0	104	69 - 130				
1,2,4-Trimethylbenzene	19.39	1.0	20	0	97.0	76 - 124				
1,2-Dibromo-3-chloropropane	18.44	1.0	20	0	92.2	62 - 128				
1,2-Dibromoethane	18.01	1.0	20	0	90.0	77 - 121				
1,2-Dichlorobenzene	18.42	1.0	20	0	92.1	80 - 119				
1,2-Dichloroethane	21.9	1.0	20	2.811	95.4	73 - 128				
1,2-Dichloropropane	14.57	1.0	20	0	72.8	78 - 122				S
1,3,5-Trimethylbenzene	19.98	1.0	20	0	99.9	75 - 124				
1,3-Dichlorobenzene	18.77	1.0	20	0	93.9	80 - 119				
1,3-Dichloropropane	16.57	1.0	20	0	82.9	80 - 119				
1,4-Dichlorobenzene	18.28	1.0	20	0	91.4	79 - 118				
2,2-Dichloropropane	17.73	1.0	20	0	88.7	60 - 139				
2-Butanone	24.62	2.0	40	0	61.6	56 - 143				
2-Chlorotoluene	19.06	1.0	20	0	95.3	79 - 122				
2-Hexanone	27.87	2.0	40	0	69.7	57 - 139				
4-Chlorotoluene	19.33	1.0	20	0	96.6	78 - 122				
4-Isopropyltoluene	19.93	1.0	20	0	99.7	77 - 127				
4-Methyl-2-pentanone	28.8	2.0	40	0	72.0	67 - 130				
Acetone	22.36	2.0	40	0	55.9	39 - 160				
Benzene	16.12	1.0	20	0	80.6	79 - 120				
Bromobenzene	18.94	1.0	20	0	94.7	80 - 120				
Bromochloromethane	15.45	1.0	20	0	77.3	78 - 123				S
Bromodichloromethane	18.7	1.0	20	0	93.5	79 - 125				
Bromoform	18.8	1.0	20	0	94.0	66 - 130				
Bromomethane	13.69	1.0	20	0	68.4	53 - 141				

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19110215-01MS** Units: **UG/L** Analysis Date: **06-Nov-2019 20:22**
Client ID: **LH18/24-SP650_110519_BIX** Run ID: **VOA6_349962** SeqNo: **5333170** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	29.64	2.0	40	0	74.1	64 - 133				
Carbon tetrachloride	20.19	1.0	20	0	101	72 - 136				
Chlorobenzene	18.05	1.0	20	0	90.2	82 - 118				
Chloroethane	23.31	1.0	20	0	117	60 - 138				
Chloroform	17.08	1.0	20	0	85.4	79 - 124				
Chloromethane	12.36	1.0	20	0	61.8	50 - 139				
cis-1,2-Dichloroethene	68.08	1.0	20	52.78	76.5	78 - 123				S
cis-1,3-Dichloropropene	16.6	1.0	20	0	83.0	75 - 124				
Dibromochloromethane	18.88	1.0	20	0	94.4	74 - 126				
Dibromomethane	17.14	1.0	20	0	85.7	79 - 123				
Dichlorodifluoromethane	18.24	1.0	20	0	91.2	32 - 152				
Ethylbenzene	18.44	1.0	20	0	92.2	79 - 121				
Hexachlorobutadiene	23.24	1.0	20	0	116	66 - 134				
Isopropylbenzene	19.07	1.0	20	0	95.4	72 - 131				
m,p-Xylene	36.65	2.0	40	0	91.6	80 - 121				
Methylene chloride	37.17	2.0	20	21.49	78.4	74 - 124				
Naphthalene	20.35	1.0	20	0	102	61 - 128				
n-Butylbenzene	19.47	1.0	20	0	97.4	75 - 128				
n-Propylbenzene	18.93	1.0	20	0	94.6	76 - 126				
o-Xylene	18.2	1.0	20	0	91.0	78 - 122				
sec-Butylbenzene	19.92	1.0	20	0	99.6	77 - 126				
Styrene	17.91	1.0	20	0	89.5	78 - 123				
tert-Butylbenzene	19.7	1.0	20	0	98.5	78 - 124				
Tetrachloroethene	20.62	1.0	20	0	103	74 - 129				
Toluene	17.68	1.0	20	0	88.4	80 - 121				
trans-1,2-Dichloroethene	16.54	1.0	20	0	82.7	75 - 124				
trans-1,3-Dichloropropene	17.45	1.0	20	0	87.2	73 - 127				
Trichloroethene	33.68	1.0	20	15.12	92.8	79 - 123				
Trichlorofluoromethane	18.67	1.0	20	0	93.4	65 - 141				
Vinyl chloride	15.06	1.0	20	0	75.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.56*	*1.0*	*50*	*0*	*97.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.7*	*1.0*	*50*	*0*	*99.4*	*85 - 114*				
Surr: Dibromofluoromethane	*45.78*	*1.0*	*50*	*0*	*91.6*	*80 - 119*				
Surr: Toluene-d8	*48*	*1.0*	*50*	*0*	*96.0*	*89 - 112*				

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19110215-01MSD** Units: **UG/L** Analysis Date: **06-Nov-2019 20:46**
Client ID: **LH18/24-SP650_110519_BIX** Run ID: **VOA6_349962** SeqNo: **5333171** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.12	1.0	20	0	90.6	78 - 124	18.81	3.76	20	
1,1,1-Trichloroethane	18.27	1.0	20	0	91.3	74 - 131	19.05	4.19	20	
1,1,2,2-Tetrachloroethane	15.26	1.0	20	0	76.3	71 - 121	16.63	8.58	20	
1,1,2-Trichloroethane	16.36	1.0	20	0	81.8	80 - 119	16.74	2.32	20	
1,1-Dichloroethane	14.51	1.0	20	0	72.5	77 - 125	15.49	6.55	20	S
1,1-Dichloroethene	14.62	1.0	20	0	73.1	71 - 131	15.62	6.64	20	
1,1-Dichloropropene	17.23	1.0	20	0	86.2	78 - 125	18.34	6.26	20	
1,2,3-Trichlorobenzene	24.2	1.0	20	0	121	69 - 129	22.92	5.41	20	
1,2,3-Trichloropropane	16.2	1.0	20	0	81.0	73 - 122	17.97	10.4	20	
1,2,4-Trichlorobenzene	19.06	1.0	20	0	95.3	69 - 130	20.73	8.43	20	
1,2,4-Trimethylbenzene	17.86	1.0	20	0	89.3	76 - 124	19.39	8.24	20	
1,2-Dibromo-3-chloropropane	16.94	1.0	20	0	84.7	62 - 128	18.44	8.5	20	
1,2-Dibromoethane	17.8	1.0	20	0	89.0	77 - 121	18.01	1.14	20	
1,2-Dichlorobenzene	16.84	1.0	20	0	84.2	80 - 119	18.42	8.97	20	
1,2-Dichloroethane	21.4	1.0	20	2.811	92.9	73 - 128	21.9	2.31	20	
1,2-Dichloropropane	14.64	1.0	20	0	73.2	78 - 122	14.57	0.538	20	S
1,3,5-Trimethylbenzene	18.2	1.0	20	0	91.0	75 - 124	19.98	9.35	20	
1,3-Dichlorobenzene	16.86	1.0	20	0	84.3	80 - 119	18.77	10.7	20	
1,3-Dichloropropane	16.04	1.0	20	0	80.2	80 - 119	16.57	3.28	20	
1,4-Dichlorobenzene	17.24	1.0	20	0	86.2	79 - 118	18.28	5.86	20	
2,2-Dichloropropane	16.9	1.0	20	0	84.5	60 - 139	17.73	4.82	20	
2-Butanone	23.06	2.0	40	0	57.7	56 - 143	24.62	6.53	20	
2-Chlorotoluene	17.26	1.0	20	0	86.3	79 - 122	19.06	9.87	20	
2-Hexanone	28.26	2.0	40	0	70.7	57 - 139	27.87	1.39	20	
4-Chlorotoluene	17.72	1.0	20	0	88.6	78 - 122	19.33	8.65	20	
4-Isopropyltoluene	18.11	1.0	20	0	90.6	77 - 127	19.93	9.56	20	
4-Methyl-2-pentanone	28.11	2.0	40	0	70.3	67 - 130	28.8	2.43	20	
Acetone	20.88	2.0	40	0	52.2	39 - 160	22.36	6.85	20	
Benzene	15.7	1.0	20	0	78.5	79 - 120	16.12	2.66	20	S
Bromobenzene	17.7	1.0	20	0	88.5	80 - 120	18.94	6.77	20	
Bromochloromethane	15.18	1.0	20	0	75.9	78 - 123	15.45	1.78	20	S
Bromodichloromethane	18.71	1.0	20	0	93.6	79 - 125	18.7	0.0544	20	
Bromoform	18.56	1.0	20	0	92.8	66 - 130	18.8	1.28	20	
Bromomethane	12.24	1.0	20	0	61.2	53 - 141	13.69	11.2	20	

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19110215

QC BATCH REPORT

Batch ID: R349962 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19110215-01MSD** Units: **UG/L** Analysis Date: **06-Nov-2019 20:46**
Client ID: **LH18/24-SP650_110519_BIX** Run ID: **VOA6_349962** SeqNo: **5333171** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	27.75	2.0	40	0	69.4	64 - 133	29.64	6.58	20	
Carbon tetrachloride	19.74	1.0	20	0	98.7	72 - 136	20.19	2.25	20	
Chlorobenzene	17.51	1.0	20	0	87.6	82 - 118	18.05	3	20	
Chloroethane	21.09	1.0	20	0	105	60 - 138	23.31	9.99	20	
Chloroform	16	1.0	20	0	80.0	79 - 124	17.08	6.54	20	
Chloromethane	10.98	1.0	20	0	54.9	50 - 139	12.36	11.8	20	
cis-1,2-Dichloroethene	65.5	1.0	20	52.78	63.6	78 - 123	68.08	3.86	20	S
cis-1,3-Dichloropropene	16.38	1.0	20	0	81.9	75 - 124	16.6	1.33	20	
Dibromochloromethane	17.93	1.0	20	0	89.6	74 - 126	18.88	5.17	20	
Dibromomethane	17.24	1.0	20	0	86.2	79 - 123	17.14	0.533	20	
Dichlorodifluoromethane	16.59	1.0	20	0	82.9	32 - 152	18.24	9.52	20	
Ethylbenzene	17.51	1.0	20	0	87.5	79 - 121	18.44	5.19	20	
Hexachlorobutadiene	22.42	1.0	20	0	112	66 - 134	23.24	3.56	20	
Isopropylbenzene	18.77	1.0	20	0	93.9	72 - 131	19.07	1.58	20	
m,p-Xylene	35.04	2.0	40	0	87.6	80 - 121	36.65	4.49	20	
Methylene chloride	35.65	2.0	20	21.49	70.8	74 - 124	37.17	4.19	20	S
Naphthalene	20.65	1.0	20	0	103	61 - 128	20.35	1.48	20	
n-Butylbenzene	18.37	1.0	20	0	91.8	75 - 128	19.47	5.84	20	
n-Propylbenzene	17.44	1.0	20	0	87.2	76 - 126	18.93	8.18	20	
o-Xylene	17.43	1.0	20	0	87.1	78 - 122	18.2	4.35	20	
sec-Butylbenzene	18.34	1.0	20	0	91.7	77 - 126	19.92	8.25	20	
Styrene	17.77	1.0	20	0	88.9	78 - 123	17.91	0.767	20	
tert-Butylbenzene	18.17	1.0	20	0	90.8	78 - 124	19.7	8.11	20	
Tetrachloroethene	20.39	1.0	20	0	102	74 - 129	20.62	1.13	20	
Toluene	17.03	1.0	20	0	85.1	80 - 121	17.68	3.74	20	
trans-1,2-Dichloroethene	15.86	1.0	20	0	79.3	75 - 124	16.54	4.16	20	
trans-1,3-Dichloropropene	17.39	1.0	20	0	86.9	73 - 127	17.45	0.346	20	
Trichloroethene	32.02	1.0	20	15.12	84.5	79 - 123	33.68	5.05	20	
Trichlorofluoromethane	17.65	1.0	20	0	88.2	65 - 141	18.67	5.63	20	
Vinyl chloride	13.85	1.0	20	0	69.3	58 - 137	15.06	8.38	20	
Surr: 1,2-Dichloroethane-d4	*47.49*	*1.0*	*50*	*0*	*95.0*	*81 - 118*	*48.56*	*2.23*	*20*	
Surr: 4-Bromofluorobenzene	*52.29*	*1.0*	*50*	*0*	*105*	*85 - 114*	*49.7*	*5.08*	*20*	
Surr: Dibromofluoromethane	*45.49*	*1.0*	*50*	*0*	*91.0*	*80 - 119*	*45.78*	*0.621*	*20*	
Surr: Toluene-d8	*49.19*	*1.0*	*50*	*0*	*98.4*	*89 - 112*	*48*	*2.45*	*20*	

ALS Houston, US Date: 07-Nov-19

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder:	HS19110215

QC BATCH REPORT

Batch ID:	**R349962 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19110215-01 HS19110215-02

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: **HS19110215**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 07-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19110215
Date/Time Received: **06-Nov-2019 08:45**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature 6-Nov-2019 Date
Reviewed by: *RJ Modashia* eSignature 6-Nov-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4c U/C	IR25	
Cooler(s)/Kit(s):	6026		
Date/Time sample(s) sent to storage:	11/6/19 11:35		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Trip Blank logged in on hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd., Suite 210 Houston, TX 77099 (281) 530 – 5656 ATTN: RJ Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job:
GROUNDWATER TREATMENT PLANT MONTHLY EFFLUENT SAMPLES

Prepared By: Scott Beesinger

P.O. Number

HS19110215
Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Monthly Effluent Sample

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOLATILES	SILVER, SELENIUM, LEAD, BARIUM	HEXAVALENT CHROMIUM	1, 4 - DIOXANE	PERCHLORATE					Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_110519_BIX	Water	11/05/19 / 14:00		3	X									HCl	
LH18/24-SP650_110519_AIX	Water	11/05/19 / 14:00		3	X									HCl	

Additional Remarks: **24 HOUR TAT**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	11/05/19	14:30	NR	11/6	0845						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

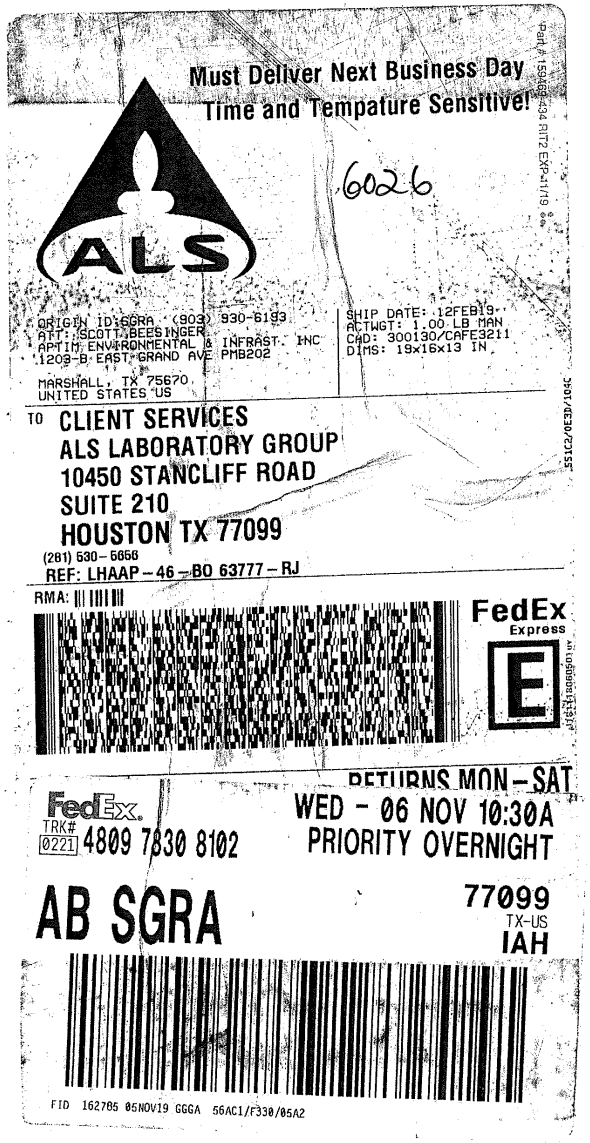
Remarks:

6020 Tem 4/c 1.4
IR # 25
cf 0

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

ALS	CUSTODY SEAL	Seal Broken By:
10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887 6026	Date: 11/5/19 Time: 1430 Name: Scott Beesinger Company: BHAT	Date: 11/06/19

6026 NOV 0 6 2019



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 14, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19110613**

Laboratory Results for: **Longhorn GW Treatment Plant Bi-Weekly Samples**

Dear Marcia,

ALS Environmental received 2 sample(s) on Nov 13, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
Work Order: HS19110613

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19110613-01	LH18/24-SP650_111219	Water		12-Nov-2019 14:00	13-Nov-2019 08:39	☐
HS19110613-02	Trip Blank	Water	C&G-101419-14	12-Nov-2019 00:00	13-Nov-2019 08:39	☐

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
Work Order: HS19110613

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R350401

Sample ID: LH18/24-SP650_111219 (HS19110613-01MS)

- MS/MSD failed QC limits for several compounds.

WetChemistry by Method SW9056

Batch ID: R350457

Sample ID: HS19110621-01MS

- MS and MSD are for an unrelated sample (Chloride,Sulfate)

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Bi-Weekly Samples WorkOrder:HS19110613
Sample ID: LH18/24-SP650_111219 Lab ID:HS19110613-01
Collection Date: 12-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,2-Dichloroethane	**2.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	13-Nov-2019 14:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	13-Nov-2019 14:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	13-Nov-2019 14:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	13-Nov-2019 14:05
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	13-Nov-2019 14:05
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	13-Nov-2019 14:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder:HS19110613
Sample ID: LH18/24-SP650_111219
Lab ID:HS19110613-01
Collection Date: 12-Nov-2019 14:00
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
cis-1,2-Dichloroethene	**64**		**0.20**	**0.50**	**1.0**	**UG/L**	1	13-Nov-2019 14:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	13-Nov-2019 14:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	13-Nov-2019 14:05
Methylene chloride	**16**		**0.40**	**1.0**	**2.0**	**UG/L**	1	13-Nov-2019 14:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 14:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**UG/L**	1	13-Nov-2019 14:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 14:05
Vinyl chloride	**1.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	13-Nov-2019 14:05
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*1*	*13-Nov-2019 14:05*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*1*	*13-Nov-2019 14:05*
Surr: Dibromofluoromethane	*86.0*			**0**	*80-119*	*%REC*	*1*	*13-Nov-2019 14:05*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*13-Nov-2019 14:05*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**528**		**2.00**	**5.00**	**5.00**	**mg/L**	10	13-Nov-2019 15:41
Sulfate	**34.8**		**2.00**	**5.00**	**5.00**	**mg/L**	10	13-Nov-2019 15:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Bi-Weekly Samples WorkOrder:HS19110613

Sample ID: Trip Blank Lab ID:HS19110613-02

Collection Date: 12-Nov-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	13-Nov-2019 13:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	13-Nov-2019 13:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	13-Nov-2019 13:41
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	13-Nov-2019 13:41
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	13-Nov-2019 13:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Bi-Weekly Samples WorkOrder:HS19110613

Sample ID: Trip Blank Lab ID:HS19110613-02

Collection Date: 12-Nov-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	13-Nov-2019 13:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	13-Nov-2019 13:41
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	13-Nov-2019 13:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	13-Nov-2019 13:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	13-Nov-2019 13:41
Surr: 1,2-Dichloroethane-d4	*93.0*			**0**	*81-118*	*%REC*	*1*	*13-Nov-2019 13:41*
Surr: 4-Bromofluorobenzene	*94.3*			**0**	*85-114*	*%REC*	*1*	*13-Nov-2019 13:41*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*13-Nov-2019 13:41*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*13-Nov-2019 13:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R350401 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19110613-01	LH18/24-SP650_111219	12 Nov 2019 14:00			13 Nov 2019 14:05	1
HS19110613-02	Trip Blank	12 Nov 2019 00:00			13 Nov 2019 13:41	1
Batch ID: R350457 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS19110613-01	LH18/24-SP650_111219	12 Nov 2019 14:00			13 Nov 2019 15:41	10

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191113** Units: **UG/L** Analysis Date: **13-Nov-2019 13:17**
Client ID: Run ID: **VOA9_350401** SeqNo: **5342322** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191113** Units: **UG/L** Analysis Date: **13-Nov-2019 13:17**
Client ID: Run ID: **VOA9_350401** SeqNo: **5342322** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.37*	*1.0*	*50*	*0*	*94.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*47.37*	*1.0*	*50*	*0*	*94.7*	*85 - 114*				
Surr: Dibromofluoromethane	*41.11*	*1.0*	*50*	*0*	*82.2*	*80 - 119*				
Surr: Toluene-d8	*52.4*	*1.0*	*50*	*0*	*105*	*89 - 112*				

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191113** Units: **UG/L** Analysis Date: **13-Nov-2019 12:28**
Client ID: Run ID: **VOA9_350401** SeqNo: **5342321** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.03	1.0	20	0	90.1	78 - 124				
1,1,1-Trichloroethane	19.26	1.0	20	0	96.3	74 - 131				
1,1,2,2-Tetrachloroethane	20.18	1.0	20	0	101	71 - 121				
1,1,2-Trichloroethane	20.04	1.0	20	0	100	80 - 119				
1,1-Dichloroethane	20.48	1.0	20	0	102	77 - 125				
1,1-Dichloroethene	20.98	1.0	20	0	105	71 - 131				
1,1-Dichloropropene	21.53	1.0	20	0	108	78 - 125				
1,2,3-Trichlorobenzene	19.51	1.0	20	0	97.6	69 - 129				
1,2,3-Trichloropropane	20.45	1.0	20	0	102	73 - 122				
1,2,4-Trichlorobenzene	18.9	1.0	20	0	94.5	69 - 130				
1,2,4-Trimethylbenzene	20.23	1.0	20	0	101	76 - 124				
1,2-Dibromo-3-chloropropane	16.98	1.0	20	0	84.9	62 - 128				
1,2-Dibromoethane	18.9	1.0	20	0	94.5	77 - 121				
1,2-Dichlorobenzene	18.97	1.0	20	0	94.8	80 - 119				
1,2-Dichloroethane	19.75	1.0	20	0	98.8	73 - 128				
1,2-Dichloropropane	21.99	1.0	20	0	110	78 - 122				
1,3,5-Trimethylbenzene	20.08	1.0	20	0	100	75 - 124				
1,3-Dichlorobenzene	18.23	1.0	20	0	91.2	80 - 119				
1,3-Dichloropropane	21.42	1.0	20	0	107	80 - 119				
1,4-Dichlorobenzene	18.23	1.0	20	0	91.1	79 - 118				
2,2-Dichloropropane	19.66	1.0	20	0	98.3	60 - 139				
2-Butanone	43.26	2.0	40	0	108	56 - 143				
2-Chlorotoluene	21.35	1.0	20	0	107	79 - 122				
2-Hexanone	38.05	2.0	40	0	95.1	57 - 139				
4-Chlorotoluene	19.28	1.0	20	0	96.4	78 - 122				
4-Isopropyltoluene	20.02	1.0	20	0	100	77 - 127				
4-Methyl-2-pentanone	40.29	2.0	40	0	101	67 - 130				
Acetone	50.16	2.0	40	0	125	39 - 160				
Benzene	20.89	1.0	20	0	104	79 - 120				
Bromobenzene	18.98	1.0	20	0	94.9	80 - 120				
Bromochloromethane	20.3	1.0	20	0	102	78 - 123				
Bromodichloromethane	20.8	1.0	20	0	104	79 - 125				
Bromoform	16.82	1.0	20	0	84.1	66 - 130				
Bromomethane	22.97	1.0	20	0	115	53 - 141				

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191113** Units: **UG/L** Analysis Date: **13-Nov-2019 12:28**
Client ID: Run ID: **VOA9_350401** SeqNo: **5342321** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40.98	2.0	40	0	102	64 - 133				
Carbon tetrachloride	20.22	1.0	20	0	101	72 - 136				
Chlorobenzene	19.37	1.0	20	0	96.9	82 - 118				
Chloroethane	23.68	1.0	20	0	118	60 - 138				
Chloroform	20.51	1.0	20	0	103	79 - 124				
Chloromethane	24.59	1.0	20	0	123	50 - 139				
cis-1,2-Dichloroethene	19.53	1.0	20	0	97.6	78 - 123				
cis-1,3-Dichloropropene	21.17	1.0	20	0	106	75 - 124				
Dibromochloromethane	17.93	1.0	20	0	89.6	74 - 126				
Dibromomethane	20.18	1.0	20	0	101	79 - 123				
Dichlorodifluoromethane	20.89	1.0	20	0	104	32 - 152				
Ethylbenzene	19.85	1.0	20	0	99.3	79 - 121				
Hexachlorobutadiene	18.05	1.0	20	0	90.3	66 - 134				
Isopropylbenzene	19.54	1.0	20	0	97.7	72 - 131				
m,p-Xylene	40.09	2.0	40	0	100	80 - 121				
Methylene chloride	21.36	2.0	20	0	107	74 - 124				
Naphthalene	20.97	1.0	20	0	105	61 - 128				
n-Butylbenzene	20.56	1.0	20	0	103	75 - 128				
n-Propylbenzene	20.74	1.0	20	0	104	76 - 126				
o-Xylene	18.39	1.0	20	0	92.0	78 - 122				
sec-Butylbenzene	20.77	1.0	20	0	104	77 - 126				
Styrene	20.01	1.0	20	0	100	78 - 123				
tert-Butylbenzene	19.99	1.0	20	0	100.0	78 - 124				
Tetrachloroethene	19.34	1.0	20	0	96.7	74 - 129				
Toluene	19.33	1.0	20	0	96.6	80 - 121				
trans-1,2-Dichloroethene	20.07	1.0	20	0	100	75 - 124				
trans-1,3-Dichloropropene	17.76	1.0	20	0	88.8	73 - 127				
Trichloroethene	19.52	1.0	20	0	97.6	79 - 123				
Trichlorofluoromethane	21.29	1.0	20	0	106	65 - 141				
Vinyl chloride	21.85	1.0	20	0	109	58 - 137				
Surr: 1,2-Dichloroethane-d4	*54.1*	*1.0*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*47.96*	*1.0*	*50*	*0*	*95.9*	*85 - 114*				
Surr: Dibromofluoromethane	*52.24*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*51.2*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19110613-01MS** Units: **UG/L** Analysis Date: **13-Nov-2019 15:43**
Client ID: **LH18/24-SP650_111219** Run ID: **VOA9_350401** SeqNo: **5342334** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.43	1.0	20	0	112	78 - 124				
1,1,1-Trichloroethane	23.98	1.0	20	0	120	74 - 131				
1,1,2,2-Tetrachloroethane	25.11	1.0	20	0	126	71 - 121				S
1,1,2-Trichloroethane	25.27	1.0	20	0	126	80 - 119				S
1,1-Dichloroethane	24.48	1.0	20	0	122	77 - 125				
1,1-Dichloroethene	26.81	1.0	20	0	134	71 - 131				S
1,1-Dichloropropene	29.49	1.0	20	0	147	78 - 125				S
1,2,3-Trichlorobenzene	23.75	1.0	20	0	119	69 - 129				
1,2,3-Trichloropropane	24.54	1.0	20	0	123	73 - 122				S
1,2,4-Trichlorobenzene	23.2	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	25.62	1.0	20	0	128	76 - 124				S
1,2-Dibromo-3-chloropropane	20.42	1.0	20	0	102	62 - 128				
1,2-Dibromoethane	23.13	1.0	20	0	116	77 - 121				
1,2-Dichlorobenzene	23.56	1.0	20	0	118	80 - 119				
1,2-Dichloroethane	26.44	1.0	20	2.058	122	73 - 128				
1,2-Dichloropropane	27.98	1.0	20	0	140	78 - 122				S
1,3,5-Trimethylbenzene	26.16	1.0	20	0	131	75 - 124				S
1,3-Dichlorobenzene	24.2	1.0	20	0	121	80 - 119				S
1,3-Dichloropropane	26.98	1.0	20	0	135	80 - 119				S
1,4-Dichlorobenzene	22.93	1.0	20	0	115	79 - 118				
2,2-Dichloropropane	22.33	1.0	20	0	112	60 - 139				
2-Butanone	44.47	2.0	40	0	111	56 - 143				
2-Chlorotoluene	27.41	1.0	20	0	137	79 - 122				S
2-Hexanone	45.29	2.0	40	0	113	57 - 139				
4-Chlorotoluene	24.68	1.0	20	0	123	78 - 122				S
4-Isopropyltoluene	25.89	1.0	20	0	129	77 - 127				S
4-Methyl-2-pentanone	48.47	2.0	40	0	121	67 - 130				
Acetone	45.3	2.0	40	0	113	39 - 160				
Benzene	28.02	1.0	20	0	140	79 - 120				S
Bromobenzene	22.97	1.0	20	0	115	80 - 120				
Bromochloromethane	22.73	1.0	20	0	114	78 - 123				
Bromodichloromethane	25.49	1.0	20	0	127	79 - 125				S
Bromoform	20.28	1.0	20	0	101	66 - 130				
Bromomethane	27.49	1.0	20	0	137	53 - 141				

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19110613-01MS** Units: **UG/L** Analysis Date: **13-Nov-2019 15:43**
Client ID: **LH18/24-SP650_111219** Run ID: **VOA9_350401** SeqNo: **5342334** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	50.27	2.0	40	0	126	64 - 133				
Carbon tetrachloride	27.38	1.0	20	0	137	72 - 136				S
Chlorobenzene	24.32	1.0	20	0	122	82 - 118				S
Chloroethane	29.41	1.0	20	0	147	60 - 138				S
Chloroform	23.49	1.0	20	0	117	79 - 124				
Chloromethane	29.08	1.0	20	0	145	50 - 139				S
cis-1,2-Dichloroethene	85.93	1.0	20	63.59	112	78 - 123				
cis-1,3-Dichloropropene	26.67	1.0	20	0	133	75 - 124				S
Dibromochloromethane	21.93	1.0	20	0	110	74 - 126				
Dibromomethane	26.2	1.0	20	0	131	79 - 123				S
Dichlorodifluoromethane	21.63	1.0	20	0	108	32 - 152				
Ethylbenzene	25.45	1.0	20	0	127	79 - 121				S
Hexachlorobutadiene	25.14	1.0	20	0	126	66 - 134				
Isopropylbenzene	26.16	1.0	20	0	131	72 - 131				
m,p-Xylene	51.07	2.0	40	0	128	80 - 121				S
Methylene chloride	39.43	2.0	20	16.33	116	74 - 124				
Naphthalene	24.94	1.0	20	0	125	61 - 128				
n-Butylbenzene	27.33	1.0	20	0	137	75 - 128				S
n-Propylbenzene	27.18	1.0	20	0	136	76 - 126				S
o-Xylene	25.43	1.0	20	0	127	78 - 122				S
sec-Butylbenzene	26.86	1.0	20	0	134	77 - 126				S
Styrene	25.39	1.0	20	0	127	78 - 123				S
tert-Butylbenzene	26.91	1.0	20	0	135	78 - 124				S
Tetrachloroethene	24.94	1.0	20	0	125	74 - 129				
Toluene	24.88	1.0	20	0	124	80 - 121				S
trans-1,2-Dichloroethene	22.64	1.0	20	0	113	75 - 124				
trans-1,3-Dichloropropene	21.63	1.0	20	0	108	73 - 127				
Trichloroethene	36.94	1.0	20	11.69	126	79 - 123				S
Trichlorofluoromethane	26.24	1.0	20	0	131	65 - 141				
Vinyl chloride	27.93	1.0	20	1.692	131	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.56*	*1.0*	*50*	*0*	*89.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.36*	*1.0*	*50*	*0*	*98.7*	*85 - 114*				
Surr: Dibromofluoromethane	*44.53*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*52.03*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19110613-01MSD** Units: **UG/L** Analysis Date: **13-Nov-2019 16:07**
Client ID: **LH18/24-SP650_111219** Run ID: **VOA9_350401** SeqNo: **5342335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.26	1.0	20	0	111	78 - 124	22.43	0.775	20	
1,1,1-Trichloroethane	22.11	1.0	20	0	111	74 - 131	23.98	8.09	20	
1,1,2,2-Tetrachloroethane	24.63	1.0	20	0	123	71 - 121	25.11	1.9	20	S
1,1,2-Trichloroethane	25.42	1.0	20	0	127	80 - 119	25.27	0.569	20	S
1,1-Dichloroethane	23.83	1.0	20	0	119	77 - 125	24.48	2.7	20	
1,1-Dichloroethene	24.63	1.0	20	0	123	71 - 131	26.81	8.48	20	
1,1-Dichloropropene	27.29	1.0	20	0	136	78 - 125	29.49	7.77	20	S
1,2,3-Trichlorobenzene	25.89	1.0	20	0	129	69 - 129	23.75	8.59	20	S
1,2,3-Trichloropropane	24.98	1.0	20	0	125	73 - 122	24.54	1.77	20	S
1,2,4-Trichlorobenzene	22.26	1.0	20	0	111	69 - 130	23.2	4.12	20	
1,2,4-Trimethylbenzene	24.52	1.0	20	0	123	76 - 124	25.62	4.37	20	
1,2-Dibromo-3-chloropropane	20.36	1.0	20	0	102	62 - 128	20.42	0.314	20	
1,2-Dibromoethane	23.5	1.0	20	0	118	77 - 121	23.13	1.6	20	
1,2-Dichlorobenzene	24.04	1.0	20	0	120	80 - 119	23.56	2.02	20	S
1,2-Dichloroethane	27.26	1.0	20	2.058	126	73 - 128	26.44	3.05	20	
1,2-Dichloropropane	30.06	1.0	20	0	150	78 - 122	27.98	7.18	20	S
1,3,5-Trimethylbenzene	23.85	1.0	20	0	119	75 - 124	26.16	9.24	20	
1,3-Dichlorobenzene	22.95	1.0	20	0	115	80 - 119	24.2	5.31	20	
1,3-Dichloropropane	25.74	1.0	20	0	129	80 - 119	26.98	4.69	20	S
1,4-Dichlorobenzene	21.65	1.0	20	0	108	79 - 118	22.93	5.77	20	
2,2-Dichloropropane	22.14	1.0	20	0	111	60 - 139	22.33	0.862	20	
2-Butanone	46.96	2.0	40	0	117	56 - 143	44.47	5.44	20	
2-Chlorotoluene	24.94	1.0	20	0	125	79 - 122	27.41	9.46	20	S
2-Hexanone	47.05	2.0	40	0	118	57 - 139	45.29	3.82	20	
4-Chlorotoluene	24.44	1.0	20	0	122	78 - 122	24.68	0.972	20	S
4-Isopropyltoluene	24.74	1.0	20	0	124	77 - 127	25.89	4.57	20	
4-Methyl-2-pentanone	49.85	2.0	40	0	125	67 - 130	48.47	2.81	20	
Acetone	42.43	2.0	40	0	106	39 - 160	45.3	6.53	20	
Benzene	26.57	1.0	20	0	133	79 - 120	28.02	5.32	20	S
Bromobenzene	21.7	1.0	20	0	109	80 - 120	22.97	5.67	20	
Bromochloromethane	23.05	1.0	20	0	115	78 - 123	22.73	1.4	20	
Bromodichloromethane	25.4	1.0	20	0	127	79 - 125	25.49	0.373	20	S
Bromoform	20.32	1.0	20	0	102	66 - 130	20.28	0.165	20	
Bromomethane	25.44	1.0	20	0	127	53 - 141	27.49	7.75	20	

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350401 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19110613-01MSD** Units: **UG/L** Analysis Date: **13-Nov-2019 16:07**
Client ID: **LH18/24-SP650_111219** Run ID: **VOA9_350401** SeqNo: **5342335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	48.94	2.0	40	0	122	64 - 133	50.27	2.67	20	
Carbon tetrachloride	25.64	1.0	20	0	128	72 - 136	27.38	6.56	20	
Chlorobenzene	22.84	1.0	20	0	114	82 - 118	24.32	6.25	20	
Chloroethane	27.04	1.0	20	0	135	60 - 138	29.41	8.4	20	
Chloroform	23.1	1.0	20	0	116	79 - 124	23.49	1.67	20	
Chloromethane	27.31	1.0	20	0	137	50 - 139	29.08	6.26	20	
cis-1,2-Dichloroethene	83.57	1.0	20	63.59	99.9	78 - 123	85.93	2.78	20	
cis-1,3-Dichloropropene	27.77	1.0	20	0	139	75 - 124	26.67	4.04	20	S
Dibromochloromethane	20.92	1.0	20	0	105	74 - 126	21.93	4.74	20	
Dibromomethane	27.31	1.0	20	0	137	79 - 123	26.2	4.15	20	S
Dichlorodifluoromethane	20.74	1.0	20	0	104	32 - 152	21.63	4.17	20	
Ethylbenzene	24.21	1.0	20	0	121	79 - 121	25.45	5	20	S
Hexachlorobutadiene	23.23	1.0	20	0	116	66 - 134	25.14	7.89	20	
Isopropylbenzene	24.92	1.0	20	0	125	72 - 131	26.16	4.84	20	
m,p-Xylene	48.6	2.0	40	0	121	80 - 121	51.07	4.96	20	S
Methylene chloride	39.65	2.0	20	16.33	117	74 - 124	39.43	0.573	20	
Naphthalene	24.88	1.0	20	0	124	61 - 128	24.94	0.234	20	
n-Butylbenzene	25.5	1.0	20	0	127	75 - 128	27.33	6.94	20	
n-Propylbenzene	25.65	1.0	20	0	128	76 - 126	27.18	5.77	20	S
o-Xylene	24.26	1.0	20	0	121	78 - 122	25.43	4.69	20	
sec-Butylbenzene	25.92	1.0	20	0	130	77 - 126	26.86	3.56	20	S
Styrene	23.77	1.0	20	0	119	78 - 123	25.39	6.58	20	
tert-Butylbenzene	25.79	1.0	20	0	129	78 - 124	26.91	4.25	20	S
Tetrachloroethene	23.7	1.0	20	0	118	74 - 129	24.94	5.12	20	
Toluene	23.48	1.0	20	0	117	80 - 121	24.88	5.8	20	
trans-1,2-Dichloroethene	23.14	1.0	20	0	116	75 - 124	22.64	2.21	20	
trans-1,3-Dichloropropene	21.66	1.0	20	0	108	73 - 127	21.63	0.133	20	
Trichloroethene	36.06	1.0	20	11.69	122	79 - 123	36.94	2.43	20	
Trichlorofluoromethane	24.77	1.0	20	0	124	65 - 141	26.24	5.74	20	
Vinyl chloride	26.62	1.0	20	1.692	125	58 - 137	27.93	4.82	20	
Surr: 1,2-Dichloroethane-d4	*44.09*	*1.0*	*50*	*0*	*88.2*	*81 - 118*	*44.56*	*1.04*	*20*	
Surr: 4-Bromofluorobenzene	*48.7*	*1.0*	*50*	*0*	*97.4*	*85 - 114*	*49.36*	*1.36*	*20*	
Surr: Dibromofluoromethane	*46.14*	*1.0*	*50*	*0*	*92.3*	*80 - 119*	*44.53*	*3.55*	*20*	
Surr: Toluene-d8	*50.76*	*1.0*	*50*	*0*	*102*	*89 - 112*	*52.03*	*2.47*	*20*	

ALS Houston, US Date: 14-Nov-19

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder:	HS19110613

QC BATCH REPORT

Batch ID:	**R350401 (0)**	**Instrument:**	**VOA9**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch:	HS19110613-01	HS19110613-02

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350457 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-111319** Units: **mg/L** Analysis Date: **13-Nov-2019 14:02**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343626** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-111319** Units: **mg/L** Analysis Date: **13-Nov-2019 14:18**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343627** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.9	0.500	20	0	99.5	80 - 120				
Sulfate	19.6	0.500	20	0	98.0	80 - 120				

LCSD Sample ID: **WLCSDW1-111319** Units: **mg/L** Analysis Date: **13-Nov-2019 14:35**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343628** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.76	0.500	20	0	98.8	80 - 120	19.9	0.736	20	
Sulfate	19.39	0.500	20	0	96.9	80 - 120	19.6	1.07	20	

MS Sample ID: **HS19110644-07MS** Units: **mg/L** Analysis Date: **13-Nov-2019 20:57**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343645** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	92.15	0.500	10	84.1	80.5	80 - 120				O
Sulfate	29.85	0.500	10	20.76	90.9	80 - 120				

MS Sample ID: **HS19110621-01MS** Units: **mg/L** Analysis Date: **13-Nov-2019 16:14**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343633** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	311.1	1.00	20	297	70.3	80 - 120				SEO
Sulfate	322.5	1.00	20	310.5	60.1	80 - 120				SEO

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: HS19110613

QC BATCH REPORT

Batch ID: R350457 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS19110644-07MSD** Units: **mg/L** Analysis Date: **13-Nov-2019 21:14**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343646** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	92.17	0.500	10	84.1	80.7	80 - 120	92.15	0.0174	20	O
Sulfate	29.88	0.500	10	20.76	91.2	80 - 120	29.85	0.1	20	

MSD Sample ID: **HS19110621-01MSD** Units: **mg/L** Analysis Date: **13-Nov-2019 16:31**
Client ID: Run ID: **ICS-Integrion_350457** SeqNo: **5343634** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	310.4	1.00	20	297	66.5	80 - 120	311.1	0.243	20	SEO
Sulfate	322.3	1.00	20	310.5	59.2	80 - 120	322.5	0.0539	20	SEO

The following samples were analyzed in this batch: HS19110613-01

ALS Houston, US Date: 14-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi-Weekly Samples
WorkOrder: **HS19110613**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 14-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19110613
Date/Time Received: **13-Nov-2019 08:39**
Received by: **PMG**

Checklist completed by: *Paresh M. Giga* eSignature 13-Nov-2019 Date
Reviewed by: *RJ Modashia* eSignature 13-Nov-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.5c U/C	IR25
Cooler(s)/Kit(s):	43382	
Date/Time sample(s) sent to storage:	11/13/19 10:55	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210, Houston, Tx. 77099 ATTN: R.J. Modashia

Page 1 of 1

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT BI-WEEKLY SAMPLES**	
Prepared By: Scott Beesinger	P.O Number

HS19110613

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Bi-Weekly Samples

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC	Analyses: CHLORIDE, SULFATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_111219	Water	11/12/19 / 14:00		3	3		HCL	
LH18/24-SP650_111219	Water	11/12/19 / 14:00		1		1	NONE	
Trip Blank	Water	11/12/19		2	2		HCL	

Additional Remarks: **24 hour TAT on VOC sample. Standard TAT on chloride & sulfate**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	11/12/19	14:30		11/13/19	08:38						

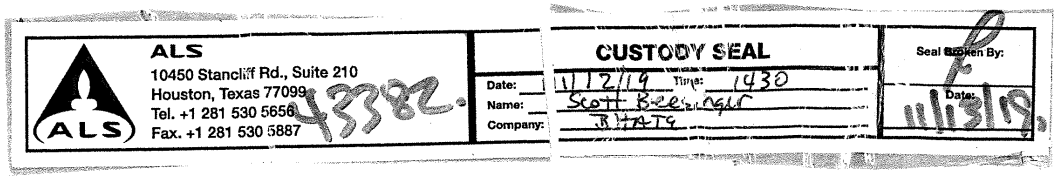
For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

43382 GIC. 0.50 + 25 cif 0.0



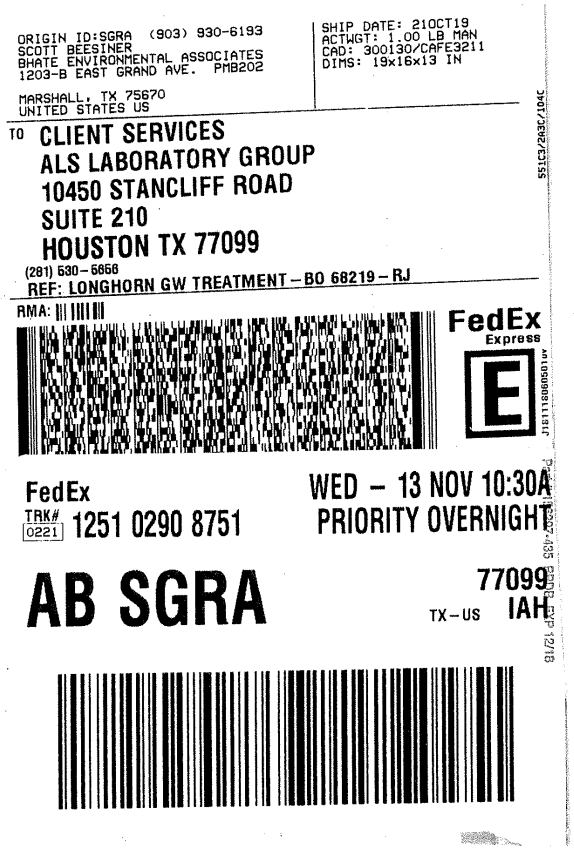
ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43382.

Date:
Name:
Company:

CUSTODY SEAL
11/2/19 Time: 1430
Scott Beesinger
BHATE

Seal broken By:
Date: 11/3/19.



ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 21OCT19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LONGHORN GW TREATMENT - BO 68219 - RJ

RMA:

FedEx Express

FedEx
TRK# 0221 1251 0290 8751

WED - 13 NOV 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS19110615

Longhorn GW Treatment Plant Weekly Samples

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

03-Dec-2019

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 03, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19110615**

Laboratory Results for: **Longhorn GW Treatment Plant Weekly Samples**

Dear Marcia,

ALS Environmental received 2 sample(s) on Nov 13, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS19110615

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19110615-01	LH18/24-SP650_111219	Water		12-Nov-2019 14:00	13-Nov-2019 09:39	☐
HS19110615-02	LH18/24-SP650_111219_AIX	Water		12-Nov-2019 14:00	13-Nov-2019 09:39	☐

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS19110615

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

• The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

WetChemistry by Method E365.3

Batch ID: R351434

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E350.3

Batch ID: R350726

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Weekly Samples WorkOrder:HS19110615
Sample ID: LH18/24-SP650_111219 Lab ID:HS19110615-01
Collection Date: 12-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: MZD
Nitrogen, Ammonia (As N)	**7.5**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	18-Nov-2019 15:30
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: KVL
Phosphorus, Total Orthophosphate (As P)	**1.59**	a	**0.100**	**0.250**	**0.250**	**mg/L**	10	14-Nov-2019 11:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Dec-2019 09:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Weekly Samples WorkOrder:HS19110615
Sample ID: LH18/24-SP650_111219_AIX Lab ID:HS19110615-02
Collection Date: 12-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	27-Nov-2019 17:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS19110615

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R350726 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Water	
HS19110615-01	LH18/24-SP650_111219	12 Nov 2019 14:00			18 Nov 2019 15:30	1
Batch ID: R351434 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Water	
HS19110615-01	LH18/24-SP650_111219	12 Nov 2019 14:00			14 Nov 2019 11:00	10
Batch ID: R351504 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19110615-02	LH18/24-SP650_111219_AIX	12 Nov 2019 14:00			27 Nov 2019 17:54	1
Batch ID: R351628 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Water	
HS19110615-01	LH18/24-SP650_111219	12 Nov 2019 14:00			03 Dec 2019 09:38	1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS19110615

QC BATCH REPORT

Batch ID: R350726 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-R350726** Units: **mg/L** Analysis Date: **18-Nov-2019 15:30**
Client ID: Run ID: **WetChem_HS_350726** SeqNo: **5348669** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-R350726** Units: **mg/L** Analysis Date: **18-Nov-2019 15:30**
Client ID: Run ID: **WetChem_HS_350726** SeqNo: **5348668** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.46	0.20	10	0	105	80 - 120				

MS Sample ID: **HS19110571-01MS** Units: **mg/L** Analysis Date: **18-Nov-2019 15:30**
Client ID: Run ID: **WetChem_HS_350726** SeqNo: **5348676** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.48	0.20	10	0.639	98.4	80 - 120				

MSD Sample ID: **HS19110571-01MSD** Units: **mg/L** Analysis Date: **18-Nov-2019 15:30**
Client ID: Run ID: **WetChem_HS_350726** SeqNo: **5348675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.33	0.20	10	0.639	96.9	80 - 120	10.48	1.44	20	

The following samples were analyzed in this batch: HS19110615-01

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS19110615

QC BATCH REPORT

Batch ID: R351434 (0) **Instrument:** UV-2450 **Method:** ORTHO PHOSPHATE (PO4) AS P BY E365.3

MBLK Sample ID: **MBLK-R351434** Units: **mg/L** Analysis Date: **14-Nov-2019 11:00**
Client ID: Run ID: **UV-2450_351434** SeqNo: **5364336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R351434** Units: **mg/L** Analysis Date: **14-Nov-2019 11:00**
Client ID: Run ID: **UV-2450_351434** SeqNo: **5364335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.233	0.0250	0.25	0	93.2	85 - 115				

MS Sample ID: **HS19110615-01MS** Units: **mg/L** Analysis Date: **14-Nov-2019 11:00**
Client ID: **LH18/24-SP650_111219** Run ID: **UV-2450_351434** SeqNo: **5364338** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	3.98	0.250	2.5	1.59	95.6	80 - 120				

MSD Sample ID: **HS19110615-01MSD** Units: **mg/L** Analysis Date: **14-Nov-2019 11:00**
Client ID: **LH18/24-SP650_111219** Run ID: **UV-2450_351434** SeqNo: **5364337** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	3.95	0.250	2.5	1.59	94.4	80 - 120	3.98	0.757	20	

The following samples were analyzed in this batch: HS19110615-01

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Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: **HS19110615**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

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ALS Houston, US Date: 03-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS19110615

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19110615-01	LH18/24-SP650_111219	Login	11/13/2019 10:56:36 AM	PMG	WET060
HS19110615-01	LH18/24-SP650_111219	Login	11/13/2019 10:56:36 AM	PMG	VOA002
HS19110615-02	LH18/24-SP650_111219_AIX	Login	11/13/2019 10:56:36 AM	PMG	VOA002

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ALS Houston, US Date: 03-Dec-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19110615
Date/Time Received: **13-Nov-2019 09:39**
Received by: **PMG**

Checklist completed by: *Paresh M. Giga* eSignature 13-Nov-2019 Date
Reviewed by: *RJ Modashia* eSignature 13-Nov-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.5c U/C	IR25
Cooler(s)/Kit(s):	43382	
Date/Time sample(s) sent to storage:	11/13/19 11:15	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

HS19110615
Bhate Environmental Associates. Inc.
Longhorn GW Treatment Plant Weekly Samples

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_111219	Water	11/12/19 / 14:00		3	X	X			H2SO4	
LH18/24-SP650_111219	Water	11/12/19 / 14:00		1			X		NONE	
LH18/24 – SP650_111219_AIX	Water	11/12/19 / 14:00		1				X	NONE	

Analyses

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
	11/12/19	14:30		11/13/19	09:38						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

43382 0.5° +21° C1/-0.8°

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43382.

Date:
Name:
Company:

CUSTODY SEAL
11/12/19 Time: 1430
Scott Beesinger
BHATE

Seal Broken By:
Date: 11/13/19.

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 21OCT19
ACTWGT: 1.00 LB MAN
CAD: 3001307CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LONGHORN GW TREATMENT - BO 68219 - RJ

RMA:

FedEx Express

FedEx
TRK# 0221 1251 0290 8751

WED - 13 NOV 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

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ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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www.alsglobal.com

November 21, 2019 **Analytical Report for Service Re uest No:** K1910760

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19110615

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory November 14, 2019
For your reference, these analyses have been assigned our service request number **K1910760.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Kelley Lovejoy
Project Manager

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

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ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

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Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS19110615
Sample Matrix: Water

Service Request: K1910760
Date Received: 11/14/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 11/14/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Noe D. Dan Date 11/21/2019

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Chain of Custody

ALS Environmental—Kelso Laboratory
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KI9110760

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12608**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626 **Phone:** +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19110615
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19110615-01**	**LH18/24-SP650_111219**	**Water**	**12 Nov 2019 14:00**
	TOC Analysis for DOD Level IV			21 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 11/13/19 1800.

Received By: R Morrow ALS Kelso Date/Time: 11-14-19 0940

Cooler ID(s): _____ Temperature(s): _____

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request *K19* 10760

Received: 11-14-19 Opened: 11-14-19 By: [illegible] Unloaded: 11-14-19 By: [illegible]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1F4/B
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number	NA	Filed
0.5	-0.5	4.5	4.5	0	371		1251 0291 7686		

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1910760
Project:	HS19110615	**Date Collected:**	11/12/19
Sample Matrix:	Water	**Date Received:**	11/14/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_111219	K1910760-001	**1.23**	0.50	0.20	0.07	1	11/17/19 02:22	
Method Blank	K1910760-MB	ND U	0.50	0.20	0.07	1	11/16/19 19:16	

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910760
Project	HS19110615	**Date Collected:**	11/12/19
Sample Matrix:	Water	**Date Received:**	11/14/19
		Date Analyzed:	11/17/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_111219	**Units:**	mg/L
Lab Code:	K1910760-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1910760-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	1.23	1.12	1.17	10	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910760
Project:	HS19110615	**Date Collected:**	11/12/19
Sample Matrix:	Water	**Date Received:**	11/14/19
		Date Analyzed:	11/17/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	LH18/24-SP650_111219	**Units:**	mg/L
Lab Code:	K1910760-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1910760-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.23	25.8	25.0	98	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910760
Project:	HS19110615	**Date Analyzed:**	11/16/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	660115

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1910760-LCS	24.6	25.0	98	83-117

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1910760
Project: HS19110615

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	660115	KQ1916991-01	11/16/19 23:04	25.0	23.9	95	90-110
CCV2	660115	KQ1916991-02	11/17/19 03:33	25.0	23.7	95	90-110

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1910760
Project: HS19110615

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	660115	KQ1916991-03	11/16/19 23:18	0.50	0.20	0.07	ND	U
CCB2	660115	KQ1916991-04	11/17/19 03:48	0.50	0.20	0.07	ND	U

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Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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General Chemistry

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Work Request # Original (K1901695, 160, 169, 187, 278, 332, 415, 473, 545, 547, 731, 473, 483, 561, 572, 576, 599, 254, 297, 760, 765)

Tier: II, IV, II, I, II, I, II, II, II, IV, II, II, II, II, IV, IV, IV, IV, IV

Date Analyzed: 11/15/19

Analyst: BCP / BCP for HLM

Run # TOC: 660112, 660113, 660114, 660115

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K1901160-3MS reports a low %Recovery due to suspected matrix interference.
K1901187-3/3d, 278-2/2d, 473-5/5d, 561-2/2d, 254-3/3d, 254-7/7d report a high %RSD. However, these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 11/19/19

DQREPORT

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660112 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
K1910095-017	Carbon, Total Organic	N/A		Water	4.92 mg/L	10 mL	246 mg/L	50	4	25			11/15/19 15:25:00	N
K1910095-018	Carbon, Total Organic	N/A		Water	5.97 mg/L	10 mL	298 mg/L	50	4	25			11/15/19 15:53:00	N
K1910160-001	Carbon, Total Organic	N/A		Water	1.69 mg/L	10 mL	1.69 mg/L	1	0.07	0.50			11/15/19 16:36:00	N
K1910160-002	Carbon, Total Organic	N/A		Water	1.38 mg/L	10 mL	1.38 mg/L	1	0.07	0.50			11/15/19 17:04:00	N
K1910160-003	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			11/15/19 17:32:00	N
K1910169-001	Carbon, Total Organic	N/A		Ground Water	1.77 mg/L	10 mL	1.77 mg/L	1	0.07	0.50			11/15/19 18:44:00	N
K1910169-002	Carbon, Total Organic	N/A		Ground Water	3.51 mg/L	10 mL	3.51 mg/L	1	0.07	0.50			11/15/19 19:12:00	N
K1910169-003	Carbon, Total Organic	N/A		Ground Water	3.55 mg/L	10 mL	3.55 mg/L	1	0.07	0.50			11/15/19 19:40:00	N
K1910187-001	Carbon, Total Organic	N/A		Water	2.41 mg/L	10 mL	2.41 mg/L	1	0.07	0.50			11/15/19 20:08:00	N
K1910187-002	Carbon, Total Organic	N/A		Water	0.51 mg/L	10 mL	0.51 mg/L	1	0.07	0.50			11/15/19 20:36:00	N
K1910187-003	Carbon, Total Organic	N/A		Water	0.51 mg/L	10 mL	0.51 mg/L	1	0.07	0.50			11/15/19 21:04:00	N
K1910278-001	Carbon, Total Organic	N/A		Ground Water	3.33 mg/L	10 mL	3.33 mg/L	1	0.07	0.50			11/15/19 22:57:00	N
K1910278-002	Carbon, Total Organic	N/A		Ground Water	0.34 mg/L	10 mL	0.34 mg/L J	1	0.07	0.50			11/16/19 00:23:00	N
K1910332-001	Carbon, Total Organic	N/A		Drinking Water	0.37 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 21:32:00	N
K1910415-001	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 22:00:00	N
K1910473-001	Carbon, Total Organic	N/A		Ground Water	6.20 mg/L	10 mL	6.20 mg/L	1	0.07	0.50			11/16/19 00:51:00	N
K1910473-002	Carbon, Total Organic	N/A		Ground Water	6.32 mg/L	10 mL	6.32 mg/L	1	0.07	0.50			11/16/19 01:19:00	N
K1910473-003	Carbon, Total Organic	N/A		Ground Water	0.34 mg/L	10 mL	0.34 mg/L J	1	0.07	0.50			11/16/19 01:48:00	N
K1910545-001	Carbon, Total Organic	N/A		Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50			11/15/19 22:28:00	N
KQ1916988-01	Carbon, Total Organic	CCV		Water	24.50 mg/L	10 mL	24.5 mg/L	1					11/15/19 14:11:00	N
KQ1916988-02	Carbon, Total Organic	CCV		Water	24.74 mg/L	10 mL	24.7 mg/L	1					11/15/19 18:14:00	N
KQ1916988-03	Carbon, Total Organic	CCV		Water	24.27 mg/L	10 mL	24.3 mg/L	1					11/15/19 23:25:00	N
KQ1916988-04	Carbon, Total Organic	CCV		Water	24.63 mg/L	10 mL	24.6 mg/L	1					11/16/19 04:08:00	N
KQ1916988-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 14:26:00	N
KQ1916988-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 18:29:00	N
KQ1916988-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 23:39:00	N
KQ1916988-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 04:23:00	N
KQ1916988-09	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 14:41:00	N
KQ1916988-10	Carbon, Total Organic	LCS		Water	25.27 mg/L	10 mL	25.3 mg/L	1	0.07	0.50	101		11/15/19 14:56:00	N
KQ1916988-11	Carbon, Total Organic	MS	K1910160-003	Water	21.53 mg/L	10 mL	21.5 mg/L	1	0.07	0.50	81*		11/15/19 18:00:00	N
KQ1916988-12	Carbon, Total Organic	DUP	K1910095-017	Water	4.97 mg/L	10 mL	249 mg/L	50	4	25		1	11/15/19 15:25:00	N

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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11/19/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660112 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
KQ1916988-13	Carbon, Total Organic	DUP	K1910095-018	Water	6.04 mg/L	10 mL	302 mg/L	50	4	25		1	11/15/19 15:53:00	N
KQ1916988-15	Carbon, Total Organic	DUP	K1910160-002	Water	1.32 mg/L	10 mL	1.32 mg/L	1	0.07	0.50		5	11/15/19 17:04:00	N
KQ1916988-16	Carbon, Total Organic	DUP	K1910160-001	Water	1.57 mg/L	10 mL	1.57 mg/L	1	0.07	0.50		7	11/15/19 16:36:00	N
KQ1916988-17	Carbon, Total Organic	DUP	K1910160-003	Water	1.20 mg/L	10 mL	1.20 mg/L	1	0.07	0.50		2	11/15/19 17:32:00	N
KQ1916988-18	Carbon, Total Organic	DUP	K1910169-001	Ground Water	1.78 mg/L	10 mL	1.78 mg/L	1	0.07	0.50		<1	11/15/19 18:44:00	N
KQ1916988-19	Carbon, Total Organic	DUP	K1910169-002	Ground Water	3.57 mg/L	10 mL	3.57 mg/L	1	0.07	0.50		2	11/15/19 19:12:00	N
KQ1916988-20	Carbon, Total Organic	DUP	K1910169-003	Ground Water	3.50 mg/L	10 mL	3.50 mg/L	1	0.07	0.50		2	11/15/19 19:40:00	N
KQ1916988-21	Carbon, Total Organic	DUP	K1910187-001	Water	2.39 mg/L	10 mL	2.39 mg/L	1	0.07	0.50		<1	11/15/19 20:08:00	N
KQ1916988-22	Carbon, Total Organic	DUP	K1910187-002	Water	0.50 mg/L	10 mL	0.50 mg/L	1	0.07	0.50		2	11/15/19 20:36:00	N
KQ1916988-23	Carbon, Total Organic	DUP	K1910187-003	Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50		11*	11/15/19 21:04:00	N
KQ1916988-24	Carbon, Total Organic	DUP	K1910278-001	Ground Water	3.20 mg/L	10 mL	3.20 mg/L	1	0.07	0.50		4	11/15/19 22:57:00	N
KQ1916988-25	Carbon, Total Organic	DUP	K1910278-002	Ground Water	0.24 mg/L	10 mL	0.24 mg/L J	1	0.07	0.50		37*	11/16/19 00:23:00	N
KQ1916988-26	Carbon, Total Organic	DUP	K1910332-001	Drinking Water	0.42 mg/L	10 mL	0.42 mg/L J	1	0.07	0.50		NC	11/15/19 21:32:00	N
KQ1916988-28	Carbon, Total Organic	DUP	K1910473-001	Ground Water	6.24 mg/L	10 mL	6.24 mg/L	1	0.07	0.50		<1	11/16/19 00:51:00	N
KQ1916988-29	Carbon, Total Organic	DUP	K1910473-002	Ground Water	6.33 mg/L	10 mL	6.33 mg/L	1	0.07	0.50		<1	11/16/19 01:19:00	N
KQ1916988-30	Carbon, Total Organic	DUP	K1910473-003	Ground Water	0.37 mg/L	10 mL	0.37 mg/L J	1	0.07	0.50		7	11/16/19 01:48:00	N
KQ1916988-31	Carbon, Total Organic	DUP	K1910545-001	Water	1.88 mg/L	10 mL	1.88 mg/L	1	0.07	0.50		3	11/15/19 22:28:00	N
KQ1916988-32	Carbon, Total Organic	DUP	K1910415-001	Ocean Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/15/19 22:00:00	N

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Page 37 of 181
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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660113 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
K1910147-001	Carbon, Total Organic	N/A		Water	2.61 mg/L	10 mL	2.61 mg/L	1	0.07	0.50			11/16/19 12:53:00	N
K1910331-001	Carbon, Total Organic	N/A		Water	8.66 mg/L	10 mL	866 mg/L	100	7	50			11/16/19 05:34:00	N
K1910331-002	Carbon, Total Organic	N/A		Water	9.22 mg/L	10 mL	922 mg/L	100	7	50			11/16/19 06:02:00	N
K1910331-003	Carbon, Total Organic	N/A		Water	7.00 mg/L	10 mL	700 mg/L	100	7	50			11/16/19 06:30:00	N
K1910473-004	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 02:16:00	N
K1910473-005	Carbon, Total Organic	N/A		Ground Water	0.74 mg/L	10 mL	0.74 mg/L	1	0.07	0.50			11/16/19 02:44:00	N
K1910473-006	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 03:12:00	N
K1910483-001	Carbon, Total Organic	N/A		Water	3.41 mg/L	10 mL	3.41 mg/L	1	0.07	0.50			11/16/19 03:40:00	N
K1910483-003	Carbon, Total Organic	N/A		Water	2.42 mg/L	10 mL	2.42 mg/L	1	0.07	0.50			11/16/19 04:38:00	N
K1910561-001	Carbon, Total Organic	N/A		Surface Water	12.22 mg/L	10 mL	122 mg/L	10	0.7	5.0			11/16/19 06:58:00	N
K1910561-002	Carbon, Total Organic	N/A		Surface Water	1.49 mg/L	10 mL	1.49 mg/L	1	0.07	0.50			11/16/19 07:26:00	N
K1910561-003	Carbon, Total Organic	N/A		Surface Water	4.36 mg/L	10 mL	8.7 mg/L	2	0.2	1.0			11/16/19 07:54:00	N
K1910572-001	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 08:22:00	N
K1910572-002	Carbon, Total Organic	N/A		Surface Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 10:05:00	N
K1910572-003	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 10:33:00	N
K1910572-004	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 11:01:00	N
K1910572-005	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 11:29:00	N
K1910572-006	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 11:57:00	N
K1910572-008	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 12:25:00	N
K1910576-001	Carbon, Total Organic	N/A		Water	20.04 mg/L	10 mL	20.0 mg/L	1	0.07	0.50			11/16/19 05:06:00	N
KQ1916989-01	Carbon, Total Organic	CCV		Ground Water	24.27 mg/L	10 mL	24.3 mg/L	1					11/15/19 23:25:00	N
KQ1916989-02	Carbon, Total Organic	CCV		Ground Water	24.63 mg/L	10 mL	24.6 mg/L	1					11/16/19 04:08:00	N
KQ1916989-03	Carbon, Total Organic	CCV		Ground Water	24.21 mg/L	10 mL	24.2 mg/L	1					11/16/19 09:05:00	N
KQ1916989-04	Carbon, Total Organic	CCV		Ground Water	23.71 mg/L	10 mL	23.7 mg/L	1					11/16/19 13:50:00	N
KQ1916989-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 23:39:00	N
KQ1916989-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 04:23:00	N

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/19/19

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660113 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
KQ1916989-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 09:19:00	N
KQ1916989-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 14:04:00	N
KQ1916989-09	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/15/19 23:54:00	N
KQ1916989-10	Carbon, Total Organic	LCS		Ground Water	24.76 mg/L	10 mL	24.8 mg/L	1	0.07	0.50	99		11/16/19 00:09:00	N
KQ1916989-11	Carbon, Total Organic	MS	K1910572-001	Surface Water	25.02 mg/L	10 mL	25.0 mg/L	1	0.07	0.50	100		11/16/19 08:50:00	N
KQ1916989-12	Carbon, Total Organic	DUP	K1910147-001	Water	2.59 mg/L	10 mL	2.59 mg/L	1	0.07	0.50		<1	11/16/19 12:53:00	N
KQ1916989-13	Carbon, Total Organic	DUP	K1910331-001	Water	8.72 mg/L	10 mL	872 mg/L	100	7	50		<1	11/16/19 05:34:00	N
KQ1916989-14	Carbon, Total Organic	DUP	K1910331-002	Water	9.19 mg/L	10 mL	919 mg/L	100	7	50		<1	11/16/19 06:02:00	N
KQ1916989-15	Carbon, Total Organic	DUP	K1910473-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 02:16:00	N
KQ1916989-16	Carbon, Total Organic	DUP	K1910473-005	Ground Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50		18*	11/16/19 02:44:00	N
KQ1916989-17	Carbon, Total Organic	DUP	K1910473-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 03:12:00	N
KQ1916989-18	Carbon, Total Organic	DUP	K1910483-003	Water	2.37 mg/L	10 mL	2.37 mg/L	1	0.07	0.50		2	11/16/19 04:38:00	N
KQ1916989-19	Carbon, Total Organic	DUP	K1910483-001	Water	3.31 mg/L	10 mL	3.31 mg/L	1	0.07	0.50		3	11/16/19 03:40:00	N
KQ1916989-20	Carbon, Total Organic	DUP	K1910331-003	Water	6.84 mg/L	10 mL	684 mg/L	100	7	50		2	11/16/19 06:30:00	N
KQ1916989-21	Carbon, Total Organic	DUP	K1910561-001	Surface Water	12.17 mg/L	10 mL	122 mg/L	10	0.7	5.0		<1	11/16/19 06:58:00	N
KQ1916989-22	Carbon, Total Organic	DUP	K1910561-002	Surface Water	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		15*	11/16/19 07:26:00	N
KQ1916989-23	Carbon, Total Organic	DUP	K1910561-003	Surface Water	4.18 mg/L	10 mL	8.4 mg/L	2	0.2	1.0		4	11/16/19 07:54:00	N
KQ1916989-24	Carbon, Total Organic	DUP	K1910572-002	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 10:05:00	N
KQ1916989-25	Carbon, Total Organic	DUP	K1910572-003	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 10:33:00	N
KQ1916989-26	Carbon, Total Organic	DUP	K1910572-004	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 11:01:00	N
KQ1916989-27	Carbon, Total Organic	DUP	K1910572-005	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 11:29:00	N
KQ1916989-28	Carbon, Total Organic	DUP	K1910572-006	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 11:57:00	N
KQ1916989-29	Carbon, Total Organic	DUP	K1910572-008	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 12:25:00	N
KQ1916989-30	Carbon, Total Organic	DUP	K1910572-001	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	11/16/19 08:22:00	N
KQ1916989-31	Carbon, Total Organic	DUP	K1910576-001	Water	19.96 mg/L	10 mL	20.0 mg/L	1	0.07	0.50		<1	11/16/19 05:06:00	N

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660114 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
K1910147-002	Carbon, Total Organic	N/A		Water	2.64 mg/L	10 mL	2.64 mg/L	1	0.07	0.50			11/16/19 13:22:00	N
K1910147-006	Carbon, Total Organic	N/A		Water	3.06 mg/L	10 mL	3.06 mg/L	1	0.07	0.50			11/16/19 14:19:00	N
K1910147-007	Carbon, Total Organic	N/A		Water	4.59 mg/L	10 mL	4.59 mg/L	1	0.07	0.50			11/16/19 14:47:00	N
K1910199-001	Carbon, Total Organic	N/A		Water	1.80 mg/L	10 mL	1.80 mg/L	1	0.07	0.50			11/16/19 15:15:00	N
K1910199-002	Carbon, Total Organic	N/A		Water	1.52 mg/L	10 mL	1.52 mg/L	1	0.07	0.50			11/16/19 15:43:00	N
K1910199-003	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			11/16/19 16:12:00	N
K1910199-004	Carbon, Total Organic	N/A		Water	1.40 mg/L	10 mL	1.40 mg/L	1	0.07	0.50			11/16/19 16:40:00	N
K1910199-007	Carbon, Total Organic	N/A		Water	1.93 mg/L	10 mL	1.93 mg/L	1	0.07	0.50			11/16/19 17:08:00	N
K1910199-008	Carbon, Total Organic	N/A		Water	1.89 mg/L	10 mL	1.89 mg/L	1	0.07	0.50			11/16/19 17:36:00	N
K1910199-010	Carbon, Total Organic	N/A		Water	1.51 mg/L	10 mL	1.51 mg/L	1	0.07	0.50			11/16/19 18:04:00	N
K1910254-002	Carbon, Total Organic	N/A		Water	1.73 mg/L	10 mL	1.73 mg/L	1	0.07	0.50			11/16/19 19:46:00	N
K1910254-003	Carbon, Total Organic	N/A		Water	0.99 mg/L	10 mL	0.99 mg/L	1	0.07	0.50			11/16/19 20:14:00	N
K1910254-004	Carbon, Total Organic	N/A		Water	2.33 mg/L	10 mL	2.33 mg/L	1	0.07	0.50			11/16/19 20:42:00	Y
K1910254-005	Carbon, Total Organic	N/A		Water	1.15 mg/L	10 mL	1.15 mg/L	1	0.07	0.50			11/16/19 21:39:00	N
K1910254-006	Carbon, Total Organic	N/A		Water	28.09 mg/L	10 mL	28.1 mg/L	1	0.07	0.50			11/16/19 22:08:00	N
K1910254-007	Carbon, Total Organic	N/A		Water	2.13 mg/L	10 mL	2.13 mg/L	1	0.07	0.50			11/16/19 22:36:00	N
KQ1916990-01	Carbon, Total Organic	CCV		Water	24.21 mg/L	10 mL	24.2149 mg/L	1					11/16/19 09:05:00	N
KQ1916990-02	Carbon, Total Organic	CCV		Water	23.71 mg/L	10 mL	23.7056 mg/L	1					11/16/19 13:50:00	N
KQ1916990-03	Carbon, Total Organic	CCV		Water	23.93 mg/L	10 mL	23.9330 mg/L	1					11/16/19 18:47:00	N
KQ1916990-04	Carbon, Total Organic	CCV		Water	23.87 mg/L	10 mL	23.8729 mg/L	1					11/16/19 23:04:00	N
KQ1916990-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 09:19:00	N
KQ1916990-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 14:04:00	N
KQ1916990-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 19:02:00	N
KQ1916990-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 23:18:00	N
KQ1916990-09	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 09:34:00	N
KQ1916990-10	Carbon, Total Organic	LCS		Water	24.43 mg/L	10 mL	24.4 mg/L	1	0.07	0.50			11/16/19 09:49:00	N
KQ1916990-11	Carbon, Total Organic	DUP	K1910147-002	Water	2.62 mg/L	10 mL	2.62 mg/L	1	0.07	0.50		<1	11/16/19 13:22:00	N
KQ1916990-12	Carbon, Total Organic	DUP	K1910147-006	Water	2.99 mg/L	10 mL	2.99 mg/L	1	0.07	0.50		2	11/16/19 14:19:00	N
KQ1916990-13	Carbon, Total Organic	DUP	K1910147-007	Water	4.39 mg/L	10 mL	4.39 mg/L	1	0.07	0.50		5	11/16/19 14:47:00	N
KQ1916990-14	Carbon, Total Organic	DUP	K1910199-002	Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50		<1	11/16/19 15:43:00	N
KQ1916990-15	Carbon, Total Organic	DUP	K1910199-003	Water	1.24 mg/L	10 mL	1.24 mg/L	1	0.07	0.50		1	11/16/19 16:12:00	N
KQ1916990-16	Carbon, Total Organic	DUP	K1910199-004	Water	1.38 mg/L	10 mL	1.38 mg/L	1	0.07	0.50		1	11/16/19 16:40:00	N
KQ1916990-17	Carbon, Total Organic	DUP	K1910199-007	Water	1.86 mg/L	10 mL	1.86 mg/L	1	0.07	0.50		4	11/16/19 17:08:00	N
KQ1916990-18	Carbon, Total Organic	DUP	K1910199-008	Water	1.89 mg/L	10 mL	1.89 mg/L	1	0.07	0.50		<1	11/16/19 17:36:00	N
KQ1916990-19	Carbon, Total Organic	DUP	K1910199-001	Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50		2	11/16/19 15:15:00	N
KQ1916990-20	Carbon, Total Organic	DUP	K1910199-010	Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50		5	11/16/19 18:04:00	N

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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11/19/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660114 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
KQ1916990-22	Carbon, Total Organic	DUP	K1910254-002	Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50		8	11/16/19 19:46:00	N
KQ1916990-23	Carbon, Total Organic	DUP	K1910254-003	Water	1.11 mg/L	10 mL	1.11 mg/L	1	0.07	0.50		11*	11/16/19 20:14:00	N
KQ1916990-24	Carbon, Total Organic	DUP	K1910254-004	Water	2.30 mg/L	10 mL	2.30 mg/L	1	0.07	0.50		1	11/16/19 20:42:00	N
KQ1916990-25	Carbon, Total Organic	DUP	K1910254-005	Water	1.11 mg/L	10 mL	1.11 mg/L	1	0.07	0.50		3	11/16/19 21:39:00	N
KQ1916990-26	Carbon, Total Organic	DUP	K1910254-006	Water	28.17 mg/L	10 mL	28.2 mg/L	1	0.07	0.50		<1	11/16/19 22:08:00	N
KQ1916990-27	Carbon, Total Organic	DUP	K1910254-007	Water	1.84 mg/L	10 mL	1.84 mg/L	1	0.07	0.50		14*	11/16/19 22:36:00	N
KQ1916990-28	Carbon, Total Organic	MS	K1910254-004	Water	27.79 mg/L	10 mL	27.8 mg/L	1	0.07	0.50			11/16/19 21:10:00	N

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 660115 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
K1910254-008	Carbon, Total Organic	N/A		Water	1.45 mg/L	10 mL	1.45 mg/L	1	0.07	0.50			11/16/19 23:33:00	N
K1910299-001	Carbon, Total Organic	N/A		Water	7.30 mg/L	10 mL	7.30 mg/L	1	0.07	0.50			11/17/19 00:01:00	N
K1910760-001	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			11/17/19 02:22:00	N
K1910765-001	Carbon, Total Organic	N/A		Ground Water	9.06 mg/L	10 mL	9.06 mg/L	1	0.07	0.50			11/17/19 00:29:00	N
K1910765-002	Carbon, Total Organic	N/A		Ground Water	13.64 mg/L	10 mL	13.6 mg/L	1	0.07	0.50			11/17/19 00:58:00	N
K1910765-003	Carbon, Total Organic	N/A		Ground Water	22.60 mg/L	10 mL	22.6 mg/L	1	0.07	0.50			11/17/19 01:26:00	N
K1910765-004	Carbon, Total Organic	N/A		Ground Water	10.31 mg/L	10 mL	10.3 mg/L	1	0.07	0.50			11/17/19 01:54:00	N
KQ1916991-01	Carbon, Total Organic	CCV		Water	23.87 mg/L	10 mL	23.9 mg/L	1					11/16/19 23:04:00	N
KQ1916991-02	Carbon, Total Organic	CCV		Water	23.67 mg/L	10 mL	23.7 mg/L	1					11/17/19 03:33:00	N
KQ1916991-03	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 23:18:00	N
KQ1916991-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/17/19 03:48:00	N
KQ1916991-05	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/16/19 19:16:00	N
KQ1916991-06	Carbon, Total Organic	LCS		Water	24.59 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		11/16/19 19:31:00	N
KQ1916991-07	Carbon, Total Organic	MS	K1910760-001	Water	25.85 mg/L	10 mL	25.8 mg/L	1	0.07	0.50	98		11/17/19 02:50:00	N
KQ1916991-08	Carbon, Total Organic	DUP	K1910254-008	Water	1.42 mg/L	10 mL	1.42 mg/L	1	0.07	0.50		2	11/16/19 23:33:00	N
KQ1916991-09	Carbon, Total Organic	DUP	K1910299-001	Water	7.01 mg/L	10 mL	7.01 mg/L	1	0.07	0.50		4	11/17/19 00:01:00	N
KQ1916991-10	Carbon, Total Organic	DUP	K1910760-001	Water	1.12 mg/L	10 mL	1.12 mg/L	1	0.07	0.50		10	11/17/19 02:22:00	N
KQ1916991-11	Carbon, Total Organic	DUP	K1910765-002	Ground Water	13.45 mg/L	10 mL	13.4 mg/L	1	0.07	0.50		1	11/17/19 00:58:00	N
KQ1916991-12	Carbon, Total Organic	DUP	K1910765-001	Ground Water	8.90 mg/L	10 mL	8.90 mg/L	1	0.07	0.50		2	11/17/19 00:29:00	N
KQ1916991-13	Carbon, Total Organic	DUP	K1910765-003	Ground Water	22.72 mg/L	10 mL	22.7 mg/L	1	0.07	0.50		<1	11/17/19 01:26:00	N
KQ1916991-14	Carbon, Total Organic	DUP	K1910765-004	Ground Water	9.87 mg/L	10 mL	9.87 mg/L	1	0.07	0.50		4	11/17/19 01:54:00	N

11/19/19

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Page 426 of 481
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TOC660112
660113
660114
660115

Schedule: 11152019

Version: 15
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/11/16 10:07 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1910095-017.08 50x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1910095-018.08 50x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K1910157-001.02 25x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1910160-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1910160-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1910160-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1910160-003.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1910169-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1910169-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1910169-003.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1910187-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1910187-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1910187-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1910332-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1910415-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1910545-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1910278-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1910278-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1910473-001.13	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1910473-002.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1910473-003.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1910473-004.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1910473-005.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1910473-006.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1910483-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1910483-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1910576-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1910331-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1910331-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1910331-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1910561-001.15 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1910561-002.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1910561-003.14 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1910572-001.16	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1910572-001.16 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

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Schedule: 11152019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1910572-002.16	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1910572-003.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1910572-004.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1910572-005.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1910572-006.16	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1910572-008.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1910147-001.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1910147-002.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1910147-006.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1910147-007.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1910199-001.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1910199-002.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1910199-003.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1910199-004.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1910199-007.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1910199-008.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1910199-010.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1910254-001.04	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1910254-002.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1910254-003.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1910254-004.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1910254-004.04 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
63	Sample	rb	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
64	Sample	K1910254-005.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1910254-006.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1910254-007.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1910254-008.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1910299-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1910765-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample	K1910765-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1910765-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	K1910765-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample	K1910760-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1910760-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
75	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

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Fusion Report - 11152019
Friday, November 15, 2019 12:08 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/11/19 09:11 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	11152019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8) Fusion1 (Fusion1) (v10) Fusion1 (Fusion1) (v11) Fusion1 (Fusion1) (v13) Fusion1 (Fusion1) (v14) Fusion1 (Fusion1) (v15)		
Comment:			

Report Results

11/19/19

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/11/15 12:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.76	16.22	3.46	49.69	05:27
2	TC Clean	5.39	8.81	3.42	49.82	07:17
3	TC Clean	1.94	5.58	3.64	49.82	07:04
4	TC Clean	1.93	5.53	3.60	49.84	07:02

Sample Type: Clean — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/11/15 12:40

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.80	4.46	3.66	49.66	05:16

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2	TC Clean	4.24	7.86	3.62	50.13	04:06
3	TC Clean	1.75	5.37	3.62	50.25	03:46
4	TC Clean	1.62	5.16	3.54	50.24	03:48

Sample Type: Clean From Schedule Version 6

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/15 13:02

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.95	4.19	3.25	49.74	05:11
2	TC Clean	4.91	8.40	3.49	50.60	04:00
3	TC Clean	2.28	5.87	3.59	50.40	03:47
4	TC Clean	1.86	5.44	3.58	50.34	03:44

Sample Type: Blank (Creating v1320) From Schedule Version 7

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/11/15 13:23

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	7.01	10.68	3.68	49.53	05:10
2	TC Clean	3.98	7.63	3.65	50.07	03:58
3	TC Clean	1.76	5.38	3.62	50.26	03:47
4	TC Clean	1.43	5.09	3.66	50.10	03:52
5	Reagent Blank	6.99	10.63	3.64	50.08	05:07
6	Acid Blank	1.76	5.53	3.77	49.64	05:30

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.4469 ppm	0.0000 ppm	0.0000%	2019/11/15 13:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4469	4.4691	12.02	15.81	3.79	50.10	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5004 ppm (PASS)	0.0000 ppm	0%	2019/11/15 14:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5004	245.0044	175.77	179.74	3.97	50.15	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/15 14:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.77	12.50	3.73	50.15	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/15 14:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.28	11.96	3.68	50.14	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 11

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	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.2718 ppm (PASS)	0.0000 ppm	0%	2019/11/15 14:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.2718	252.7180	181.01	184.83	3.83	50.15	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.2494 ppm	0.0000 ppm	0.0000%	2019/11/15 15:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2494	2.4936	10.68	14.48	3.81	50.15	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	K1910095-017.08 50x	4.9489 ppm	0.0367 ppm	0.7400%	2019/11/15 15:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9229	49.2294	42.40	46.05	3.65	50.14	10:27
2	TOC	4.9748	49.7480	42.75	46.46	3.71	50.16	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K1910095-018.08 50x	6.0030 ppm	0.0514 ppm	0.8600%	2019/11/15 15:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9667	59.6670	49.48	53.06	3.57	50.17	10:29
2	TOC	6.0393	60.3933	49.98	53.65	3.67	50.17	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K1910157-001.02 25x	4.0567 ppm	0.0000 ppm	0.0000%	2019/11/15 16:21

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0567	40.5670	36.52	40.26	3.74	50.21	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K1910160-001.02	1.6341 ppm	0.0855 ppm	5.2300%	2019/11/15 16:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6946	16.9457	20.48	23.99	3.50	50.21	10:28
2	TOC	1.5736	15.7362	19.66	23.40	3.74	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1910160-002.02	1.3500 ppm	0.0433 ppm	3.2100%	2019/11/15 17:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3806	13.8063	18.35	22.02	3.67	50.22	10:27
2	TOC	1.3193	13.1934	17.94	21.58	3.64	50.22	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1910160-003.01	1.2163 ppm	0.0172 ppm	1.4100%	2019/11/15 17:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2284	12.2845	17.32	20.91	3.59	50.23	10:31
2	TOC	1.2041	12.0414	17.16	20.75	3.59	50.25	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K1910160-003.01 ms	21.5289 ppm	0.0000 ppm	0.0000%	2019/11/15 18:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.5289	215.2886	155.12	158.72	3.60	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7429 ppm (PASS)	0.0000 ppm	0%	2019/11/15 18:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7429	247.4293	177.42	181.03	3.61	50.24	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/15 18:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.97	11.50	3.53	50.27	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1910169-001.08	1.7747 ppm	0.0073 ppm	0.4100%	2019/11/15 18:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7696	17.6955	20.99	24.65	3.66	50.27	10:25
2	TOC	1.7799	17.7987	21.06	24.79	3.73	50.24	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1910169-002.08	3.5395 ppm	0.0386 ppm	1.0900%	2019/11/15 19:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5122	35.1220	32.82	36.70	3.88	50.26	10:26
2	TOC	3.5669	35.6686	33.19	36.76	3.56	50.26	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1910169-003.08	3.5263 ppm	0.0377 ppm	1.0700%	2019/11/15 19:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5530	35.5301	33.10	36.72	3.62	50.26	10:27
2	TOC	3.4997	34.9968	32.74	36.33	3.59	50.26	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1910187-001.03	2.3984 ppm	0.0130 ppm	0.5400%	2019/11/15 20:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4076	24.0760	25.32	29.11	3.78	50.30	10:30
2	TOC	2.3892	23.8918	25.20	28.77	3.57	50.28	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1910187-002.03	0.5055 ppm	0.0070 ppm	1.3800%	2019/11/15 20:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5104	5.1041	12.45	16.08	3.63	50.26	10:28
2	TOC	0.5005	5.0054	12.38	16.05	3.67	50.27	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1910187-003.03	0.5422 ppm	0.0431 ppm	7.9500%	2019/11/15 21:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5117	5.1173	12.46	16.08	3.62	50.26	10:31
2	TOC	0.5727	5.7273	12.87	16.45	3.58	50.26	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1910332-001.01	0.3940 ppm	0.0384 ppm	9.7600%	2019/11/15 21:32

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3668	3.6677	11.47	15.05	3.58	50.27	10:27
2	TOC	0.4211	4.2113	11.84	15.41	3.57	50.27	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1910415-001.01	0.0098 ppm	0.0106 ppm	108.2500%	2019/11/15 22:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0023	0.0230	9.00	12.60	3.60	50.25	10:27
2	TOC	0.0173	0.1733	9.10	12.69	3.59	50.29	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1910545-001.01	1.8523 ppm	0.0385 ppm	2.0800%	2019/11/15 22:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8251	18.2509	21.37	25.07	3.69	50.27	10:32
2	TOC	1.8796	18.7960	21.74	25.24	3.50	50.25	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1910278-001.08	3.2661 ppm	0.0957 ppm	2.9300%	2019/11/15 22:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3338	33.3380	31.61	35.17	3.56	50.28	10:26
2	TOC	3.1984	31.9841	30.69	34.18	3.49	50.25	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2686 ppm (PASS)	0.0000 ppm	0%	2019/11/15 23:25

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

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	Type		#							Time
B	TOC	25 ppm	1	24.2686	242.6855	174.20	177.87	3.67	50.24	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/15 23:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.87	10.59	3.72	50.23	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/15 23:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.26	9.99	3.73	50.23	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.7580 ppm (PASS)	0.0000 ppm	0%	2019/11/16 00:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7580	247.5795	177.52	181.15	3.63	50.25	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K1910278-002.08	0.2897 ppm	0.0752 ppm	25.9600%	2019/11/16 00:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3429	3.4291	11.31	14.96	3.65	50.23	10:29
2	TOC	0.2365	2.3654	10.59	14.37	3.78	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1910473-001.13	6.2195 ppm	0.0283 ppm	0.4600%	2019/11/16 00:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.1995	61.9947	51.06	54.70	3.64	50.20	10:28
2	TOC	6.2395	62.3954	51.34	55.03	3.69	50.22	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K1910473-002.12	6.3251 ppm	0.0117 ppm	0.1800%	2019/11/16 01:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.3169	63.1688	51.86	55.39	3.52	50.22	10:27
2	TOC	6.3334	63.3338	51.97	55.71	3.74	50.27	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K1910473-003.12	0.3568 ppm	0.0176 ppm	4.9300%	2019/11/16 01:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3444	3.4438	11.32	15.12	3.80	50.20	10:28
2	TOC	0.3693	3.6928	11.49	15.22	3.74	50.22	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K1910473-004.12	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 02:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

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1	TOC	0.0000	0.0000	7.93	11.60	3.67	50.20	10:28
2	TOC	0.0000	0.0000	7.22	10.80	3.58	50.21	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1910473-005.12	0.6764 ppm	0.0841 ppm	12.4300%	2019/11/16 02:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7358	7.3581	13.98	17.62	3.64	50.18	10:30
2	TOC	0.6169	6.1692	13.17	16.93	3.76	50.18	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1910473-006.12	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 03:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.73	10.39	3.66	50.20	10:31
2	TOC	0.0000	0.0000	6.66	10.44	3.78	50.19	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1910483-001.01	3.3577 ppm	0.0669 ppm	1.9900%	2019/11/16 03:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4050	34.0495	32.10	35.66	3.56	50.21	10:31
2	TOC	3.3104	33.1037	31.45	35.28	3.83	50.22	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6323 ppm (PASS)	0.0000 ppm	0%	2019/11/16 04:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6323	246.3229	176.66	180.34	3.68	50.21	10:30

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Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 11

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/16 04:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.45	10.17	3.71	50.24	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1910483-003.01	2.3901 ppm	0.0355 ppm	1.4900%	2019/11/16 04:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4153	24.1526	25.38	28.86	3.48	50.20	10:28
2	TOC	2.3650	23.6502	25.04	28.74	3.70	50.23	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1910576-001.01	20.0038 ppm	0.0575 ppm	0.2900%	2019/11/16 05:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.0445	200.4446	145.04	148.74	3.70	50.22	10:30
2	TOC	19.9631	199.6314	144.49	148.32	3.83	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1910331-001.01 100x	8.6865 ppm	0.0435 ppm	0.5000%	2019/11/16 05:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.6557	86.5574	67.74	71.55	3.81	50.23	10:27

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2	TOC	8.7173	87.1732	68.16	71.92	3.77	50.20	10:27

Dilution 1:10 | **Blank Contribution** (TC) 8.9824 (IC) (v1320) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K1910331-002.01 100x	9.2041 ppm	0.0188 ppm	0.2000%	2019/11/16 06:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.2173	92.1732	71.55	75.19	3.64	50.19	10:28
2	TOC	9.1908	91.9080	71.37	75.00	3.63	50.18	10:28

Dilution 1:10 | **Blank Contribution** (TC) 8.9824 (IC) (v1320) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	K1910331-003.01 100x	6.9189 ppm	0.1166 ppm	1.6800%	2019/11/16 06:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.0013	70.0133	56.51	60.25	3.74	50.23	10:26
2	TOC	6.8365	68.3648	55.39	59.06	3.67	50.22	10:27

Dilution 1:10 | **Blank Contribution** (TC) 8.9824 (IC) (v1320) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	34	TOC	K1910561-001.15 10x	12.1977 ppm	0.0334 ppm	0.2700%	2019/11/16 06:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.2213	122.2132	91.94	95.61	3.67	50.22	10:30
2	TOC	12.1740	121.7403	91.62	95.40	3.78	50.21	10:24

Dilution 1:10 | **Blank Contribution** (TC) 8.9824 (IC) (v1320) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	35	TOC	K1910561-002.15	1.3849 ppm	0.1446 ppm	10.4400%	2019/11/16 07:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4871	14.8714	19.08	22.85	3.78	50.22	10:26
2	TOC	1.2827	12.8266	17.69	21.42	3.73	50.23	10:28

Dilution 1:10 | **Blank Contribution** (TC) 8.9824 (IC) | **Method** CAS_salt_010711 | **Calibration** CAS_salt_010711

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(v1320) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	36	TOC	K1910561-003.14 2x	4.2701 ppm	0.1282 ppm	3.0000%	2019/11/16 07:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3608	43.6077	38.58	42.30	3.72	50.20	10:28
2	TOC	4.1794	41.7942	37.35	40.99	3.63	50.21	10:27

Dilution: 1:10
Blank Contribution: (TC) 8.9824 (IC) (v1320)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K1910572-001.16	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 08:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.22	10.80	3.57	50.25	10:28
2	TOC	0.0000	0.0000	6.60	10.17	3.57	50.28	10:26

Dilution: 1:10
Blank Contribution: (TC) 8.9824 (IC) (v1320)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1910572-001.16 ms	25.0218 ppm	0.0000 ppm	0.0000%	2019/11/16 08:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.0218	250.2182	178.83	182.43	3.60	50.26	10:32

Dilution: 1:10
Blank Contribution: (TC) 8.9824 (IC) (v1320)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2149 ppm (PASS)	0.0000 ppm	0%	2019/11/16 09:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2149	242.1493	173.83	177.36	3.53	50.24	10:31

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/16 09:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.62	10.33	3.71	50.28	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.12	9.77	3.65	50.22	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.4262 ppm (PASS)	0.0000 ppm	0%	2019/11/16 09:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.4262	244.2619	175.27	178.87	3.61	50.21	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 14

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1910572-002.16	0.0031 ppm	0.0044 ppm	141.4200%	2019/11/16 10:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

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1	TOC	0.0063	0.0628	9.02	12.56	3.53	50.19	10:26
2	TOC	0.0000	0.0000	8.21	11.78	3.57	50.21	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample

From Schedule Version 15

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K1910572-003.15	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 10:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.12	10.60	3.48	50.21	10:27
2	TOC	0.0000	0.0000	7.16	10.64	3.49	50.21	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K1910572-004.15	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 11:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.62	10.19	3.57	50.23	10:28
2	TOC	0.0000	0.0000	6.68	10.42	3.74	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K1910572-005.15	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 11:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.56	10.22	3.66	50.27	10:29
2	TOC	0.0000	0.0000	6.90	10.35	3.45	50.27	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K1910572-006.16	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 11:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.22	11.93	3.70	50.25	10:30
2	TOC	0.0000	0.0000	8.40	12.04	3.64	50.25	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1910572-008.15	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 12:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.44	11.97	3.53	50.25	10:27
2	TOC	0.0000	0.0000	8.27	11.78	3.51	50.25	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1910147-001.05	2.6001 ppm	0.0141 ppm	0.5400%	2019/11/16 12:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6100	26.1001	26.70	30.36	3.66	50.25	10:31
2	TOC	2.5901	25.9013	26.56	30.27	3.71	50.25	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1910147-002.05	2.6326 ppm	0.0141 ppm	0.5300%	2019/11/16 13:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6426	26.4257	26.92	30.45	3.53	50.24	10:30
2	TOC	2.6227	26.2268	26.78	30.30	3.52	50.28	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.7056 ppm (PASS)	0.0000 ppm	0%	2019/11/16 13:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.7056	237.0564	170.38	173.90	3.53	50.25	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC

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met.	(v4)	(v30)

Sample Type: Check Standard --> CCB From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/16 14:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.11	9.76	3.65	50.27	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 15

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1910147-006.04	3.0222 ppm	0.0485 ppm	1.6100%	2019/11/16 14:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0565	30.5654	29.73	33.30	3.57	50.30	10:30
2	TOC	2.9879	29.8789	29.26	32.89	3.63	50.27	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1910147-007.04	4.4869 ppm	0.1435 ppm	3.2000%	2019/11/16 14:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5884	45.8838	40.13	43.86	3.74	50.25	10:26
2	TOC	4.3854	43.8537	38.75	42.61	3.86	50.27	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1910199-001.04	1.8117 ppm	0.0221 ppm	1.2200%	2019/11/16 15:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7961	17.9607	21.17	24.95	3.77	50.27	10:26
2	TOC	1.8273	18.2730	21.39	25.08	3.70	50.32	10:25

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Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	51	TOC	K1910199-002.04	1.5258 ppm	0.0105 ppm	0.6900%	2019/11/16 15:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5184	15.1837	19.29	22.78	3.49	50.25	10:29
2	TOC	1.5333	15.3325	19.39	22.89	3.50	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	52	TOC	K1910199-003.04	1.2318 ppm	0.0092 ppm	0.7400%	2019/11/16 16:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2254	12.2535	17.30	20.69	3.39	50.26	10:27
2	TOC	1.2383	12.3832	17.39	20.92	3.53	50.29	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	53	TOC	K1910199-004.04	1.3880 ppm	0.0127 ppm	0.9200%	2019/11/16 16:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3970	13.9698	18.46	22.10	3.63	50.25	10:25
2	TOC	1.3790	13.7901	18.34	21.88	3.54	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K1910199-007.04	1.8976 ppm	0.0515 ppm	2.7100%	2019/11/16 17:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9340	19.3396	22.11	25.67	3.56	50.25	10:30
2	TOC	1.8612	18.6119	21.62	25.11	3.50	50.22	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K1910199-008.04	1.8928 ppm	0.0022 ppm	0.1200%	2019/11/16 17:36

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8943	18.9433	21.84	25.41	3.57	50.24	10:28
2	TOC	1.8912	18.9124	21.82	25.38	3.56	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	K1910199-010.04	1.5466 ppm	0.0566 ppm	3.6600%	2019/11/16 18:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5066	15.0659	19.21	22.81	3.60	50.25	10:29
2	TOC	1.5866	15.8658	19.75	23.11	3.36	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K1910254-001.04	2.0643 ppm	0.0000 ppm	0.0000%	2019/11/16 18:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0643	20.6434	22.99	26.69	3.70	50.28	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.9330 ppm (PASS)	0.0000 ppm	0%	2019/11/16 18:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9330	239.3296	171.92	175.42	3.50	50.25	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm	0.0000 ppm	0%	2019/11/16 19:02

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							(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.78	9.45	3.66	50.24	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 15

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 19:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.29	8.80	3.51	50.26	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.5930 ppm (PASS)	0.0000 ppm	0%	2019/11/16 19:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.5930	245.9295	176.40	179.86	3.46	50.26	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 15

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K1910254-002.04	1.6585 ppm	0.0964 ppm	5.8100%	2019/11/16 19:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7267	17.2668	20.70	24.27	3.57	50.28	10:30
2	TOC	1.5904	15.9041	19.78	23.42	3.64	50.25	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC)	CAS_salt_010711	CAS_salt_010711

(v1320) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1910254-003.04	1.0469 ppm	0.0839 ppm	8.0100%	2019/11/16 20:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9876	9.8758	15.69	19.40	3.72	50.25	10:29
2	TOC	1.1062	11.0617	16.49	20.11	3.61	50.24	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1910254-004.04	2.3140 ppm	0.0238 ppm	1.0300%	2019/11/16 20:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3308	23.3084	24.80	28.50	3.69	50.24	10:30
2	TOC	2.2973	22.9725	24.58	27.88	3.30	50.26	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1910254-004.04 ms	27.7911 ppm	0.0000 ppm	0.0000%	2019/11/16 21:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.7911	277.9114	197.63	201.14	3.51	50.25	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	rb	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/16 21:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.64	9.30	3.66	50.26	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1910254-005.04	1.1292 ppm	0.0235 ppm	2.0800%	2019/11/16 21:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1458	11.4580	16.76	20.42	3.66	50.25	10:26
2	TOC	1.1125	11.1251	16.53	20.33	3.79	50.24	10:27

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	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	65	TOC	K1910254-006.04	28.1311 ppm	0.0561 ppm	0.2000%	2019/11/16 22:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0914	280.9138	199.67	203.23	3.56	50.25	10:25
2	TOC	28.1708	281.7079	200.20	204.08	3.88	50.24	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	66	TOC	K1910254-007.04	1.9818 ppm	0.2031 ppm	10.2500%	2019/11/16 22:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1255	21.2548	23.41	27.00	3.59	50.28	10:27
2	TOC	1.8382	18.3820	21.46	24.95	3.49	50.25	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8729 ppm (PASS)	0.0000 ppm	0%	2019/11/16 23:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8729	238.7285	171.51	175.00	3.49	50.24	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/16 23:18

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

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	Type									
D	TOC	0 ppm	1	0.0000	0.0000	6.38	9.91	3.53	50.26	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 15

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1910254-008.04	1.4375 ppm	0.0190 ppm	1.3200%	2019/11/16 23:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4509	14.5090	18.83	22.51	3.68	50.25	10:28
2	TOC	1.4241	14.2409	18.65	22.21	3.56	50.31	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1910299-001.03	7.1545 ppm	0.2045 ppm	2.8600%	2019/11/17 00:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.2991	72.9907	58.53	62.07	3.54	50.24	10:30
2	TOC	7.0099	70.0988	56.57	60.19	3.63	50.26	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1910765-001.01	8.9810 ppm	0.1088 ppm	1.2100%	2019/11/17 00:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.0579	90.5792	70.47	73.94	3.47	50.27	10:31
2	TOC	8.9041	89.0412	69.42	73.00	3.58	50.23	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	K1910765-002.01	13.5412 ppm	0.1337 ppm	0.9900%	2019/11/17 00:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.6357	136.3574	101.54	105.14	3.60	50.23	10:28
2	TOC	13.4467	134.4673	100.26	104.04	3.78	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1910765-003.01	22.6620 ppm	0.0885 ppm	0.3900%	2019/11/17 01:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.5994	225.9944	162.39	166.08	3.69	50.23	10:26
2	TOC	22.7247	227.2466	163.24	166.80	3.56	50.12	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1910765-004.01	10.0901 ppm	0.3055 ppm	3.0300%	2019/11/17 01:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.3062	103.0616	78.94	82.74	3.80	50.11	10:30
2	TOC	9.8741	98.7407	76.01	79.77	3.76	50.16	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1910760-001.01	1.1733 ppm	0.0796 ppm	6.7800%	2019/11/17 02:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2296	12.2963	17.33	20.90	3.57	50.08	10:28
2	TOC	1.1171	11.1707	16.57	20.17	3.61	50.20	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1910760-001.01 ms	25.8462 ppm	0.0000 ppm	0.0000%	2019/11/17 02:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.8462	258.4622	184.42	187.91	3.49	50.11	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/17 03:05

Rep	Base			Adjusted		Baseline	Pressure	Run

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#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	0.0000	0.0000	6.30	9.69	3.39	50.09	10:28
2	TOC	0.0000	0.0000	5.64	9.26	3.62	50.11	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9824 (IC) (v1320)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.6725 ppm (PASS)	0.0000 ppm	0%	2019/11/17 03:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6725	236.7250	170.15	173.77	3.62	50.15	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 15

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/17 03:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.73	9.31	3.58	50.18	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1319	0.9217	1.0210	0.0000	0.0000	0.0000	2019/11/13 13:58	Fusion1 (Fusion1)
v1320	2.3307	1.7570	0.0000	0.0000	0.0000	2019/11/15 13:57	Fusion1 (Fusion1)

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Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min

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SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/17 04:03

StarLIMS Run: 660112, 660113, 660114, 660115

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-83A

21 % H3PO4: 11-GEN-05-82G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BVP	Date Analyzed: 11/15/19
Reviewed By:	Date Reviewed: 11/19/19

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Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1932283; 1932284; 1932352

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2320 (252432)

General Set Information: There were seventeen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1932284006 was analyzed and reported from a 1:10 dilution. Field sample 1932284007 was analyzed and reported from a 1:100 dilution. Field samples 1932284008/09/10 and 1932352003 were analyzed and reported from 1:1,000 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 685442) was less than 1/2 the CRDL. The recovery for the LCS (685439) was within acceptable parameters.

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MS/MSD Analysis: MS/MSD was performed on samples 1932352005/06 (Client ID: 50WW23-191113). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 685440) is reported from the analysis of the Laboratory Control Sample (LCS – 685439) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafile 22NOV19D07.

Thomas Bosch November 25, 2019
Analyst Date

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ANALYTICAL REPORT

Report Date: November 26, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1932283**
Project ID: HS19110615
Purchase Order: HS19110615
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_111219_AIX	1932283001	11/12/19	11/14/19	HS19110615-02

ANALYTICAL REPORT

Workorder: 34-1932283
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_111219_AIX**	Sampling Site: HS19110615-02	Collected: 11/12/2019
Lab ID: 1932283001	Media: 125 mL Nalgene	Received: 11/14/2019
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2320 (HBN: 252432)	**%Solids:** NA
	Analyzed: 11/22/2019 09:12	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 252432)

Field sample 1932284006 was analyzed and reported from a 1:10 dilution. Field sample 1932284007 was analyzed and reported from a 1:100 dilution. Field samples 1932284008/09/10 and 1932352003 were analyzed and reported from 1:1,000 dilutions. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 11/25/2019 12:25	/S/ Stephen Brose 11/26/2019 07:45

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1932283
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1932283

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2320 (HBN: 252432)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 685442
Analyzed: 11/22/2019 08:51
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 685439
Analyzed: 11/22/2019 08:23
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	2.92	3.00	97.3	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1932352004	**MS:**	1932352005	**MSD:**	1932352006
Analyzed:	11/22/2019 12:55	**Analyzed:**	11/22/2019 13:09	**Analyzed:**	11/22/2019 13:23
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.29	3	110	78.8	123.8	3.05	102	7.54	0.0	20.0

Comments

Field sample 1932284006 was analyzed and reported from a 1:10 dilution. Field sample 1932284007 was analyzed and reported from a 1:100 dilution. Field samples 1932284008/09/10 and 1932352003 were analyzed and reported from 1:1,000 dilutions. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
11/25/2019 12:27	11/26/2019 07:45

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

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10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

1932283

Subcontract Chain of Custody

18698 / #2

SAMPLING STATE: **Dept of Defense** **COC ID:** **12609**

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19110615
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19110615-02**	**LH18/24-SP650_111219_AIX**	**Water**	**12 Nov 2019 14:00**
	SUB_Perch-6850			21 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 11/13/19 1800

Received By: _____ Date/Time: 11/14/19 09:08

Cooler ID(s): _____ Temperature(s): _____

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ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19110615-02	***Split:***	**Workorder ID:** 1932283	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives**

m	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850_DoD QSM	COOL
	11/12/2019 14:00	LH18/24-SP650_111219_AIX	1932283001		Water	A	1	A	

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
nTassell, Tami	11/14/2019 09:08	ALS Sample Receiving	Sample Login
Tamika Tassell	11-14-19 14:40	Lab	Storage
R.33.1	11.20.19/14:00	T. Beach	CLP4 analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

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ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: _____

Date/Time of Receipt: 11/14/19 09:08

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Cntr/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA	VOA Headspace Present?	Yes/No/NA
	Frozen/Melted/NA		

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	Great	2 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: Jaylynn (Signature) Jaylynn Johnson (Printed Name) 11/14/19 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

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ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 13NOV19
ACTWGT: 18.95 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19110615/644/646 - RJ

FedEx Express

TRK# 0201 1251 0291 7712

THU - 14 NOV 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

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Batch Worklist

Batch: ELMS/ 2320 **Created:** 11/22/2019 07:40 **Instrument:** **HBN:** 252432

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1932283 [ENV_LVL4]
Workorder: 1932284 [ENV_LVL4]
Workorder: 1932352 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	685438	CCV for HBN 252432 [ELMS/2320]				CCV	3		E685041C3Q	5311		11/27/2019	
2	685439	LCS for HBN 252432 [ELMS/2320]				LCS	3		E6850Q413Q	5311		11/27/2019	
3	685440	RLVS for HBN 252432 [ELMS/2320				RLVS	3		E685041C3Q	5311		11/27/2019	
4	685441	ICS for HBN 252432 [ELMS/2320]				ICS	3		E6850..D3Q	5311		11/27/2019	
5	685442	LMB for HBN 252432 [ELMS/2320]				LMB	3		E6850Q413Q	5311		11/27/2019	
6	1932283001	LH18/24-SP650_111219_AIX				SAMPLE	3	1932283001-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
7	1932284001	50WW29-191111				SAMPLE	3	1932284001-A	E6850Q41.3	5480	12/9/2019	11/27/2019	
8	1932284002	50WW10-191111				SAMPLE	3	1932284002-A	E6850Q41.3	5480	12/9/2019	11/27/2019	
9	1932284003	50WW09-191111				SAMPLE	3	1932284003-A	E6850Q41.3	5480	12/9/2019	11/27/2019	
10	1932284004	50WW09-191111-FD				SAMPLE	3	1932284004-A	E6850Q41.3	5480	12/9/2019	11/27/2019	
11	1932284005	50WW22-191112				SAMPLE	3	1932284005-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
12	1932284006	50WW08-191112				SAMPLE	3	1932284006-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
13	1932284007	50WW06-191112				SAMPLE	3	1932284007-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
14	1932284008	50WW11-191112				SAMPLE	3	1932284008-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
15	1932284009	50WW12-191112				SAMPLE	3	1932284009-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
16	685443	CCV for HBN 252432 [ELMS/2320]				CCV	3		E685041C3Q	5311		11/27/2019	
17	1932284010	50WW12-191112-FD				SAMPLE	3	1932284010-A	E6850Q41.3	5480	12/10/2019	11/27/2019	
18	1932352001	50WW16-191113				SAMPLE	3	1932352001-A	E6850Q41.3	5480	12/11/2019	12/2/2019	
19	1932352002	50WW14-191113				SAMPLE	3	1932352002-A	E6850Q41.3	5480	12/11/2019	12/2/2019	
20	1932352003	50WW13-191113				SAMPLE	3	1932352003-A	E6850Q41.3	5480	12/11/2019	12/2/2019	
21	1932352004	50WW23-191113				SAMPLE	3	1932352004-A	E6850Q41.3	5480	12/11/2019	12/2/2019	
22	1932352005	50WW23-191113 MS				MS	3	1932352005-A	E6850Q413Q	5480		11/27/2019	
23	1932352006	50WW23-191113 MSD				MSD	3	1932352006-A	E6850Q413Q	5480		11/27/2019	
24	685444	CCV for HBN 252432 [ELMS/2320]				CCV	3		E685041C3Q	5311		11/27/2019	

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00960907

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ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

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Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1932283 (001); 1932284 (001-10); 1932352 (001-06)
ELMS Batch/HBN ID: 2320 (252432)
Prep Date: 11/20/2019 Analysis Date: 11/22/2019 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\NOV\22NOV19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: **LCMS04** Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 685439; Target = 3.0µg/L. ASTM type II water was used for LMB 685442.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on samples 1932352005/06 (Client ID's: 50WW23-191113. 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1932284006 was analyzed and reported from a 1:10 dilution. Field sample 1932284007 was analyzed and reported from a 1:100 dilution. Field samples 1932284008/09/10 and 1932352003 were analyzed and reported from 1:1,000 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\NOV\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\252432-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 685440) is reported from the analysis of the Laboratory Control Sample (LCS – 685439) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafile 22NOV19D07.

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5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS 2320 HBN: 252432 **Sample Set IDs if Applicable:** 1932283/1932284/1932352	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

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STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L	
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL	
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020	
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes	
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

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STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

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STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK			Description - 6850 WKG Std 100.ug/L
Standard: 49948	**Created By:** Thomas Bosch	**Amount:** 10 mL	
MFG: ALS/SLC	**Create Date:** 09/20/2019 03:09PM	**Expires:** 07/25/2020	
MFG Lot: TNB: 09/20/2019		**Usable:** Yes	
Pipette ID: Not Provided		**Lab Lot:** CLO4 WRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

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STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 43659
MFG: AccuStandard
MFG Lot: 218065075
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 09/17/2018 09:09AM

Amount: 100 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermdt AccStd 10.ug/mL
Standard: 49947	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

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STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK			Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL	
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020	
MFG Lot: CP-0860		**Usable:** Yes	
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK	

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

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STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 05/06/2019 03:05PM **Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 9001 ISO 17025 ISO GUIDE 34

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

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Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification: ≥ 98%

MW*: 130.44
** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Labeled CAS Number: NA

$NaCl^{18}O_4$

Unlabeled CAS Number: 7601-89-0

Chemical Formula: NaCl*O4

Storage: Store at room temperature away from light and moisture.
Stability: See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

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ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

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Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	685438 CCV@25	Vial 71	1	Control	1	1.18387e6	7.449	24.67940
*	685439 QC@3.0	Vial 72	1	Control	2	1.54064e5	7.386	2.91840
*	685441 ICS@3.0	Vial 73	1	Control	3	8.60264e4	7.254	2.21034
*	685442 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1932283001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	1932284001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	1932284002	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	1932284003	Vial 78	1	Sample	8	3.39907e5	7.111	6.60218
*	1932284004	Vial 79	1	Sample	9	3.51318e5	7.127	7.40859
*	1932284005	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1932284006 10X	Vial 81	1	Sample	11	3.45930e5	7.327	83.07076
*	1932284008 1K	Vial 83	1	Sample	13	3.33136e5	7.511	7986.47256
*	1932284009 1K	Vial 84	1	Sample	14	2.24426e6	7.566	4.73695e4
*	685443 CCV@25	Vial 71	1	Control	15	1.08713e6	7.452	23.36377
*	1932284010 1K	Vial 85	1	Sample	16	2.57913e6	7.503	4.25987e4
*	1932352001	Vial 86	1	Sample	17	8.45132e4	7.334	1.64039
*	1932352002	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	1932352003 1K	Vial 88	1	Sample	19	2.46586e5	7.620	4887.02652
*	1932352004	Vial 89	1	Sample	20	0.00000	0.000	0.00000
*	1932352005 MS	Vial 90	1	Sample	21	1.31208e5	7.056	3.28992
*	1932352006 MSD	Vial 91	1	Sample	22	1.21739e5	6.973	3.05088
*	1932284007 100	Vial 92	1	Sample	23	2.00097e6	7.508	4344.98594
*	685444 CCV@25	Vial 71	1	Control	24	1.01321e6	7.528	23.41845

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	685438 CCV@25	Vial 71	1	Control	1	1.64125e5	7.468	5.00000
*	685439 QC@3.0	Vial 72	1	Control	2	1.94166e5	7.409	5.00000
*	685441 ICS@3.0	Vial 73	1	Control	3	1.42348e5	7.286	5.00000
*	685442 LMB	Vial 74	1	Control	4	1.76890e5	7.423	5.00000
*	1932283001	Vial 75	1	Sample	5	1.50033e5	7.238	5.00000
*	1932284001	Vial 76	1	Sample	6	1.75095e5	7.088	5.00000
*	1932284002	Vial 77	1	Sample	7	1.69527e5	7.355	5.00000
*	1932284003	Vial 78	1	Sample	8	1.89098e5	7.138	5.00000
*	1932284004	Vial 79	1	Sample	9	1.73764e5	7.145	5.00000
*	1932284005	Vial 80	1	Sample	10	1.68474e5	7.001	5.00000
*	1932284006 10X	Vial 81	1	Sample	11	1.52150e5	7.348	50.00000
*	1932284008 1K	Vial 83	1	Sample	13	1.52567e5	7.535	5000.00000
*	1932284009 1K	Vial 84	1	Sample	14	1.48043e5	7.591	5000.00000
*	685443 CCV@25	Vial 71	1	Control	15	1.60069e5	7.476	5.00000
*	1932284010 1K	Vial 85	1	Sample	16	1.92723e5	7.534	5000.00000
*	1932352001	Vial 86	1	Sample	17	1.86562e5	7.360	5.00000
*	1932352002	Vial 87	1	Sample	18	1.64477e5	7.141	5.00000
*	1932352003 1K	Vial 88	1	Sample	19	1.85984e5	7.653	5000.00000
*	1932352004	Vial 89	1	Sample	20	1.67521e5	7.041	5.00000
*	1932352005 MS	Vial 90	1	Sample	21	1.46896e5	7.077	5.00000
*	1932352006 MSD	Vial 91	1	Sample	22	1.46852e5	6.990	5.00000
*	1932284007 100	Vial 92	1	Sample	23	1.46105e5	7.536	500.00000
*	685444 CCV@25	Vial 71	1	Control	24	1.48803e5	7.553	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	685438 CCV@25	Vial 71	1	Control	1	3.62557e5	7.464	24.77392
*	685439 QC@3.0	Vial 72	1	Control	2	4.98007e4	7.424	3.00461

RIGHT SOLUTIONS | RIGHT PARTNER

Batch Report: C:\HPCHEM\1\DATA\22NOV19D\22NOV19S.B

#	*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
	*	685441 ICS@3.0	Vial 73	1	Control	3	3.55197e4	7.263	2.91970
	*	685442 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
	*	1932283001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
	*	1932284001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
	*	1932284002	Vial 77	1	Sample	7	0.00000	0.000	0.00000
	*	1932284003	Vial 78	1	Sample	8	1.13127e5	7.120	7.10077
	*	1932284004	Vial 79	1	Sample	9	1.17024e5	7.135	7.98367
	*	1932284005	Vial 80	1	Sample	10	0.00000	0.000	0.00000
	*	1932284006 10X	Vial 81	1	Sample	11	1.11676e5	7.348	86.89341
	*	1932284008 1K	Vial 83	1	Sample	13	1.02889e5	7.529	7994.43215
	*	1932284009 1K	Vial 84	1	Sample	14	6.95779e5	7.584	4.83298e4
	*	685443 CCV@25	Vial 71	1	Control	15	3.40343e5	7.472	23.92121
	*	1932284010 1K	Vial 85	1	Sample	16	7.87731e5	7.521	4.28684e4
	*	1932352001	Vial 86	1	Sample	17	2.73332e4	7.346	1.65533
	*	1932352002	Vial 87	1	Sample	18	0.00000	0.000	0.00000
	*	1932352003 1K	Vial 88	1	Sample	19	7.88807e4	7.651	5031.65245
	*	1932352004	Vial 89	1	Sample	20	0.00000	0.000	0.00000
	*	1932352005 MS	Vial 90	1	Sample	21	4.82831e4	7.074	3.88198
	*	1932352006 MSD	Vial 91	1	Sample	22	4.25685e4	6.990	3.41115
	*	1932284007 100	Vial 92	1	Sample	23	6.21132e5	7.526	4434.86232
	*	685444 CCV@25	Vial 71	1	Control	24	3.26599e5	7.551	24.62821

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	685438 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	685439 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	685441 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	685442 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1932283001	CLO4-AQN	1	Sample		
6	Vial 76	1932284001	CLO4-AQN	1	Sample		
7	Vial 77	1932284002	CLO4-AQN	1	Sample		
8	Vial 78	1932284003	CLO4-AQN	1	Sample		
9	Vial 79	1932284004	CLO4-AQN	1	Sample		
10	Vial 80	1932284005	CLO4-AQN	1	Sample		
11	Vial 81	1932284006 10X	CLO4-AQN	1	Sample		
12	Vial 82	1932284007 1K	CLO4-AQN	1	Sample		
13	Vial 83	1932284008 1K	CLO4-AQN	1	Sample		
14	Vial 84	1932284009 1K	CLO4-AQN	1	Sample		
15	Vial 71	685443 CCV@25	CLO4-AQN	1	Ctrl Samp		
16	Vial 85	1932284010 1K	CLO4-AQN	1	Sample		
17	Vial 86	1932352001	CLO4-AQN	1	Sample		
18	Vial 87	1932352002	CLO4-AQN	1	Sample		
19	Vial 88	1932352003 1K	CLO4-AQN	1	Sample		
20	Vial 89	1932352004	CLO4-AQN	1	Sample		
21	Vial 90	1932352005 MS	CLO4-AQN	1	Sample		
22	Vial 91	1932352006 MSD	CLO4-AQN	1	Sample		
23	Vial 92	1932284007 100	CLO4-AQN	1	Sample		
24	Vial 71	685444 CCV@25	CLO4-AQN	1	Ctrl Samp		

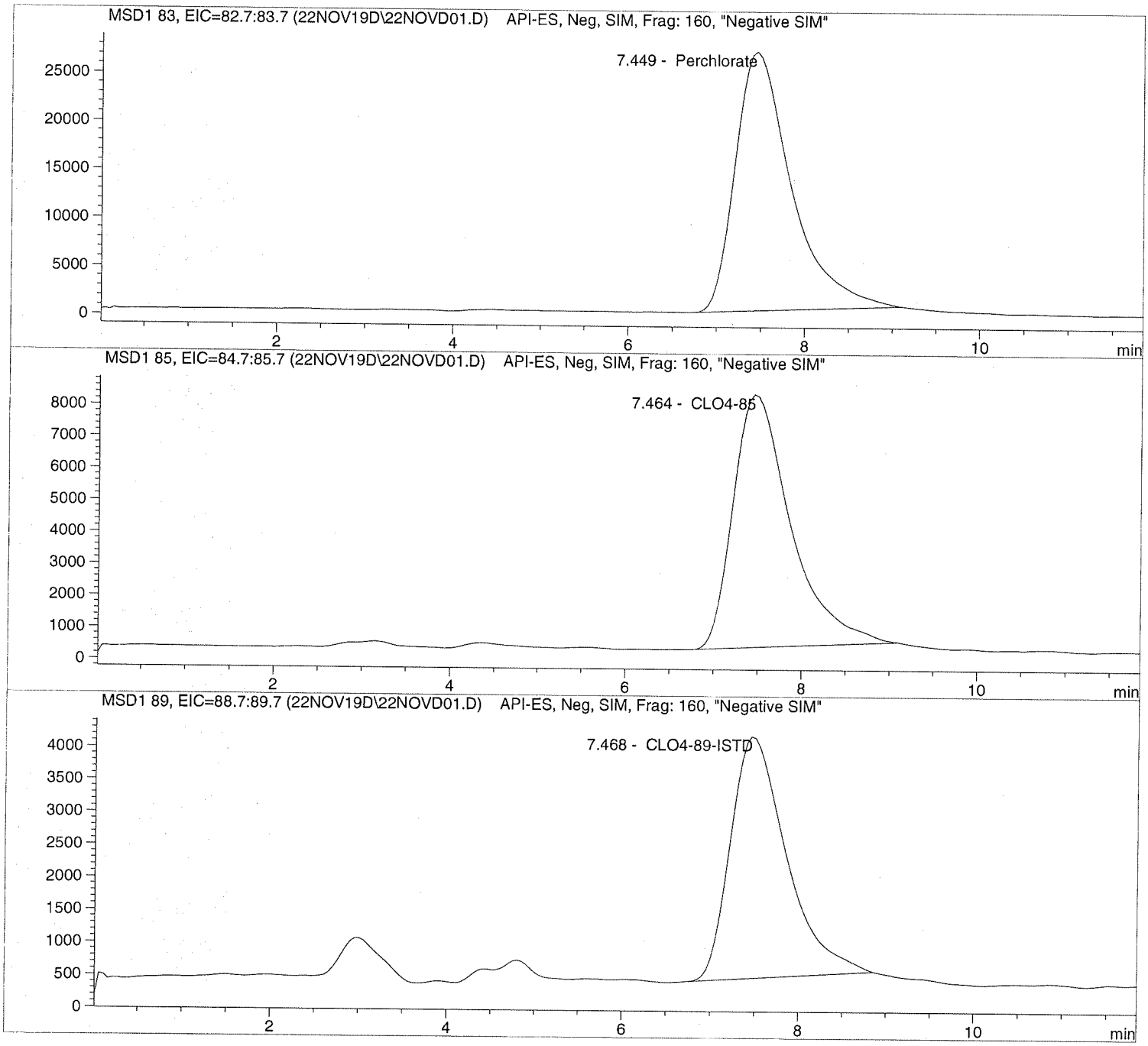
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD01.D Sample Name: 685438 CCV@25

Injection Date:	11/22/2019 08:07:39	Seq Line:	1
Sample Name:	685438 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD01.D Sample Name: 685438 CCV@25

Injection Date:	11/22/2019 08:07:39	Seq Line:	1
Sample Name:	685438 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.449	PBA	1183865.7	24.6794	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.464	PBA	362557.4	24.7739	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.468	PBA	164125.4	5.0000	CLO4-89-ISTD

*** End of Report ***

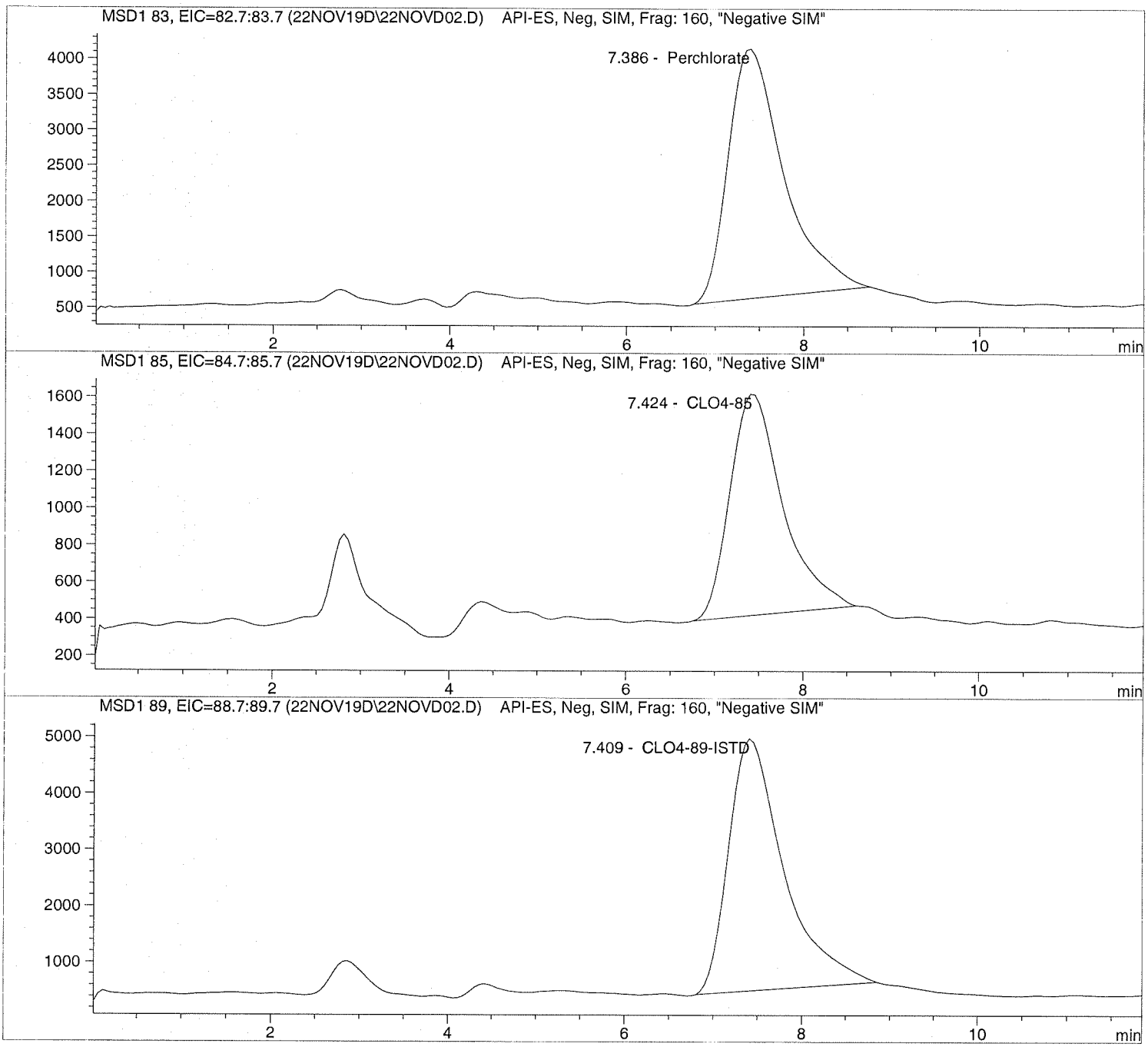
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD02.D Sample Name: 685439 QC@3.0

Injection Date:	11/22/2019 08:23:13	Seq Line:	2
Sample Name:	685439 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD02.D Sample Name: 685439 QC@3.0

Injection Date:	11/22/2019 08:23:13	Seq Line:	2
Sample Name:	685439 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.386	PBA	154063.9	2.9184	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.424	PBA	49800.7	3.0046	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.409	PBA	194166.2	5.0000	CLO4-89-ISTD

*** End of Report ***

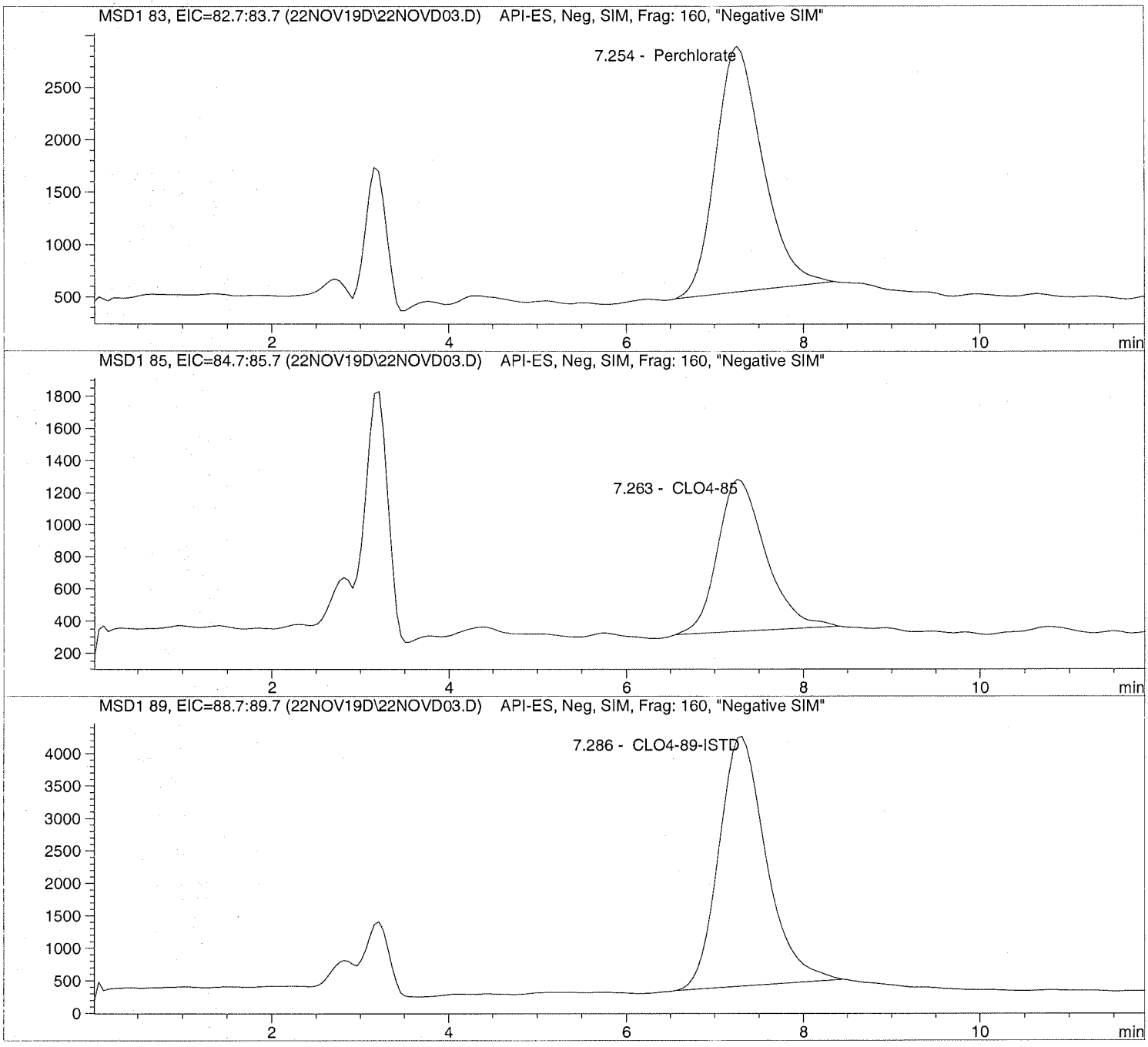
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD03.D Sample Name: 685441 ICS@3.0

Injection Date:	11/22/2019 08:37:06	Seq Line:	3
Sample Name:	685441 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD03.D Sample Name: 685441 ICS@3.0

Injection Date:	11/22/2019 08:37:06	Seq Line:	3
Sample Name:	685441 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.254	PBA	86026.4	2.2103	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.263	BBA	35519.7	2.9197	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.286	PBA	142348.3	5.0000	CLO4-89-ISTD

*** End of Report ***

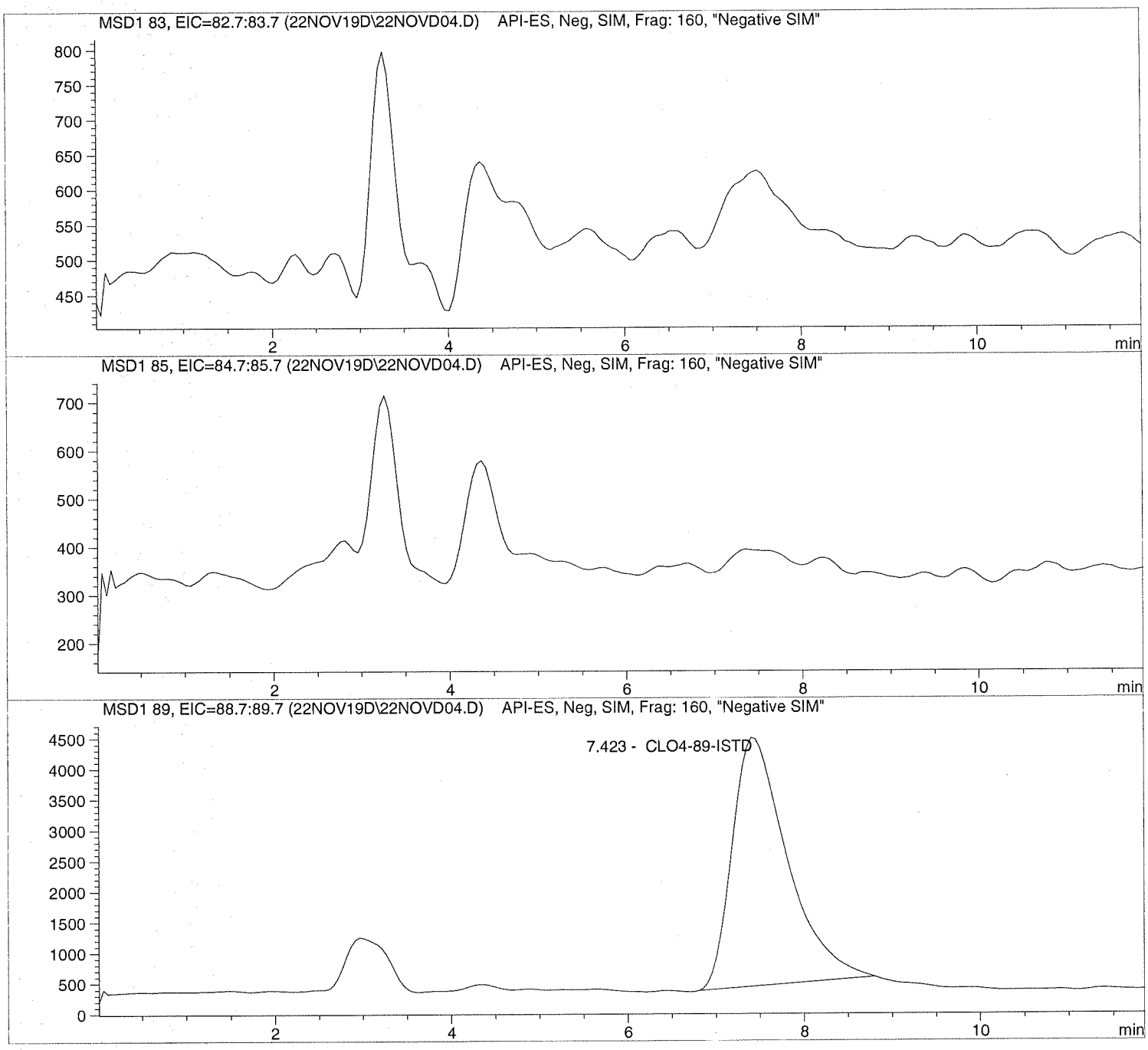
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD04.D Sample Name: 685442 LMB

Injection Date:	11/22/2019 08:51:01	Seq Line:	4
Sample Name:	685442 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD04.D Sample Name: 685442 LMB

Injection Date:	11/22/2019 08:51:01	Seq Line:	4
Sample Name:	685442 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.423	PBA	176890.3	5.0000	CLO4-89-ISTD

*** End of Report ***

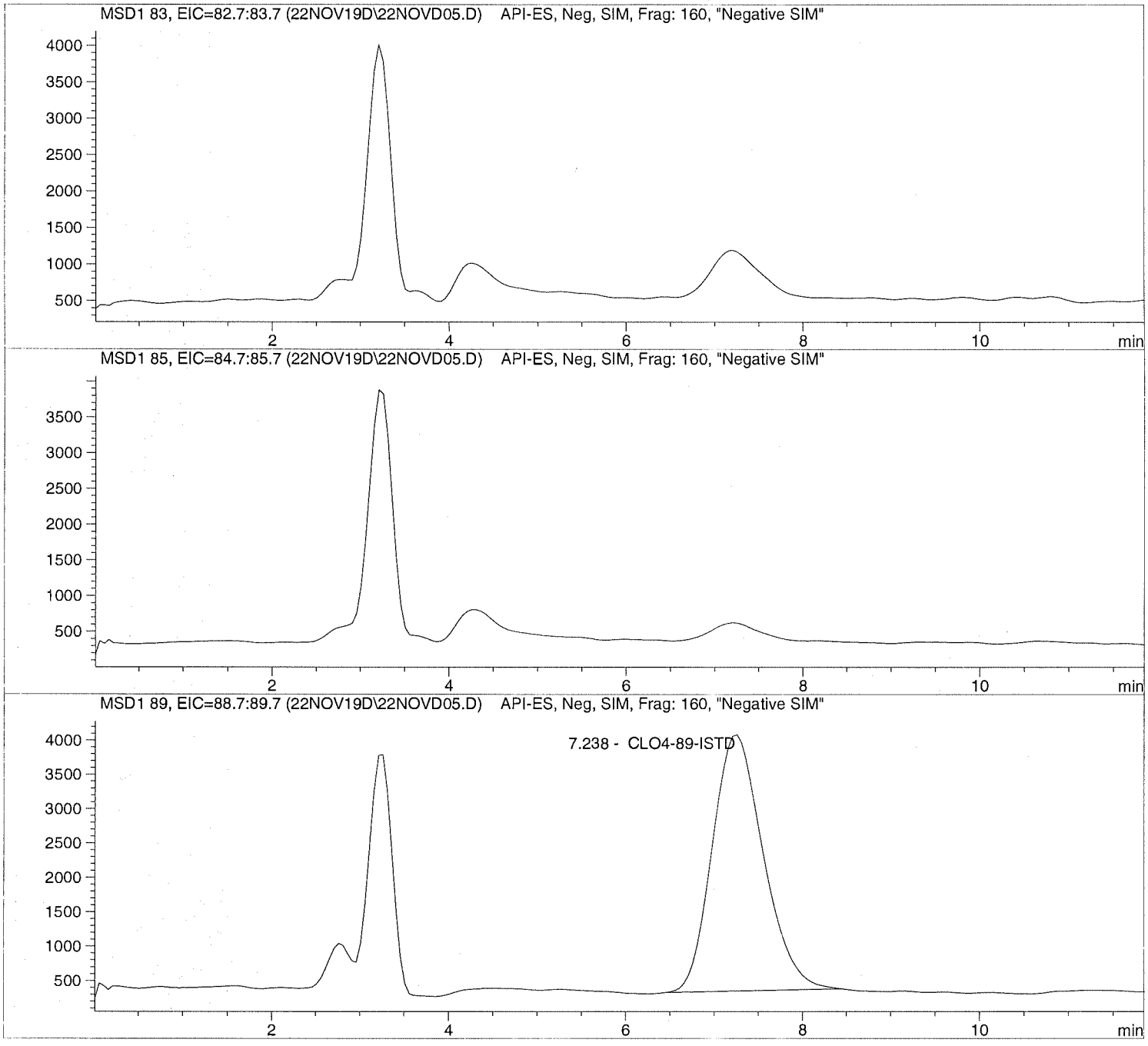
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD05.D Sample Name: 1932283001

Injection Date:	11/22/2019 09:12:41	Seq Line:	5
Sample Name:	1932283001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD05.D Sample Name: 1932283001

Injection Date:	11/22/2019 09:12:41	Seq Line:	5
Sample Name:	1932283001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.238	PBA	150033.3	5.0000	CLO4-89-ISTD

*** End of Report ***

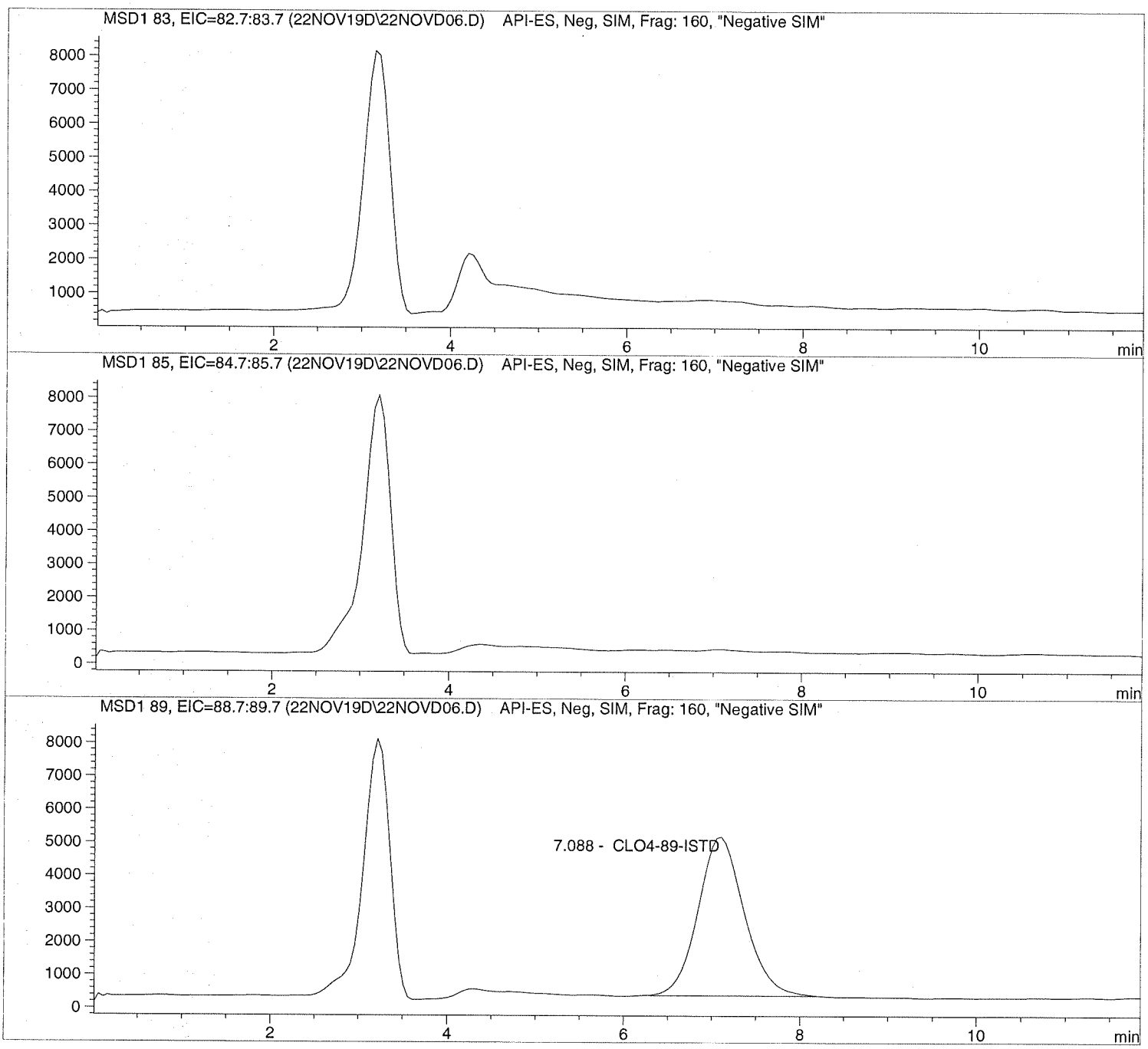
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD06.D Sample Name: 1932284001

Injection Date:	11/22/2019 09:26:34	Seq Line:	6
Sample Name:	1932284001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD06.D Sample Name: 1932284001

Injection Date:	11/22/2019 09:26:34	Seq Line:	6
Sample Name:	1932284001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.088	BBA	175095.0	5.0000	CLO4-89-ISTD

*** End of Report ***

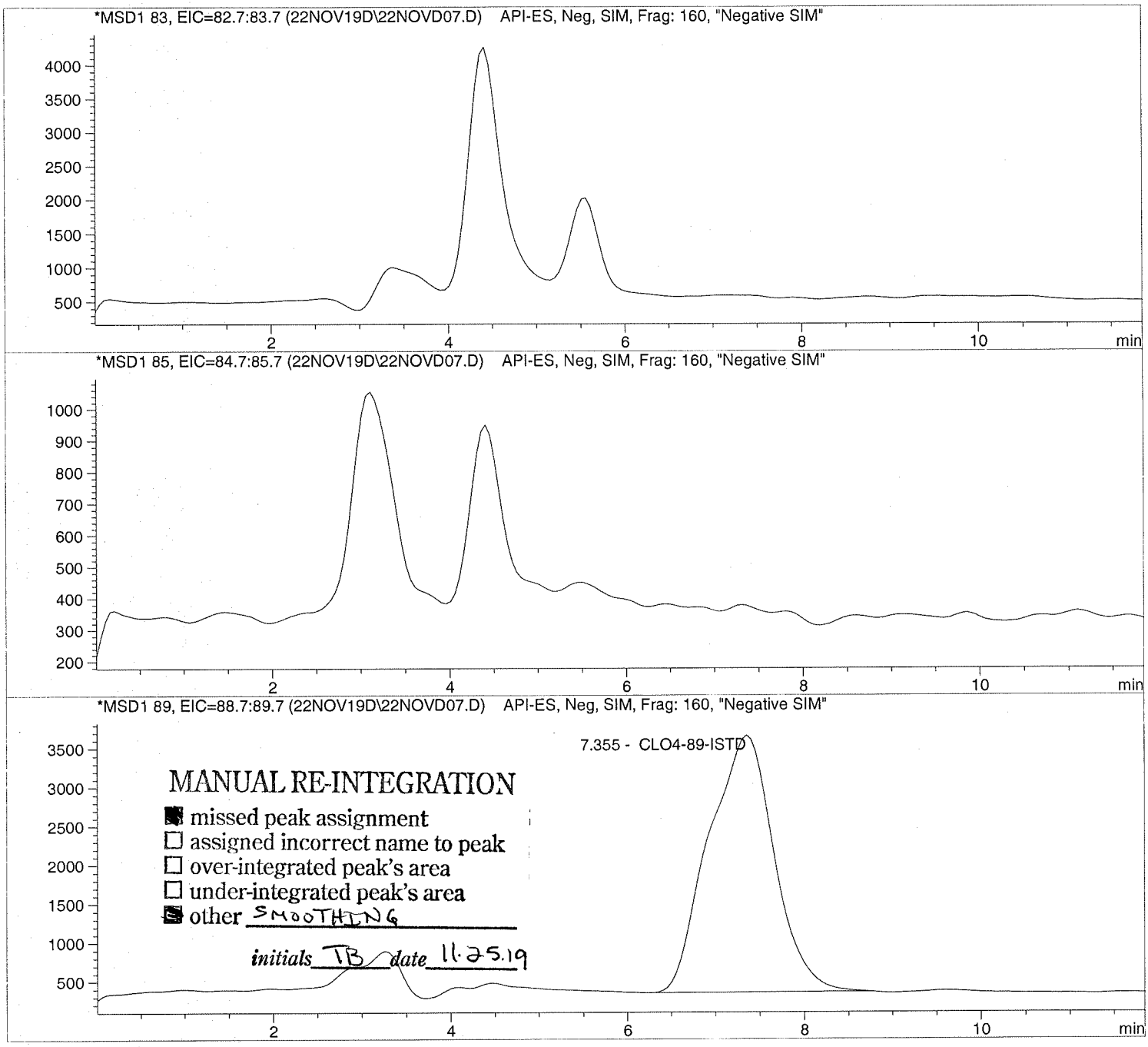
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD07.D Sample Name: 1932284002

Injection Date:	11/22/2019 09:55:02	Seq Line:	7
Sample Name:	1932284002	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD07.D Sample Name: 1932284002

Injection Date:	11/22/2019 09:55:02	Seq Line:	7
Sample Name:	1932284002	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.355	PBA	169526.6	5.0000	CLO4-89-ISTD

*** End of Report ***

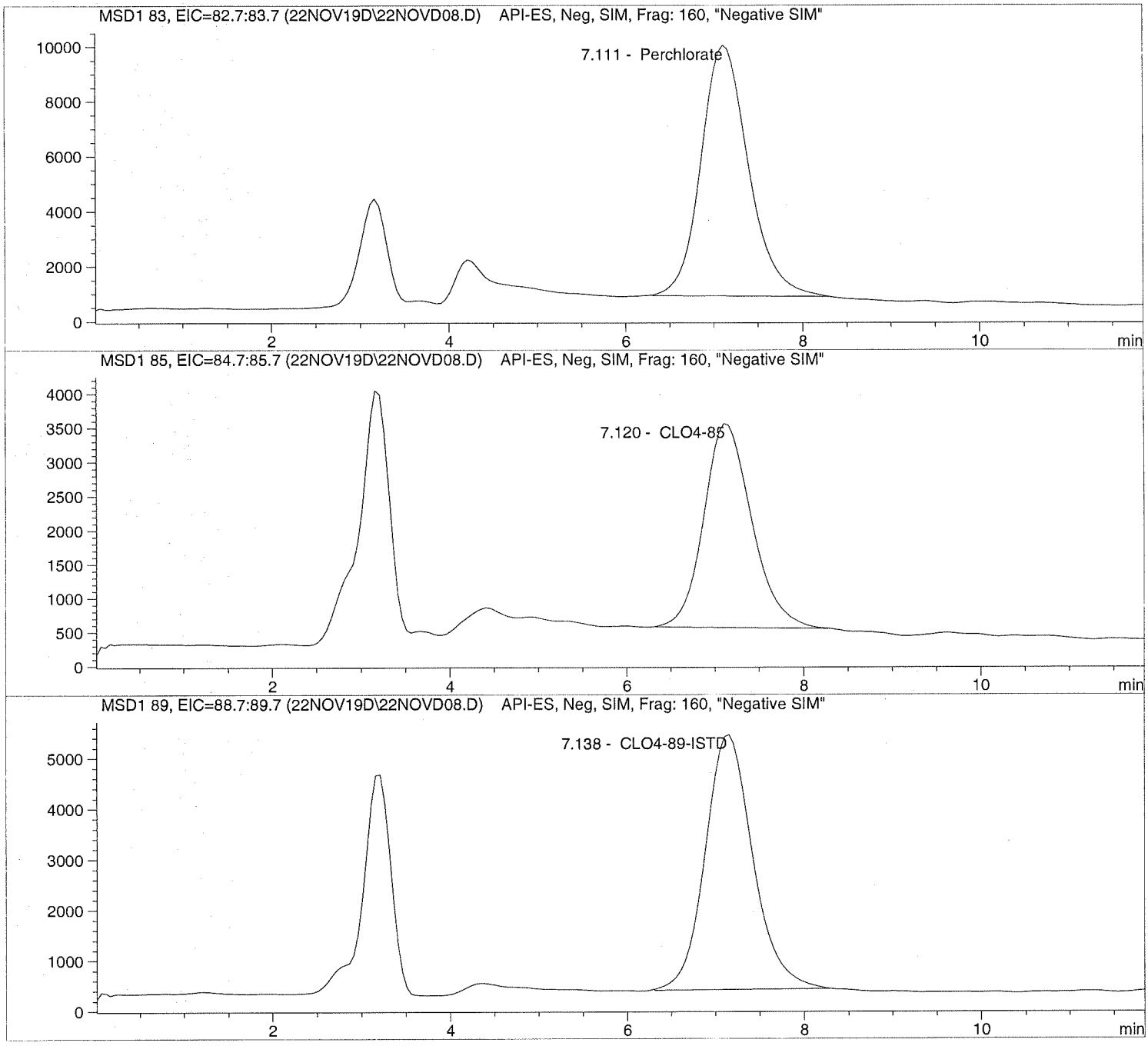
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD08.D Sample Name: 1932284003

Injection Date:	11/22/2019 10:08:56	Seq Line:	8
Sample Name:	1932284003	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD08.D Sample Name: 1932284003

Injection Date:	11/22/2019 10:08:56	Seq Line:	8
Sample Name:	1932284003	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.111	BBA	339906.7	6.6022	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.120	PBA	113127.0	7.1008	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.138	PBA	189097.7	5.0000	CLO4-89-ISTD

*** End of Report ***

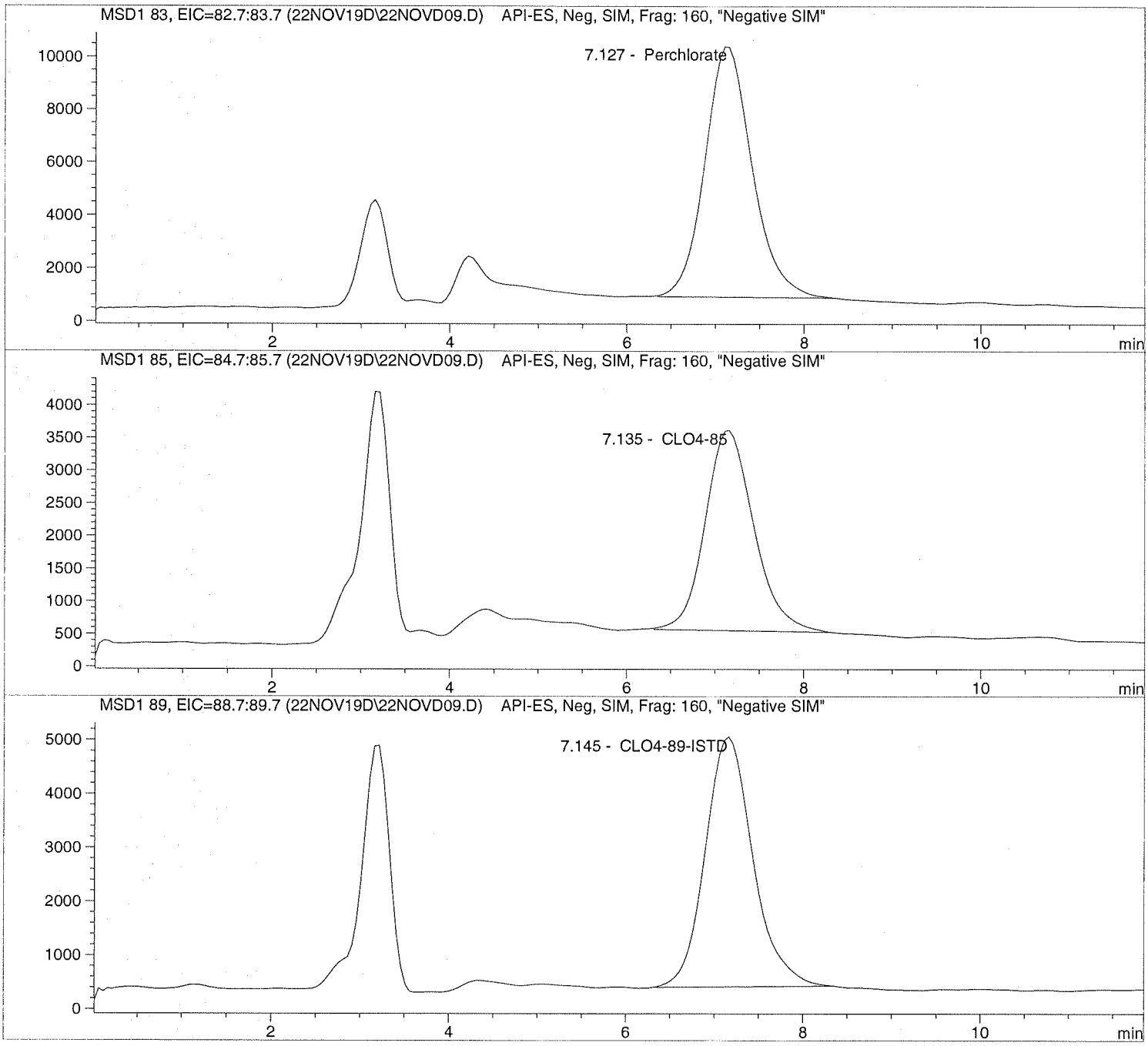
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD09.D Sample Name: 1932284004

Injection Date:	11/22/2019 10:22:49	Seq Line:	9
Sample Name:	1932284004	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD09.D Sample Name: 1932284004

Injection Date:	11/22/2019 10:22:49	Seq Line:	9
Sample Name:	1932284004	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.127	BBA	351317.6	7.4086	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.135	BBA	117024.3	7.9837	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.145	PBA	173763.9	5.0000	CLO4-89-ISTD

*** End of Report ***

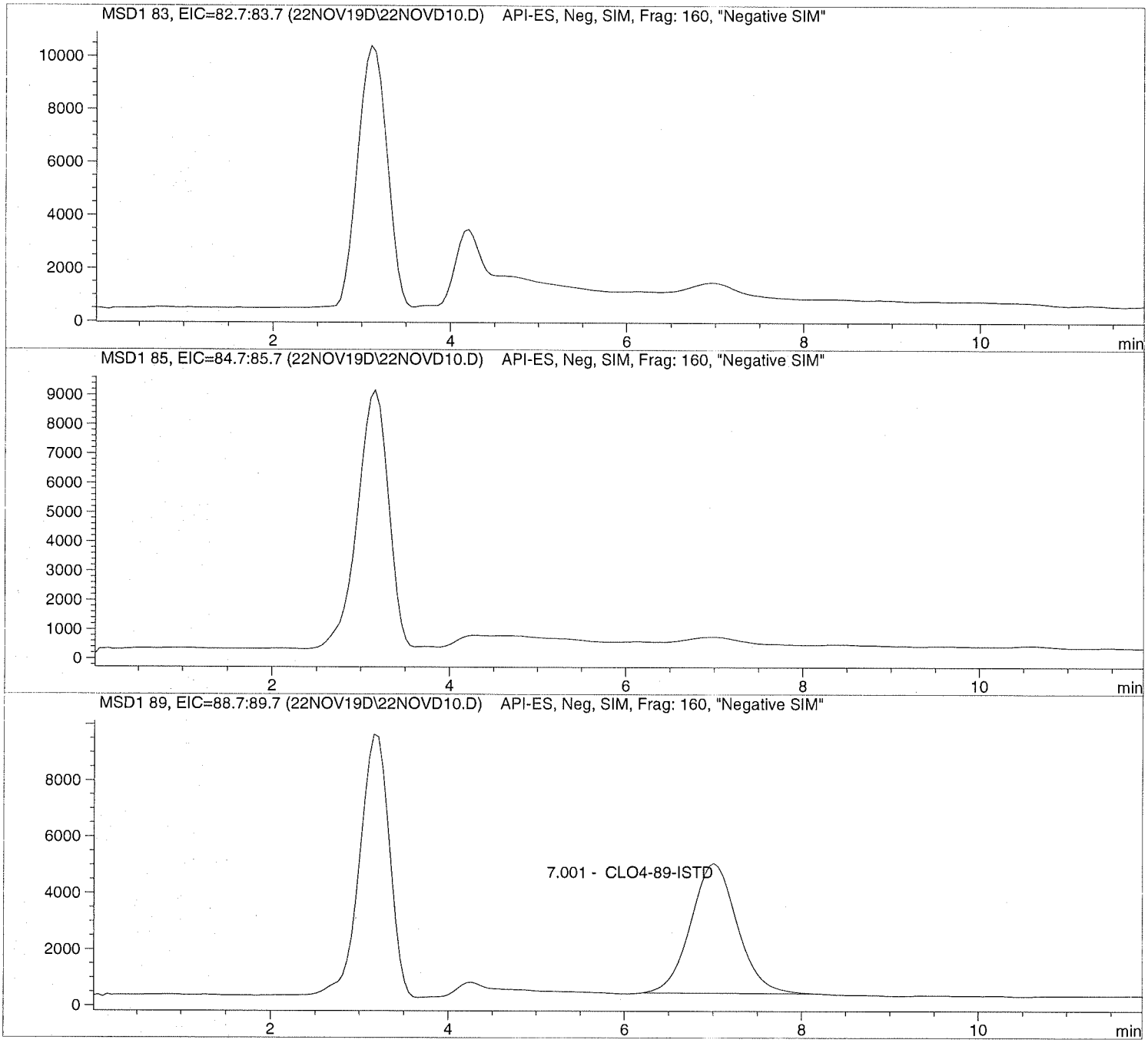
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD10.D Sample Name: 1932284005

Injection Date:	11/22/2019 10:36:43	Seq Line:	10
Sample Name:	1932284005	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD10.D Sample Name: 1932284005

Injection Date:	11/22/2019 10:36:43	Seq Line:	10
Sample Name:	1932284005	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.001	BBA	168474.5	5.0000	CLO4-89-ISTD

*** End of Report ***

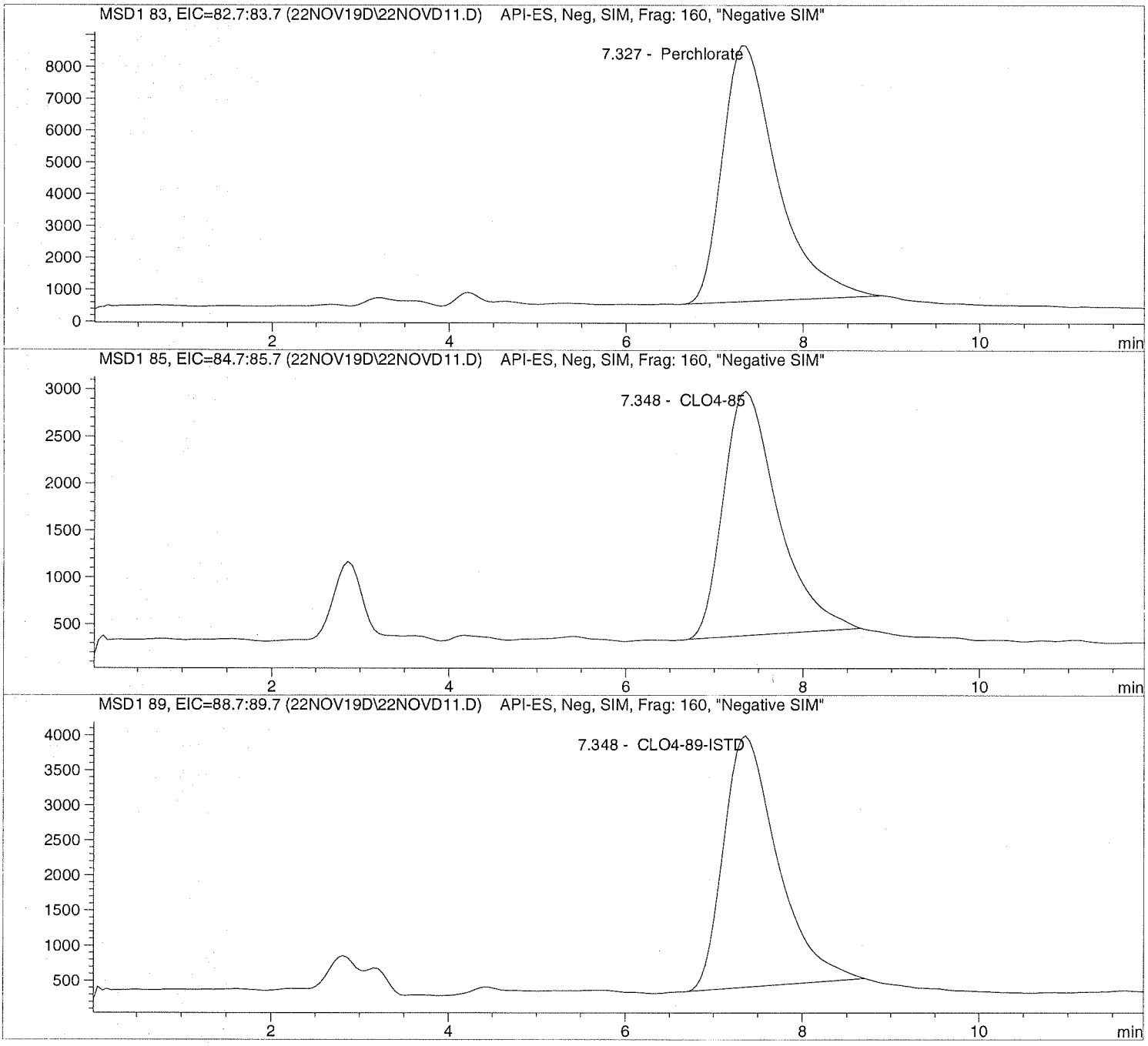
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD11.D Sample Name: 1932284006 10X

Injection Date:	11/22/2019 10:50:36	Seq Line:	11
Sample Name:	1932284006 10X	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD11.D Sample Name: 1932284006 10X

Injection Date:	11/22/2019 10:50:36	Seq Line:	11
Sample Name:	1932284006 10X	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.327	PBA	345930.0	83.0708	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.348	PBA	111675.8	86.8934	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.348	PBA	152149.8	50.0000	CLO4-89-ISTD

*** End of Report ***

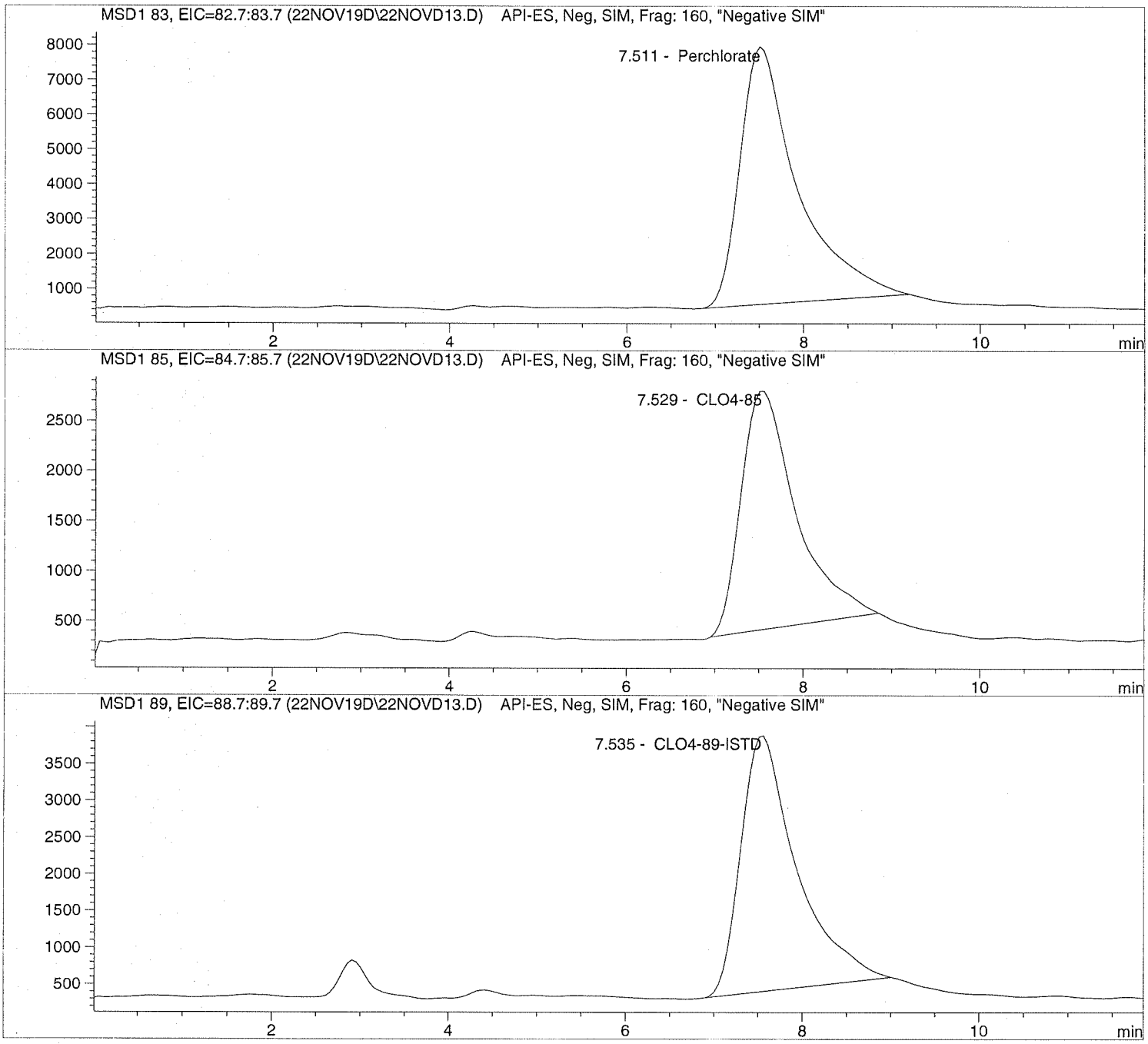
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD13.D Sample Name: 1932284008 1K

Injection Date:	11/22/2019 11:18:19	Seq Line:	13
Sample Name:	1932284008 1K	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD13.D Sample Name: 1932284008 1K

Injection Date:	11/22/2019 11:18:19	Seq Line:	13
Sample Name:	1932284008 1K	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.511	PBA	333135.6	7986.4726	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.529	PBA	102889.4	7994.4321	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.535	PBA	152567.1	5000.0000	CLO4-89-ISTD

*** End of Report ***

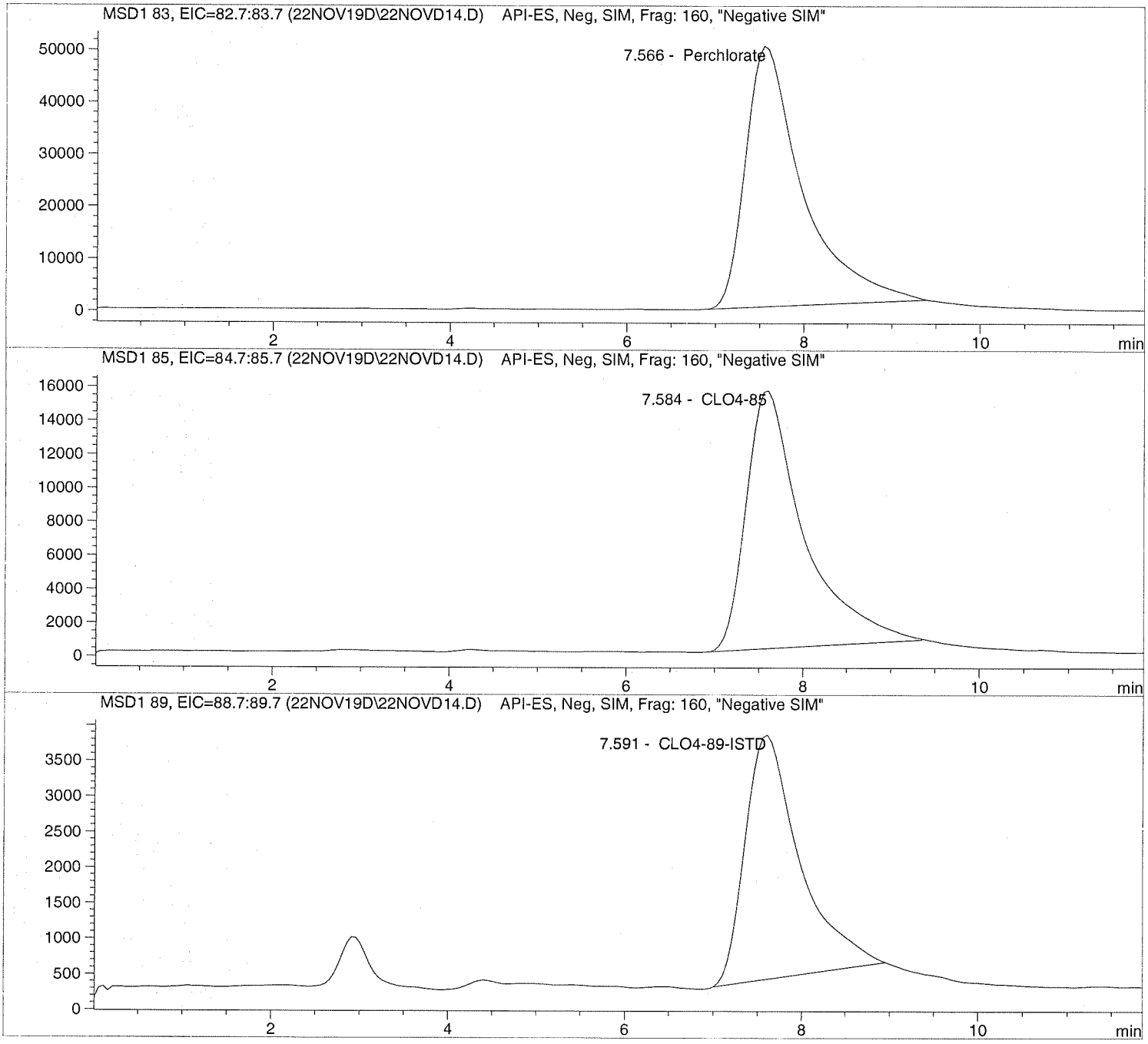
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD14.D Sample Name: 1932284009 1K

Injection Date:	11/22/2019 11:32:09	Seq Line:	14
Sample Name:	1932284009 1K	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD14.D Sample Name: 1932284009 1K

Injection Date:	11/22/2019 11:32:09	Seq Line:	14
Sample Name:	1932284009 1K	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.566	PBA	2244256.0	47369.5432	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.584	PBA	695778.6	48329.8011	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.591	PBA	148042.5	5000.0000	CLO4-89-ISTD

*** End of Report ***

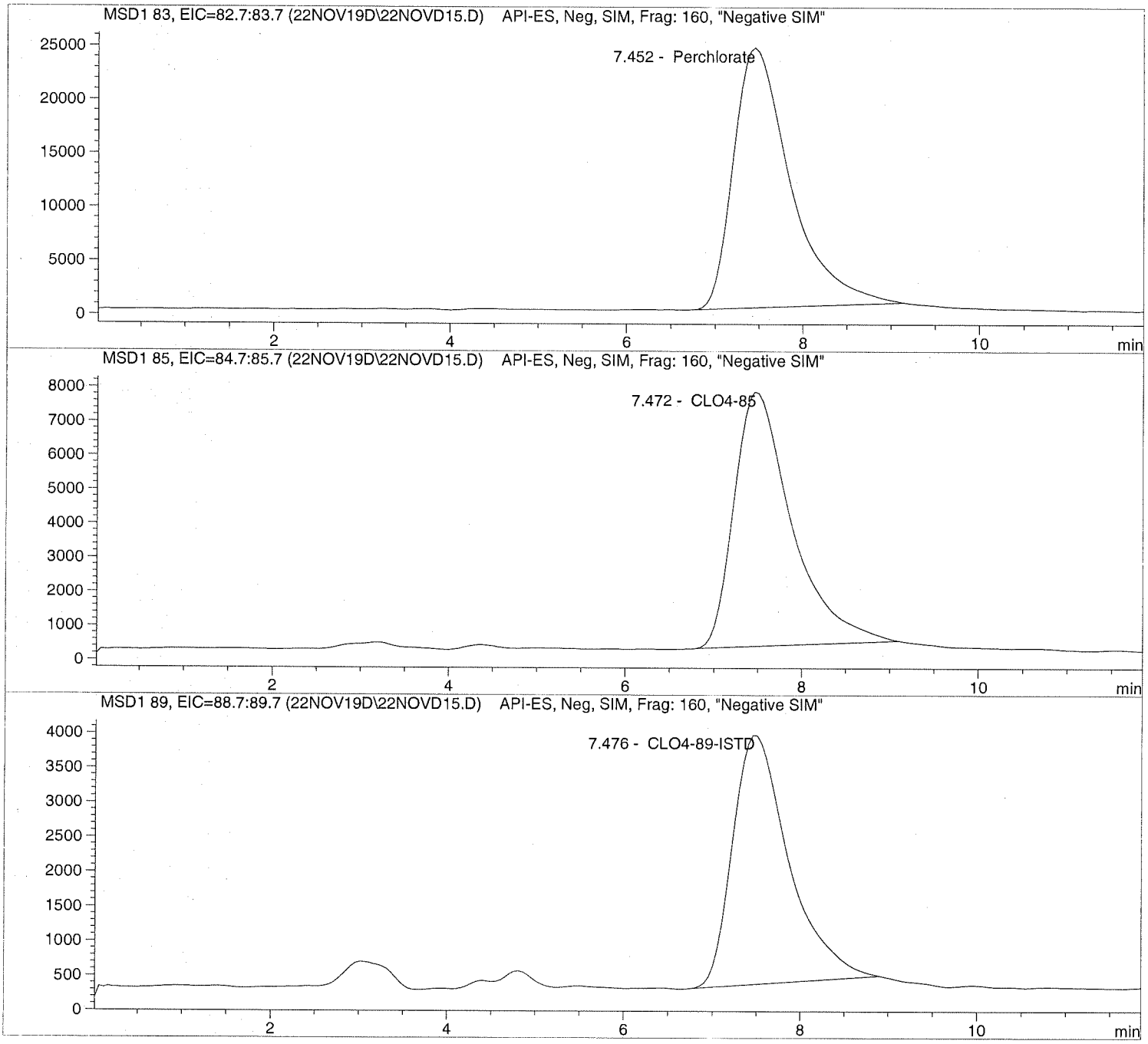
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD15.D Sample Name: 685443 CCV@25

Injection Date:	11/22/2019 11:46:00	Seq Line:	15
Sample Name:	685443 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD15.D Sample Name: 685443 CCV@25

Injection Date:	11/22/2019 11:46:00	Seq Line:	15
Sample Name:	685443 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.452	PBA	1087130.5	23.3638	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.472	PBA	340342.8	23.9212	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.476	PBA	160068.6	5.0000	CLO4-89-ISTD

*** End of Report ***

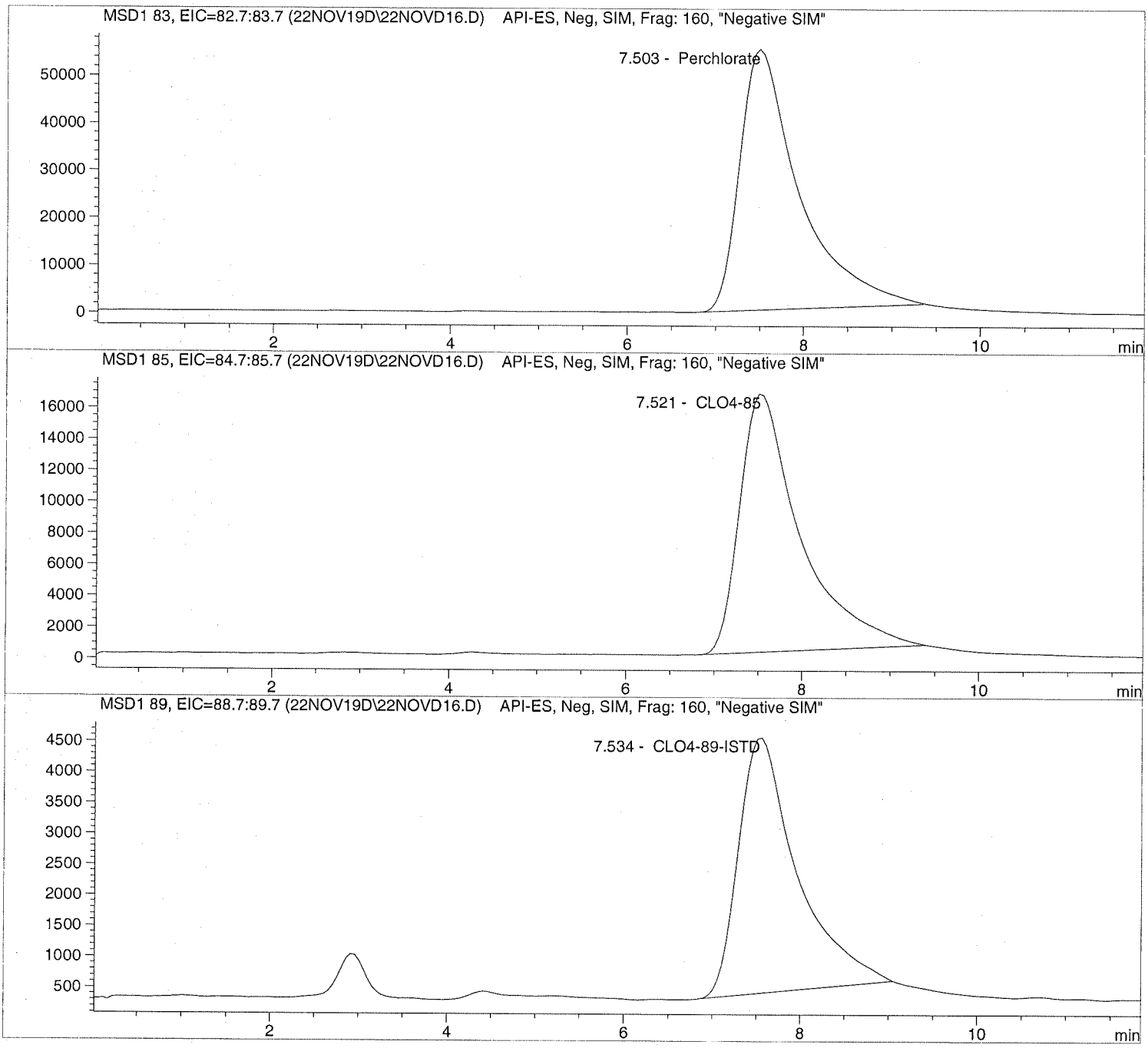
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD16.D Sample Name: 1932284010 1K

Injection Date:	11/22/2019 11:59:50	Seq Line:	16
Sample Name:	1932284010 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD16.D Sample Name: 1932284010 1K

Injection Date:	11/22/2019 11:59:50	Seq Line:	16
Sample Name:	1932284010 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.503	PBA	2579132.0	42598.6907	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.521	PBA	787731.0	42868.3703	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.534	PBA	192723.4	5000.0000	CLO4-89-ISTD

*** End of Report ***

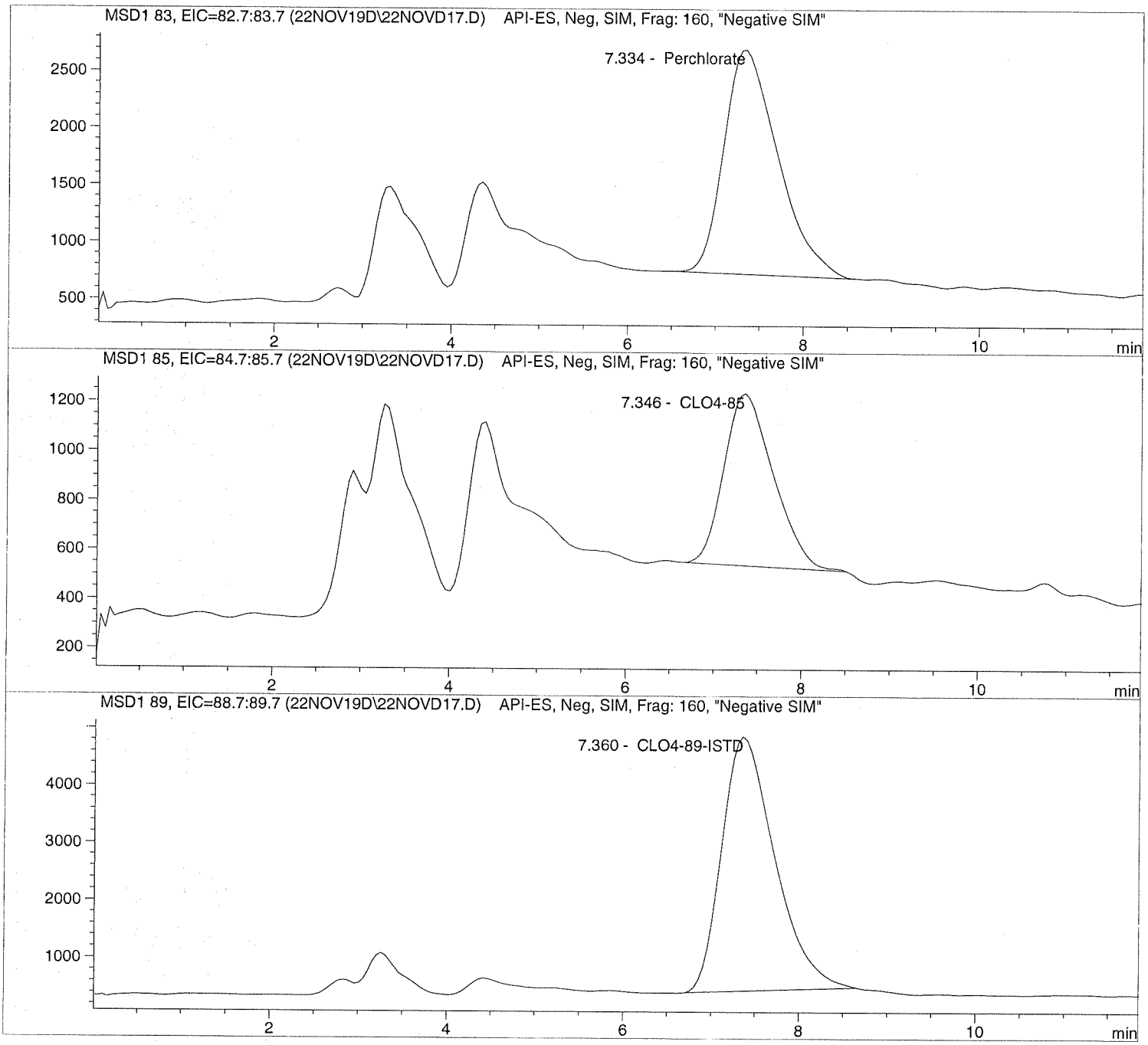
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD17.D Sample Name: 1932352001

Injection Date:	11/22/2019 12:13:41	Seq Line:	17
Sample Name:	1932352001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD17.D Sample Name: 1932352001

Injection Date:	11/22/2019 12:13:41	Seq Line:	17
Sample Name:	1932352001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.334	PBA	84513.2	1.6404	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.346	PBA	27333.2	1.6553	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.360	PBA	186562.4	5.0000	CLO4-89-ISTD

*** End of Report ***

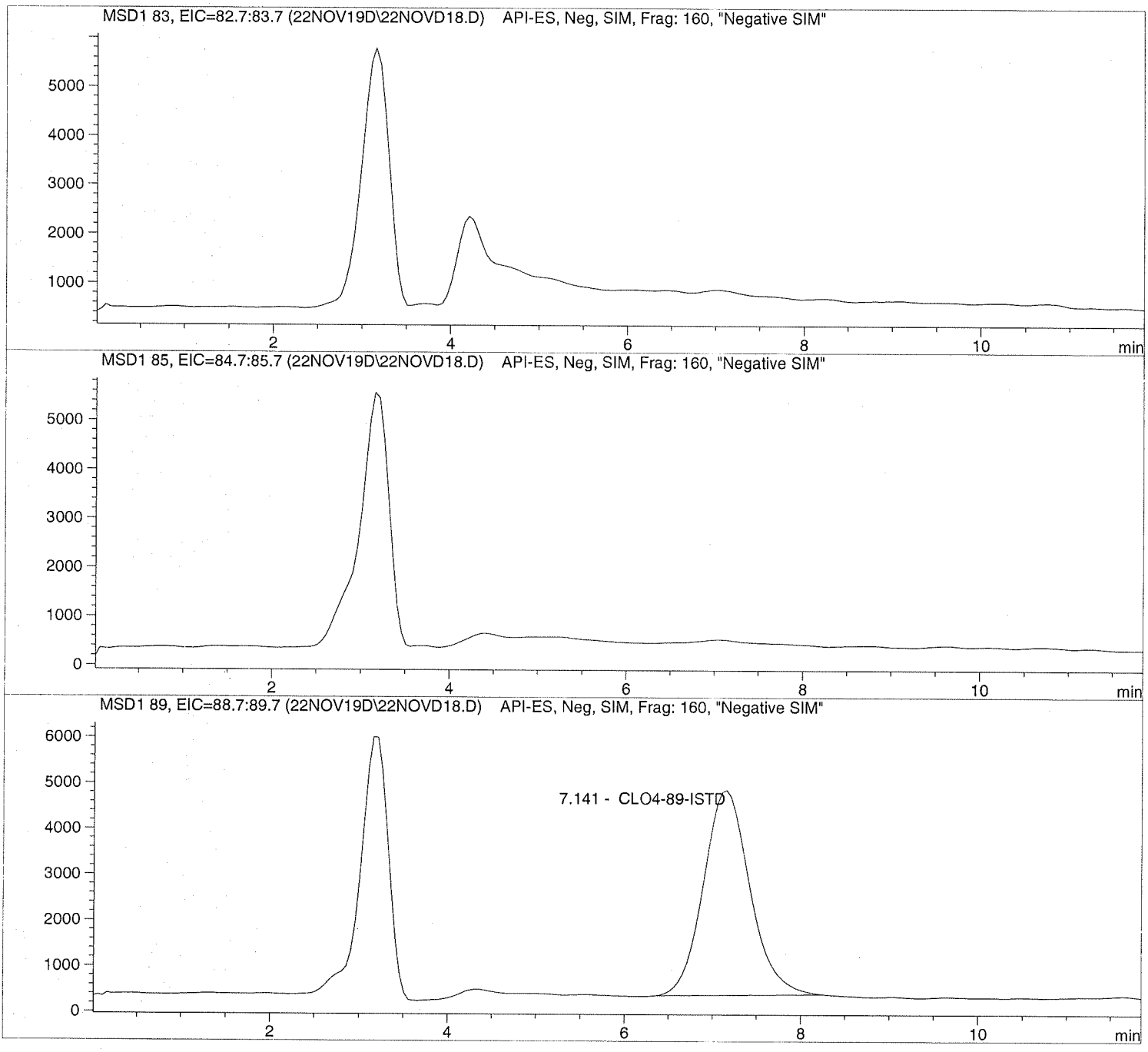
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD18.D Sample Name: 1932352002

Injection Date:	11/22/2019 12:27:35	Seq Line:	18
Sample Name:	1932352002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD18.D Sample Name: 1932352002

Injection Date:	11/22/2019 12:27:35	Seq Line:	18
Sample Name:	1932352002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.141	PBA	164476.7	5.0000	CLO4-89-ISTD

*** End of Report ***

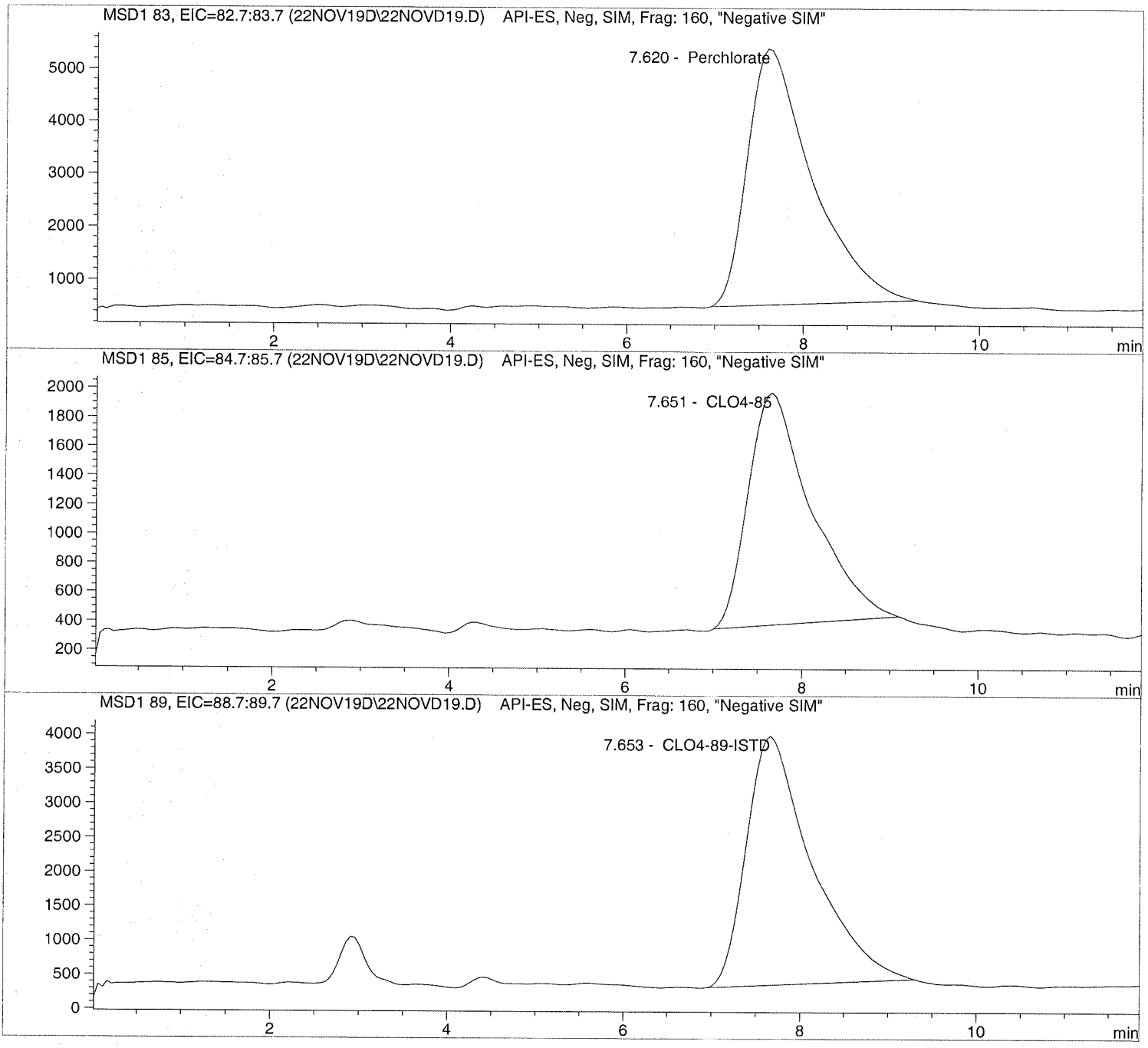
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD19.D Sample Name: 1932352003 1K

Injection Date:	11/22/2019 12:41:26	Seq Line:	19
Sample Name:	1932352003 1K	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD19.D Sample Name: 1932352003 1K

Injection Date:	11/22/2019 12:41:26	Seq Line:	19
Sample Name:	1932352003 1K	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.620	PBA	246585.9	4887.0265	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.651	PBA	78880.7	5031.6524	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.653	PBA	185984.5	5000.0000	CLO4-89-ISTD

*** End of Report ***

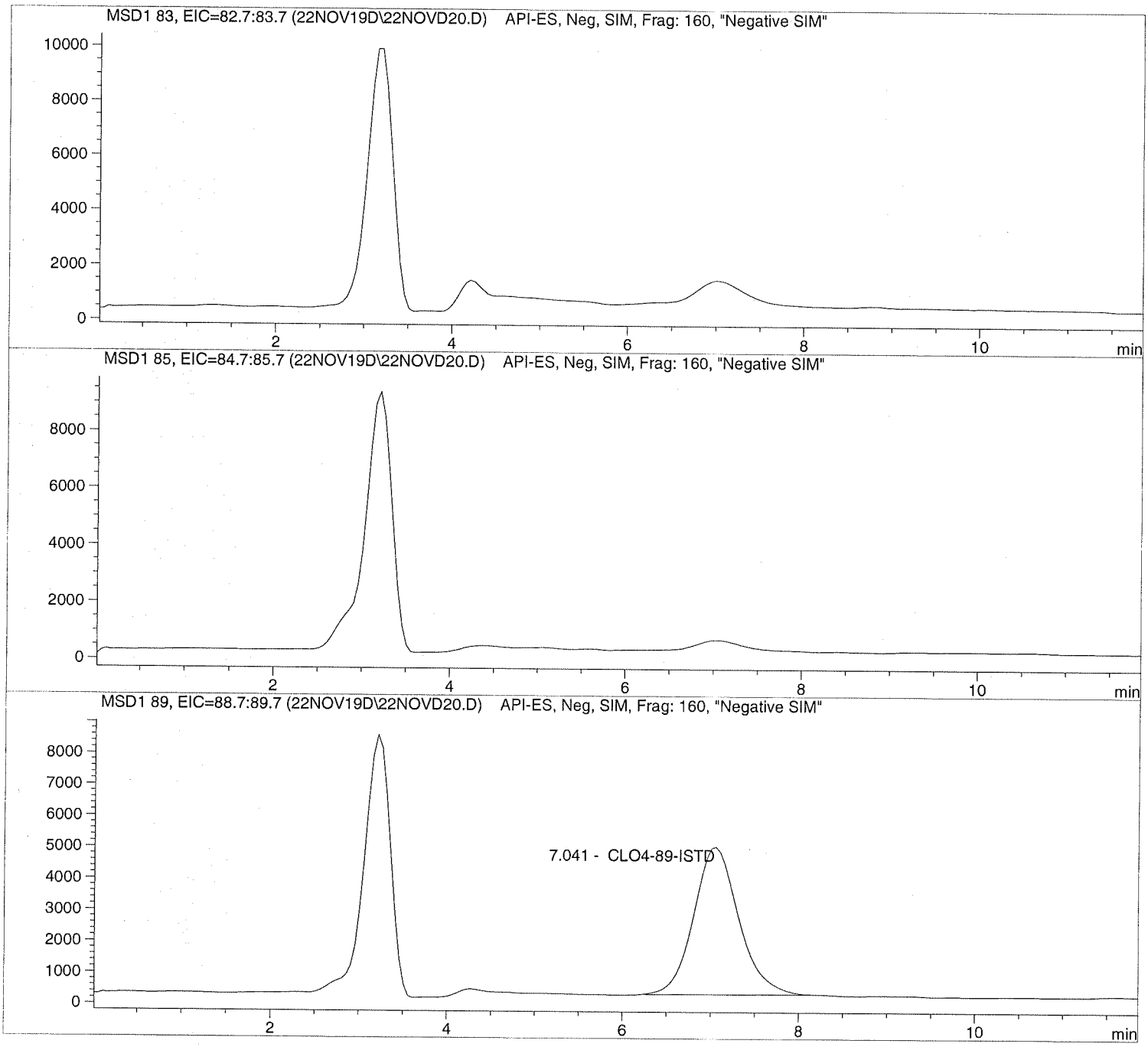
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD20.D Sample Name: 1932352004

Injection Date:	11/22/2019 12:55:21	Seq Line:	20
Sample Name:	1932352004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD20.D Sample Name: 1932352004

Injection Date:	11/22/2019 12:55:21	Seq Line:	20
Sample Name:	1932352004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.041	BBA	167521.2	5.0000	CLO4-89-ISTD

*** End of Report ***

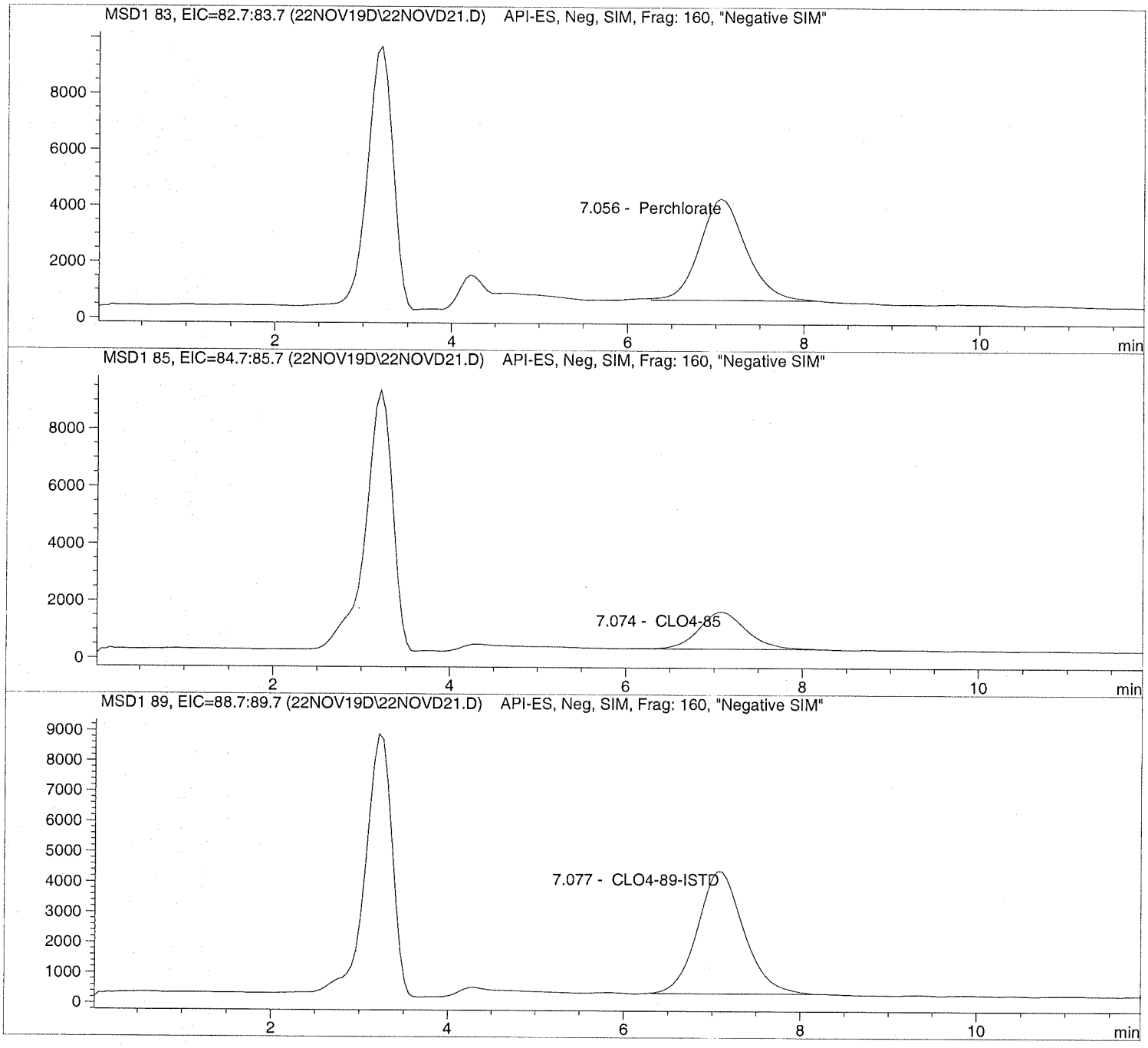
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD21.D Sample Name: 1932352005 MS

Injection Date:	11/22/2019 13:09:17	Seq Line:	21
Sample Name:	1932352005 MS	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD21.D Sample Name: 1932352005 MS

Injection Date:	11/22/2019 13:09:17	Seq Line:	21
Sample Name:	1932352005 MS	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.056	BBA	131207.6	3.2899	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.074	BBA	48283.1	3.8820	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.077	PBA	146896.4	5.0000	CLO4-89-ISTD

*** End of Report ***

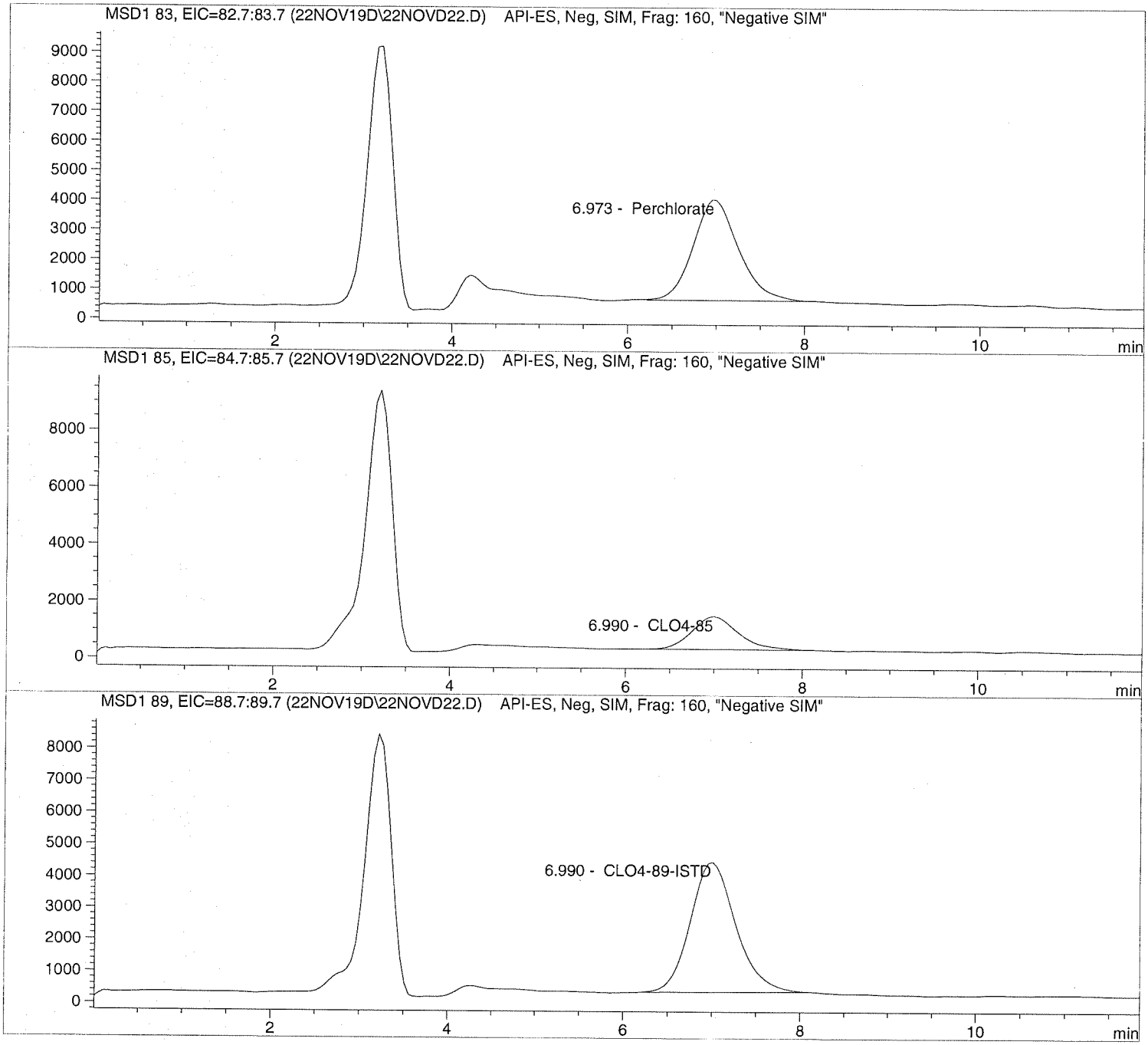
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD22.D Sample Name: 1932352006 MSD

Injection Date:	11/22/2019 13:23:12	Seq Line:	22
Sample Name:	1932352006 MSD	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD22.D Sample Name: 1932352006 MSD

Injection Date:	11/22/2019 13:23:12	Seq Line:	22
Sample Name:	1932352006 MSD	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.973	BBA	121738.6	3.0509	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.990	BBA	42568.5	3.4112	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.990	BBA	146852.0	5.0000	CLO4-89-ISTD

*** End of Report ***

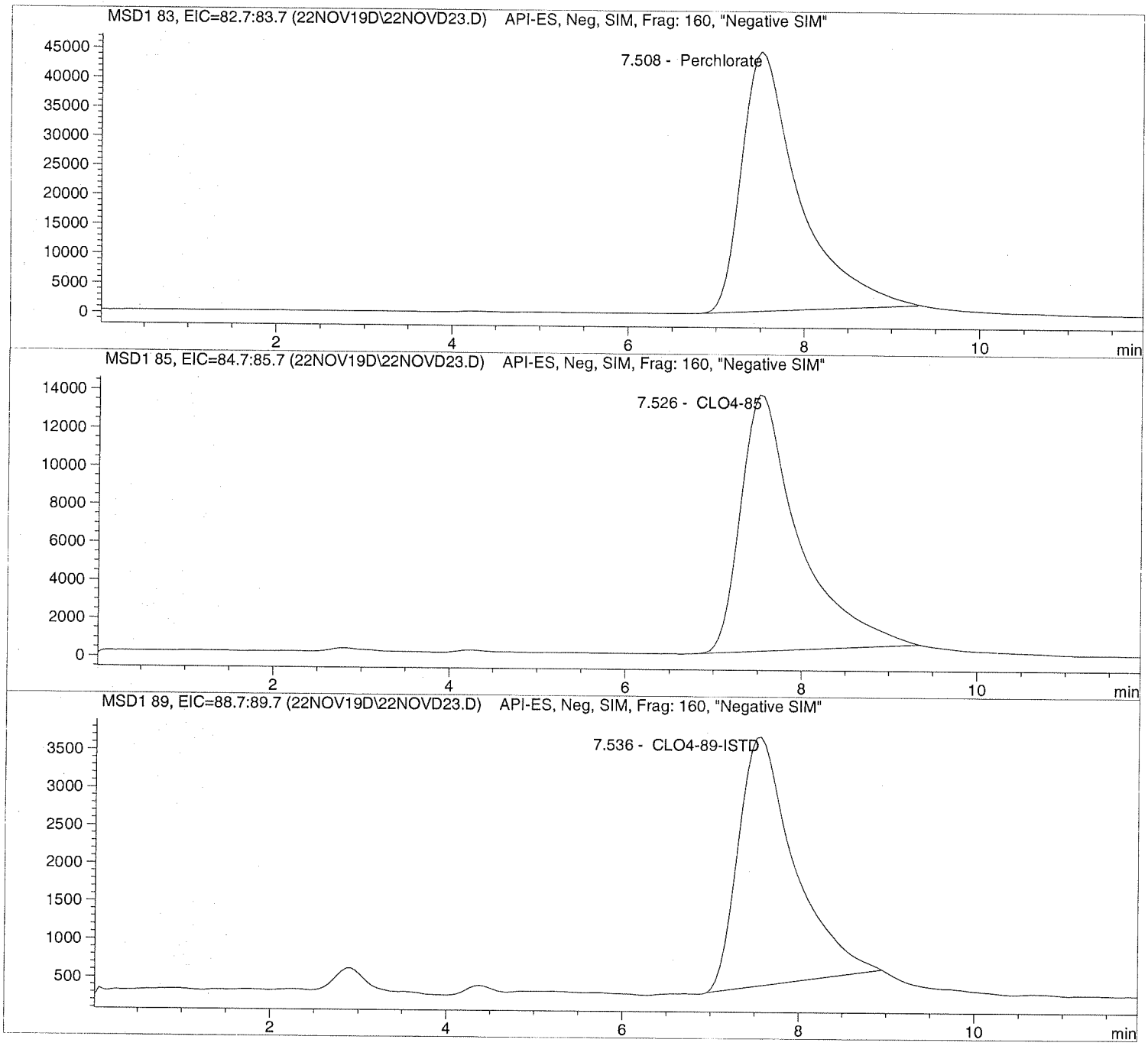
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD23.D Sample Name: 1932284007 100

Injection Date:	11/22/2019 13:39:02	Seq Line:	23
Sample Name:	1932284007 100	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD23.D Sample Name: 1932284007 100

Injection Date:	11/22/2019 13:39:02	Seq Line:	23
Sample Name:	1932284007 100	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	100.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.508	PBA	2000966.8	4344.9859	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.526	PBA	621132.3	4434.8623	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.536	PBA	146104.5	500.0000	CLO4-89-ISTD

*** End of Report ***

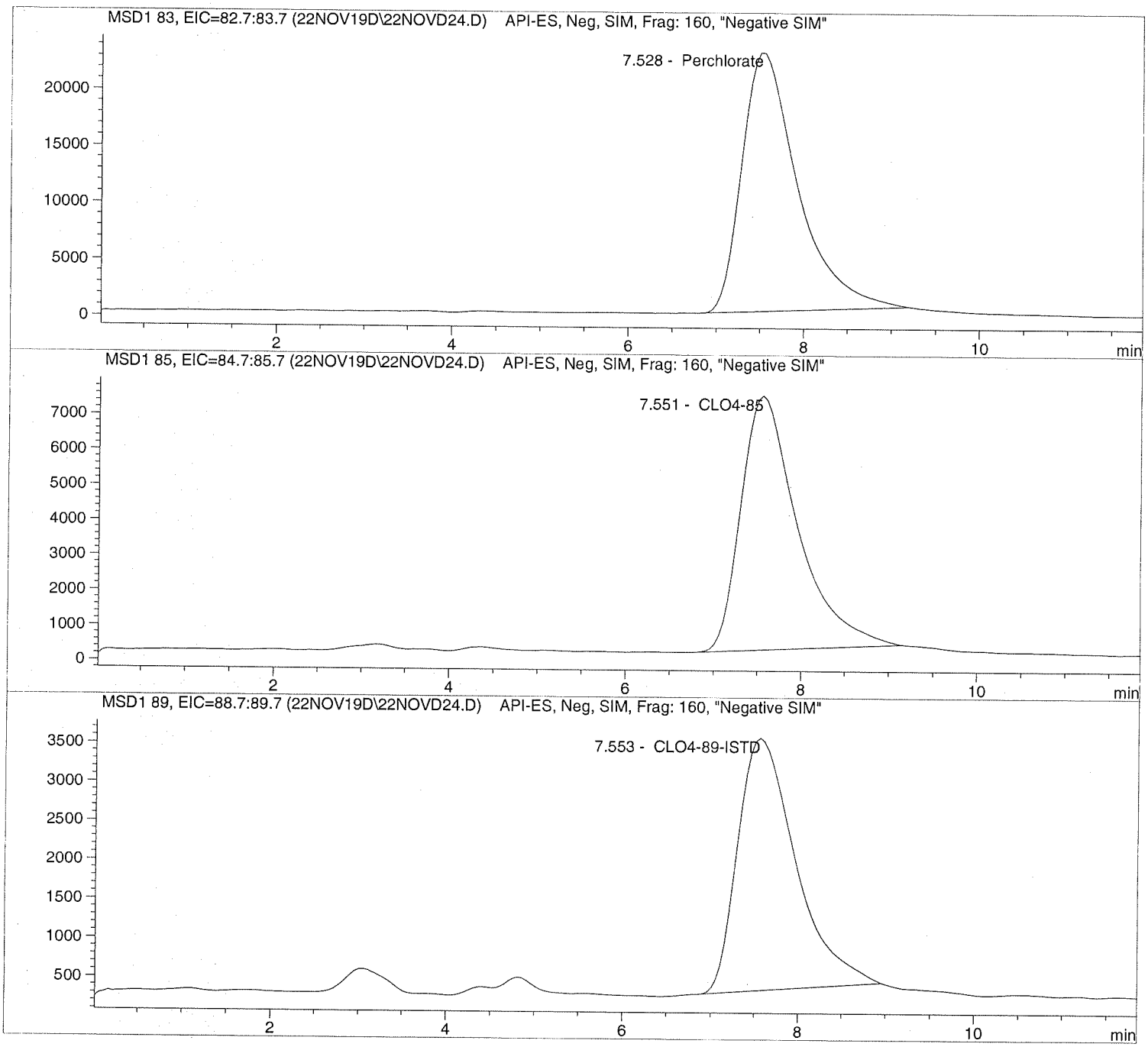
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD24.D Sample Name: 685444 CCV@25

Injection Date:	11/22/2019 13:54:23	Seq Line:	24
Sample Name:	685444 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD24.D Sample Name: 685444 CCV@25

Injection Date:	11/22/2019 13:54:23	Seq Line:	24
Sample Name:	685444 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.528	PBA	1013210.4	23.4184	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.551	PBA	326598.5	24.6282	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.553	PBA	148802.7	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5	1		Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5	1		CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

==========

Peak Sum Table

==========

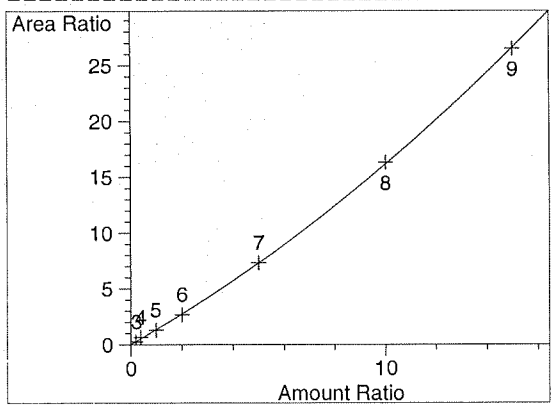
No Entries in table

==========

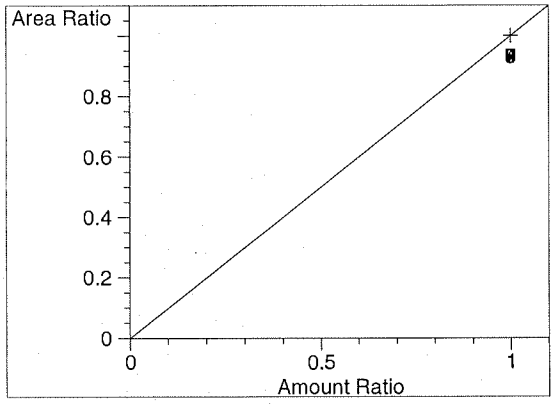
RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

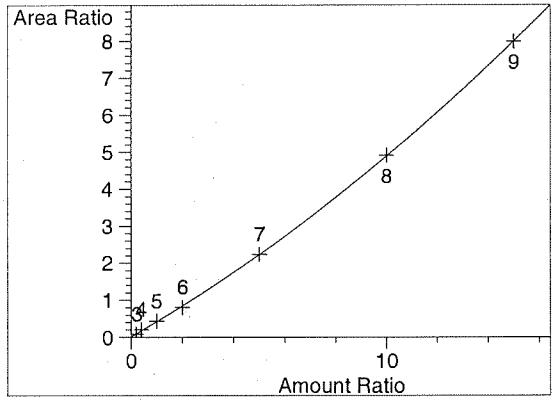
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

RIGHT SOLUTIONS | RIGHT PARTNER

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

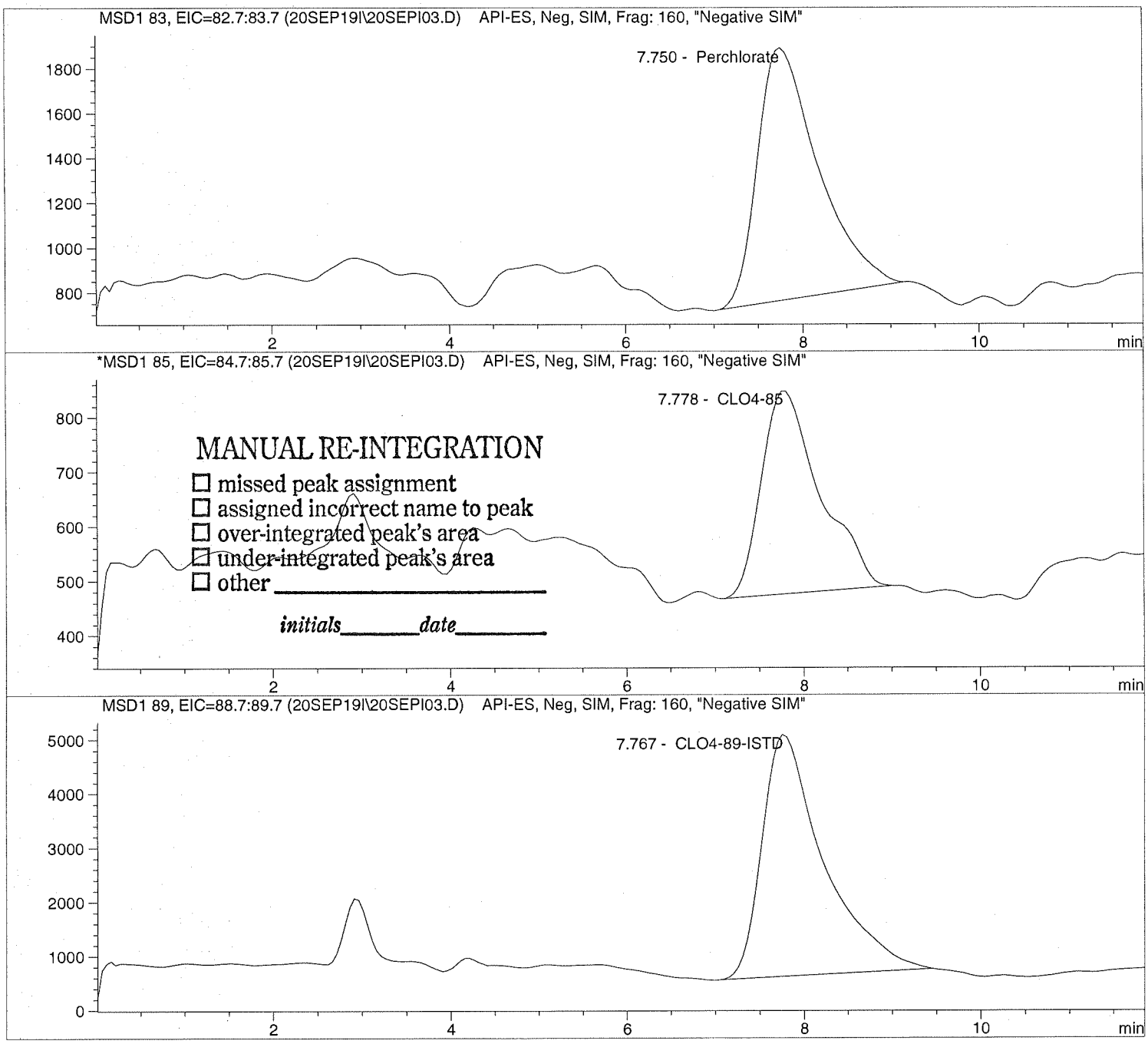
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

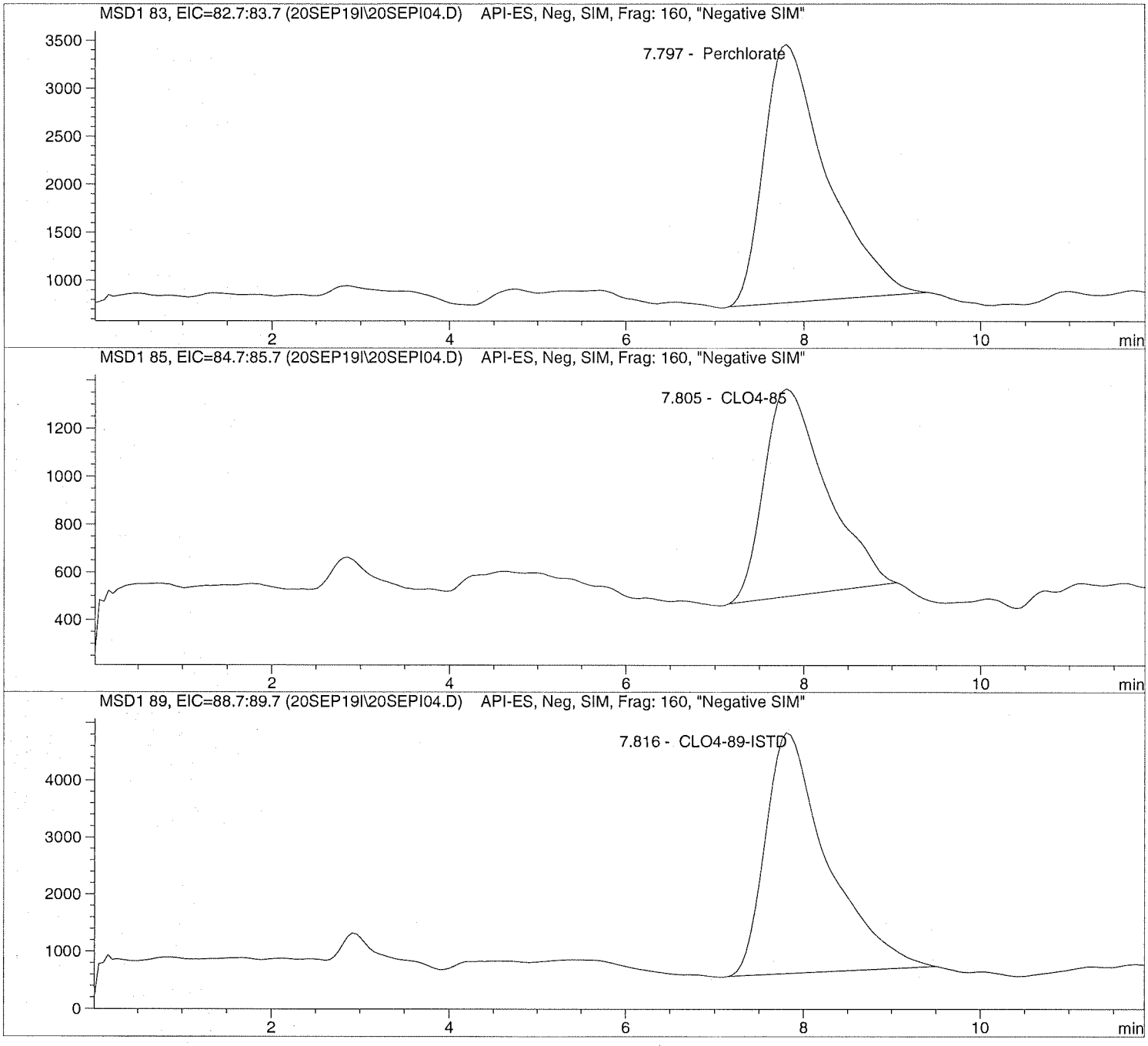
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

*** End of Report ***

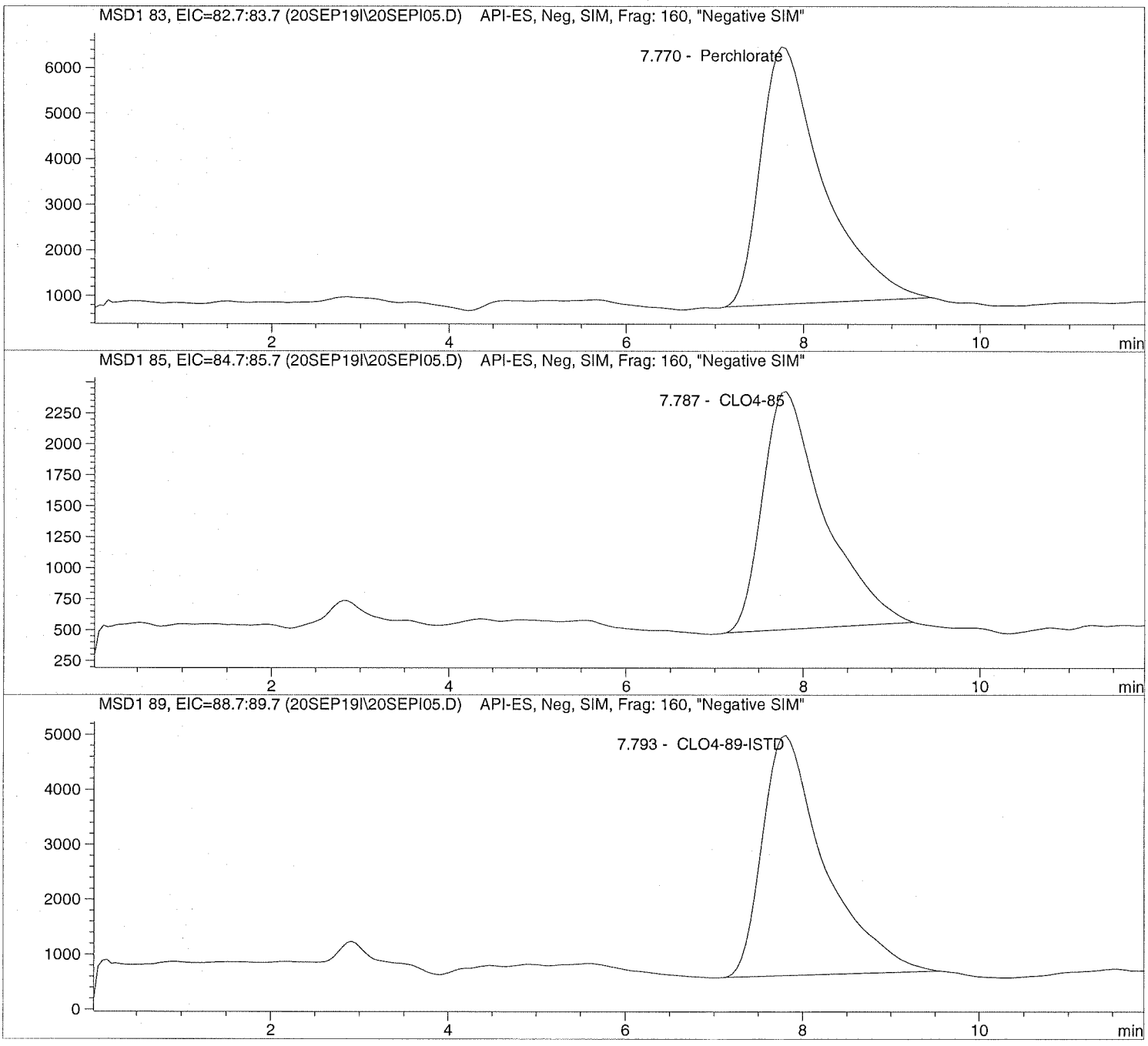
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

*** End of Report ***

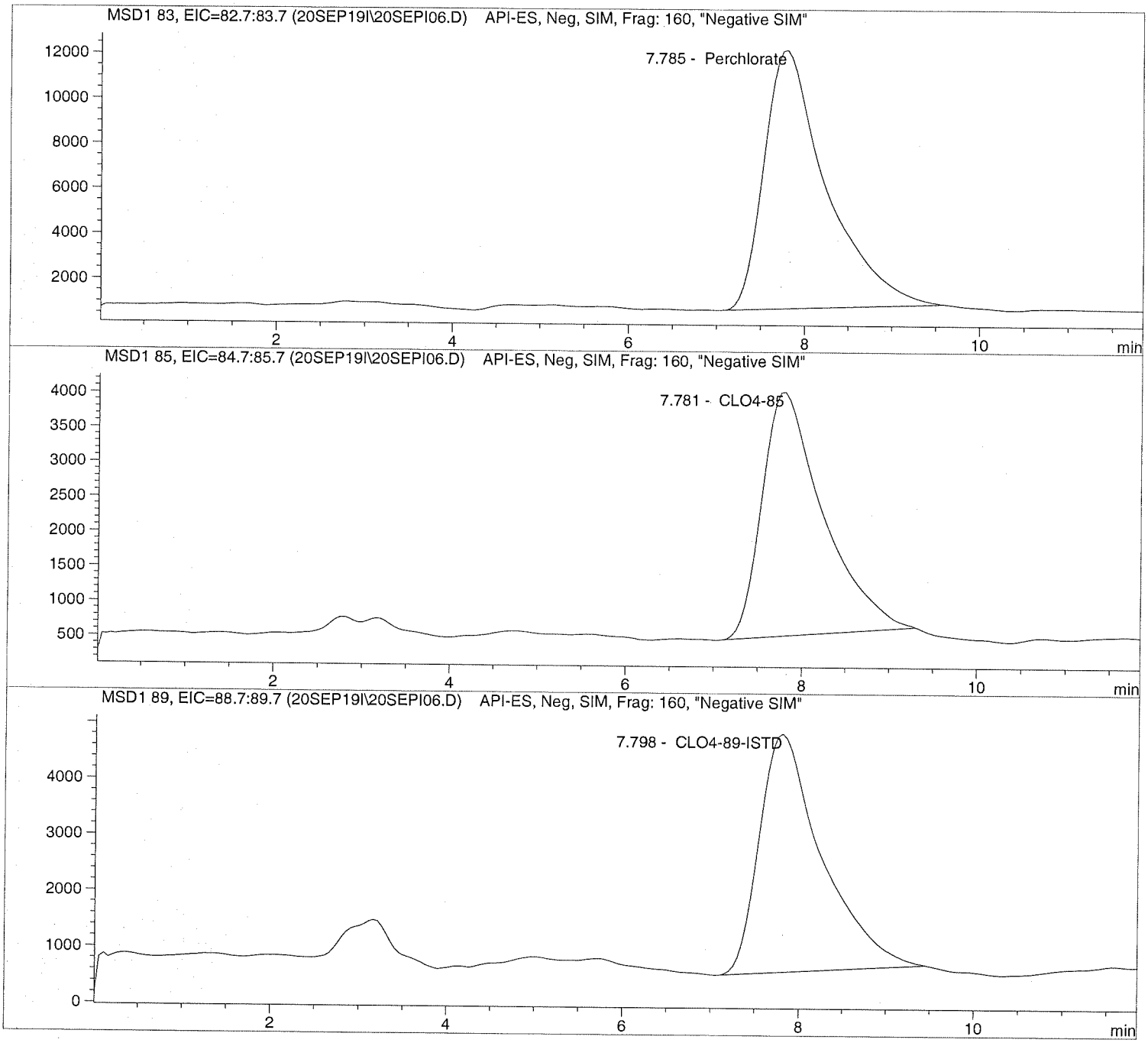
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

*** End of Report ***

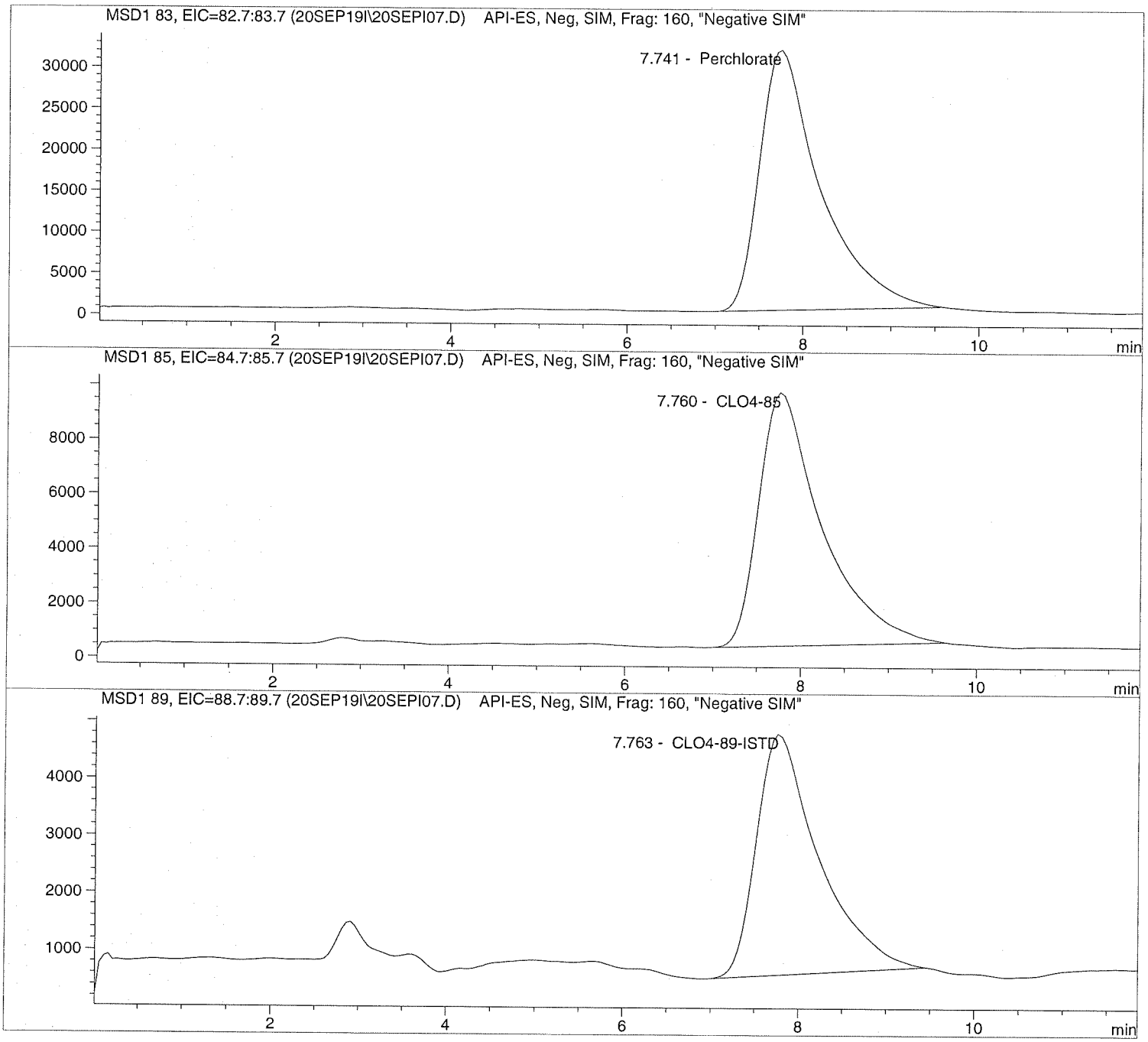
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

*** End of Report ***

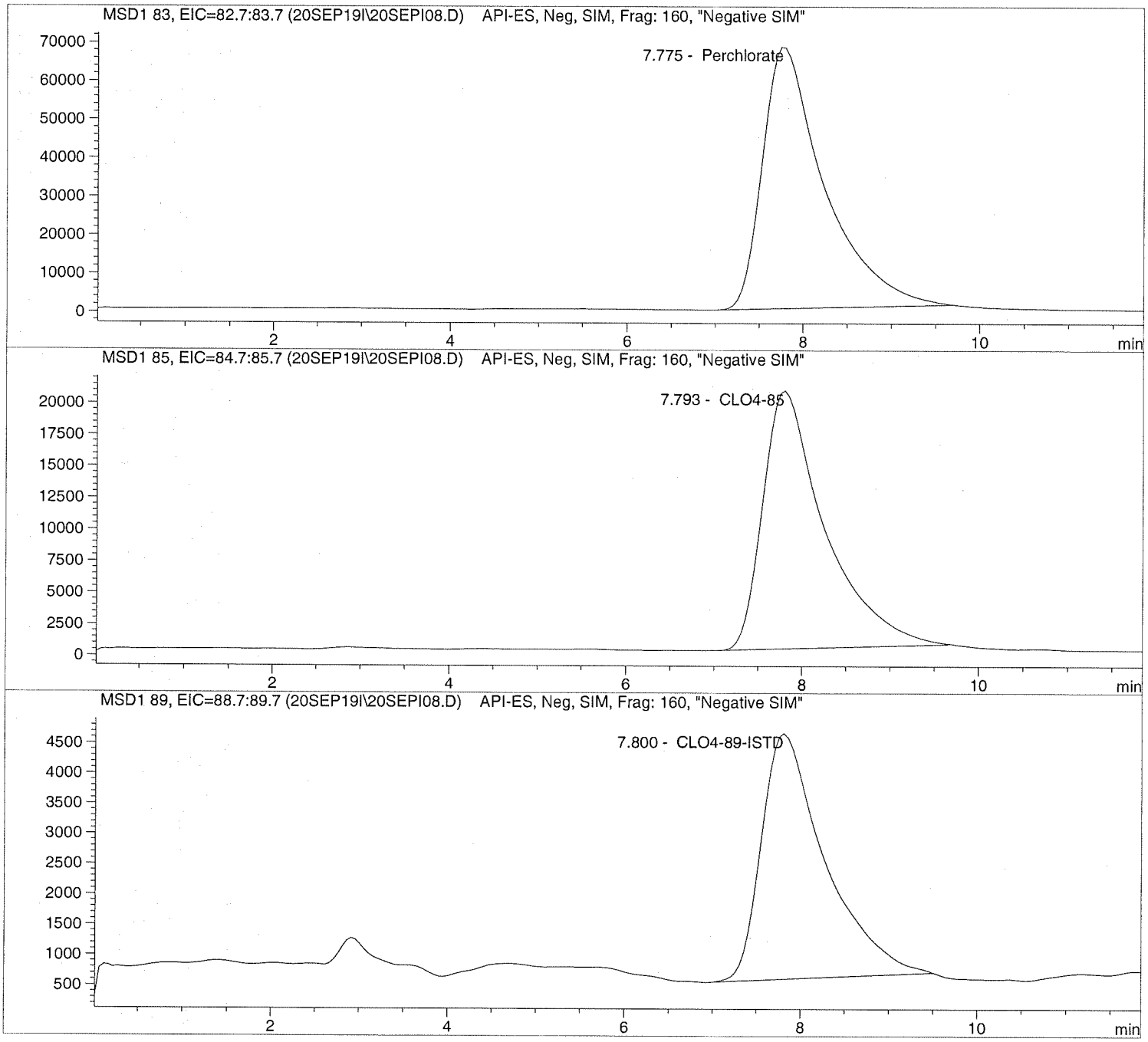
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

*** End of Report ***

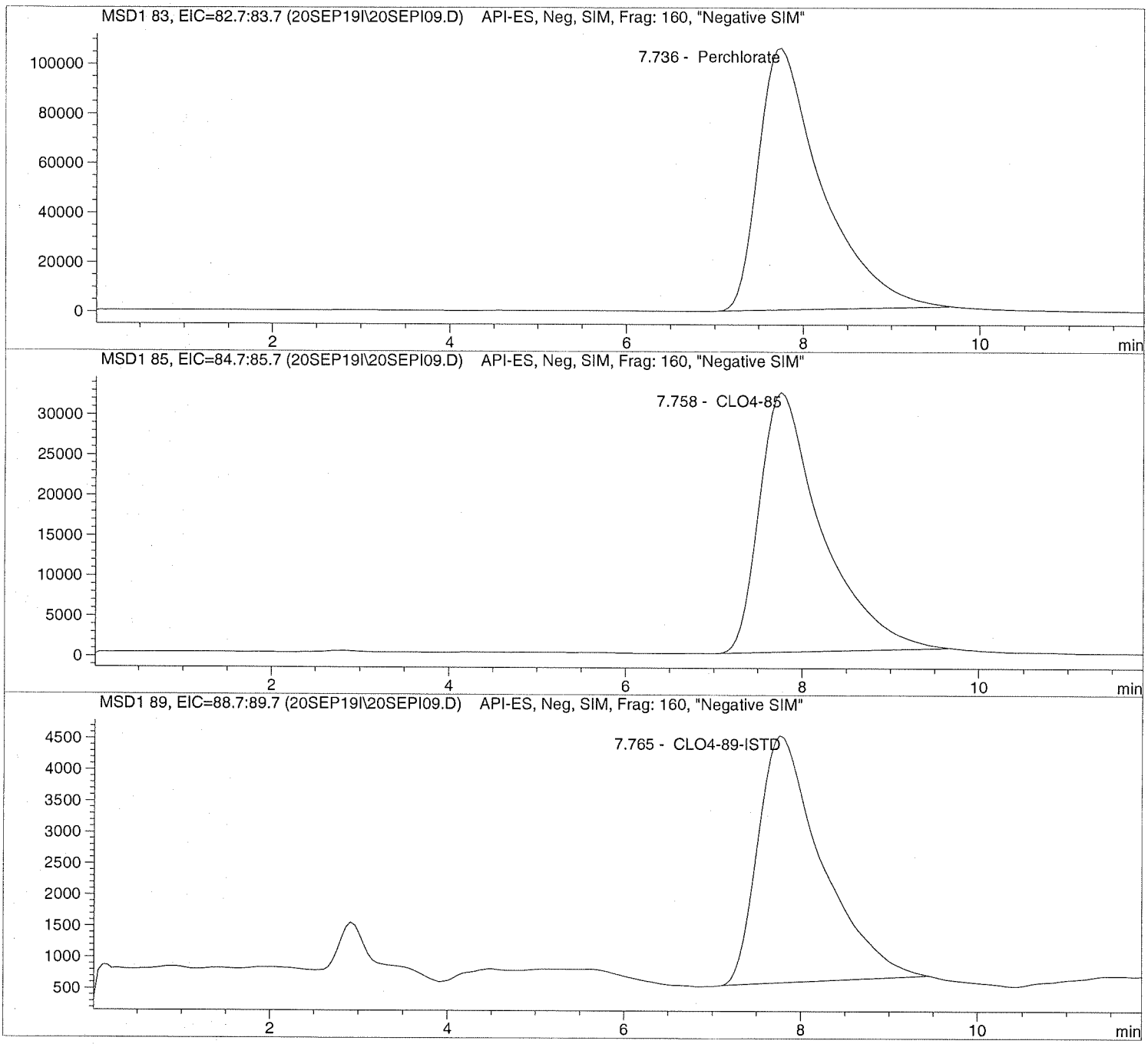
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

*** End of Report ***

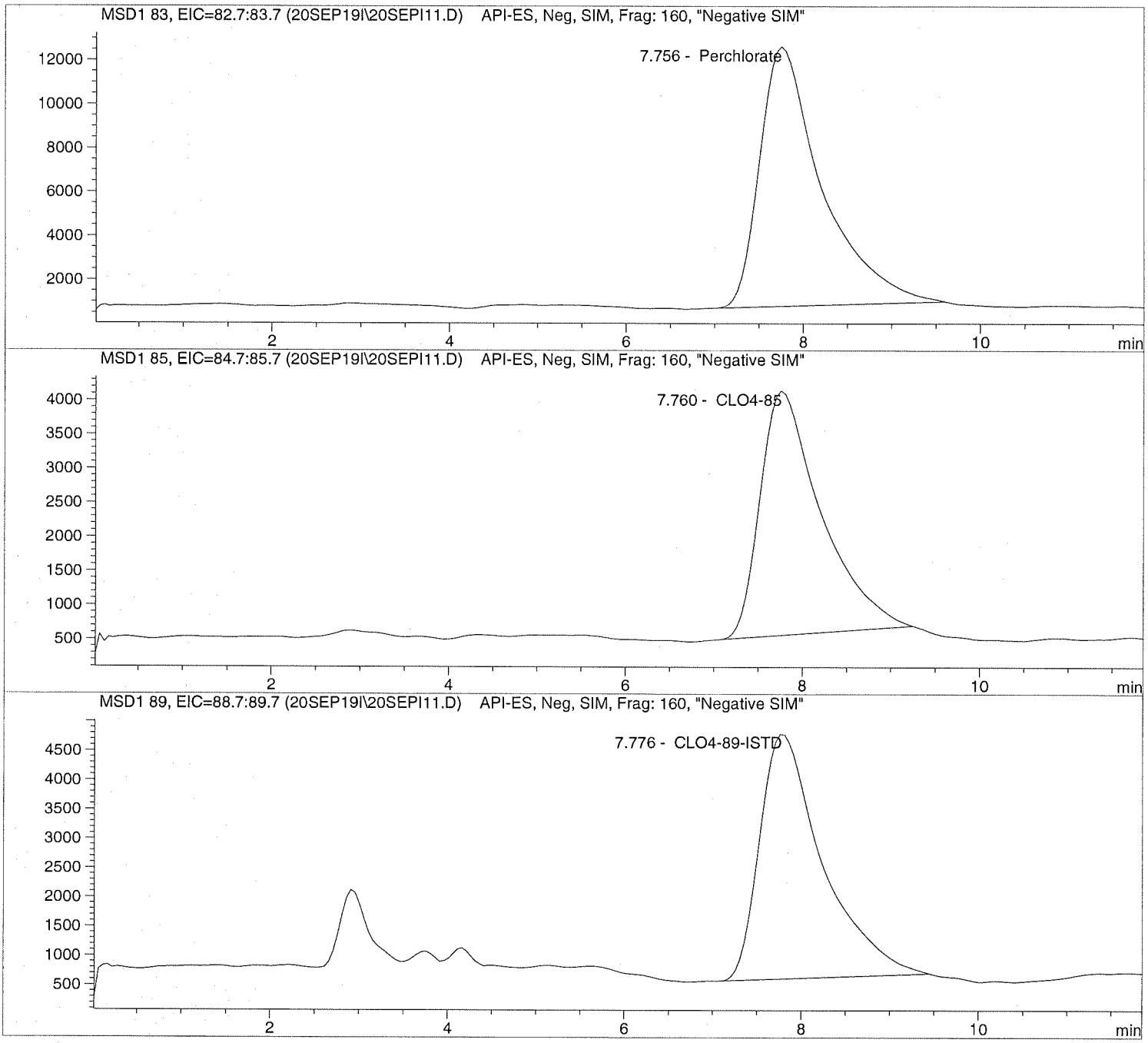
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Unmodified

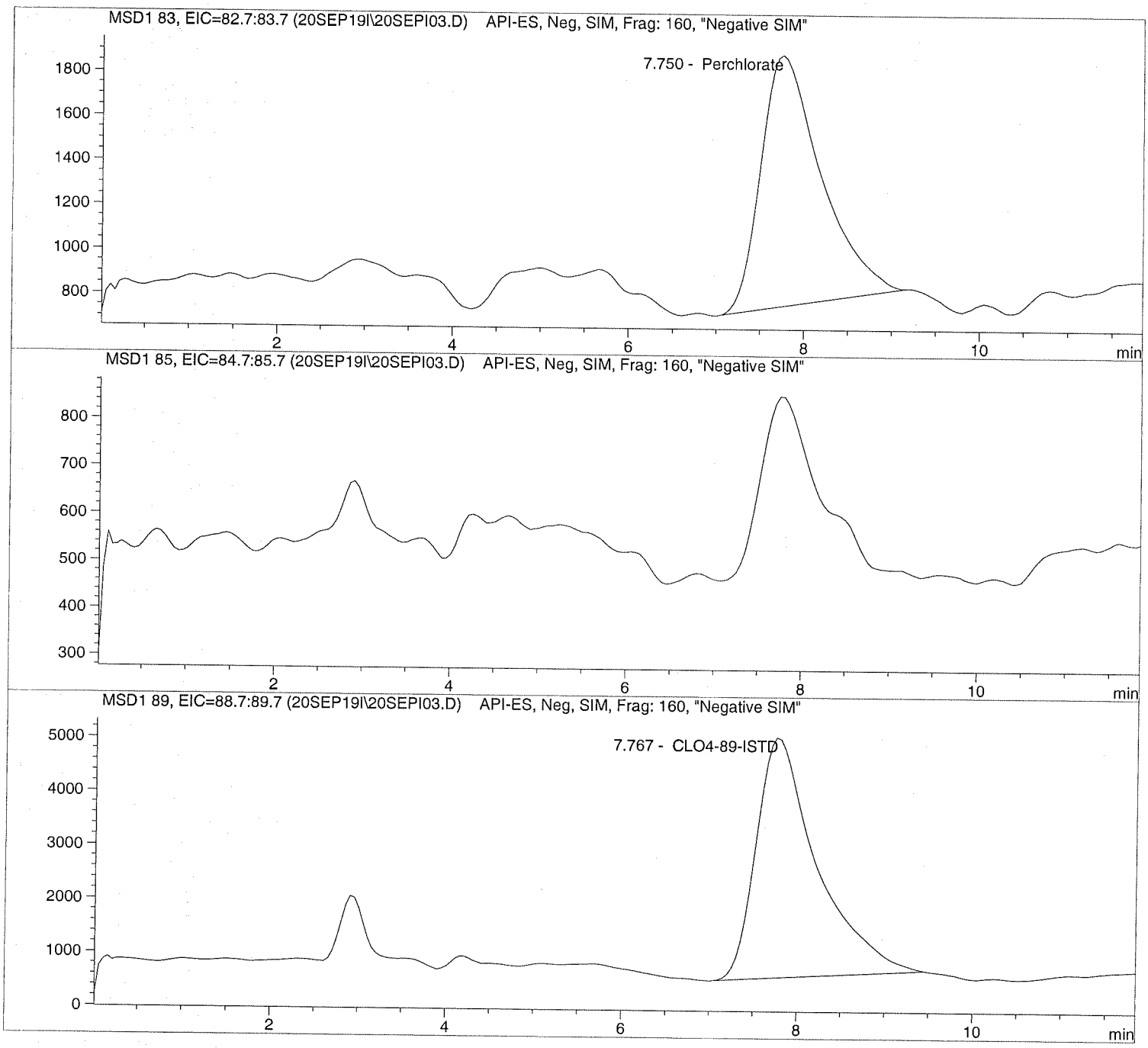
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

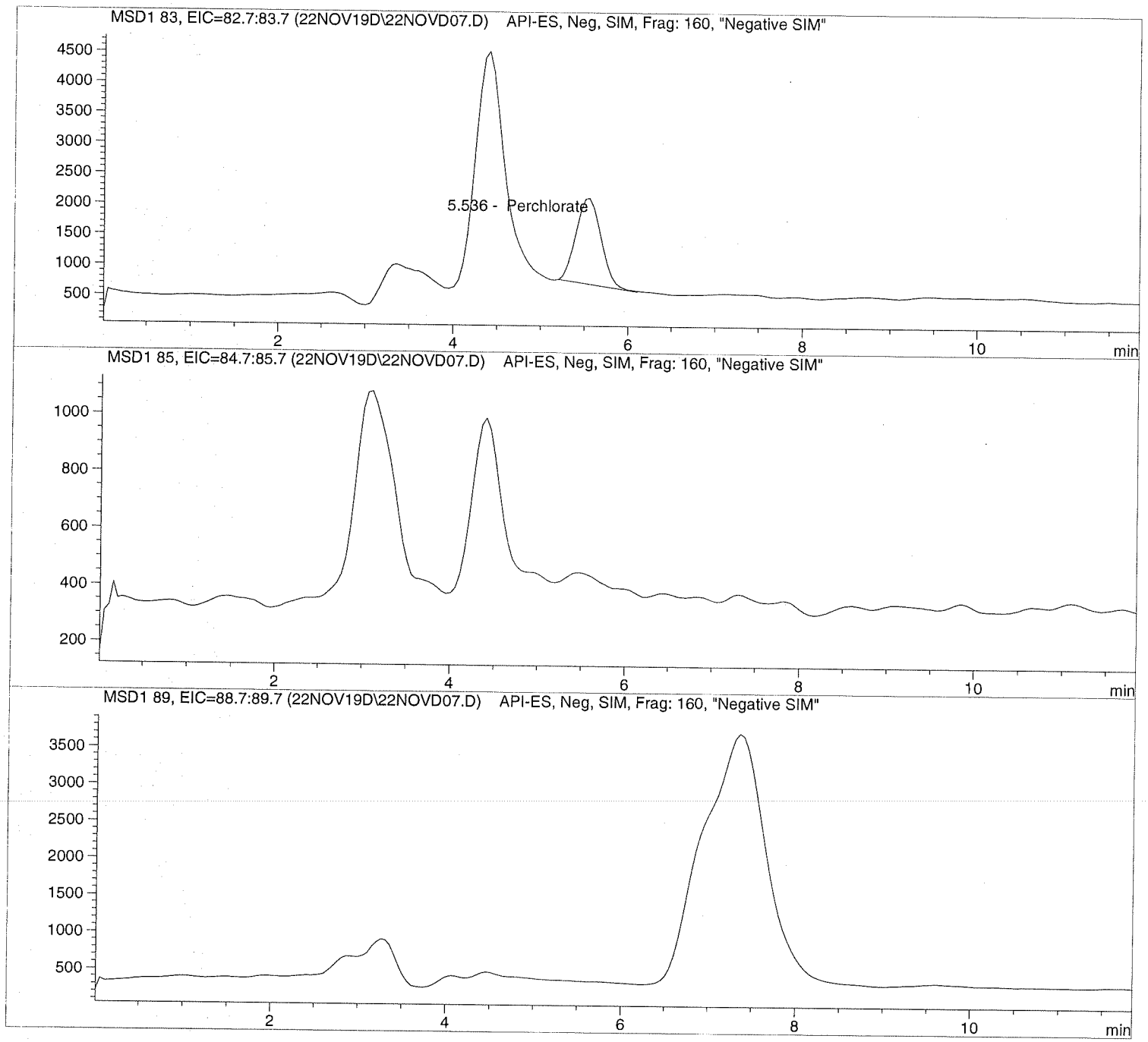
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD07.D Sample Name: 1932284002

Injection Date:	11/22/2019 09:55:02	Seq Line:	7
Sample Name:	1932284002	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\22NOV19D\22NOVD07.D Sample Name: 1932284002

Injection Date:	11/22/2019 09:55:02	Seq Line:	7
Sample Name:	1932284002	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.536	PBA	27611.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

NIT- AMN-W-ISE

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Logbook **31114**

Ion Selective Electrode Logbook

Analyst: MD			Date: 11/18/19 3:15PM
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F			
Probe Calibration Date: 11/15/19	Cal Std ID:		Probe ID: SR1-15910
Std Level		mV	Conc., mg/L:
STD 1 (mg/L):	0.2	127.4	0.200
STD 2 (mg/L):	1	89.3	1.009
STD 3 (mg/L):	5.	49.4	5.010
LSC / MS Spike ID:	3 1006008		
ICV Cal STD ID:			
DPD Reagent ID:	2970208234		

Sodium Thiosulfate ID:		
Std Level	mV	Conc., mg/L:
STD 4 (mg/L): 10	33.6	9.638
STD 5 (mg/L): 50	-8.3	50.01
ICAL Date & Slope:		98.1% / -57.8 mV

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/–)	Comments
ICV		50ml	50ml		9.737			
CCB		1	1		0.029			
MBLK		50ml	50ml		0.027			
LCS					10.046			
MS 191507-01					0.572		-ve	
615-01					7.459		-ve	
571-01					6.639		+ve	Rechecked
571-01 MS					10.48			
571-01 MSD					10.33			
783-01					0.509		+ve	Rechecked
687-02		1ml	50ml	50X	0.026		-ve	Analyte less DF
696-01		1ml	50ml	50X	~~0.026~~	23.926	-ve	
CCV		50ml	50ml		10.019			MD 11/18/19
CCB		1	1		0.023			

Batch ID:	Reported By	Reviewed By:
R# 350724 / R# 350726	MD	

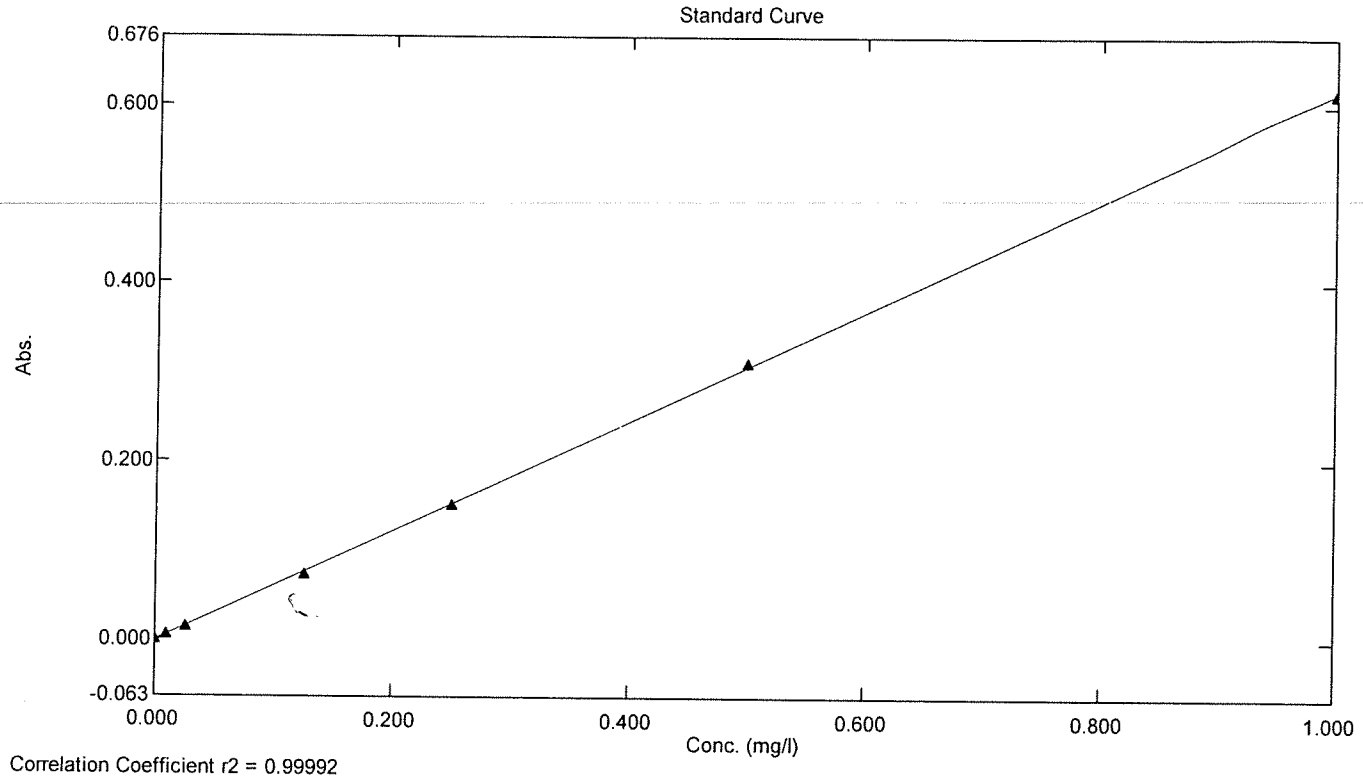
RIGHT SOLUTIONS | RIGHT PARTNER

HS191106 15

Standard Table Report

11/27/2019 11:25:43 AM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\2019\11142019_P_ORTHO_.ph



Correlation Coefficient r2 = 0.99992

Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.001	1.000	
2	STD2	Standard		0.010	0.005	1.000	
3	STD3	Standard		0.025	0.013	1.000	
4	STD4	Standard		0.125	0.074	1.000	
5	STD5	Standard		0.250	0.152	1.000	
6	STD6	Standard		0.500	0.311	1.000	
7	STD7	Standard		1.000	0.614	1.000	
8							

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Sample Table Report

11/27/2019 11:25:37 AM

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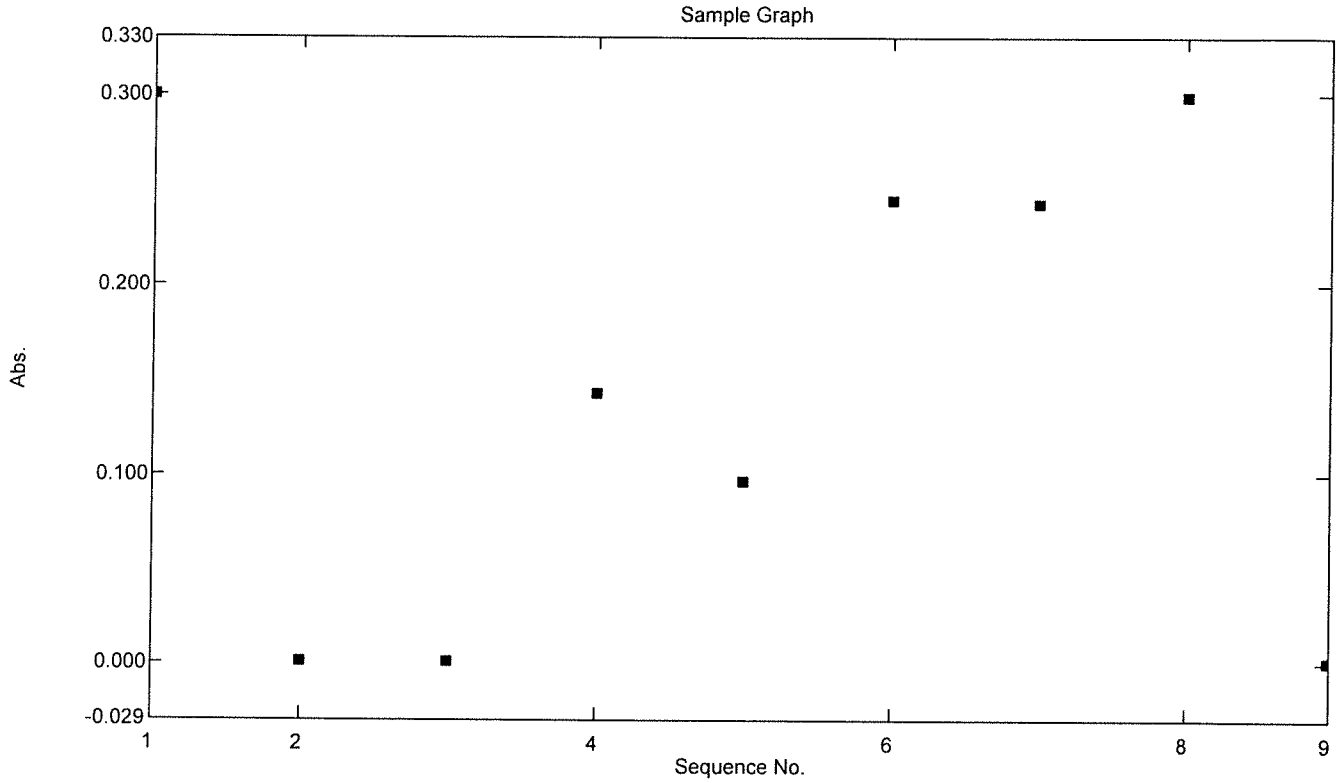

Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.489	0.300	312090505 UV-06
2	CCB	Unknown		0.003	0.001	
3	MBLK	Unknown		0.004	0.001	312090609 C
4	LCS	Unknown		0.233	0.142	312090504 UV-06
5	19110615.01	Unknown		0.159	0.096	PF-10X
6	19110615.01MS	Unknown		0.398	0.244	PF-10X
7	19110615.01MSD	Unknown		0.395	0.242	PF-10X
8	CCV2	Unknown		0.487	0.299	
9	CCB2	Unknown		0.003	0.001	
10						

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www.alsglobal.com

WorkOrder: HS19111039

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

10-Dec-2019

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 10, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19111039**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 2 sample(s) on Nov 21, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 10-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19111039

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19111039-01	LH18/24-SP650_112019	Water		20-Nov-2019 14:00	21-Nov-2019 08:35	☐
HS19111039-02	LH18/24-SP650_112019_AIX	Water		20-Nov-2019 14:00	21-Nov-2019 08:35	☐

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ALS Houston, US Date: 10-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19111039

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

  The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

WetChemistry by Method E365.3

Batch ID: R351507

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E350.3

Batch ID: R351487

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 10-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_112019
Collection Date: 20-Nov-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19111039
Lab ID:HS19111039-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: MZD
Nitrogen, Ammonia (As N)	**4.6**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	27-Nov-2019 16:20
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**0.833**	a	**0.0100**	**0.0250**	**0.0250**	**mg/L**	1	21-Nov-2019 17:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	27-Nov-2019 09:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Houston, US Date: 10-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_112019_AIX
Collection Date: 20-Nov-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19111039
Lab ID:HS19111039-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	10-Dec-2019 09:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19111039

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R351402 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Water	
HS19111039-01	LH18/24-SP650_112019	20 Nov 2019 14:00			27 Nov 2019 09:14	1
Batch ID: R351487 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Water	
HS19111039-01	LH18/24-SP650_112019	20 Nov 2019 14:00			27 Nov 2019 16:20	1
Batch ID: R351507 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Water	
HS19111039-01	LH18/24-SP650_112019	20 Nov 2019 14:00			21 Nov 2019 17:00	1
Batch ID: R352119 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19111039-02	LH18/24-SP650_112019_AIX	20 Nov 2019 14:00			10 Dec 2019 09:45	1

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ALS Houston, US Date: 10-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19111039

QC BATCH REPORT

Batch ID: R351487 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-351487** Units: **mg/L** Analysis Date: **27-Nov-2019 16:20**
Client ID: Run ID: **WetChem_HS_351487** SeqNo: **5365450** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-351487** Units: **mg/L** Analysis Date: **27-Nov-2019 16:20**
Client ID: Run ID: **WetChem_HS_351487** SeqNo: **5365451** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	9.25	0.20	10	0	92.5	80 - 120				

LCSD Sample ID: **LCSD-351487** Units: **mg/L** Analysis Date: **27-Nov-2019 16:20**
Client ID: Run ID: **WetChem_HS_351487** SeqNo: **5365452** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	9.398	0.20	10	0	94.0	80 - 120	9.25	1.59	20	

MS Sample ID: **HS19111039-01MS** Units: **mg/L** Analysis Date: **27-Nov-2019 16:20**
Client ID: **LH18/24-SP650_112019** Run ID: **WetChem_HS_351487** SeqNo: **5365454** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	14.09	0.20	10	4.624	94.7	80 - 120				

MSD Sample ID: **HS19111039-01MSD** Units: **mg/L** Analysis Date: **27-Nov-2019 16:20**
Client ID: **LH18/24-SP650_112019** Run ID: **WetChem_HS_351487** SeqNo: **5365455** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	14.12	0.20	10	4.624	95.0	80 - 120	14.09	0.213	20	

The following samples were analyzed in this batch: HS19111039-01

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ALS Houston, US Date: 10-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19111039

QC BATCH REPORT

Batch ID: R351507 (0) **Instrument:** UV-2450 **Method:** ORTHO PHOSPHATE (PO4) AS P BY E365.3

MBLK Sample ID: **MBLK-R351507** Units: **mg/L** Analysis Date: **21-Nov-2019 17:00**
Client ID: Run ID: **UV-2450_351507** SeqNo: **5365816** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R351507** Units: **mg/L** Analysis Date: **21-Nov-2019 17:00**
Client ID: Run ID: **UV-2450_351507** SeqNo: **5365823** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.217	0.0250	0.25	0	86.8	85 - 115				

LCSD Sample ID: **LCSD-R351507** Units: **mg/L** Analysis Date: **21-Nov-2019 17:00**
Client ID: Run ID: **UV-2450_351507** SeqNo: **5365814** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.217	0.0250	0.25	0	86.8	85 - 115	0.217	0	20	

MS Sample ID: **HS19111045-01MS** Units: **mg/L** Analysis Date: **21-Nov-2019 17:00**
Client ID: Run ID: **UV-2450_351507** SeqNo: **5365820** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.232	0.0250	0.25	0.004	91.2	80 - 120				

MSD Sample ID: **HS19111045-01MSD** Units: **mg/L** Analysis Date: **21-Nov-2019 17:00**
Client ID: Run ID: **UV-2450_351507** SeqNo: **5365819** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.228	0.0250	0.25	0.004	89.6	80 - 120	0.232	1.74	20	

The following samples were analyzed in this batch: HS19111039-01

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Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS19111039**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 10-Dec-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19111039
Date/Time Received: **21-Nov-2019 08:35**
Received by: **PMG**

Checklist completed by: *Paresh M. Giga* eSignature — 21-Nov-2019 Date
Reviewed by: *RJ Modashia* eSignature — 21-Nov-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.8c U/c	IR11
Cooler(s)/Kit(s):	44718	
Date/Time sample(s) sent to storage:	11/21/19 10:25	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Chain incorrect.
1st sample date 11/22/19.
Logged in as 11/20/19

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Page 1 of 1

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_112019	Water	11/22/19 / 14:00		3	X	X			H2SO4	
LH18/24-SP650_112019	Water	11/20/19 / 14:00		1			X		NONE	
LH18/24 –SP650_112019_AIX	Water	11/20/19 / 14:00		1				X	NONE	

Analyses

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	11/20/19	14:30		11/21/19	08:35						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

HS19111039

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

44718 ULC 0.3° 4 PI CIF 0.0°

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

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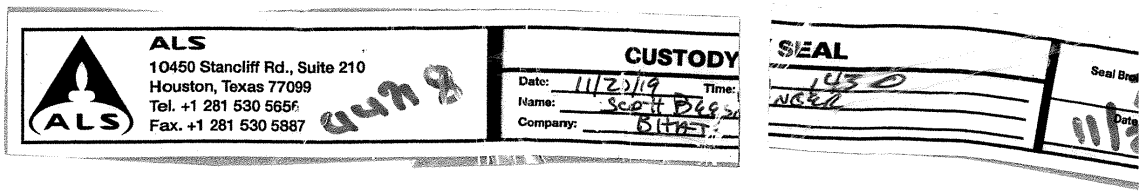

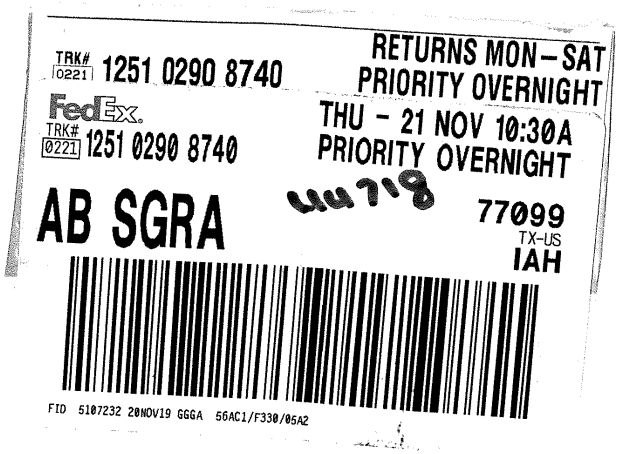

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ALS Group USA, Corp
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Kelso, WA 98626
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www.alsglobal.com

November 27, 2019

Analytical Report for Service Re uest No: K1911031

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19111039

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory November 22, 2019
For your reference, these analyses have been assigned our service request number **K1911031.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

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ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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www.alsglobal.com

Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, the elution pattern does not match the calibration standard.
	chromatographic fingerprint does not resemble a petroleum product.

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ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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ALS Environmental

Client: ALS Environmental - US
Project: HS19111039
Sample Matrix: Water

Service Request: K1911031
Date Received: 11/22/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 11/22/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

Method SM 5310 C, 11/24/2019: The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in sample LH18/24-SP650_112019 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by Kelley Lovejoy Date 11/27/2019

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Chain of Custody

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K1911031

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12678**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626 **Phone:** +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19111039
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19111039-01**	**LH18/24-SP650_112019**	**Water**	**20 Nov 2019 14:00**
	TOC Analysis for DOD Level IV			03 Dec 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Mussman Date/Time: 11/21/19 18:00

Received By: Date/Time: 11/22/19 0940

Cooler ID(s): Temperature(s):

PC KL

Cooler Receipt and Preservation Form

Client ALS Houston Service Request K19 11031

Received: 11/22/19 Opened: 11/22/19 By: CG Unloaded: 11/22/19 By: CG

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.6	-0.5	-0.2	-0.1	+0.1	360	12678	1251 0292 0914	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

RUSH

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General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1911031
Project:	HS19111039	**Date Collected:**	11/20/19
Sample Matrix:	Water	**Date Received:**	11/22/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_112019	K1911031-001	**0.90**	0.50	0.20	0.07	1	11/24/19 12:50	
Method Blank	K1911031-MB	ND U	0.50	0.20	0.07	1	11/24/19 02:41	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1911031
Project	HS19111039	**Date Collected:**	11/20/19
Sample Matrix:	Water	**Date Received:**	11/22/19
		Date Analyzed:	11/24/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_112019	**Units:**	mg/L
Lab Code:	K1911031-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1911031-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	0.90	0.79	0.843	13 *	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

eries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1911031
Project:	HS19111039	**Date Analyzed:**	11/24/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	661077

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1911031-LCS	25.1	25.0	100	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1911031
Project: HS19111039

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	661077	KQ1917447-01	11/24/19 02:11	25.0	24.6	98	90-110
CCV2	661077	KQ1917447-02	11/24/19 06:54	25.0	24.2	97	90-110
CCV3	661077	KQ1917447-03	11/24/19 11:51	25.0	24.7	99	90-110
CCV4	661077	KQ1917447-04	11/24/19 16:22	25.0	24.3	97	90-110

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1911031
Project: HS19111039

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	661077	KQ1917447-05	11/24/19 02:26	0.50	0.20	0.07	ND	U
CCB2	661077	KQ1917447-06	11/24/19 07:09	0.50	0.20	0.07	ND	U
CCB3	661077	KQ1917447-07	11/24/19 12:06	0.50	0.20	0.07	0.23	J
CCB4	661077	KQ1917447-08	11/24/19 16:36	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # (Original) K1910680, 796, 847, 86, 929, 959, 11031, 11032, 11033, 10803, 11028, 11032, 11047, 11049, 975, 11043

Tier: II IV IV II II I IV IV IV IV V IV II II I II

Date Analyzed: 11/23/19

Analyst: BCV

Analysis: TOC/DOC

TOC: 661076, 661077, 661078

Run # DOC: 661079

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K1910847-4/4d, K1910903-2/2d, 803-4/4d sent for CA due to being above calibration curve.
K1910803-3/3d, 803-5/5d sent for CA due to sample carry over.
K1911043-2 sent for CA due to being overdiluted.
K1910680-2/2d, 680-4/4d, 680-5/5d, 796-2/2d, 929-2/2d, 11031-1/1d, 11028-3/3d, and 10975-1/1d report a high %RSD. However these samples are less than 5x the MRL.
K1911033-6/6d, 11033-7/7d, 10803-3, 10803-5, 11047-1/1d report a high %RSD due to suspected non-homogenous sample.

Final Approved by: _____ Date: 11/26/19

DQREPORT

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661076 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
K1910680-001	Carbon, Total Organic	N/A		Water	0.36 mg/L	10 ml	0.36 mg/L J	1	0.07	0.50			11/23/19 17:58	N
K1910680-002	Carbon, Total Organic	N/A		Water	0.30 mg/L	10 ml	0.30 mg/L J	1	0.07	0.50			11/23/19 18:26	N
K1910680-003	Carbon, Total Organic	N/A		Water	0.63 mg/L	10 ml	0.63 mg/L	1	0.07	0.50			11/23/19 18:54	N
K1910680-004	Carbon, Total Organic	N/A		Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50			11/23/19 19:22	N
K1910680-005	Carbon, Total Organic	N/A		Water	0.17 mg/L	10 ml	0.17 mg/L J	1	0.07	0.50			11/23/19 19:50	N
K1910796-001	Carbon, Total Organic	N/A		Ground Water	1.05 mg/L	10 ml	1.05 mg/L	1	0.07	0.50			11/23/19 21:30	N
K1910796-002	Carbon, Total Organic	N/A		Ground Water	0.88 mg/L	10 ml	0.88 mg/L	1	0.07	0.50			11/23/19 21:59	N
K1910796-003	Carbon, Total Organic	N/A		Ground Water	1.78 mg/L	10 ml	1.78 mg/L	1	0.07	0.50			11/23/19 22:27	N
K1910796-004	Carbon, Total Organic	N/A		Ground Water	0.20 mg/L	10 ml	0.20 mg/L J	1	0.07	0.50			11/23/19 20:18	Y
K1910847-001	Carbon, Total Organic	N/A		Ground Water	34.01 mg/L	10 ml	680 mg/L	20	2	10			11/23/19 22:55	N
K1910847-002	Carbon, Total Organic	N/A		Ground Water	32.82 mg/L	10 ml	32.8 mg/L	1	0.07	0.50			11/23/19 23:23	N
K1910847-003	Carbon, Total Organic	N/A		Ground Water	35.27 mg/L	10 ml	35.3 mg/L	1	0.07	0.50			11/23/19 23:51	N
K1910847-004	Carbon, Total Organic	N/A		Ground Water	61.27 mg/L	10 ml	61.3 mg/L	1	0.07	0.50			11/24/19 00:19	N
K1910861-001	Carbon, Total Organic	N/A		Water	7.26 mg/L	10 ml	726 mg/L	100	7	50			11/24/19 00:47	N
K1910861-002	Carbon, Total Organic	N/A		Water	5.98 mg/L	10 ml	598 mg/L	100	7	50			11/24/19 01:15	N
K1910861-003	Carbon, Total Organic	N/A		Water	5.96 mg/L	10 ml	596 mg/L	100	7	50			11/24/19 01:43	N
K1910861-004	Carbon, Total Organic	N/A		Water	7.78 mg/L	10 ml	778 mg/L	100	7	50			11/24/19 03:10	N
K1910861-005	Carbon, Total Organic	N/A		Water	7.46 mg/L	10 ml	746 mg/L	100	7	50			11/24/19 03:38	N
K1910861-006	Carbon, Total Organic	N/A		Water	10.75 mg/L	10 ml	1080 mg/L	100	7	50			11/24/19 04:06	N
K1910861-007	Carbon, Total Organic	N/A		Water	8.35 mg/L	10 ml	835 mg/L	100	7	50			11/24/19 04:34	N
KQ1917446-01	Carbon, Total Organic	CCV		Water	24.53 mg/L	10 ml	24.5 mg/L	1					11/23/19 16:45	N
KQ1917446-02	Carbon, Total Organic	CCV		Water	24.61 mg/L	10 ml	24.6 mg/L	1					11/23/19 21:01	N
KQ1917446-03	Carbon, Total Organic	CCV		Water	24.56 mg/L	10 ml	24.6 mg/L	1					11/24/19 02:11	N
KQ1917446-04	Carbon, Total Organic	CCV		Water	24.22 mg/L	10 ml	24.2 mg/L	1					11/24/19 06:54	N
KQ1917446-05	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/23/19 16:59	N
KQ1917446-06	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/23/19 21:15	N
KQ1917446-07	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 02:26	N
KQ1917446-08	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 07:09	N
KQ1917446-09	Carbon, Total Organic	MB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/23/19 17:14	N
KQ1917446-10	Carbon, Total Organic	LCS		Water	24.74 mg/L	10 ml	24.7 mg/L	1	0.07	0.50	99		11/23/19 17:29	N
KQ1917446-11	Carbon, Total Organic	MS	K1910796-004	Ground Water	22.48 mg/L	10 ml	22.5 mg/L	1	0.07	0.50	89		11/23/19 20:46	N

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/26/19

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661076 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Ti
KQ1917446-12	Carbon, Total Organic	DUP	K1910680-001	Water	0.36 mg/L	10 ml	0.36 mg/L J	1	0.07	0.50		2	11/23/19 17:58	N	
KQ1917446-13	Carbon, Total Organic	DUP	K1910680-002	Water	0.26 mg/L	10 ml	0.26 mg/L J	1	0.07	0.50		13*	11/23/19 18:26	N	
KQ1917446-14	Carbon, Total Organic	DUP	K1910680-003	Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50		3	11/23/19 18:54	N	
KQ1917446-15	Carbon, Total Organic	DUP	K1910680-004	Water	0.67 mg/L	10 ml	0.67 mg/L	1	0.07	0.50		17*	11/23/19 19:22	N	
KQ1917446-16	Carbon, Total Organic	DUP	K1910680-005	Water	0.20 mg/L	10 ml	0.20 mg/L J	1	0.07	0.50		15*	11/23/19 19:50	N	
KQ1917446-17	Carbon, Total Organic	DUP	K1910796-002	Ground Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50		14*	11/23/19 21:59	N	
KQ1917446-18	Carbon, Total Organic	DUP	K1910796-001	Ground Water	1.14 mg/L	10 ml	1.14 mg/L	1	0.07	0.50		8	11/23/19 21:30	N	
KQ1917446-19	Carbon, Total Organic	DUP	K1910796-003	Ground Water	1.75 mg/L	10 ml	1.75 mg/L	1	0.07	0.50		1	11/23/19 22:27	N	
KQ1917446-20	Carbon, Total Organic	DUP	K1910796-004	Ground Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50		6	11/23/19 20:18	N	
KQ1917446-21	Carbon, Total Organic	DUP	K1910847-002	Ground Water	32.44 mg/L	10 ml	32.4 mg/L	1	0.07	0.50		1	11/23/19 23:23	N	
KQ1917446-22	Carbon, Total Organic	DUP	K1910847-001	Ground Water	33.78 mg/L	10 ml	676 mg/L	20	2	10		<1	11/23/19 22:55	N	
KQ1917446-23	Carbon, Total Organic	DUP	K1910847-003	Ground Water	34.76 mg/L	10 ml	34.8 mg/L	1	0.07	0.50		1	11/23/19 23:51	N	
KQ1917446-24	Carbon, Total Organic	DUP	K1910847-004	Ground Water	60.91 mg/L	10 ml	60.9 mg/L	1	0.07	0.50		<1	11/24/19 00:19	N	
KQ1917446-25	Carbon, Total Organic	DUP	K1910861-001	Water	6.74 mg/L	10 ml	674 mg/L	100	7	50		7	11/24/19 00:47	N	
KQ1917446-26	Carbon, Total Organic	DUP	K1910861-002	Water	5.82 mg/L	10 ml	582 mg/L	100	7	50		3	11/24/19 01:15	N	
KQ1917446-27	Carbon, Total Organic	DUP	K1910861-003	Water	5.90 mg/L	10 ml	590 mg/L	100	7	50		1	11/24/19 01:43	N	
KQ1917446-28	Carbon, Total Organic	DUP	K1910861-004	Water	7.76 mg/L	10 ml	776 mg/L	100	7	50		<1	11/24/19 03:10	N	
KQ1917446-29	Carbon, Total Organic	DUP	K1910861-005	Water	7.41 mg/L	10 ml	741 mg/L	100	7	50		<1	11/24/19 03:38	N	
KQ1917446-30	Carbon, Total Organic	DUP	K1910861-006	Water	10.62 mg/L	10 ml	1060 mg/L	100	7	50		1	11/24/19 04:06	N	
KQ1917446-31	Carbon, Total Organic	DUP	K1910861-007	Water	8.16 mg/L	10 ml	816 mg/L	100	7	50		2	11/24/19 04:34	N	

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# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661077 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Ti
K1910929-001	Carbon, Total Organic	N/A		Water	1.49 mg/L	10 ml	1.49 mg/L	1	0.07	0.50			11/24/19 05:02	N	
K1910929-002	Carbon, Total Organic	N/A		Water	0.79 mg/L	10 ml	0.79 mg/L	1	0.07	0.50			11/24/19 05:30	N	
K1910929-003	Carbon, Total Organic	N/A		Water	1.91 mg/L	10 ml	1.91 mg/L	1	0.07	0.50			11/24/19 05:58	N	
K1910969-002	Carbon, Total Organic	N/A		Drinking Water	1.16 mg/L	10 ml	1.16 mg/L	1	0.07	0.50			11/24/19 06:26	N	
K1911031-001	Carbon, Total Organic	N/A		Water	0.90 mg/L	10 ml	0.90 mg/L	1	0.07	0.50			11/24/19 12:50	N	
K1911032-001	Carbon, Total Organic	N/A		Ground Water	1.54 mg/L	10 ml	1.54 mg/L	1	0.07	0.50			11/24/19 13:19	N	
K1911032-002	Carbon, Total Organic	N/A		Ground Water	1.55 mg/L	10 ml	1.55 mg/L	1	0.07	0.50			11/24/19 13:47	N	
K1911032-003	Carbon, Total Organic	N/A		Ground Water	1.59 mg/L	10 ml	1.59 mg/L	1	0.07	0.50			11/24/19 14:15	N	
K1911032-004	Carbon, Total Organic	N/A		Ground Water	2.02 mg/L	10 ml	2.02 mg/L	1	0.07	0.50			11/24/19 14:43	N	
K1911032-005	Carbon, Total Organic	N/A		Ground Water	4.63 mg/L	10 ml	1850 mg/L	400	30	200			11/24/19 15:11	N	
K1911032-006	Carbon, Total Organic	N/A		Ground Water	1.99 mg/L	10 ml	1.99 mg/L	1	0.07	0.50			11/24/19 15:39	N	
K1911033-001	Carbon, Total Organic	N/A		Ground Water	3.66 mg/L	10 ml	3.66 mg/L	1	0.07	0.50			11/24/19 07:24	N	
K1911033-002	Carbon, Total Organic	N/A		Ground Water	2.81 mg/L	10 ml	2.81 mg/L	1	0.07	0.50			11/24/19 07:52	N	
K1911033-003	Carbon, Total Organic	N/A		Ground Water	2.80 mg/L	10 ml	2.80 mg/L	1	0.07	0.50			11/24/19 08:20	N	
K1911033-004	Carbon, Total Organic	N/A		Ground Water	2.38 mg/L	10 ml	2.38 mg/L	1	0.07	0.50			11/24/19 08:48	N	
K1911033-005	Carbon, Total Organic	N/A		Ground Water	39.57 mg/L	10 ml	791 mg/L	20	2	10			11/24/19 09:16	N	
K1911033-006	Carbon, Total Organic	N/A		Ground Water	4.37 mg/L	10 ml	4.37 mg/L	1	0.07	0.50			11/24/19 09:44	N	
K1911033-007	Carbon, Total Organic	N/A		Ground Water	2.51 mg/L	10 ml	2.51 mg/L	1	0.07	0.50			11/24/19 10:12	N	
K1911033-008	Carbon, Total Organic	N/A		Ground Water	7.82 mg/L	10 ml	7820 mg/L	1000	70	500			11/24/19 10:41	N	
K1911033-009	Carbon, Total Organic	N/A		Ground Water	3.94 mg/L	10 ml	3.94 mg/L	1	0.07	0.50			11/24/19 11:09	Y	
KQ1917447-01	Carbon, Total Organic	CCV		Water	24.56 mg/L	10 ml	24.6 mg/L	1					11/24/19 02:11	N	
KQ1917447-02	Carbon, Total Organic	CCV		Water	24.22 mg/L	10 ml	24.2 mg/L	1					11/24/19 06:54	N	
KQ1917447-03	Carbon, Total Organic	CCV		Water	24.73 mg/L	10 ml	24.7 mg/L	1					11/24/19 11:51	N	
KQ1917447-04	Carbon, Total Organic	CCV		Water	24.32 mg/L	10 ml	24.3 mg/L	1					11/24/19 16:22	N	
KQ1917447-05	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 02:26	N	
KQ1917447-06	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 07:09	N	
KQ1917447-07	Carbon, Total Organic	CCB		Water	0.23 mg/L	10 ml	0.23 mg/L J	1	0.07	0.50			11/24/19 12:06	N	
KQ1917447-08	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 16:36	N	

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/26/19

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661077 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Ti
KQ1917447-09	Carbon, Total Organic	MB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 02:41	N	
KQ1917447-10	Carbon, Total Organic	LCS		Water	25.09 mg/L	10 ml	25.1 mg/L	1	0.07	0.50	100		11/24/19 02:55	N	
KQ1917447-11	Carbon, Total Organic	MS	K1911033-009	Ground Water	26.11 mg/L	10 ml	52.2 mg/L	2	0.2	1.0	97		11/24/19 11:37	N	
KQ1917447-12	Carbon, Total Organic	DUP	K1910929-001	Water	1.39 mg/L	10 ml	1.39 mg/L	1	0.07	0.50		7	11/24/19 05:02	N	
KQ1917447-13	Carbon, Total Organic	DUP	K1910929-002	Water	0.88 mg/L	10 ml	0.88 mg/L	1	0.07	0.50		11*	11/24/19 05:30	N	
KQ1917447-14	Carbon, Total Organic	DUP	K1910929-003	Water	1.94 mg/L	10 ml	1.94 mg/L	1	0.07	0.50		2	11/24/19 05:58	N	
KQ1917447-15	Carbon, Total Organic	DUP	K1910969-002	Drinking Water	1.11 mg/L	10 ml	1.11 mg/L	1	0.07	0.50		5	11/24/19 06:26	N	
KQ1917447-16	Carbon, Total Organic	DUP	K1911031-001	Water	0.79 mg/L	10 ml	0.79 mg/L	1	0.07	0.50		13*	11/24/19 12:50	N	
KQ1917447-17	Carbon, Total Organic	DUP	K1911032-002	Ground Water	1.60 mg/L	10 ml	1.60 mg/L	1	0.07	0.50		3	11/24/19 13:47	N	
KQ1917447-18	Carbon, Total Organic	DUP	K1911032-001	Ground Water	1.42 mg/L	10 ml	1.42 mg/L	1	0.07	0.50		8	11/24/19 13:19	N	
KQ1917447-19	Carbon, Total Organic	DUP	K1911032-003	Ground Water	1.50 mg/L	10 ml	1.50 mg/L	1	0.07	0.50		5	11/24/19 14:15	N	
KQ1917447-20	Carbon, Total Organic	DUP	K1911032-004	Ground Water	1.87 mg/L	10 ml	1.87 mg/L	1	0.07	0.50		8	11/24/19 14:43	N	
KQ1917447-21	Carbon, Total Organic	DUP	K1911032-005	Ground Water	4.83 mg/L	10 ml	1930 mg/L	400	30	200		4	11/24/19 15:11	N	
KQ1917447-22	Carbon, Total Organic	DUP	K1911032-006	Ground Water	1.82 mg/L	10 ml	1.82 mg/L	1	0.07	0.50		9	11/24/19 15:39	N	
KQ1917447-23	Carbon, Total Organic	DUP	K1911033-001	Ground Water	3.65 mg/L	10 ml	3.65 mg/L	1	0.07	0.50		<1	11/24/19 07:24	N	
KQ1917447-24	Carbon, Total Organic	DUP	K1911033-002	Ground Water	2.74 mg/L	10 ml	2.74 mg/L	1	0.07	0.50		3	11/24/19 07:52	N	
KQ1917447-25	Carbon, Total Organic	DUP	K1911033-003	Ground Water	2.76 mg/L	10 ml	2.76 mg/L	1	0.07	0.50		1	11/24/19 08:20	N	
KQ1917447-26	Carbon, Total Organic	DUP	K1911033-004	Ground Water	2.31 mg/L	10 ml	2.31 mg/L	1	0.07	0.50		3	11/24/19 08:48	N	
KQ1917447-27	Carbon, Total Organic	DUP	K1911033-005	Ground Water	38.77 mg/L	10 ml	775 mg/L	20	2	10		2	11/24/19 09:16	N	
KQ1917447-28	Carbon, Total Organic	DUP	K1911033-006	Ground Water	3.18 mg/L	10 ml	3.18 mg/L	1	0.07	0.50		31*	11/24/19 09:44	N	
KQ1917447-29	Carbon, Total Organic	DUP	K1911033-007	Ground Water	2.24 mg/L	10 ml	2.24 mg/L	1	0.07	0.50		11*	11/24/19 10:12	N	
KQ1917447-30	Carbon, Total Organic	DUP	K1911033-008	Ground Water	8.01 mg/L	10 ml	8010 mg/L	1000	70	500		2	11/24/19 10:41	N	
KQ1917447-31	Carbon, Total Organic	DUP	K1911033-009	Ground Water	3.61 mg/L	10 ml	3.61 mg/L	1	0.07	0.50		9	11/24/19 11:09	N	

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661078 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
K1910803-001	Carbon, Total Organic	N/A		Water	43.43 mg/L	10 ml	43.4 mg/L	1	0.07	0.50			11/24/19 17:19	N	
K1910803-002	Carbon, Total Organic	N/A		Water	119.98 mg/L	10 ml	120 mg/L	1	0.07	0.50			11/24/19 17:47	N	
K1910803-003	Carbon, Total Organic	N/A		Water	21.79 mg/L	10 ml	21.8 mg/L	1	0.07	0.50			11/24/19 18:15	N	
K1910803-004	Carbon, Total Organic	N/A		Water	67.32 mg/L	10 ml	67.3 mg/L	1	0.07	0.50			11/24/19 18:43	N	
K1910803-005	Carbon, Total Organic	N/A		Water	39.95 mg/L	10 ml	39.9 mg/L	1	0.07	0.50			11/24/19 19:11	N	
K1910803-006	Carbon, Total Organic	N/A		Water	14.93 mg/L	10 ml	14.9 mg/L	1	0.07	0.50			11/24/19 19:40	N	
K1911028-001	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50			11/25/19 00:24	N	
K1911028-002	Carbon, Total Organic	N/A		Water	22.10 mg/L	10 ml	22.1 mg/L	1	0.07	0.50			11/25/19 00:52	N	
K1911028-003	Carbon, Total Organic	N/A		Water	0.73 mg/L	10 ml	0.73 mg/L	1	0.07	0.50			11/25/19 01:21	N	
K1911028-004	Carbon, Total Organic	N/A		Water	1.41 mg/L	10 ml	1.41 mg/L	1	0.07	0.50			11/25/19 02:18	N	
K1911028-005	Carbon, Total Organic	N/A		Water	1.44 mg/L	10 ml	1.44 mg/L	1	0.07	0.50			11/25/19 02:47	N	
K1911032-007	Carbon, Total Organic	N/A		Ground Water	4.08 mg/L	10 ml	4.08 mg/L	1	0.07	0.50			11/24/19 16:51	Y	
K1911047-001	Carbon, Total Organic	N/A		Water	3.61 mg/L	10 ml	361 mg/L	100	7	50			11/24/19 20:08	N	
K1911047-002	Carbon, Total Organic	N/A		Water	26.84 mg/L	10 ml	2680 mg/L	100	7	50			11/24/19 20:36	N	
K1911049-001	Carbon, Total Organic	N/A		Water	4.21 mg/L	10 ml	84 mg/L	20	2	10			11/24/19 21:04	N	
K1911049-002	Carbon, Total Organic	N/A		Water	9.04 mg/L	10 ml	181 mg/L	20	2	10			11/24/19 22:31	Y	
K1911049-003	Carbon, Total Organic	N/A		Water	11.75 mg/L	10 ml	11.7 mg/L	1	0.07	0.50			11/24/19 23:28	N	
K1911049-004	Carbon, Total Organic	N/A		Water	1.62 mg/L	10 ml	1.62 mg/L	1	0.07	0.50			11/24/19 23:56	N	
KQ1917448-01	Carbon, Total Organic	CCV		Ground Water	24.73 mg/L	10 ml	24.7 mg/L	1					11/24/19 11:51	N	
KQ1917448-02	Carbon, Total Organic	CCV		Ground Water	24.32 mg/L	10 ml	24.3 mg/L	1					11/24/19 16:22	N	
KQ1917448-03	Carbon, Total Organic	CCV		Ground Water	24.63 mg/L	10 ml	24.6 mg/L	1					11/24/19 21:32	N	
KQ1917448-04	Carbon, Total Organic	CCV		Ground Water	24.22 mg/L	10 ml	24.2 mg/L	1					11/25/19 01:49	N	
KQ1917448-05	Carbon, Total Organic	CCV		Ground Water	24.12 mg/L	10 ml	24.1 mg/L	1					11/25/19 06:19	N	
KQ1917448-06	Carbon, Total Organic	CCB		Ground Water	0.23 mg/L	10 ml	0.23 mg/L J	1	0.07	0.50			11/24/19 12:06	N	
KQ1917448-07	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 16:36	N	
KQ1917448-08	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/24/19 21:47	N	
KQ1917448-09	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/25/19 02:04	N	
KQ1917448-10	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/25/19 06:34	N	
KQ1917448-11	Carbon, Total Organic	MB		Ground Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			11/24/19 12:21	N	

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11/26/19

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661078 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
KQ1917448-12	Carbon, Total Organic	LCS		Ground Water	24.93 mg/L	10 ml	24.9 mg/L	1	0.07	0.50	100		11/24/19 12:36	N	
KQ1917448-13	Carbon, Total Organic	MS	K1911032-007	Ground Water	26.35 mg/L	10 ml	52.7 mg/L	2	0.2	1.0	97		11/24/19 16:07	N	
KQ1917448-14	Carbon, Total Organic	MS	K1911049-002	Water	29.03 mg/L	10 ml	2900 mg/L	100	7	50	109		11/24/19 22:59	N	
KQ1917448-15	Carbon, Total Organic	DUP	K1910803-002	Water	122.07 mg/L	10 ml	122 mg/L	1	0.07	0.50		2	11/24/19 17:47	N	
KQ1917448-16	Carbon, Total Organic	DUP	K1910803-003	Water	18.16 mg/L	10 ml	18.2 mg/L	1	0.07	0.50		18*	11/24/19 18:15	N	
KQ1917448-17	Carbon, Total Organic	DUP	K1910803-004	Water	69.64 mg/L	10 ml	69.6 mg/L	1	0.07	0.50		3	11/24/19 18:43	N	
KQ1917448-18	Carbon, Total Organic	DUP	K1910803-005	Water	22.58 mg/L	10 ml	22.6 mg/L	1	0.07	0.50		56*	11/24/19 19:11	N	
KQ1917448-19	Carbon, Total Organic	DUP	K1910803-006	Water	13.68 mg/L	10 ml	13.7 mg/L	1	0.07	0.50		9	11/24/19 19:40	N	
KQ1917448-20	Carbon, Total Organic	DUP	K1910803-001	Water	44.82 mg/L	10 ml	44.8 mg/L	1	0.07	0.50		3	11/24/19 17:19	N	
KQ1917448-21	Carbon, Total Organic	DUP	K1911028-003	Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50		11*	11/25/19 01:21	N	
KQ1917448-22	Carbon, Total Organic	DUP	K1911028-004	Water	1.38 mg/L	10 ml	1.38 mg/L	1	0.07	0.50		2	11/25/19 02:18	N	
KQ1917448-23	Carbon, Total Organic	DUP	K1911028-005	Water	1.42 mg/L	10 ml	1.42 mg/L	1	0.07	0.50		1	11/25/19 02:47	N	
KQ1917448-24	Carbon, Total Organic	DUP	K1911028-001	Water	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50		9	11/25/19 00:24	N	
KQ1917448-25	Carbon, Total Organic	DUP	K1911028-002	Water	21.52 mg/L	10 ml	21.5 mg/L	1	0.07	0.50		3	11/25/19 00:52	N	
KQ1917448-26	Carbon, Total Organic	DUP	K1911032-007	Ground Water	4.18 mg/L	10 ml	4.18 mg/L	1	0.07	0.50		2	11/24/19 16:51	N	
KQ1917448-27	Carbon, Total Organic	DUP	K1911047-001	Water	3.03 mg/L	10 ml	303 mg/L	100	7	50		18*	11/24/19 20:08	N	
KQ1917448-28	Carbon, Total Organic	DUP	K1911047-002	Water	26.76 mg/L	10 ml	2680 mg/L	100	7	50		<1	11/24/19 20:36	N	
KQ1917448-29	Carbon, Total Organic	DUP	K1911049-001	Water	3.99 mg/L	10 ml	80 mg/L	20	2	10		5	11/24/19 21:04	N	
KQ1917448-30	Carbon, Total Organic	DUP	K1911049-002	Water	8.98 mg/L	10 ml	179 mg/L	20	2	10		<1	11/24/19 22:31	N	
KQ1917448-31	Carbon, Total Organic	DUP	K1911049-003	Water	11.81 mg/L	10 ml	11.8 mg/L	1	0.07	0.50		<1	11/24/19 23:28	N	
KQ1917448-32	Carbon, Total Organic	DUP	K1911049-004	Water	1.50 mg/L	10 ml	1.50 mg/L	1	0.07	0.50		8	11/24/19 23:56	N	

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 661079 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?
K1910975-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50			11/25/19 05:08	N
K1910975-002	Carbon, Dissolved Organic (DOC)	N/A		Water	7.97 mg/L	10 ml	79.7 mg/L	10	0.7	5.0			11/25/19 04:40	N
K1911043-001	Carbon, Dissolved Organic (DOC)	N/A		Water	11.72 mg/L	10 ml	11700 mg/L	1000	70	500			11/25/19 03:44	N
K1911043-002.R01	Carbon, Dissolved Organic (DOC)	N/A		Water	-0.04 mg/L	10 ml	500 mg/L U	1000	70	500			11/25/19 04:12	N
KQ1917449-01	Carbon, Dissolved Organic (DOC)	CCV		Water	-0.04 mg/L	10 ml	-0.0368 mg/L	1					11/24/19 22:01	N
KQ1917449-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.12 mg/L	10 ml	24.1 mg/L	1					11/25/19 06:19	N
KQ1917449-03	Carbon, Dissolved Organic (DOC)	CCB		Water	24.68 mg/L	10 ml	24.7 mg/L	1	0.07	0.50			11/24/19 22:16	N
KQ1917449-04	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/25/19 06:34	N
KQ1917449-05	Carbon, Dissolved Organic (DOC)	MB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			11/25/19 01:49	N
KQ1917449-06	Carbon, Dissolved Organic (DOC)	LCS		Water	24.22 mg/L	10 ml	24.2 mg/L	1	0.07	0.50	97		11/25/19 02:04	N
KQ1917449-07	Carbon, Dissolved Organic (DOC)	MS	K1910975-001	Water	26.58 mg/L	10 ml	26.6 mg/L	1	0.07	0.50	103		11/25/19 05:36	N
KQ1917449-08	Carbon, Dissolved Organic (DOC)	DUP	K1910975-001	Water	0.72 mg/L	10 ml	0.72 mg/L	1	0.07	0.50		21*	11/25/19 05:08	N
KQ1917449-09	Carbon, Dissolved Organic (DOC)	DUP	K1910975-002	Water	8.27 mg/L	10 ml	82.7 mg/L	10	0.7	5.0		4	11/25/19 04:40	N
KQ1917449-10	Carbon, Dissolved Organic (DOC)	DUP	K1911043-001	Water	11.71 mg/L	10 ml	11700 mg/L	1000	70	500		<1	11/25/19 03:44	N
KQ1917449-11	Carbon, Dissolved Organic (DOC)	DUP	K1911043-002	Water	-0.04 mg/L	10 ml	500 mg/L U	1000	70	500		NC	11/25/19 04:12	N

11/26/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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0.031	0.031	#DIV/0!	#DIV/0!	OBSERVATIONS	13	0.031
0.000				STD Deviation	0.08537	0
0.000				AVERAGE	0.03675	0
0.000				UCL	0.12213	0
0.000				LCL	-0.04862	0
0.000						0
0.270						ABOVE
0.177				OBSERVATIONS	1	ABOVE
0.000				STD Deviation	#DIV/0!	0
0.000				AVERAGE	0.03100	0
0.000				UCL	#DIV/0!	0
0.000				LCL	#DIV/0!	0
0.000						0
						0
				OBSERVATIONS	0	0
				STD Deviation	#DIV/0!	0
				AVERAGE	#DIV/0!	0
				UCL	#DIV/0!	0
				LCL	#DIV/0!	0
						0
						0
				OBSERVATIONS	0	0
				STD Deviation	#DIV/0!	0
				AVERAGE	#DIV/0!	0
						0
						0
						0
						0
						0
						0

11/26/19

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.567	0.0368	24.5300	24.52995	24.5	11/23/2019
3	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/23/2019
4	mb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/23/2019
5	lcs	1	24.774	0.0368	24.7370	24.73695	24.7	11/23/2019
6	K1910680-001	1	0.394	0.0368	0.3575	0.35745	<0.5	11/23/2019
7	K1910680-001	1	0.400	0.0368	0.3632	0.36315	<0.5	11/23/2019
8	K1910680-002	1	0.336	0.0368	0.2995	0.29945	<0.5	11/23/2019
9	K1910680-002	1	0.301	0.0368	0.2638	0.26375	<0.5	11/23/2019
10	K1910680-003	1	0.665	0.0368	0.6281	0.62805	0.63	11/23/2019
11	K1910680-003	1	0.645	0.0368	0.6085	0.60845	0.6	11/23/2019
12	K1910680-004	1	0.598	0.0368	0.5611	0.56105	0.56	11/23/2019
13	K1910680-004	1	0.704	0.0368	0.6673	0.66725	0.67	11/23/2019
14	K1910680-005	1	0.209	0.0368	0.1722	0.17215	<0.5	11/23/2019
15	K1910680-005	1	0.237	0.0368	0.1999	0.19985	<0.5	11/23/2019
16	K1910796-004	1	0.235	0.0368	0.1982	0.19815	<0.5	11/23/2019
17	K1910796-004	1	0.247	0.0368	0.2103	0.21025	<0.5	11/23/2019
18	KQ1917446-11	1	22.520	0.0368	22.4829	22.48285	22.5	11/23/2019
19	ccv	1	24.651	0.0368	24.6140	24.61395	24.6	11/23/2019
20	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/23/2019
21	K1910796-001	1	1.085	0.0368	1.0481	1.04805	1.05	11/23/2019
22	K1910796-001	1	1.173	0.0368	1.1367	1.13665	1.1	11/23/2019
23	K1910796-002	1	0.917	0.0368	0.8806	0.88055	0.9	11/23/2019
24	K1910796-002	1	0.803	0.0368	0.7659	0.76585	0.77	11/23/2019
25	K1910796-003	1	1.814	0.0368	1.7772	1.77715	1.78	11/23/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

23 Bad Wells

Analyzed By: BKP		Date Analyzed	11/26/19
Reviewed By:		Date Reviewed	11/26/19

date time

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1910796-003	1	1.791	0.0368	1.7545	1.75445	1.75	11/23/2019
27	K1910847-001	20	34.048	0.0368	34.0116	680.231	680.23	11/23/2019
28	K1910847-001	20	33.816	0.0368	33.7788	675.575	675.6	11/23/2019
29	K1910847-002	1	32.858	0.0368	32.8211	32.82105	32.8	11/23/2019
30	K1910847-002	1	32.481	0.0368	32.4447	32.44465	32.4	11/23/2019
31	K1910847-003	1	35.302	0.0368	35.2656	35.26555	35.3	11/23/2019
32	K1910847-003	1	34.801	0.0368	34.7641	34.76405	34.8	11/23/2019
33	K1910847-004	1	61.309	0.0368	61.2726	61.27255	61.3	11/24/2019
34	K1910847-004	1	60.948	0.0368	60.9109	60.91085	60.9	11/24/2019
35	K1910861-001	100	7.292	0.0368	7.2555	725.545	725.5	11/24/2019
36	K1910861-001	100	6.781	0.0368	6.7447	674.465	674.5	11/24/2019
37	K1910861-002	100	6.013	0.0368	5.9758	597.575	597.6	11/24/2019
38	K1910861-002	100	5.852	0.0368	5.8151	581.505	581.5	11/24/2019
39	K1910861-003	100	5.998	0.0368	5.9616	596.155	596.2	11/24/2019
40	K1910861-003	100	5.934	0.0368	5.8973	589.725	589.7	11/24/2019
41	ccv	1	24.592	0.0368	24.5555	24.55545	24.6	11/24/2019
42	ccb	1	0.031	0.0368	-0.0058	-0.00575	<0.5	11/24/2019
43	K1910861-004	100	7.819	0.0368	7.7823	778.225	778.2	11/24/2019
44	K1910861-004	100	7.801	0.0368	7.7640	776.395	776.4	11/24/2019
45	K1910861-005	100	7.497	0.0368	7.4601	746.005	746.0	11/24/2019
46	K1910861-005	100	7.442	0.0368	7.4053	740.525	740.5	11/24/2019
47	K1910861-006	100	10.791	0.0368	10.7546	1075.455	1075.5	11/24/2019
48	K1910861-006	100	10.652	0.0368	10.6153	1061.525	1061.5	11/24/2019
49	K1910861-007	100	8.384	0.0368	8.3476	834.755	834.8	11/24/2019
50	K1910861-007	100	8.194	0.0368	8.1568	815.675	815.7	11/24/2019

Analyzed By: BCD Date Analyzed 11/23/19

Reviewed By: [signature] Date Reviewed 11/26/19

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	24.259	0.0368	24.2227	24.22265	24.22	11/24/2019
52	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCP	Date Analyzed	11/25/19
Reviewed By:	[signature]	Date Reviewed	11/26/19

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.592	0.0368	24.5555	24.55545	24.6	11/24/2019
3	ccb	1	0.031	0.0368	-0.0058	-0.00575	<0.5	11/24/2019
4	mb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
5	lcs	1	25.123	0.0368	25.0866	25.08655	25.1	11/24/2019
6	K1910929-001	1	1.527	0.0368	1.4898	1.48975	1.49	11/24/2019
7	K1910929-001	1	1.429	0.0368	1.3918	1.39175	1.4	11/24/2019
8	K1910929-002	1	0.827	0.0368	0.7902	0.79015	1	11/24/2019
9	K1910929-002	1	0.919	0.0368	0.8820	0.88195	0.88	11/24/2019
10	K1910929-003	1	1.943	0.0368	1.9064	1.90635	1.91	11/24/2019
11	K1910929-003	1	1.976	0.0368	1.9391	1.93905	1.9	11/24/2019
12	K1910969-002	1	1.201	0.0368	1.1638	1.16375	1.16	11/24/2019
13	K1910969-002	1	1.147	0.0368	1.1100	1.10995	1.11	11/24/2019
14	ccv	1	24.259	0.0368	24.2227	24.22265	24.22	11/24/2019
15	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
16	K1911033-001	1	3.696	0.0368	3.6588	3.65875	3.7	11/24/2019
17	K1911033-001	1	3.684	0.0368	3.6472	3.64715	3.65	11/24/2019
18	K1911033-002	1	2.845	0.0368	2.8083	2.80825	2.8	11/24/2019
19	K1911033-002	1	2.775	0.0368	2.7385	2.73845	2.7	11/24/2019
20	K1911033-003	1	2.836	0.0368	2.7992	2.79915	2.80	11/24/2019
21	K1911033-003	1	2.795	0.0368	2.7582	2.75815	2.76	11/24/2019
22	K1911033-004	1	2.422	0.0368	2.3849	2.38485	2.4	11/24/2019
23	K1911033-004	1	2.347	0.0368	2.3104	2.31035	2.3	11/24/2019
24	K1911033-005	20	39.603	0.0368	39.5660	791.319	791.32	11/24/2019
25	K1911033-005	20	38.802	0.0368	38.7653	775.305	775.31	11/24/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: BCP	Date Analyzed	11/23/19	
Reviewed By: [signature]	Date Reviewed	11/26/19	

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RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911033-006	1	4.402	0.0368	4.3652	4.36515	4.37	11/24/2019
27	K1911033-006	1	3.221	0.0368	3.1843	3.18425	3.18	11/24/2019
28	K1911033-007	1	2.543	0.0368	2.5060	2.50595	2.5	11/24/2019
29	K1911033-007	1	2.273	0.0368	2.2363	2.23625	2.2	11/24/2019
30	K1911033-008	1000	7.861	0.0368	7.8241	7824.05	7824.1	11/24/2019
31	K1911033-008	1000	8.044	0.0368	8.0074	8007.35	8007.4	11/24/2019
32	K1911033-009	1	3.972	0.0368	3.9355	3.93545	3.9	11/24/2019
33	K1911033-009	1	3.647	0.0368	3.6099	3.60985	3.6	11/24/2019
34	KQ1917447-11	2	26.144	0.0368	26.1076	52.2151	52.2	11/24/2019
35	ccv	1	24.762	0.0368	24.7255	24.72545	24.7	11/24/2019
36	ccb	1	0.270	0.0368	0.2328	0.23275	<0.5	11/24/2019
37	K1911031-001	1	0.934	0.0368	0.8970	0.89695	0.9	11/24/2019
38	K1911031-001	1	0.826	0.0368	0.7890	0.78895	0.8	11/24/2019
39	K1911032-001	1	1.580	0.0368	1.5437	1.54365	1.5	11/24/2019
40	K1911032-001	1	1.458	0.0368	1.4216	1.42155	1.4	11/24/2019
41	K1911032-002	1	1.585	0.0368	1.5487	1.54865	1.5	11/24/2019
42	K1911032-002	1	1.638	0.0368	1.6012	1.60115	1.6	11/24/2019
43	K1911032-003	1	1.623	0.0368	1.5864	1.58635	1.6	11/24/2019
44	K1911032-003	1	1.541	0.0368	1.5038	1.50375	1.5	11/24/2019
45	K1911032-004	1	2.055	0.0368	2.0187	2.01865	2.0	11/24/2019
46	K1911032-004	1	1.904	0.0368	1.8668	1.86675	1.9	11/24/2019
47	K1911032-005	400	4.671	0.0368	4.6341	1853.62	1853.6	11/24/2019
48	K1911032-005	400	4.867	0.0368	4.8300	1931.98	1932.0	11/24/2019
49	K1911032-006	1	2.028	0.0368	1.9917	1.99165	2.0	11/24/2019
50	K1911032-006	1	1.861	0.0368	1.8238	1.82375	1.8	11/24/2019

Analyzed By:	BCD	Date Analyzed	11/23/19
Reviewed By:		Date Reviewed	11/26/19

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	24.356	0.0368	24.3194	24.31935	24.32	11/24/2019
52	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BR Date Analyzed 11/23/19

Reviewed By: [signature] Date Reviewed 11/26/19

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.762	0.0368	24.7255	24.72545	24.7	11/24/2019
3	ccb	1	0.270	0.0368	0.2328	0.23275	<0.5	11/24/2019
4	mb	1	0.177	0.0368	0.1406	0.14055	<0.5	11/24/2019
5	lcs	1	24.962	0.0368	24.9254	24.92535	24.9	11/24/2019
6	KQ1917448-13	2	26.387	0.0368	26.3507	52.7013	52.70	11/24/2019
7	ccv	1	24.356	0.0368	24.3194	24.31935	24.3	11/24/2019
8	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
9	K1911032-007	1	4.121	0.0368	4.0838	4.08375	4.08	11/24/2019
10	K1911032-007	1	4.215	0.0368	4.1781	4.17805	4.18	11/24/2019
11	K1910803-001	1	43.462	0.0368	43.4256	43.42555	43.4	11/24/2019
12	K1910803-001	1	44.855	0.0368	44.8186	44.81855	44.82	11/24/2019
13	K1910803-002	1	120.019	0.0368	119.9820	119.98195	119.98	11/24/2019
14	K1910803-002	1	122.103	0.0368	122.0664	122.06635	122.07	11/24/2019
15	K1910803-003	1	21.826	0.0368	21.7893	21.78925	21.8	11/24/2019
16	K1910803-003	1	18.201	0.0368	18.1638	18.16375	18.2	11/24/2019
17	K1910803-004	1	67.352	0.0368	67.3154	67.31535	67.32	11/24/2019
18	K1910803-004	1	69.680	0.0368	69.6435	69.64345	69.6	11/24/2019
19	K1910803-005	1	39.984	0.0368	39.9477	39.94765	39.9	11/24/2019
20	K1910803-005	1	22.612	0.0368	22.5756	22.57555	22.58	11/24/2019
21	K1910803-006	1	14.967	0.0368	14.9307	14.93065	14.93	11/24/2019
22	K1910803-006	1	13.722	0.0368	13.6848	13.68475	13.7	11/24/2019
23	K1911047-001	100	3.650	0.0368	3.6131	361.305	361.3	11/24/2019
24	K1911047-001	100	3.066	0.0368	3.0297	302.965	302.97	11/24/2019
25	K1911047-002	100	26.873	0.0368	26.8364	2683.635	2683.64	11/24/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: BOP	Date Analyzed	11/23/19	
Reviewed By:	Date Reviewed	11/26/19	

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911047-002	100	26.799	0.0368	26.7618	2676.175	2676.18	11/24/2019
27	K1911049-001	20	4.249	0.0368	4.2124	84.247	84.25	11/24/2019
28	K1911049-001	20	4.029	0.0368	3.9925	79.849	79.8	11/24/2019
29	ccv	1	24.669	0.0368	24.6320	24.63195	24.6	11/24/2019
30	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
31	K1911049-002	20	9.079	0.0368	9.0426	180.851	180.9	11/24/2019
32	K1911049-002	20	9.012	0.0368	8.9750	179.499	179.5	11/24/2019
33	KQ1917448-14	100	29.072	0.0368	29.0348	2903.475	2903.5	11/24/2019
34	K1911049-003	1	11.784	0.0368	11.7471	11.74705	11.7	11/24/2019
35	K1911049-003	1	11.848	0.0368	11.8116	11.81155	11.8	11/24/2019
36	K1911049-004	1	1.659	0.0368	1.6225	1.62245	1.6	11/24/2019
37	K1911049-004	1	1.541	0.0368	1.5039	1.50385	1.5	11/24/2019
38	K1911028-001	1	0.932	0.0368	0.8949	0.89485	0.9	11/25/2019
39	K1911028-001	1	0.858	0.0368	0.8217	0.82165	0.8	11/25/2019
40	K1911028-002	1	22.140	0.0368	22.1030	22.10295	22.1	11/25/2019
41	K1911028-002	1	21.561	0.0368	21.5239	21.52385	21.5	11/25/2019
42	K1911028-003	1	0.771	0.0368	0.7346	0.73455	0.7	11/25/2019
43	K1911028-003	1	0.696	0.0368	0.6592	0.65915	0.7	11/25/2019
44	ccv	1	24.254	0.0368	24.2171	24.21705	24.2	11/25/2019
45	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/25/2019
46	K1911028-004	1	1.442	0.0368	1.4057	1.40565	1.4	11/25/2019
47	K1911028-004	1	1.412	0.0368	1.3753	1.37525	1.4	11/25/2019
48	K1911028-005	1	1.478	0.0368	1.4409	1.44085	1.4	11/25/2019
49	K1911028-005	1	1.461	0.0368	1.4244	1.42435	1.4	11/25/2019
50	ccv	1	24.161	0.0368	24.1246	24.12455	24.1	11/25/2019

Analyzed By: BH	Date Analyzed 11/23/19
Reviewed By: [signature]	Date Reviewed 11/26/19

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/25/2019
52		1		0.0000	0.0000	0	<0.5	
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BKP	Date Analyzed 11/27/19
Reviewed By:	Date Reviewed 11/26/19

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	mb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/24/2019
3	lcs	1	24.714	0.0368	24.6774	24.67735	24.7	11/24/2019
4	ccv	1	24.254	0.0368	24.2171	24.21705	24.2	11/25/2019
5	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/25/2019
6	K1911043-001	1000	11.760	0.0368	11.7231	11723.05	11723.05	11/25/2019
7	K1911043-001	1000	11.743	0.0368	11.7062	11706.15	11706.2	11/25/2019
8	K1911043-002	1000	0.000	0.0368	-0.0368	-36.75	<0.5	11/25/2019
9	K1911043-002	1000	0.000	0.0368	-0.0368	-36.75	<0.5	11/25/2019
10	K1910975-002	10	8.002	0.0368	7.9657	79.6565	79.66	11/25/2019
11	K1910975-002	10	8.302	0.0368	8.2651	82.6505	82.7	11/25/2019
12	K1910975-001	1	0.922	0.0368	0.8852	0.88515	0.89	11/25/2019
13	K1910975-001	1	0.756	0.0368	0.7189	0.71885	0.72	11/25/2019
14	KQ1917449-07	1	26.613	0.0368	26.5764	26.57635	26.58	11/25/2019
15	ccv	1	24.161	0.0368	24.1246	24.12455	24.1	11/25/2019
16	ccb	1	0.000	0.0368	-0.0368	-0.03675	<0.5	11/25/2019
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By:		Date Analyzed	11/23/19
Reviewed By:		Date Reviewed	11/26/19

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TOC: 661076,
661077,
661078
DOC: 661079

Schedule: 11232019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/11/23 17:20 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1910680-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1910680-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K1910680-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K1910680-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1910680-005.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1910796-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1910796-004.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1910796-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1910796-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1910796-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1910847-001.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1910847-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1910847-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1910847-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1910861-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1910861-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1910861-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1910861-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1910861-005.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1910861-006.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1910861-007.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1910929-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1910929-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1910929-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1910969-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1911033-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1911033-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1911033-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1911033-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1911033-005.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1911033-006.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1911033-007.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1911033-008.03 1000x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1911033-009.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1911033-009.08 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

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Schedule: 11232019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1911031-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1911032-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1911032-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1911032-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1911032-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1911032-005.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1911032-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1911032-007.03 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1911032-007.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1910803-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1910803-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1910803-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1910803-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1910803-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1910803-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1911047-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1911047-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1911049-001.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1911049-002.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1911049-002.01 ms 100x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
61	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
62	Sample	K1911049-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1911049-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	K1911028-001.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1911028-002.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1911028-003.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1911028-004.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1911028-005.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	FB 11/21/19	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
70	Sample	FB 11/22/19	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
71	Sample	K1911043-001.01 doc 1000x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	K1911043-002.01 doc 1000x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample	K1910975-002.01 doc 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1910975-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample	K1910975-001.01 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
61	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

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Fusion Report - 11232019
Saturday, November 23, 2019 02:23 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/11/26 09:09 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	11232019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8)		
Comment:			

11/26/19

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/23 14:23

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.02	17.16	4.14	49.59	05:26
2	TC Clean	7.50	10.99	3.49	49.85	07:19
3	TC Clean	2.01	5.61	3.60	49.88	07:04
4	TC Clean	1.40	5.11	3.71	49.85	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/23 14:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.72	15.29	3.57	49.65	05:23

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2	TC Clean	3.64	7.23	3.59	49.87	07:17
3	TC Clean	1.59	5.34	3.74	49.87	07:02
4	TC Clean	1.19	4.93	3.74	49.91	07:02

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/23 15:34

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.48	15.13	3.65	49.68	05:24
2	TC Clean	3.90	7.40	3.51	50.02	04:07
3	TC Clean	1.55	5.07	3.52	50.06	03:50
4	TC Clean	1.18	4.74	3.56	50.06	03:48

Sample Type: Blank (Creating v1323) From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/11/23 15:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.31	14.93	3.62	49.60	05:13
2	TC Clean	3.39	7.01	3.62	50.04	04:06
3	TC Clean	1.31	4.93	3.61	50.06	03:48
4	TC Clean	1.45	4.95	3.50	50.05	03:47
5	Reagent Blank	4.02	7.68	3.66	50.07	05:09
6	Acid Blank	1.14	4.93	3.79	49.74	05:31

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0324 ppm	0.0000 ppm	0.0000%	2019/11/23 16:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0324	0.3238	9.00	12.79	3.79	50.19	10:34

Dilution **Blank Contribution** **Method** **Calibration**

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1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5667 ppm (PASS)	0.0000 ppm	0%	2019/11/23 16:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5667	245.6673	176.22	180.09	3.87	50.19	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/23 16:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.20	10.93	3.73	50.19	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/23 17:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.91	9.77	3.86	50.22	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	Pos	BAT	Concentration	Dil	Sample ID	Min / Max	Result	Std. Dev.	RSD	Start Time

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			(ppm)			(% dev)				
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.7737 ppm (PASS)	0.0000 ppm	0%	2019/11/23 17:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7737	247.7372	177.62	181.34	3.71	50.22	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.0515 ppm	0.0000 ppm	0.0000%	2019/11/23 17:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0515	0.5154	9.13	12.75	3.61	50.28	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1910680-001.01	0.3971 ppm	0.0041 ppm	1.0200%	2019/11/23 17:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3942	3.9420	11.46	15.12	3.66	50.22	10:23
2	TOC	0.3999	3.9995	11.50	15.20	3.70	50.24	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1910680-002.01	0.3183 ppm	0.0252 ppm	7.9200%	2019/11/23 18:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3362	3.3616	11.07	14.56	3.49	50.27	10:28
2	TOC	0.3005	3.0051	10.82	14.32	3.50	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1910680-003.01	0.6550 ppm	0.0139 ppm	2.1200%	2019/11/23 18:54

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6648	6.6483	13.30	17.08	3.79	50.23	10:28
2	TOC	0.6452	6.4524	13.16	16.93	3.77	50.22	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1910680-004.01	0.6509 ppm	0.0751 ppm	11.5400%	2019/11/23 19:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5978	5.9780	12.84	16.55	3.71	50.24	10:25
2	TOC	0.7040	7.0402	13.56	17.06	3.50	50.21	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1910680-005.03	0.2227 ppm	0.0196 ppm	8.7900%	2019/11/23 19:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2089	2.0887	10.20	13.79	3.59	50.22	10:27
2	TOC	0.2366	2.3657	10.39	13.99	3.60	50.18	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1910796-004.01	0.2410 ppm	0.0085 ppm	3.5400%	2019/11/23 20:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2349	2.3495	10.38	14.07	3.70	50.17	10:30
2	TOC	0.2470	2.4703	10.46	14.10	3.64	50.21	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1910796-004.01 ms	22.5196 ppm	0.0000 ppm	0.0000%	2019/11/23 20:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.5196	225.1962	161.65	165.26	3.61	50.18	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6507 ppm (PASS)	0.0000 ppm	0%	2019/11/23 21:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6507	246.5070	176.79	180.47	3.68	50.17	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/23 21:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.20	10.96	3.76	50.20	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1910796-001.01	1.1291 ppm	0.0626 ppm	5.5400%	2019/11/23 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0848	10.8484	16.15	19.70	3.56	50.19	10:28
2	TOC	1.1734	11.7338	16.75	20.53	3.78	50.20	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1910796-002.01	0.8600 ppm	0.0811 ppm	9.4400%	2019/11/23 21:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9173	9.1734	15.01	18.72	3.71	50.17	10:29

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2	TOC	0.8026	8.0257	14.23	17.85	3.62	50.21	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K1910796-003.01	1.8026 ppm	0.0160 ppm	0.8900%	2019/11/23 22:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8139	18.1393	21.10	24.61	3.52	50.15	10:27
2	TOC	1.7912	17.9124	20.94	24.64	3.70	50.17	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K1910847-001.01 20x	33.9319 ppm	0.1646 ppm	0.4900%	2019/11/23 22:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	34.0483	340.4830	239.90	243.51	3.61	50.13	10:25
2	TOC	33.8155	338.1553	238.32	242.06	3.74	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K1910847-002.01	32.6696 ppm	0.2662 ppm	0.8100%	2019/11/23 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.8578	328.5780	231.82	235.44	3.62	50.13	10:29
2	TOC	32.4814	324.8140	229.27	232.83	3.57	50.16	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K1910847-003.01	35.0515 ppm	0.3546 ppm	1.0100%	2019/11/23 23:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	35.3023	353.0229	248.41	251.92	3.51	50.15	10:24
2	TOC	34.8008	348.0081	245.01	248.71	3.70	50.19	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

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◆	16	TOC	K1910847-004.01	61.1285 ppm	0.2557 ppm	0.4200%	2019/11/24 00:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	61.3093	613.0929	424.95	428.74	3.79	50.16	10:26
2	TOC	60.9476	609.4762	422.49	426.28	3.78	50.18	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1910861-001.01 100x	7.0368 ppm	0.3612 ppm	5.1300%	2019/11/24 00:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.2922	72.9217	58.28	62.10	3.82	50.15	10:27
2	TOC	6.7814	67.8141	54.82	58.35	3.54	50.11	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1910861-002.01 100x	5.9322 ppm	0.1137 ppm	1.9200%	2019/11/24 01:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.0125	60.1255	49.60	53.26	3.66	50.14	10:29
2	TOC	5.8518	58.5182	48.51	52.12	3.61	50.05	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1910861-003.01 100x	5.9661 ppm	0.0454 ppm	0.7600%	2019/11/24 01:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9983	59.9826	49.50	53.04	3.54	50.09	10:26
2	TOC	5.9340	59.3403	49.06	52.60	3.54	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5922 ppm (PASS)	0.0000 ppm	0%	2019/11/24 02:11

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Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5922	245.9222	176.39	179.84	3.44	50.03	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0310 ppm (PASS)	0.0000 ppm	0%	2019/11/24 02:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0310	0.3101	9.67	13.33	3.66	50.08	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/24 02:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.75	12.48	3.72	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.1233 ppm (PASS)	0.0000 ppm	0%	2019/11/24 02:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1233	251.2331	180.00	183.53	3.53	50.03	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

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Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1910861-004.01 100x	7.8099 ppm	0.0129 ppm	0.1700%	2019/11/24 03:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8190	78.1899	61.86	65.43	3.57	50.08	10:27
2	TOC	7.8007	78.0072	61.74	65.35	3.62	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1910861-005.01 100x	7.4694 ppm	0.0388 ppm	0.5200%	2019/11/24 03:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4968	74.9680	59.67	63.39	3.72	50.08	10:26
2	TOC	7.4420	74.4200	59.30	62.89	3.59	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1910861-006.01 100x	10.7216 ppm	0.0985 ppm	0.9200%	2019/11/24 04:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.7913	107.9132	82.04	85.66	3.63	50.12	10:29
2	TOC	10.6520	106.5195	81.09	84.72	3.63	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1910861-007.01 100x	8.2889 ppm	0.1349 ppm	1.6300%	2019/11/24 04:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.3843	83.8426	65.70	69.24	3.54	50.09	10:26
2	TOC	8.1935	81.9348	64.40	67.94	3.54	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1910929-001.01	1.4775 ppm	0.0693 ppm	4.6900%	2019/11/24 05:02

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5265	15.2651	19.15	22.67	3.52	50.08	10:26
2	TOC	1.4285	14.2854	18.48	22.07	3.59	50.12	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K1910929-002.01	0.8728 ppm	0.0649 ppm	7.4400%	2019/11/24 05:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8269	8.2688	14.40	17.92	3.52	50.11	10:29
2	TOC	0.9187	9.1866	15.02	18.57	3.55	50.11	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K1910929-003.01	1.9595 ppm	0.0231 ppm	1.1800%	2019/11/24 05:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9431	19.4313	21.97	25.45	3.48	50.14	10:29
2	TOC	1.9758	19.7583	22.20	25.88	3.69	50.11	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K1910969-002.01	1.1736 ppm	0.0380 ppm	3.2400%	2019/11/24 06:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2005	12.0049	16.93	20.49	3.56	50.15	10:28
2	TOC	1.1467	11.4671	16.57	20.16	3.59	50.15	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2594 ppm (PASS)	0.0000 ppm	0%	2019/11/24 06:54

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

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	Type		#							Time
B	TOC	25 ppm	1	24.2594	242.5942	174.13	177.81	3.67	50.11	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/24 07:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.62	11.38	3.76	50.13	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1911033-001.03	3.6897 ppm	0.0082 ppm	0.2200%	2019/11/24 07:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6955	36.9550	33.87	37.44	3.58	50.10	10:30
2	TOC	3.6839	36.8386	33.79	37.44	3.65	50.12	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1911033-002.03	2.8101 ppm	0.0494 ppm	1.7600%	2019/11/24 07:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8450	28.4502	28.10	31.78	3.68	50.13	10:24
2	TOC	2.7752	27.7519	27.62	31.38	3.76	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1911033-003.03	2.8154 ppm	0.0290 ppm	1.0300%	2019/11/24 08:20

Rep	Base			Adjusted		Baseline	Pressure	Run

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#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	2.8359	28.3589	28.03	31.72	3.68	50.10	10:27
2	TOC	2.7949	27.9493	27.76	31.45	3.69	50.12	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K1911033-004.03	2.3843 ppm	0.0527 ppm	2.2100%	2019/11/24 08:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4216	24.2162	25.22	28.84	3.62	50.11	10:29
2	TOC	2.3471	23.4708	24.72	28.28	3.57	50.10	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	K1911033-005.03 20x	39.2024 ppm	0.5662 ppm	1.4400%	2019/11/24 09:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	39.6027	396.0271	277.60	281.33	3.73	50.11	10:27
2	TOC	38.8020	388.0202	272.17	276.09	3.92	50.14	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	34	TOC	K1911033-006.03	3.8114 ppm	0.8350 ppm	21.9100%	2019/11/24 09:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4019	44.0190	38.66	42.53	3.86	50.11	10:29
2	TOC	3.2210	32.2098	30.65	34.21	3.56	50.10	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	35	TOC	K1911033-007.03	2.4078 ppm	0.1907 ppm	7.9200%	2019/11/24 10:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5427	25.4272	26.04	29.72	3.67	50.12	10:29
2	TOC	2.2730	22.7298	24.21	27.75	3.54	50.10	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8608	78.6083	62.14	65.77	3.63	50.14	10:31
2	TOC	8.0441	80.4409	63.39	67.04	3.65	50.09	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K1911033-009.08	3.8094 ppm	0.2302 ppm	6.0400%	2019/11/24 11:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9722	39.7217	35.75	39.38	3.63	50.12	10:30
2	TOC	3.6466	36.4659	33.54	37.02	3.49	50.11	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1911033-009.08 ms 2x	26.1443 ppm	0.0000 ppm	0.0000%	2019/11/24 11:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.1443	261.4428	186.25	189.80	3.55	50.11	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7622 ppm (PASS)	0.0000 ppm	0%	2019/11/24 11:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7622	247.6222	177.55	181.02	3.47	50.15	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

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Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2695 ppm (PASS)	0.0000 ppm	0%	2019/11/24 12:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2695	2.6952	11.29	14.85	3.56	50.13	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.1773 ppm	0.0000 ppm	0.0000%	2019/11/24 12:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1773	1.7735	9.99	13.72	3.73	50.13	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.9621 ppm (PASS)	0.0000 ppm	0%	2019/11/24 12:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9621	249.6214	178.90	182.70	3.80	50.17	10:37

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1911031-001.01	0.8797 ppm	0.0764 ppm	8.6800%	2019/11/24 12:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

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1	TOC	0.9337	9.3369	15.12	18.87	3.75	50.14	10:29
2	TOC	0.8257	8.2570	14.39	18.18	3.79	50.17	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K1911032-001.01	1.5194 ppm	0.0864 ppm	5.6800%	2019/11/24 13:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5804	15.8042	19.51	23.29	3.78	50.19	10:28
2	TOC	1.4583	14.5830	18.68	22.26	3.58	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K1911032-002.01	1.6117 ppm	0.0371 ppm	2.3000%	2019/11/24 13:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5854	15.8543	19.55	22.98	3.44	50.25	10:28
2	TOC	1.6379	16.3788	19.90	23.42	3.52	50.20	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K1911032-003.01	1.5818 ppm	0.0584 ppm	3.6900%	2019/11/24 14:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6231	16.2315	19.80	23.26	3.46	50.22	10:25
2	TOC	1.5405	15.4050	19.24	22.79	3.54	50.25	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K1911032-004.01	1.9794 ppm	0.1074 ppm	5.4300%	2019/11/24 14:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0554	20.5538	22.74	26.37	3.63	50.21	10:30
2	TOC	1.9035	19.0350	21.70	25.32	3.61	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1911032-005.01 400x	4.7687 ppm	0.1385 ppm	2.9100%	2019/11/24 15:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6708	46.7076	40.49	43.95	3.46	50.26	10:28
2	TOC	4.8667	48.6669	41.82	45.56	3.74	50.27	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1911032-006.01	1.9445 ppm	0.1188 ppm	6.1100%	2019/11/24 15:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0284	20.2842	22.55	26.14	3.58	50.27	10:31
2	TOC	1.8605	18.6048	21.41	25.06	3.65	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1911032-007.03 ms 2x	26.3874 ppm	0.0000 ppm	0.0000%	2019/11/24 16:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.3874	263.8736	187.90	191.52	3.62	50.24	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3561 ppm (PASS)	0.0000 ppm	0%	2019/11/24 16:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3561	243.5606	174.79	178.42	3.63	50.26	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

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	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/24 16:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.48	11.05	3.57	50.24	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1911032-007.03	4.1677 ppm	0.0667 ppm	1.6000%	2019/11/24 16:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1205	41.2052	36.75	40.48	3.73	50.22	10:28
2	TOC	4.2148	42.1480	37.39	40.98	3.59	50.25	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1910803-001.01	44.1588 ppm	0.9849 ppm	2.2300%	2019/11/24 17:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	43.4623	434.6235	303.80	307.50	3.70	50.24	10:26
2	TOC	44.8553	448.5526	313.26	317.05	3.79	50.20	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1910803-002.01	121.0609 ppm	1.4739 ppm	1.2200%	2019/11/24 17:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	120.0187	1200.1870	823.46	827.29	3.83	50.25	10:28
2	TOC	122.1031	1221.0313	837.61	842.19	4.58	50.24	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

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◆	51	TOC	K1910803-003.01	20.0133 ppm	2.5636 ppm	12.8100%	2019/11/24 18:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.8260	218.2603	156.94	161.38	4.44	50.17	10:27
2	TOC	18.2005	182.0049	132.33	136.43	4.11	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	52	TOC	K1910803-004.01	68.5161 ppm	1.6462 ppm	2.4000%	2019/11/24 18:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	67.3521	673.5207	465.97	469.89	3.93	50.19	10:27
2	TOC	69.6802	696.8016	481.77	488.04	6.27	50.15	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	53	TOC	K1910803-005.01	31.2983 ppm	12.2840 ppm	39.2500%	2019/11/24 19:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	39.9844	399.8441	280.20	285.79	5.59	50.18	10:30
2	TOC	22.6123	226.1228	162.27	166.53	4.26	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K1910803-006.01	14.3445 ppm	0.8810 ppm	6.1400%	2019/11/24 19:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.9674	149.6740	110.38	114.24	3.86	50.18	10:28
2	TOC	13.7215	137.2151	101.92	105.81	3.89	50.14	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K1911047-001.01 100x	3.3581 ppm	0.4125 ppm	12.2800%	2019/11/24 20:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6498	36.4983	33.56	37.32	3.76	50.14	10:27
2	TOC	3.0664	30.6644	29.60	33.16	3.56	50.17	10:27

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Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	K1911047-002.01 100x	26.8358 ppm	0.0527 ppm	0.2000%	2019/11/24 20:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8731	268.7307	191.20	194.84	3.64	50.13	10:25
2	TOC	26.7985	267.9853	190.69	194.42	3.73	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K1911049-001.01 20x	4.1392 ppm	0.1555 ppm	3.7600%	2019/11/24 21:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2491	42.4913	37.63	41.27	3.65	50.16	10:28
2	TOC	4.0292	40.2918	36.13	39.75	3.61	50.12	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6687 ppm (PASS)	0.0000 ppm	0%	2019/11/24 21:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6687	246.6868	176.91	180.57	3.66	50.17	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/24 21:47

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

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	Type									
D	TOC	0 ppm	1	0.0000	0.0000	8.80	12.38	3.58	50.14	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/24 22:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.03	11.47	3.43	50.10	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.7141 ppm (PASS)	0.0000 ppm	0%	2019/11/24 22:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7141	247.1405	177.22	180.81	3.59	50.14	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K1911049-002.01 20x	9.0455 ppm	0.0478 ppm	0.5300%	2019/11/24 22:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.0793	90.7931	70.41	74.08	3.66	50.15	10:27
2	TOC	9.0117	90.1169	69.96	73.45	3.50	50.14	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

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◈ 60	TOC	K1911049-002.01 ms 100x	29.0715 ppm	0.0000 ppm	0.0000%	2019/11/24 22:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.0715	290.7153	206.12	209.76	3.64	50.16	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/24 23:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.92	11.64	3.72	50.14	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1911049-003.01	11.8161 ppm	0.0456 ppm	0.3900%	2019/11/24 23:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.7838	117.8381	88.77	92.40	3.62	50.11	10:31
2	TOC	11.8483	118.4834	89.21	92.81	3.60	50.16	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1911049-004.01	1.5999 ppm	0.0839 ppm	5.2400%	2019/11/24 23:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6592	16.5924	20.05	23.59	3.54	50.11	10:30
2	TOC	1.5406	15.4065	19.24	22.81	3.57	50.13	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1911028-001.04	0.8950 ppm	0.0518 ppm	5.7800%	2019/11/25 00:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9316	9.3163	15.11	18.58	3.47	50.15	10:28
2	TOC	0.8584	8.5841	14.61	18.06	3.45	50.11	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC)	CAS_salt_010711	CAS_salt_010711

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(v1323) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	65	TOC	K1911028-002.04	21.8501 ppm	0.4095 ppm	1.8700%	2019/11/25 00:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.1397	221.3968	159.07	162.59	3.52	50.14	10:29
2	TOC	21.5606	215.6056	155.14	158.84	3.70	50.12	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	66	TOC	K1911028-003.04	0.7336 ppm	0.0533 ppm	7.2700%	2019/11/25 01:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7713	7.7134	14.02	17.61	3.59	50.10	10:26
2	TOC	0.6959	6.9591	13.51	17.14	3.64	50.14	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2538 ppm (PASS)	0.0000 ppm	0%	2019/11/25 01:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2538	242.5382	174.10	177.84	3.74	50.11	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/25 02:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.19	9.91	3.72	50.09	10:33

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Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1911028-004.04	1.4272 ppm	0.0215 ppm	1.5000%	2019/11/25 02:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4424	14.4239	18.58	22.17	3.60	50.13	10:29
2	TOC	1.4120	14.1204	18.37	22.07	3.70	50.12	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1911028-005.04	1.4693 ppm	0.0117 ppm	0.7900%	2019/11/25 02:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4776	14.7759	18.81	22.49	3.68	50.15	10:28
2	TOC	1.4611	14.6110	18.70	22.34	3.64	50.11	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	FB 11/21/19	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/25 03:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.76	9.25	3.49	50.12	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	FB 11/22/19	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/25 03:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.79	9.29	3.50	50.13	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

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◈	71	TOC	K1911043-001.01 doc 1000x	11.7513 ppm	0.0120 ppm	0.1000%	2019/11/25 03:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.7598	117.5980	88.61	92.27	3.66	50.11	10:29
2	TOC	11.7429	117.4286	88.49	92.16	3.67	50.11	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1911043-002.01 doc 1000x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/25 04:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.79	11.41	3.62	50.11	10:29
2	TOC	0.0000	0.0000	7.15	10.87	3.72	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1910975-002.01 doc 10x	8.1521 ppm	0.2117 ppm	2.6000%	2019/11/25 04:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0024	80.0240	63.10	66.61	3.51	50.14	10:30
2	TOC	8.3018	83.0176	65.14	68.78	3.64	50.11	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1910975-001.01 doc	0.8387 ppm	0.1176 ppm	14.0200%	2019/11/25 05:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9219	9.2190	15.04	18.69	3.65	50.11	10:26
2	TOC	0.7556	7.5558	13.91	17.48	3.57	50.12	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	K1910975-001.01 ms doc	26.6131 ppm	0.0000 ppm	0.0000%	2019/11/25 05:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	26.6131	266.1305	189.43	193.03	3.60	50.14	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/25 05:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.23	10.93	3.70	50.12	10:28
2	TOC	0.0000	0.0000	6.73	10.14	3.40	50.11	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7842 (IC) (v1323)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1613 ppm (PASS)	0.0000 ppm	0%	2019/11/25 06:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1613	241.6131	173.47	177.17	3.70	50.11	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/25 06:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.86	9.52	3.65	50.12	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1322	1.2997	0.8410	0.0000	0.0000	0.0000	2019/11/21 13:13	Fusion1 (Fusion1)
v1323	1.3397	1.1360	0.0000	0.0000	0.0000	2019/11/23 16:30	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v30
Ver Creation: 2019/03/05 17:42
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 6.788x + 9.463
r^2 value: TOC: r^2 = 0.99963

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4
Ver Creation: 2019/02/21 17:57
Comment:
Operator: Fusion1 (Fusion1)

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7

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PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/25 06:49

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StarLIMS Run: 661076, 661077, 661078, 661079

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-83D

21 % H3PO4: 11-GEN-05-83B

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: RKP	Date Analyzed: 11/26/19
Reviewed By: [signature]	Date Reviewed: 11/26/19

23 RKP 11/27/19

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Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1933152; 1933786; 1934085; 1934086; 1934088

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2324 (253208)

General Set Information: There were five field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1934086001 was analyzed and reported from a 1:1,000 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 687322) was less than 1/2 the CRDL. The recovery for the LCS (687319) was within acceptable parameters.

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MS/MSD Analysis: MS/MSD was performed on sample 1933152001 (Client ID: LH18/24-SP650_AIX Water). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The MS/MSD (687323/24) failed QC acceptance criteria for percent recoveries. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 687320) is reported from the analysis of the Laboratory Control Sample (LCS – 687319) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

Thomas Bosch December 09, 2019
Analyst Date

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ANALYTICAL REPORT

Report Date: December 09, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1933152**
Project ID: HS19111039-02
Purchase Order: HS19111039-02
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_112019_AIX Water	1933152001	11/20/19	11/23/19	HS19111039-02

ANALYTICAL REPORT

Workorder: 34-1933152
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_112019_AIX Water**
Lab ID: 1933152001
Matrix: Water

Sampling Site: HS19111039-02
Media: 125 mL Nalgene
Sampling Parameter: NA

Collected: 11/20/2019
Received: 11/23/2019

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable

Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2324 (HBN: 253208)
Analyzed: 12/08/2019 14:20

Instrument ID: LCMS04
%Solids: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**11**	1.0	2.0	4.0	1	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 12/09/2019 13:27	/S/ Stephen Brose 12/09/2019 14:23

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1933152
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1933152

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2324 (HBN: 253208)
		Prepared By:	NA	**Analyzed By:**	Thom as Bosch

Blank

LMB: 687322
Analyzed: 12/08/2019 14:06
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 687319
Analyzed: 12/08/2019 13:38
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.17	3.00	106	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1933152001	**MS:**	687323
Analyzed:	12/08/2019 14:20	**Analyzed:**	12/08/2019 14:34
Dilution:	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L

	MSD:	687324
	Analyzed:	12/08/2019 14:48
	Dilution:	1
	Units:	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	11.0	13.7	3	# 77.7	78.8	123.8	12.9	# 48.8	6.53	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
12/09/2019 13:31	12/09/2019 14:23

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

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10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

1933152

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12679**

18698/#2

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123 **Phone:** +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19111039
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19111039-02**	**LH18/24-SP650_112019_AIX**	**Water**	**20 Nov 2019 14:00**
	SUB_Perch-6850			03 Dec 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 11/22/19 18:30

Received By: _____ Date/Time: 11/23/19 855

Cooler ID(s): _____ Temperature(s): 2°

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CHAIN-OF-CUSTODY

/ Job / Task: HS19111039-02	Split:	Workorder ID: 1933152	Level: ENV_LVL4
lient: ALS Environmental (Houston)		Account: 8101	Type: 125Poly
omments:			Preservatives

m	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
	11/20/2019 14:00	LH18/24-SP650_112019_AIX Water	1933152001		Water	A	1	A

COOL

Page 90 of 165

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Tassell, Tami	11/23/2019 08:58	ALS Sample Receiving	Sample Login
Tami Tassell R-33.1	11/25/19 9:15	Heb	Storage
	12/8/19/12:40	T. Burch	CLOA analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

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00961094

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: _____

Date/Time of Receipt: 11/23/19 858

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	good	2° °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: Meredith Ellens (Signature) Meredith Ellens (Printed Name) 11/23/19 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

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ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD.
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 22NOV19
ACTWGT: 9.55 LB MAN
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19111039 - RJ

FedEx Express

TRK# 0201 1251 0292 1450

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BTFA

84123
UT-US SLC

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tch Worklist

Batch: ELMS/ 2324 **Created:** 12/8/2019 13:11 **Instrument:** **HBN:** 253208

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1933152 [ENV_LVL4]
Workorder: 1933786 [ENV_LVL4]
Workorder: 1934085 [ENV_LVL4]
Workorder: 1934086 [ENV_LVL4]
Workorder: 1934088 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	687318	CCV for HBN 253208 [ELMS/2324]				CCV	3		E685041C3Q	5311		12/9/2019	
2	687319	LCS for HBN 253208 [ELMS/2324]				LCS	3		E6850Q413Q	5311		12/9/2019	
3	687320	RLVS for HBN 253208 [ELMS/2324				RLVS	3		E685041C3Q	5311		12/9/2019	
4	687321	ICS for HBN 253208 [ELMS/2324]				ICS	3		E6850..D3Q	5311		12/9/2019	
5	687322	LMB for HBN 253208 [ELMS/2324]				LMB	3		E6850Q413Q	5311		12/9/2019	
6	1933152001	LH18/24-SP650_112019_AIX Water				SAMPLE	3	1933152001-A	E6850Q41.3	5480	12/18/2019	12/9/2019	
7	687323	LH18/24-SP650...(1933152001MS)				MS	3		E6850Q413Q	5311		12/9/2019	
8	687324	LH18/24-SP65...(1933152001MSD)				MSD	3		E6850Q413Q	5311		12/9/2019	
9	1933786001	LH18/24-SP650_112619_AIX				SAMPLE	3	1933786001-A	E6850Q41.3	5480	12/24/2019	12/16/2019	
10	1934085001	LH18/24-SP650_120319_AIX				SAMPLE	3	1934085001-A	E6850Q41.3	5480	12/31/2019	12/18/2019	
11	1934086001	LH18/24-SP140_120319				SAMPLE	3	1934086001-A	E6850Q41.3	5480	12/31/2019	12/18/2019	
12	1934088001	LH18/24-SP650_120319_AIX				SAMPLE	3	1934088001-A	E6850Q41.3	5480	12/31/2019	12/18/2019	
13	687325	CCV for HBN 253208 [ELMS/2324]				CCV	3		E685041C3Q	5311		12/9/2019	

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00961097

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

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Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1933152 (001); 1933786 (001); 1934085 (001); 1934086 (001); 1934088 (001)
ELMS Batch/HBN ID: 2324 (253208)
Prep Date: 12/08/2019 Analysis Date: 12/08/2019 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\DEC\08DEC19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: **LCMS04** Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 687319; Target = 3.0µg/L. ASTM type II water was used for LMB 687322.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1933152001 (Client ID's: LH18/24-SP650_AIX Water). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1934086001 was analyzed and reported from a 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (687323/24) failed QC acceptance criteria for percent recoveries. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\DEC\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\3208DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 687320) is reported from the analysis of the Laboratory Control Sample (LCS – 687319) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

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5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2324 HBN: 253208 1934086 / 1934088 **Sample Set IDs if Applicable:** 1933152 / 1933786 / 1934085	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

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STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L	
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL	
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020	
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes	
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

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STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

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STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK			Description - 6850 WKG Std 100.ug/L
Standard: 49948	**Created By:** Thomas Bosch	**Amount:** 10 mL	
MFG: ALS/SLC	**Create Date:** 09/20/2019 03:09PM	**Expires:** 07/25/2020	
MFG Lot: TNB: 09/20/2019		**Usable:** Yes	
Pipette ID: Not Provided		**Lab Lot:** CLO4 WRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

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STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard:	43659	**Created By:**	Thomas Bosch	**Amount:**	100 mL
MFG:	AccuStandard	**Create Date:**	09/17/2018 09:09AM	**Expires:**	07/25/2020
MFG Lot:	218065075			**Usable:**	Yes
Part ID:	IC-PER-10X-1			**Lab Lot:**	CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermdt AccStd 10.ug/mL
Standard: 49947	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

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STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard:	36748	**Created By:**	Thomas Bosch	**Amount:**	100 mL
MFG:	Ultra Scientific	**Create Date:**	05/11/2017 01:05PM	**Expires:**	03/31/2020
MFG Lot:	CP-0860			**Usable:**	Yes
Part ID:	ICC-013			**Lab Lot:**	CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

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STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 47515
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

Page 1 of 1

For use in routine laboratory analysis.

AccuStandard

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO 17025 ISO GUIDE 34 ISO 9001

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ALS
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Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification: ≥ 98%

MW*: 130.44
** For isotopically labeled compounds, MW listed is for the fully enriched product.*

$NaCl^{18}O_4$

Labeled CAS Number: NA

Unlabeled CAS Number: 7601-89-0

Chemical Formula: NaCl*O4

Storage: Store at room temperature away from light and moisture.
Stability: See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

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Batch Report: C:\HPCHEM\1\DATA\08DEC19D\08DEC19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#	687318 CCV@25	Vial 71	1	Control	1	1.69605e6	7.373	26.83661
#	687319 QC@3.0	Vial 72	1	Control	2	2.01272e5	7.322	3.16765
#	687321 ICS@3.0	Vial 73	1	Control	3	1.15555e5	7.255	2.71754
#	687322 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
#	1933152001	Vial 75	1	Sample	5	6.68714e5	7.233	11.40769
#	687323 331521S	Vial 76	1	Sample	6	8.19147e5	7.331	13.73971
#	687324 331521D	Vial 77	1	Sample	7	8.20045e5	7.281	12.87113
#	1933786001	Vial 78	1	Sample	8	6.28422e4	7.290	8.96014e-1
#	1934085001	Vial 79	1	Sample	9	7.76702e4	7.271	1.30616
#	1934086001 1K	Vial 80	1	Sample	10	6.52914e5	7.541	1.06845e4
#	1934088001	Vial 81	1	Sample	11	8.35067e4	7.206	1.23378
*	687325 CCV@25	Vial 71	1	Control	12	1.56876e6	7.401	26.26666

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#	687318 CCV@25	Vial 71	1	Control	1	2.14319e5	7.415	5.00000
#	687319 QC@3.0	Vial 72	1	Control	2	2.33945e5	7.349	5.00000
#	687321 ICS@3.0	Vial 73	1	Control	3	1.56222e5	7.280	5.00000
#	687322 LMB	Vial 74	1	Control	4	2.16883e5	7.417	5.00000
#	1933152001	Vial 75	1	Sample	5	2.11754e5	7.253	5.00000
#	687323 331521S	Vial 76	1	Sample	6	2.13383e5	7.356	5.00000
#	687324 331521D	Vial 77	1	Sample	7	2.28828e5	7.301	5.00000
#	1933786001	Vial 78	1	Sample	8	2.44931e5	7.312	5.00000
#	1934085001	Vial 79	1	Sample	9	2.13009e5	7.296	5.00000
#	1934086001 1K	Vial 80	1	Sample	10	2.21359e5	7.561	5000.00000
#	1934088001	Vial 81	1	Sample	11	2.41676e5	7.223	5.00000
*	687325 CCV@25	Vial 71	1	Control	12	2.03012e5	7.417	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#	687318 CCV@25	Vial 71	1	Control	1	5.12256e5	7.390	26.62112
#	687319 QC@3.0	Vial 72	1	Control	2	6.70814e4	7.342	3.37306
#	687321 ICS@3.0	Vial 73	1	Control	3	4.41800e4	7.280	3.32517
#	687322 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
#	1933152001	Vial 75	1	Sample	5	2.33281e5	7.255	12.89143
#	687323 331521S	Vial 76	1	Sample	6	2.85504e5	7.349	15.51969
#	687324 331521D	Vial 77	1	Sample	7	2.84040e5	7.294	14.45077
#	1933786001	Vial 78	1	Sample	8	2.43896e4	7.313	1.07465
#	1934085001	Vial 79	1	Sample	9	3.07397e4	7.291	1.62821
#	1934086001 1K	Vial 80	1	Sample	10	1.97618e5	7.553	1.05214e4
#	1934088001	Vial 81	1	Sample	11	3.11607e4	7.206	1.43824
*	687325 CCV@25	Vial 71	1	Control	12	4.80251e5	7.415	26.37250

*** End of Report ***

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Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\DEC\08DEC19D.S

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	687318 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	687319 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	687321 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	687322 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1933152001	CLO4-AQN	1	Sample		
6	Vial 76	687323 331521S	CLO4-AQN	1	Sample		
7	Vial 77	687324 331521D	CLO4-AQN	1	Sample		
8	Vial 78	1933786001	CLO4-AQN	1	Sample		
9	Vial 79	1934085001	CLO4-AQN	1	Sample		
10	Vial 80	1934086001 1K	CLO4-AQN	1	Sample		
11	Vial 81	1934088001	CLO4-AQN	1	Sample		
12	Vial 71	687325 CCV@25	CLO4-AQN	1	Ctrl Samp		

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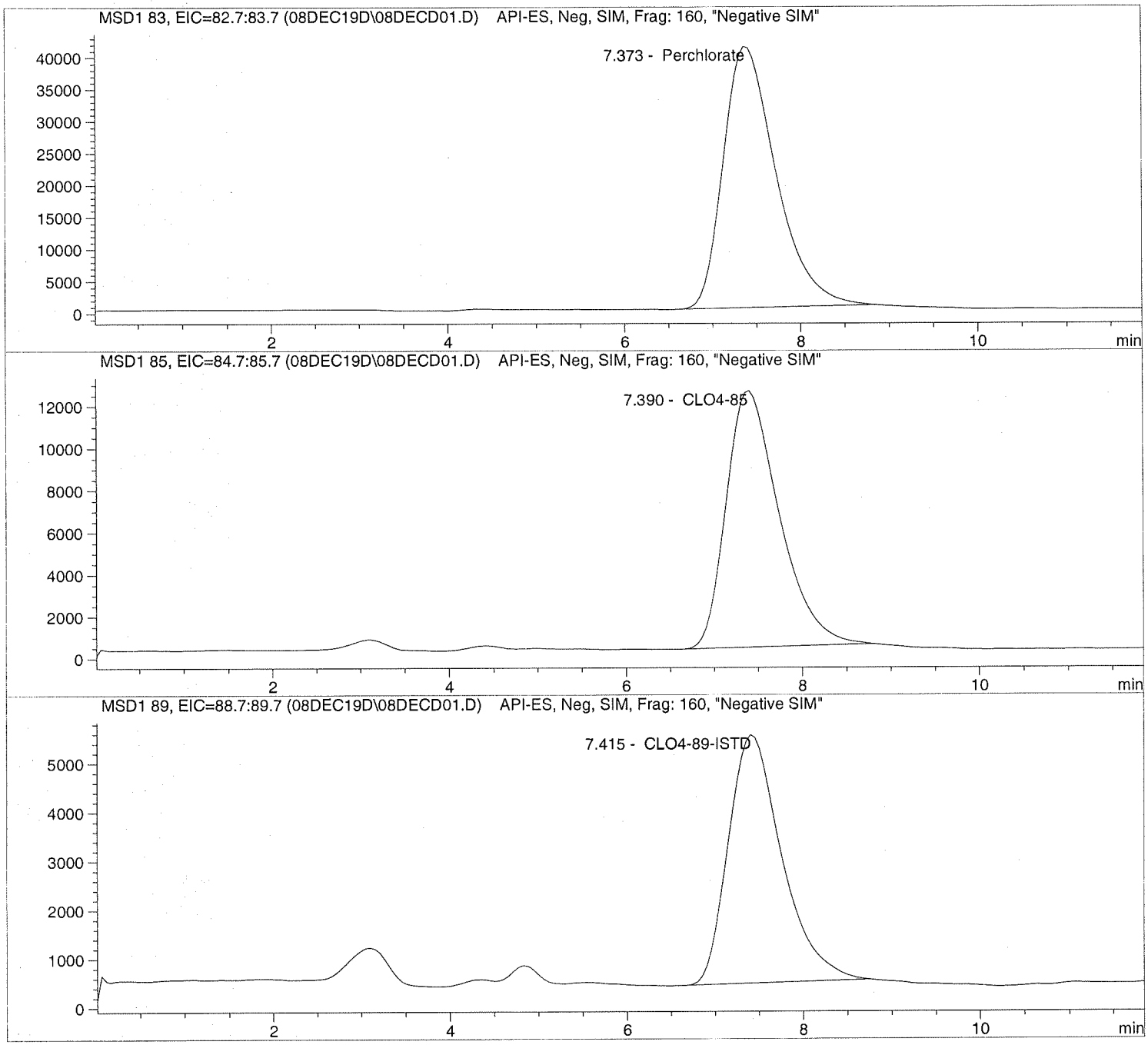
Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD01.D Sample Name: 687318 CCV@25

Injection Date:	12/08/2019 13:20:07	Seq Line:	1
Sample Name:	687318 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



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Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD01.D Sample Name: 687318 CCV@25

Injection Date:	12/08/2019 13:20:07	Seq Line:	1
Sample Name:	687318 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.373	PBA	1696047.9	26.8366	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.390	PBA	512255.8	26.6211	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.415	PBA	214319.2	5.0000	CLO4-89-ISTD

*** End of Report ***

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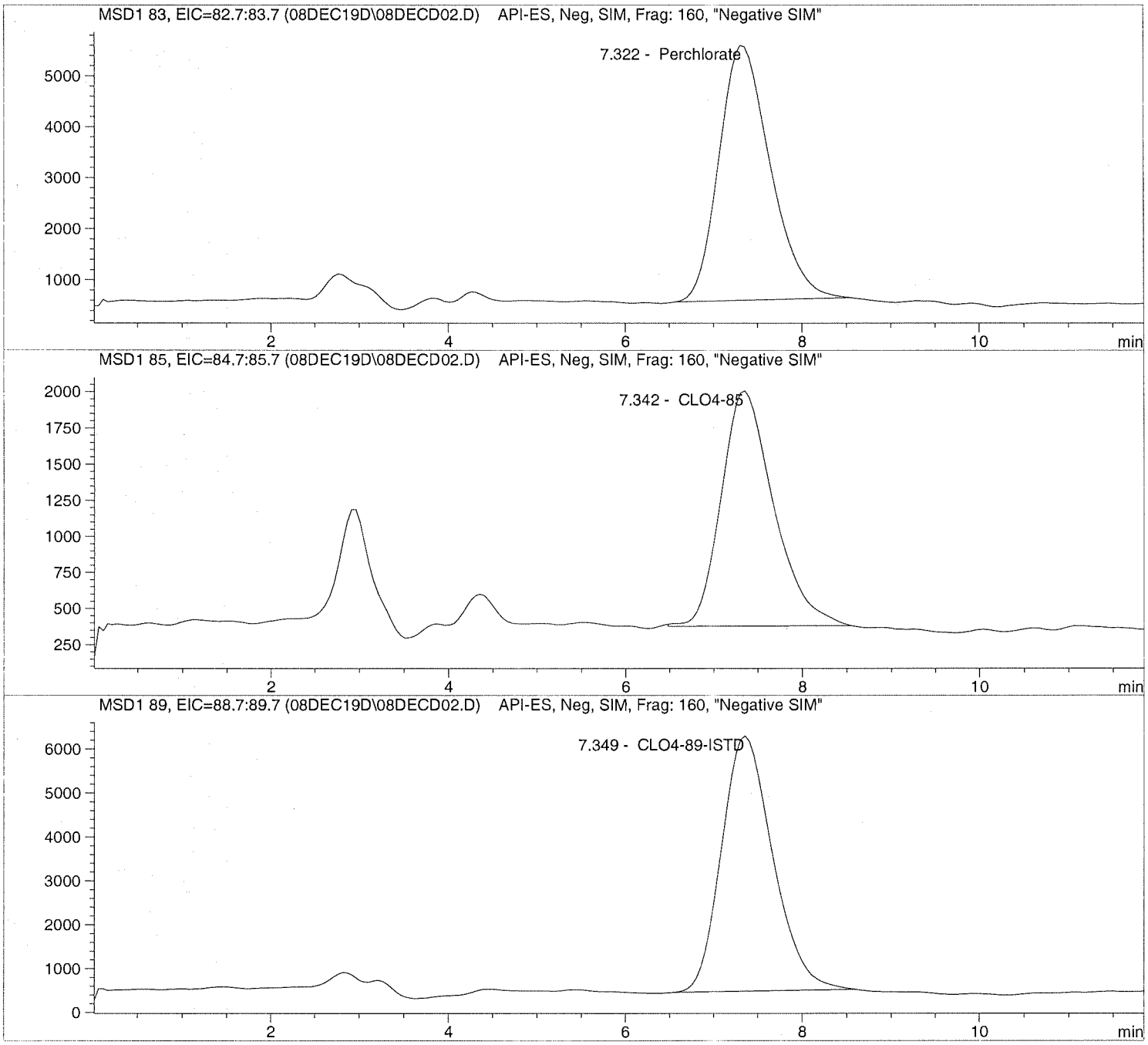
Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD02.D Sample Name: 687319 QC@3.0

Injection Date:	12/08/2019 13:38:13	Seq Line:	2
Sample Name:	687319 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



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Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD02.D Sample Name: 687319 QC@3.0

Injection Date:	12/08/2019 13:38:13	Seq Line:	2
Sample Name:	687319 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.322	PBA	201271.8	3.1677	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.342	BBA	67081.4	3.3731	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.349	PBA	233945.4	5.0000	CLO4-89-ISTD

*** End of Report ***

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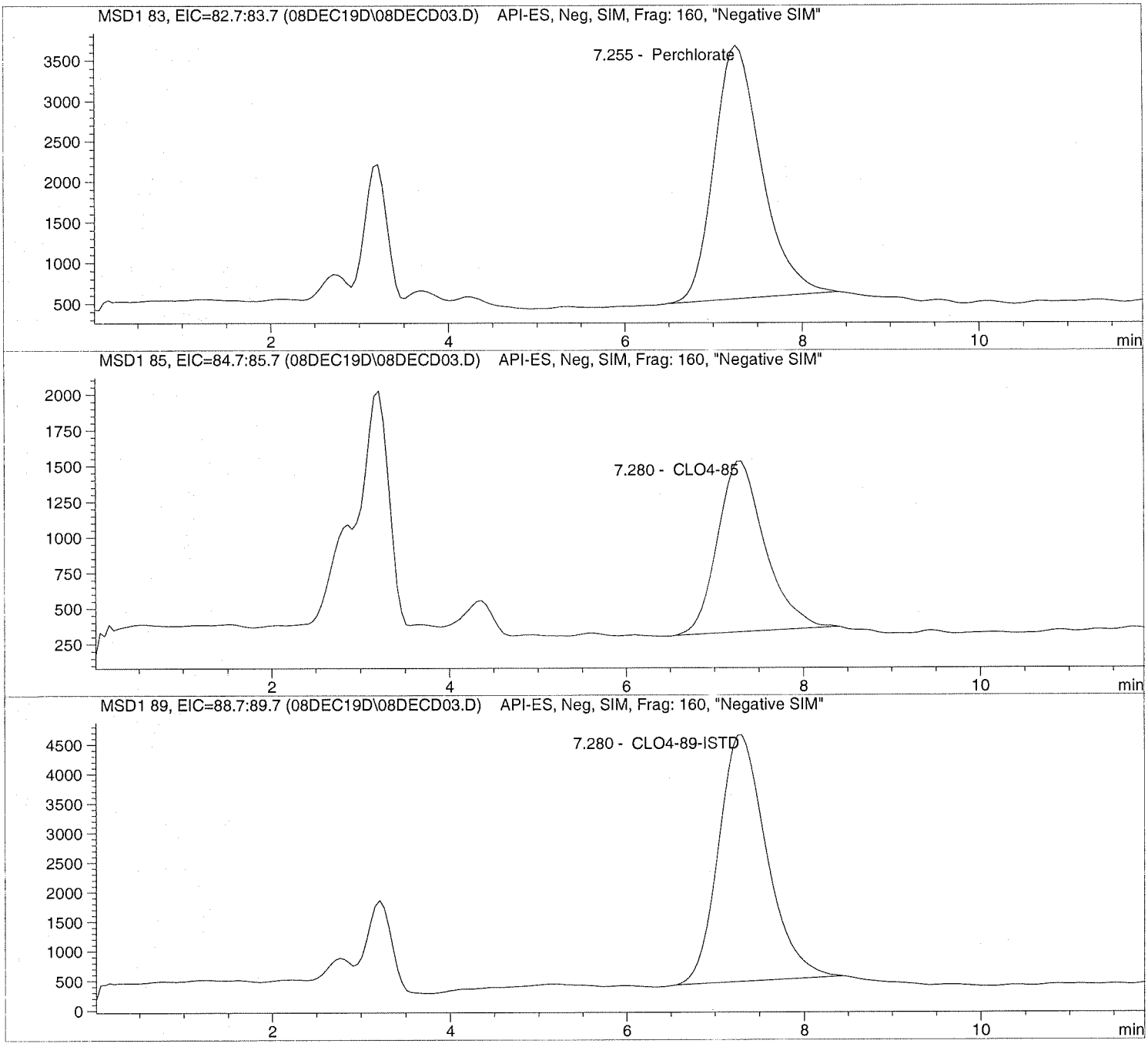
Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD03.D Sample Name: 687321 ICS@3.0

Injection Date:	12/08/2019 13:52:08	Seq Line:	3
Sample Name:	687321 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD03.D Sample Name: 687321 ICS@3.0

Injection Date:	12/08/2019 13:52:08	Seq Line:	3
Sample Name:	687321 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.255	BBA	115555.3	2.7175	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.280	PBA	44180.0	3.3252	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.280	PBA	156222.3	5.0000	CLO4-89-ISTD

*** End of Report ***

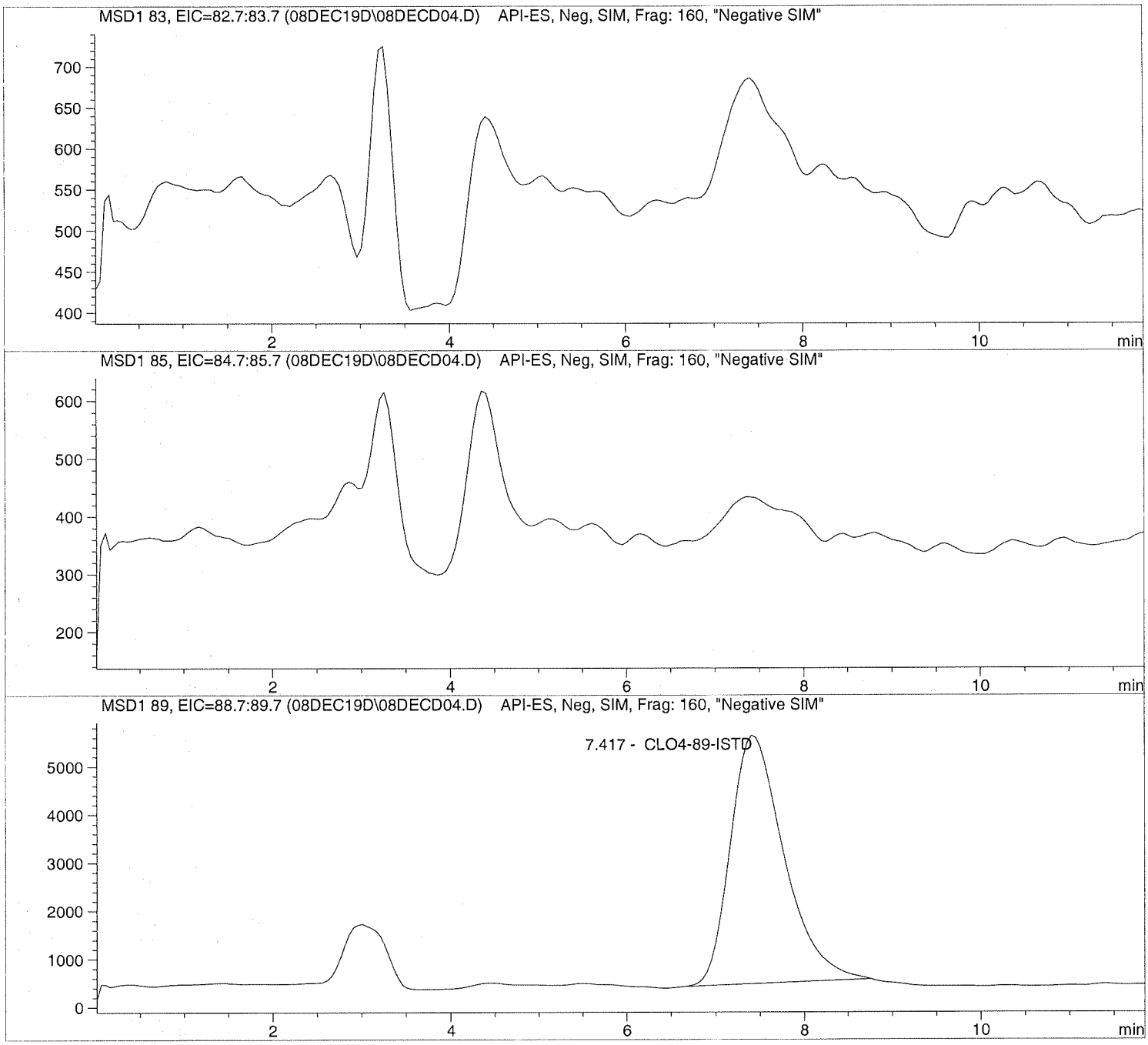
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD04.D Sample Name: 687322 LMB

Injection Date:	12/08/2019 14:06:04	Seq Line:	4
Sample Name:	687322 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD04.D Sample Name: 687322 LMB

Injection Date:	12/08/2019 14:06:04	Seq Line:	4
Sample Name:	687322 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.417	PBA	216882.7	5.0000	CLO4-89-ISTD

*** End of Report ***

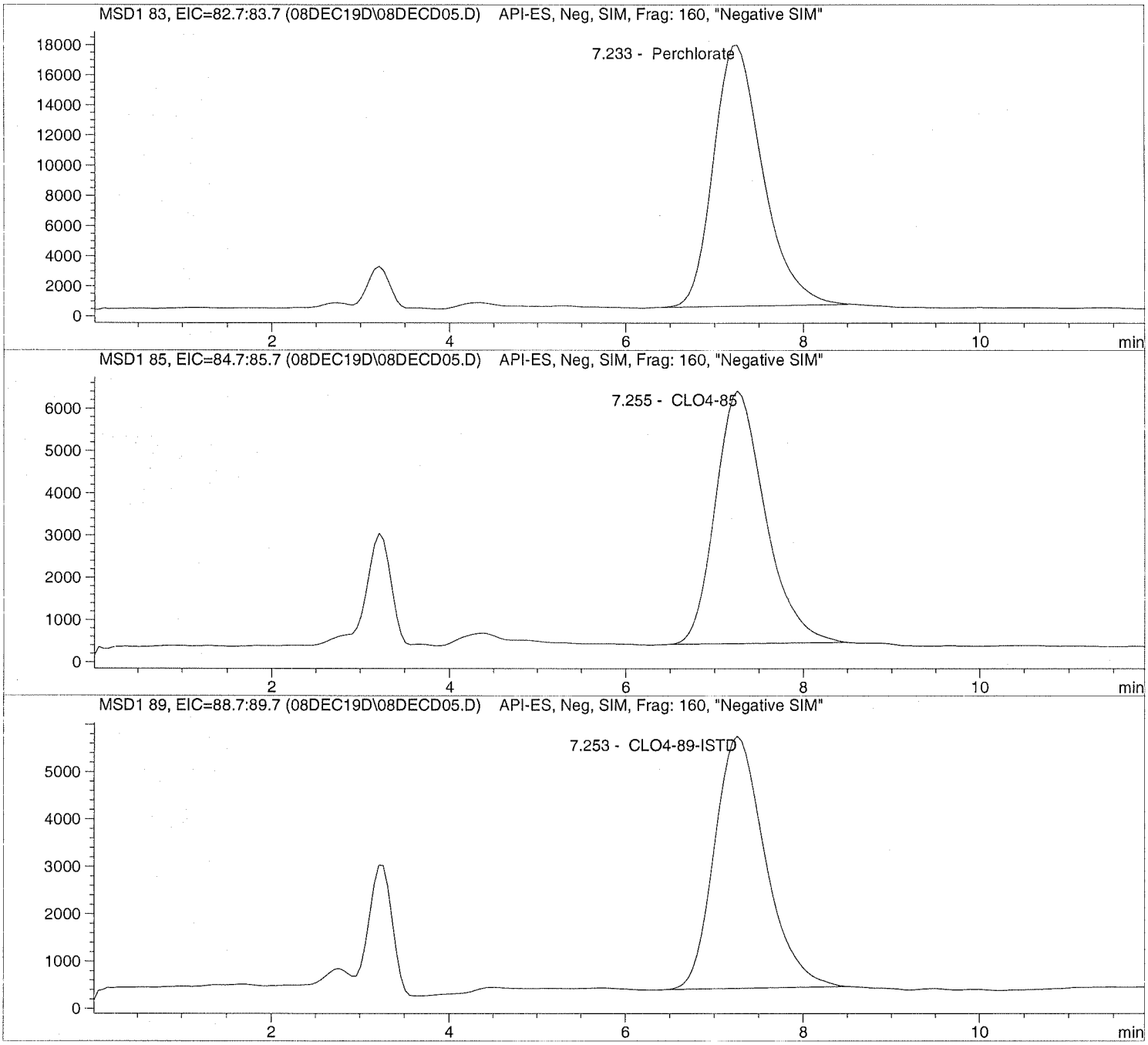
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD05.D Sample Name: 1933152001

Injection Date:	12/08/2019 14:20:08	Seq Line:	5
Sample Name:	1933152001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD05.D Sample Name: 1933152001

Injection Date:	12/08/2019 14:20:08	Seq Line:	5
Sample Name:	1933152001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.233	PBA	668714.5	11.4077	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.255	PBA	233281.0	12.8914	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.253	PBA	211754.2	5.0000	CLO4-89-ISTD

*** End of Report ***

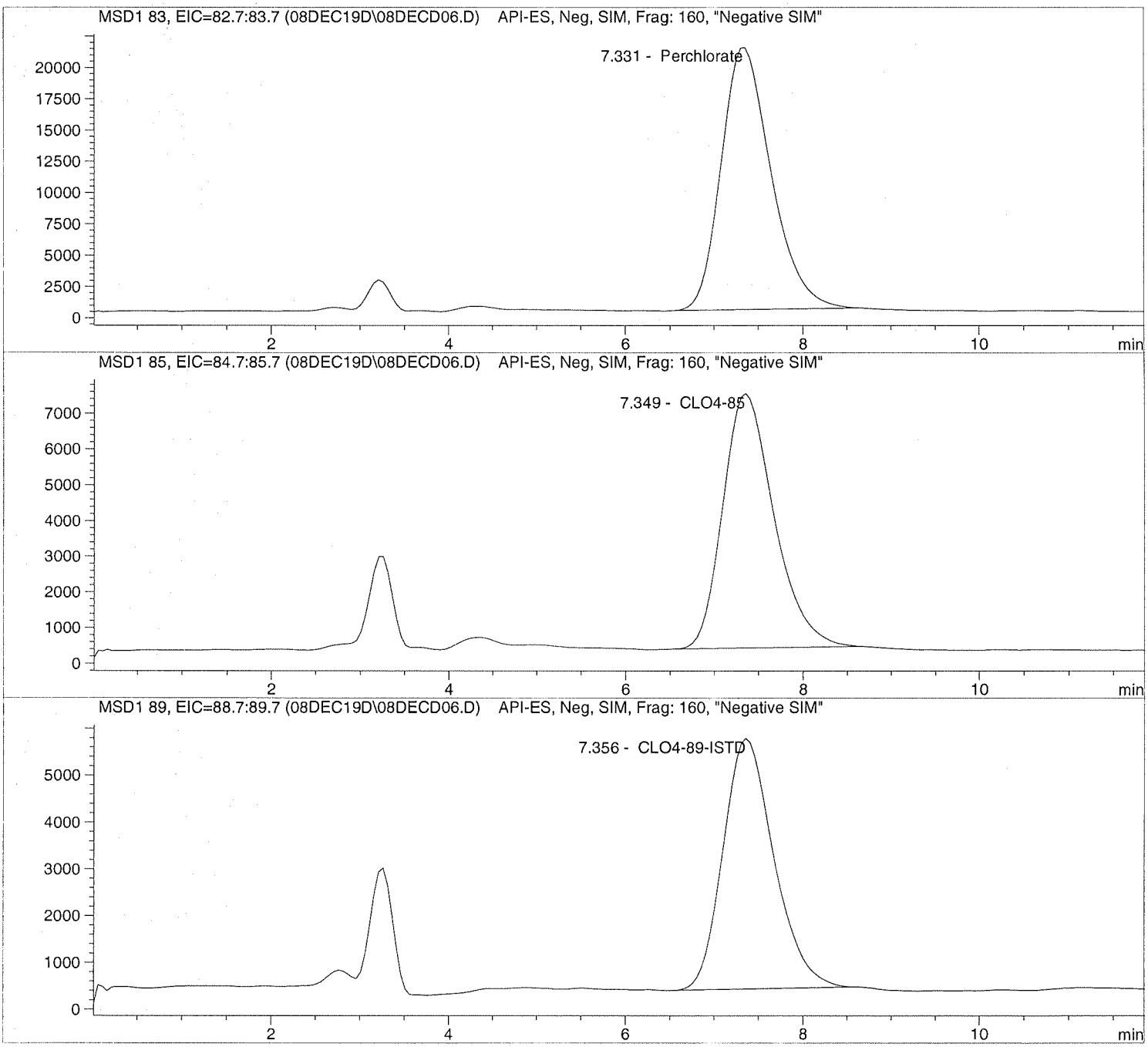
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD06.D Sample Name: 687323 331521S

Injection Date:	12/08/2019 14:34:02	Seq Line:	6
Sample Name:	687323 331521S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD06.D Sample Name: 687323 331521S

Injection Date: 12/08/2019 14:34:02 Seq Line: 6
Sample Name: 687323 331521S Location: Vial 76
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.331	PBA	819146.8	13.7397	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.349	PBA	285503.6	15.5197	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.356	PBA	213383.5	5.0000	CLO4-89-ISTD

*** End of Report ***

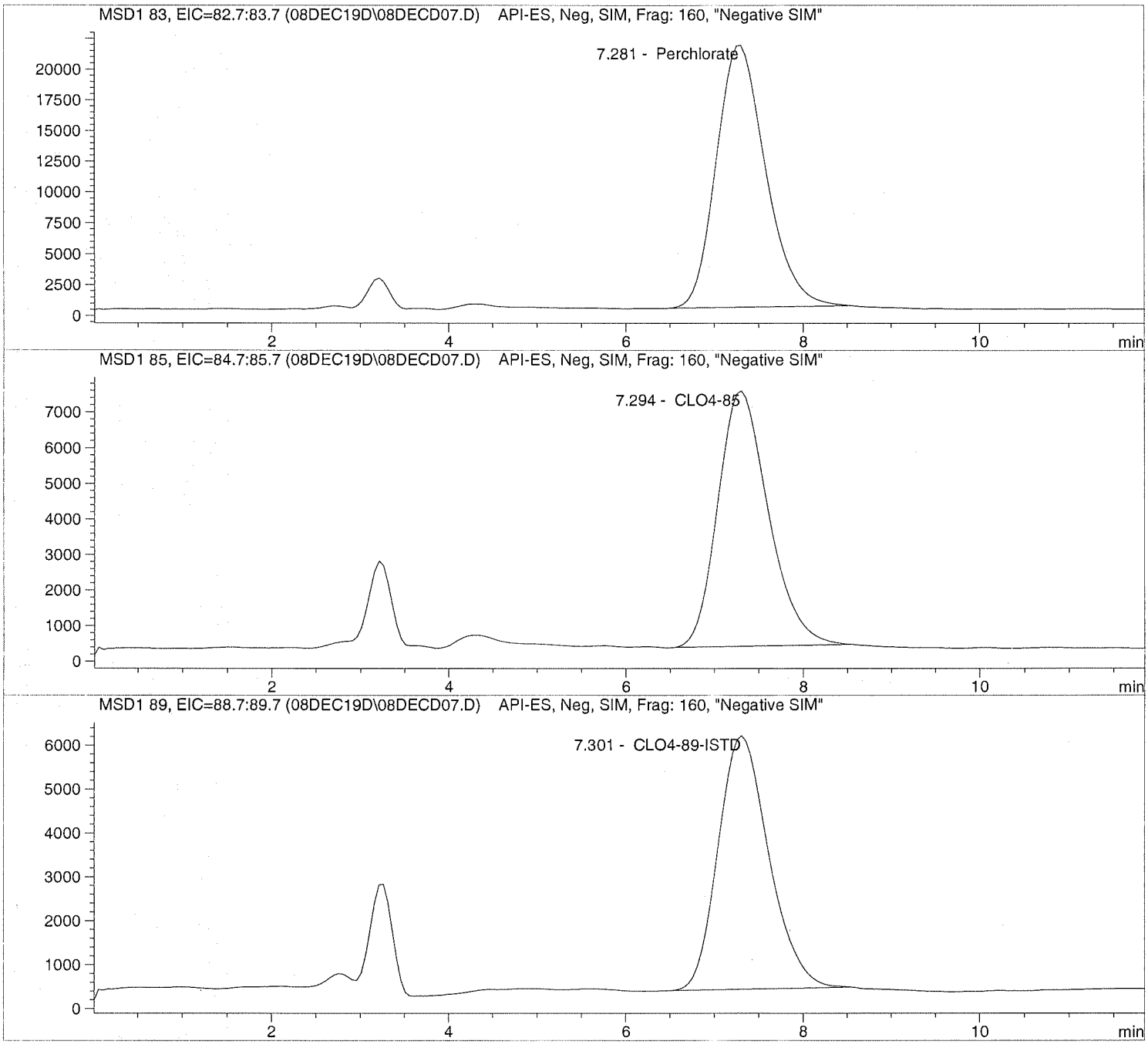
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD07.D Sample Name: 687324 331521D

Injection Date:	12/08/2019 14:48:08	Seq Line:	7
Sample Name:	687324 331521D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD07.D Sample Name: 687324 331521D

Injection Date:	12/08/2019 14:48:08	Seq Line:	7
Sample Name:	687324 331521D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.281	PBA	820045.2	12.8711	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	PBA	284039.7	14.4508	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.301	PBA	228828.1	5.0000	CLO4-89-ISTD

*** End of Report ***

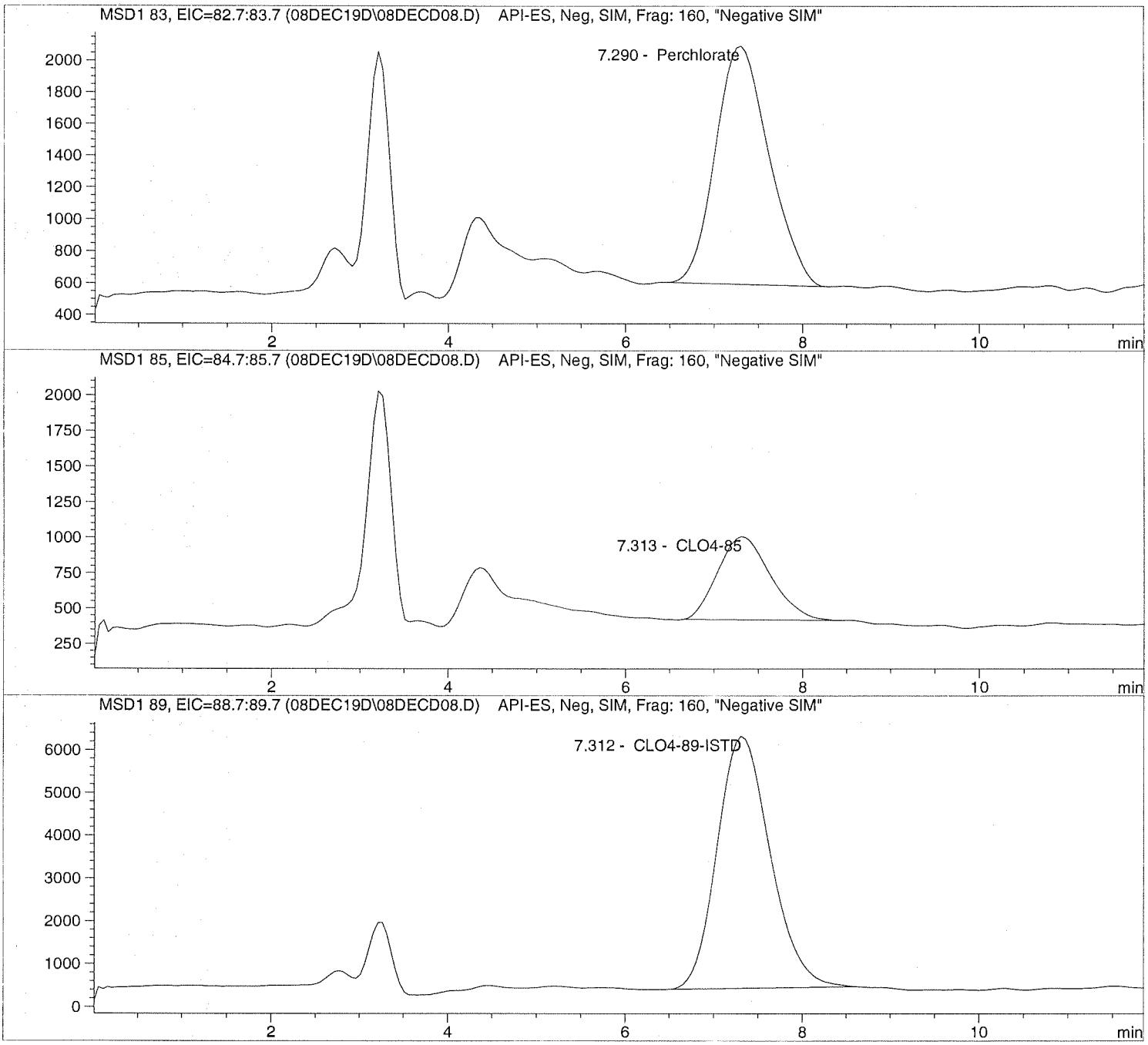
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD08.D Sample Name: 1933786001

Injection Date:	12/08/2019 15:02:01	Seq Line:	8
Sample Name:	1933786001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD08.D Sample Name: 1933786001

Injection Date:	12/08/2019 15:02:01	Seq Line:	8
Sample Name:	1933786001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	62842.2	0.8960	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.313	PBA	24389.6	1.0747	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.312	PBA	244930.7	5.0000	CLO4-89-ISTD

*** End of Report ***

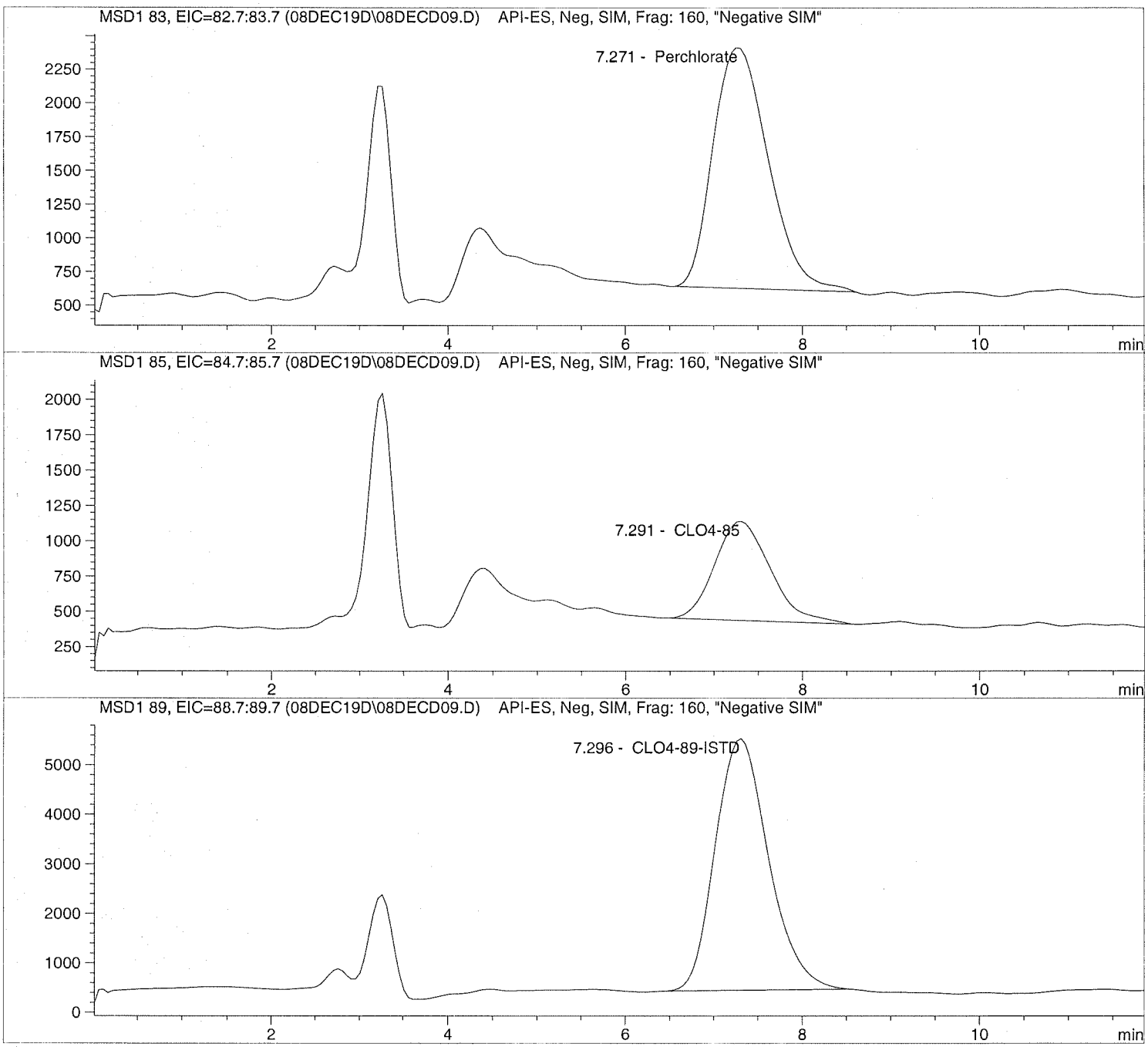
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD09.D Sample Name: 1934085001

Injection Date:	12/08/2019 15:15:52	Seq Line:	9
Sample Name:	1934085001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD09.D Sample Name: 1934085001

Injection Date:	12/08/2019 15:15:52	Seq Line:	9
Sample Name:	1934085001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.271	PBA	77670.2	1.3062	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.291	PBA	30739.7	1.6282	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.296	PBA	213008.8	5.0000	CLO4-89-ISTD

*** End of Report ***

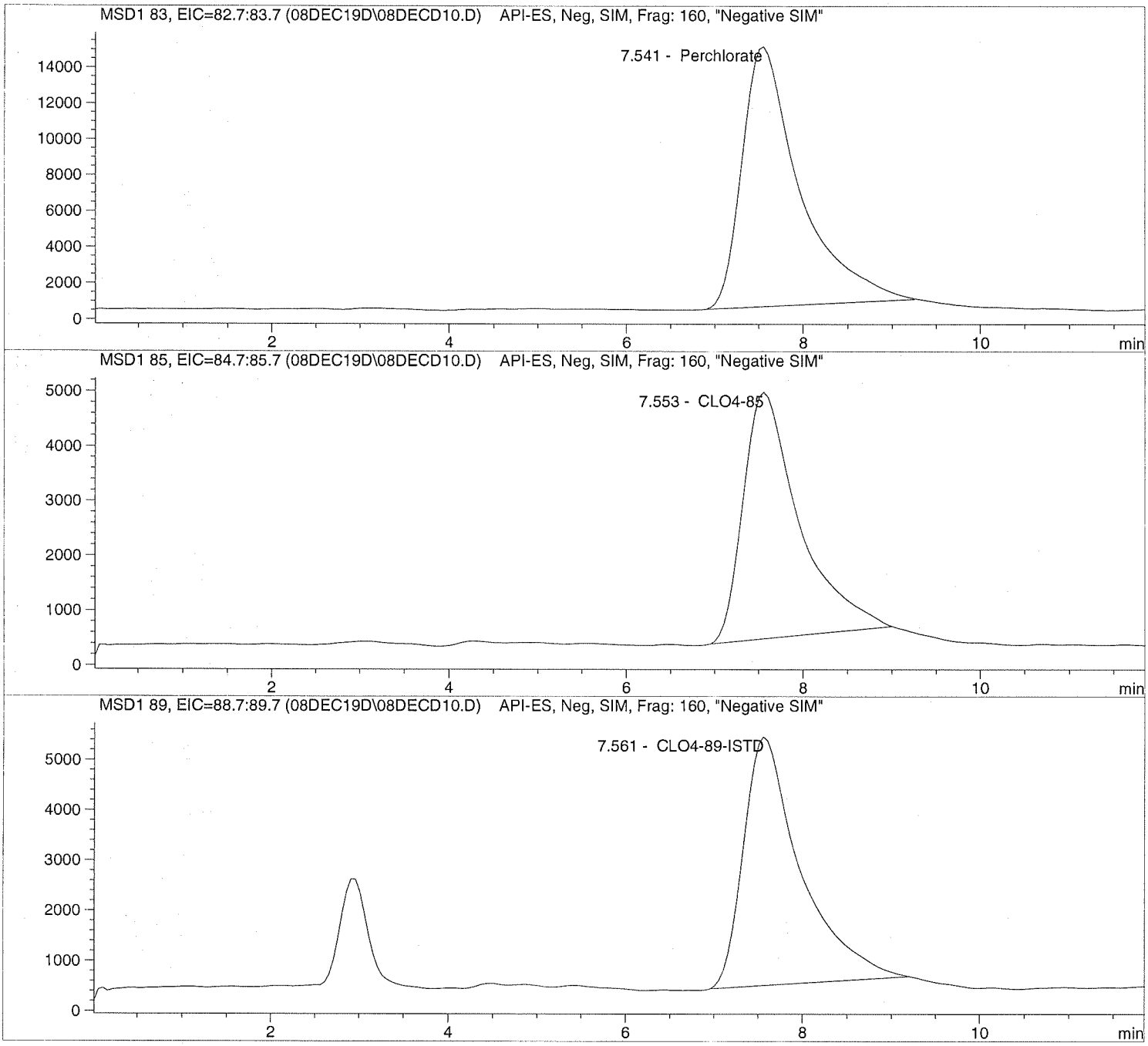
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD10.D Sample Name: 1934086001 1K

Injection Date:	12/08/2019 15:29:50	Seq Line:	10
Sample Name:	1934086001 1K	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD10.D Sample Name: 1934086001 1K

Injection Date:	12/08/2019 15:29:50	Seq Line:	10
Sample Name:	1934086001 1K	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.541	PBA	652913.9	10684.5187	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.553	PBA	197617.5	10521.3847	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.561	PBA	221358.6	5000.0000	CLO4-89-ISTD

*** End of Report ***

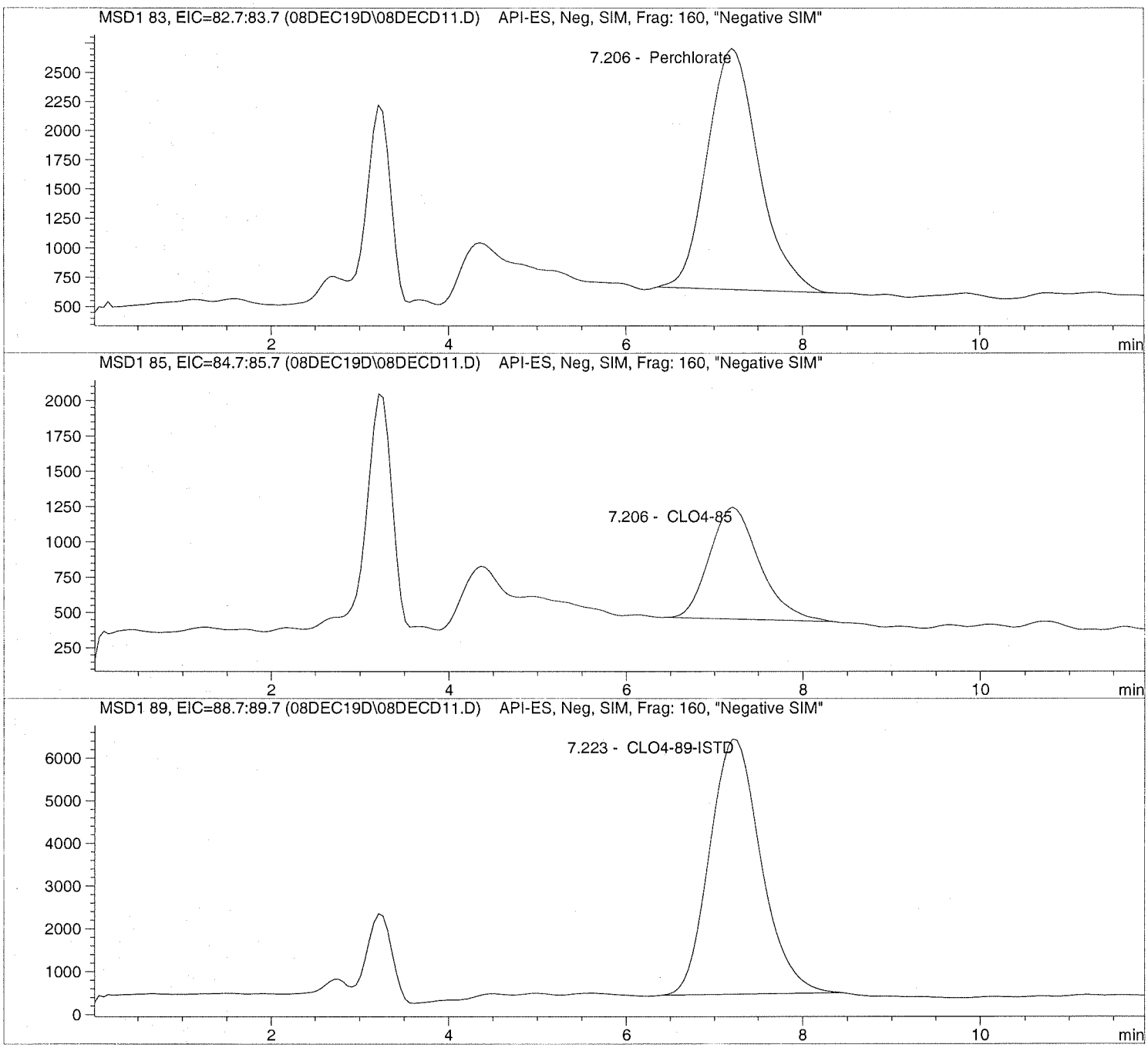
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD11.D Sample Name: 1934088001

Injection Date:	12/08/2019 15:43:41	Seq Line:	11
Sample Name:	1934088001	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD11.D Sample Name: 1934088001

Injection Date:	12/08/2019 15:43:41	Seq Line:	11
Sample Name:	1934088001	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.206	PBA	83506.7	1.2338	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.206	PBA	31160.7	1.4382	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.223	PBA	241675.8	5.0000	CLO4-89-ISTD

*** End of Report ***

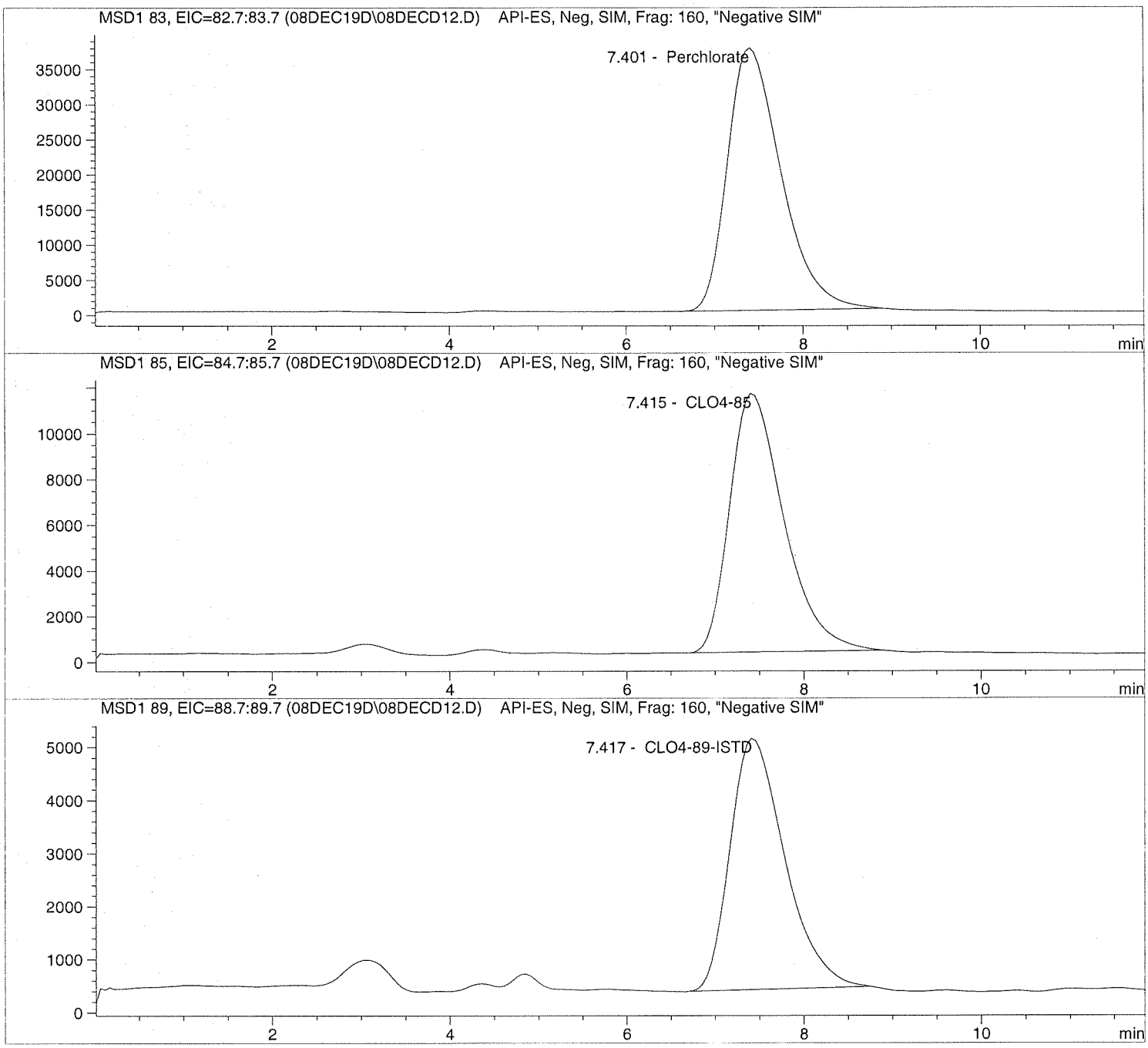
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD12.D Sample Name: 687325 CCV@25

Injection Date:	12/08/2019 15:57:34	Seq Line:	12
Sample Name:	687325 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD12.D Sample Name: 687325 CCV@25

Injection Date:	12/08/2019 15:57:34	Seq Line:	12
Sample Name:	687325 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.401	PBA	1568763.4	26.2667	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.415	PBA	480251.1	26.3725	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.417	PBA	203011.5	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Lvl	Sig	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

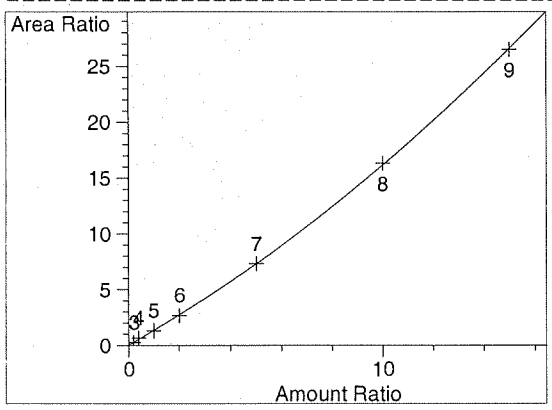
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

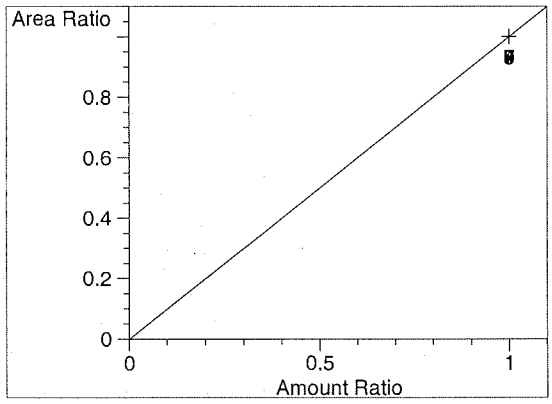
No Entries in table

RIGHT SOLUTIONS | RIGHT PARTNER

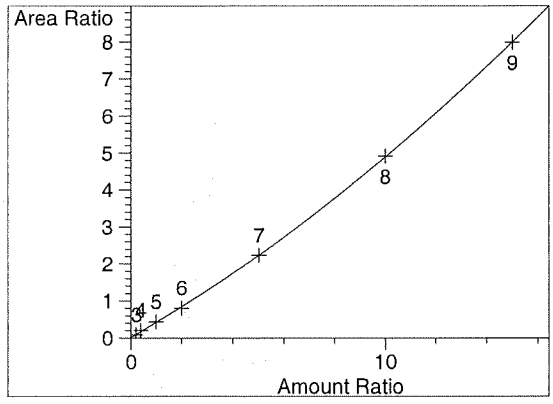
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: y = ax² + bx + c
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: y = mx + b
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: y = ax² + bx + c
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

RIGHT SOLUTIONS | RIGHT PARTNER

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

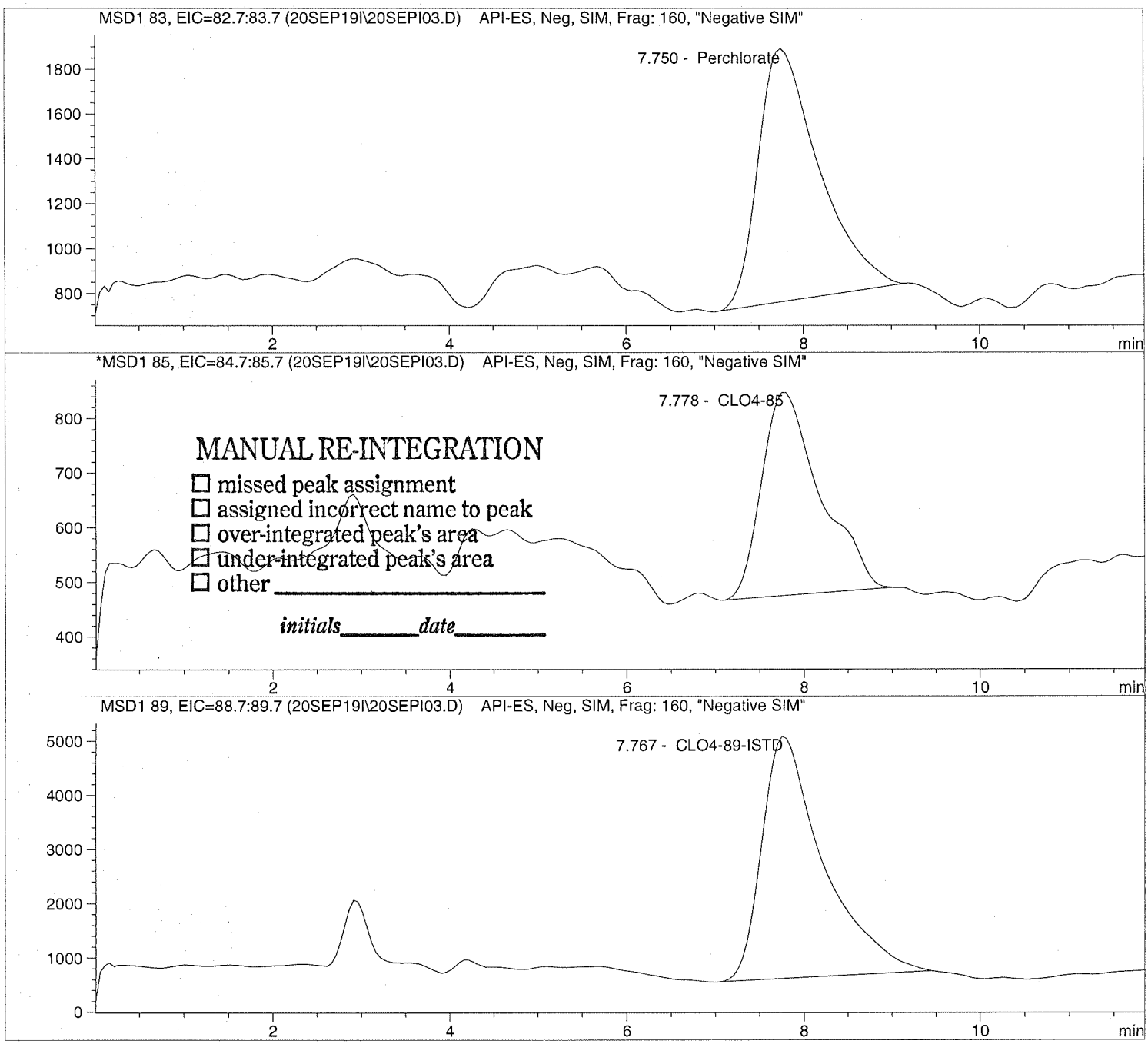
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

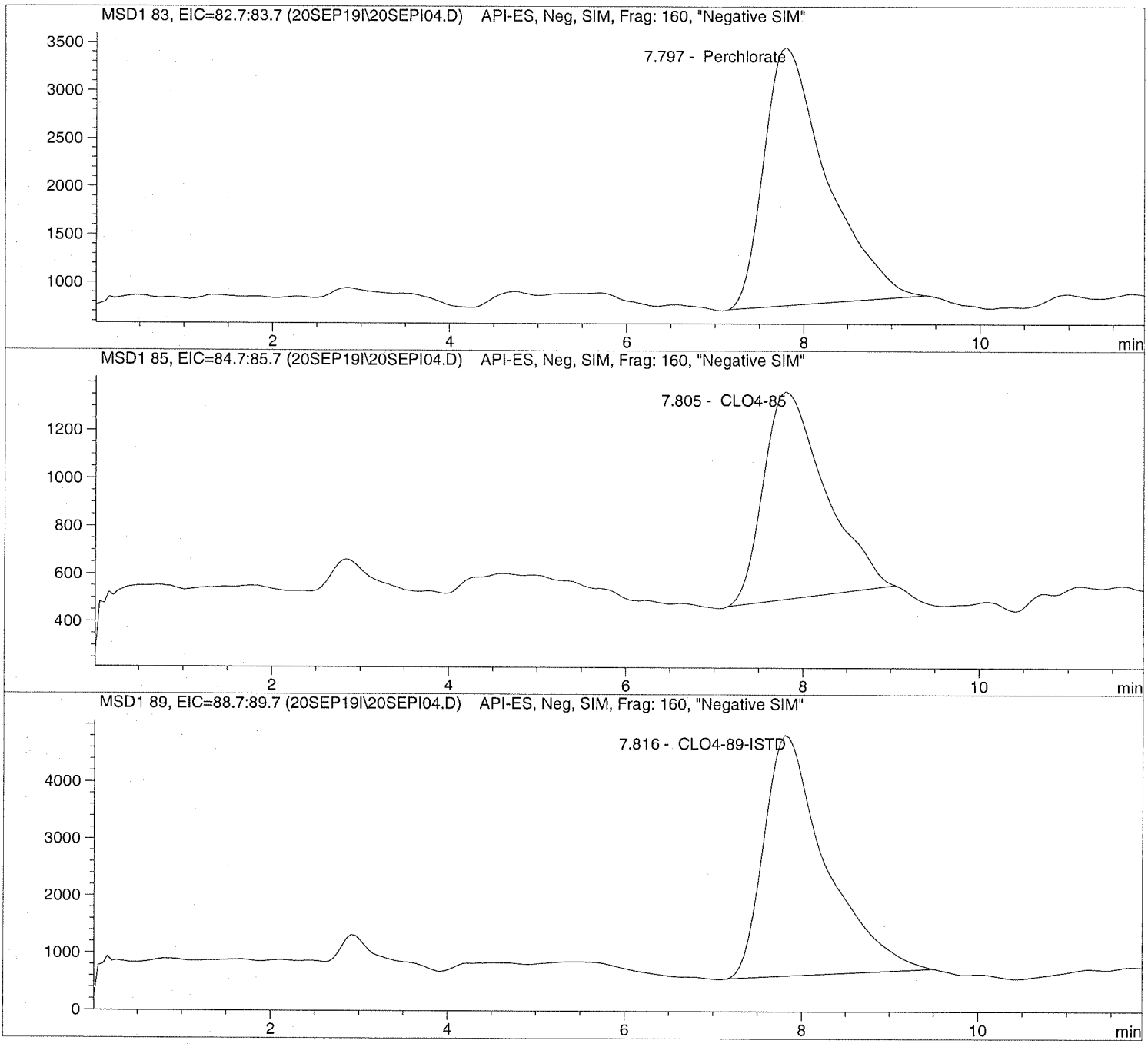
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

*** End of Report ***

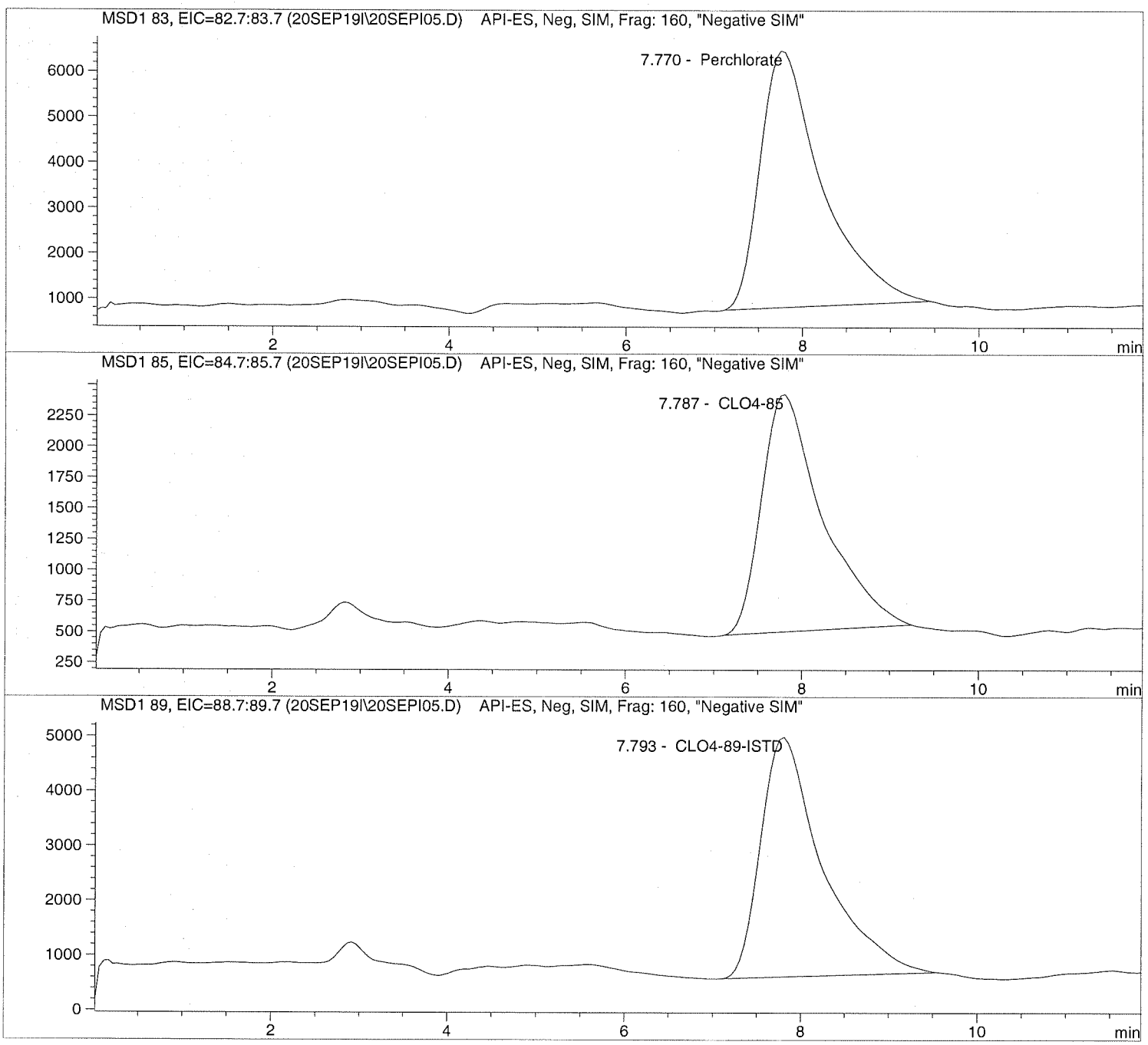
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

*** End of Report ***

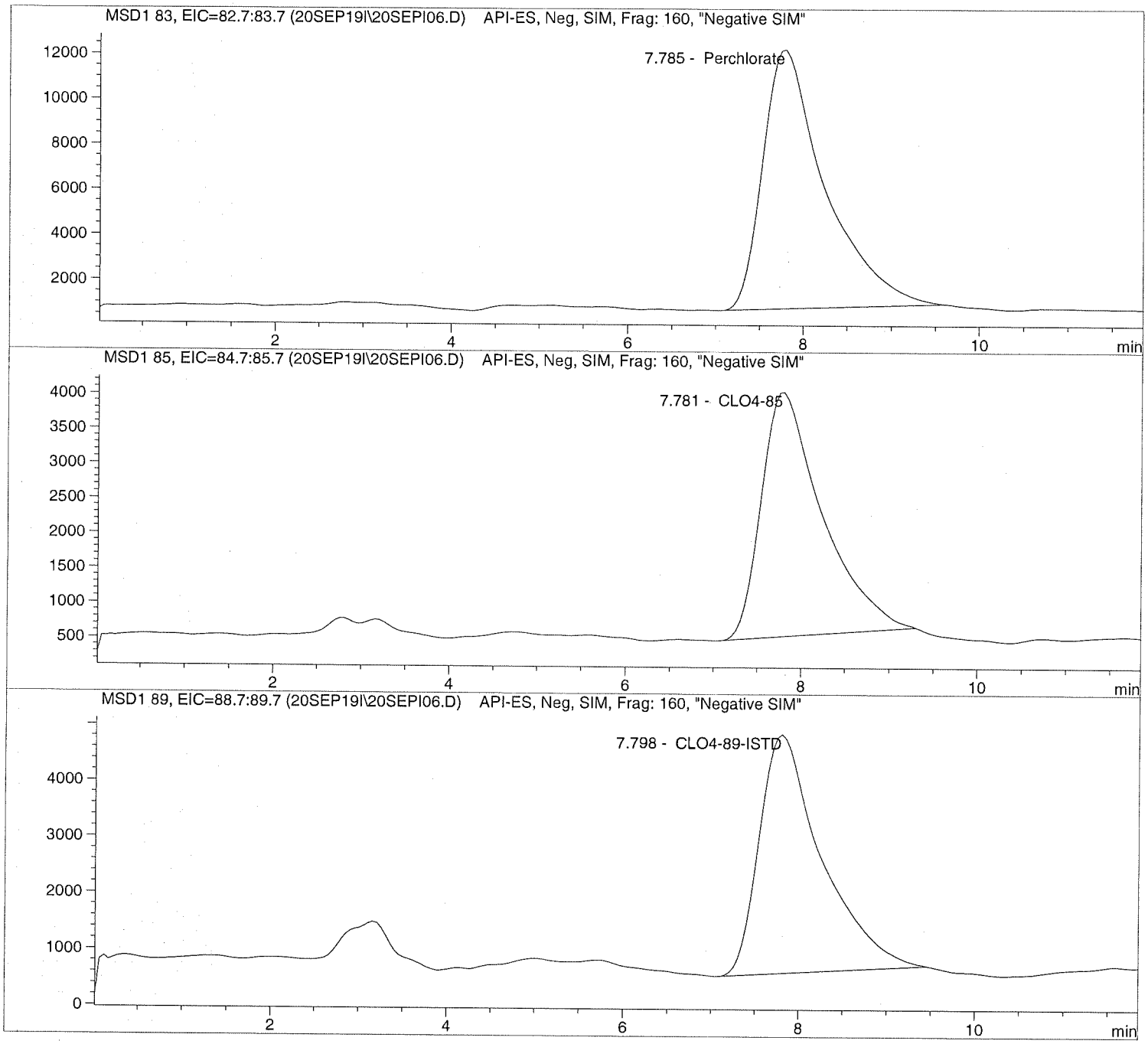
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

*** End of Report ***

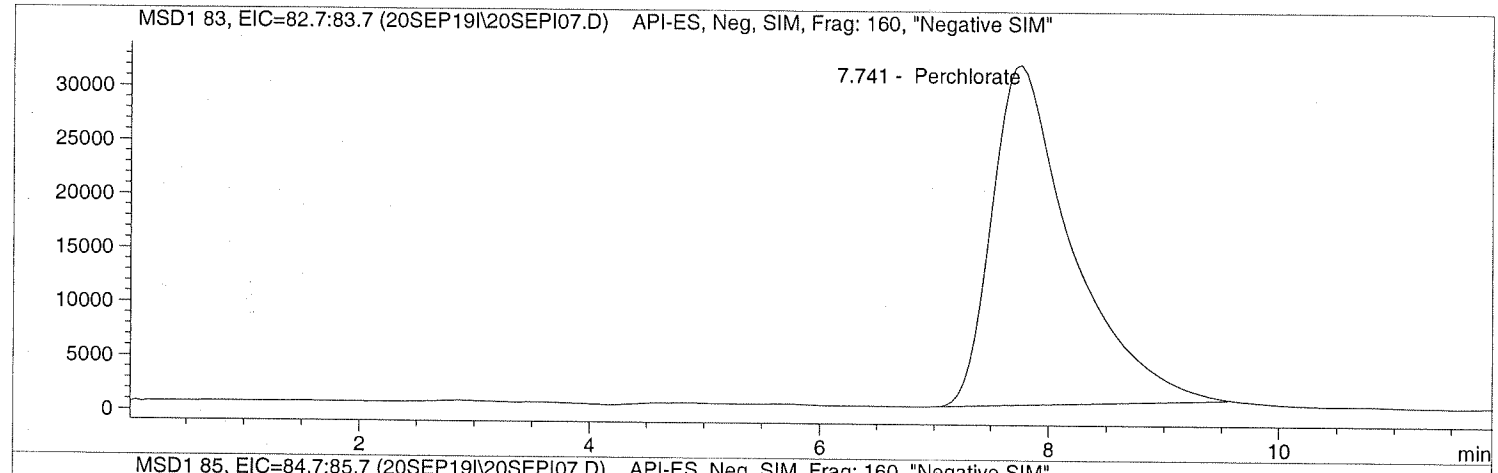
RIGHT SOLUTIONS | RIGHT PARTNER

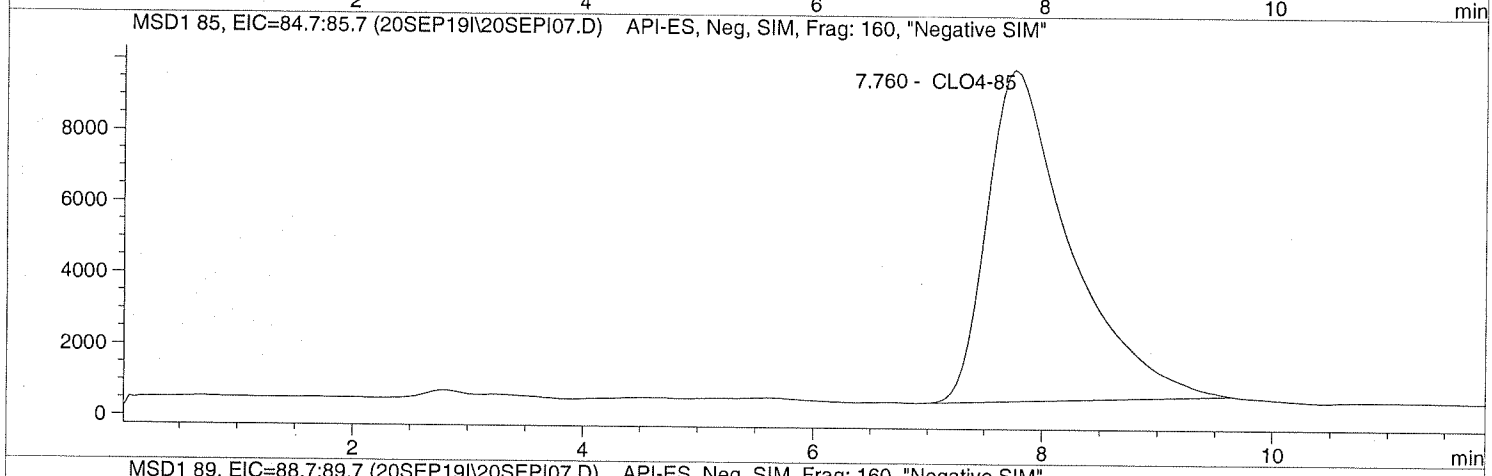
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

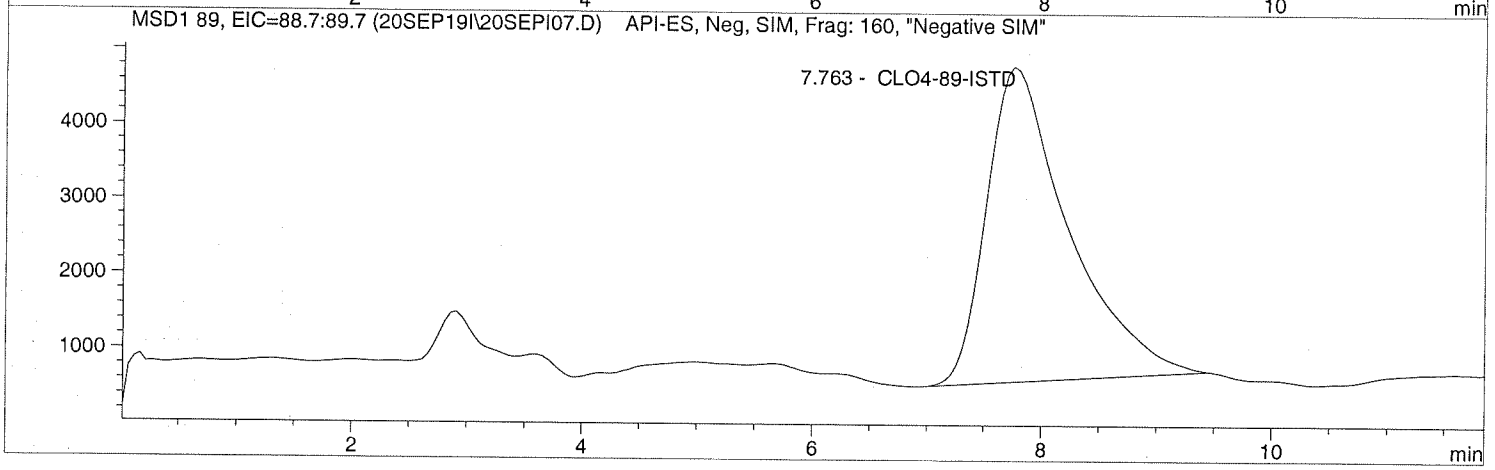
Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

*** End of Report ***

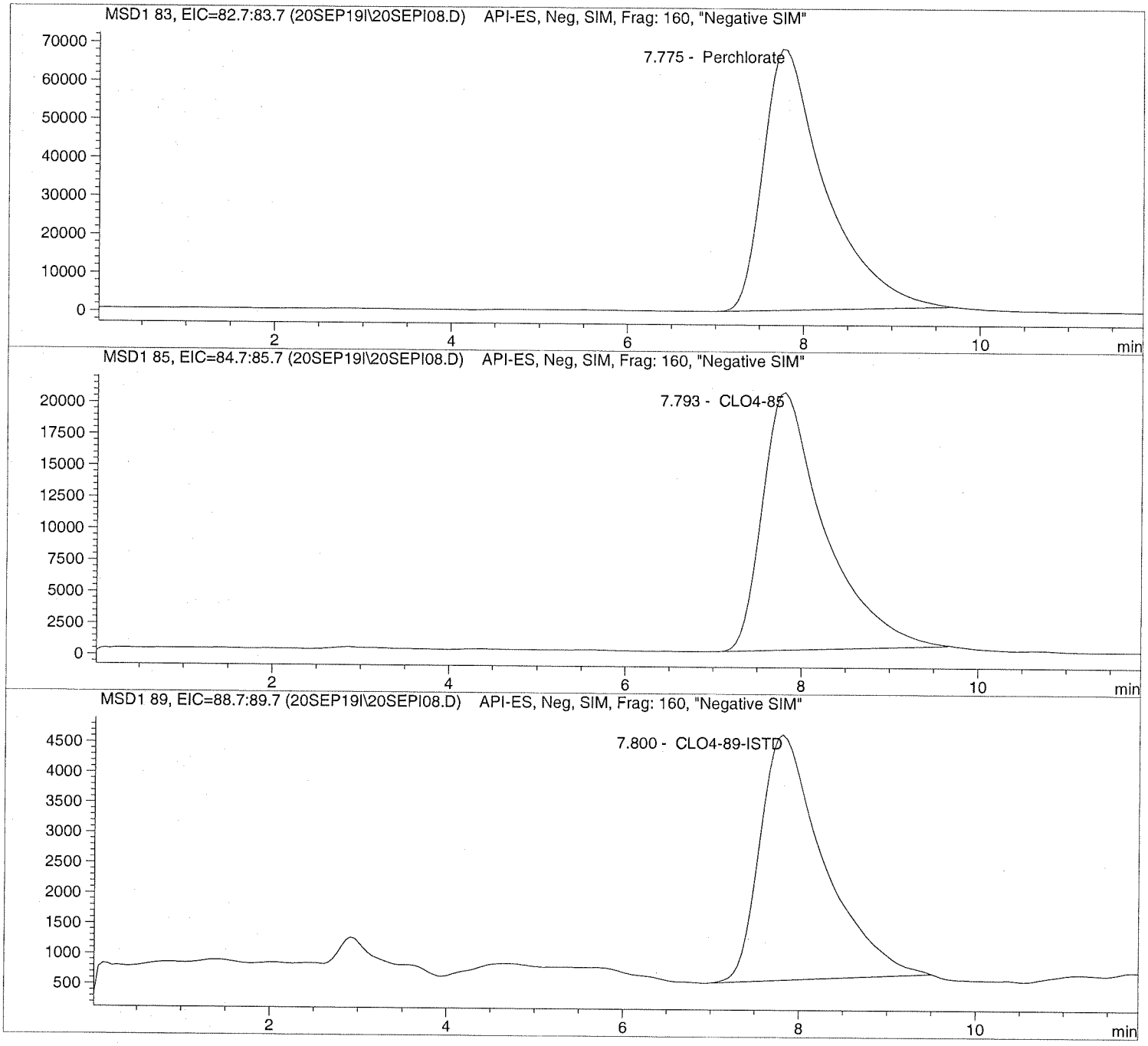
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

*** End of Report ***

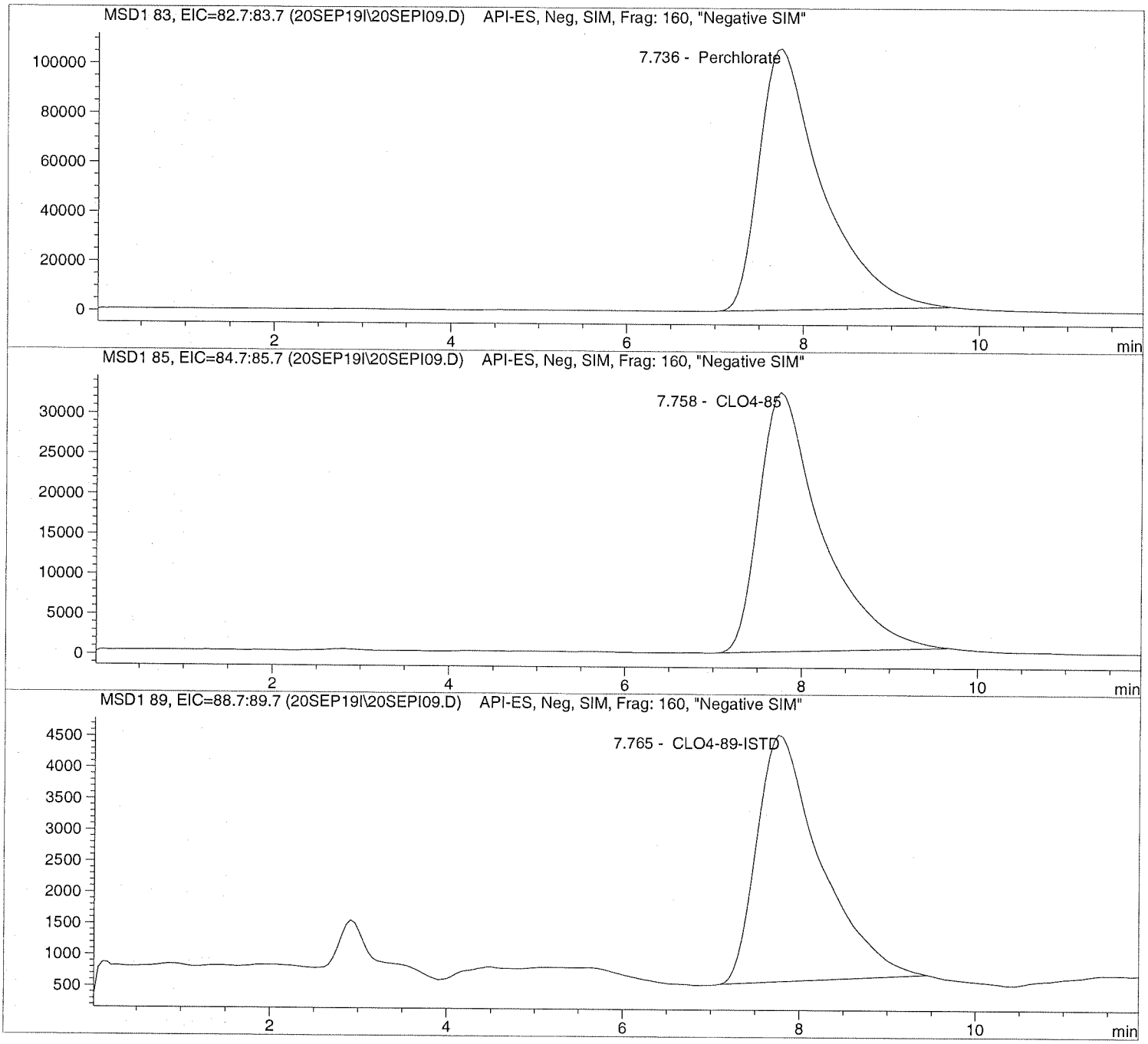
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

*** End of Report ***

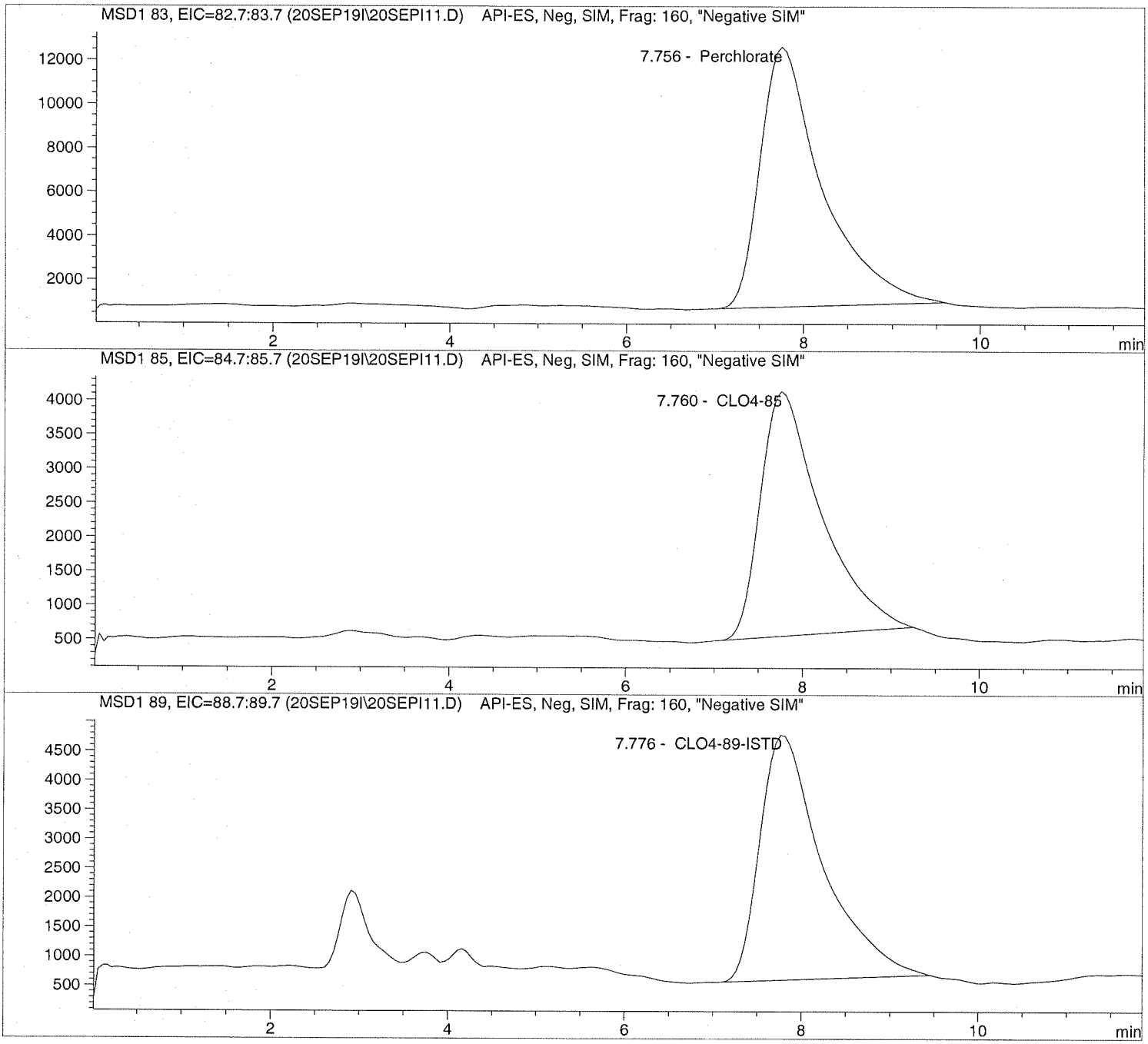
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Unmodified

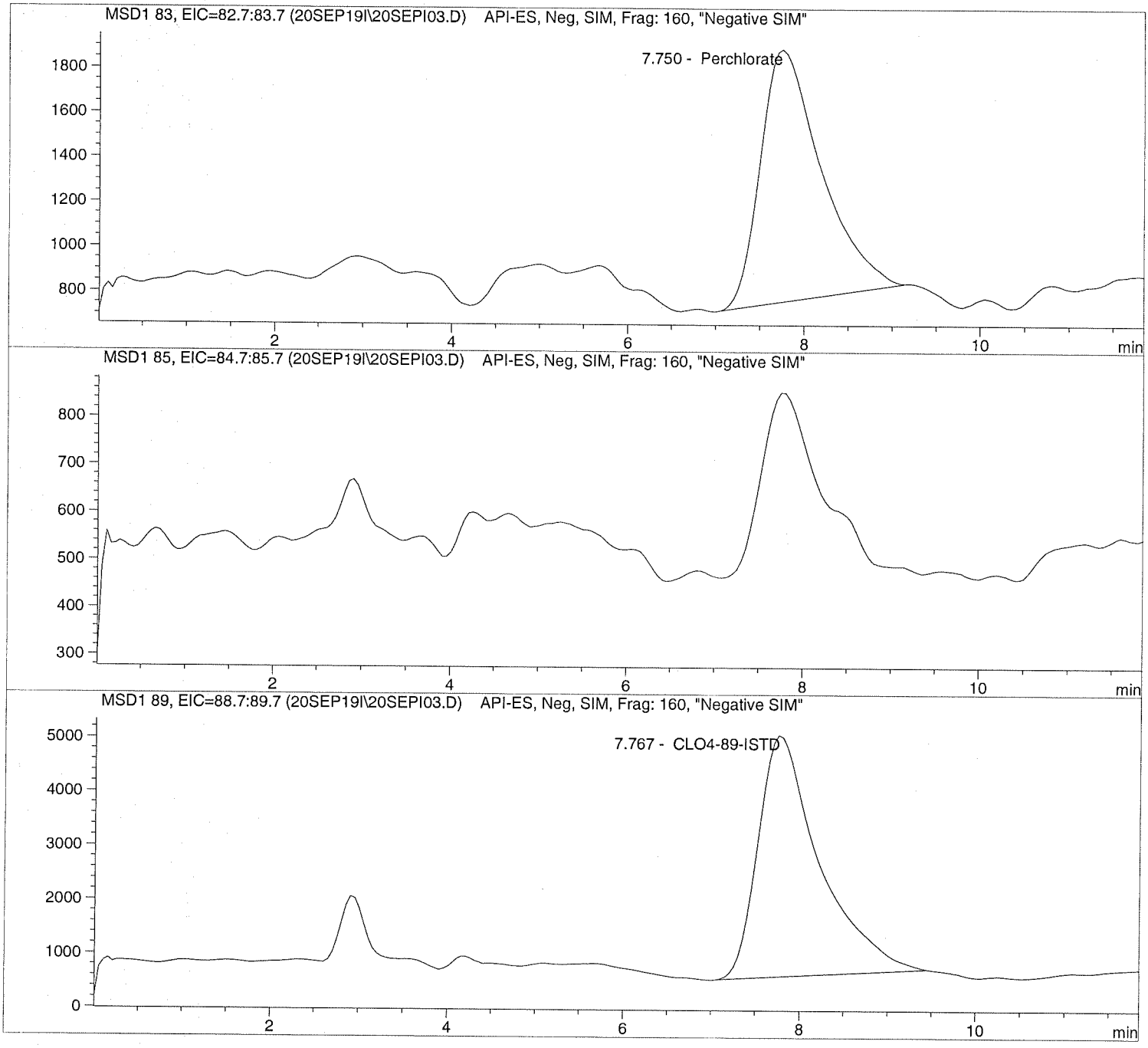
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

NIT AmN W-ISE 3503.
MS191111039

Logbook **31114**

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Ion Selective Electrode Logbook

Analyst: MD	calfg · 84	Date: 11/27/19 4:05PM	
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F			
Probe Calibration Date: 11/27/19	Cal Std ID: 312091801	Probe ID: SRL15910	
Std Level	mV	Conc., mg/L:	Sodium Thiosulfate ID:
STD 1 (mg/L): 0.2	118.1	0.209	Std Level / mV / Conc., mg/L:
STD 2 (mg/L): 1	82.6	1.006	STD 4 (mg/L): 10 / 18.7 / 10.024
STD 3 (mg/L): 5	35.9	5.008	STD 5 (mg/L): 50 / -4.0 / 49.952
LSC / MS Spike ID: 3100680 ~~807~~ 35.9			ICAL Date & Slope: 96.6+1 — 57.0 mV
ICV Cal STD ID: 312091801			
DPD Reagent ID: 2470105234			

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/–)	Comments
ICV		50ml	50ml		9.960			
CCB		1	2		0.023			
MBlk		50ml	50ml		0.024			
LCS					9.250			
LCSD					9.398			
MS191111039-01					4.624		+ve	Rechecked
1039-01MS					14.09			
1039-01MSD					14.12			
CCV		50ml	50ml		10.019			
CCB		1	2		0.028			

ID: 351487 | Reported By: MD | Reviewed By: KL

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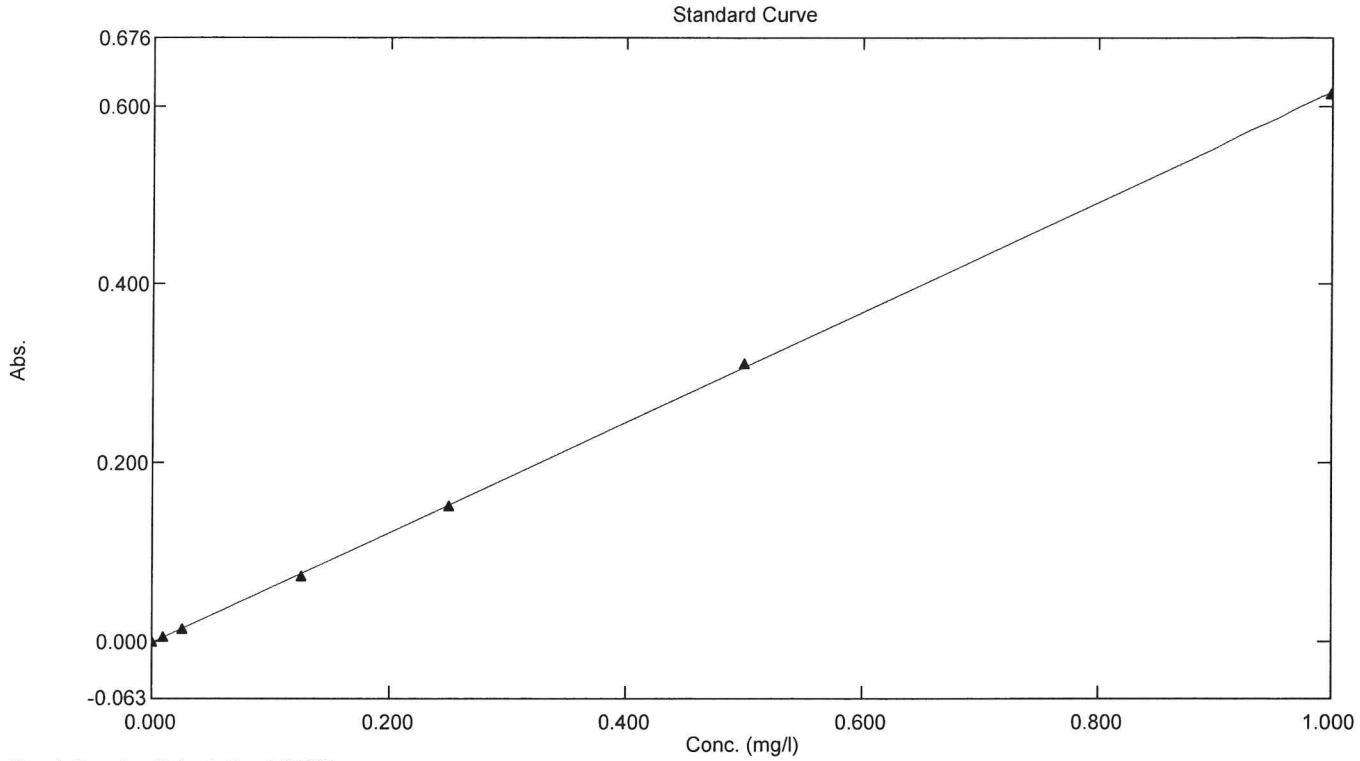
Logbook - ISE 2.2 01/31/18 ©2018 ALS Laboratory Group

HS1911039

Standard Table Report

12/03/2019 04:21:28 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\2019\11212019_P_ORTHO_.ph



Correlation Coefficient r2 = 0.99992

Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.001	1.000	
2	STD2	Standard		0.010	0.005	1.000	
3	STD3	Standard		0.025	0.013	1.000	
4	STD4	Standard		0.125	0.074	1.000	
5	STD5	Standard		0.250	0.152	1.000	
6	STD6	Standard		0.500	0.311	1.000	
7	STD7	Standard		1.000	0.614	1.000	
8							

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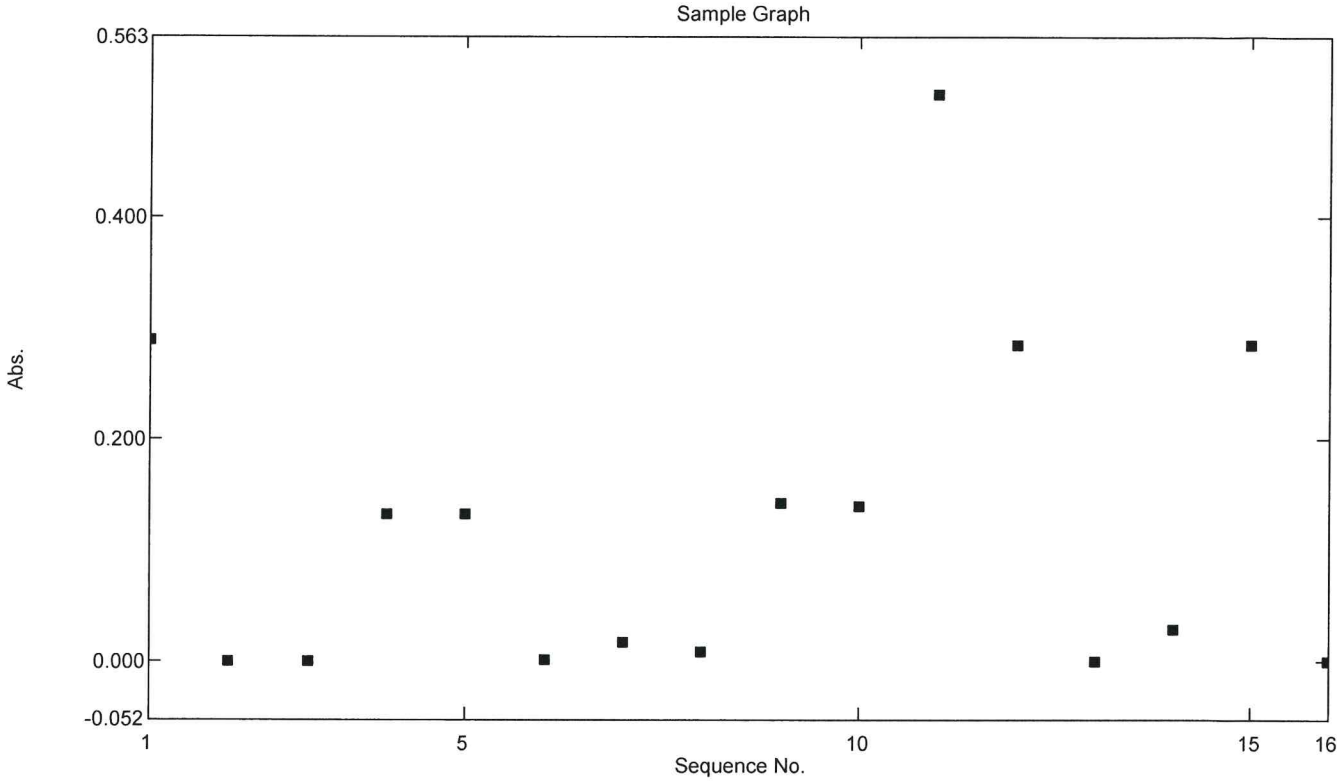
Sample Table Report

12/03/2019 04:20:49 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\2019\11212019_P_ORTHO_.ph



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.473	0.290	312090505 UV-06
2	CCB	Unknown		0.002	-0.000	
3	MBLK	Unknown		0.001	-0.001	312091201 UV-11
4	LCS	Unknown		0.217	0.133	312090504 UV-06
5	LCSD	Unknown		0.217	0.132	
6	19111045.01	Unknown		0.004	0.001	04:50PM
7	19111045.02	Unknown		0.029	0.017	04:51PM
8	19111045.03	Unknown		0.016	0.008	04:51PM
9	19111045.01MS	Unknown		0.232	0.142	
10	19111045.01MSD	Unknown		0.228	0.139	
11	1911039.01	Unknown		0.833	0.512	5:00PM
12	CCV2	Unknown		0.466	0.286	
13	CCB2	Unknown		0.002	0.000	
14	LOQ	Unknown		0.048	0.028	
15	CCV3	Unknown		0.464	0.285	
16	CCB3	Unknown		0.001	-0.001	
17						

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 11, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19111389**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 2 sample(s) on Nov 27, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19111389

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19111389-01	LH18/24-SP650_112619	Water		26-Nov-2019 14:00	27-Nov-2019 10:00	☐
HS19111389-02	LH18/24-SP650_112619_AIX	Water		26-Nov-2019 14:00	27-Nov-2019 10:00	☐

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19111389

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

- The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

WetChemistry by Method E365.3

Batch ID: R351878

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E350.3

Batch ID: R351660

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_112619
Collection Date: 26-Nov-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19111389
Lab ID:HS19111389-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: MZD
Nitrogen, Ammonia (As N)	**3.5**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	03-Dec-2019 10:50
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**0.518**	a	**0.0100**	**0.0250**	**0.0250**	**mg/L**	1	27-Nov-2019 17:25
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	06-Dec-2019 10:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_112619_AIX
Collection Date: 26-Nov-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19111389
Lab ID:HS19111389-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	10-Dec-2019 09:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19111389

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R351660 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Water	
HS19111389-01	LH18/24-SP650_112619	26 Nov 2019 14:00			03 Dec 2019 10:50	1
Batch ID: R351878 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Water	
HS19111389-01	LH18/24-SP650_112619	26 Nov 2019 14:00			27 Nov 2019 17:25	1
Batch ID: R351908 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Water	
HS19111389-01	LH18/24-SP650_112619	26 Nov 2019 14:00			06 Dec 2019 10:03	1
Batch ID: R352119 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19111389-02	LH18/24-SP650_112619_AIX	26 Nov 2019 14:00			10 Dec 2019 09:45	1

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19111389

QC BATCH REPORT

Batch ID: R351660 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-351660** Units: **mg/L** Analysis Date: **03-Dec-2019 10:50**
Client ID: Run ID: **WetChem_HS_351660** SeqNo: **5371253** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-351660** Units: **mg/L** Analysis Date: **03-Dec-2019 10:50**
Client ID: Run ID: **WetChem_HS_351660** SeqNo: **5371254** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	9.689	0.20	10	0	96.9	80 - 120				

MS Sample ID: **HS19111321-01MS** Units: **mg/L** Analysis Date: **03-Dec-2019 10:50**
Client ID: Run ID: **WetChem_HS_351660** SeqNo: **5371256** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.05	0.20	10	0.058	99.9	80 - 120				

MSD Sample ID: **HS19111321-01MSD** Units: **mg/L** Analysis Date: **03-Dec-2019 10:50**
Client ID: Run ID: **WetChem_HS_351660** SeqNo: **5371257** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.01	0.20	10	0.058	99.6	80 - 120	10.05	0.369	20	

The following samples were analyzed in this batch: HS19111389-01

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19111389

QC BATCH REPORT

Batch ID: R351878 (0) **Instrument: UV-2450** **Method: ORTHO PHOSPHATE (PO4) AS P BY E365.3**

MBLK Sample ID: **MBLK-R351878** Units: **mg/L** Analysis Date: **27-Nov-2019 17:25**
Client ID: Run ID: **UV-2450_351878** SeqNo: **5375615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R351878** Units: **mg/L** Analysis Date: **27-Nov-2019 17:25**
Client ID: Run ID: **UV-2450_351878** SeqNo: **5375614** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.234	0.0250	0.25	0	93.6	85 - 115				

MS Sample ID: **HS19111389-01MS** Units: **mg/L** Analysis Date: **27-Nov-2019 17:25**
Client ID: **LH18/24-SP650_112619** Run ID: **UV-2450_351878** SeqNo: **5375617** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.743	0.0250	0.25	0.518	90.0	80 - 120				

MSD Sample ID: **HS19111389-01MSD** Units: **mg/L** Analysis Date: **27-Nov-2019 17:25**
Client ID: **LH18/24-SP650_112619** Run ID: **UV-2450_351878** SeqNo: **5375616** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.747	0.0250	0.25	0.518	91.6	80 - 120	0.743	0.537	20	

The following samples were analyzed in this batch: HS19111389-01

ALS Houston, US Date: 11-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS19111389**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Houston, US Date: 11-Dec-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

00961180

ALS Houston, US Date: 11-Dec-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19111389
Date/Time Received: **27-Nov-2019 10:00**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* 27-Nov-2019
eSignature | Date

Reviewed by: _____
eSignature | Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	3.2c U/c	IR25
Cooler(s)/Kit(s):	24013	
Date/Time sample(s) sent to storage:	11/27/19 11:25	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00961181

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Page 1 of 1

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES**	
Prepared By: Scott Beesinger	P.O. Number

HS19111389

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE							Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_112619	Water	11/26/19 / 14:00		3	X	X									H2SO4	
LH18/24-SP650_112619	Water	11/26/19 / 14:00		1			X								NONE	
LH18/24 –SP650_112619_AIX	Water	11/26/19 / 14:00		1				X							NONE	

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	11/26/19	14:30									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
NA	11/27/19	10.00							

Remarks:

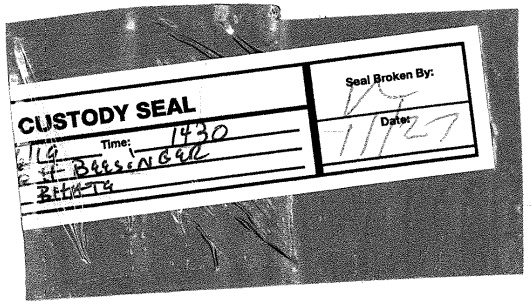
2 Ice pks — Temp 4°C 3.2

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

IR# 25

FedEx
TRK#
0221 1251 0290 9265
77099
WED - 27 NOV 10:30A
PRIORITY OVERNIGHT
GRA
77099
TX-US
IAH

AD S
FID 5107232
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
ALS
Date: 11/2
Name:
Company:


CUSTODY SEAL
Time: 1430
Seal Broken By:
Date:
11/27

ALS Environmental
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December 06, 2019

Analytical Report for Service Re uest No: K1911243

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19111389

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory December 03, 2019
For your reference, these analyses have been assigned our service request number **K1911243.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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ALS Environmental

Client: ALS Environmental - US
Project: HS19111389
Sample Matrix: Water

Service Request: K1911243
Date Received: 12/03/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 12/03/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 12/06/2019

Chain of Custody

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HS19111389

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12742**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19111389
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19111389-01**	**LH18/24-SP650_112619**	**Water**	**26 Nov 2019 14:00**
	TOC Analysis for DOD Level IV			09 Dec 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Mangum Date/Time: 12/02/19 18:00

Received By: K Monaw ALS-Kelso Date/Time: 12/3/19 10:00

Cooler ID(s): _____ Temperature(s): _____

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request K19 11243

Received: 12/3/19 Opened: 12/3/19 By: KM Unloaded: 12/3/19 By: KM

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	FIled
0.0	-0.1	N/A	N/A	-0.1	381	12742	1251 0292 4736	

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

otes, Discrepancies, & Resolutions: RUSH

General Chemistry

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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1911243
Project:	HS19111389	**Date Collected:**	11/26/19
Sample Matrix:	Water	**Date Received:**	12/3/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_112619	K1911243-001	**1.30**	0.50	0.20	0.07	1	12/04/19 20:01	
Method Blank	K1911243-MB	**0.11 J**	0.50	0.20	0.07	1	12/04/19 19:17	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1911243
Project	HS19111389	**Date Collected:**	11/26/19
Sample Matrix:	Water	**Date Received:**	12/03/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
LH18/24-SP650_112619	K1911243-001DUP	0.50	0.20	0.07	1.30	1.27	1.29	3	10	12/04/19
Batch QC	K1911272-001DUP	50	20	7	2700	2680	2690	<1	10	12/04/19
Batch QC	K1911272-002DUP	50	20	7	886	882	884	<1	10	12/04/19
Batch QC	K1911291-001DUP	0.50	0.20	0.07	2.44	2.44	2.44	<1	10	12/04/19

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1911243
Project:	HS19111389	**Date Collected:**	11/26/19
Sample Matrix:	Water	**Date Received:**	12/03/19
		Date Analyzed:	12/4/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	LH18/24-SP650_112619	**Units:**	mg/L
Lab Code:	K1911243-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1911243-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.30	27.1	25.0	103	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1911243
Project:	HS19111389	**Date Analyzed:**	12/04/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	662088

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1911243-LCS	25.8	25.0	103	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1911243
Project: HS19111389

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	662088	KQ1917897-04	12/04/19 18:48	25.0	25.1	100	90-110
CCV2	662088	KQ1917897-05	12/04/19 22:51	25.0	24.5	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1911243
Project: HS19111389

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	662088	KQ1917897-06	12/04/19 19:03	0.50	0.20	0.07	0.20	J
CCB2	662088	KQ1917897-07	12/04/19 23:05	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K1911319, 1243, 1272, 1291,

Tier: II IV II II

Date Analyzed: 12/4/19

Analyst: BCD

Analysis: TOC/DOC

Run # TOC: 662088 DOC: 662089

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Final Approved by: _____ Date: 12/05/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 662088 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911243-001	Carbon, Total Organic	N/A		Water	1.30 mg/L	10 mL	1.30 mg/L	1	0.07	0.50			12/4/19 20:01:00	N	IV
K1911272-001	Carbon, Total Organic	N/A		Water	27.01 mg/L	10 mL	2700 mg/L	100	7	50			12/4/19 21:27:00	N	II
K1911272-002	Carbon, Total Organic	N/A		Water	8.86 mg/L	10 mL	886 mg/L	100	7	50			12/4/19 21:55:00	N	II
K1911291-001	Carbon, Total Organic	N/A		Water	2.44 mg/L	10 mL	2.44 mg/L	1	0.07	0.50			12/4/19 20:58:00	N	II
KQ1917897-01	Carbon, Total Organic	MS	K1911243-001	Water	27.12 mg/L	10 mL	27.1 mg/L	1	0.07	0.50	103		12/4/19 20:29:00	N	IV
KQ1917897-02	Carbon, Total Organic	MB		Water	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50			12/4/19 19:17:00	N	IV
KQ1917897-03	Carbon, Total Organic	LCS		Water	25.80 mg/L	10 mL	25.8 mg/L	1	0.07	0.50	103		12/4/19 19:32:00	N	IV
KQ1917897-04	Carbon, Total Organic	CCV		Water	25.12 mg/L	10 mL	25.1 mg/L	1					12/4/19 18:48:00	N	IV
KQ1917897-05	Carbon, Total Organic	CCV		Water	24.55 mg/L	10 mL	24.5 mg/L	1					12/4/19 22:51:00	N	IV
KQ1917897-06	Carbon, Total Organic	CCB		Water	0.20 mg/L	10 mL	0.20 mg/L J	1	0.07	0.50			12/4/19 19:03:00	N	IV
KQ1917897-07	Carbon, Total Organic	CCB		Water	-0.10 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			12/4/19 23:05:00	N	IV
KQ1917897-08	Carbon, Total Organic	DUP	K1911291-001	Water	2.44 mg/L	10 mL	2.44 mg/L	1	0.07	0.50		<1	12/4/19 20:58:00	N	II
KQ1917897-09	Carbon, Total Organic	DUP	K1911272-002	Water	8.82 mg/L	10 mL	882 mg/L	100	7	50		<1	12/4/19 21:55:00	N	II
KQ1917897-10	Carbon, Total Organic	DUP	K1911243-001	Water	1.27 mg/L	10 mL	1.27 mg/L	1	0.07	0.50		3	12/4/19 20:01:00	N	IV
KQ1917897-11	Carbon, Total Organic	DUP	K1911272-001	Water	26.83 mg/L	10 mL	2680 mg/L	100	7	50		<1	12/4/19 21:27:00	N	II

12/05/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 662089 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911319-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.25 mg/L	10 ml	1.25 mg/L	1	0.07	0.50			12/4/19 22:23	N	II
K1911319-002	Carbon, Dissolved Organic (DOC)	N/A		Water	1.08 mg/L	10 ml	1.08 mg/L	1	0.07	0.50			12/4/19 23:49	N	II
KQ1917899-01	Carbon, Dissolved Organic (DOC)	MB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/5/19 00:17	N	II
KQ1917899-02	Carbon, Dissolved Organic (DOC)	LCS		Effluent	25.29 mg/L	10 ml	25.3 mg/L	1	0.07	0.50	101		12/5/19 00:32	N	II
KQ1917899-03	Carbon, Dissolved Organic (DOC)	CCV		Effluent	25.12 mg/L	10 ml	25.1 mg/L	1					12/4/19 18:48	N	II
KQ1917899-04	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.55 mg/L	10 ml	24.5 mg/L	1					12/4/19 22:51	N	II
KQ1917899-05	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.42 mg/L	10 ml	24.4 mg/L	1					12/5/19 00:47	N	II
KQ1917899-06	Carbon, Dissolved Organic (DOC)	CCB		Effluent	0.20 mg/L	10 ml	0.20 mg/L J	1	0.07	0.50			12/4/19 19:03	N	II
KQ1917899-07	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/4/19 23:05	N	II
KQ1917899-08	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/5/19 01:01	N	II
KQ1917899-09	Carbon, Dissolved Organic (DOC)	MS	K1911319-001	Effluent	27.06 mg/L	10 ml	27.1 mg/L	1	0.07	0.50	103		12/4/19 23:20	N	II
KQ1917899-10	Carbon, Dissolved Organic (DOC)	DUP	K1911319-001	Effluent	1.14 mg/L	10 ml	1.14 mg/L	1	0.07	0.50		9	12/4/19 22:23	N	II
KQ1917899-11	Carbon, Dissolved Organic (DOC)	DUP	K1911319-002	Water	0.99 mg/L	10 ml	0.99 mg/L	1	0.07	0.50		9	12/4/19 23:49	N	II

12/05/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.299			OBSERVATIONS	5	ABOVE
0.210	0.210	#DIV/0! #DIV/0!	STD Deviation	0.14276	0.2098
0.000			AVERAGE	0.10170	0
0.000			UCL	0.24446	0
0.000			LCL	-0.04106	0
					0
					0
			OBSERVATIONS	1	0
			STD Deviation	#DIV/0!	0
			AVERAGE	0.20980	0
			UCL	#DIV/0!	0
			LCL	#DIV/0!	0
					0
					0
			OBSERVATIONS	0	0
			STD Deviation	#DIV/0!	0
			AVERAGE	#DIV/0!	0
			UCL	#DIV/0!	0
			LCL	#DIV/0!	0
					0
					0
			OBSERVATIONS	0	0
			STD Deviation	#DIV/0!	0
			AVERAGE	#DIV/0!	0
					0
					0
					0
					0
					0
					0

12/05/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.220	0.1017	25.1185	25.1185	25.1	12/4/2019
3	ccb	1	0.299	0.1017	0.1970	0.197	<0.5	12/4/2019
4	mb	1	0.210	0.1017	0.1081	0.1081	<0.5	12/4/2019
5	lcs	1	25.904	0.1017	25.8025	25.8025	25.8	12/4/2019
6	K1911243-001	1	1.405	0.1017	1.3033	1.3033	1.30	12/4/2019
7	K1911243-001	1	1.369	0.1017	1.2677	1.2677	1.3	12/4/2019
8	KQ1917897-01	1	27.225	0.1017	27.1228	27.1228	27	12/4/2019
9	K1911291-001	1	2.537	0.1017	2.4353	2.4353	2.44	12/4/2019
10	K1911291-001	1	2.541	0.1017	2.4392	2.4392	2.44	12/4/2019
11	K1911272-001	100	27.112	0.1017	27.0102	2701.02	2701.0	12/4/2019
12	K1911272-001	100	26.932	0.1017	26.8306	2683.06	2683.06	12/4/2019
13	K1911272-002	100	8.966	0.1017	8.8645	886.45	886.45	12/4/2019
14	K1911272-002	100	8.925	0.1017	8.8237	882.37	882.37	12/4/2019
15	ccv	1	24.648	0.1017	24.5465	24.5465	24.5	12/4/2019
16	ccb	1	0.000	0.1017	-0.1017	-0.1017	<0.5	12/4/2019
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By:		Date Analyzed	12/4/19
Reviewed By:		Date Reviewed	12/05/19

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.220	0.1017	25.1185	25.1185	25.1	12/4/2019
3	ccb	1	0.299	0.1017	0.1970	0.197	<0.5	12/4/2019
4	K1911319-001	1	1.348	0.1017	1.2464	1.2464	1.2	12/4/2019
5	K1911319-001	1	1.241	0.1017	1.1391	1.1391	1.1	12/4/2019
6	ccv	1	24.648	0.1017	24.5465	24.5465	24.55	12/4/2019
7	ccb	1	0.000	0.1017	-0.1017	-0.1017	<0.5	12/4/2019
8	KQ1917899-09	1	27.158	0.1017	27.0560	27.056	27	12/4/2019
9	K1911319-002	1	1.186	0.1017	1.0844	1.0844	1.08	12/4/2019
10	K1911319-002	1	1.092	0.1017	0.9907	0.9907	0.99	12/4/2019
11	mb	1	0.000	0.1017	-0.1017	-0.1017	<0.5	12/5/2019
12	lcs	1	25.393	0.1017	25.2908	25.2908	25.29	12/5/2019
13	ccv	1	24.518	0.1017	24.4158	24.4158	24.42	12/5/2019
14	ccb	1	0.000	0.1017	-0.1017	-0.1017	<0.5	12/5/2019
15		1		0.0000	0.0000	0	<0.5	
16		1		0.0000	0.0000	0	<0.5	
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: BD	Date Analyzed	12/4/19	
Reviewed By:	Date Reviewed	12/05/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

TOC: 662088
DOC: 662089

Schedule: 12042019

Version: 3
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/12/04 16:15 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1911243-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1911243-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1911291-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1911272-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1911272-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1911319-001.03 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1911319-001.03 ms DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
11	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
12	Sample	K1911319-002.04 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

12/05/19

Fusion Report - 12042019
Wednesday, December 04, 2019 04:13 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/12/05 09:09 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	12042019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3)		
Comment:			

12/05/19

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/12/04 16:13

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	16.69	20.42	3.73	49.77	05:23
2	TC Clean	62.28	65.73	3.45	49.96	04:03
3	TC Clean	19.41	23.85	4.43	49.90	03:47
4	TC Clean	13.65	18.22	4.57	49.80	03:53

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/12/04 16:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.45	4.96	3.51	49.82	05:22
2	TC Clean	22.91	26.73	3.82	49.95	04:04
3	TC Clean	8.07	11.91	3.84	49.95	03:45
4	TC Clean	8.51	12.40	3.90	50.00	03:47

Sample Type: Clean From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/12/04 16:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.00	4.62	3.62	49.72	05:12
2	TC Clean	15.85	19.58	3.73	50.00	04:00
3	TC Clean	6.88	10.72	3.84	49.86	03:54
4	TC Clean	6.38	10.27	3.88	49.87	03:52

Sample Type: Blank (Creating v1326) From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/12/04 17:18

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.24	4.70	3.46	49.72	05:24
2	TC Clean	12.89	16.64	3.75	49.98	04:01
3	TC Clean	5.46	9.19	3.74	50.04	03:47
4	TC Clean	5.96	9.85	3.89	50.02	03:54
5	Reagent Blank	10.22	14.15	3.93	49.94	05:05
6	Acid Blank	1.13	4.73	3.60	49.74	05:27

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.7657 ppm	0.5880 ppm	76.8000%	2019/12/04 17:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6180	16.1804	20.18	24.11	3.93	49.96	10:28
2	TOC	0.6638	6.6385	13.70	17.55	3.84	49.99	10:24
3	TOC	0.4872	4.8721	12.50	16.19	3.68	50.00	10:25
4	TOC	0.2936	2.9363	11.19	14.93	3.74	49.99	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2202 ppm (PASS)	0.0000 ppm	0%	2019/12/04 18:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2202	252.2024	180.66	184.04	3.39	50.00	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2987 ppm (PASS)	0.0000 ppm	0%	2019/12/04 19:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2987	2.9869	11.49	15.16	3.67	50.03	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.2098 ppm	0.0000 ppm	0.0000%	2019/12/04 19:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2098	2.0981	10.62	14.15	3.53	50.00	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.9042 ppm (PASS)	0.0000 ppm	0%	2019/12/04 19:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.9042	259.0425	185.30	189.03	3.73	50.06	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.4131 ppm	0.0000 ppm	0.0000%	2019/12/04 19:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4131	4.1311	12.00	15.74	3.74	50.01	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	K1911243-001.01	1.3872 ppm	0.0252 ppm	1.8200%	2019/12/04 20:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4050	14.0502	18.74	22.49	3.76	50.02	10:29
2	TOC	1.3694	13.6936	18.49	21.94	3.44	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K1911243-001.01 ms	27.2245 ppm	0.0000 ppm	0.0000%	2019/12/04 20:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.2245	272.2448	194.00	197.35	3.35	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	RB	0.1139 ppm	0.0000 ppm	0.0000%	2019/12/04 20:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1139	1.1390	9.97	13.64	3.67	50.01	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC)	CAS_salt_010711	CAS_salt_010711

(v1326) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K1911291-001.01	2.5389 ppm	0.0027 ppm	0.1100%	2019/12/04 20:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5370	25.3702	26.42	30.13	3.71	50.03	10:28
2	TOC	2.5409	25.4085	26.44	30.01	3.56	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1911272-001.01 100x	27.0221 ppm	0.1270 ppm	0.4700%	2019/12/04 21:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.1119	271.1193	193.23	196.71	3.48	50.03	10:29
2	TOC	26.9323	269.3234	192.01	195.72	3.70	50.06	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1911272-002.01 100x	8.9458 ppm	0.0289 ppm	0.3200%	2019/12/04 21:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9662	89.6622	70.06	73.68	3.62	50.01	10:27
2	TOC	8.9254	89.2541	69.78	73.37	3.59	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K1911319-001.03	1.2945 ppm	0.0759 ppm	5.8700%	2019/12/04 22:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3481	13.4815	18.35	22.00	3.65	50.00	10:28
2	TOC	1.2408	12.4075	17.62	21.10	3.48	50.05	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6482 ppm (PASS)	0.0000 ppm	0%	2019/12/04 22:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6482	246.4820	176.77	180.42	3.65	50.00	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/12/04 23:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.28	11.92	3.64	50.02	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1911319-001.03 ms	27.1577 ppm	0.0000 ppm	0.0000%	2019/12/04 23:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.1577	271.5774	193.54	197.16	3.62	50.02	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/04 23:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.30	12.07	3.77	50.03	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1978 (IC) (v1326)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	12	TOC	K1911319-002.04	1.1392 ppm	0.0663 ppm	5.8200%	2019/12/04 23:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1861	11.8610	17.25	20.87	3.62	50.03	10:30
2	TOC	1.0924	10.9240	16.61	20.21	3.60	50.01	10:24

Dilution 1:10 | **Blank Contribution** (TC) 9.1978 (IC) (v1326) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/05 00:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.64	11.36	3.72	50.03	10:30

Dilution 1:10 | **Blank Contribution** (TC) 9.1978 (IC) (v1326) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.3925 ppm (PASS)	0.0000 ppm	0%	2019/12/05 00:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.3925	253.9246	181.82	185.39	3.57	50.03	10:32

Completion State Success - Criteria met. | **Success Action** Do Nothing | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30) | **STD Conc - Pos C** 25 ppmC

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5175 ppm (PASS)	0.0000 ppm	0%	2019/12/05 00:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5175	245.1753	175.89	179.52	3.63	50.04	10:30

Completion State Success - Criteria met. | **Success Action** Do Nothing | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30) | **STD Conc - Pos B** 50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/12/05 01:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.83	11.43	3.60	50.01	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1325	1.6240	0.9840	0.0000	0.0000	0.0000	2019/11/30 14:13	Fusion1 (Fusion1)
v1326	3.4080	1.1320	0.0000	0.0000	0.0000	2019/12/04 17:52	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v30

Ver Creation: 2019/03/05 17:42

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 6.788x + 9.463

r^2 value: TOC: r^2 = 0.99963

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/12/05 01:16

ALS Environmental

StarLIMS Run: 662088, 662089

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-83D

21 % H3PO4: 11-GEN-05-83E

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BD	Date Analyzed: 12/4/19
Reviewed By:	Date Reviewed: 12/05/19

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1933152; 1933786; 1934085; 1934086; 1934088

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2324 (253208)

General Set Information: There were five field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1934086001 was analyzed and reported from a 1:1,000 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 687322) was less than 1/2 the CRDL. The recovery for the LCS (687319) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1933152001 (Client ID: LH18/24-SP650_AIX Water). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The MS/MSD (687323/24) failed QC acceptance criteria for percent recoveries. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 687320) is reported from the analysis of the Laboratory Control Sample (LCS – 687319) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

Thomas Bosch December 09, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: December 09, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1933786**
Project ID: HS19111389
Purchase Order: HS19111389
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_112619_AIX	1933786001	11/26/19	12/03/19	

ANALYTICAL REPORT

Workorder: 34-1933786
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_112619_AIX**
Lab ID: 1933786001
Matrix: Water
Sampling Site: NA
Media: 125 mL Nalgene
Sampling Parameter: NA
Collected: 11/26/2019
Received: 12/03/2019

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water
Batch: ELMS/2324 (HBN: 253208)
Analyzed: 12/08/2019 15:02
Instrument ID: LCMS04
%Solids: NA
Report Basis: Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 12/09/2019 13:27	/S/ Stephen Brose 12/09/2019 14:23

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1933786
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1933786

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2324 (HBN: 253208)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 687322
Analyzed: 12/08/2019 14:06
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 687319
Analyzed: 12/08/2019 13:38
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.17	3.00	106	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1933152001	**MS:**	687323
Analyzed:	12/08/2019 14:20	**Analyzed:**	12/08/2019 14:34
Dilution:	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L

	MSD:	687324
	Analyzed:	12/08/2019 14:48
	Dilution:	1
	Units:	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	11.0	13.7	3	# 77.7	78.8	123.8	12.9	# 48.8	6.53	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
12/09/2019 13:31	12/09/2019 14:23

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
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Subcontract Chain of Custody

18698/#2

SAMPLING STATE: **Dept of Defense**

COC ID: **12743**

1933786

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19111389
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19111389-02**	**LH18/24-SP650_112619_AIX**	**Water**	**26 Nov 2019 14:00**
	SUB_Perch-6850			09 Dec 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Modashia Date/Time: 12/02/19 18:00

Received By: Date/Time: 12/3/19 09:40

Cooler ID(s): Temperature(s):

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19111389	Split:	Workorder ID: 1933786	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	11/26/2019 14:00	LH18/24-SP650_112619_AIX	1933786001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

COOL

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warathy Julie	12/03/2019 09:40	ALS Sample Receiving	Sample Login
	12/3/19 1400	LB	Storage
R.33.1	12.8.19/12:40	CLOA analysis	CLOA analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00961227

00961228

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1933786

Date/Time of Receipt: 12/3/19 09:40

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA	
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA	
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA	
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA	

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	Okay	3 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: JayLynn (Signature) JayLynn Johnson (Printed Name) 12/3/19 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

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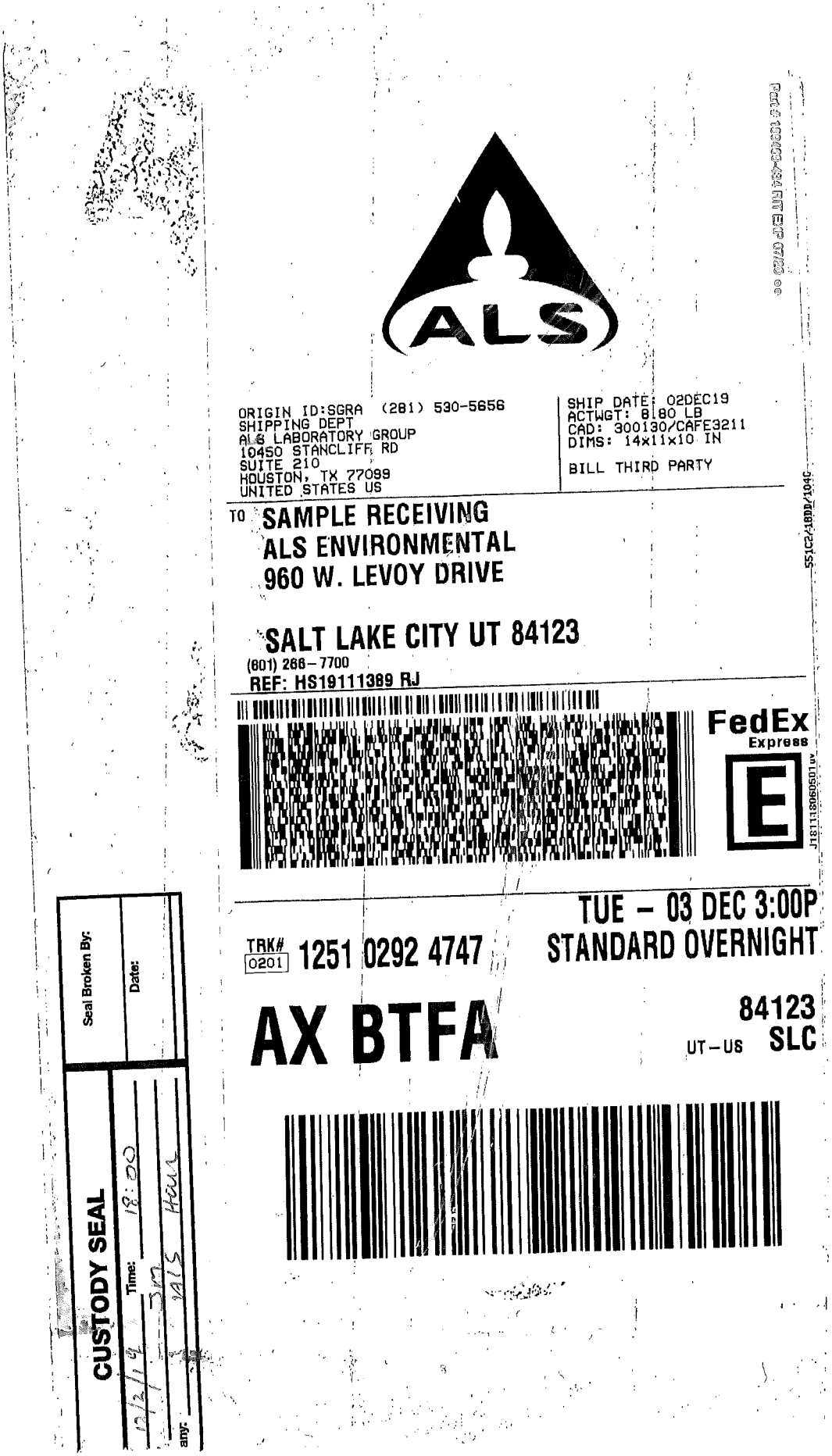

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 02DEC19
ACTWGT: 8.80 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19111389 RJ

FedEx Express

TRK# 0201 1251 0292 4747

TUE - 03 DEC 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

CUSTODY SEAL
Seal Broken By:
Date:
Time: 18:00
12/3/19
ALS Hou
any:

Batch Worklist

Batch: ELMS/ 2324 **Created:** 12/8/2019 13:11 **Instrument:** **HBN:** 253208

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1933152 [ENV_LVL4]
Workorder: 1933786 [ENV_LVL4]
Workorder: 1934085 [ENV_LVL4]
Workorder: 1934086 [ENV_LVL4]
Workorder: 1934088 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	687318	CCV for HBN 253208 [ELMS/2324]				CCV	3		E685041C3Q	5311		12/9/2019	
2	687319	LCS for HBN 253208 [ELMS/2324]				LCS	3		E6850Q413Q	5311		12/9/2019	
3	687320	RLVS for HBN 253208 [ELMS/2324				RLVS	3		E685041C3Q	5311		12/9/2019	
4	687321	ICS for HBN 253208 [ELMS/2324]				ICS	3		E6850..D3Q	5311		12/9/2019	
5	687322	LMB for HBN 253208 [ELMS/2324]				LMB	3		E6850Q413Q	5311		12/9/2019	
6	1933152001	LH18/24-SP650_112019_AIX Water				SAMPLE	3	1933152001-A	E6850Q41.3	5480	12/18/2019	12/9/2019	
7	687323	LH18/24-SP650...(1933152001MS)				MS	3		E6850Q413Q	5311		12/9/2019	
8	687324	LH18/24-SP65...(1933152001MSD)				MSD	3		E6850Q413Q	5311		12/9/2019	
9	1933786001	LH18/24-SP650_112619_AIX				SAMPLE	3	1933786001-A	E6850Q41.3	5480	12/24/2019	12/16/2019	
10	1934085001	LH18/24-SP650_120319_AIX				SAMPLE	3	1934085001-A	E6850Q41.3	5480	12/31/2019	12/18/2019	
11	1934086001	LH18/24-SP140_120319				SAMPLE	3	1934086001-A	E6850Q41.3	5480	12/31/2019	12/18/2019	
12	1934088001	LH18/24-SP650_120319_AIX				SAMPLE	3	1934088001-A	E6850Q41.3	5480	12/31/2019	12/18/2019	
13	687325	CCV for HBN 253208 [ELMS/2324]				CCV	3		E685041C3Q	5311		12/9/2019	

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1933152 (001); 1933786 (001); 1934085 (001); 1934086 (001); 1934088 (001)
ELMS Batch/HBN ID: 2324 (253208)
Prep Date: 12/08/2019 Analysis Date: 12/08/2019 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\DEC\08DEC19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: **LCMS04** Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 687319; Target = 3.0µg/L. ASTM type II water was used for LMB 687322.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1933152001 (Client ID's: LH18/24-SP650_AIX Water). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1934086001 was analyzed and reported from a 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (687323/24) failed QC acceptance criteria for percent recoveries. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\DEC\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\3208DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 687320) is reported from the analysis of the Laboratory Control Sample (LCS – 687319) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2324 HBN: 253208 1934086 / 1934088 **Sample Set IDs if Applicable:** 1933152 / 1933786 / 1934085	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermdt AccStd 10.ug/mL
Standard: 49947	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT		Description - 6850 QC Intrmdt Std-QC 10ug/mL
Standard: 47515	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

AccuStandard

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
MW*: *For isotopically labeled compounds, MW listed is for the fully enriched product.	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\08DEC19D\08DEC19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	687318 CCV@25	Vial 71	1	Control	1	1.69605e6	7.373	26.83661
#*	687319 QC@3.0	Vial 72	1	Control	2	2.01272e5	7.322	3.16765
#*	687321 ICS@3.0	Vial 73	1	Control	3	1.15555e5	7.255	2.71754
#*	687322 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
#*	1933152001	Vial 75	1	Sample	5	6.68714e5	7.233	11.40769
#*	687323 331521S	Vial 76	1	Sample	6	8.19147e5	7.331	13.73971
#*	687324 331521D	Vial 77	1	Sample	7	8.20045e5	7.281	12.87113
#*	1933786001	Vial 78	1	Sample	8	6.28422e4	7.290	8.96014e-1
#*	1934085001	Vial 79	1	Sample	9	7.76702e4	7.271	1.30616
#*	1934086001 1K	Vial 80	1	Sample	10	6.52914e5	7.541	1.06845e4
#*	1934088001	Vial 81	1	Sample	11	8.35067e4	7.206	1.23378
*	687325 CCV@25	Vial 71	1	Control	12	1.56876e6	7.401	26.26666

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	687318 CCV@25	Vial 71	1	Control	1	2.14319e5	7.415	5.00000
#*	687319 QC@3.0	Vial 72	1	Control	2	2.33945e5	7.349	5.00000
#*	687321 ICS@3.0	Vial 73	1	Control	3	1.56222e5	7.280	5.00000
#*	687322 LMB	Vial 74	1	Control	4	2.16883e5	7.417	5.00000
#*	1933152001	Vial 75	1	Sample	5	2.11754e5	7.253	5.00000
#*	687323 331521S	Vial 76	1	Sample	6	2.13383e5	7.356	5.00000
#*	687324 331521D	Vial 77	1	Sample	7	2.28828e5	7.301	5.00000
#*	1933786001	Vial 78	1	Sample	8	2.44931e5	7.312	5.00000
#*	1934085001	Vial 79	1	Sample	9	2.13009e5	7.296	5.00000
#*	1934086001 1K	Vial 80	1	Sample	10	2.21359e5	7.561	5000.00000
#*	1934088001	Vial 81	1	Sample	11	2.41676e5	7.223	5.00000
*	687325 CCV@25	Vial 71	1	Control	12	2.03012e5	7.417	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	687318 CCV@25	Vial 71	1	Control	1	5.12256e5	7.390	26.62112
#*	687319 QC@3.0	Vial 72	1	Control	2	6.70814e4	7.342	3.37306
#*	687321 ICS@3.0	Vial 73	1	Control	3	4.41800e4	7.280	3.32517
#*	687322 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
#*	1933152001	Vial 75	1	Sample	5	2.33281e5	7.255	12.89143
#*	687323 331521S	Vial 76	1	Sample	6	2.85504e5	7.349	15.51969
#*	687324 331521D	Vial 77	1	Sample	7	2.84040e5	7.294	14.45077
#*	1933786001	Vial 78	1	Sample	8	2.43896e4	7.313	1.07465
#*	1934085001	Vial 79	1	Sample	9	3.07397e4	7.291	1.62821
#*	1934086001 1K	Vial 80	1	Sample	10	1.97618e5	7.553	1.05214e4
#*	1934088001	Vial 81	1	Sample	11	3.11607e4	7.206	1.43824
*	687325 CCV@25	Vial 71	1	Control	12	4.80251e5	7.415	26.37250

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\DEC\08DEC19D.S

Sequence Table:

Method and Injection Info Part:

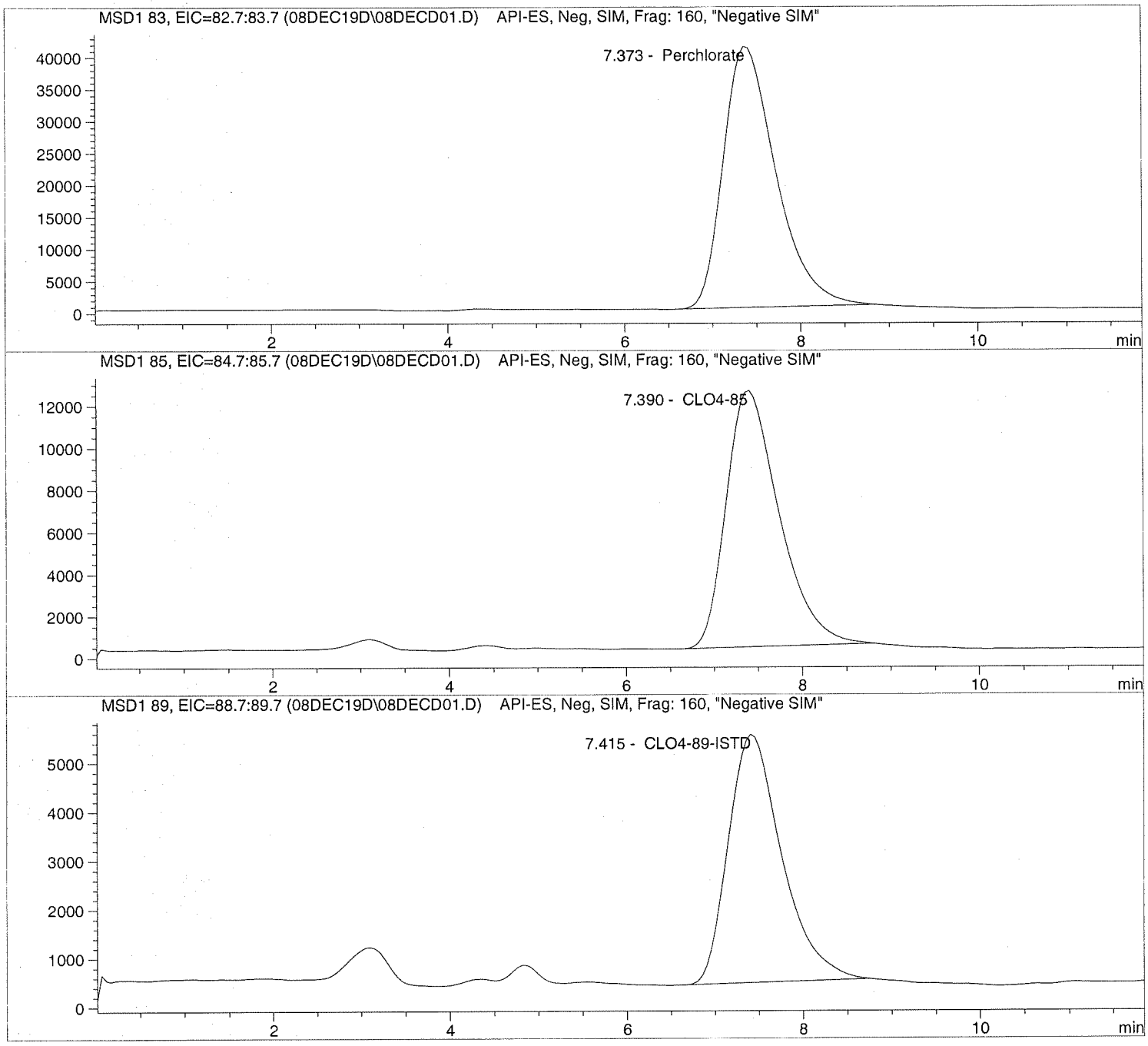
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	687318 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	687319 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	687321 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	687322 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1933152001	CLO4-AQN	1	Sample		
6	Vial 76	687323 331521S	CLO4-AQN	1	Sample		
7	Vial 77	687324 331521D	CLO4-AQN	1	Sample		
8	Vial 78	1933786001	CLO4-AQN	1	Sample		
9	Vial 79	1934085001	CLO4-AQN	1	Sample		
10	Vial 80	1934086001 1K	CLO4-AQN	1	Sample		
11	Vial 81	1934088001	CLO4-AQN	1	Sample		
12	Vial 71	687325 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD01.D Sample Name: 687318 CCV@25

Injection Date:	12/08/2019 13:20:07	Seq Line:	1
Sample Name:	687318 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD01.D Sample Name: 687318 CCV@25

Injection Date:	12/08/2019 13:20:07	Seq Line:	1
Sample Name:	687318 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.373	PBA	1696047.9	26.8366	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.390	PBA	512255.8	26.6211	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.415	PBA	214319.2	5.0000	CLO4-89-ISTD

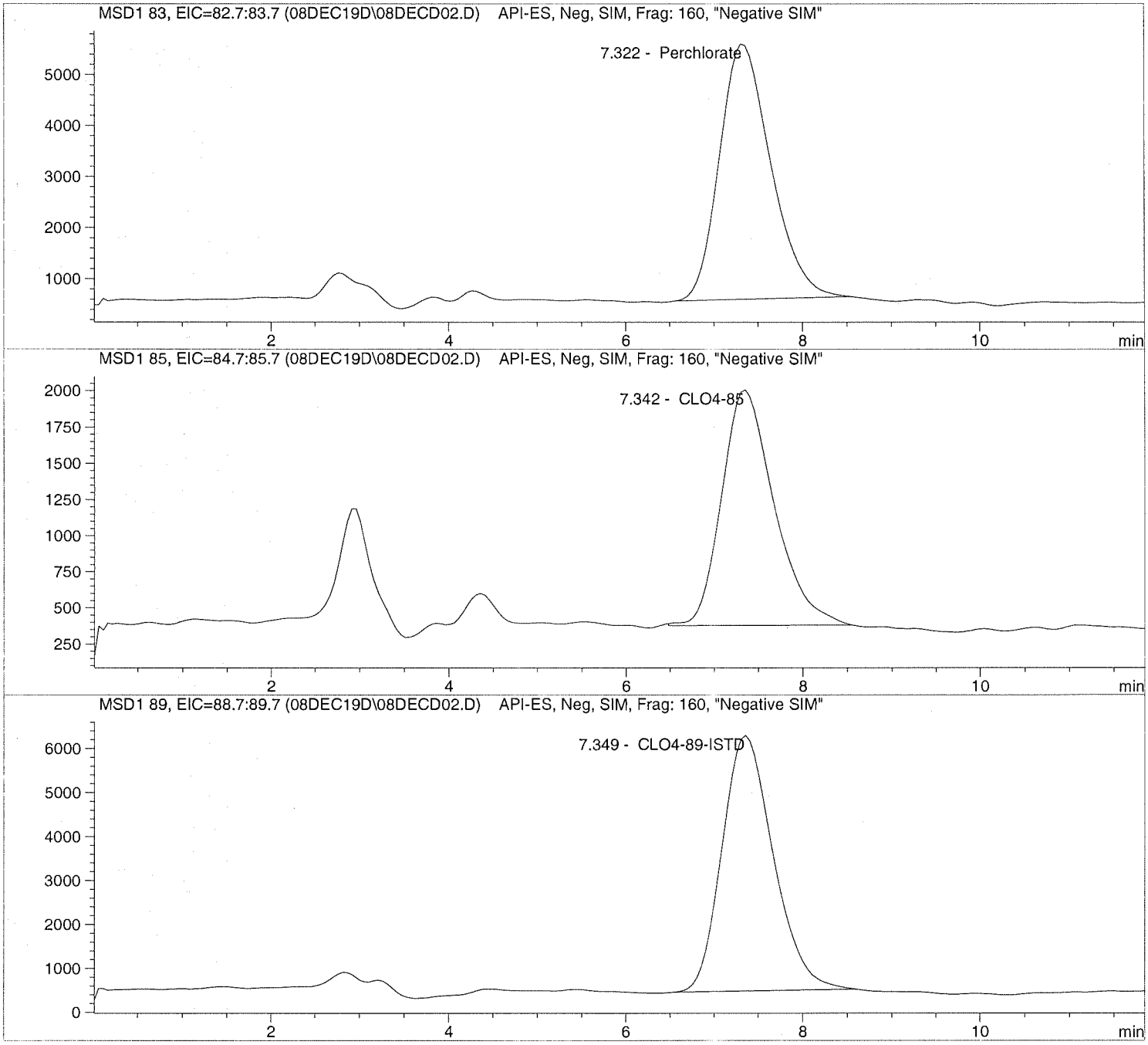
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD02.D Sample Name: 687319 QC@3.0

Injection Date:	12/08/2019 13:38:13	Seq Line:	2
Sample Name:	687319 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD02.D Sample Name: 687319 QC@3.0

Injection Date:	12/08/2019 13:38:13	Seq Line:	2
Sample Name:	687319 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.322	PBA	201271.8	3.1677	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.342	BBA	67081.4	3.3731	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.349	PBA	233945.4	5.0000	CLO4-89-ISTD

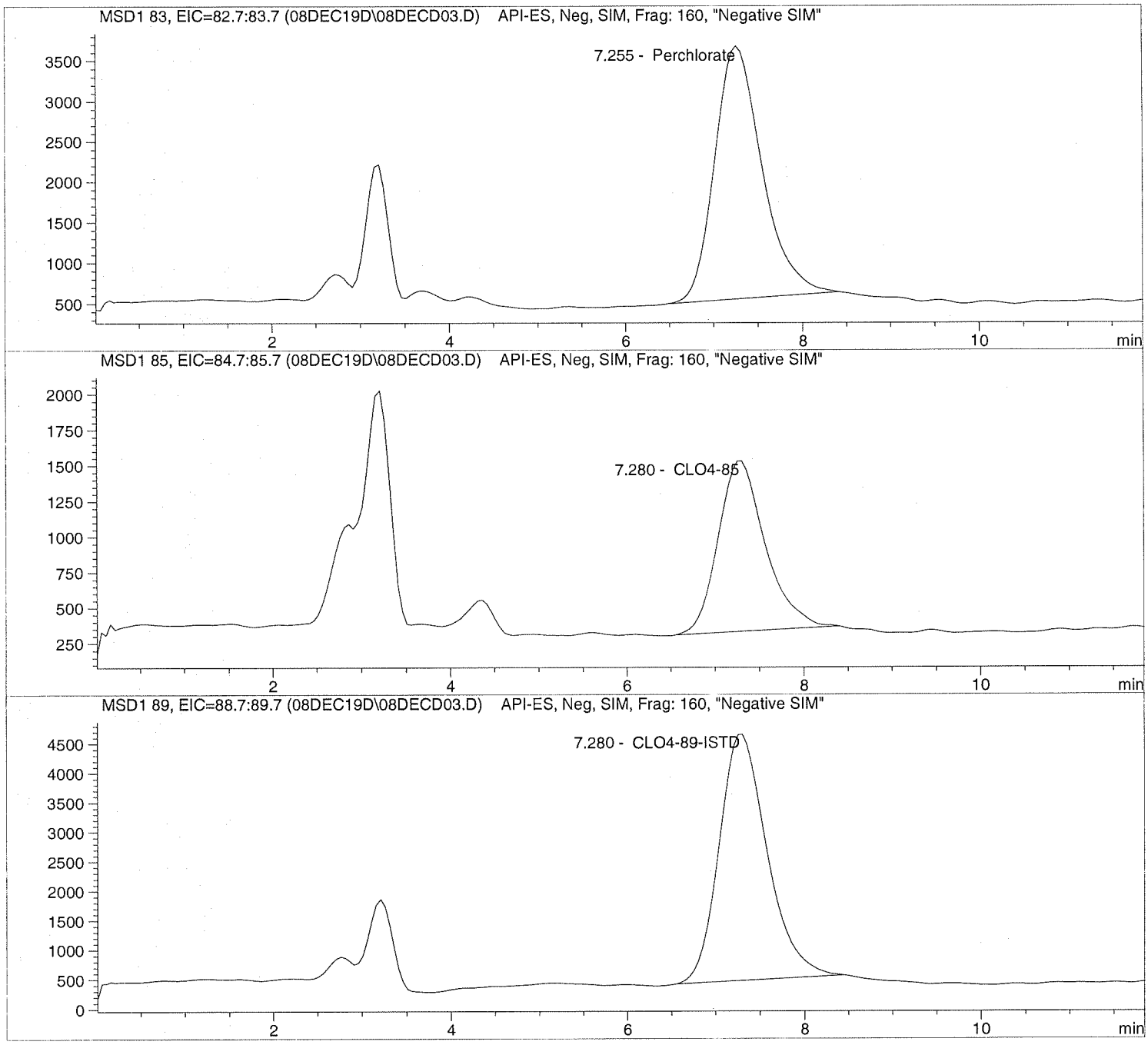
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD03.D Sample Name: 687321 ICS@3.0

Injection Date:	12/08/2019 13:52:08	Seq Line:	3
Sample Name:	687321 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD03.D Sample Name: 687321 ICS@3.0

Injection Date:	12/08/2019 13:52:08	Seq Line:	3
Sample Name:	687321 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.255	BBA	115555.3	2.7175	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.280	PBA	44180.0	3.3252	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.280	PBA	156222.3	5.0000	CLO4-89-ISTD

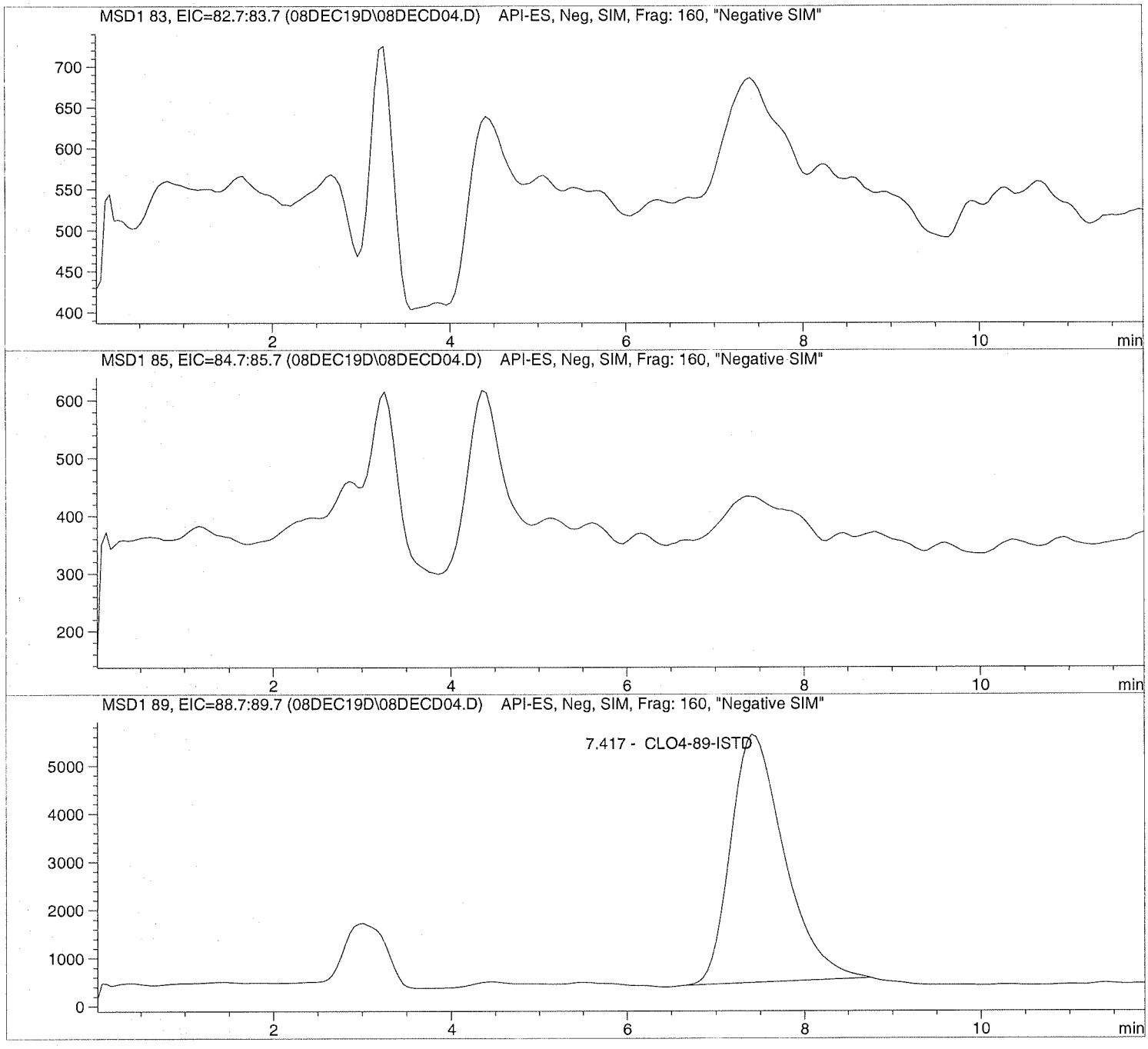
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD04.D Sample Name: 687322 LMB

Injection Date:	12/08/2019 14:06:04	Seq Line:	4
Sample Name:	687322 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD04.D Sample Name: 687322 LMB

Injection Date:	12/08/2019 14:06:04	Seq Line:	4
Sample Name:	687322 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.417	PBA	216882.7	5.0000	CLO4-89-ISTD

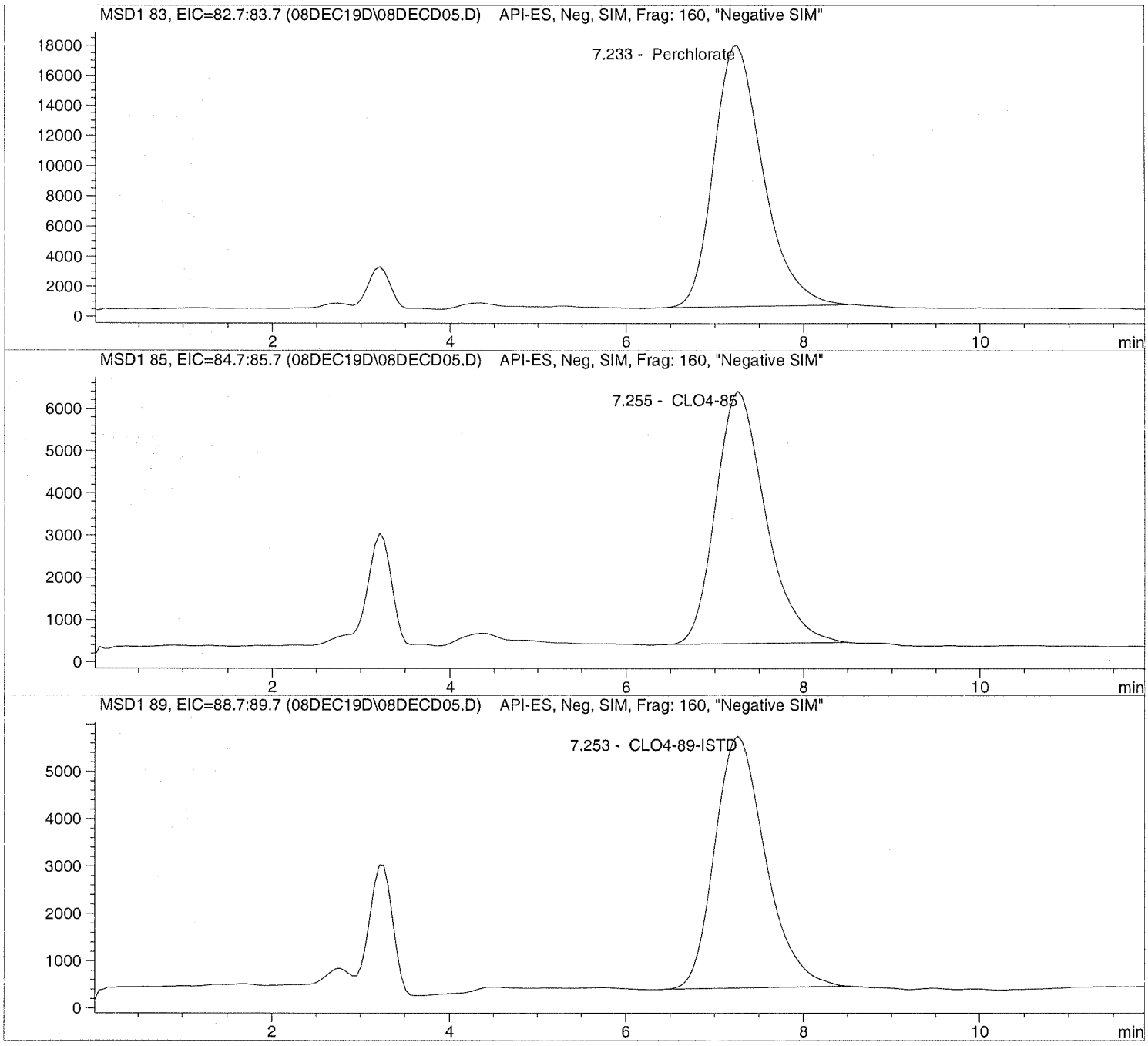
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD05.D Sample Name: 1933152001

Injection Date:	12/08/2019 14:20:08	Seq Line:	5
Sample Name:	1933152001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD05.D Sample Name: 1933152001

Injection Date:	12/08/2019 14:20:08	Seq Line:	5
Sample Name:	1933152001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.233	PBA	668714.5	11.4077	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.255	PBA	233281.0	12.8914	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.253	PBA	211754.2	5.0000	CLO4-89-ISTD

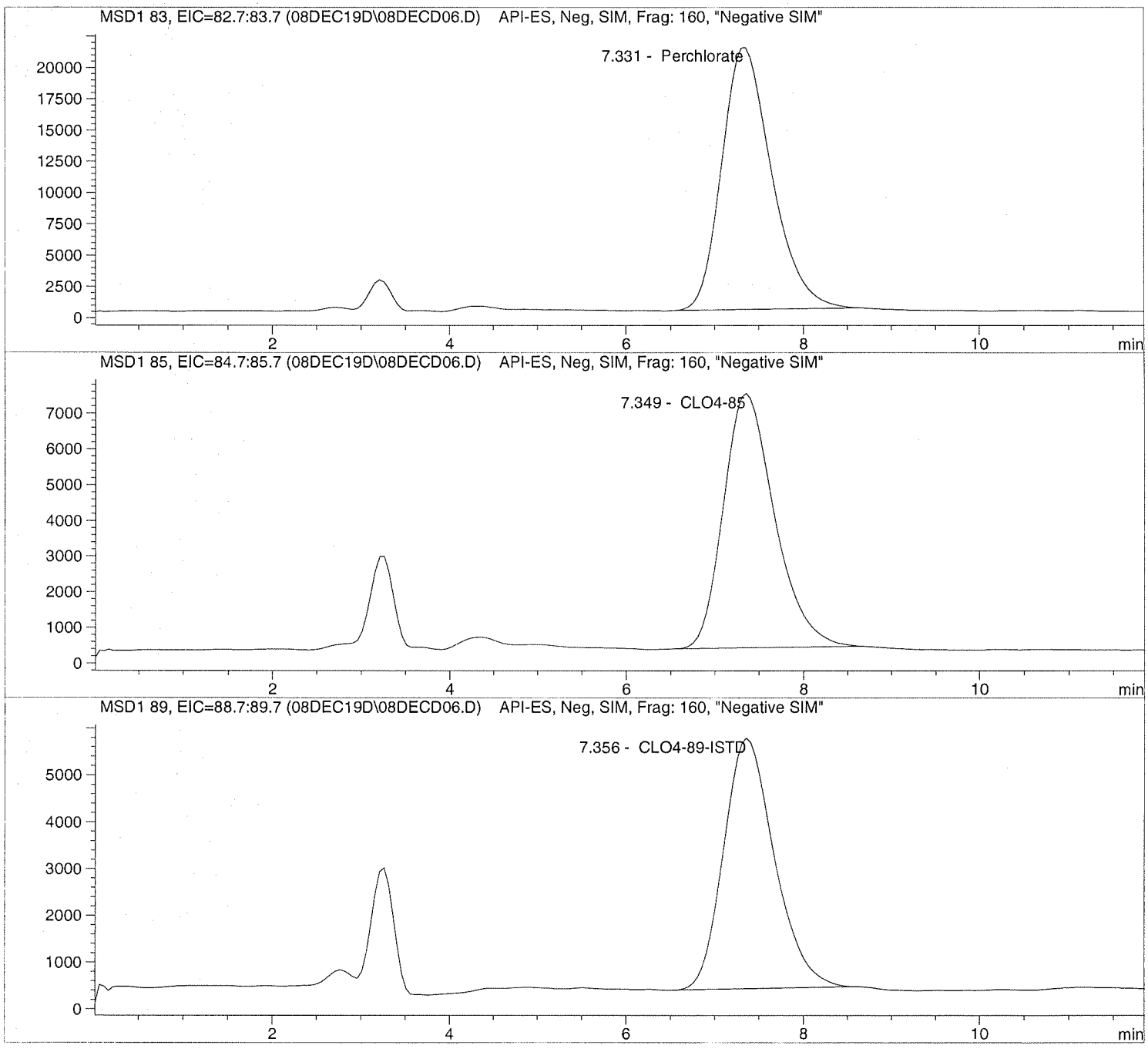
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD06.D Sample Name: 687323 331521S

Injection Date:	12/08/2019 14:34:02	Seq Line:	6
Sample Name:	687323 331521S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD06.D Sample Name: 687323 331521S

Injection Date:	12/08/2019 14:34:02	Seq Line:	6
Sample Name:	687323 331521S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.331	PBA	819146.8	13.7397	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.349	PBA	285503.6	15.5197	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.356	PBA	213383.5	5.0000	CLO4-89-ISTD

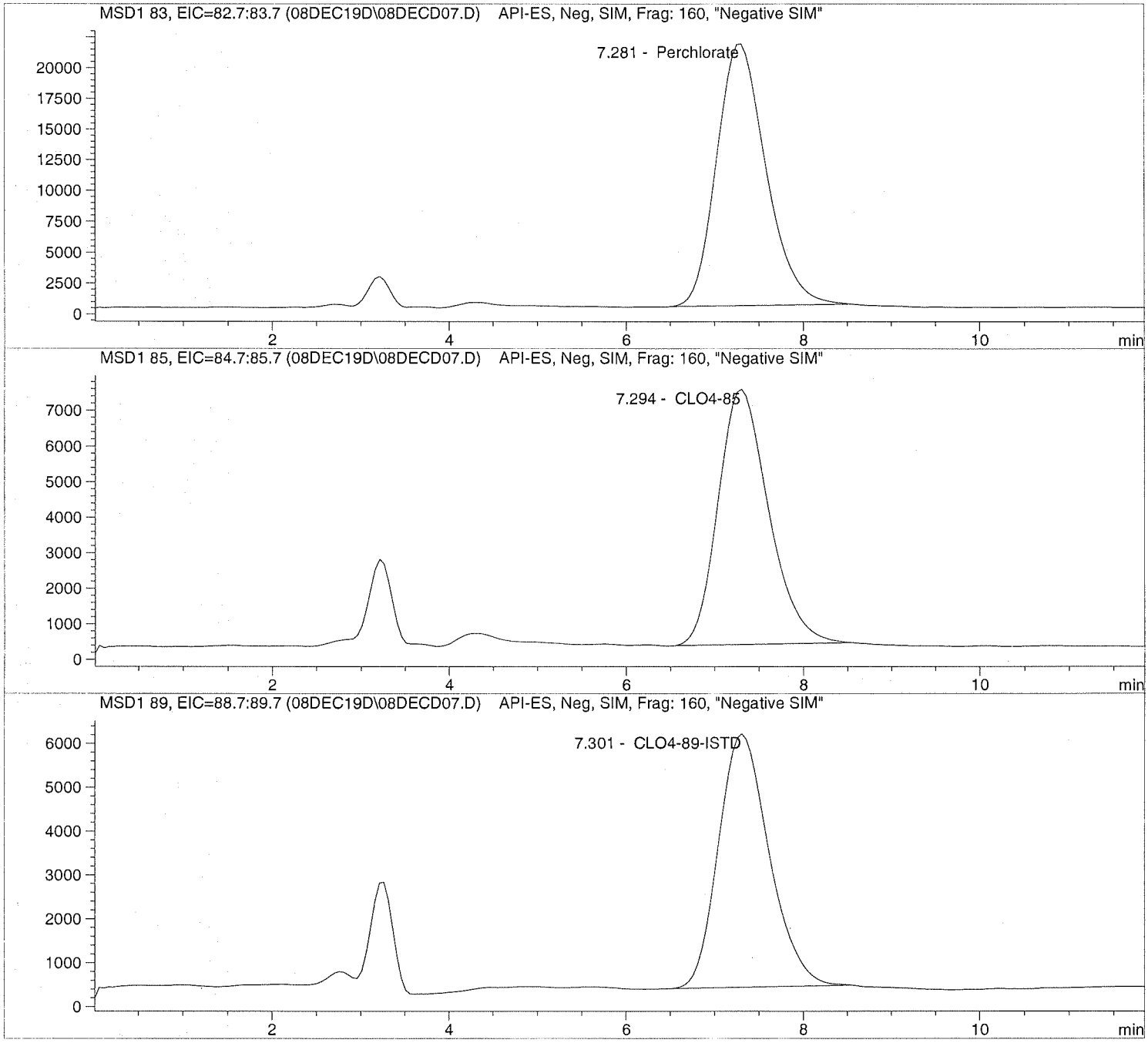
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD07.D Sample Name: 687324 331521D

Injection Date:	12/08/2019 14:48:08	Seq Line:	7
Sample Name:	687324 331521D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD07.D Sample Name: 687324 331521D

Injection Date:	12/08/2019 14:48:08	Seq Line:	7
Sample Name:	687324 331521D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.281	PBA	820045.2	12.8711	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	PBA	284039.7	14.4508	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.301	PBA	228828.1	5.0000	CLO4-89-ISTD

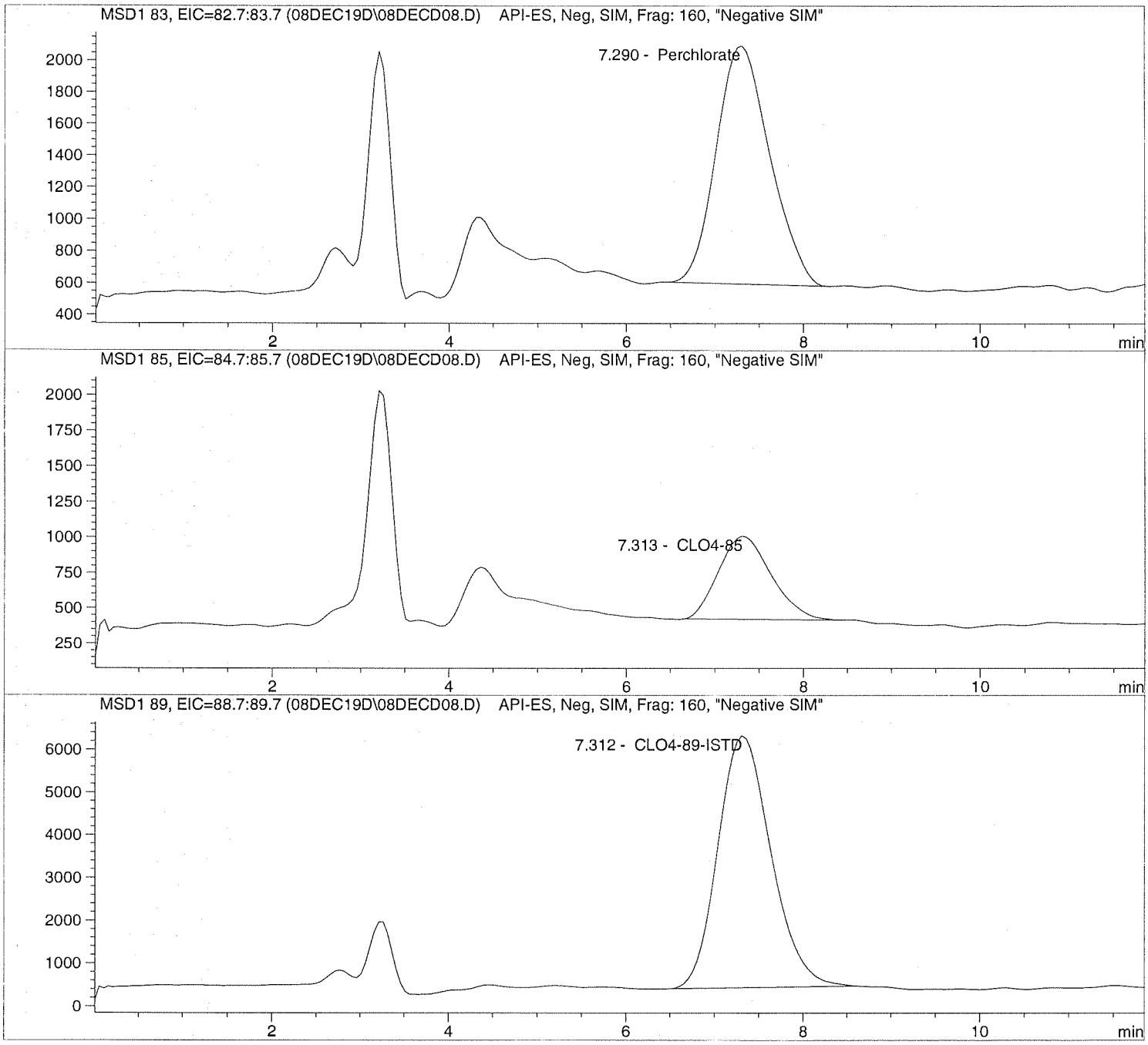
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD08.D Sample Name: 1933786001

Injection Date:	12/08/2019 15:02:01	Seq Line:	8
Sample Name:	1933786001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD08.D Sample Name: 1933786001

Injection Date:	12/08/2019 15:02:01	Seq Line:	8
Sample Name:	1933786001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	62842.2	0.8960	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.313	PBA	24389.6	1.0747	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.312	PBA	244930.7	5.0000	CLO4-89-ISTD

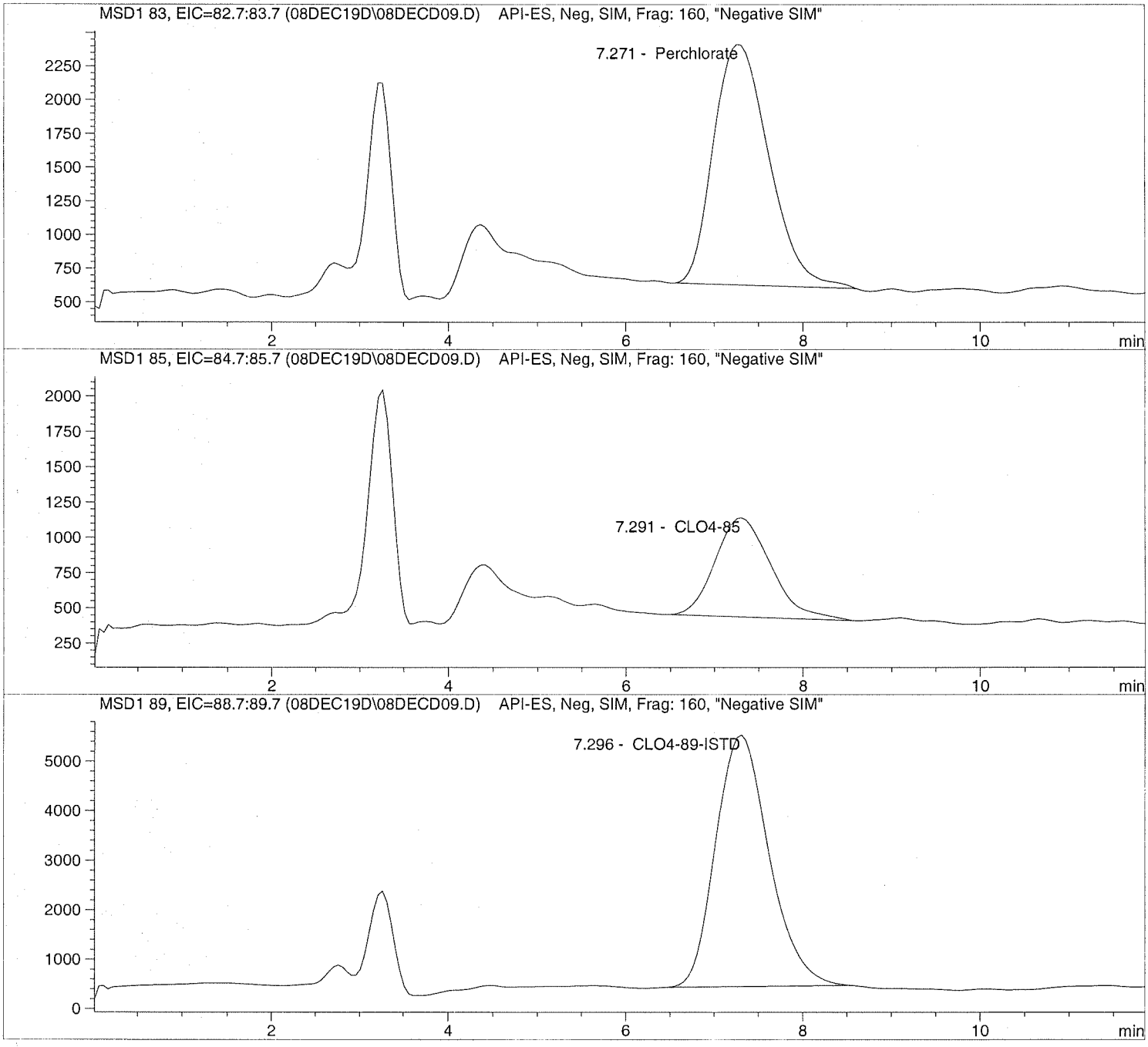
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD09.D Sample Name: 1934085001

Injection Date:	12/08/2019 15:15:52	Seq Line:	9
Sample Name:	1934085001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD09.D Sample Name: 1934085001

Injection Date:	12/08/2019 15:15:52	Seq Line:	9
Sample Name:	1934085001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.271	PBA	77670.2	1.3062	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.291	PBA	30739.7	1.6282	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.296	PBA	213008.8	5.0000	CLO4-89-ISTD

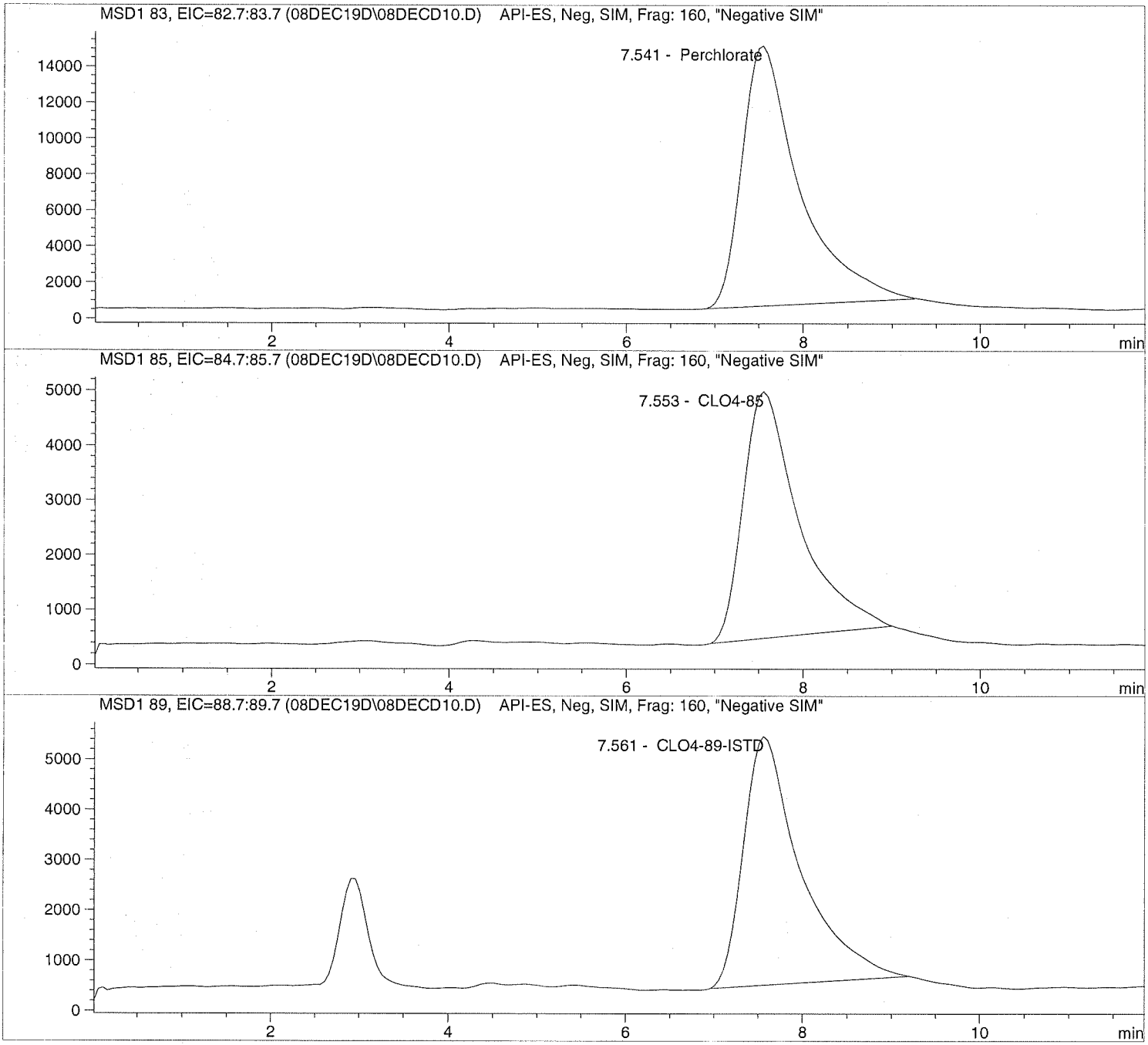
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD10.D Sample Name: 1934086001 1K

Injection Date:	12/08/2019 15:29:50	Seq Line:	10
Sample Name:	1934086001 1K	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD10.D Sample Name: 1934086001 1K

Injection Date:	12/08/2019 15:29:50	Seq Line:	10
Sample Name:	1934086001 1K	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.541	PBA	652913.9	10684.5187	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.553	PBA	197617.5	10521.3847	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.561	PBA	221358.6	5000.0000	CLO4-89-ISTD

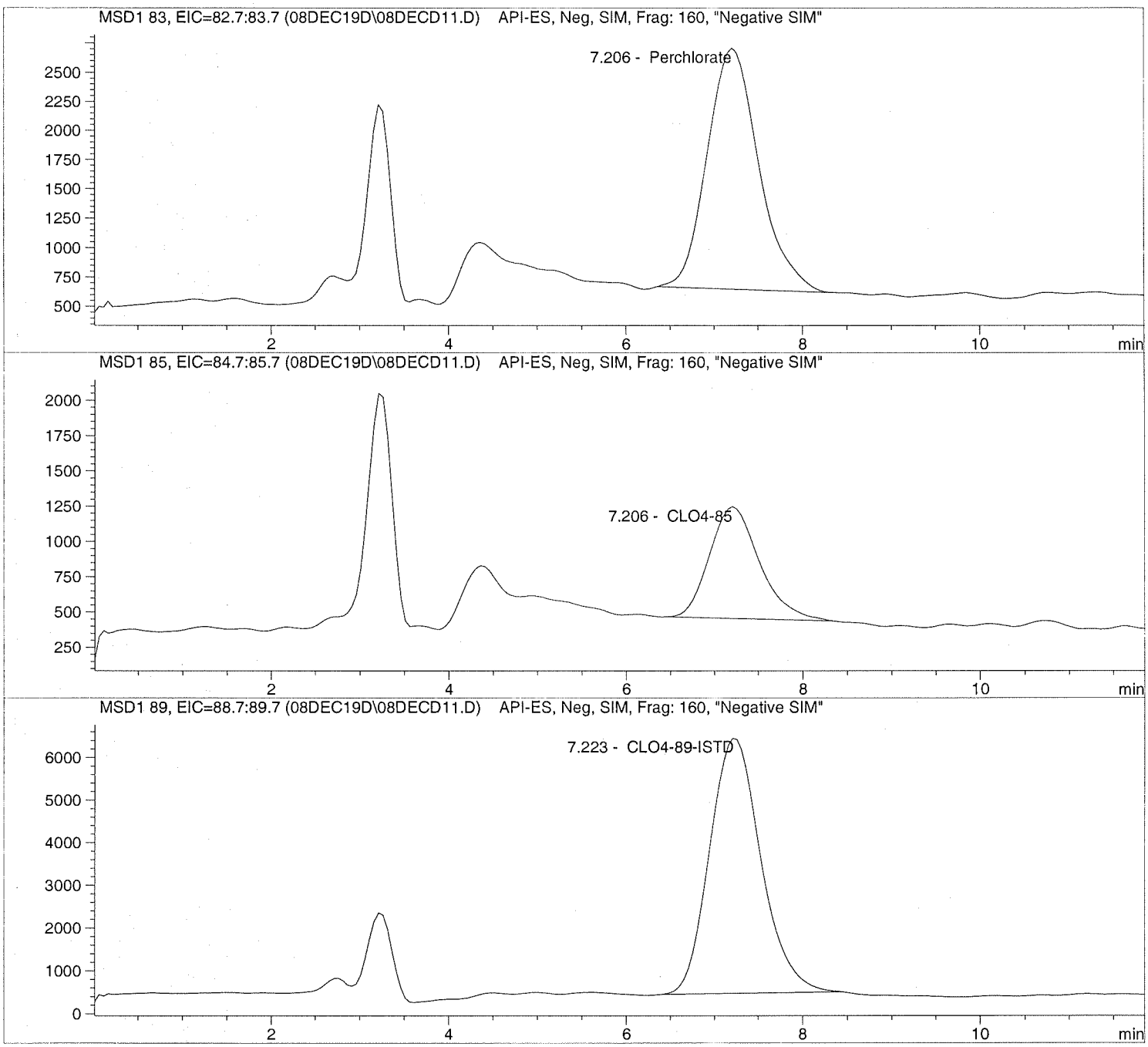
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD11.D Sample Name: 1934088001

Injection Date:	12/08/2019 15:43:41	Seq Line:	11
Sample Name:	1934088001	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD11.D Sample Name: 1934088001

Injection Date:	12/08/2019 15:43:41	Seq Line:	11
Sample Name:	1934088001	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.206	PBA	83506.7	1.2338	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.206	PBA	31160.7	1.4382	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.223	PBA	241675.8	5.0000	CLO4-89-ISTD

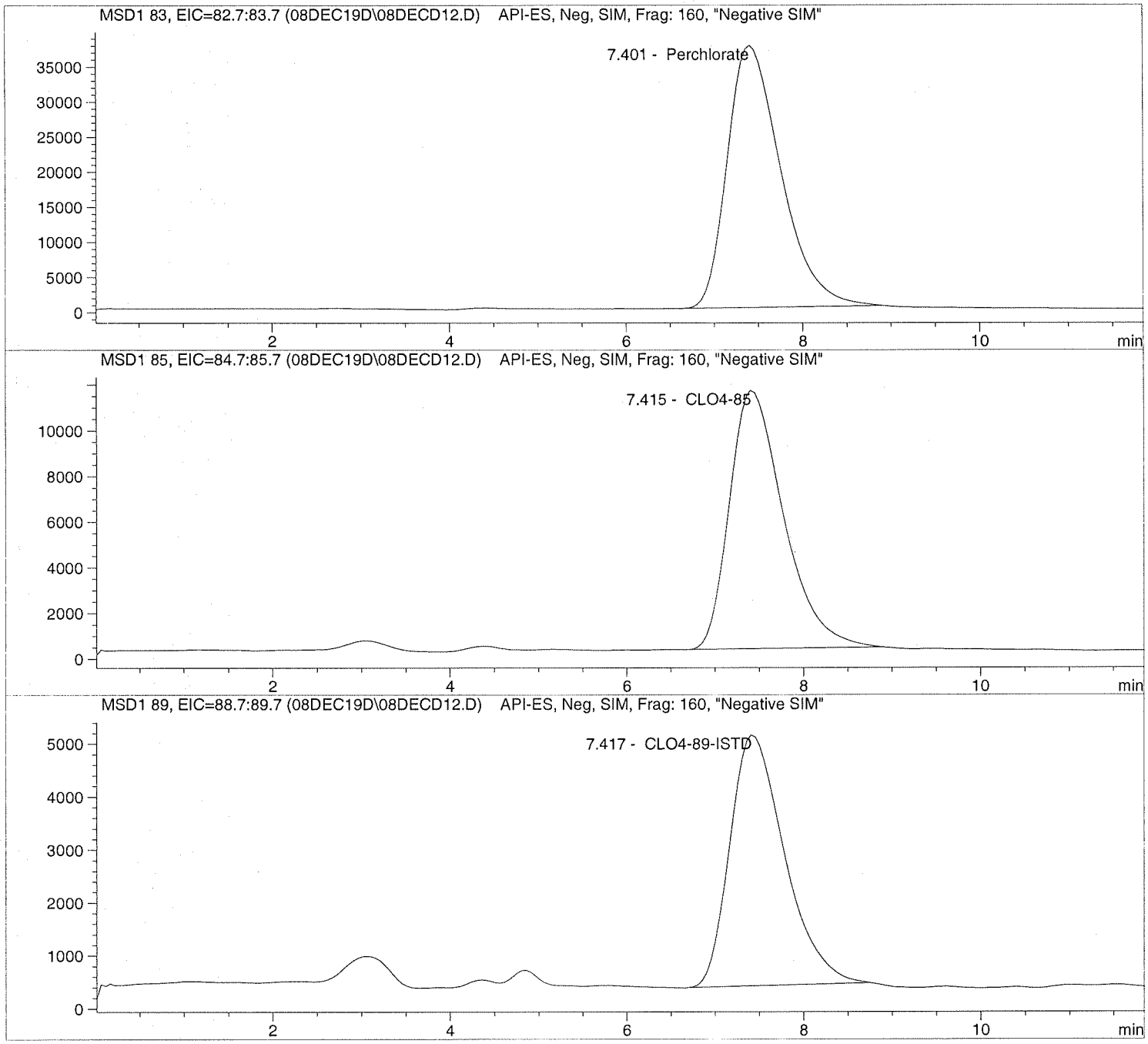
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD12.D Sample Name: 687325 CCV@25

Injection Date:	12/08/2019 15:57:34	Seq Line:	12
Sample Name:	687325 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\08DEC19D\08DECD12.D Sample Name: 687325 CCV@25

Injection Date:	12/08/2019 15:57:34	Seq Line:	12
Sample Name:	687325 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 11/5/2019 08:44:45

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.401	PBA	1568763.4	26.2667	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.415	PBA	480251.1	26.3725	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.417	PBA	203011.5	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Lvl Sig		Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5	1		Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5	1		CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

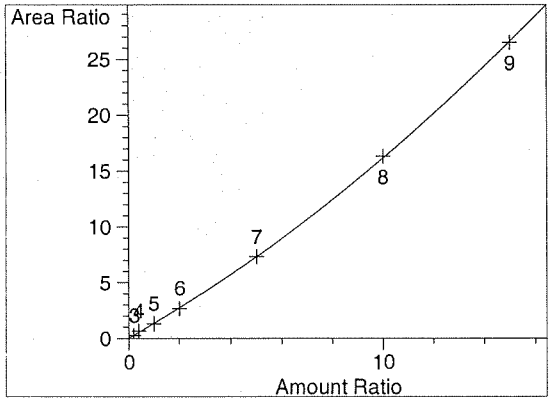
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

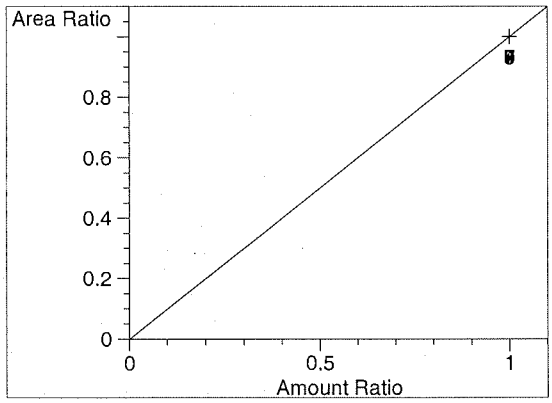
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

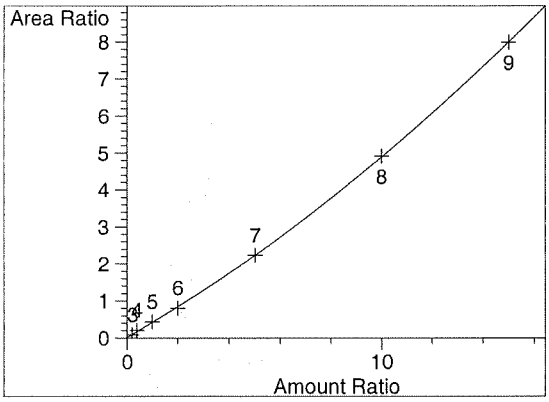
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

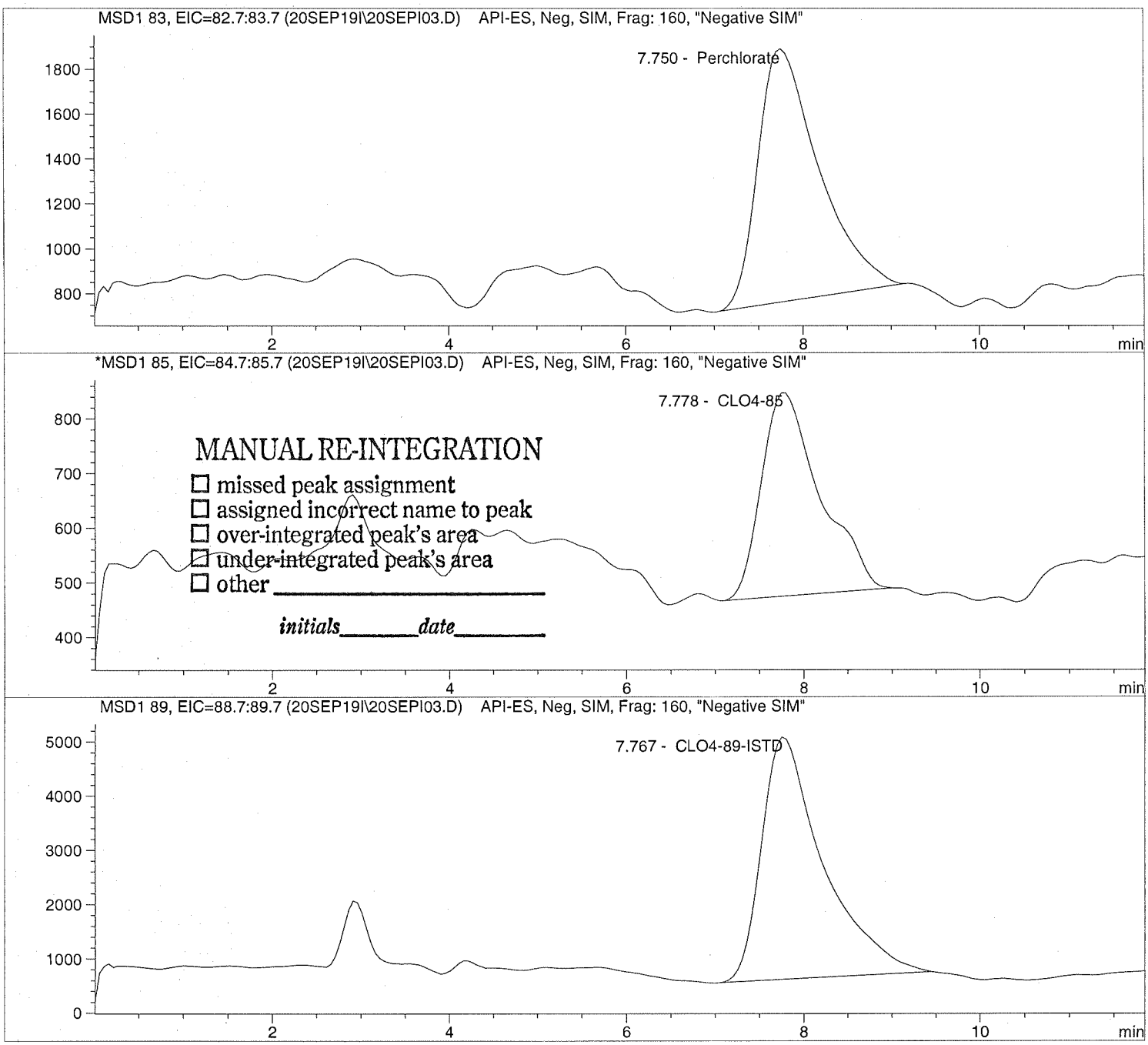
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

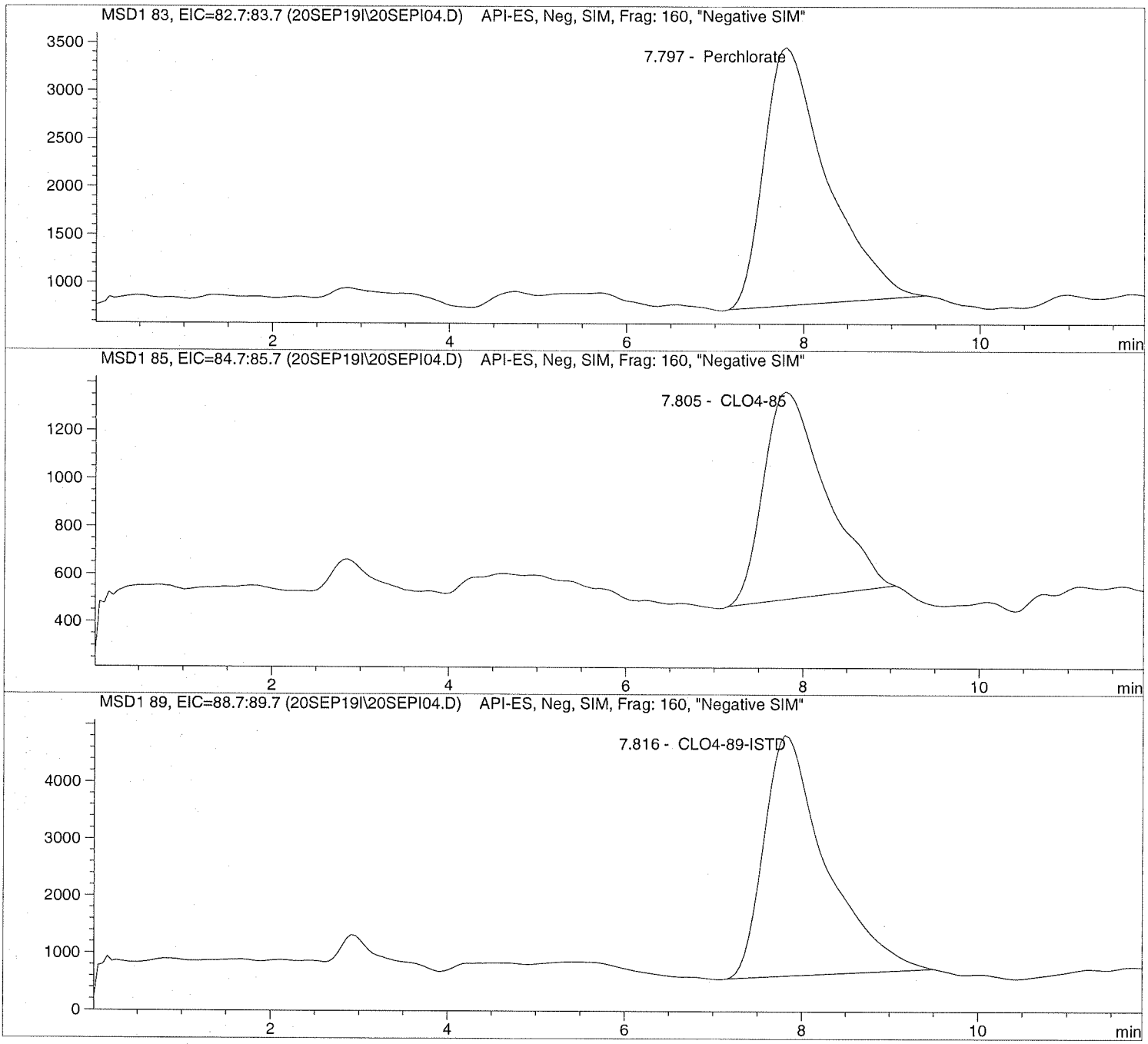
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

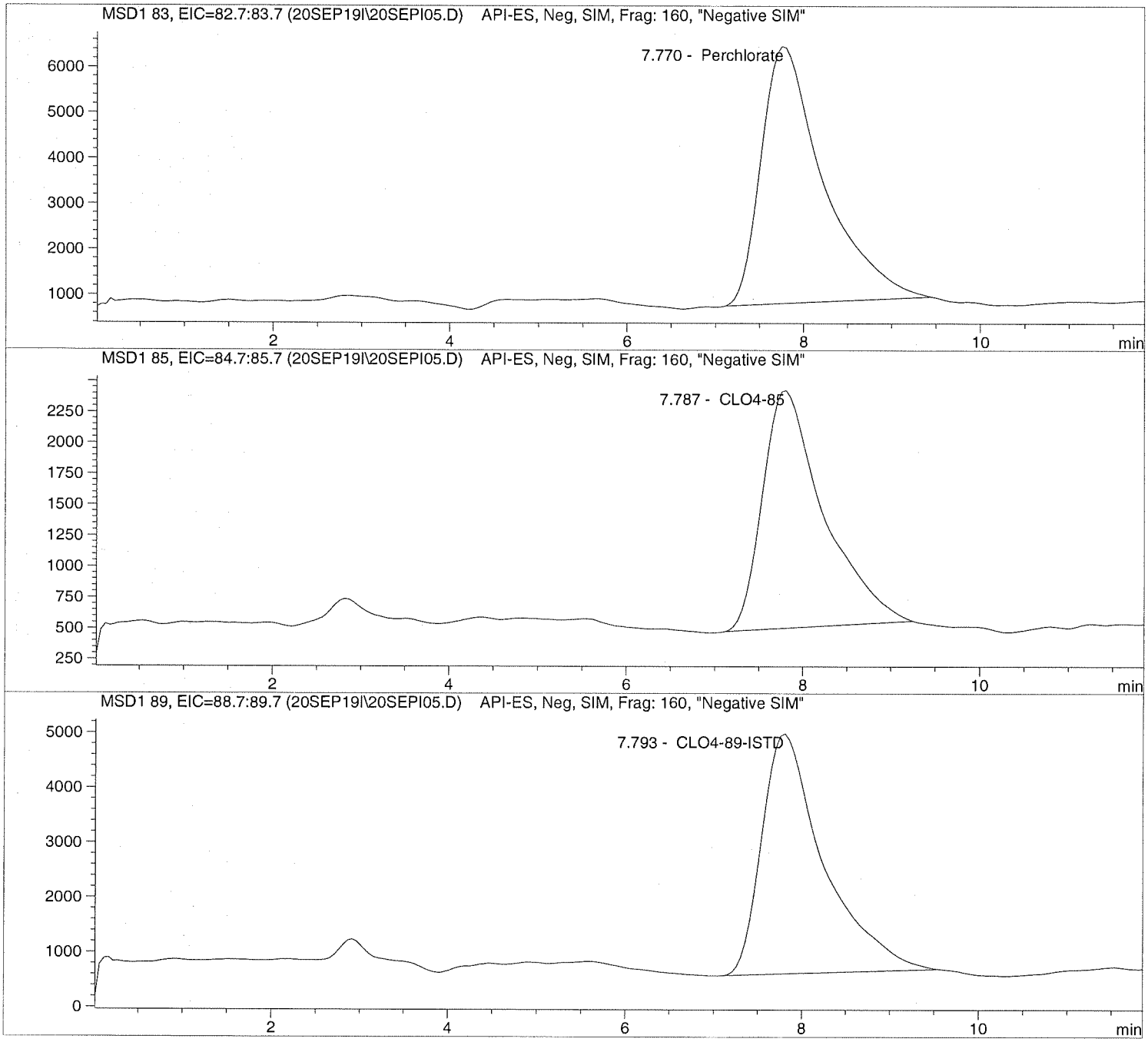
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

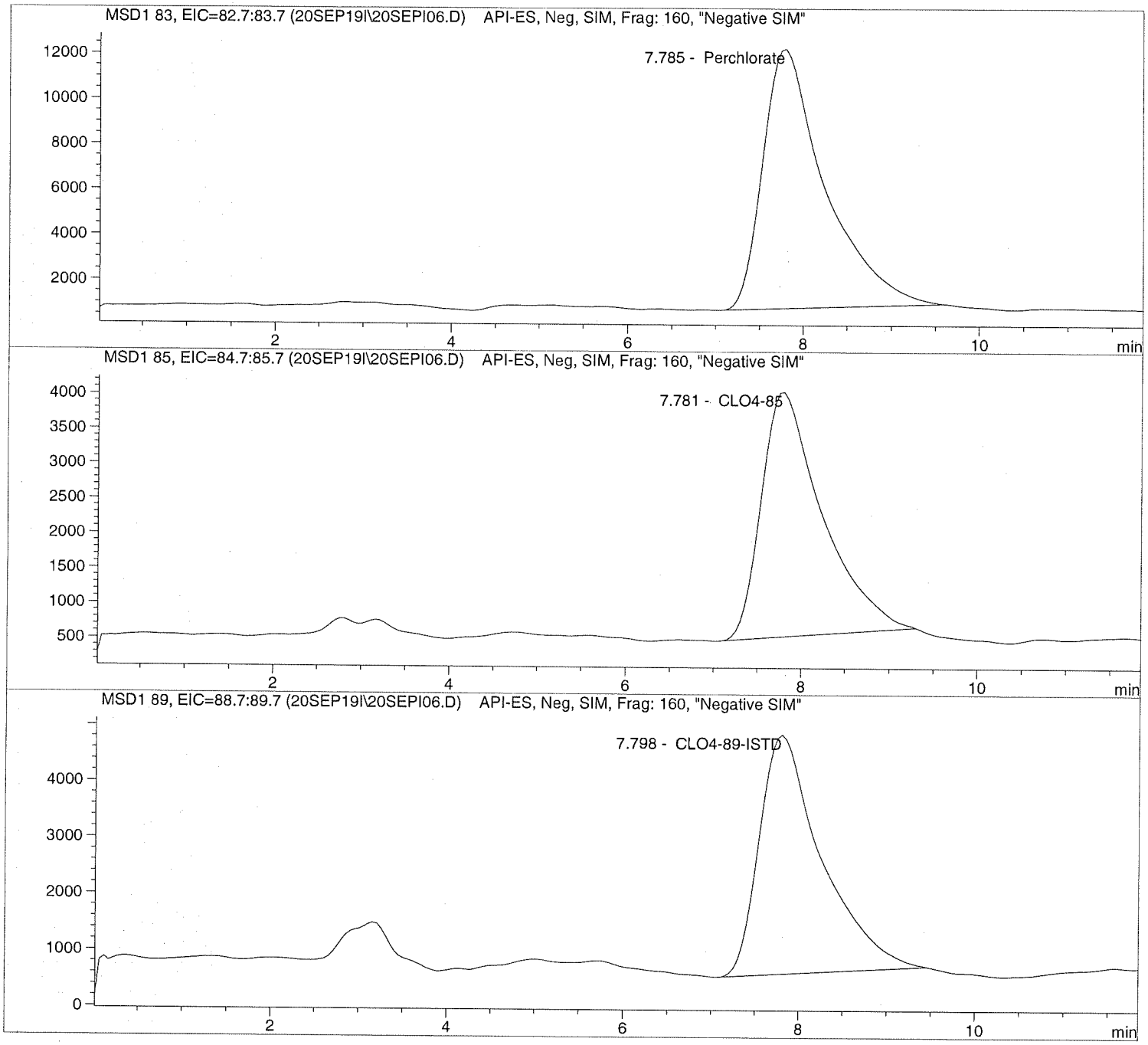
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

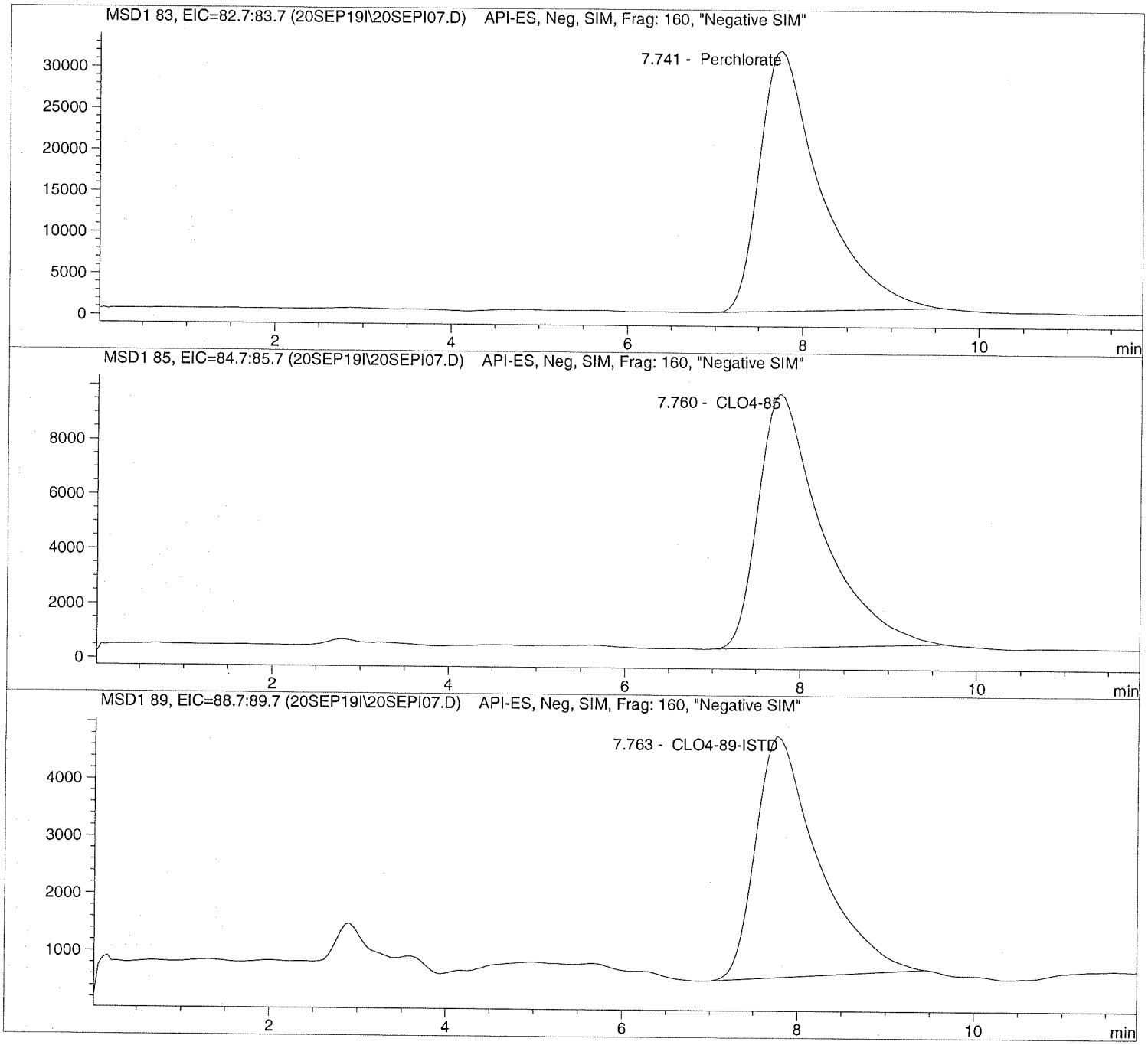
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

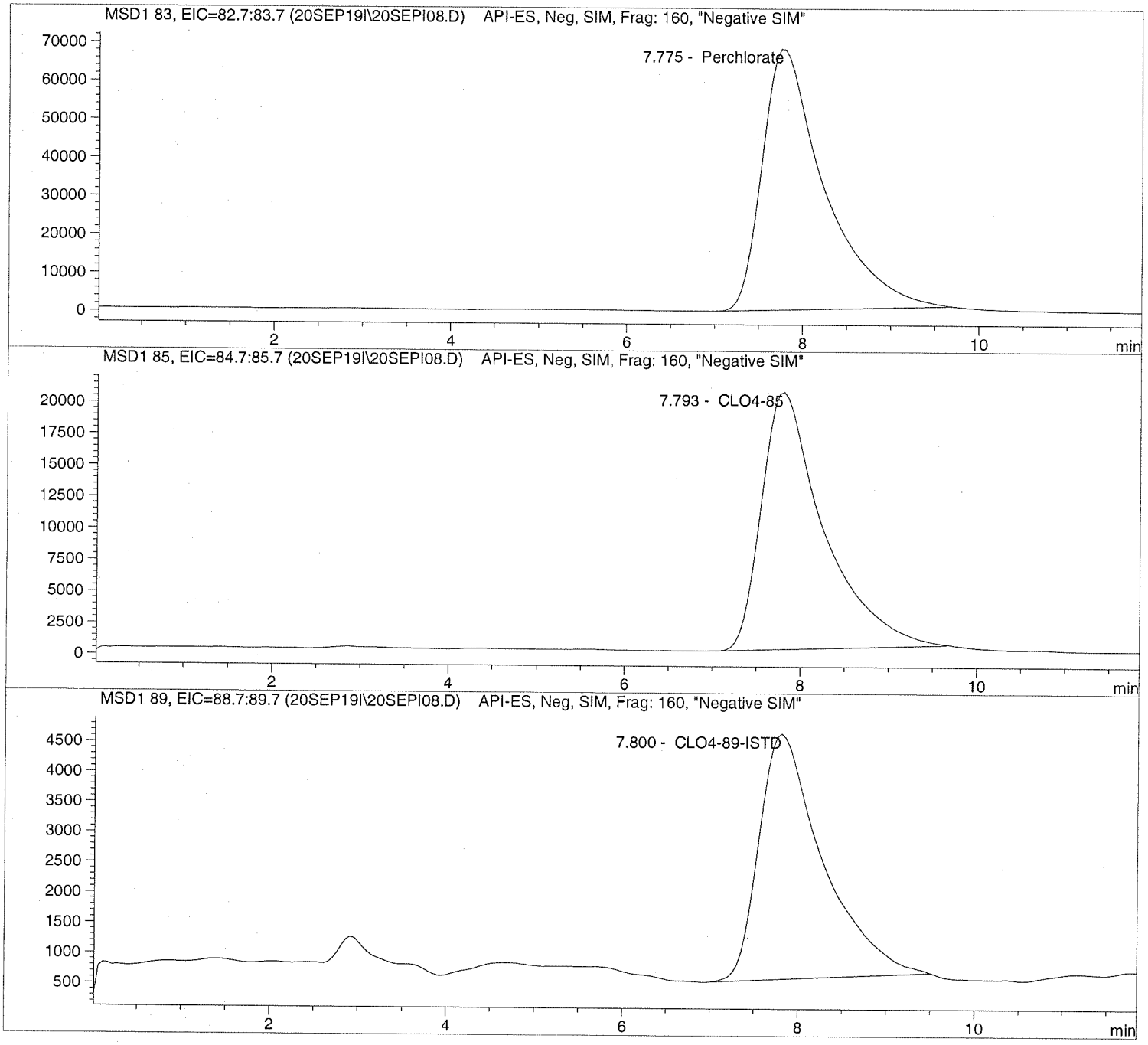
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

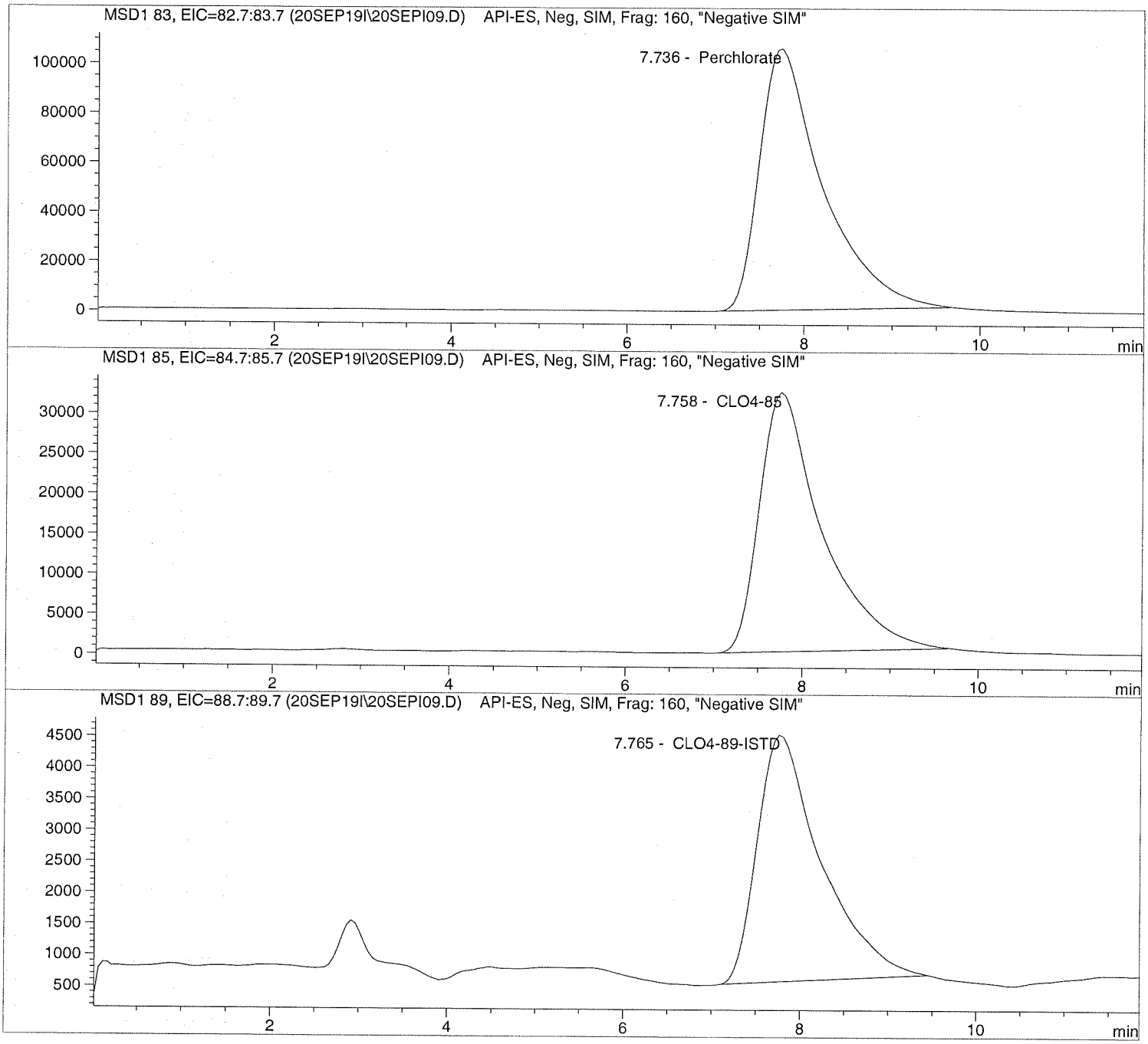
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

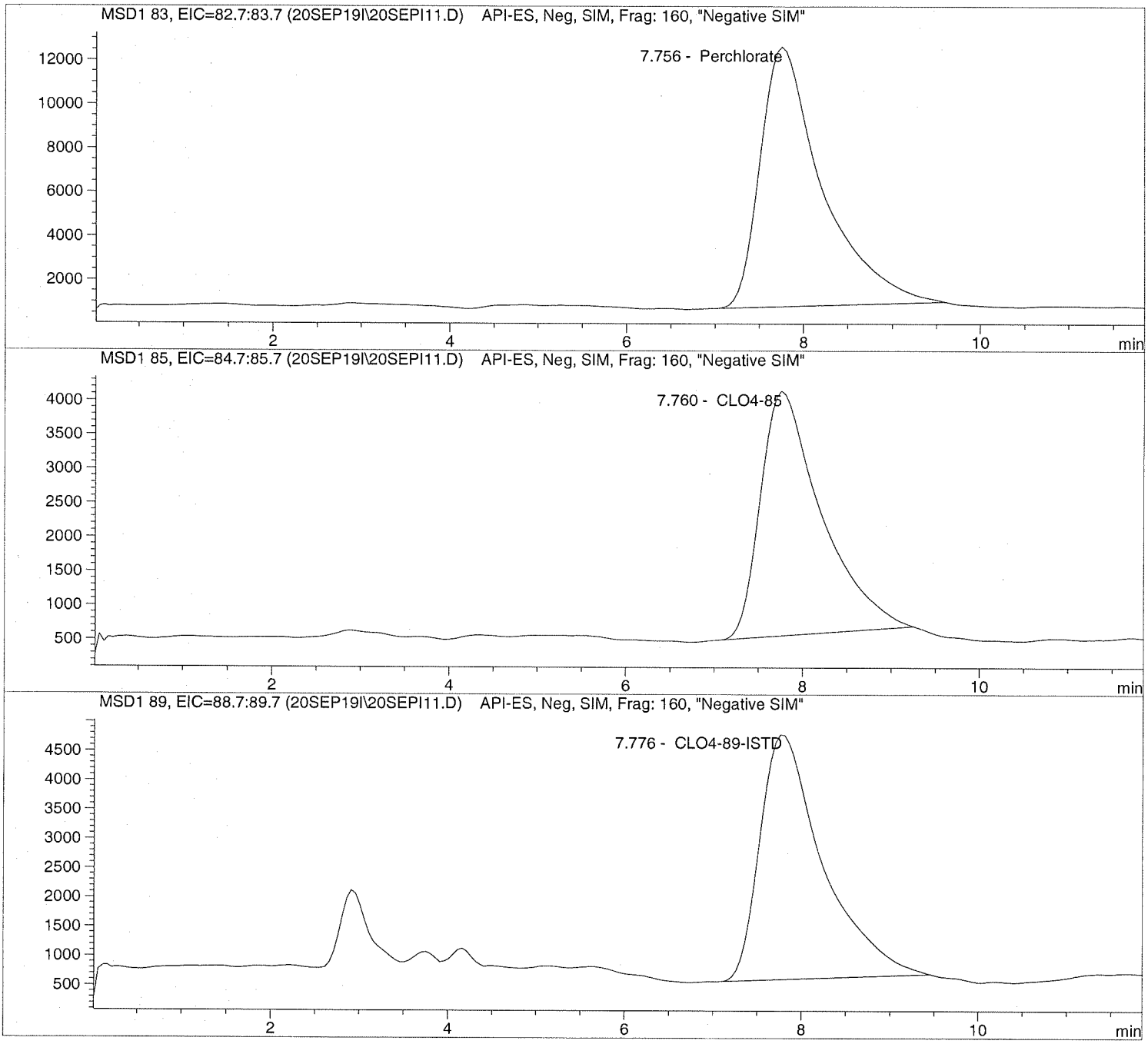
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

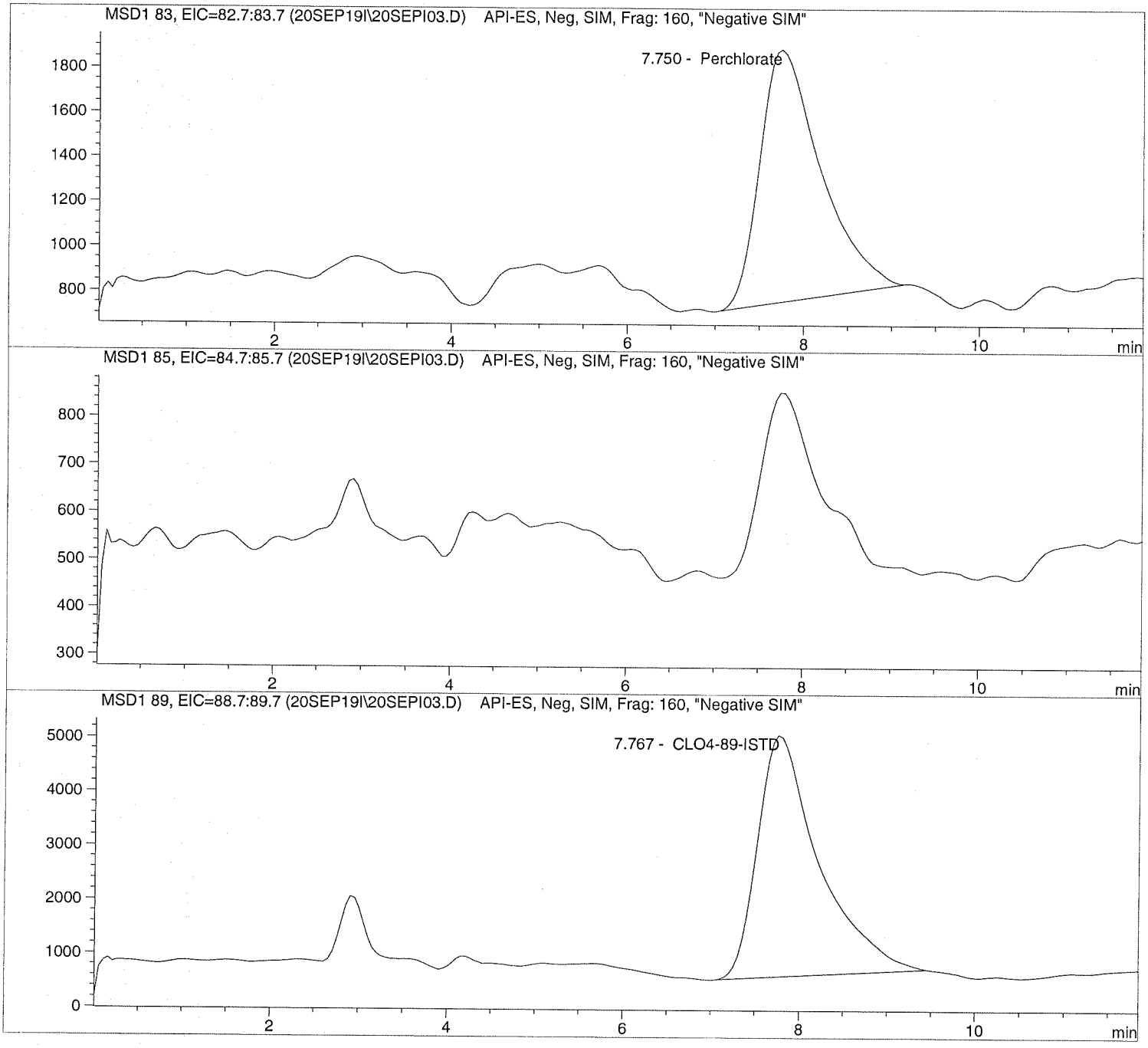
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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December 04, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19111401**

Laboratory Results for: **Longhorn GW Treatment Plant Bi Weekly Samples**

Dear Marcia,

ALS Environmental received 2 sample(s) on Nov 27, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
Work Order: HS19111401

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19111401-01	LH18/24-SP650_112619	Water		26-Nov-2019 14:00	27-Nov-2019 10:00	☐
HS19111401-02	Trip Blank	Water	C&G-090718-75	26-Nov-2019 00:00	27-Nov-2019 10:00	☐

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant Bi Weekly Samples
Work Order: HS19111401

GCMS Volatiles by Method SW8260

Batch ID: R351682

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R351781

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Bi Weekly Samples WorkOrder:HS19111401
Sample ID: LH18/24-SP650_112619 Lab ID:HS19111401-01
Collection Date: 26-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,2-Dichloroethane	**1.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	03-Dec-2019 14:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	03-Dec-2019 14:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	03-Dec-2019 14:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	03-Dec-2019 14:05
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	03-Dec-2019 14:05
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	03-Dec-2019 14:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Bi Weekly Samples WorkOrder:HS19111401
Sample ID: LH18/24-SP650_112619 Lab ID:HS19111401-01
Collection Date: 26-Nov-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
cis-1,2-Dichloroethene	**63**		**0.20**	**0.50**	**1.0**	**UG/L**	1	03-Dec-2019 14:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	03-Dec-2019 14:05
Methylene chloride	**6.0**		**0.40**	**1.0**	**2.0**	**UG/L**	1	03-Dec-2019 14:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 14:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**UG/L**	1	03-Dec-2019 14:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 14:05
Vinyl chloride	**0.66**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	03-Dec-2019 14:05
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*1*	*03-Dec-2019 14:05*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*1*	*03-Dec-2019 14:05*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*03-Dec-2019 14:05*
Surr: Toluene-d8	*97.9*			**0**	*89-112*	*%REC*	*1*	*03-Dec-2019 14:05*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**403**		**2.00**	**5.00**	**5.00**	**mg/L**	10	04-Dec-2019 08:19
Sulfate	**33.5**		**2.00**	**5.00**	**5.00**	**mg/L**	10	04-Dec-2019 08:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Bi Weekly Samples WorkOrder:HS19111401
Sample ID: Trip Blank Lab ID:HS19111401-02
Collection Date: 26-Nov-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	03-Dec-2019 13:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	03-Dec-2019 13:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	03-Dec-2019 13:41
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	03-Dec-2019 13:41
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	03-Dec-2019 13:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Bi Weekly Samples WorkOrder:HS19111401

Sample ID: Trip Blank Lab ID:HS19111401-02

Collection Date: 26-Nov-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	03-Dec-2019 13:41
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	03-Dec-2019 13:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Dec-2019 13:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	03-Dec-2019 13:41
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*81-118*	*%REC*	*1*	*03-Dec-2019 13:41*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*1*	*03-Dec-2019 13:41*
Surr: Dibromofluoromethane	*99.3*			**0**	*80-119*	*%REC*	*1*	*03-Dec-2019 13:41*
Surr: Toluene-d8	*95.8*			**0**	*89-112*	*%REC*	*1*	*03-Dec-2019 13:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R351682 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19111401-01	LH18/24-SP650_112619	26 Nov 2019 14:00			03 Dec 2019 14:05	1
HS19111401-02	Trip Blank	26 Nov 2019 00:00			03 Dec 2019 13:41	1
Batch ID: R351781 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS19111401-01	LH18/24-SP650_112619	26 Nov 2019 14:00			04 Dec 2019 08:19	10

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191203** Units: **UG/L** Analysis Date: **03-Dec-2019 12:29**
Client ID: Run ID: **VOA6_351682** SeqNo: **5371674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191203** Units: **UG/L** Analysis Date: **03-Dec-2019 12:29**
Client ID: Run ID: **VOA6_351682** SeqNo: **5371674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*50.74*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.48*	*1.0*	*50*	*0*	*97.0*	*85 - 114*				
Surr: Dibromofluoromethane	*49.42*	*1.0*	*50*	*0*	*98.8*	*80 - 119*				
Surr: Toluene-d8	*48.06*	*1.0*	*50*	*0*	*96.1*	*89 - 112*				

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-191203** Units: **UG/L** Analysis Date: **03-Dec-2019 12:53**
Client ID: Run ID: **VOA6_351682** SeqNo: **5371675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.28	1.0	20	0	101	78 - 124				
1,1,1-Trichloroethane	22.29	1.0	20	0	111	74 - 131				
1,1,2,2-Tetrachloroethane	20.07	1.0	20	0	100	71 - 121				
1,1,2-Trichloroethane	20.7	1.0	20	0	103	80 - 119				
1,1-Dichloroethane	22.41	1.0	20	0	112	77 - 125				
1,1-Dichloroethene	19.99	1.0	20	0	100.0	71 - 131				
1,1-Dichloropropene	19.89	1.0	20	0	99.5	78 - 125				
1,2,3-Trichlorobenzene	14.16	1.0	20	0	70.8	69 - 129				
1,2,3-Trichloropropane	20.62	1.0	20	0	103	73 - 122				
1,2,4-Trichlorobenzene	15.43	1.0	20	0	77.2	69 - 130				
1,2,4-Trimethylbenzene	20.88	1.0	20	0	104	76 - 124				
1,2-Dibromo-3-chloropropane	19.24	1.0	20	0	96.2	62 - 128				
1,2-Dibromoethane	20.7	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	20.41	1.0	20	0	102	80 - 119				
1,2-Dichloroethane	22.41	1.0	20	0	112	73 - 128				
1,2-Dichloropropane	20.25	1.0	20	0	101	78 - 122				
1,3,5-Trimethylbenzene	20.84	1.0	20	0	104	75 - 124				
1,3-Dichlorobenzene	20.59	1.0	20	0	103	80 - 119				
1,3-Dichloropropane	20.38	1.0	20	0	102	80 - 119				
1,4-Dichlorobenzene	20.62	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	22.01	1.0	20	0	110	60 - 139				
2-Butanone	46.9	2.0	40	0	117	56 - 143				
2-Chlorotoluene	21.56	1.0	20	0	108	79 - 122				
2-Hexanone	41.58	2.0	40	0	104	57 - 139				
4-Chlorotoluene	20.89	1.0	20	0	104	78 - 122				
4-Isopropyltoluene	20.3	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	40.34	2.0	40	0	101	67 - 130				
Acetone	45.36	2.0	40	0	113	39 - 160				
Benzene	20.96	1.0	20	0	105	79 - 120				
Bromobenzene	20.49	1.0	20	0	102	80 - 120				
Bromochloromethane	22.73	1.0	20	0	114	78 - 123				
Bromodichloromethane	21.31	1.0	20	0	107	79 - 125				
Bromoform	20.36	1.0	20	0	102	66 - 130				
Bromomethane	23.03	1.0	20	0	115	53 - 141				

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-191203** Units: **UG/L** Analysis Date: **03-Dec-2019 12:53**
Client ID: Run ID: **VOA6_351682** SeqNo: **5371675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	43.73	2.0	40	0	109	64 - 133				
Carbon tetrachloride	19.57	1.0	20	0	97.9	72 - 136				
Chlorobenzene	20.01	1.0	20	0	100	82 - 118				
Chloroethane	20.87	1.0	20	0	104	60 - 138				
Chloroform	22.36	1.0	20	0	112	79 - 124				
Chloromethane	16.32	1.0	20	0	81.6	50 - 139				
cis-1,2-Dichloroethene	22.98	1.0	20	0	115	78 - 123				
cis-1,3-Dichloropropene	21.18	1.0	20	0	106	75 - 124				
Dibromochloromethane	20.42	1.0	20	0	102	74 - 126				
Dibromomethane	21.53	1.0	20	0	108	79 - 123				
Dichlorodifluoromethane	23.81	1.0	20	0	119	32 - 152				
Ethylbenzene	20.34	1.0	20	0	102	79 - 121				
Hexachlorobutadiene	14.19	1.0	20	0	70.9	66 - 134				
Isopropylbenzene	20.48	1.0	20	0	102	72 - 131				
m,p-Xylene	40.95	2.0	40	0	102	80 - 121				
Methylene chloride	21.83	2.0	20	0	109	74 - 124				
Naphthalene	14.85	1.0	20	0	74.2	61 - 128				
n-Butylbenzene	20.18	1.0	20	0	101	75 - 128				
n-Propylbenzene	20.76	1.0	20	0	104	76 - 126				
o-Xylene	20.02	1.0	20	0	100	78 - 122				
sec-Butylbenzene	20.5	1.0	20	0	103	77 - 126				
Styrene	20.19	1.0	20	0	101	78 - 123				
tert-Butylbenzene	20.63	1.0	20	0	103	78 - 124				
Tetrachloroethene	19.07	1.0	20	0	95.4	74 - 129				
Toluene	20.02	1.0	20	0	100	80 - 121				
trans-1,2-Dichloroethene	22.42	1.0	20	0	112	75 - 124				
trans-1,3-Dichloropropene	21.23	1.0	20	0	106	73 - 127				
Trichloroethene	20.6	1.0	20	0	103	79 - 123				
Trichlorofluoromethane	21.49	1.0	20	0	107	65 - 141				
Vinyl chloride	19.69	1.0	20	0	98.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*57.21*	*1.0*	*50*	*0*	*114*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.17*	*1.0*	*50*	*0*	*96.3*	*85 - 114*				
Surr: Dibromofluoromethane	*52.27*	*1.0*	*50*	*0*	*105*	*80 - 119*				
Surr: Toluene-d8	*44.84*	*1.0*	*50*	*0*	*89.7*	*89 - 112*				

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19111401-01MS** Units: **UG/L** Analysis Date: **03-Dec-2019 14:29**
Client ID: **LH18/24-SP650_112619** Run ID: **VOA6_351682** SeqNo: **5371829** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.33	1.0	20	0	91.7	78 - 124				
1,1,1-Trichloroethane	19.53	1.0	20	0	97.7	74 - 131				
1,1,2,2-Tetrachloroethane	18.42	1.0	20	0	92.1	71 - 121				
1,1,2-Trichloroethane	18.23	1.0	20	0	91.2	80 - 119				
1,1-Dichloroethane	18.89	1.0	20	0	94.4	77 - 125				
1,1-Dichloroethene	18.05	1.0	20	0	90.3	71 - 131				
1,1-Dichloropropene	19.23	1.0	20	0	96.1	78 - 125				
1,2,3-Trichlorobenzene	15.42	1.0	20	0	77.1	69 - 129				
1,2,3-Trichloropropane	18.46	1.0	20	0	92.3	73 - 122				
1,2,4-Trichlorobenzene	15.65	1.0	20	0	78.3	69 - 130				
1,2,4-Trimethylbenzene	19.68	1.0	20	0	98.4	76 - 124				
1,2-Dibromo-3-chloropropane	18.31	1.0	20	0	91.6	62 - 128				
1,2-Dibromoethane	18.38	1.0	20	0	91.9	77 - 121				
1,2-Dichlorobenzene	18.95	1.0	20	0	94.7	80 - 119				
1,2-Dichloroethane	21	1.0	20	1.722	96.4	73 - 128				
1,2-Dichloropropane	17.74	1.0	20	0	88.7	78 - 122				
1,3,5-Trimethylbenzene	19.97	1.0	20	0	99.9	75 - 124				
1,3-Dichlorobenzene	19.37	1.0	20	0	96.8	80 - 119				
1,3-Dichloropropane	18.11	1.0	20	0	90.6	80 - 119				
1,4-Dichlorobenzene	19.08	1.0	20	0	95.4	79 - 118				
2,2-Dichloropropane	19.3	1.0	20	0	96.5	60 - 139				
2-Butanone	34.63	2.0	40	0	86.6	56 - 143				
2-Chlorotoluene	20.31	1.0	20	0	102	79 - 122				
2-Hexanone	35.61	2.0	40	0	89.0	57 - 139				
4-Chlorotoluene	19.72	1.0	20	0	98.6	78 - 122				
4-Isopropyltoluene	19.77	1.0	20	0	98.9	77 - 127				
4-Methyl-2-pentanone	35.45	2.0	40	0	88.6	67 - 130				
Acetone	27.39	2.0	40	0	68.5	39 - 160				
Benzene	18.82	1.0	20	0	94.1	79 - 120				
Bromobenzene	18.95	1.0	20	0	94.8	80 - 120				
Bromochloromethane	18.16	1.0	20	0	90.8	78 - 123				
Bromodichloromethane	18.77	1.0	20	0	93.9	79 - 125				
Bromoform	18.15	1.0	20	0	90.8	66 - 130				
Bromomethane	16.5	1.0	20	0	82.5	53 - 141				

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19111401-01MS** Units: **UG/L** Analysis Date: **03-Dec-2019 14:29**
Client ID: **LH18/24-SP650_112619** Run ID: **VOA6_351682** SeqNo: **5371829** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	39.29	2.0	40	0	98.2	64 - 133				
Carbon tetrachloride	19.17	1.0	20	0	95.8	72 - 136				
Chlorobenzene	18.17	1.0	20	0	90.9	82 - 118				
Chloroethane	16.51	1.0	20	0	82.6	60 - 138				
Chloroform	18.15	1.0	20	0	90.8	79 - 124				
Chloromethane	12.09	1.0	20	0	60.4	50 - 139				
cis-1,2-Dichloroethene	80.86	1.0	20	62.51	91.7	78 - 123				
cis-1,3-Dichloropropene	18.52	1.0	20	0	92.6	75 - 124				
Dibromochloromethane	18.21	1.0	20	0	91.1	74 - 126				
Dibromomethane	18.41	1.0	20	0	92.1	79 - 123				
Dichlorodifluoromethane	15.15	1.0	20	0	75.7	32 - 152				
Ethylbenzene	18.96	1.0	20	0	94.8	79 - 121				
Hexachlorobutadiene	14.42	1.0	20	0	72.1	66 - 134				
Isopropylbenzene	19.44	1.0	20	0	97.2	72 - 131				
m,p-Xylene	37.97	2.0	40	0	94.9	80 - 121				
Methylene chloride	23.34	2.0	20	6.029	86.5	74 - 124				
Naphthalene	15.19	1.0	20	0	76.0	61 - 128				
n-Butylbenzene	20.24	1.0	20	0	101	75 - 128				
n-Propylbenzene	20.15	1.0	20	0	101	76 - 126				
o-Xylene	18.53	1.0	20	0	92.7	78 - 122				
sec-Butylbenzene	20.44	1.0	20	0	102	77 - 126				
Styrene	18.76	1.0	20	0	93.8	78 - 123				
tert-Butylbenzene	20.37	1.0	20	0	102	78 - 124				
Tetrachloroethene	18.47	1.0	20	0	92.3	74 - 129				
Toluene	18.9	1.0	20	0	94.5	80 - 121				
trans-1,2-Dichloroethene	19.15	1.0	20	0	95.7	75 - 124				
trans-1,3-Dichloropropene	18.49	1.0	20	0	92.5	73 - 127				
Trichloroethene	30.69	1.0	20	11.54	95.7	79 - 123				
Trichlorofluoromethane	18.82	1.0	20	0	94.1	65 - 141				
Vinyl chloride	16.77	1.0	20	0.6565	80.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.39*	*1.0*	*50*	*0*	*103*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.46*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*49.88*	*1.0*	*50*	*0*	*99.8*	*80 - 119*				
Surr: Toluene-d8	*47.56*	*1.0*	*50*	*0*	*95.1*	*89 - 112*				

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19111401-01MSD** Units: **UG/L** Analysis Date: **03-Dec-2019 14:53**
Client ID: **LH18/24-SP650_112619** Run ID: **VOA6_351682** SeqNo: **5371830** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.59	1.0	20	0	88.0	78 - 124	18.33	4.12	20	
1,1,1-Trichloroethane	19.42	1.0	20	0	97.1	74 - 131	19.53	0.555	20	
1,1,2,2-Tetrachloroethane	18.32	1.0	20	0	91.6	71 - 121	18.42	0.547	20	
1,1,2-Trichloroethane	17.75	1.0	20	0	88.7	80 - 119	18.23	2.71	20	
1,1-Dichloroethane	18.54	1.0	20	0	92.7	77 - 125	18.89	1.83	20	
1,1-Dichloroethene	17.24	1.0	20	0	86.2	71 - 131	18.05	4.58	20	
1,1-Dichloropropene	18.49	1.0	20	0	92.4	78 - 125	19.23	3.9	20	
1,2,3-Trichlorobenzene	17.59	1.0	20	0	88.0	69 - 129	15.42	13.1	20	
1,2,3-Trichloropropane	18.5	1.0	20	0	92.5	73 - 122	18.46	0.24	20	
1,2,4-Trichlorobenzene	16.5	1.0	20	0	82.5	69 - 130	15.65	5.3	20	
1,2,4-Trimethylbenzene	18.95	1.0	20	0	94.7	76 - 124	19.68	3.81	20	
1,2-Dibromo-3-chloropropane	17.49	1.0	20	0	87.4	62 - 128	18.31	4.61	20	
1,2-Dibromoethane	17.57	1.0	20	0	87.9	77 - 121	18.38	4.49	20	
1,2-Dichlorobenzene	18.46	1.0	20	0	92.3	80 - 119	18.95	2.62	20	
1,2-Dichloroethane	20.93	1.0	20	1.722	96.1	73 - 128	21	0.321	20	
1,2-Dichloropropane	17.75	1.0	20	0	88.8	78 - 122	17.74	0.0586	20	
1,3,5-Trimethylbenzene	19.23	1.0	20	0	96.2	75 - 124	19.97	3.78	20	
1,3-Dichlorobenzene	18.76	1.0	20	0	93.8	80 - 119	19.37	3.18	20	
1,3-Dichloropropane	17.61	1.0	20	0	88.1	80 - 119	18.11	2.81	20	
1,4-Dichlorobenzene	18.56	1.0	20	0	92.8	79 - 118	19.08	2.74	20	
2,2-Dichloropropane	19.14	1.0	20	0	95.7	60 - 139	19.3	0.851	20	
2-Butanone	35.18	2.0	40	0	87.9	56 - 143	34.63	1.56	20	
2-Chlorotoluene	19.8	1.0	20	0	99.0	79 - 122	20.31	2.54	20	
2-Hexanone	34.9	2.0	40	0	87.3	57 - 139	35.61	1.99	20	
4-Chlorotoluene	19.29	1.0	20	0	96.4	78 - 122	19.72	2.2	20	
4-Isopropyltoluene	18.87	1.0	20	0	94.3	77 - 127	19.77	4.67	20	
4-Methyl-2-pentanone	34.5	2.0	40	0	86.2	67 - 130	35.45	2.71	20	
Acetone	27.8	2.0	40	0	69.5	39 - 160	27.39	1.51	20	
Benzene	18.42	1.0	20	0	92.1	79 - 120	18.82	2.18	20	
Bromobenzene	18.59	1.0	20	0	92.9	80 - 120	18.95	1.93	20	
Bromochloromethane	18.38	1.0	20	0	91.9	78 - 123	18.16	1.18	20	
Bromodichloromethane	18.71	1.0	20	0	93.5	79 - 125	18.77	0.348	20	
Bromoform	17.65	1.0	20	0	88.2	66 - 130	18.15	2.81	20	
Bromomethane	16.54	1.0	20	0	82.7	53 - 141	16.5	0.283	20	

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19111401-01MSD** Units: **UG/L** Analysis Date: **03-Dec-2019 14:53**
Client ID: **LH18/24-SP650_112619** Run ID: **VOA6_351682** SeqNo: **5371830** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	38.31	2.0	40	0	95.8	64 - 133	39.29	2.54	20	
Carbon tetrachloride	18.57	1.0	20	0	92.8	72 - 136	19.17	3.18	20	
Chlorobenzene	17.83	1.0	20	0	89.1	82 - 118	18.17	1.9	20	
Chloroethane	17.41	1.0	20	0	87.1	60 - 138	16.51	5.3	20	
Chloroform	18.01	1.0	20	0	90.1	79 - 124	18.15	0.759	20	
Chloromethane	11.76	1.0	20	0	58.8	50 - 139	12.09	2.78	20	
cis-1,2-Dichloroethene	80.04	1.0	20	62.51	87.6	78 - 123	80.86	1.01	20	
cis-1,3-Dichloropropene	18.04	1.0	20	0	90.2	75 - 124	18.52	2.67	20	
Dibromochloromethane	17.81	1.0	20	0	89.1	74 - 126	18.21	2.23	20	
Dibromomethane	18.59	1.0	20	0	93.0	79 - 123	18.41	0.991	20	
Dichlorodifluoromethane	14.33	1.0	20	0	71.7	32 - 152	15.15	5.51	20	
Ethylbenzene	18.23	1.0	20	0	91.1	79 - 121	18.96	3.97	20	
Hexachlorobutadiene	14.51	1.0	20	0	72.5	66 - 134	14.42	0.616	20	
Isopropylbenzene	18.57	1.0	20	0	92.8	72 - 131	19.44	4.62	20	
m,p-Xylene	36.62	2.0	40	0	91.6	80 - 121	37.97	3.62	20	
Methylene chloride	22.94	2.0	20	6.029	84.6	74 - 124	23.34	1.7	20	
Naphthalene	17.05	1.0	20	0	85.3	61 - 128	15.19	11.6	20	
n-Butylbenzene	18.99	1.0	20	0	95.0	75 - 128	20.24	6.37	20	
n-Propylbenzene	19.41	1.0	20	0	97.1	76 - 126	20.15	3.7	20	
o-Xylene	17.95	1.0	20	0	89.7	78 - 122	18.53	3.22	20	
sec-Butylbenzene	19.2	1.0	20	0	96.0	77 - 126	20.44	6.26	20	
Styrene	18.16	1.0	20	0	90.8	78 - 123	18.76	3.25	20	
tert-Butylbenzene	19.21	1.0	20	0	96.0	78 - 124	20.37	5.86	20	
Tetrachloroethene	17.85	1.0	20	0	89.3	74 - 129	18.47	3.38	20	
Toluene	18.07	1.0	20	0	90.4	80 - 121	18.9	4.46	20	
trans-1,2-Dichloroethene	18.83	1.0	20	0	94.1	75 - 124	19.15	1.67	20	
trans-1,3-Dichloropropene	18.32	1.0	20	0	91.6	73 - 127	18.49	0.909	20	
Trichloroethene	30.03	1.0	20	11.54	92.4	79 - 123	30.69	2.18	20	
Trichlorofluoromethane	18.06	1.0	20	0	90.3	65 - 141	18.82	4.11	20	
Vinyl chloride	15.94	1.0	20	0.6565	76.4	58 - 137	16.77	5.1	20	
Surr: 1,2-Dichloroethane-d4	*50.53*	*1.0*	*50*	*0*	*101*	*81 - 118*	*51.39*	*1.69*	*20*	
Surr: 4-Bromofluorobenzene	*50.37*	*1.0*	*50*	*0*	*101*	*85 - 114*	*50.46*	*0.183*	*20*	
Surr: Dibromofluoromethane	*50.26*	*1.0*	*50*	*0*	*101*	*80 - 119*	*49.88*	*0.747*	*20*	
Surr: Toluene-d8	*46.82*	*1.0*	*50*	*0*	*93.6*	*89 - 112*	*47.56*	*1.57*	*20*	

ALS Houston, US Date: 04-Dec-19

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder:	HS19111401

QC BATCH REPORT

Batch ID:	**R351682 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19111401-01 HS19111401-02

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: HS19111401

QC BATCH REPORT

Batch ID: R351781 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW2-120319** Units: **mg/L** Analysis Date: **04-Dec-2019 03:54**
Client ID: Run ID: **ICS-Integrion_351781** SeqNo: **5373567** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW2-120319** Units: **mg/L** Analysis Date: **04-Dec-2019 04:10**
Client ID: Run ID: **ICS-Integrion_351781** SeqNo: **5373568** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.08	0.500	20	0	100	80 - 120				
Sulfate	20.63	0.500	20	0	103	80 - 120				

LCSD Sample ID: **WLCSDW2-120319** Units: **mg/L** Analysis Date: **04-Dec-2019 04:27**
Client ID: Run ID: **ICS-Integrion_351781** SeqNo: **5373569** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.11	0.500	20	0	101	80 - 120	20.08	0.154	20	
Sulfate	20.61	0.500	20	0	103	80 - 120	20.63	0.0868	20	

MS Sample ID: **HS19111065-09MS** Units: **mg/L** Analysis Date: **04-Dec-2019 07:46**
Client ID: Run ID: **ICS-Integrion_351781** SeqNo: **5373581** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	88.34	2.50	50	40.24	96.2	80 - 120				
Sulfate	255.3	2.50	50	214.1	82.4	80 - 120				O

MSD Sample ID: **HS19111065-09MSD** Units: **mg/L** Analysis Date: **04-Dec-2019 08:03**
Client ID: Run ID: **ICS-Integrion_351781** SeqNo: **5373582** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	88.45	2.50	50	40.24	96.4	80 - 120	88.34	0.119	20	
Sulfate	254.5	2.50	50	214.1	80.8	80 - 120	255.3	0.308	20	O

The following samples were analyzed in this batch: HS19111401-01

ALS Houston, US Date: 04-Dec-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Bi Weekly Samples
WorkOrder: **HS19111401**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 04-Dec-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19111401
Date/Time Received: **27-Nov-2019 10:00**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature 27-Nov-2019 Date
Reviewed by: *RJ Modashia* eSignature 27-Nov-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	3.2c U/c	IR25
Cooler(s)/Kit(s):	24013	
Date/Time sample(s) sent to storage:	11/27/19 12:25	

Water - VOA vials have zero headspace?	Yes ☐	No ☑	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: All Trip Blank vials have headspace > 6mm

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210, Houston, Tx. 77099 ATTN: R.J. Modashia

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT BI-WEEKLY SAMPLES**	
Prepared By: Scott Beesinger	P.O Number

HS19111401

Bhate Environmental Associates. Inc.

Longhorn GW Treatment Plant Bi Weekly Samples

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC	Analyses: CHLORIDE, SULFATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_112619	Water	11/26/19 / 14:00		3	3		HCL	
LH18/24-SP650_112619	Water	11/26/19 / 14:00		1		1	NONE	
Trip Blank	Water	11/26/19		2	2		HCL	

Additional Remarks: **24 hour TAT on VOC sample. Standard TAT on chloride & sulfate**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	11/26/19	14:30									

9For Lab Use Only

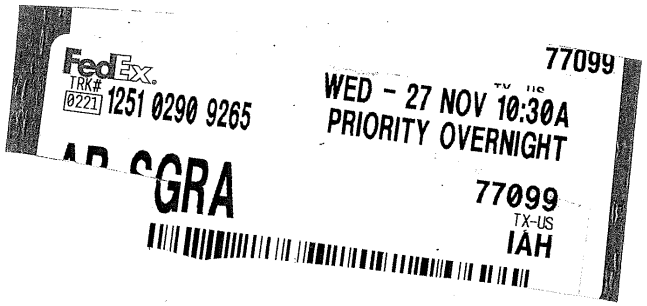
Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
[illegible]	11/27/19	10:00							

Remarks

24013 Temp u/c 3.2

IR # 25.

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly


FedEx
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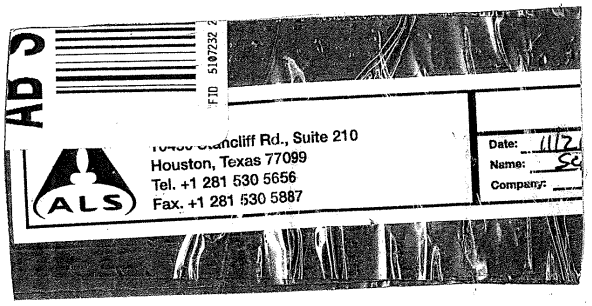
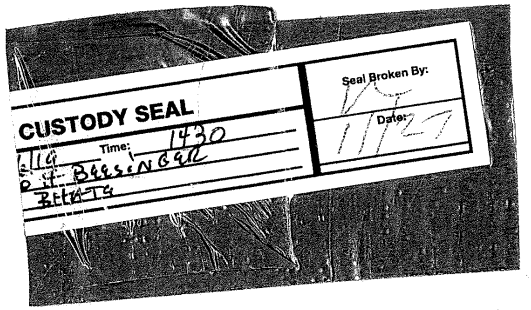
0221 1251 0290 9265
77099
WED - 27 NOV 10:30A
PRIORITY OVERNIGHT
GRA
77099
TX-US
IAH


Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
ALS
Date:
Name:
Company:


CUSTODY SEAL
Time: 1430
Seal Broken By:
Date:

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 18, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100171**

Laboratory Results for: **Longhorn GW Treatment Plant - GWTP Weekly Effluent**

Dear Marcia,

ALS Environmental received 2 sample(s) on Oct 03, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100171

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100171-01	LH18/24-SP650_100119	Groundwater		01-Oct-2019 14:00	03-Oct-2019 08:33	☐
HS19100171-02	LH18/24-SP650_100119_AIX	Groundwater		01-Oct-2019 14:00	03-Oct-2019 08:33	☐

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100171

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

• The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.

WetChemistry by Method E350.3

Batch ID: R347898

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: R347550

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder:HS19100171
Sample ID: LH18/24-SP650_100119
Lab ID:HS19100171-01
Collection Date: 01-Oct-2019 14:00
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: RG
Nitrogen, Ammonia (As N)	**5.2**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	08-Oct-2019 15:15
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: TH
Phosphorus, Total Orthophosphate (As P)	**1.33**	a	**0.100**	**0.250**	**0.250**	**mg/L**	10	03-Oct-2019 12:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	16-Oct-2019 09:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder:HS19100171
Sample ID: LH18/24-SP650_100119_AIX
Lab ID:HS19100171-02
Collection Date: 01-Oct-2019 14:00
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Oct-2019 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100171

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R347550 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Groundwater	
HS19100171-01	LH18/24-SP650_100119	01 Oct 2019 14:00			03 Oct 2019 12:00	10
Batch ID: R347898 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Groundwater	
HS19100171-01	LH18/24-SP650_100119	01 Oct 2019 14:00			08 Oct 2019 15:15	1
Batch ID: R348472 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19100171-01	LH18/24-SP650_100119	01 Oct 2019 14:00			16 Oct 2019 09:24	1
Batch ID: R348532 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS19100171-02	LH18/24-SP650_100119_AIX	01 Oct 2019 14:00			17 Oct 2019 14:54	1

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100171

QC BATCH REPORT

Batch ID: R347550 (0) **Instrument:** UV-2450 **Method:** ORTHO PHOSPHATE (PO4) AS P BY E365.3

MBLK Sample ID: **MBLK-R347550** Units: **mg/L** Analysis Date: **03-Oct-2019 12:00**
Client ID: Run ID: **UV-2450_347550** SeqNo: **5280982** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R347550** Units: **mg/L** Analysis Date: **03-Oct-2019 12:00**
Client ID: Run ID: **UV-2450_347550** SeqNo: **5280981** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.242	0.0250	0.25	0	96.8	85 - 115				

LCSD Sample ID: **LCSD-R347550** Units: **mg/L** Analysis Date: **03-Oct-2019 12:00**
Client ID: Run ID: **UV-2450_347550** SeqNo: **5280980** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.241	0.0250	0.25	0	96.4	85 - 115	0.242	0.414	20	

MS Sample ID: **HS19100171-01MS** Units: **mg/L** Analysis Date: **03-Oct-2019 12:00**
Client ID: **LH18/24-SP650_100119** Run ID: **UV-2450_347550** SeqNo: **5280984** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	3.93	0.250	2.5	1.33	104	80 - 120				

MSD Sample ID: **HS19100171-01MSD** Units: **mg/L** Analysis Date: **03-Oct-2019 12:00**
Client ID: **LH18/24-SP650_100119** Run ID: **UV-2450_347550** SeqNo: **5280983** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	3.85	0.250	2.5	1.33	101	80 - 120	3.93	2.06	20	

The following samples were analyzed in this batch: HS19100171-01

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100171

QC BATCH REPORT

Batch ID: R347898 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-R347898** Units: **mg/L** Analysis Date: **08-Oct-2019 15:15**
Client ID: Run ID: **WetChem_HS_347898** SeqNo: **5287787** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-R347898** Units: **mg/L** Analysis Date: **08-Oct-2019 15:15**
Client ID: Run ID: **WetChem_HS_347898** SeqNo: **5287786** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.09	0.20	10	0	101	80 - 120				

MS Sample ID: **HS19100295-01MS** Units: **mg/L** Analysis Date: **08-Oct-2019 15:15**
Client ID: Run ID: **WetChem_HS_347898** SeqNo: **5287789** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.21	0.20	10	0.546	96.6	80 - 120				

MSD Sample ID: **HS19100295-01MSD** Units: **mg/L** Analysis Date: **08-Oct-2019 15:15**
Client ID: Run ID: **WetChem_HS_347898** SeqNo: **5287788** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.3	0.20	10	0.546	97.5	80 - 120	10.21	0.868	20	

The following samples were analyzed in this batch: HS19100171-01

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: **HS19100171**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 18-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100171

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100171-01	LH18/24-SP650_100119	Login	10/3/2019 11:10:12 AM	JRM	WET133
HS19100171-01	LH18/24-SP650_100119	Login	10/3/2019 11:10:12 AM	JRM	WET133
HS19100171-01	LH18/24-SP650_100119	Login	10/3/2019 11:10:12 AM	JRM	Sub
HS19100171-02	LH18/24-SP650_100119_AIX	Login	10/3/2019 11:10:12 AM	JRM	Sub

ALS Houston, US Date: 18-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100171
Date/Time Received: **03-Oct-2019 08:33**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 3-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 3-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2°C / 1.2°C UC/C	IR25	
Cooler(s)/Kit(s):	45043		
Date/Time sample(s) sent to storage:	10/03/2019 11:15		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE							Remarks (Preservatives, etc.)	Lab I.D.#
					Analyses											
LH18/24-SP650_100119	Water	10/01/19 / 14:00		2	X	X									H2SO4	
LH18/24-SP650_100119	Water	10/01/19 / 14:00		1			X								NONE	
LH18/24-SP650_100119_AIX	Water	10/01/19 / 14:00		1				X							NONE	

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/01/19	14:30									

For Lab Use Only

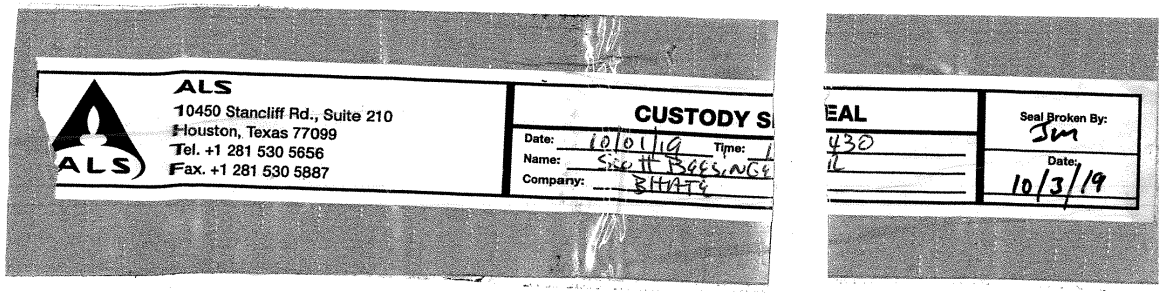
Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
J. Mavenny	10/3/19	08:33							

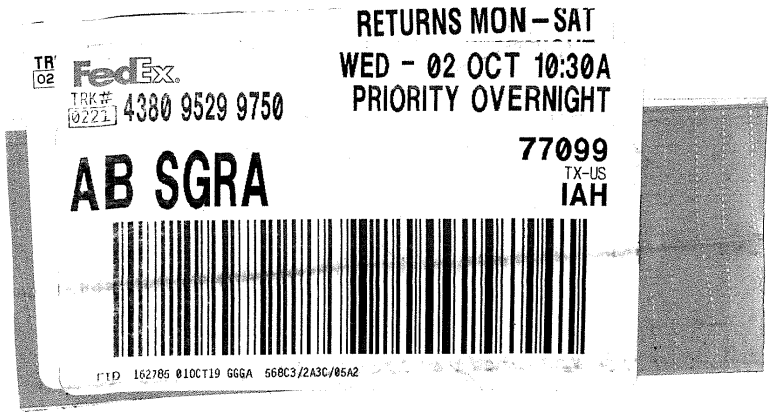
Remarks: Cooler 45043 1225
Temp 1.2 CF0.0

HS19100171

Bhate Environmental Associates, Inc.
ghorn GW Treatment Plant - GWTP Weekly Effluen

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY S
Date: 10/01/19 Time:
Name: SEE # BEESINGE
Company: BHATS
EAL
430
Seal Broken By:
JM
Date:
10/3/19


TR
02
FedEx
TRK#
0221
4380 9529 9750
RETURNS MON-SAT
WED - 02 OCT 10:30A
PRIORITY OVERNIGHT
77099
TX-US
IAH
AB SGRA
ID 162705 01OCT19 GGGA 568C3/2A3C/05A2

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1928465; 1929006; 1929010; 1929013

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2302 (249888)

General Set Information: There were four field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 679039) was less than 1/2 the CRDL. The recovery for the LCS (679040) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1928465001 (Client ID: LH18/24-650_100119_BIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (679041/42) passed QC performance limits for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected**.**

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch October 16, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: October 17, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1928465**
Project ID: HS19100171
Purchase Order: HS19100171
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_100119_AIX	1928465001	10/01/19	10/04/19	

ANALYTICAL REPORT

Workorder: 34-1928465
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_100119_AIX** | Sampling Site: NA | Collected: 10/01/2019
Lab ID: 1928465001 | Media: 125 mL Nalgene | Received: 10/04/2019
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2302 (HBN: 249888) | **%Solids:** NA
Analyzed: 10/15/2019 10:41 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 249888)

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 10/16/2019 07:50	/S/ Stephen Brose 10/17/2019 11:10

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1928465
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1928465

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2302 (HBN: 249888)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 679039
Analyzed: 10/15/2019 10:26
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 679040
Analyzed: 10/15/2019 09:58
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.04	3.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1928465001	**MS:**	679041	**MSD:**	679042
Analyzed:	10/15/2019 10:41	**Analyzed:**	10/15/2019 10:55	**Analyzed:**	10/15/2019 11:09
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.55	3	118	78.8	123.8	2.46	81.9	# 36.5	0.0	20.0

Comments

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
10/16/2019 07:51	10/17/2019 11:10

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

W 1928465

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

18698/# 2

SAMPLING STATE: **Dept of Defense**

COC ID: **12299**

1928465

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100171
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100171-02**	**LH18/24-SP650_100119_AIX**	**Groundwater**	**01 Oct 2019 14:00**
	SUB_Perch-6850			17 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/3/19 1800

Received By: _____ Date/Time: 10/4/19 09:49

Cooler ID(s): _____ Temperature(s): _____

ALS-Salt Lake City-Related Information Report (CRIR)

Cooler or Container Information Checklist (Fill In or Circle)

Project/Task/Site: 1928465

Client Name: ALS Houston

Date/Time of Receipt: 10/4/19 09:49

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA	VOA Headspace Present?	Yes/No/NA
	Frozen/Melted/NA		

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C199901	3 °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: Jaylynn (Signature) Jaylynn Johnson (Printed Name) 10/4/19 (Date)

Client-Related Information

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

Briefly Describe the Problem and the Action Taken:

Client Notified? Yes ☐ No ☐

Response Required Within 24 Hours

Project Management

Project Manager Comments:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 030CT19
ACTWGT: 10.75 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19100171 - RJ

FedEx Express

J181111806050lux

TRK# 0201 **1251 0290 2308**

FRI - 04 OCT 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US **SLC**

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19100171	Split:	Workorder ID: 1928465	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	EPA 6850, DoD QSM	
1	10/01/2019 14:00	LH18/24-SP650_100119_BIX	1928465001		Water	A	1	A	
2		AIX							
3									
4									
5									
6									
7									
8									
9									
10									

24 of 163

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Wofath, Julie	10/04/2019 09:49	ALS Sample Receiving	Sample Login
[signature]	10/4/19 1400	14B	Storage
R-33-1	10.15.19/09:10	T. Bush	CL04 analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00961346

Batch Worklist

Batch: ELMS/ 2302 Created: 10/15/2019 07:51 Instrument: HBN: 249888

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 1928465 [ENV_LVL4]
Workorder: 1929006 [ENV_LVL4]
Workorder: 1929010 [ENV_LVL4]
Workorder: 1929013 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	679036	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	
2	679037	RLVS for HBN 249888 [ELMS/2302				RLVS	3		E685041C3Q	5311		10/17/2019	
3	679038	ICS for HBN 249888 [ELMS/2302]				ICS	3		E6850..D3Q	5311		10/17/2019	
4	679039	LMB for HBN 249888 [ELMS/2302]				LMB	3		E6850Q413Q	5311		10/17/2019	
5	679040	LCS for HBN 249888 [ELMS/2302]				LCS	3		E6850Q413Q	5311		10/17/2019	
6	1928465001	LH18/24-SP650_100119_BIX				SAMPLE	3	1928465001-A	E6850Q41.3	5480	10/29/2019	10/17/2019	
7	679041	LH18/24-SP650...(1928465001MS)				MS	3		E6850Q413Q	5311		10/17/2019	
8	679042	LH18/24-SP65...(1928465001MSD)				MSD	3		E6850Q413Q	5311		10/17/2019	
9	1929006001	LH18/24-SP140_100819				SAMPLE	3	1929006001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
10	1929010001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929010001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
11	1929013001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929013001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
12	679043	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1928465 (001); 1929006 (001); 1929010 (001); 1929013 (001)
ELMS Batch/HBN ID: 2302 (249888)
Prep Date: 10/15/2019 Analysis Date: 10/15/2019 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Thomas Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 679040; Target = 3.0µg/L. ASTM type II water was used for LMB 679039.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1928465001 (Client ID's: LH18/24-650_100119_BIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (679041/42) passed QC acceptance criteria for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\249888-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2302 HBN: 249888 **Sample Set IDs if Applicable:** 1928465/1929006/1929010/1929013	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/23/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		**Description - 6850 QC Stock STD 1,000ug/mL**
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 47515
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided
Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM
Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

AccuStandard

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 6/18

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

250 SMITH STREET • NORTH KINGSTOWN, RHODE ISLAND 02852 • WWW.ULTRASCI.COM

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc. Certificate of Analysis

S 47863

Product Name: (Isotopic Label & Enrichment Specification) PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
MW*: *For isotopically labeled compounds, MW listed is for the fully enriched product.	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\15OCT19D\15OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	679036 CCV@25	Vial 71	1	Control	1	1.33443e6	7.526	26.88759
*	679040 QC@3.0	Vial 72	1	Control	2	1.73380e5	7.567	3.03903
*	679038 ICS@3.0	Vial 73	1	Control	3	1.13696e5	7.369	3.02285
*	679039 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1928465001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	679041 284651S	Vial 76	1	Sample	6	1.33460e5	7.290	3.55332
*	679042 284651D	Vial 77	1	Sample	7	1.25808e5	7.285	2.45603
*	1929006001 1K	Vial 78	1	Sample	8	5.72391e5	7.634	1.23264e4
*	1929010001	Vial 79	1	Sample	9	2.36643e5	7.246	6.04458
*	1929013001	Vial 80	1	Sample	10	2.42664e5	7.272	6.91662
*	679043 CCV@25	Vial 71	1	Control	11	1.14959e6	7.592	26.90349

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	679036 CCV@25	Vial 71	1	Control	1	1.68268e5	7.544	5.00000
*	679040 QC@3.0	Vial 72	1	Control	2	2.09952e5	7.575	5.00000
*	679038 ICS@3.0	Vial 73	1	Control	3	1.38406e5	7.393	5.00000
*	679039 LMB	Vial 74	1	Control	4	1.78248e5	7.632	5.00000
*	1928465001	Vial 75	1	Sample	5	2.08517e5	7.256	5.00000
*	679041 284651S	Vial 76	1	Sample	6	1.38428e5	7.310	5.00000
*	679042 284651D	Vial 77	1	Sample	7	1.87824e5	7.294	5.00000
*	1929006001 1K	Vial 78	1	Sample	8	1.67142e5	7.648	5000.00000
*	1929010001	Vial 79	1	Sample	9	1.43998e5	7.264	5.00000
*	1929013001	Vial 80	1	Sample	10	1.28749e5	7.294	5.00000
*	679043 CCV@25	Vial 71	1	Control	11	1.44866e5	7.612	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	679036 CCV@25	Vial 71	1	Control	1	4.04332e5	7.548	26.75019
*	679040 QC@3.0	Vial 72	1	Control	2	5.40492e4	7.595	3.01622
*	679038 ICS@3.0	Vial 73	1	Control	3	3.88200e4	7.382	3.29691
*	679039 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1928465001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	679041 284651S	Vial 76	1	Sample	6	4.67868e4	7.298	3.99450
*	679042 284651D	Vial 77	1	Sample	7	4.45366e4	7.299	2.76816
*	1929006001 1K	Vial 78	1	Sample	8	1.69566e5	7.658	1.19081e4
*	1929010001	Vial 79	1	Sample	9	8.15441e4	7.262	6.72364
*	1929013001	Vial 80	1	Sample	10	7.97082e4	7.290	7.34615
*	679043 CCV@25	Vial 71	1	Control	11	3.49798e5	7.619	26.86882

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.S

Sequence Table:

Method and Injection Info Part:

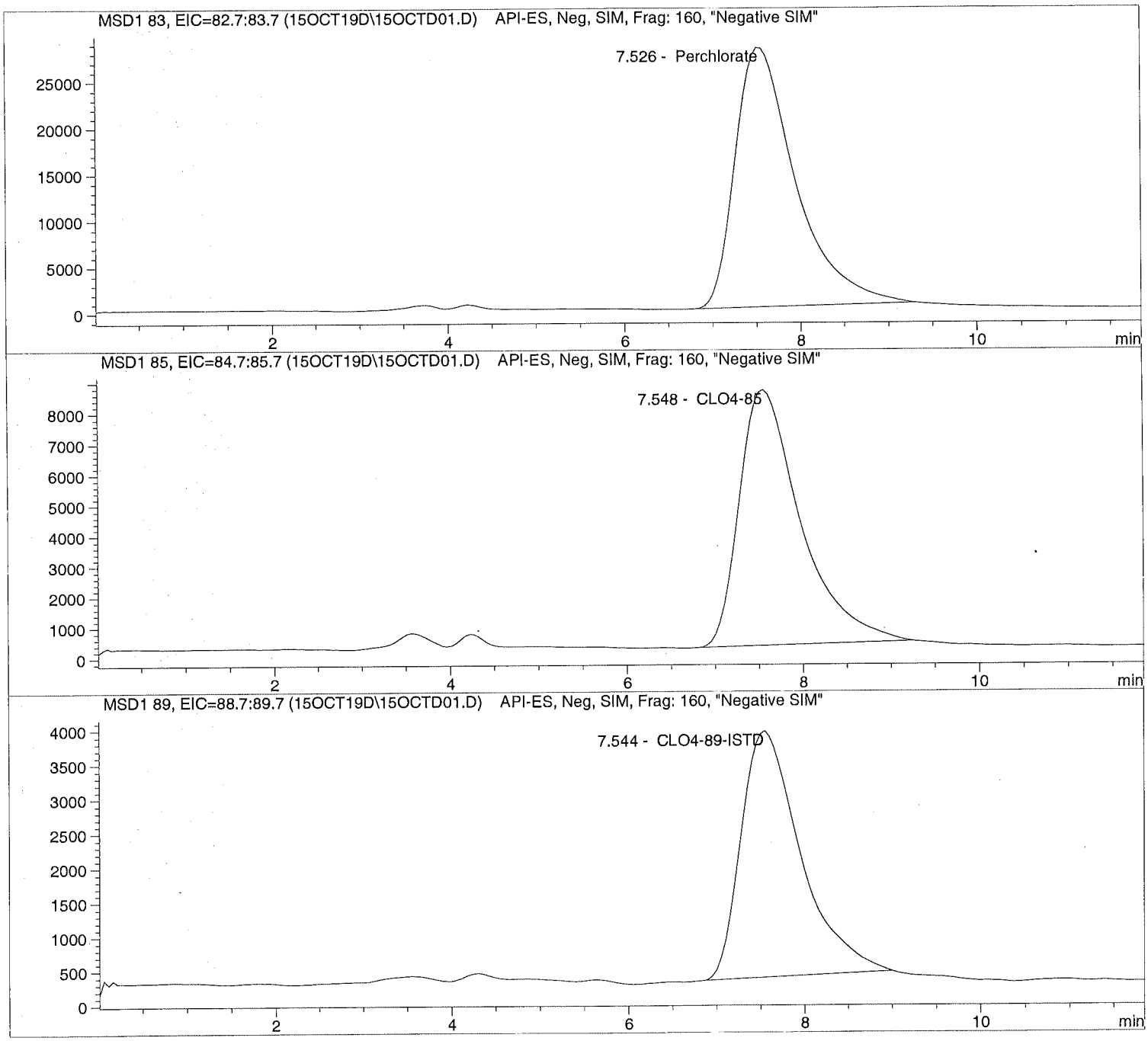
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	679036 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	679040 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	679038 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	679039 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1928465001	CLO4-AQN	1	Sample		
6	Vial 76	679041 284651S	CLO4-AQN	1	Sample		
7	Vial 77	679042 284651D	CLO4-AQN	1	Sample		
8	Vial 78	1929006001 1K	CLO4-AQN	1	Sample		
9	Vial 79	1929010001	CLO4-AQN	1	Sample		
10	Vial 80	1929013001	CLO4-AQN	1	Sample		
11	Vial 71	679043 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.526	PBA	1334425.5	26.8876	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.548	PBA	404331.7	26.7502	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.544	PBA	168268.3	5.0000	CLO4-89-ISTD

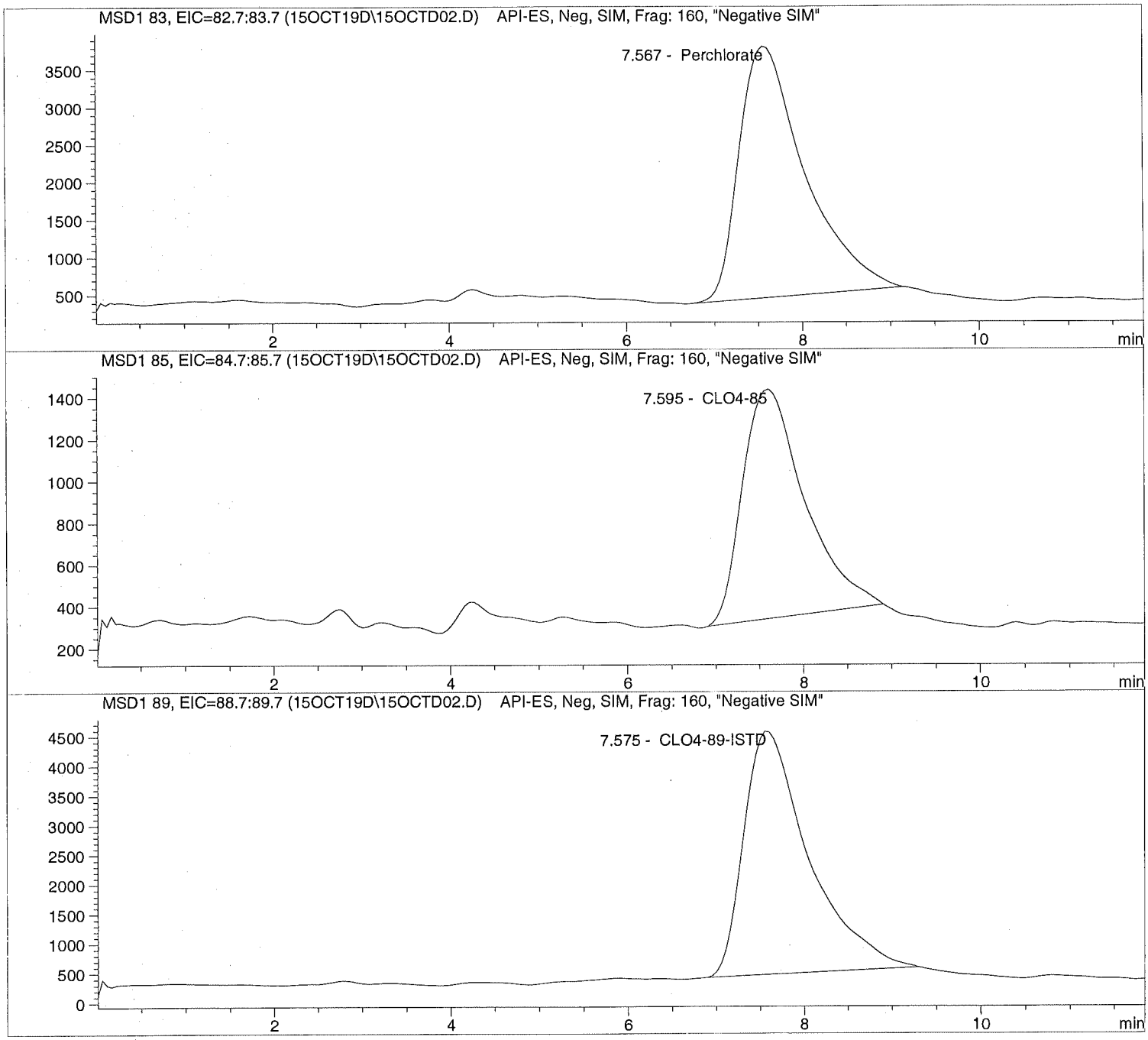
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.567	PBA	173380.0	3.0390	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.595	PBA	54049.2	3.0162	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	209951.5	5.0000	CLO4-89-ISTD

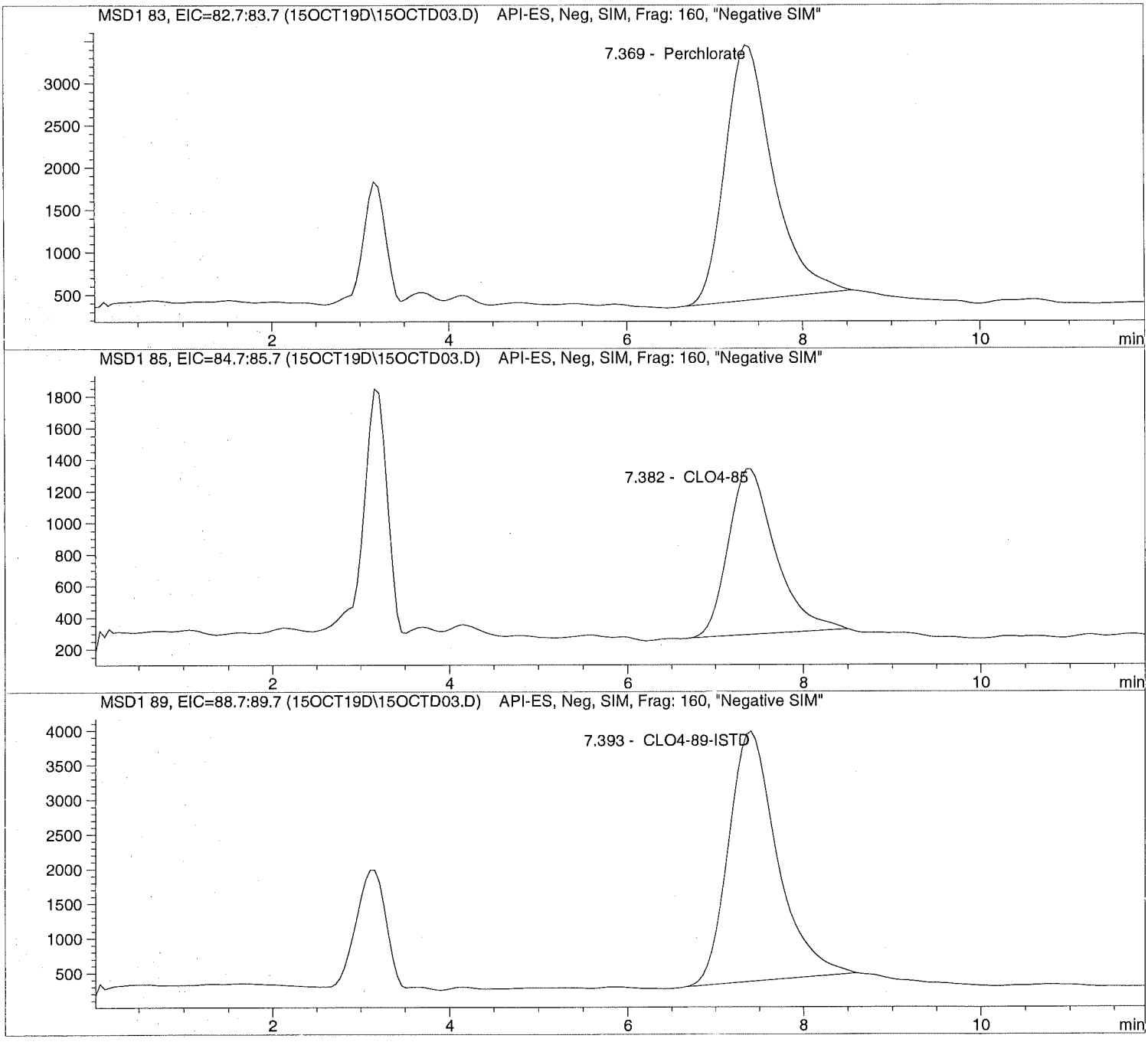
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.369	PBA	113696.3	3.0228	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.382	PBA	38820.0	3.2969	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.393	PBA	138406.3	5.0000	CLO4-89-ISTD

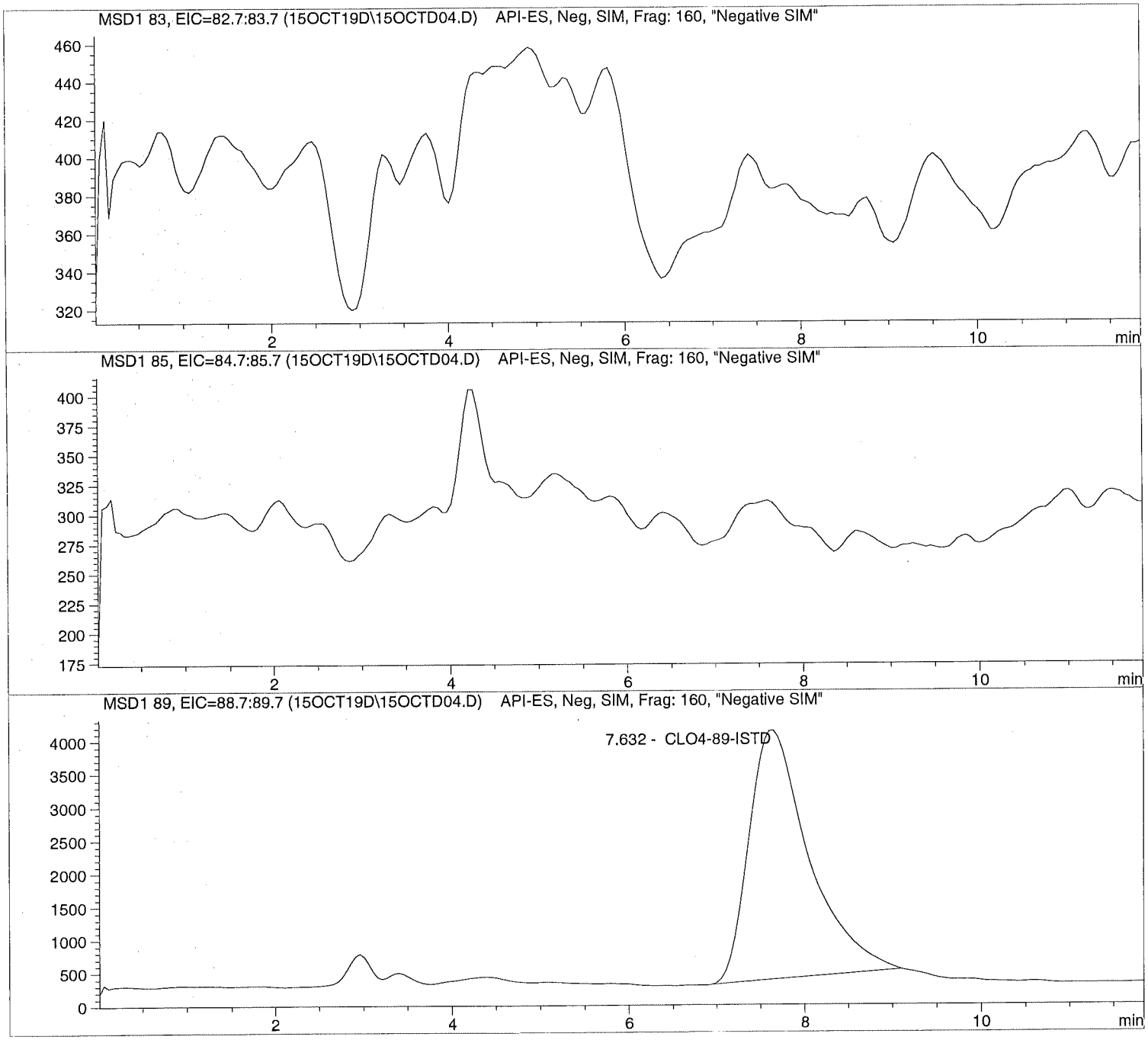
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.632	PBA	178247.9	5.0000	CLO4-89-ISTD

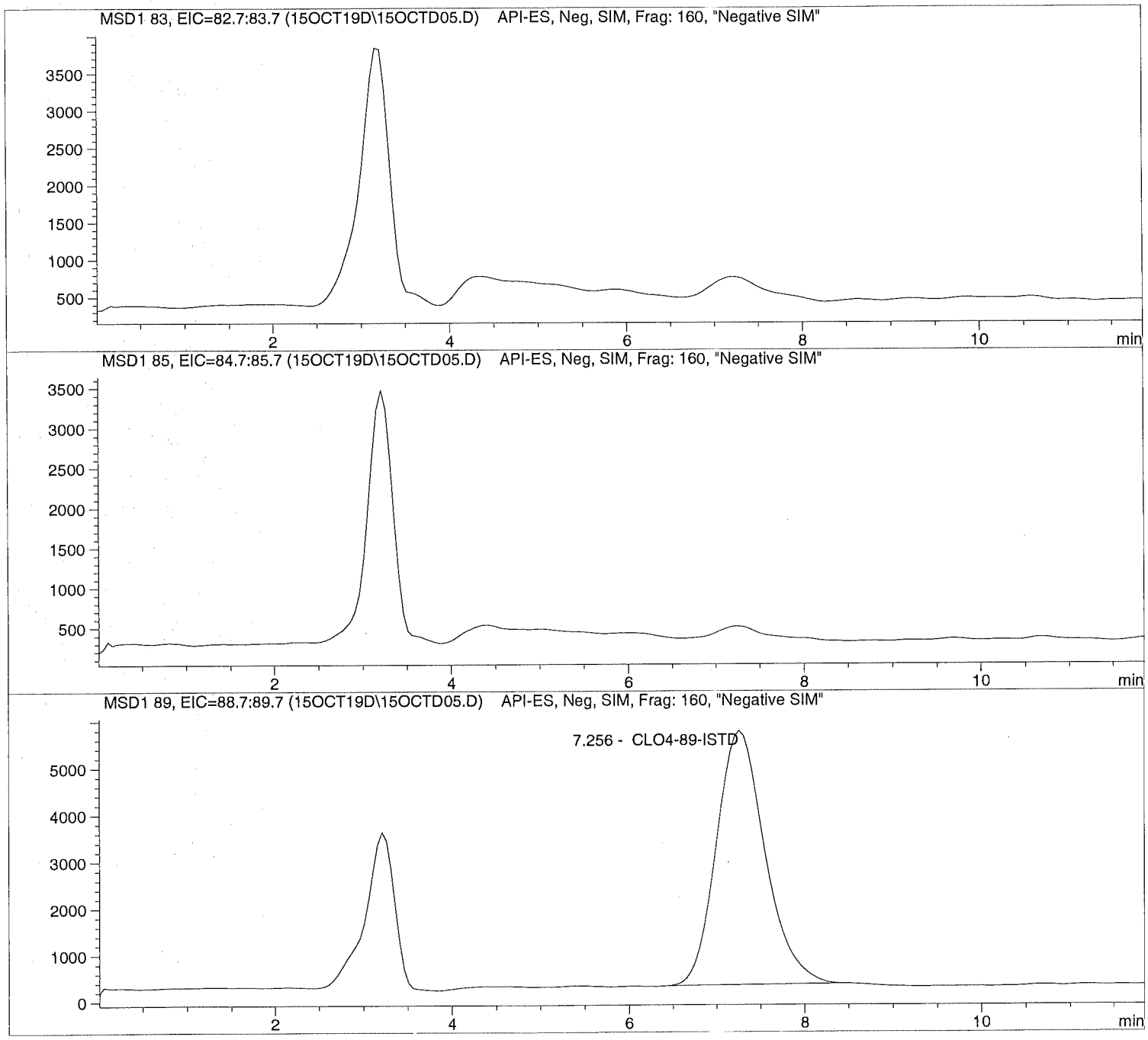
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.256	PBA	208516.8	5.0000	CLO4-89-ISTD

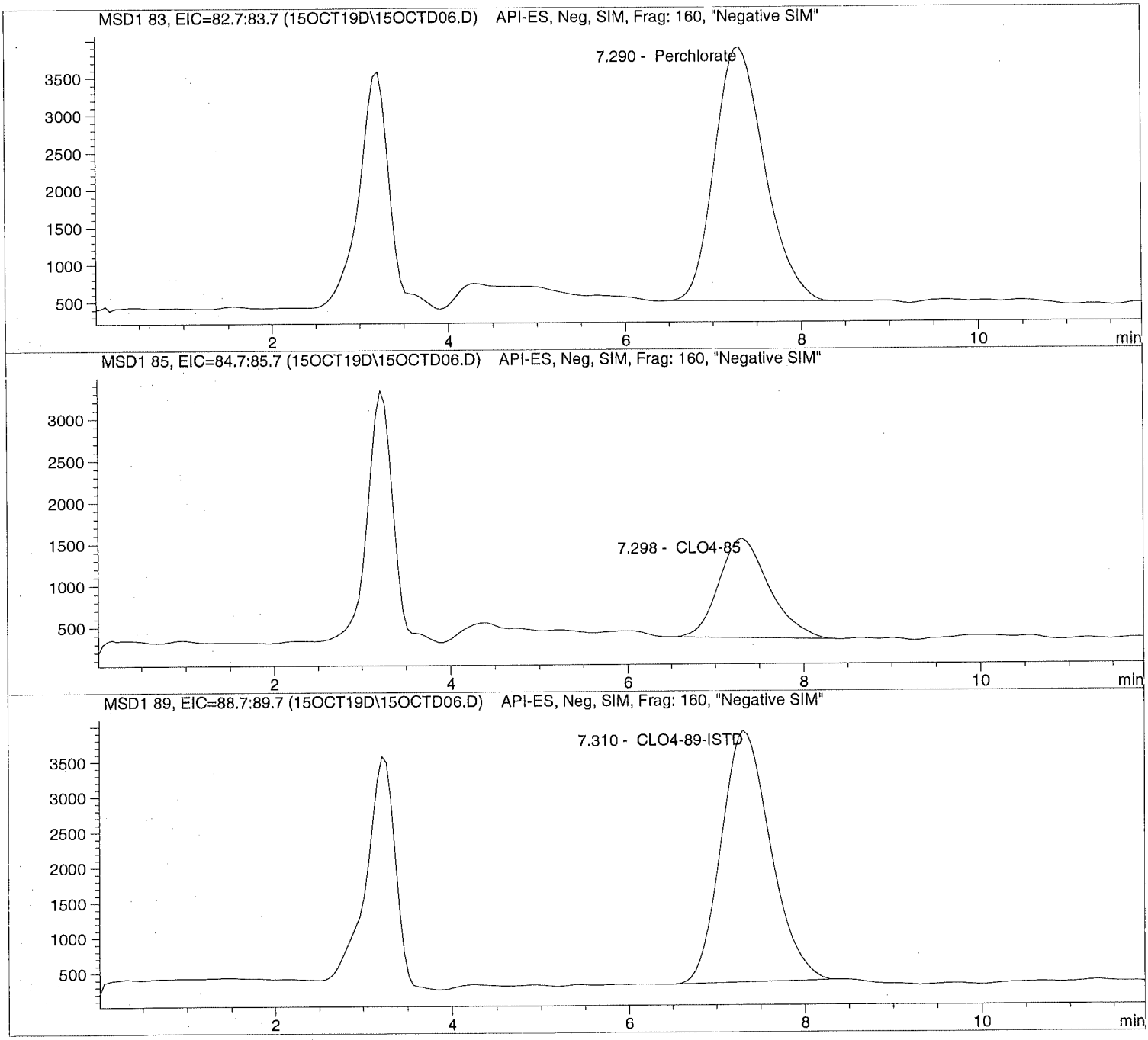
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	133460.4	3.5533	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.298	PBA	46786.8	3.9945	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.310	PBA	138427.8	5.0000	CLO4-89-ISTD

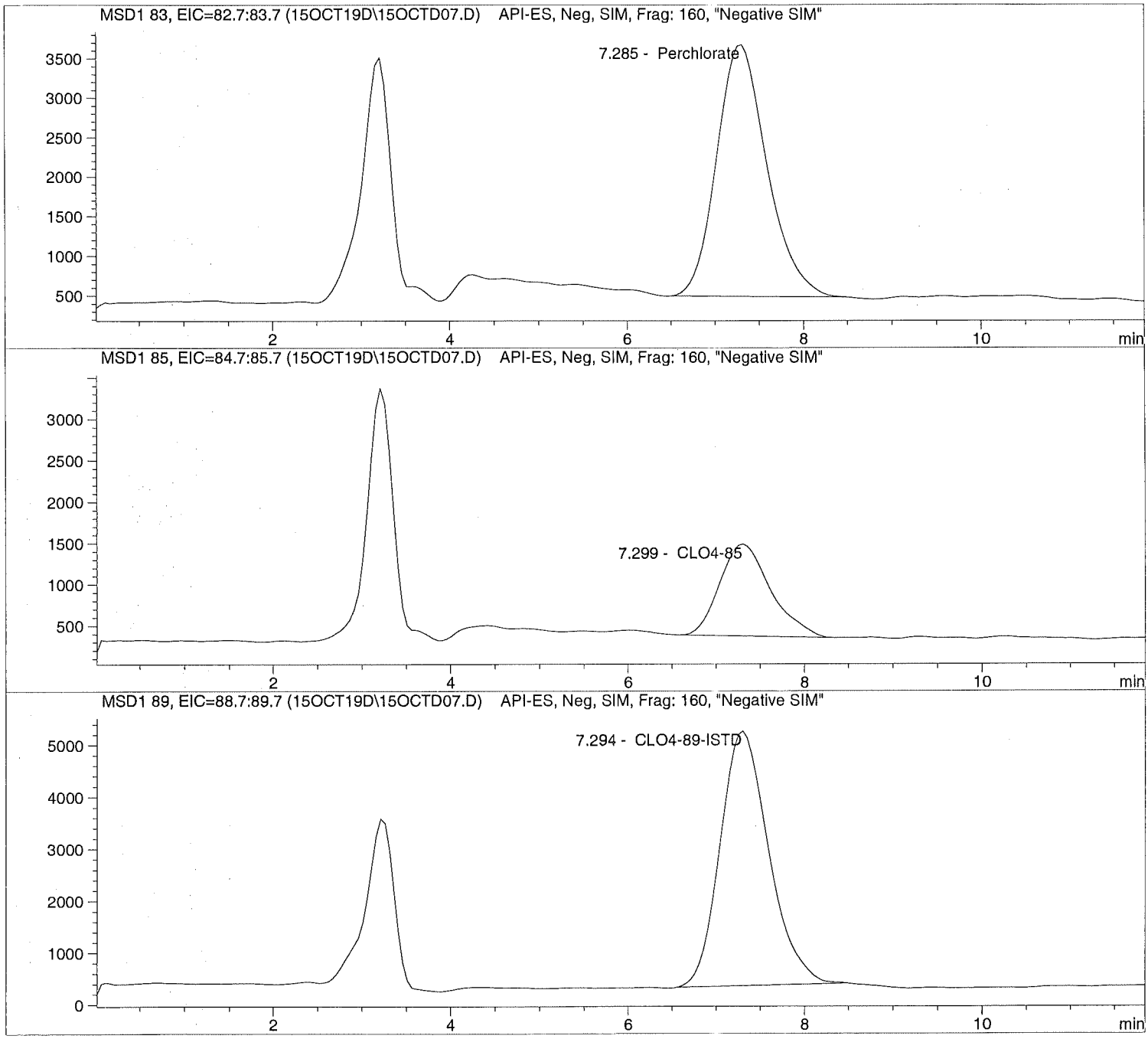
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.285	PBA	125808.1	2.4560	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.299	PBA	44536.6	2.7682	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	PBA	187823.9	5.0000	CLO4-89-ISTD

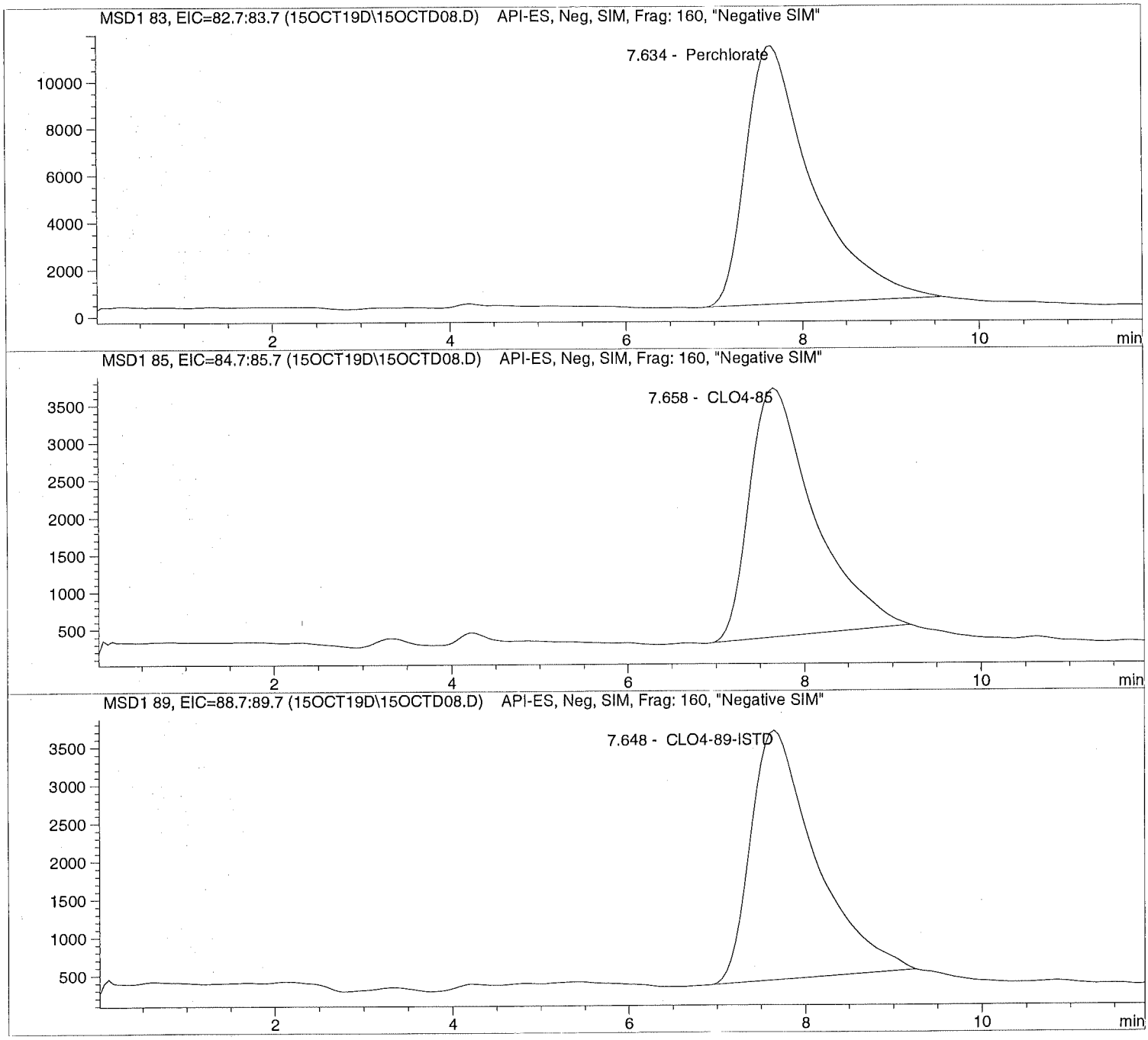
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.634	PBA	572391.3	12326.3509	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.658	PBA	169565.9	11908.1208	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.648	PBA	167142.0	5000.0000	CLO4-89-ISTD

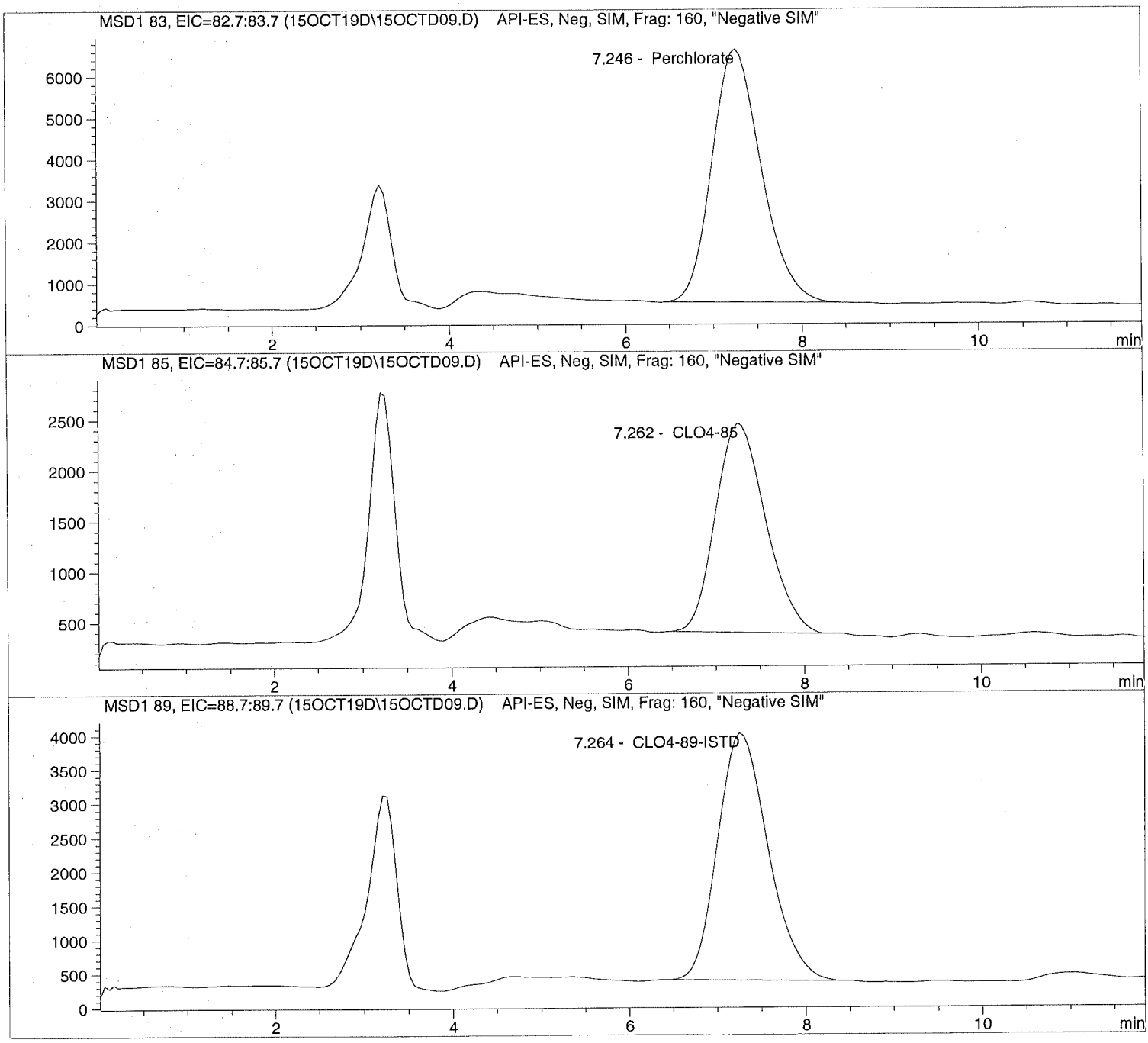
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.246	PBA	236643.2	6.0446	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.262	PBA	81544.1	6.7236	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.264	BBA	143998.5	5.0000	CLO4-89-ISTD

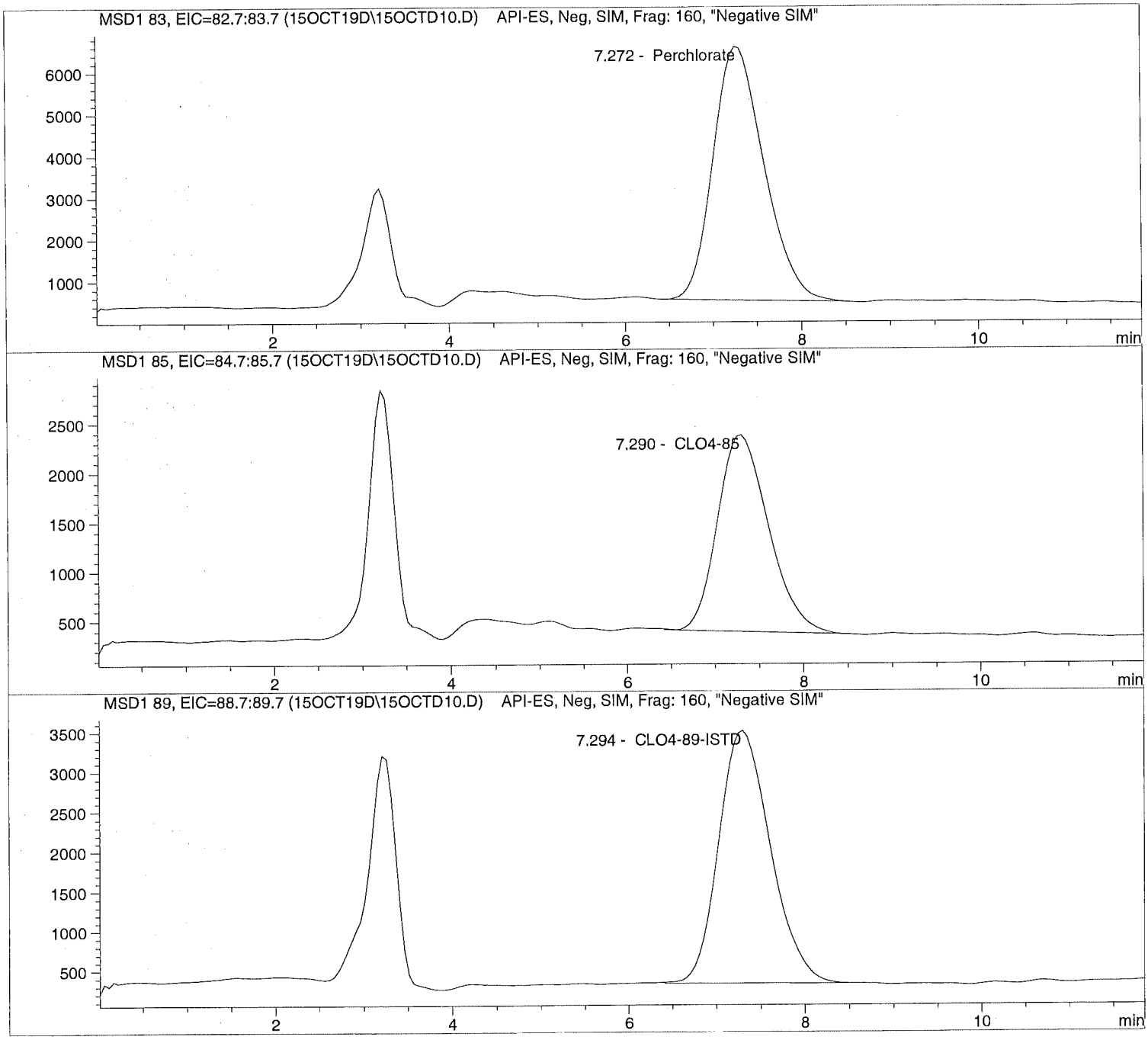
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.272	PBA	242664.3	6.9166	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	BBA	79708.2	7.3461	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	BBA	128749.2	5.0000	CLO4-89-ISTD

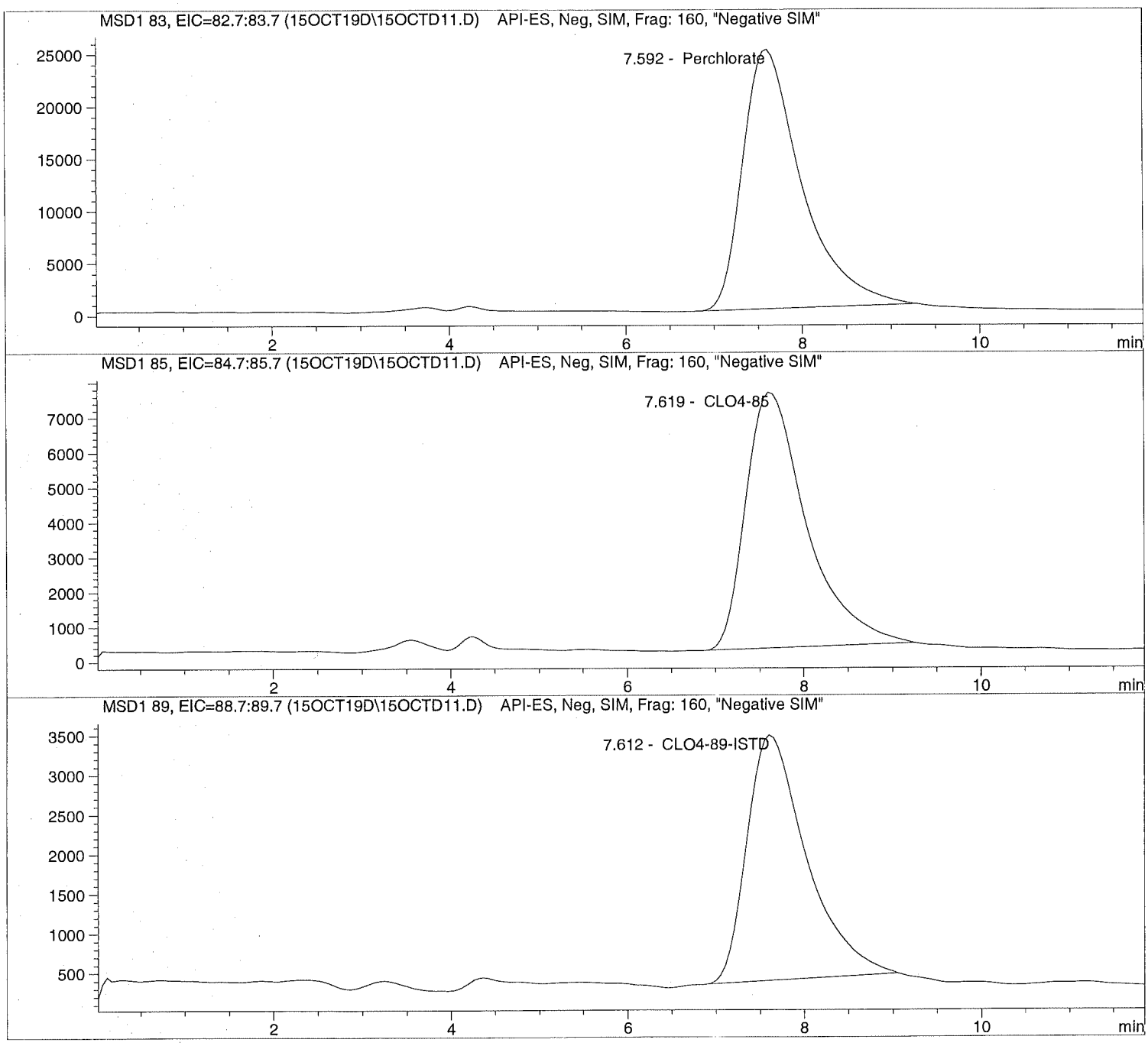
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.592	PBA	1149594.9	26.9035	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.619	PBA	349797.9	26.8688	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.612	PBA	144866.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Lvl Sig		Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

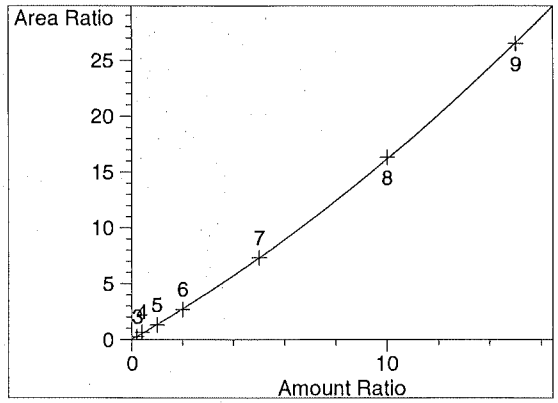
Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

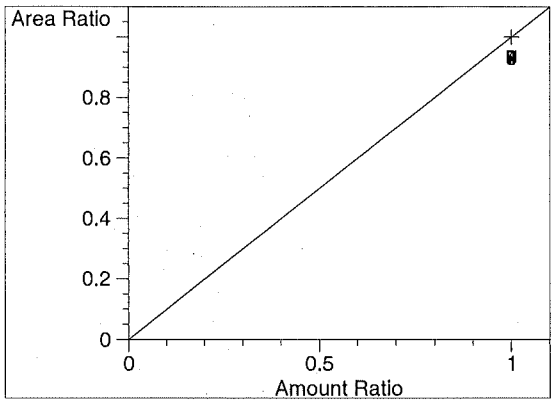
Peak Sum Table

No Entries in table

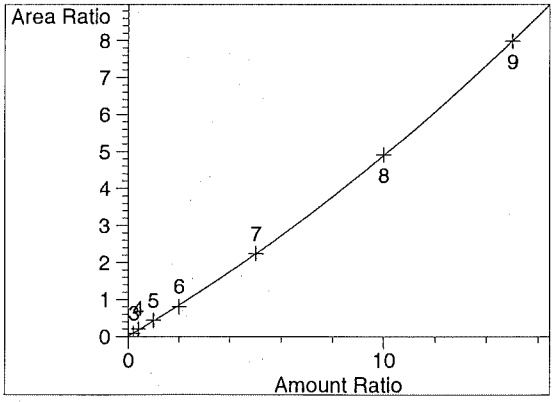
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

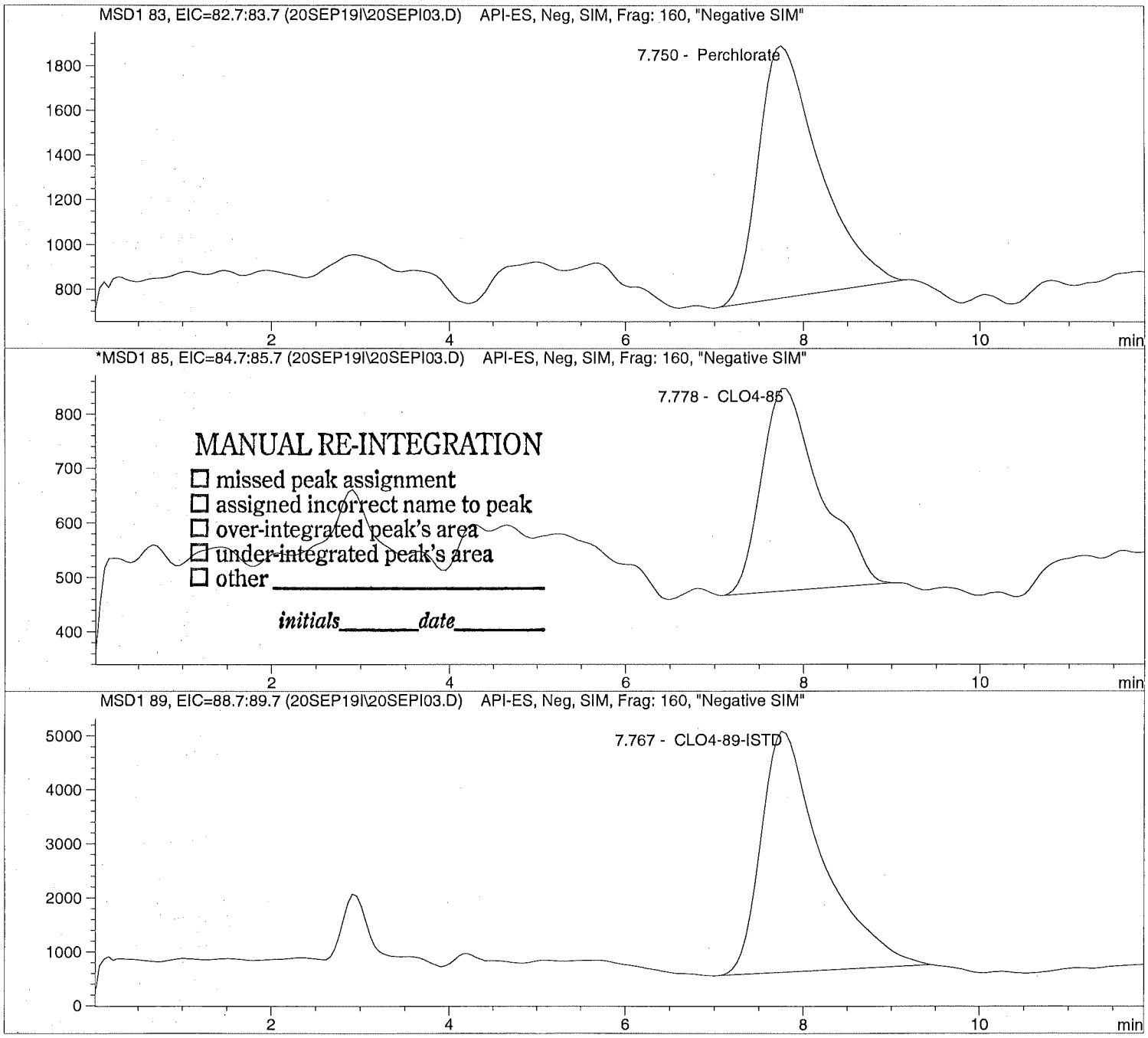
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

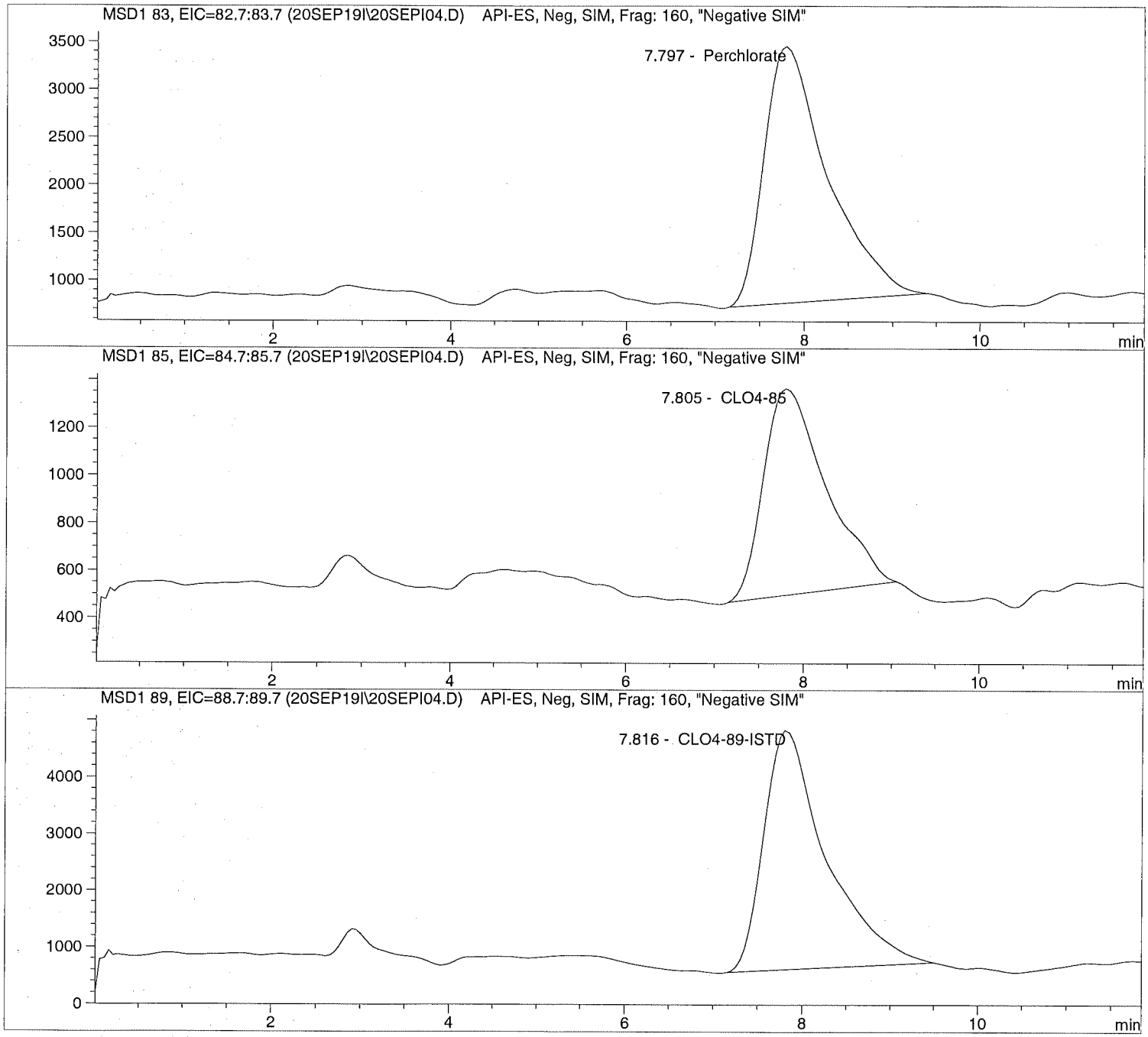
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

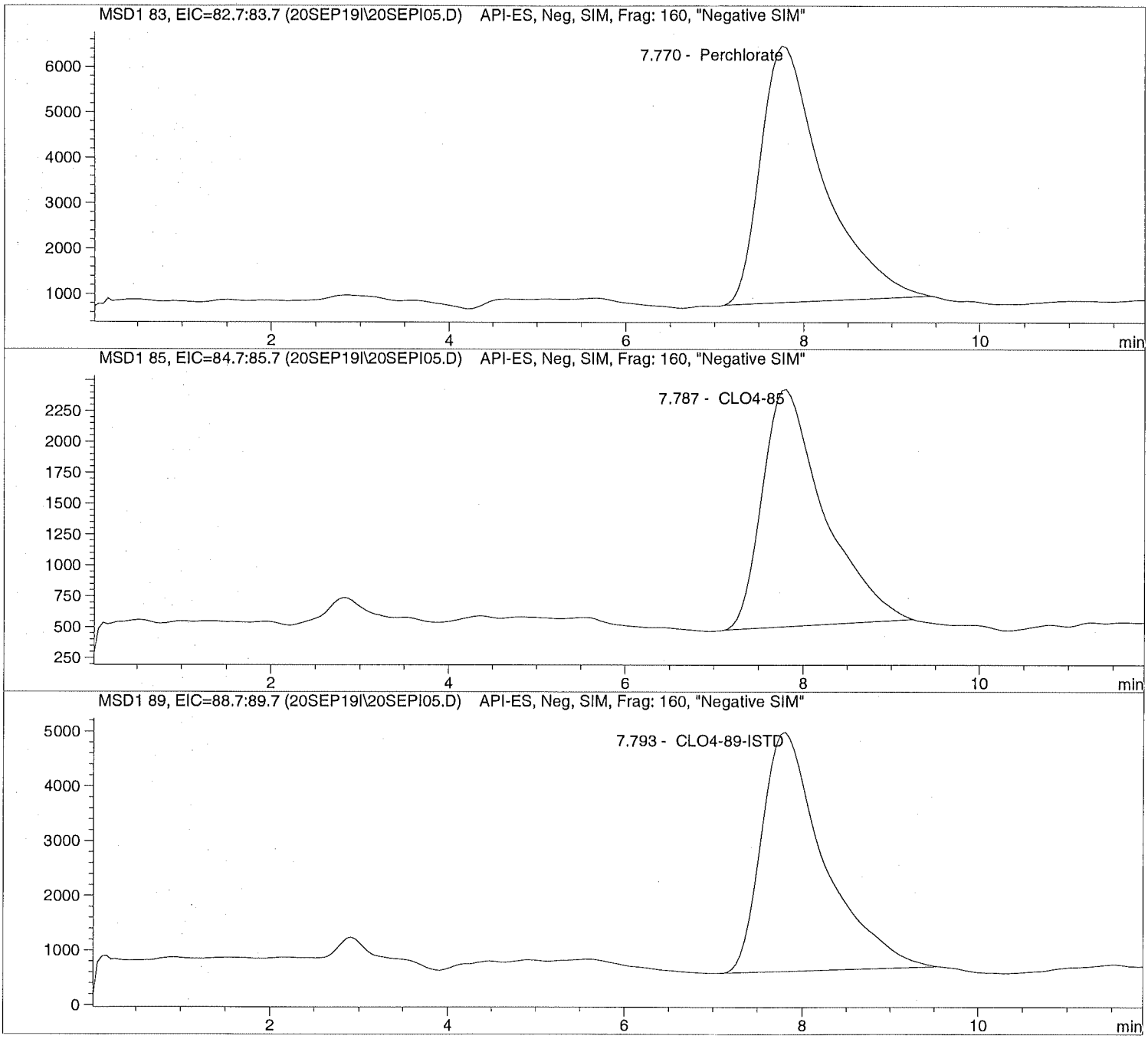
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

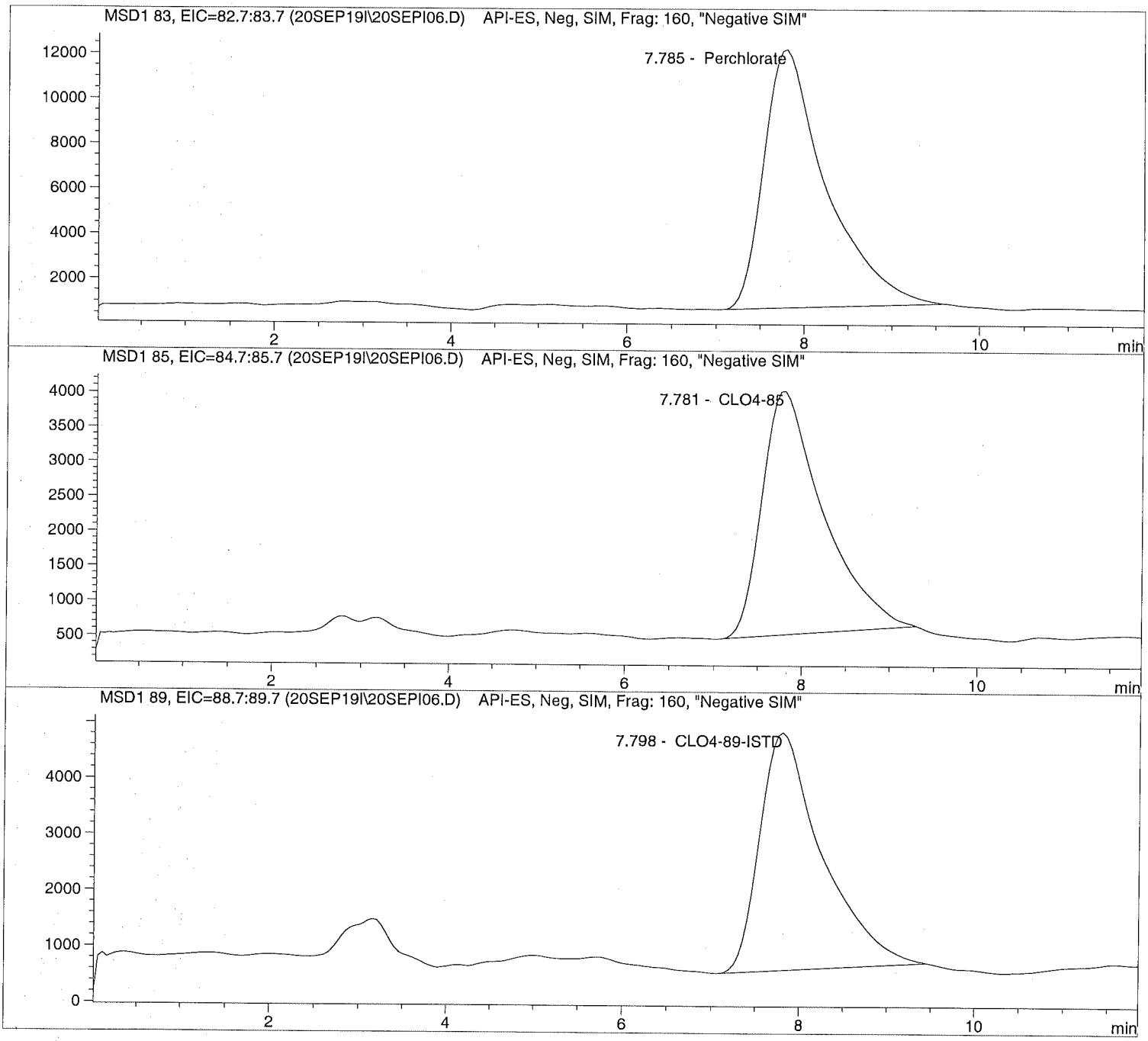
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

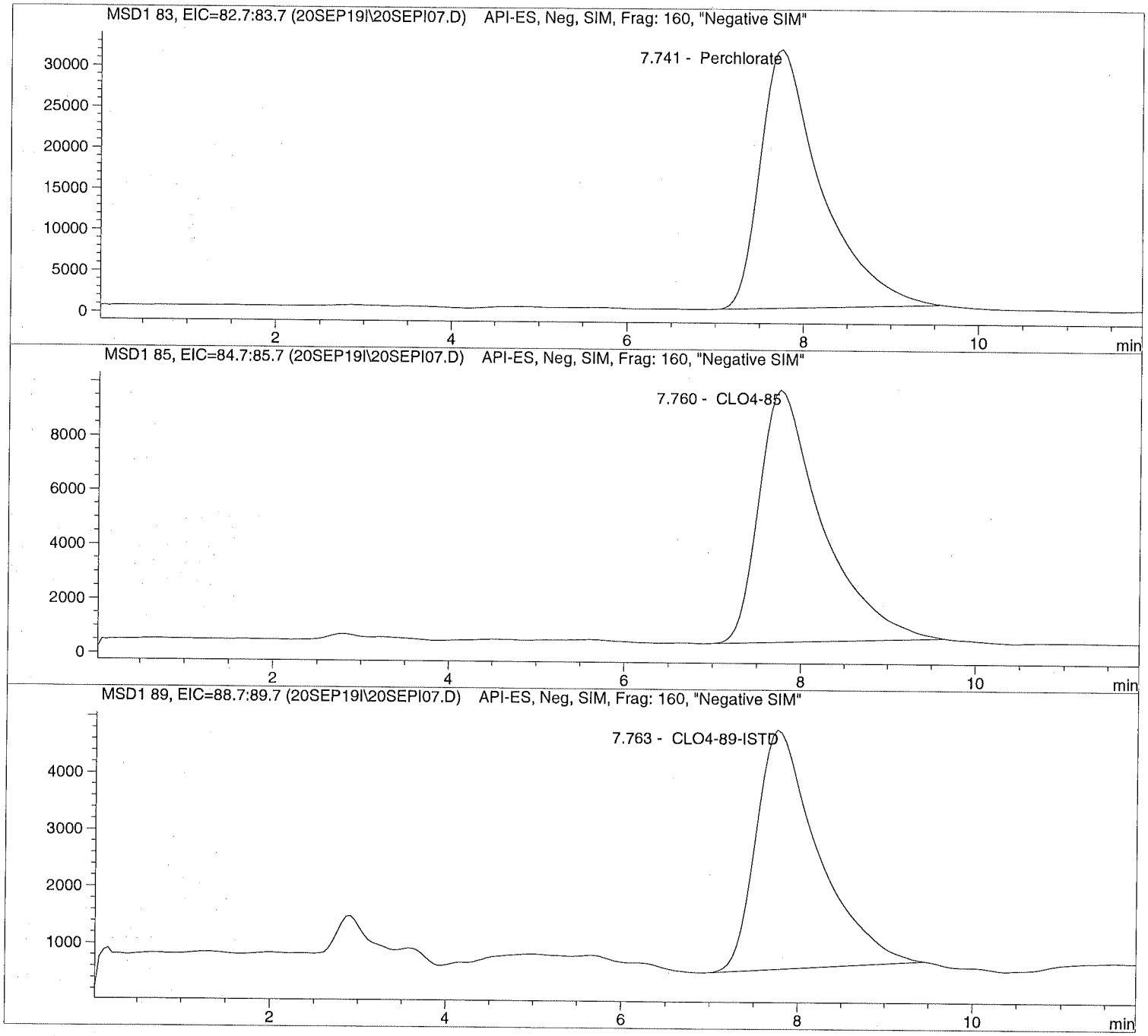
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

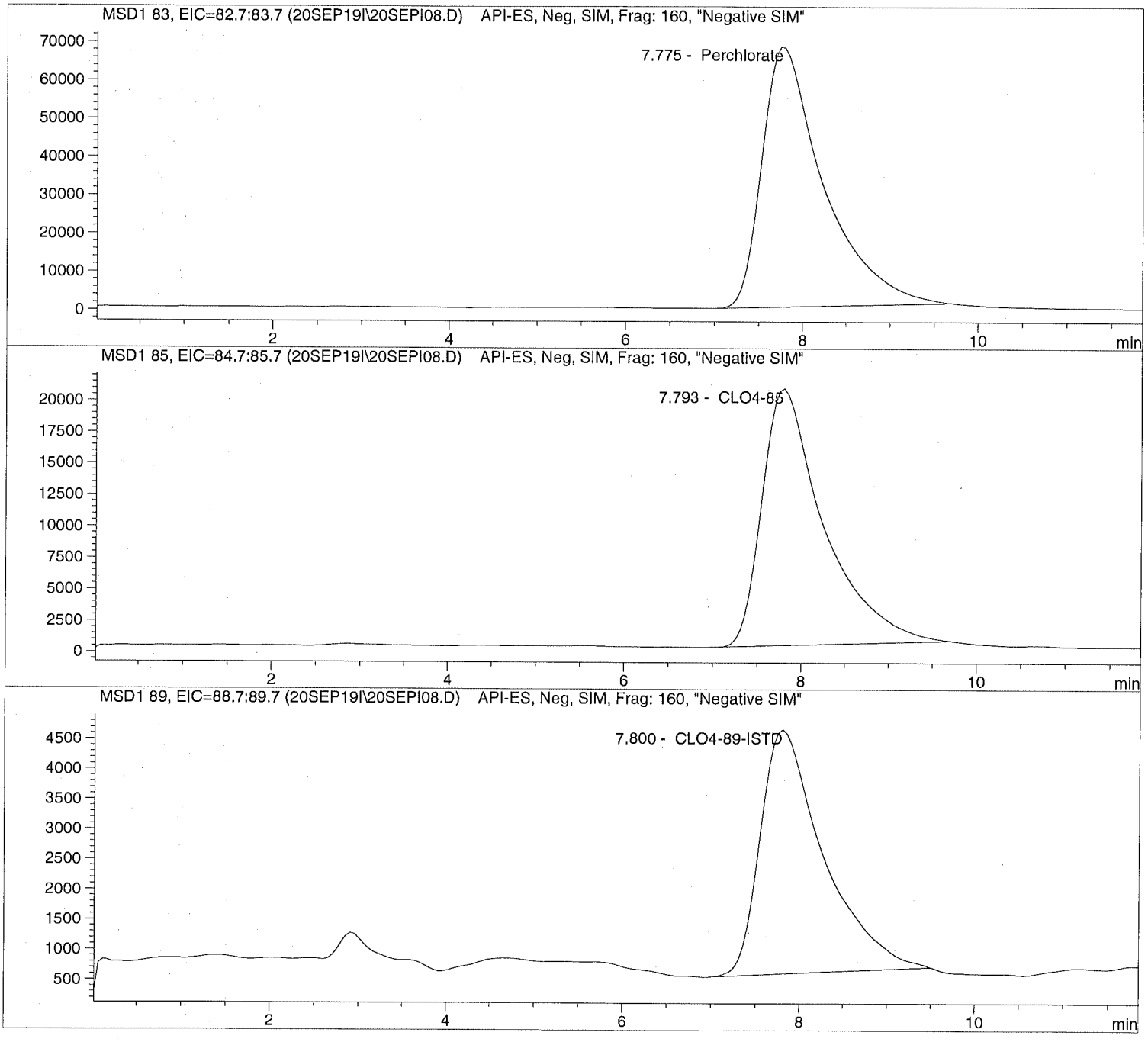
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

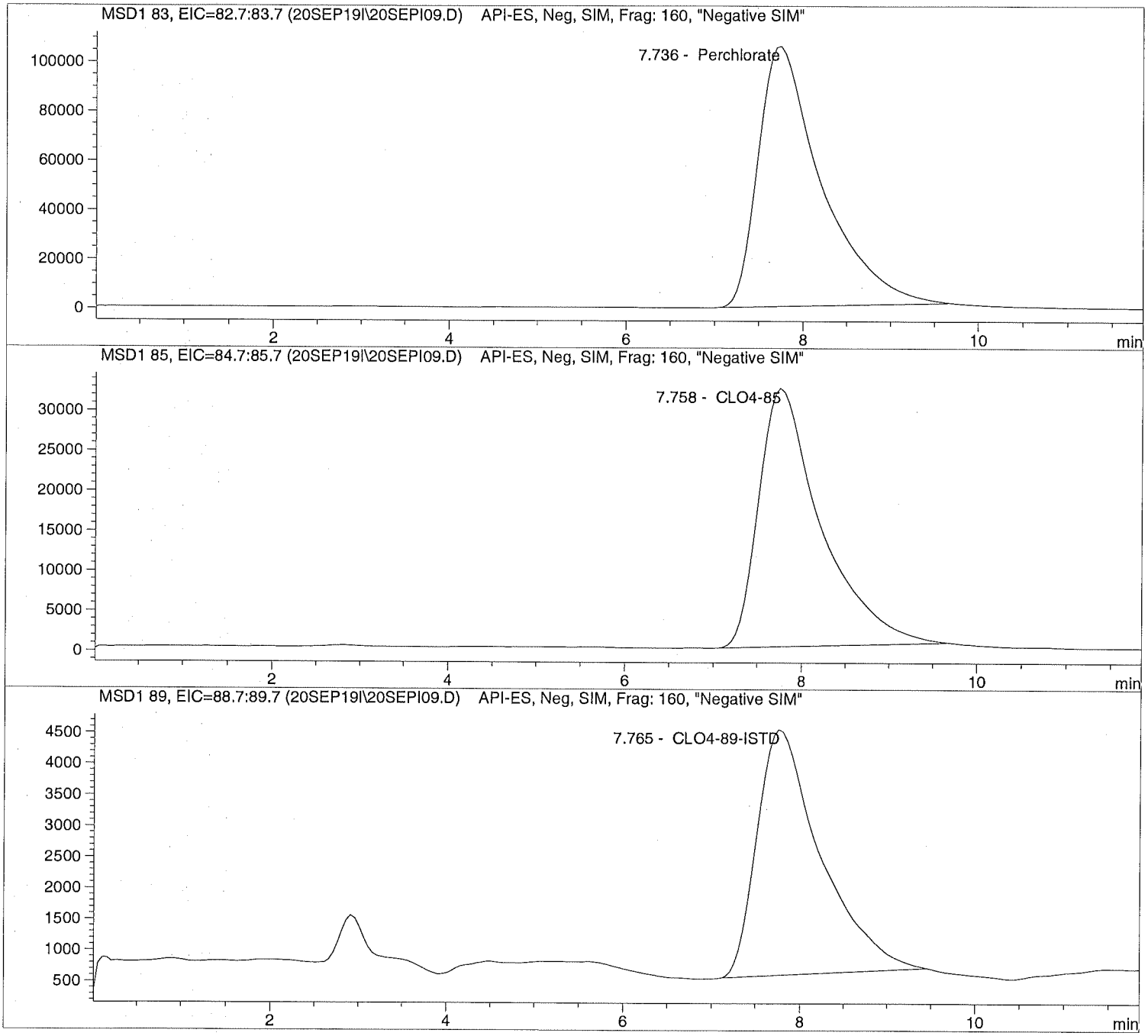
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

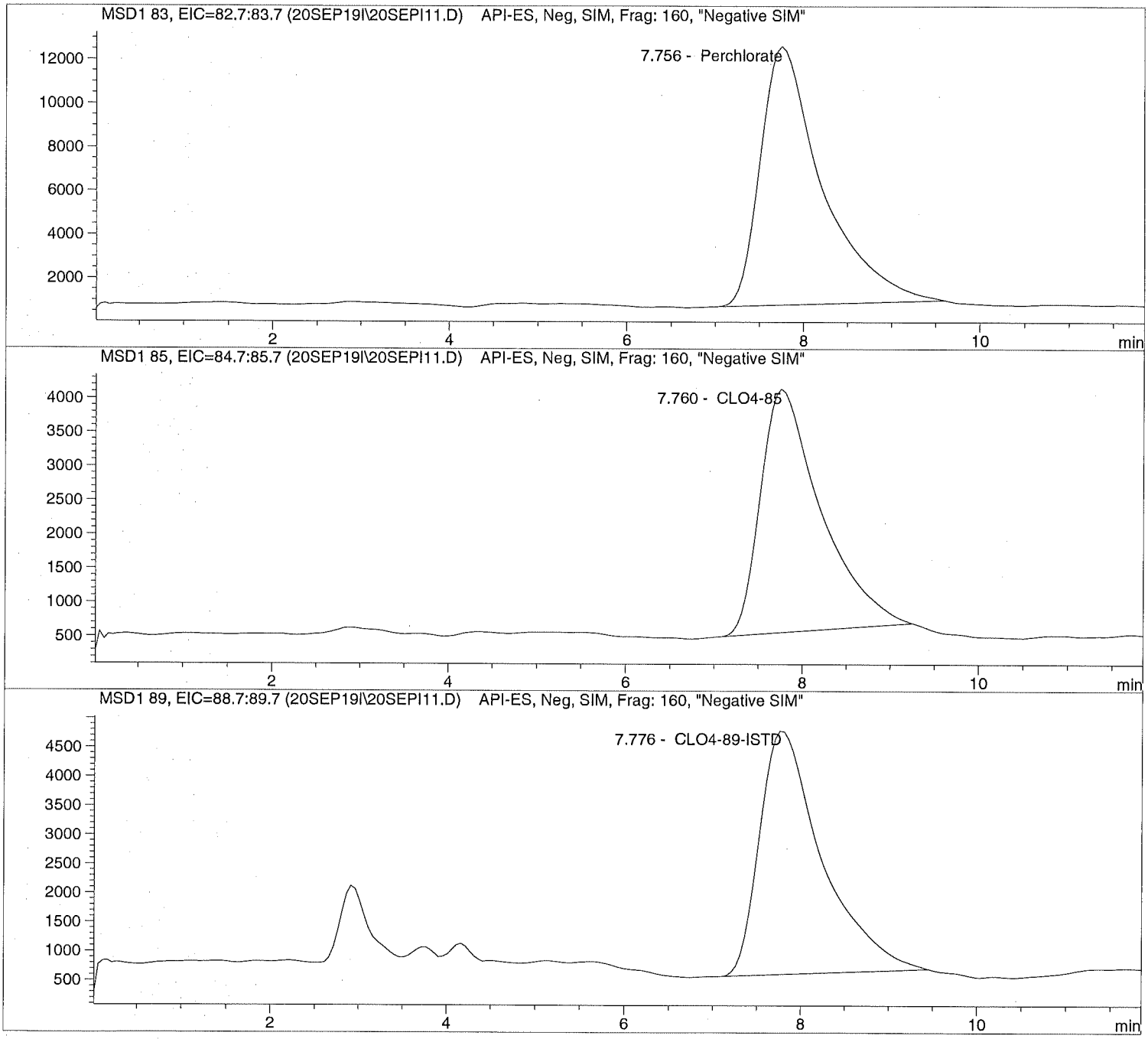
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

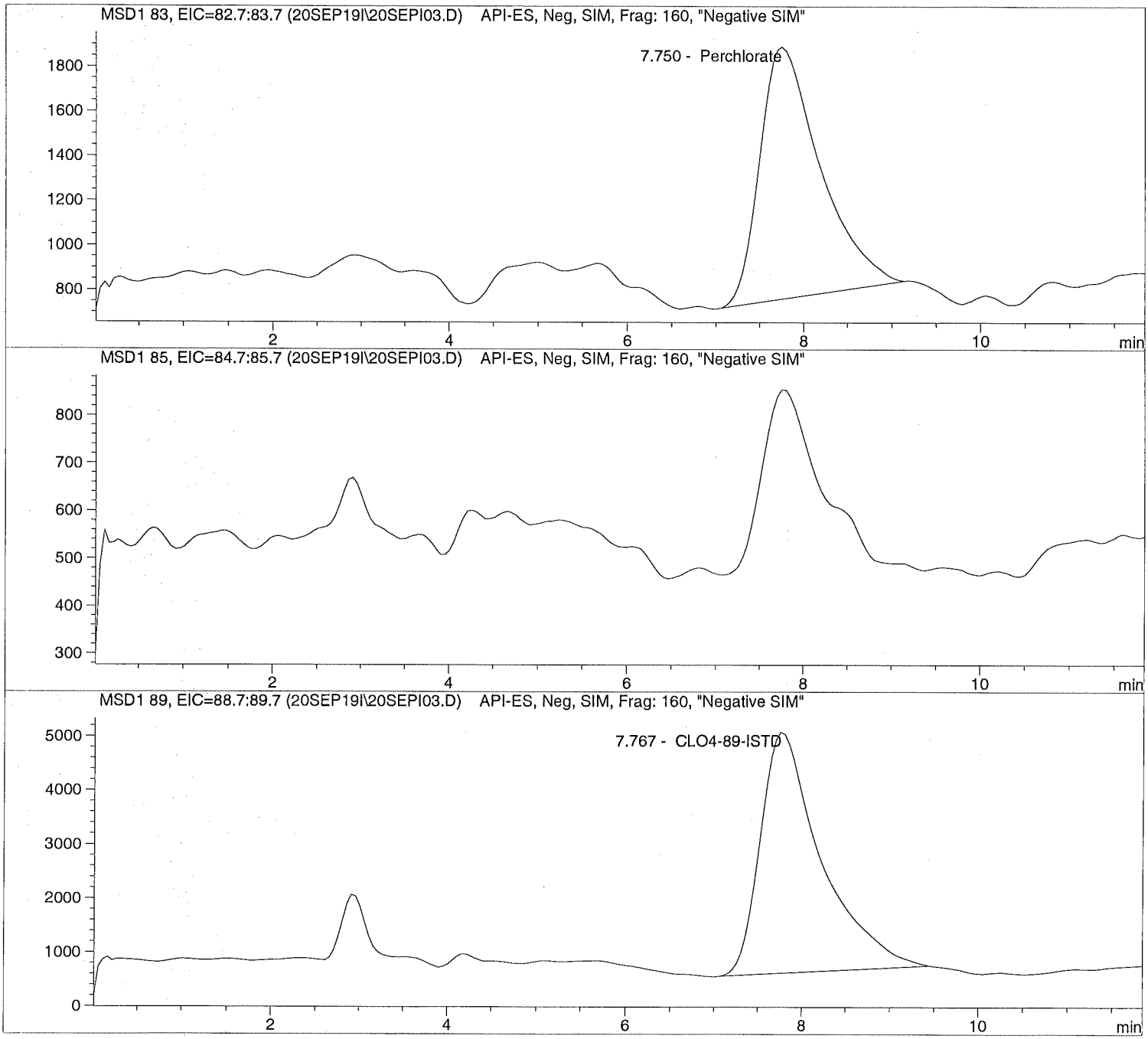
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : 1 360 577 7222
F : 1 360 636 1068
www.alsglobal.com

October 16, 2019

Analytical Report for Service Re uest No: K1909271

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19100171

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory October 04, 2019
For your reference, these analyses have been assigned our service request number **K1909271.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
ALS Group USA, Corp
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Kelso, WA 98626
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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: HS19100171
Sample Matrix: Water

Service Request: K1909271
Date Received: 10/04/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 10/04/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 10/16/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
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10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12300**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100171
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100171-01**	**LH18/24-SP650_100119**	**Groundwater**	**01 Oct 2019 14:00**
	TOC Analysis for DOD Level IV			17 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. [illegible] Date/Time: 10/3/19 18:00

Received By: [signature] Date/Time: 10/4/19 0930

Cooler ID(s): Temperature(s):

RIGHT SOLUTIONS | RIGHT PARTNER

ALS

PC

Cooler Receipt and Preservation Form

Client ALS/Houston Service Request K19

Received: 10/4/19 Opened: 10/4/19 By: Unloaded: 10/4/19 By:

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.2	0.4	1.4	1.6	+0.2	393	12305 12300	1251 0290 2150	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1909271
Project:	HS19100171	**Date Collected:**	10/1/19
Sample Matrix:	Water	**Date Received:**	10/4/19
Analysis Method:	9060A	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_100119	K1909271-001	**1.83**	0.50	0.20	0.07	1	10/13/19 22:19	
Method Blank	K1909271-MB1	ND U	0.50	0.20	0.07	1	10/14/19 03:27	
Method Blank	K1909271-MB2	ND U	0.50	0.20	0.07	1	10/14/19 03:27	
Method Blank	K1909271-MB3	ND U	0.50	0.20	0.07	1	10/14/19 03:27	
Method Blank	K1909271-MB4	ND U	0.50	0.20	0.07	1	10/14/19 03:27	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1909271
Project	HS19100171	**Date Collected:**	10/01/19
Sample Matrix:	Water	**Date Received:**	10/04/19
		Date Analyzed:	10/13/19

Quadruplicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_100119	**Units:**	mg/L
Lab Code:	K1909271-001	**Basis:**	NA
Analysis Method:	9060A		
Prep Method:	None		

Analyte Name	MRL	MDL	Sample Result	Duplicate K1909271-001DUP Result	Triplicate K1909271-001TRP Result	Quadruplicate K1909271-001QUAD Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.50	0.07	1.83	1.77	1.79	1.68	1.77	4	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1909271
Project:	HS19100171	**Date Analyzed:**	10/14/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	9060A	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	655259

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1909271-LCS1	23.9	25.0	96	83-117
Lab Control Sample	K1909271-LCS2	24.0	25.0	96	83-117
Lab Control Sample	K1909271-LCS3	24.0	25.0	96	83-117
Lab Control Sample	K1909271-LCS4	24.0	25.0	96	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1909271
Project: HS19100171

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: 9060A **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	655259	KQ1914875-01	10/13/19 17:11	25.0	24.8	99	90-110
CCV2	655259	KQ1914875-02	10/14/19 02:58	25.0	24.3	97	90-110
CCV3	655259	KQ1914875-03	10/14/19 12:45	25.0	24.6	98	90-110
CCV4	655259	KQ1914875-68	10/14/19 22:31	25.0	24.0	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1909271
Project: HS19100171

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: 9060A **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	655259	KQ1914875-04	10/13/19 17:26	0.50	0.20	0.07	ND	U
CCB2	655259	KQ1914875-05	10/14/19 03:13	0.50	0.20	0.07	ND	U
CCB3	655259	KQ1914875-06	10/14/19 12:59	0.50	0.20	0.07	ND	U
CCB4	655259	KQ1914875-69	10/14/19 22:45	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) KP09057, 9231, 9499, 9271
IV IV IV IV

Tier:

Date Analyzed: 10/12/19

Analyst: BCP

Analysis: TOC/DOC

DOC: 655257, 655258
TOC: 655259, 655260
Run #

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: KP09057-7/7dup report a high %RSD. However, these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 10/16/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655257 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909057-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.76 mg/L	10 mL	1.76 mg/L	1		0.50			10/13/19 03:43:00	N	IV
K1909057-003	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.99 mg/L	10 mL	0.99 mg/L	1		0.50			10/13/19 04:38:00	N	IV
K1909057-005	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.86 mg/L	10 mL	0.86 mg/L	1		0.50			10/13/19 05:34:00	N	IV
K1909057-006	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.71 mg/L	10 mL	0.71 mg/L	1		0.50			10/13/19 06:30:00	N	IV
K1909231-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.40 mg/L	10 mL	1.40 mg/L	1		0.50			10/12/19 15:50:00	N	IV
K1909231-002	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.11 mg/L	10 mL	1.11 mg/L	1		0.50			10/12/19 17:56:00	N	IV
K1909231-004	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.36 mg/L	10 mL	1.36 mg/L	1		0.50			10/12/19 18:52:00	N	IV
K1909231-007	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50			10/12/19 19:48:00	N	IV
K1909231-008	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.46 mg/L	10 mL	1.46 mg/L	1		0.50			10/12/19 20:44:00	N	IV
K1909231-009	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.54 mg/L	10 mL	1.54 mg/L	1		0.50			10/12/19 22:09:00	N	IV
K1909231-011	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50			10/12/19 23:04:00	N	IV
K1909231-012	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.13 mg/L	10 mL	1.13 mg/L	1		0.50			10/13/19 00:00:00	N	IV
K1909231-013	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.74 mg/L	10 mL	0.74 mg/L	1		0.50			10/13/19 00:56:00	N	IV
K1909231-014	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.41 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 01:51:00	N	IV
K1909231-016	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.35 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 02:47:00	N	IV
KQ1914876-01	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	25.19 mg/L	10 mL	25.2 mg/L	1					10/12/19 13:14:00	N	IV
KQ1914876-02	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.73 mg/L	10 mL	24.7 mg/L	1					10/12/19 21:39:00	N	IV
KQ1914876-03	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.39 mg/L	10 mL	24.4 mg/L	1					10/13/19 07:25:00	N	IV
KQ1914876-04	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/12/19 13:29:00	N	IV
KQ1914876-05	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/12/19 21:54:00	N	IV
KQ1914876-06	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 07:40:00	N	IV
KQ1914876-07	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/12/19 13:44:00	N	IV
KQ1914876-08	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/12/19 13:44:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655257 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914876-09	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/12/19 13:44:00	N	IV
KQ1914876-10	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/12/19 13:44:00	N	IV
KQ1914876-11	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.95 mg/L	10 mL	25.0 mg/L	1		0.50	100		10/12/19 14:40:00	N	IV
KQ1914876-12	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	25.03 mg/L	10 mL	25.0 mg/L	1		0.50	100		10/12/19 14:40:00	N	IV
KQ1914876-13	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.91 mg/L	10 mL	24.9 mg/L	1		0.50	100		10/12/19 14:40:00	N	IV
KQ1914876-14	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.78 mg/L	10 mL	24.8 mg/L	1		0.50	99		10/12/19 14:40:00	N	IV
KQ1914876-15	Carbon, Dissolved Organic (DOC)	MS	K1909231-001	Pore Water	27.44 mg/L	10 mL	27.4 mg/L	1		0.50	104		10/12/19 16:46:00	N	IV
KQ1914876-16	Carbon, Dissolved Organic (DOC)	MS	K1909231-001	Pore Water	27.90 mg/L	10 mL	27.9 mg/L	1		0.50	106		10/12/19 16:46:00	N	IV
KQ1914876-17	Carbon, Dissolved Organic (DOC)	MS	K1909231-001	Pore Water	27.69 mg/L	10 mL	27.7 mg/L	1		0.50	105		10/12/19 16:46:00	N	IV
KQ1914876-18	Carbon, Dissolved Organic (DOC)	MS	K1909231-001	Pore Water	27.73 mg/L	10 mL	27.7 mg/L	1		0.50	105		10/12/19 16:46:00	N	IV
KQ1914876-19	Carbon, Dissolved Organic (DOC)	DUP	K1909057-001	Pore Water	1.78 mg/L	10 mL	1.78 mg/L	1		0.50		<1	10/13/19 03:43:00	N	IV
KQ1914876-20	Carbon, Dissolved Organic (DOC)	TRP	K1909057-001	Pore Water	1.78 mg/L	10 mL	1.78 mg/L	1		0.50		<1	10/13/19 03:43:00	N	IV
KQ1914876-21	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-001	Pore Water	1.79 mg/L	10 mL	1.79 mg/L	1		0.50		<1	10/13/19 03:43:00	N	IV
KQ1914876-22	Carbon, Dissolved Organic (DOC)	DUP	K1909057-003	Pore Water	0.94 mg/L	10 mL	0.94 mg/L	1		0.50		6	10/13/19 04:38:00	N	IV
KQ1914876-23	Carbon, Dissolved Organic (DOC)	TRP	K1909057-003	Pore Water	0.95 mg/L	10 mL	0.95 mg/L	1		0.50		3	10/13/19 04:38:00	N	IV
KQ1914876-24	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-003	Pore Water	0.99 mg/L	10 mL	0.99 mg/L	1		0.50		3	10/13/19 04:38:00	N	IV
KQ1914876-25	Carbon, Dissolved Organic (DOC)	DUP	K1909057-006	Pore Water	0.68 mg/L	10 mL	0.68 mg/L	1		0.50		5	10/13/19 06:30:00	N	IV
KQ1914876-26	Carbon, Dissolved Organic (DOC)	TRP	K1909057-006	Pore Water	0.74 mg/L	10 mL	0.74 mg/L	1		0.50		4	10/13/19 06:30:00	N	IV
KQ1914876-27	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-006	Pore Water	0.73 mg/L	10 mL	0.73 mg/L	1		0.50		3	10/13/19 06:30:00	N	IV
KQ1914876-28	Carbon, Dissolved Organic (DOC)	DUP	K1909057-005	Pore Water	0.92 mg/L	10 mL	0.92 mg/L	1		0.50		7	10/13/19 05:34:00	N	IV
KQ1914876-29	Carbon, Dissolved Organic (DOC)	TRP	K1909057-005	Pore Water	0.88 mg/L	10 mL	0.88 mg/L	1		0.50		4	10/13/19 05:34:00	N	IV
KQ1914876-30	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-005	Pore Water	0.94 mg/L	10 mL	0.94 mg/L	1		0.50		4	10/13/19 05:34:00	N	IV
KQ1914876-31	Carbon, Dissolved Organic (DOC)	DUP	K1909231-001	Pore Water	1.38 mg/L	10 mL	1.38 mg/L	1		0.50		2	10/12/19 15:50:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655257 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914876-32	Carbon, Dissolved Organic (DOC)	TRP	K1909231-001	Pore Water	1.37 mg/L	10 mL	1.37 mg/L	1		0.50		<1	10/12/19 15:50:00	N	IV
KQ1914876-33	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-001	Pore Water	1.36 mg/L	10 mL	1.36 mg/L	1		0.50		1	10/12/19 15:50:00	N	IV
KQ1914876-34	Carbon, Dissolved Organic (DOC)	DUP	K1909231-002	Pore Water	1.09 mg/L	10 mL	1.09 mg/L	1		0.50		2	10/12/19 17:56:00	N	IV
KQ1914876-35	Carbon, Dissolved Organic (DOC)	TRP	K1909231-002	Pore Water	1.11 mg/L	10 mL	1.11 mg/L	1		0.50		<1	10/12/19 17:56:00	N	IV
KQ1914876-36	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-002	Pore Water	1.07 mg/L	10 mL	1.07 mg/L	1		0.50		2	10/12/19 17:56:00	N	IV
KQ1914876-37	Carbon, Dissolved Organic (DOC)	DUP	K1909231-004	Pore Water	1.33 mg/L	10 mL	1.33 mg/L	1		0.50		3	10/12/19 18:52:00	N	IV
KQ1914876-38	Carbon, Dissolved Organic (DOC)	TRP	K1909231-004	Pore Water	1.38 mg/L	10 mL	1.38 mg/L	1		0.50		2	10/12/19 18:52:00	N	IV
KQ1914876-39	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-004	Pore Water	1.44 mg/L	10 mL	1.44 mg/L	1		0.50		4	10/12/19 18:52:00	N	IV
KQ1914876-40	Carbon, Dissolved Organic (DOC)	DUP	K1909231-007	Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50		<1	10/12/19 19:48:00	N	IV
KQ1914876-41	Carbon, Dissolved Organic (DOC)	TRP	K1909231-007	Pore Water	1.32 mg/L	10 mL	1.32 mg/L	1		0.50		2	10/12/19 19:48:00	N	IV
KQ1914876-42	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-007	Pore Water	1.34 mg/L	10 mL	1.34 mg/L	1		0.50		3	10/12/19 19:48:00	N	IV
KQ1914876-43	Carbon, Dissolved Organic (DOC)	DUP	K1909231-008	Pore Water	1.52 mg/L	10 mL	1.52 mg/L	1		0.50		4	10/12/19 20:44:00	N	IV
KQ1914876-44	Carbon, Dissolved Organic (DOC)	TRP	K1909231-008	Pore Water	1.52 mg/L	10 mL	1.52 mg/L	1		0.50		2	10/12/19 20:44:00	N	IV
KQ1914876-45	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-008	Pore Water	1.55 mg/L	10 mL	1.55 mg/L	1		0.50		3	10/12/19 20:44:00	N	IV
KQ1914876-46	Carbon, Dissolved Organic (DOC)	DUP	K1909231-009	Pore Water	1.66 mg/L	10 mL	1.66 mg/L	1		0.50		8	10/12/19 22:09:00	N	IV
KQ1914876-47	Carbon, Dissolved Organic (DOC)	TRP	K1909231-009	Pore Water	1.60 mg/L	10 mL	1.60 mg/L	1		0.50		4	10/12/19 22:09:00	N	IV
KQ1914876-48	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-009	Pore Water	1.58 mg/L	10 mL	1.58 mg/L	1		0.50		3	10/12/19 22:09:00	N	IV
KQ1914876-49	Carbon, Dissolved Organic (DOC)	DUP	K1909231-011	Pore Water	0.82 mg/L	10 mL	0.82 mg/L	1		0.50		3	10/12/19 23:04:00	N	IV
KQ1914876-50	Carbon, Dissolved Organic (DOC)	TRP	K1909231-011	Pore Water	0.77 mg/L	10 mL	0.77 mg/L	1		0.50		3	10/12/19 23:04:00	N	IV
KQ1914876-51	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-011	Pore Water	0.74 mg/L	10 mL	0.74 mg/L	1		0.50		4	10/12/19 23:04:00	N	IV
KQ1914876-52	Carbon, Dissolved Organic (DOC)	DUP	K1909231-012	Pore Water	1.10 mg/L	10 mL	1.10 mg/L	1		0.50		2	10/13/19 00:00:00	N	IV
KQ1914876-53	Carbon, Dissolved Organic (DOC)	TRP	K1909231-012	Pore Water	1.07 mg/L	10 mL	1.07 mg/L	1		0.50		3	10/13/19 00:00:00	N	IV
KQ1914876-54	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-012	Pore Water	1.03 mg/L	10 mL	1.03 mg/L	1		0.50		4	10/13/19 00:00:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655257 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914876-55	Carbon, Dissolved Organic (DOC)	DUP	K1909231-013	Pore Water	0.68 mg/L	10 mL	0.68 mg/L	1		0.50		9	10/13/19 00:56:00	N	IV
KQ1914876-56	Carbon, Dissolved Organic (DOC)	TRP	K1909231-013	Pore Water	0.69 mg/L	10 mL	0.69 mg/L	1		0.50		4	10/13/19 00:56:00	N	IV
KQ1914876-57	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-013	Pore Water	0.67 mg/L	10 mL	0.67 mg/L	1		0.50		4	10/13/19 00:56:00	N	IV
KQ1914876-58	Carbon, Dissolved Organic (DOC)	DUP	K1909231-014	Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 01:51:00	N	IV
KQ1914876-59	Carbon, Dissolved Organic (DOC)	TRP	K1909231-014	Pore Water	0.38 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 01:51:00	N	IV
KQ1914876-60	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-014	Pore Water	0.43 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 01:51:00	N	IV
KQ1914876-61	Carbon, Dissolved Organic (DOC)	DUP	K1909231-016	Pore Water	0.44 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 02:47:00	N	IV
KQ1914876-62	Carbon, Dissolved Organic (DOC)	TRP	K1909231-016	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 02:47:00	N	IV
KQ1914876-63	Carbon, Dissolved Organic (DOC)	QUAD	K1909231-016	Pore Water	0.38 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 02:47:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655258 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909057-007	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.81 mg/L	10 mL	0.81 mg/L	1		0.50			10/13/19 09:46:00	N	IV
K1909057-009	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.60 mg/L	10 mL	0.60 mg/L	1		0.50			10/13/19 10:42:00	N	IV
K1909057-010	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.39 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 11:38:00	N	IV
K1909057-011	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.59 mg/L	10 mL	0.59 mg/L	1		0.50			10/13/19 12:33:00	N	IV
K1909057-012	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.78 mg/L	10 mL	0.78 mg/L	1		0.50			10/13/19 13:29:00	N	IV
K1909057-013	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.80 mg/L	10 mL	0.80 mg/L	1		0.50			10/13/19 14:24:00	N	IV
K1909057-014	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.58 mg/L	10 mL	1.58 mg/L	1		0.50			10/13/19 15:20:00	N	IV
K1909057-015	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.81 mg/L	10 mL	0.81 mg/L	1		0.50			10/13/19 17:41:00	N	IV
K1909057-016	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.37 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 18:37:00	N	IV
K1909057-017	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50			10/13/19 19:32:00	N	IV
K1909057-018	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.28 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 20:28:00	N	IV
K1909057-019	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.41 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 21:24:00	N	IV
K1909499-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.43 mg/L	10 mL	1.43 mg/L	1		0.50			10/13/19 23:15:00	N	IV
K1909499-002	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.64 mg/L	10 mL	0.64 mg/L	1		0.50			10/14/19 00:11:00	N	IV
K1909499-003	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.77 mg/L	10 mL	0.77 mg/L	1		0.50			10/14/19 01:07:00	N	IV
KQ1914877-01	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.39 mg/L	10 mL	24.4 mg/L	1					10/13/19 07:25:00	N	IV
KQ1914877-02	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.79 mg/L	10 mL	24.8 mg/L	1					10/13/19 17:11:00	N	IV
KQ1914877-03	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.30 mg/L	10 mL	24.3 mg/L	1					10/14/19 02:58:00	N	IV
KQ1914877-04	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 07:40:00	N	IV
KQ1914877-05	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 17:26:00	N	IV
KQ1914877-06	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 03:13:00	N	IV
KQ1914877-07	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 07:55:00	N	IV
KQ1914877-08	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 07:55:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655258 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914877-09	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 07:55:00	N	IV
KQ1914877-10	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 07:55:00	N	IV
KQ1914877-11	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.37 mg/L	10 mL	24.4 mg/L	1		0.50	97		10/13/19 08:50:00	N	IV
KQ1914877-12	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.28 mg/L	10 mL	24.3 mg/L	1		0.50	97		10/13/19 08:50:00	N	IV
KQ1914877-13	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.12 mg/L	10 mL	24.1 mg/L	1		0.50	96		10/13/19 08:50:00	N	IV
KQ1914877-14	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	24.38 mg/L	10 mL	24.4 mg/L	1		0.50	98		10/13/19 08:50:00	N	IV
KQ1914877-15	Carbon, Dissolved Organic (DOC)	MS	K1909057-007	Pore Water	26.63 mg/L	10 mL	26.6 mg/L	1		0.50	103		10/13/19 16:16:00	N	IV
KQ1914877-16	Carbon, Dissolved Organic (DOC)	MS	K1909057-007	Pore Water	26.65 mg/L	10 mL	26.7 mg/L	1		0.50	103		10/13/19 16:16:00	N	IV
KQ1914877-17	Carbon, Dissolved Organic (DOC)	MS	K1909057-007	Pore Water	26.84 mg/L	10 mL	26.8 mg/L	1		0.50	104		10/13/19 16:16:00	N	IV
KQ1914877-18	Carbon, Dissolved Organic (DOC)	MS	K1909057-007	Pore Water	26.72 mg/L	10 mL	26.7 mg/L	1		0.50	104		10/13/19 16:16:00	N	IV
KQ1914877-19	Carbon, Dissolved Organic (DOC)	MS	K1909499-003	Pore Water	25.97 mg/L	10 mL	26.0 mg/L	1		0.50	101		10/14/19 02:02:00	N	IV
KQ1914877-20	Carbon, Dissolved Organic (DOC)	MS	K1909499-003	Pore Water	26.20 mg/L	10 mL	26.2 mg/L	1		0.50	102		10/14/19 02:02:00	N	IV
KQ1914877-21	Carbon, Dissolved Organic (DOC)	MS	K1909499-003	Pore Water	26.06 mg/L	10 mL	26.1 mg/L	1		0.50	101		10/14/19 02:02:00	N	IV
KQ1914877-22	Carbon, Dissolved Organic (DOC)	MS	K1909499-003	Pore Water	26.07 mg/L	10 mL	26.1 mg/L	1		0.50	101		10/14/19 02:02:00	N	IV
KQ1914877-23	Carbon, Dissolved Organic (DOC)	DUP	K1909057-007	Pore Water	0.66 mg/L	10 mL	0.66 mg/L	1		0.50		21*	10/13/19 09:46:00	N	IV
KQ1914877-24	Carbon, Dissolved Organic (DOC)	TRP	K1909057-007	Pore Water	0.66 mg/L	10 mL	0.66 mg/L	1		0.50		12	10/13/19 09:46:00	N	IV
KQ1914877-25	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-007	Pore Water	0.67 mg/L	10 mL	0.67 mg/L	1		0.50		11	10/13/19 09:46:00	N	IV
KQ1914877-26	Carbon, Dissolved Organic (DOC)	DUP	K1909057-009	Pore Water	0.59 mg/L	10 mL	0.59 mg/L	1		0.50		1	10/13/19 10:42:00	N	IV
KQ1914877-27	Carbon, Dissolved Organic (DOC)	TRP	K1909057-009	Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50		3	10/13/19 10:42:00	N	IV
KQ1914877-28	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-009	Pore Water	0.52 mg/L	10 mL	0.52 mg/L	1		0.50		6	10/13/19 10:42:00	N	IV
KQ1914877-29	Carbon, Dissolved Organic (DOC)	DUP	K1909057-010	Pore Water	0.37 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 11:38:00	N	IV
KQ1914877-30	Carbon, Dissolved Organic (DOC)	TRP	K1909057-010	Pore Water	0.34 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 11:38:00	N	IV
KQ1914877-31	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-010	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 11:38:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655258 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914877-32	Carbon, Dissolved Organic (DOC)	DUP	K1909057-011	Pore Water	0.65 mg/L	10 mL	0.65 mg/L	1		0.50		10	10/13/19 12:33:00	N	IV
KQ1914877-33	Carbon, Dissolved Organic (DOC)	TRP	K1909057-011	Pore Water	0.63 mg/L	10 mL	0.63 mg/L	1		0.50		5	10/13/19 12:33:00	N	IV
KQ1914877-34	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-011	Pore Water	0.57 mg/L	10 mL	0.57 mg/L	1		0.50		6	10/13/19 12:33:00	N	IV
KQ1914877-35	Carbon, Dissolved Organic (DOC)	DUP	K1909057-012	Pore Water	0.75 mg/L	10 mL	0.75 mg/L	1		0.50		4	10/13/19 13:29:00	N	IV
KQ1914877-36	Carbon, Dissolved Organic (DOC)	TRP	K1909057-012	Pore Water	0.78 mg/L	10 mL	0.78 mg/L	1		0.50		3	10/13/19 13:29:00	N	IV
KQ1914877-37	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-012	Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50		2	10/13/19 13:29:00	N	IV
KQ1914877-38	Carbon, Dissolved Organic (DOC)	DUP	K1909057-013	Pore Water	0.82 mg/L	10 mL	0.82 mg/L	1		0.50		3	10/13/19 14:24:00	N	IV
KQ1914877-39	Carbon, Dissolved Organic (DOC)	TRP	K1909057-013	Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50		2	10/13/19 14:24:00	N	IV
KQ1914877-40	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-013	Pore Water	0.84 mg/L	10 mL	0.84 mg/L	1		0.50		3	10/13/19 14:24:00	N	IV
KQ1914877-41	Carbon, Dissolved Organic (DOC)	DUP	K1909057-014	Pore Water	1.59 mg/L	10 mL	1.59 mg/L	1		0.50		<1	10/13/19 15:20:00	N	IV
KQ1914877-42	Carbon, Dissolved Organic (DOC)	TRP	K1909057-014	Pore Water	1.60 mg/L	10 mL	1.60 mg/L	1		0.50		<1	10/13/19 15:20:00	N	IV
KQ1914877-43	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-014	Pore Water	1.56 mg/L	10 mL	1.56 mg/L	1		0.50		<1	10/13/19 15:20:00	N	IV
KQ1914877-44	Carbon, Dissolved Organic (DOC)	DUP	K1909057-015	Pore Water	0.80 mg/L	10 mL	0.80 mg/L	1		0.50		<1	10/13/19 17:41:00	N	IV
KQ1914877-45	Carbon, Dissolved Organic (DOC)	TRP	K1909057-015	Pore Water	0.81 mg/L	10 mL	0.81 mg/L	1		0.50		<1	10/13/19 17:41:00	N	IV
KQ1914877-46	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-015	Pore Water	0.76 mg/L	10 mL	0.76 mg/L	1		0.50		3	10/13/19 17:41:00	N	IV
KQ1914877-47	Carbon, Dissolved Organic (DOC)	DUP	K1909057-016	Pore Water	0.41 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 18:37:00	N	IV
KQ1914877-48	Carbon, Dissolved Organic (DOC)	TRP	K1909057-016	Pore Water	0.38 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 18:37:00	N	IV
KQ1914877-49	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-016	Pore Water	0.36 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 18:37:00	N	IV
KQ1914877-50	Carbon, Dissolved Organic (DOC)	DUP	K1909057-017	Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50		<1	10/13/19 19:32:00	N	IV
KQ1914877-51	Carbon, Dissolved Organic (DOC)	TRP	K1909057-017	Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50		6	10/13/19 19:32:00	N	IV
KQ1914877-52	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-017	Pore Water	0.54 mg/L	10 mL	0.54 mg/L	1		0.50		5	10/13/19 19:32:00	N	IV
KQ1914877-53	Carbon, Dissolved Organic (DOC)	DUP	K1909057-018	Pore Water	0.27 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 20:28:00	N	IV
KQ1914877-54	Carbon, Dissolved Organic (DOC)	TRP	K1909057-018	Pore Water	0.28 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 20:28:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655258 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914877-55	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-018	Pore Water	0.26 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 20:28:00	N	IV
KQ1914877-56	Carbon, Dissolved Organic (DOC)	DUP	K1909057-019	Pore Water	0.46 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 21:24:00	N	IV
KQ1914877-57	Carbon, Dissolved Organic (DOC)	TRP	K1909057-019	Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 21:24:00	N	IV
KQ1914877-58	Carbon, Dissolved Organic (DOC)	QUAD	K1909057-019	Pore Water	0.47 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/13/19 21:24:00	N	IV
KQ1914877-59	Carbon, Dissolved Organic (DOC)	DUP	K1909499-001	Pore Water	1.45 mg/L	10 mL	1.45 mg/L	1		0.50		1	10/13/19 23:15:00	N	IV
KQ1914877-60	Carbon, Dissolved Organic (DOC)	TRP	K1909499-001	Pore Water	1.40 mg/L	10 mL	1.40 mg/L	1		0.50		2	10/13/19 23:15:00	N	IV
KQ1914877-61	Carbon, Dissolved Organic (DOC)	QUAD	K1909499-001	Pore Water	1.45 mg/L	10 mL	1.45 mg/L	1		0.50		2	10/13/19 23:15:00	N	IV
KQ1914877-62	Carbon, Dissolved Organic (DOC)	DUP	K1909499-002	Pore Water	0.69 mg/L	10 mL	0.69 mg/L	1		0.50		7	10/14/19 00:11:00	N	IV
KQ1914877-63	Carbon, Dissolved Organic (DOC)	TRP	K1909499-002	Pore Water	0.72 mg/L	10 mL	0.72 mg/L	1		0.50		6	10/14/19 00:11:00	N	IV
KQ1914877-64	Carbon, Dissolved Organic (DOC)	QUAD	K1909499-002	Pore Water	0.71 mg/L	10 mL	0.71 mg/L	1		0.50		5	10/14/19 00:11:00	N	IV
KQ1914877-65	Carbon, Dissolved Organic (DOC)	DUP	K1909499-003	Pore Water	0.78 mg/L	10 mL	0.78 mg/L	1		0.50		2	10/14/19 01:07:00	N	IV
KQ1914877-66	Carbon, Dissolved Organic (DOC)	TRP	K1909499-003	Pore Water	0.75 mg/L	10 mL	0.75 mg/L	1		0.50		2	10/14/19 01:07:00	N	IV
KQ1914877-67	Carbon, Dissolved Organic (DOC)	QUAD	K1909499-003	Pore Water	0.71 mg/L	10 mL	0.71 mg/L	1		0.50		4	10/14/19 01:07:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655259 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909057-019	Carbon, Total Organic (TOC)	N/A		Pore Water	0.44 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 18:48:00	N	IV
K1909231-001	Carbon, Total Organic (TOC)	N/A		Pore Water	1.01 mg/L	10 mL	1.01 mg/L	1		0.50			10/14/19 05:19:00	N	IV
K1909231-002	Carbon, Total Organic (TOC)	N/A		Pore Water	0.77 mg/L	10 mL	0.77 mg/L	1		0.50			10/14/19 06:15:00	N	IV
K1909231-004	Carbon, Total Organic (TOC)	N/A		Pore Water	1.02 mg/L	10 mL	1.02 mg/L	1		0.50			10/14/19 07:10:00	N	IV
K1909231-005	Carbon, Total Organic (TOC)	N/A		Pore Water	0.91 mg/L	10 mL	0.91 mg/L	1		0.50			10/14/19 08:06:00	N	IV
K1909231-007	Carbon, Total Organic (TOC)	N/A		Pore Water	1.01 mg/L	10 mL	1.01 mg/L	1		0.50			10/14/19 09:02:00	N	IV
K1909231-008	Carbon, Total Organic (TOC)	N/A		Pore Water	1.15 mg/L	10 mL	1.15 mg/L	1		0.50			10/14/19 09:58:00	N	IV
K1909231-009	Carbon, Total Organic (TOC)	N/A		Pore Water	1.22 mg/L	10 mL	1.22 mg/L	1		0.50			10/14/19 10:53:00	N	IV
K1909231-010	Carbon, Total Organic (TOC)	N/A		Pore Water	1.22 mg/L	10 mL	1.22 mg/L	1		0.50			10/14/19 13:14:00	N	IV
K1909231-011	Carbon, Total Organic (TOC)	N/A		Pore Water	0.52 mg/L	10 mL	0.52 mg/L	1		0.50			10/14/19 14:10:00	N	IV
K1909231-012	Carbon, Total Organic (TOC)	N/A		Pore Water	0.77 mg/L	10 mL	0.77 mg/L	1		0.50			10/14/19 15:06:00	N	IV
K1909231-013	Carbon, Total Organic (TOC)	N/A		Pore Water	0.45 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 16:01:00	N	IV
K1909231-014	Carbon, Total Organic (TOC)	N/A		Pore Water	0.15 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 16:57:00	N	IV
K1909231-016	Carbon, Total Organic (TOC)	N/A		Pore Water	0.05 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 17:52:00	N	IV
K1909271-001	Carbon, Total Organic (TOC)	N/A		Water	1.83 mg/L	10 mL	1.83 mg/L	1		0.50			10/13/19 22:19:00	N	IV
KQ1914875-01	Carbon, Total Organic (TOC)	CCV		Pore Water	24.79 mg/L	10 mL	24.8 mg/L	1					10/13/19 17:11:00	N	IV
KQ1914875-02	Carbon, Total Organic (TOC)	CCV		Pore Water	24.30 mg/L	10 mL	24.3 mg/L	1					10/14/19 02:58:00	N	IV
KQ1914875-03	Carbon, Total Organic (TOC)	CCV		Pore Water	24.57 mg/L	10 mL	24.6 mg/L	1					10/14/19 12:45:00	N	IV
KQ1914875-04	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/13/19 17:26:00	N	IV
KQ1914875-05	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 03:13:00	N	IV
KQ1914875-06	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 12:59:00	N	IV
KQ1914875-07	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 03:27:00	N	IV
KQ1914875-08	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 03:27:00	N	IV

120 of 163

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655259 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914875-09	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 03:27:00	N	IV
KQ1914875-10	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 03:27:00	N	IV
KQ1914875-11	Carbon, Total Organic (TOC)	LCS		Pore Water	23.94 mg/L	10 mL	23.9 mg/L	1		0.50	96		10/14/19 04:23:00	N	IV
KQ1914875-12	Carbon, Total Organic (TOC)	LCS		Pore Water	24.02 mg/L	10 mL	24.0 mg/L	1		0.50	96		10/14/19 04:23:00	N	IV
KQ1914875-13	Carbon, Total Organic (TOC)	LCS		Pore Water	24.01 mg/L	10 mL	24.0 mg/L	1		0.50	96		10/14/19 04:23:00	N	IV
KQ1914875-14	Carbon, Total Organic (TOC)	LCS		Pore Water	24.02 mg/L	10 mL	24.0 mg/L	1		0.50	96		10/14/19 04:23:00	N	IV
KQ1914875-19	Carbon, Total Organic (TOC)	DUP	K1909057-019	Pore Water	0.48 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 18:48:00	N	IV
KQ1914875-20	Carbon, Total Organic (TOC)	TRP	K1909057-019	Pore Water	0.46 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 18:48:00	N	IV
KQ1914875-21	Carbon, Total Organic (TOC)	QUAD	K1909057-019	Pore Water	0.44 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 18:48:00	N	IV
KQ1914875-22	Carbon, Total Organic (TOC)	DUP	K1909231-001	Pore Water	0.95 mg/L	10 mL	0.95 mg/L	1		0.50		6	10/14/19 05:19:00	N	IV
KQ1914875-23	Carbon, Total Organic (TOC)	TRP	K1909231-001	Pore Water	0.91 mg/L	10 mL	0.91 mg/L	1		0.50		5	10/14/19 05:19:00	N	IV
KQ1914875-24	Carbon, Total Organic (TOC)	QUAD	K1909231-001	Pore Water	0.91 mg/L	10 mL	0.91 mg/L	1		0.50		5	10/14/19 05:19:00	N	IV
KQ1914875-25	Carbon, Total Organic (TOC)	DUP	K1909231-002	Pore Water	0.76 mg/L	10 mL	0.76 mg/L	1		0.50		1	10/14/19 06:15:00	N	IV
KQ1914875-26	Carbon, Total Organic (TOC)	TRP	K1909231-002	Pore Water	0.80 mg/L	10 mL	0.80 mg/L	1		0.50		2	10/14/19 06:15:00	N	IV
KQ1914875-27	Carbon, Total Organic (TOC)	QUAD	K1909231-002	Pore Water	0.80 mg/L	10 mL	0.80 mg/L	1		0.50		3	10/14/19 06:15:00	N	IV
KQ1914875-28	Carbon, Total Organic (TOC)	DUP	K1909231-004	Pore Water	1.04 mg/L	10 mL	1.04 mg/L	1		0.50		2	10/14/19 07:10:00	N	IV
KQ1914875-29	Carbon, Total Organic (TOC)	TRP	K1909231-004	Pore Water	1.00 mg/L	10 mL	1.00 mg/L	1		0.50		2	10/14/19 07:10:00	N	IV
KQ1914875-30	Carbon, Total Organic (TOC)	QUAD	K1909231-004	Pore Water	0.98 mg/L	10 mL	0.98 mg/L	1		0.50		3	10/14/19 07:10:00	N	IV
KQ1914875-31	Carbon, Total Organic (TOC)	DUP	K1909231-005	Pore Water	0.99 mg/L	10 mL	0.99 mg/L	1		0.50		8	10/14/19 08:06:00	N	IV
KQ1914875-32	Carbon, Total Organic (TOC)	TRP	K1909231-005	Pore Water	0.95 mg/L	10 mL	0.95 mg/L	1		0.50		4	10/14/19 08:06:00	N	IV
KQ1914875-33	Carbon, Total Organic (TOC)	QUAD	K1909231-005	Pore Water	0.99 mg/L	10 mL	0.99 mg/L	1		0.50		4	10/14/19 08:06:00	N	IV
KQ1914875-34	Carbon, Total Organic (TOC)	DUP	K1909231-007	Pore Water	1.06 mg/L	10 mL	1.06 mg/L	1		0.50		5	10/14/19 09:02:00	N	IV
KQ1914875-35	Carbon, Total Organic (TOC)	TRP	K1909231-007	Pore Water	1.04 mg/L	10 mL	1.04 mg/L	1		0.50		3	10/14/19 09:02:00	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655259 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914875-36	Carbon, Total Organic (TOC)	QUAD	K1909231-007	Pore Water	1.01 mg/L	10 mL	1.01 mg/L	1		0.50		2	10/14/19 09:02:00	N	IV
KQ1914875-37	Carbon, Total Organic (TOC)	DUP	K1909231-008	Pore Water	1.16 mg/L	10 mL	1.16 mg/L	1		0.50		1	10/14/19 09:58:00	N	IV
KQ1914875-38	Carbon, Total Organic (TOC)	TRP	K1909231-008	Pore Water	1.22 mg/L	10 mL	1.22 mg/L	1		0.50		3	10/14/19 09:58:00	N	IV
KQ1914875-39	Carbon, Total Organic (TOC)	QUAD	K1909231-008	Pore Water	1.28 mg/L	10 mL	1.28 mg/L	1		0.50		5	10/14/19 09:58:00	N	IV
KQ1914875-40	Carbon, Total Organic (TOC)	DUP	K1909231-009	Pore Water	1.23 mg/L	10 mL	1.23 mg/L	1		0.50		<1	10/14/19 10:53:00	N	IV
KQ1914875-41	Carbon, Total Organic (TOC)	TRP	K1909231-009	Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50		2	10/14/19 10:53:00	N	IV
KQ1914875-42	Carbon, Total Organic (TOC)	QUAD	K1909231-009	Pore Water	1.20 mg/L	10 mL	1.20 mg/L	1		0.50		2	10/14/19 10:53:00	N	IV
KQ1914875-43	Carbon, Total Organic (TOC)	DUP	K1909231-010	Pore Water	1.22 mg/L	10 mL	1.22 mg/L	1		0.50		<1	10/14/19 13:14:00	N	IV
KQ1914875-44	Carbon, Total Organic (TOC)	TRP	K1909231-010	Pore Water	1.20 mg/L	10 mL	1.20 mg/L	1		0.50		<1	10/14/19 13:14:00	N	IV
KQ1914875-45	Carbon, Total Organic (TOC)	QUAD	K1909231-010	Pore Water	1.18 mg/L	10 mL	1.18 mg/L	1		0.50		2	10/14/19 13:14:00	N	IV
KQ1914875-46	Carbon, Total Organic (TOC)	DUP	K1909231-011	Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50		2	10/14/19 14:10:00	N	IV
KQ1914875-47	Carbon, Total Organic (TOC)	TRP	K1909231-011	Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50		5	10/14/19 14:10:00	N	IV
KQ1914875-48	Carbon, Total Organic (TOC)	QUAD	K1909231-011	Pore Water	0.53 mg/L	10 mL	0.53 mg/L	1		0.50		4	10/14/19 14:10:00	N	IV
KQ1914875-49	Carbon, Total Organic (TOC)	DUP	K1909231-012	Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50		2	10/14/19 15:06:00	N	IV
KQ1914875-50	Carbon, Total Organic (TOC)	TRP	K1909231-012	Pore Water	0.84 mg/L	10 mL	0.84 mg/L	1		0.50		4	10/14/19 15:06:00	N	IV
KQ1914875-51	Carbon, Total Organic (TOC)	QUAD	K1909231-012	Pore Water	0.81 mg/L	10 mL	0.81 mg/L	1		0.50		4	10/14/19 15:06:00	N	IV
KQ1914875-52	Carbon, Total Organic (TOC)	DUP	K1909231-013	Pore Water	0.45 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 16:01:00	N	IV
KQ1914875-53	Carbon, Total Organic (TOC)	TRP	K1909231-013	Pore Water	0.48 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 16:01:00	N	IV
KQ1914875-54	Carbon, Total Organic (TOC)	QUAD	K1909231-013	Pore Water	0.47 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 16:01:00	N	IV
KQ1914875-55	Carbon, Total Organic (TOC)	DUP	K1909231-014	Pore Water	0.12 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 16:57:00	N	IV
KQ1914875-56	Carbon, Total Organic (TOC)	TRP	K1909231-014	Pore Water	0.18 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 16:57:00	N	IV
KQ1914875-57	Carbon, Total Organic (TOC)	QUAD	K1909231-014	Pore Water	0.14 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 16:57:00	N	IV
KQ1914875-58	Carbon, Total Organic (TOC)	DUP	K1909231-016	Pore Water	0.09 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 17:52:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655259 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914875-59	Carbon, Total Organic (TOC)	TRP	K1909231-016	Pore Water	0.12 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 17:52:00	N	IV
KQ1914875-60	Carbon, Total Organic (TOC)	QUAD	K1909231-016	Pore Water	0.12 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/14/19 17:52:00	N	IV
KQ1914875-61	Carbon, Total Organic (TOC)	DUP	K1909271-001	Water	1.77 mg/L	10 mL	1.77 mg/L	1		0.50		3	10/13/19 22:19:00	N	IV
KQ1914875-62	Carbon, Total Organic (TOC)	TRP	K1909271-001	Water	1.79 mg/L	10 mL	1.79 mg/L	1		0.50		2	10/13/19 22:19:00	N	IV
KQ1914875-63	Carbon, Total Organic (TOC)	QUAD	K1909271-001	Water	1.68 mg/L	10 mL	1.68 mg/L	1		0.50		4	10/13/19 22:19:00	N	IV
KQ1914875-64	Carbon, Total Organic (TOC)	MS	K1909231-009	Pore Water	28.00 mg/L	10 mL	28.0 mg/L	1		0.50	107		10/14/19 11:49:00	N	IV
KQ1914875-65	Carbon, Total Organic (TOC)	MS	K1909231-009	Pore Water	28.19 mg/L	10 mL	28.2 mg/L	1		0.50	108		10/14/19 11:49:00	N	IV
KQ1914875-66	Carbon, Total Organic (TOC)	MS	K1909231-009	Pore Water	27.93 mg/L	10 mL	27.9 mg/L	1		0.50	107		10/14/19 11:49:00	N	IV
KQ1914875-67	Carbon, Total Organic (TOC)	MS	K1909231-009	Pore Water	27.88 mg/L	10 mL	27.9 mg/L	1		0.50	107		10/14/19 11:49:00	N	IV
KQ1914875-68	Carbon, Total Organic (TOC)	CCV		Pore Water	23.97 mg/L	10 mL	24.0 mg/L	1					10/14/19 22:31:00	N	IV
KQ1914875-69	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 22:45:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655260 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909057-001	Carbon, Total Organic (TOC)	N/A		Pore Water	1.51 mg/L	10 mL	1.51 mg/L	1		0.50			10/14/19 19:44:00	N	IV
K1909057-003	Carbon, Total Organic (TOC)	N/A		Pore Water	0.66 mg/L	10 mL	0.66 mg/L	1		0.50			10/14/19 20:39:00	N	IV
K1909057-004	Carbon, Total Organic (TOC)	N/A		Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50			10/15/19 00:52:00	N	IV
K1909057-005	Carbon, Total Organic (TOC)	N/A		Pore Water	0.54 mg/L	10 mL	0.54 mg/L	1		0.50			10/15/19 01:47:00	N	IV
K1909057-007	Carbon, Total Organic (TOC)	N/A		Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 02:44:00	N	IV
K1909057-008	Carbon, Total Organic (TOC)	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 03:39:00	N	IV
K1909057-009	Carbon, Total Organic (TOC)	N/A		Pore Water	0.30 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 04:35:00	N	IV
K1909057-010	Carbon, Total Organic (TOC)	N/A		Pore Water	0.09 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 05:30:00	N	IV
K1909057-012	Carbon, Total Organic (TOC)	N/A		Pore Water	0.50 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 06:26:00	N	IV
K1909057-013	Carbon, Total Organic (TOC)	N/A		Pore Water	0.59 mg/L	10 mL	0.59 mg/L	1		0.50			10/15/19 07:22:00	N	IV
K1909057-014	Carbon, Total Organic (TOC)	N/A		Pore Water	1.25 mg/L	10 mL	1.25 mg/L	1		0.50			10/15/19 08:47:00	N	IV
K1909057-015	Carbon, Total Organic (TOC)	N/A		Pore Water	0.65 mg/L	10 mL	0.65 mg/L	1		0.50			10/15/19 09:43:00	N	IV
K1909057-016	Carbon, Total Organic (TOC)	N/A		Pore Water	0.20 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 10:38:00	N	IV
K1909057-017	Carbon, Total Organic (TOC)	N/A		Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 11:34:00	N	IV
K1909057-018	Carbon, Total Organic (TOC)	N/A		Pore Water	0.09 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 12:30:00	N	IV
K1909499-001	Carbon, Total Organic (TOC)	N/A		Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50			10/15/19 13:25:00	N	IV
K1909499-002	Carbon, Total Organic (TOC)	N/A		Pore Water	0.50 mg/L	10 mL	0.50 mg/L	1		0.50			10/15/19 14:21:00	N	IV
K1909499-003	Carbon, Total Organic (TOC)	N/A		Pore Water	0.57 mg/L	10 mL	0.57 mg/L	1		0.50			10/15/19 15:17:00	N	IV
KQ1914878-01	Carbon, Total Organic (TOC)	CCV		Pore Water	24.57 mg/L	10 mL	24.6 mg/L	1					10/14/19 12:45:00	N	IV
KQ1914878-02	Carbon, Total Organic (TOC)	CCV		Pore Water	23.97 mg/L	10 mL	24.0 mg/L	1					10/14/19 22:31:00	N	IV
KQ1914878-03	Carbon, Total Organic (TOC)	CCV		Pore Water	23.53 mg/L	10 mL	23.5 mg/L	1					10/15/19 08:17:00	N	IV
KQ1914878-04	Carbon, Total Organic (TOC)	CCV		Pore Water	24.45 mg/L	10 mL	24.4 mg/L	1					10/15/19 17:08:00	N	IV
KQ1914878-05	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 12:59:00	N	IV

124 of 163

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/16/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655260 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914878-06	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 22:45:00	N	IV
KQ1914878-07	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 08:32:00	N	IV
KQ1914878-08	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/15/19 17:23:00	N	IV
KQ1914878-09	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 23:00:00	N	IV
KQ1914878-10	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 23:00:00	N	IV
KQ1914878-11	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 23:00:00	N	IV
KQ1914878-12	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/14/19 23:00:00	N	IV
KQ1914878-13	Carbon, Total Organic (TOC)	LCS		Pore Water	23.96 mg/L	10 mL	24.0 mg/L	1		0.50	96		10/14/19 23:56:00	N	IV
KQ1914878-14	Carbon, Total Organic (TOC)	LCS		Pore Water	23.75 mg/L	10 mL	23.7 mg/L	1		0.50	95		10/14/19 23:56:00	N	IV
KQ1914878-15	Carbon, Total Organic (TOC)	LCS		Pore Water	24.37 mg/L	10 mL	24.4 mg/L	1		0.50	97		10/14/19 23:56:00	N	IV
KQ1914878-16	Carbon, Total Organic (TOC)	LCS		Pore Water	23.81 mg/L	10 mL	23.8 mg/L	1		0.50	95		10/14/19 23:56:00	N	IV
KQ1914878-17	Carbon, Total Organic (TOC)	MS	K1909057-003	Pore Water	25.89 mg/L	10 mL	25.9 mg/L	1		0.50	101		10/14/19 21:35:00	N	IV
KQ1914878-18	Carbon, Total Organic (TOC)	MS	K1909057-003	Pore Water	25.78 mg/L	10 mL	25.8 mg/L	1		0.50	100		10/14/19 21:35:00	N	IV
KQ1914878-19	Carbon, Total Organic (TOC)	MS	K1909057-003	Pore Water	25.65 mg/L	10 mL	25.6 mg/L	1		0.50	100		10/14/19 21:35:00	N	IV
KQ1914878-20	Carbon, Total Organic (TOC)	MS	K1909057-003	Pore Water	25.95 mg/L	10 mL	26.0 mg/L	1		0.50	101		10/14/19 21:35:00	N	IV
KQ1914878-21	Carbon, Total Organic (TOC)	MS	K1909499-003	Pore Water	26.89 mg/L	10 mL	26.9 mg/L	1		0.50	105		10/15/19 16:12:00	N	IV
KQ1914878-22	Carbon, Total Organic (TOC)	MS	K1909499-003	Pore Water	26.90 mg/L	10 mL	26.9 mg/L	1		0.50	105		10/15/19 16:12:00	N	IV
KQ1914878-23	Carbon, Total Organic (TOC)	MS	K1909499-003	Pore Water	26.81 mg/L	10 mL	26.8 mg/L	1		0.50	105		10/15/19 16:12:00	N	IV
KQ1914878-24	Carbon, Total Organic (TOC)	MS	K1909499-003	Pore Water	26.95 mg/L	10 mL	27.0 mg/L	1		0.50	106		10/15/19 16:12:00	N	IV
KQ1914878-25	Carbon, Total Organic (TOC)	DUP	K1909057-001	Pore Water	1.51 mg/L	10 mL	1.51 mg/L	1		0.50		<1	10/14/19 19:44:00	N	IV
KQ1914878-26	Carbon, Total Organic (TOC)	TRP	K1909057-001	Pore Water	1.60 mg/L	10 mL	1.60 mg/L	1		0.50		3	10/14/19 19:44:00	N	IV
KQ1914878-27	Carbon, Total Organic (TOC)	QUAD	K1909057-001	Pore Water	1.49 mg/L	10 mL	1.49 mg/L	1		0.50		3	10/14/19 19:44:00	N	IV
KQ1914878-28	Carbon, Total Organic (TOC)	DUP	K1909057-003	Pore Water	0.64 mg/L	10 mL	0.64 mg/L	1		0.50		3	10/14/19 20:39:00	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655260 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914878-29	Carbon, Total Organic (TOC)	TRP	K1909057-003	Pore Water	0.66 mg/L	10 mL	0.66 mg/L	1		0.50		2	10/14/19 20:39:00	N	IV
KQ1914878-30	Carbon, Total Organic (TOC)	QUAD	K1909057-003	Pore Water	0.68 mg/L	10 mL	0.68 mg/L	1		0.50		3	10/14/19 20:39:00	N	IV
KQ1914878-31	Carbon, Total Organic (TOC)	DUP	K1909057-004	Pore Water	0.74 mg/L	10 mL	0.74 mg/L	1		0.50		7	10/15/19 00:52:00	N	IV
KQ1914878-32	Carbon, Total Organic (TOC)	TRP	K1909057-004	Pore Water	0.71 mg/L	10 mL	0.71 mg/L	1		0.50		6	10/15/19 00:52:00	N	IV
KQ1914878-33	Carbon, Total Organic (TOC)	QUAD	K1909057-004	Pore Water	0.68 mg/L	10 mL	0.68 mg/L	1		0.50		7	10/15/19 00:52:00	N	IV
KQ1914878-34	Carbon, Total Organic (TOC)	DUP	K1909057-005	Pore Water	0.58 mg/L	10 mL	0.58 mg/L	1		0.50		6	10/15/19 01:47:00	N	IV
KQ1914878-35	Carbon, Total Organic (TOC)	TRP	K1909057-005	Pore Water	0.49 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 01:47:00	N	IV
KQ1914878-36	Carbon, Total Organic (TOC)	QUAD	K1909057-005	Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50		NC	10/15/19 01:47:00	N	IV
KQ1914878-37	Carbon, Total Organic (TOC)	DUP	K1909057-007	Pore Water	0.41 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 02:44:00	N	IV
KQ1914878-38	Carbon, Total Organic (TOC)	TRP	K1909057-007	Pore Water	0.34 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 02:44:00	N	IV
KQ1914878-39	Carbon, Total Organic (TOC)	QUAD	K1909057-007	Pore Water	0.41 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 02:44:00	N	IV
KQ1914878-40	Carbon, Total Organic (TOC)	DUP	K1909057-008	Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 03:39:00	N	IV
KQ1914878-41	Carbon, Total Organic (TOC)	TRP	K1909057-008	Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 03:39:00	N	IV
KQ1914878-42	Carbon, Total Organic (TOC)	QUAD	K1909057-008	Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 03:39:00	N	IV
KQ1914878-43	Carbon, Total Organic (TOC)	DUP	K1909057-009	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 04:35:00	N	IV
KQ1914878-44	Carbon, Total Organic (TOC)	TRP	K1909057-009	Pore Water	0.36 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 04:35:00	N	IV
KQ1914878-45	Carbon, Total Organic (TOC)	QUAD	K1909057-009	Pore Water	0.33 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 04:35:00	N	IV
KQ1914878-46	Carbon, Total Organic (TOC)	DUP	K1909057-010	Pore Water	0.12 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 05:30:00	N	IV
KQ1914878-47	Carbon, Total Organic (TOC)	TRP	K1909057-010	Pore Water	0.13 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 05:30:00	N	IV
KQ1914878-48	Carbon, Total Organic (TOC)	QUAD	K1909057-010	Pore Water	0.14 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 05:30:00	N	IV
KQ1914878-49	Carbon, Total Organic (TOC)	DUP	K1909057-012	Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50		NC	10/15/19 06:26:00	N	IV
KQ1914878-50	Carbon, Total Organic (TOC)	TRP	K1909057-012	Pore Water	0.57 mg/L	10 mL	0.57 mg/L	1		0.50		NC	10/15/19 06:26:00	N	IV
KQ1914878-51	Carbon, Total Organic (TOC)	QUAD	K1909057-012	Pore Water	0.50 mg/L	10 mL	0.50 mg/L	1		0.50		NC	10/15/19 06:26:00	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655260 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914878-52	Carbon, Total Organic (TOC)	DUP	K1909057-013	Pore Water	0.61 mg/L	10 mL	0.61 mg/L	1		0.50		2	10/15/19 07:22:00	N	IV
KQ1914878-53	Carbon, Total Organic (TOC)	TRP	K1909057-013	Pore Water	0.63 mg/L	10 mL	0.63 mg/L	1		0.50		3	10/15/19 07:22:00	N	IV
KQ1914878-54	Carbon, Total Organic (TOC)	QUAD	K1909057-013	Pore Water	0.61 mg/L	10 mL	0.61 mg/L	1		0.50		3	10/15/19 07:22:00	N	IV
KQ1914878-55	Carbon, Total Organic (TOC)	DUP	K1909057-014	Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50		2	10/15/19 08:47:00	N	IV
KQ1914878-56	Carbon, Total Organic (TOC)	TRP	K1909057-014	Pore Water	1.20 mg/L	10 mL	1.20 mg/L	1		0.50		3	10/15/19 08:47:00	N	IV
KQ1914878-57	Carbon, Total Organic (TOC)	QUAD	K1909057-014	Pore Water	1.42 mg/L	10 mL	1.42 mg/L	1		0.50		7	10/15/19 08:47:00	N	IV
KQ1914878-58	Carbon, Total Organic (TOC)	DUP	K1909057-015	Pore Water	0.63 mg/L	10 mL	0.63 mg/L	1		0.50		2	10/15/19 09:43:00	N	IV
KQ1914878-59	Carbon, Total Organic (TOC)	TRP	K1909057-015	Pore Water	0.62 mg/L	10 mL	0.62 mg/L	1		0.50		2	10/15/19 09:43:00	N	IV
KQ1914878-60	Carbon, Total Organic (TOC)	QUAD	K1909057-015	Pore Water	0.62 mg/L	10 mL	0.62 mg/L	1		0.50		2	10/15/19 09:43:00	N	IV
KQ1914878-61	Carbon, Total Organic (TOC)	DUP	K1909057-016	Pore Water	0.27 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 10:38:00	N	IV
KQ1914878-62	Carbon, Total Organic (TOC)	TRP	K1909057-016	Pore Water	0.29 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 10:38:00	N	IV
KQ1914878-63	Carbon, Total Organic (TOC)	QUAD	K1909057-016	Pore Water	0.25 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 10:38:00	N	IV
KQ1914878-64	Carbon, Total Organic (TOC)	DUP	K1909057-017	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 11:34:00	N	IV
KQ1914878-65	Carbon, Total Organic (TOC)	TRP	K1909057-017	Pore Water	0.34 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 11:34:00	N	IV
KQ1914878-66	Carbon, Total Organic (TOC)	QUAD	K1909057-017	Pore Water	0.35 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 11:34:00	N	IV
KQ1914878-67	Carbon, Total Organic (TOC)	DUP	K1909057-018	Pore Water	0.13 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 12:30:00	N	IV
KQ1914878-68	Carbon, Total Organic (TOC)	TRP	K1909057-018	Pore Water	0.14 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 12:30:00	N	IV
KQ1914878-69	Carbon, Total Organic (TOC)	QUAD	K1909057-018	Pore Water	0.13 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/15/19 12:30:00	N	IV
KQ1914878-70	Carbon, Total Organic (TOC)	DUP	K1909499-002	Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50		1	10/15/19 14:21:00	N	IV
KQ1914878-71	Carbon, Total Organic (TOC)	TRP	K1909499-002	Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50		6	10/15/19 14:21:00	N	IV
KQ1914878-72	Carbon, Total Organic (TOC)	QUAD	K1909499-002	Pore Water	0.53 mg/L	10 mL	0.53 mg/L	1		0.50		5	10/15/19 14:21:00	N	IV
KQ1914878-73	Carbon, Total Organic (TOC)	DUP	K1909499-001	Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50		<1	10/15/19 13:25:00	N	IV
KQ1914878-74	Carbon, Total Organic (TOC)	TRP	K1909499-001	Pore Water	1.27 mg/L	10 mL	1.27 mg/L	1		0.50		<1	10/15/19 13:25:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655260 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1914878-75	Carbon, Total Organic (TOC)	QUAD	K1909499-001	Pore Water	1.25 mg/L	10 mL	1.25 mg/L	1		0.50		<1	10/15/19 13:25:00	N	IV
KQ1914878-76	Carbon, Total Organic (TOC)	DUP	K1909499-003	Pore Water	0.60 mg/L	10 mL	0.60 mg/L	1		0.50		4	10/15/19 15:17:00	N	IV
KQ1914878-77	Carbon, Total Organic (TOC)	TRP	K1909499-003	Pore Water	0.63 mg/L	10 mL	0.63 mg/L	1		0.50		5	10/15/19 15:17:00	N	IV
KQ1914878-78	Carbon, Total Organic (TOC)	QUAD	K1909499-003	Pore Water	0.61 mg/L	10 mL	0.61 mg/L	1		0.50		4	10/15/19 15:17:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

DOC: 655257, 655258
TOC: 655259, 655260

Schedule: 10122019

Version: 7
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/10/12 13:01 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1909231-001.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1909231-001.04 ms doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1909231-002.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	K1909231-004.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
8	Sample	K1909231-007.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
9	Sample	K1909231-008.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1909231-009.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
11	Sample	K1909231-011.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
12	Sample	K1909231-012.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
13	Sample	K1909231-013.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
14	Sample	K1909231-014.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
15	Sample	K1909231-016.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
16	Sample	K1909057-001.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
17	Sample	K1909057-003.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
18	Sample	K1909057-005.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
19	Sample	K1909057-006.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
21	Sample	K1909057-007.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
22	Sample	K1909057-009.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
23	Sample	K1909057-010.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
24	Sample	K1909057-011.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
25	Sample	K1909057-012.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
26	Sample	K1909057-013.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
27	Sample	K1909057-014.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
28	Sample	K1909057-007.06 ms doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1909057-015.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
30	Sample	K1909057-016.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
31	Sample	K1909057-017.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
32	Sample	K1909057-018.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
33	Sample	K1909057-019.06 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
34	Sample	K1909271-001.01	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
35	Sample	K1909499-001.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
36	Sample	K1909499-002.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
37	Sample	K1909499-003.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
38	Sample	K1909499-003.04 ms doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

10/16/19

Schedule: 10122019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
40	Sample	K1909231-001.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
41	Sample	K1909231-002.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
42	Sample	K1909231-004.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
43	Sample	K1909231-005.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
44	Sample	K1909231-007.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
45	Sample	K1909231-008.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
46	Sample	K1909231-009.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
47	Sample	K1909231-009.03 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1909231-010.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
49	Sample	K1909231-011.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
50	Sample	K1909231-012.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
51	Sample	K1909231-013.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
52	Sample	K1909231-014.03	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
53	Sample	K1909231-016.04	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
54	Sample	K1909057-019.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
55	Sample	K1909057-001.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
56	Sample	K1909057-003.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
57	Sample	K1909057-003.05 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
59	Sample	K1909057-004.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
60	Sample	K1909057-005.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
61	Sample	K1909057-007.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
62	Sample	K1909057-008.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
63	Sample	K1909057-009.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
64	Sample	K1909057-010.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
65	Sample	K1909057-012.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
66	Sample	K1909057-013.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1909057-014.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
68	Sample	K1909057-015.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
69	Sample	K1909057-016.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
70	Sample	K1909057-017.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
71	Sample	K1909057-018.05	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
72	Sample	K1909499-001.04	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
73	Sample	K1909499-002.04	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
74	Sample	K1909499-003.04	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
75	Sample	K1909499-003.04 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 10122019
Saturday, October 12, 2019 11:01 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/10/16 09:07 - Wednesday

Report Summary Information

Company Location: Gen Chem Lab
Schedule Name: 10122019
Instrument Name: Fusion1
Report Version: 1 of 1
Report Creation by Operators (schedule version): Fusion1 (Fusion1) (v2), Fusion1 (Fusion1) (v3), Fusion1 (Fusion1) (v4), Fusion1 (Fusion1) (v5), Fusion1 (Fusion1) (v6), Fusion1 (Fusion1) (v7)
Comment:

Engine Version: 1.1.5.1
Firmware Version: 1.2.0696
Connection: RS232 COM1

Report Results

10/16/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/10/12 11:01

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.95	16.63	3.68	49.40	05:22
2	TC Clean	6.98	10.70	3.72	50.24	04:02
3	TC Clean	2.10	5.81	3.72	50.38	03:48
4	TC Clean	1.52	5.27	3.74	50.31	03:48

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/10/12 11:26

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.30	14.83	3.53	49.41	05:20
2	TC Clean	5.66	9.34	3.68	50.40	04:02

3	TC Clean	2.44	6.04	3.59	50.37	03:56
4	TC Clean	1.48	5.17	3.69	50.36	03:55

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/12 11:49

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.20	14.90	3.69	49.49	05:21
2	TC Clean	4.60	8.38	3.78	50.31	04:02
3	TC Clean	2.22	5.97	3.75	50.24	03:47
4	TC Clean	1.01	4.78	3.77	50.16	03:47

Sample Type: Blank (Creating v1306) From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/10/12 12:26

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.37	14.95	3.58	49.51	05:08
2	TC Clean	5.57	9.29	3.71	50.37	04:02
3	TC Clean	1.72	5.44	3.72	50.35	03:46
4	TC Clean	1.00	4.76	3.76	50.39	03:47
5	Reagent Blank	5.11	8.68	3.57	50.13	05:05
6	Acid Blank	1.29	5.01	3.72	49.65	05:25

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.3154 ppm	0.0000 ppm	0.0000%	2019/10/12 13:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3154	3.1539	11.00	14.96	3.96	50.51	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1915 ppm (PASS)	0.0000 ppm	0%	2019/10/12 13:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1915	251.9152	180.46	184.18	3.72	50.54	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/12 13:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.18	13.05	3.87	50.53	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/12 13:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.39	11.99	3.60	50.52	10:25
2	TOC	0.0000	0.0000	8.70	12.29	3.59	50.51	10:28
3	TOC	0.0000	0.0000	8.17	11.86	3.69	50.50	10:28
4	TOC	0.0000	0.0000	8.47	12.20	3.73	50.47	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.9187 ppm (PASS)	0.1039 ppm	0.42%	2019/10/12 14:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9530	249.5300	178.84	182.42	3.57	50.44	10:28
C	TOC	25.0 ppm	2	25.0280	250.2799	179.35	182.97	3.62	50.41	10:29
C	TOC	25.0 ppm	3	24.9138	249.1382	178.58	182.08	3.50	50.40	10:26
C	TOC	25.0 ppm	4	24.7801	247.8005	177.67	181.19	3.52	50.40	10:26

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.3669 ppm	0.0000 ppm	0.0000%	2019/10/12 15:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3669	3.6695	11.35	14.91	3.57	50.36	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1909231-001.04 doc	1.3763 ppm	0.0159 ppm	1.1500%	2019/10/12 15:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3976	13.9760	18.34	21.93	3.58	50.33	10:28
2	TOC	1.3755	13.7550	18.19	21.82	3.62	50.36	10:30
3	TOC	1.3730	13.7300	18.18	21.78	3.60	50.34	10:29
4	TOC	1.3593	13.5930	18.08	21.65	3.56	50.33	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1909231-001.04 ms doc	27.6896 ppm	0.1919 ppm	0.6900%	2019/10/12 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.7252	277.2517	197.05	200.45	3.40	50.33	10:30
2	TOC	27.6910	276.9099	196.82	200.53	3.71	50.32	10:26
3	TOC	27.9042	279.0417	198.27	201.91	3.64	50.32	10:29

4	TOC	27.4382	274.3819	195.11	198.74	3.63	50.32	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	RB	0.0919 ppm	0.0000 ppm	0.0000%	2019/10/12 17:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0919	0.9190	9.48	13.10	3.62	50.31	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K1909231-002.04 doc	1.0939 ppm	0.0170 ppm	1.5500%	2019/10/12 17:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1084	11.0841	16.38	20.03	3.65	50.30	10:29
2	TOC	1.0906	10.9058	16.26	19.87	3.61	50.31	10:31
3	TOC	1.1053	11.0532	16.36	19.95	3.59	50.31	10:28
4	TOC	1.0713	10.7129	16.13	19.65	3.52	50.32	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1909231-004.04 doc	1.3779 ppm	0.0484 ppm	3.5100%	2019/10/12 18:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3614	13.6136	18.10	21.66	3.56	50.34	10:28
2	TOC	1.3253	13.2527	17.85	21.39	3.53	50.33	10:30
3	TOC	1.3842	13.8419	18.25	21.79	3.53	50.34	10:26
4	TOC	1.4406	14.4062	18.64	22.17	3.53	50.36	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1909231-007.04 doc	1.3006 ppm	0.0373 ppm	2.8700%	2019/10/12 19:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2712	12.7120	17.49	21.29	3.81	50.38	10:27
2	TOC	1.2669	12.6693	17.46	21.17	3.71	50.38	10:27
3	TOC	1.3225	13.2247	17.83	21.40	3.56	50.40	10:25
4	TOC	1.3419	13.4191	17.97	21.49	3.52	50.40	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1909231-008.04 doc	1.5128 ppm	0.0408 ppm	2.7000%	2019/10/12 20:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4564	14.5638	18.74	22.35	3.61	50.40	10:30
2	TOC	1.5187	15.1870	19.17	22.70	3.54	50.42	10:28
3	TOC	1.5224	15.2238	19.19	22.73	3.54	50.42	10:26
4	TOC	1.5538	15.5376	19.40	22.83	3.42	50.43	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7272 ppm (PASS)	0.0000 ppm	0%	2019/10/12 21:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7272	247.2716	177.31	180.71	3.40	50.45	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/12 21:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.18	11.71	3.53	50.43	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1909231-009.04 doc	1.5924 ppm	0.0509 ppm	3.2000%	2019/10/12 22:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5355	15.3549	19.28	22.78	3.50	50.46	10:28
2	TOC	1.6579	16.5791	20.11	23.54	3.43	50.46	10:29
3	TOC	1.5984	15.9840	19.71	23.38	3.67	50.46	10:28
4	TOC	1.5778	15.7777	19.57	23.28	3.71	50.48	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1909231-011.04 doc	0.7801 ppm	0.0326 ppm	4.1800%	2019/10/12 23:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7939	7.9388	14.25	17.91	3.66	50.47	10:27
2	TOC	0.8169	8.1686	14.40	18.02	3.61	50.48	10:25
3	TOC	0.7688	7.6884	14.08	17.71	3.63	50.48	10:28
4	TOC	0.7410	7.4099	13.89	17.56	3.67	50.50	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K1909231-012.04 doc	1.0815 ppm	0.0408 ppm	3.7800%	2019/10/13 00:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1258	11.2579	16.50	19.96	3.46	50.51	10:30
2	TOC	1.1018	11.0178	16.34	19.94	3.61	50.51	10:27
3	TOC	1.0658	10.6584	16.09	19.69	3.60	50.51	10:31
4	TOC	1.0327	10.3269	15.87	19.41	3.54	50.48	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K1909231-013.04 doc	0.6954 ppm	0.0296 ppm	4.2500%	2019/10/13 00:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7375	7.3746	13.86	17.49	3.63	50.45	10:27
2	TOC	0.6762	6.7617	13.45	17.15	3.71	50.39	10:28
3	TOC	0.6946	6.9459	13.57	17.13	3.55	50.39	10:27
4	TOC	0.6734	6.7337	13.43	17.12	3.69	50.37	10:26

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1909231-014.04 doc	0.4107 ppm	0.0194 ppm	4.7300%	2019/10/13 01:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4134	4.1335	11.66	15.16	3.50	50.37	10:31
2	TOC	0.4184	4.1836	11.70	15.33	3.63	50.36	10:26
3	TOC	0.3830	3.8301	11.46	15.22	3.76	50.37	10:28
4	TOC	0.4279	4.2794	11.76	15.60	3.84	50.37	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1909231-016.04 doc	0.3925 ppm	0.0394 ppm	10.0500%	2019/10/13 02:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3493	3.4927	11.23	14.87	3.64	50.37	10:29
2	TOC	0.4430	4.4297	11.86	15.44	3.57	50.41	10:29
3	TOC	0.3994	3.9936	11.57	15.09	3.52	50.43	10:26
4	TOC	0.3783	3.7829	11.42	15.08	3.66	50.45	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1909057-001.06 doc	1.7770 ppm	0.0137 ppm	0.7700%	2019/10/13 03:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7588	17.5883	20.80	24.38	3.59	50.46	10:28
2	TOC	1.7764	17.7636	20.92	24.37	3.46	50.47	10:27
3	TOC	1.7811	17.8107	20.95	24.63	3.69	50.47	10:28
4	TOC	1.7917	17.9168	21.02	24.72	3.70	50.49	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1909057-003.06 doc	0.9667 ppm	0.0270 ppm	2.8000%	2019/10/13 04:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9932	9.9321	15.60	19.16	3.56	50.53	10:24
2	TOC	0.9391	9.3914	15.23	18.93	3.69	50.54	10:28
3	TOC	0.9481	9.4813	15.29	18.96	3.67	50.55	10:29

4	TOC	0.9863	9.8628	15.55	19.09	3.54	50.54	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1909057-005.06 doc	0.9001 ppm	0.0382 ppm	4.2400%	2019/10/13 05:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8566	8.5664	14.67	18.34	3.67	50.55	10:30
2	TOC	0.9221	9.2205	15.12	18.61	3.49	50.55	10:30
3	TOC	0.8809	8.8095	14.84	18.56	3.72	50.56	10:29
4	TOC	0.9406	9.4061	15.24	18.73	3.49	50.56	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1909057-006.06 doc	0.7143 ppm	0.0245 ppm	3.4400%	2019/10/13 06:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7130	7.1300	13.70	17.27	3.57	50.56	10:29
2	TOC	0.6804	6.8045	13.48	17.14	3.66	50.57	10:25
3	TOC	0.7363	7.3628	13.86	17.34	3.49	50.56	10:27
4	TOC	0.7276	7.2759	13.80	17.25	3.45	50.57	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3914 ppm (PASS)	0.0000 ppm	0%	2019/10/13 07:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3914	243.9142	175.03	178.52	3.49	50.57	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/13 07:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.51	11.02	3.51	50.57	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/13 07:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.92	10.57	3.65	50.57	10:29
2	TOC	0.0000	0.0000	7.04	10.63	3.59	50.63	10:25
3	TOC	0.0000	0.0000	6.82	10.37	3.55	50.59	10:26
4	TOC	0.0000	0.0000	6.88	10.50	3.62	50.56	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.2861 ppm (PASS)	0.1223 ppm	0.50%	2019/10/13 08:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.3730	243.7300	174.90	178.32	3.42	50.58	10:29
C	TOC	25.0 ppm	2	24.2767	242.7666	174.25	177.91	3.66	50.58	10:27
C	TOC	25.0 ppm	3	24.1165	241.1652	173.16	176.90	3.73	50.56	10:25
C	TOC	25.0 ppm	4	24.3783	243.7831	174.94	178.49	3.55	50.55	10:24

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◆	21	TOC	K1909057-007.06 doc	0.7008 ppm	0.0736 ppm	10.5100%	2019/10/13 09:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8107	8.1068	14.36	18.11	3.75	50.51	10:27
2	TOC	0.6555	6.5555	13.31	16.98	3.67	50.43	10:27
3	TOC	0.6635	6.6350	13.36	17.03	3.67	50.41	10:28
4	TOC	0.6734	6.7337	13.43	17.09	3.66	50.47	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1909057-009.06 doc	0.5690 ppm	0.0345 ppm	6.0700%	2019/10/13 10:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5996	5.9957	12.93	16.58	3.66	50.49	10:28
2	TOC	0.5918	5.9176	12.87	16.60	3.73	50.50	10:28
3	TOC	0.5611	5.6112	12.67	16.45	3.79	50.52	10:25
4	TOC	0.5235	5.2355	12.41	16.31	3.90	50.51	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K1909057-010.06 doc	0.3748 ppm	0.0278 ppm	7.4100%	2019/10/13 11:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3886	3.8860	11.50	15.09	3.59	50.51	10:28
2	TOC	0.3724	3.7240	11.38	15.13	3.74	50.50	10:25
3	TOC	0.3370	3.3704	11.15	14.68	3.53	50.49	10:28
4	TOC	0.4011	4.0113	11.58	15.12	3.54	50.48	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K1909057-011.06 doc	0.6117 ppm	0.0360 ppm	5.8900%	2019/10/13 12:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5938	5.9382	12.89	16.48	3.59	50.48	10:26
2	TOC	0.6532	6.5319	13.29	16.80	3.51	50.48	10:26
3	TOC	0.6279	6.2785	13.12	16.71	3.59	50.47	10:28
4	TOC	0.5719	5.7187	12.74	16.42	3.68	50.44	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC)	CAS_salt_010711	CAS_salt_010711

(v1306) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1909057-012.06 doc	0.7738 ppm	0.0189 ppm	2.4400%	2019/10/13 13:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7772	7.7724	14.13	17.94	3.81	50.43	10:30
2	TOC	0.7464	7.4645	13.92	17.39	3.46	50.43	10:26
3	TOC	0.7825	7.8254	14.17	17.70	3.54	50.42	10:28
4	TOC	0.7892	7.8917	14.21	17.87	3.65	50.41	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1909057-013.06 doc	0.8109 ppm	0.0213 ppm	2.6200%	2019/10/13 14:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7955	7.9550	14.26	17.92	3.67	50.41	10:29
2	TOC	0.8189	8.1893	14.42	18.08	3.67	50.39	10:26
3	TOC	0.7918	7.9182	14.23	17.94	3.71	50.39	10:27
4	TOC	0.8372	8.3719	14.54	18.25	3.71	50.39	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1909057-014.06 doc	1.5816 ppm	0.0156 ppm	0.9900%	2019/10/13 15:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5767	15.7674	19.56	23.26	3.70	50.39	10:27
2	TOC	1.5922	15.9221	19.66	23.36	3.70	50.45	10:28
3	TOC	1.5957	15.9575	19.69	23.38	3.70	50.36	10:31
4	TOC	1.5617	15.6171	19.46	23.09	3.64	50.35	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1909057-007.06 ms doc	26.7097 ppm	0.0958 ppm	0.3600%	2019/10/13 16:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7169	267.1691	190.21	193.93	3.72	50.35	10:24
2	TOC	26.8420	268.4199	191.06	194.71	3.66	50.34	10:31
3	TOC	26.6502	266.5018	189.76	193.42	3.67	50.33	10:28

4	TOC	26.6296	266.2955	189.62	193.29	3.67	50.32	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7873 ppm (PASS)	0.0000 ppm	0%	2019/10/13 17:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7873	247.8727	177.72	181.42	3.70	50.31	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/13 17:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.22	10.81	3.58	50.30	10:37

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1909057-015.06 doc	0.7959 ppm	0.0220 ppm	2.7700%	2019/10/13 17:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8060	8.0596	14.33	17.97	3.64	50.28	10:28
2	TOC	0.8001	8.0007	14.29	17.98	3.69	50.29	10:26
3	TOC	0.8138	8.1377	14.38	18.20	3.82	50.29	10:26
4	TOC	0.7640	7.6398	14.04	17.86	3.81	50.30	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC)	CAS_salt_010711	CAS_salt_010711

(v1306) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K1909057-016.06 doc	0.3784 ppm	0.0216 ppm	5.7100%	2019/10/13 18:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3686	3.6857	11.36	14.95	3.59	50.30	10:27
2	TOC	0.4075	4.0746	11.62	15.33	3.71	50.31	10:27
3	TOC	0.3805	3.8050	11.44	15.17	3.73	50.32	10:26
4	TOC	0.3571	3.5708	11.28	15.02	3.74	50.32	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K1909057-017.06 doc	0.5294 ppm	0.0248 ppm	4.6800%	2019/10/13 19:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5076	5.0764	12.30	16.11	3.81	50.33	10:30
2	TOC	0.5122	5.1221	12.33	16.15	3.81	50.35	10:25
3	TOC	0.5614	5.6141	12.67	16.18	3.52	50.35	10:29
4	TOC	0.5362	5.3622	12.50	16.11	3.61	50.35	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K1909057-018.06 doc	0.2738 ppm	0.0090 ppm	3.3000%	2019/10/13 20:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2824	2.8239	10.77	14.27	3.49	50.38	10:27
2	TOC	0.2679	2.6795	10.68	14.22	3.55	50.39	10:27
3	TOC	0.2806	2.8062	10.76	14.52	3.76	50.39	10:30
4	TOC	0.2643	2.6427	10.65	14.13	3.48	50.40	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	K1909057-019.06 doc	0.4411 ppm	0.0280 ppm	6.3600%	2019/10/13 21:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4147	4.1468	11.67	15.15	3.48	50.42	10:30
2	TOC	0.4648	4.6477	12.01	15.55	3.54	50.42	10:28
3	TOC	0.4191	4.1910	11.70	15.35	3.65	50.45	10:26
4	TOC	0.4659	4.6595	12.02	15.57	3.55	50.46	10:27

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1909271-001.01	1.7657 ppm	0.0638 ppm	3.6200%	2019/10/13 22:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8273	18.2733	21.26	24.90	3.64	50.48	10:26
2	TOC	1.7668	17.6678	20.85	24.50	3.65	50.50	10:26
3	TOC	1.7912	17.9124	21.02	24.55	3.53	50.52	10:24
4	TOC	1.6775	16.7751	20.24	23.94	3.69	50.55	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1909499-001.04 doc	1.4329 ppm	0.0239 ppm	1.6700%	2019/10/13 23:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4328	14.3281	18.58	22.16	3.57	50.60	10:30
2	TOC	1.4517	14.5167	18.71	22.22	3.51	50.56	10:26
3	TOC	1.3992	13.9922	18.36	21.87	3.51	50.59	10:27
4	TOC	1.4478	14.4784	18.69	22.25	3.56	50.60	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1909499-002.04 doc	0.6880 ppm	0.0338 ppm	4.9100%	2019/10/14 00:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6407	6.4067	13.21	17.04	3.84	50.62	10:31
2	TOC	0.6885	6.8855	13.53	17.19	3.66	50.62	10:29
3	TOC	0.7177	7.1772	13.73	17.38	3.66	50.63	10:26
4	TOC	0.7052	7.0520	13.64	17.22	3.58	50.64	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1909499-003.04 doc	0.7553 ppm	0.0312 ppm	4.1200%	2019/10/14 01:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7706	7.7061	14.09	17.66	3.57	50.65	10:30
2	TOC	0.7840	7.8401	14.18	17.72	3.54	50.68	10:29

3	TOC	0.7543	7.5425	13.98	17.68	3.70	50.68	10:27
4	TOC	0.7123	7.1227	13.69	17.25	3.56	50.70	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1909499-003.04 ms doc	26.0755 ppm	0.0928 ppm	0.3600%	2019/10/14 02:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.0737	260.7371	185.84	189.43	3.58	50.71	10:31
2	TOC	26.0575	260.5751	185.73	189.14	3.40	50.73	10:28
3	TOC	26.1979	261.9791	186.69	190.26	3.57	50.69	10:28
4	TOC	25.9729	259.7295	185.16	188.74	3.58	50.72	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3046 ppm (PASS)	0.0000 ppm	0%	2019/10/14 02:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3046	243.0465	174.44	178.12	3.68	50.68	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/14 03:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.82	10.62	3.80	50.68	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/14 03:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.90	9.64	3.74	50.75	10:29
2	TOC	0.0000	0.0000	5.88	9.58	3.69	50.68	10:26
3	TOC	0.0000	0.0000	5.52	9.19	3.68	50.71	10:29
4	TOC	0.0000	0.0000	5.95	9.63	3.68	50.69	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.9969 ppm (PASS)	0.0395 ppm	0.16%	2019/10/14 04:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.9381	239.3812	171.95	175.43	3.48	50.68	10:26
C	TOC	25.0 ppm	2	24.0214	240.2135	172.52	176.26	3.74	50.68	10:27
C	TOC	25.0 ppm	3	24.0102	240.1016	172.44	176.06	3.62	50.68	10:25
C	TOC	25.0 ppm	4	24.0181	240.1811	172.50	176.19	3.69	50.73	10:26

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1909231-001.03	0.9440 ppm	0.0498 ppm	5.2800%	2019/10/14 05:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0122	10.1221	15.73	19.46	3.74	50.68	10:29
2	TOC	0.9500	9.5004	15.31	19.01	3.70	50.71	10:26
3	TOC	0.9076	9.0761	15.02	18.66	3.64	50.68	10:31
4	TOC	0.9061	9.0614	15.01	18.73	3.72	50.71	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1909231-002.03	0.7826 ppm	0.0197 ppm	2.5200%	2019/10/14 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7706	7.7061	14.09	17.75	3.66	50.68	10:28
2	TOC	0.7615	7.6147	14.03	17.61	3.59	50.70	10:28
3	TOC	0.7954	7.9536	14.26	17.94	3.69	50.68	10:27
4	TOC	0.8029	8.0287	14.31	17.95	3.64	50.67	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1909231-004.03	1.0070 ppm	0.0259 ppm	2.5800%	2019/10/14 07:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0185	10.1855	15.77	19.37	3.60	50.74	10:26
2	TOC	1.0365	10.3652	15.89	19.54	3.65	50.68	10:32
3	TOC	0.9959	9.9586	15.62	19.39	3.78	50.68	10:28
4	TOC	0.9771	9.7715	15.49	18.99	3.50	50.69	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1909231-005.03	0.9588 ppm	0.0380 ppm	3.9600%	2019/10/14 08:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9095	9.0953	15.03	18.73	3.70	50.70	10:29
2	TOC	0.9850	9.8496	15.54	19.26	3.72	50.70	10:27
3	TOC	0.9486	9.4857	15.30	18.92	3.62	50.69	10:28
4	TOC	0.9922	9.9218	15.59	19.23	3.64	50.69	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1909231-007.03	1.0300 ppm	0.0245 ppm	2.3800%	2019/10/14 09:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0082	10.0823	15.70	19.43	3.73	50.68	10:30
2	TOC	1.0601	10.6009	16.05	19.68	3.63	50.68	10:30
3	TOC	1.0398	10.3976	15.92	19.53	3.61	50.66	10:31
4	TOC	1.0118	10.1177	15.72	19.39	3.67	50.67	10:27

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1909231-008.03	1.2001 ppm	0.0629 ppm	5.2500%	2019/10/14 09:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1451	11.4509	16.63	20.32	3.69	50.65	10:28
2	TOC	1.1572	11.5717	16.71	20.37	3.66	50.64	10:28
3	TOC	1.2158	12.1581	17.11	20.66	3.55	50.65	10:30
4	TOC	1.2824	12.8240	17.56	21.07	3.51	50.64	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1909231-009.03	1.2331 ppm	0.0302 ppm	2.4500%	2019/10/14 10:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2232	12.2317	17.16	20.70	3.54	50.62	10:30
2	TOC	1.2329	12.3290	17.23	20.81	3.58	50.63	10:27
3	TOC	1.2741	12.7415	17.51	21.16	3.65	50.60	10:28
4	TOC	1.2023	12.0225	17.02	20.78	3.76	50.60	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1909231-009.03 ms	27.9978 ppm	0.1378 ppm	0.4900%	2019/10/14 11:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.8782	278.7824	198.09	201.58	3.49	50.58	10:27
2	TOC	27.9263	279.2626	198.42	201.84	3.43	50.56	10:31
3	TOC	28.1916	281.9159	200.22	203.99	3.77	50.53	10:28
4	TOC	27.9952	279.9521	198.89	202.65	3.76	50.54	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5679 ppm (PASS)	0.0000 ppm	0%	2019/10/14 12:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5679	245.6791	176.23	179.80	3.57	50.50	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/14 12:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.74	10.62	3.88	50.49	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K1909231-010.03	1.2067 ppm	0.0186 ppm	1.5400%	2019/10/14 13:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2239	12.2391	17.16	20.96	3.79	50.48	10:29
2	TOC	1.2188	12.1875	17.13	20.82	3.69	50.45	10:26
3	TOC	1.2012	12.0122	17.01	20.81	3.80	50.45	10:26
4	TOC	1.1830	11.8295	16.89	20.43	3.54	50.44	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K1909231-011.03	0.5307 ppm	0.0206 ppm	3.8900%	2019/10/14 14:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5224	5.2237	12.40	15.96	3.56	50.39	10:26
2	TOC	0.5104	5.1044	12.32	15.84	3.51	50.38	10:29
3	TOC	0.5589	5.5891	12.65	16.15	3.50	50.36	10:23
4	TOC	0.5309	5.3092	12.46	16.07	3.61	50.30	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1909231-012.03	0.8018 ppm	0.0295 ppm	3.6800%	2019/10/14 15:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7724	7.7237	14.10	17.79	3.69	50.30	10:26
2	TOC	0.7877	7.8769	14.20	17.69	3.49	50.27	10:24
3	TOC	0.8409	8.4088	14.57	18.14	3.58	50.27	10:26
4	TOC	0.8063	8.0626	14.33	17.93	3.60	50.24	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1909231-013.03	0.4605 ppm	0.0172 ppm	3.7400%	2019/10/14 16:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4459	4.4591	11.88	15.53	3.65	50.23	10:25
2	TOC	0.4452	4.4518	11.88	15.45	3.57	50.18	10:24
3	TOC	0.4758	4.7582	12.09	15.58	3.50	50.19	10:27
4	TOC	0.4749	4.7493	12.08	15.61	3.53	50.22	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1909231-014.03	0.1479 ppm	0.0238 ppm	16.0600%	2019/10/14 16:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1508	1.5083	9.88	13.39	3.51	50.18	10:28
2	TOC	0.1240	1.2402	9.70	13.16	3.46	50.19	10:25
3	TOC	0.1796	1.7956	10.08	13.77	3.70	50.19	10:25
4	TOC	0.1373	1.3728	9.79	13.39	3.60	50.19	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1909231-016.04	0.0948 ppm	0.0317 ppm	33.3900%	2019/10/14 17:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0523	0.5227	9.21	12.91	3.70	50.20	10:28
2	TOC	0.0893	0.8925	9.46	13.07	3.61	50.19	10:29
3	TOC	0.1203	1.2033	9.67	13.21	3.54	50.21	10:29

4	TOC	0.1175	1.1754	9.66	13.21	3.56	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K1909057-019.05	0.4538 ppm	0.0189 ppm	4.1700%	2019/10/14 18:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4374	4.3737	11.83	15.45	3.62	50.24	10:26
2	TOC	0.4799	4.7994	12.12	15.64	3.52	50.29	10:25
3	TOC	0.4550	4.5505	11.95	15.56	3.62	50.27	10:24
4	TOC	0.4428	4.4282	11.86	15.42	3.56	50.28	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K1909057-001.05	1.5283 ppm	0.0461 ppm	3.0200%	2019/10/14 19:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5106	15.1059	19.11	22.73	3.62	50.31	10:24
2	TOC	1.5122	15.1222	19.12	22.68	3.56	50.33	10:30
3	TOC	1.5963	15.9633	19.69	23.28	3.59	50.33	10:29
4	TOC	1.4941	14.9409	19.00	22.56	3.56	50.36	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	K1909057-003.05	0.6592 ppm	0.0192 ppm	2.9200%	2019/10/14 20:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6589	6.5894	13.33	16.86	3.53	50.38	10:27
2	TOC	0.6377	6.3772	13.19	16.85	3.66	50.43	10:30
3	TOC	0.6558	6.5584	13.31	16.76	3.45	50.41	10:27
4	TOC	0.6844	6.8442	13.50	16.98	3.48	50.43	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K1909057-003.05 ms	25.8160 ppm	0.1347 ppm	0.5200%	2019/10/14 21:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.9504	259.5041	185.01	188.72	3.72	50.44	10:27

2	TOC	25.6453	256.4531	182.94	186.45	3.51	50.46	10:26
3	TOC	25.7770	257.7701	183.83	187.45	3.62	50.48	10:28
4	TOC	25.8913	258.9133	184.61	188.21	3.61	50.50	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.9658 ppm (PASS)	0.0000 ppm	0%	2019/10/14 22:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9658	239.6581	172.14	175.84	3.70	50.51	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/14 22:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.31	9.77	3.46	50.53	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/14 23:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.59	8.98	3.39	50.54	10:26
2	TOC	0.0000	0.0000	5.63	9.20	3.57	50.57	10:26
3	TOC	0.0000	0.0000	5.31	8.97	3.66	50.58	10:27
4	TOC	0.0000	0.0000	5.19	8.92	3.74	50.59	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.9718 ppm (PASS)	0.2808 ppm	1.17%	2019/10/14 23:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.9643	239.6434	172.13	175.68	3.55	50.61	10:28
C	TOC	25.0 ppm	2	23.7456	237.4557	170.65	174.34	3.69	50.61	10:26
C	TOC	25.0 ppm	3	24.3698	243.6976	174.88	178.49	3.61	50.61	10:26
C	TOC	25.0 ppm	4	23.8074	238.0744	171.07	174.74	3.68	50.63	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1909057-004.05	0.7287 ppm	0.0486 ppm	6.6700%	2019/10/15 00:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7924	7.9241	14.24	17.91	3.67	50.65	10:28
2	TOC	0.7366	7.3657	13.86	17.47	3.62	50.66	10:25
3	TOC	0.7070	7.0696	13.66	17.36	3.70	50.64	10:29
4	TOC	0.6788	6.7883	13.46	17.01	3.54	50.68	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1909057-005.05	0.5287 ppm	0.0382 ppm	7.2300%	2019/10/15 01:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5421	5.4211	12.54	16.04	3.51	50.69	10:26
2	TOC	0.5751	5.7511	12.76	16.30	3.54	50.71	10:29
3	TOC	0.4873	4.8731	12.16	15.81	3.65	50.71	10:31
4	TOC	0.5103	5.1029	12.32	15.80	3.48	50.70	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC)	CAS_salt_010711	CAS_salt_010711

(v1306) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1909057-007.05	0.3926 ppm	0.0337 ppm	8.5800%	2019/10/15 02:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4154	4.1542	11.68	15.16	3.49	50.69	10:28
2	TOC	0.4063	4.0628	11.62	15.31	3.70	50.73	10:27
3	TOC	0.3425	3.4249	11.18	14.87	3.69	50.68	10:28
4	TOC	0.4063	4.0628	11.62	15.23	3.62	50.72	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1909057-008.05	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/15 03:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.66	9.25	3.60	50.69	10:29
2	TOC	0.0000	0.0000	6.11	9.70	3.59	50.71	10:29
3	TOC	0.0000	0.0000	5.76	9.41	3.65	50.71	10:24
4	TOC	0.0000	0.0000	5.65	9.37	3.71	50.70	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1909057-009.05	0.3465 ppm	0.0451 ppm	13.0100%	2019/10/15 04:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2977	2.9771	10.88	14.60	3.73	50.76	10:26
2	TOC	0.4023	4.0231	11.59	15.19	3.60	50.71	10:26
3	TOC	0.3599	3.5988	11.30	15.03	3.73	50.75	10:25
4	TOC	0.3260	3.2599	11.07	14.78	3.71	50.71	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1909057-010.05	0.1211 ppm	0.0202 ppm	16.6500%	2019/10/15 05:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0944	0.9441	9.50	13.26	3.76	50.69	10:27
2	TOC	0.1171	1.1709	9.65	13.21	3.56	50.69	10:27
3	TOC	0.1337	1.3374	9.76	13.54	3.77	50.70	10:29
4	TOC	0.1393	1.3934	9.80	13.53	3.73	50.70	10:24

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1909057-012.05	0.5191 ppm	0.0338 ppm	6.5000%	2019/10/15 06:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4973	4.9733	12.23	16.09	3.86	50.72	10:24
2	TOC	0.5076	5.0764	12.30	16.00	3.69	50.74	10:24
3	TOC	0.5694	5.6937	12.72	16.33	3.61	50.71	10:24
4	TOC	0.5022	5.0219	12.27	15.95	3.68	50.70	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1909057-013.05	0.6126 ppm	0.0157 ppm	2.5600%	2019/10/15 07:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5946	5.9456	12.89	16.55	3.66	50.67	10:27
2	TOC	0.6091	6.0914	12.99	16.76	3.77	50.71	10:28
3	TOC	0.6326	6.3257	13.15	16.83	3.68	50.78	10:29
4	TOC	0.6142	6.1415	13.03	16.78	3.75	50.77	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.5297 ppm (PASS)	0.0000 ppm	0%	2019/10/15 08:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.5297	235.2974	169.18	172.93	3.75	50.71	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0	0 / infinity	0.0000	0.0000	0%	2019/10/15 08:32

					ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.89	9.61	3.72	50.72	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1909057-014.05	1.2820 ppm	0.0942 ppm	7.3500%	2019/10/15 08:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2457	12.4571	17.31	21.02	3.71	50.70	10:26
2	TOC	1.2687	12.6869	17.47	21.24	3.77	50.71	10:29
3	TOC	1.1975	11.9754	16.99	20.67	3.68	50.70	10:25
4	TOC	1.4162	14.1616	18.47	22.14	3.67	50.66	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1909057-015.05	0.6301 ppm	0.0137 ppm	2.1800%	2019/10/15 09:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6483	6.4833	13.26	16.90	3.64	50.67	10:29
2	TOC	0.6324	6.3242	13.15	16.87	3.72	50.65	10:29
3	TOC	0.6224	6.2240	13.08	16.88	3.80	50.63	10:26
4	TOC	0.6171	6.1710	13.05	16.81	3.77	50.61	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1909057-016.05	0.2496 ppm	0.0380 ppm	15.2300%	2019/10/15 10:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1984	1.9841	10.20	13.84	3.64	50.61	10:27
2	TOC	0.2679	2.6795	10.68	14.24	3.56	50.59	10:24
3	TOC	0.2865	2.8651	10.80	14.41	3.61	50.57	10:27
4	TOC	0.2457	2.4570	10.52	14.17	3.64	50.56	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	K1909057-017.05	0.3730 ppm	0.0318 ppm	8.5300%	2019/10/15 11:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3971	3.9715	11.55	15.24	3.69	50.58	10:29
2	TOC	0.4033	4.0334	11.60	15.09	3.50	50.57	10:31
3	TOC	0.3410	3.4102	11.17	14.86	3.69	50.57	10:27
4	TOC	0.3504	3.5045	11.24	14.81	3.57	50.55	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	71	TOC	K1909057-018.05	0.1236 ppm	0.0261 ppm	21.1000%	2019/10/15 12:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0856	0.8557	9.44	13.01	3.57	50.51	10:28
2	TOC	0.1317	1.3168	9.75	13.38	3.63	50.50	10:28
3	TOC	0.1449	1.4494	9.84	13.42	3.58	50.50	10:25
4	TOC	0.1321	1.3212	9.75	13.34	3.58	50.47	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	72	TOC	K1909499-001.04	1.2643 ppm	0.0080 ppm	0.6300%	2019/10/15 13:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2668	12.6678	17.46	21.01	3.55	50.45	10:24
2	TOC	1.2668	12.6678	17.46	21.04	3.59	50.45	10:26
3	TOC	1.2711	12.7105	17.48	21.10	3.61	50.43	10:27
4	TOC	1.2528	12.5278	17.36	20.97	3.61	50.43	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8572 (IC) (v1306)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	73	TOC	K1909499-002.04	0.5268 ppm	0.0270 ppm	5.1300%	2019/10/15 14:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5034	5.0337	12.27	16.00	3.73	50.39	10:30
2	TOC	0.5110	5.1103	12.33	15.89	3.56	50.37	10:24
3	TOC	0.5641	5.6406	12.69	16.26	3.57	50.35	10:26

4	TOC	0.5286	5.2856	12.45	16.01	3.56	50.35	10:27

Dilution 1:10 | **Blank Contribution** (TC) 8.8572 (IC) (v1306) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	74	TOC	K1909499-003.04	0.6054 ppm	0.0251 ppm	4.1400%	2019/10/15 15:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5745	5.7452	12.76	16.21	3.46	50.35	10:26
2	TOC	0.5985	5.9854	12.92	16.37	3.45	50.35	10:28
3	TOC	0.6336	6.3360	13.16	16.61	3.45	50.33	10:26
4	TOC	0.6149	6.1489	13.03	16.65	3.62	50.33	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.8572 (IC) (v1306) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	75	TOC	K1909499-003.04 ms	26.8892 ppm	0.0582 ppm	0.2200%	2019/10/15 16:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.9528	269.5277	191.81	195.40	3.58	50.33	10:27
2	TOC	26.8118	268.1179	190.85	194.57	3.72	50.32	10:25
3	TOC	26.9008	269.0077	191.46	195.18	3.73	50.31	10:27
4	TOC	26.8915	268.9149	191.40	195.17	3.77	50.34	10:23

Dilution 1:10 | **Blank Contribution** (TC) 8.8572 (IC) (v1306) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4468 ppm (PASS)	0.0000 ppm	0%	2019/10/15 17:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4468	244.4681	175.41	178.98	3.57	50.32	10:31

Completion State Success - Criteria met. | **Success Action** Do Nothing | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30) | **STD Conc - Pos B** 50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 7

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/15 17:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.79	9.32	3.53	50.32	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1305	1.4627	1.4610	0.0000	0.0000	0.0000	2019/10/10 14:30	Fusion1 (Fusion1)
v1306	1.7047	1.2920	0.0000	0.0000	0.0000	2019/10/12 13:00	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/10/15 17:39

ALS Environmental

StarLIMS Run: 655257, 655258, 655259, 655260

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-81J

21 % H3PO4: 11-GEN-05-81I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: JCP	Date Analyzed: 10/12/19
Reviewed By:	Date Reviewed: 10/16/19

10450 Stancliff Rd. Suite 210
Houston, TX 77099
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October 11, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100181**

Laboratory Results for: **Groundwater Treatment Plant Bi-Weekly Samples**

Dear Marcia,

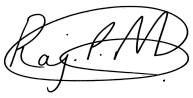
ALS Environmental received 2 sample(s) on Oct 03, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
Work Order: HS19100181

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100181-01	LH18/24-SP650_100119	Water		01-Oct-2019 14:00	03-Oct-2019 08:33	☐
HS19100181-02	Trip Blank	Water		01-Oct-2019 00:00	03-Oct-2019 08:33	☐

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
Work Order: HS19100181

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R348062

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R347908

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Groundwater Treatment Plant Bi-Weekly Samples WorkOrder:HS19100181
Sample ID: LH18/24-SP650_100119 Lab ID:HS19100181-01
Collection Date: 01-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,2-Dichloroethane	**0.37**	J	**0.20**	**1.0**	**1.0**	**UG/L**	1	09-Oct-2019 21:53
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
2-Butanone	2.0	U	0.50	2.0	2.0	UG/L	1	09-Oct-2019 21:53
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	09-Oct-2019 21:53
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	09-Oct-2019 21:53
Acetone	**5.1**		**0.40**	**2.0**	**2.0**	**UG/L**	1	09-Oct-2019 21:53
Benzene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Bromochloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Bromodichloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Carbon disulfide	2.0	U	0.60	2.0	2.0	UG/L	1	09-Oct-2019 21:53
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Chloroform	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Groundwater Treatment Plant Bi-Weekly Samples WorkOrder:HS19100181
Sample ID: LH18/24-SP650_100119 Lab ID:HS19100181-01
Collection Date: 01-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
cis-1,2-Dichloroethene	**2.2**		**0.20**	**1.0**	**1.0**	**UG/L**	1	09-Oct-2019 21:53
cis-1,3-Dichloropropene	1.0	U	0.10	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Dibromomethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
m,p-Xylene	2.0	U	0.50	2.0	2.0	UG/L	1	09-Oct-2019 21:53
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	09-Oct-2019 21:53
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:53
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Toluene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Trichloroethene	**0.98**	J	**0.20**	**1.0**	**1.0**	**UG/L**	1	09-Oct-2019 21:53
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Vinyl chloride	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:53
Surr: 1,2-Dichloroethane-d4	*91.7*			**0**	*81-118*	*%REC*	*1*	*09-Oct-2019 21:53*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*09-Oct-2019 21:53*
Surr: Dibromofluoromethane	*96.4*			**0**	*80-119*	*%REC*	*1*	*09-Oct-2019 21:53*
Surr: Toluene-d8	*98.7*			**0**	*89-112*	*%REC*	*1*	*09-Oct-2019 21:53*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**496**		**2.00**	**5.00**	**5.00**	**mg/L**	10	07-Oct-2019 22:28
Sulfate	**101**		**2.00**	**5.00**	**5.00**	**mg/L**	10	07-Oct-2019 22:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Groundwater Treatment Plant Bi-Weekly Samples WorkOrder:HS19100181
Sample ID: Trip Blank Lab ID:HS19100181-02
Collection Date: 01-Oct-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
2-Butanone	2.0	U	0.50	2.0	2.0	UG/L	1	09-Oct-2019 21:29
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	09-Oct-2019 21:29
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	09-Oct-2019 21:29
Acetone	**28**		**0.40**	**2.0**	**2.0**	**UG/L**	1	09-Oct-2019 21:29
Benzene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Bromochloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Bromodichloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Carbon disulfide	2.0	U	0.60	2.0	2.0	UG/L	1	09-Oct-2019 21:29
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Chloroform	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Groundwater Treatment Plant Bi-Weekly Samples WorkOrder:HS19100181

Sample ID: Trip Blank Lab ID:HS19100181-02

Collection Date: 01-Oct-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
cis-1,3-Dichloropropene	1.0	U	0.10	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Dibromomethane	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
m,p-Xylene	2.0	U	0.50	2.0	2.0	UG/L	1	09-Oct-2019 21:29
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	09-Oct-2019 21:29
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	09-Oct-2019 21:29
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Toluene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Trichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Trichlorofluoromethane	**0.89**	J	**0.30**	**1.0**	**1.0**	**UG/L**	1	09-Oct-2019 21:29
Vinyl chloride	1.0	U	0.20	1.0	1.0	UG/L	1	09-Oct-2019 21:29
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*1*	*09-Oct-2019 21:29*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*09-Oct-2019 21:29*
Surr: Dibromofluoromethane	*94.9*			**0**	*80-119*	*%REC*	*1*	*09-Oct-2019 21:29*
Surr: Toluene-d8	*98.4*			**0**	*89-112*	*%REC*	*1*	*09-Oct-2019 21:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R347908 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS19100181-01	LH18/24-SP650_100119	01 Oct 2019 14:00			07 Oct 2019 22:28	10
Batch ID: R348062 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19100181-01	LH18/24-SP650_100119	01 Oct 2019 14:00			09 Oct 2019 21:53	1
HS19100181-02	Trip Blank	01 Oct 2019 00:00			09 Oct 2019 21:29	1

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-191009** Units: **UG/L** Analysis Date: **09-Oct-2019 19:29**
Client ID: Run ID: **VOA6_348062** SeqNo: **5291052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	0.2437	1.0								J
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	2.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	2.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	2.0	2.0								U
Acetone	2.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191009** Units: **UG/L** Analysis Date: **09-Oct-2019 19:29**
Client ID: Run ID: **VOA6_348062** SeqNo: **5291052** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	2.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	2.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.27*	*1.0*	*50*	*0*	*90.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.08*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*47.65*	*1.0*	*50*	*0*	*95.3*	*80 - 119*				
Surr: Toluene-d8	*49.5*	*1.0*	*50*	*0*	*99.0*	*89 - 112*				

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191009** Units: **UG/L** Analysis Date: **09-Oct-2019 18:16**
Client ID: Run ID: **VOA6_348062** SeqNo: **5291051** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.36	1.0	20	0	96.8	78 - 124				
1,1,1-Trichloroethane	19.67	1.0	20	0	98.4	74 - 131				
1,1,2,2-Tetrachloroethane	19.88	1.0	20	0	99.4	71 - 121				
1,1,2-Trichloroethane	19.4	1.0	20	0	97.0	80 - 119				
1,1-Dichloroethane	19.19	1.0	20	0	95.9	77 - 125				
1,1-Dichloroethene	18.83	1.0	20	0	94.1	71 - 131				
1,1-Dichloropropene	17.86	1.0	20	0	89.3	78 - 125				
1,2,3-Trichlorobenzene	21.39	1.0	20	0	107	69 - 129				
1,2,3-Trichloropropane	20.05	1.0	20	0	100	73 - 122				
1,2,4-Trichlorobenzene	20.52	1.0	20	0	103	69 - 130				
1,2,4-Trimethylbenzene	18.71	1.0	20	0	93.6	76 - 124				
1,2-Dibromo-3-chloropropane	19.34	1.0	20	0	96.7	62 - 128				
1,2-Dibromoethane	19.61	1.0	20	0	98.0	77 - 121				
1,2-Dichlorobenzene	19.01	1.0	20	0	95.1	80 - 119				
1,2-Dichloroethane	19.52	1.0	20	0	97.6	73 - 128				
1,2-Dichloropropane	19.3	1.0	20	0	96.5	78 - 122				
1,3,5-Trimethylbenzene	18.85	1.0	20	0	94.2	75 - 124				
1,3-Dichlorobenzene	18.76	1.0	20	0	93.8	80 - 119				
1,3-Dichloropropane	19.76	1.0	20	0	98.8	80 - 119				
1,4-Dichlorobenzene	18.68	1.0	20	0	93.4	79 - 118				
2,2-Dichloropropane	20.22	1.0	20	0	101	60 - 139				
2-Butanone	41.88	2.0	40	0	105	56 - 143				
2-Chlorotoluene	17.98	1.0	20	0	89.9	79 - 122				
2-Hexanone	40.95	2.0	40	0	102	57 - 139				
4-Chlorotoluene	18.43	1.0	20	0	92.1	78 - 122				
4-Isopropyltoluene	18.26	1.0	20	0	91.3	77 - 127				
4-Methyl-2-pentanone	40.66	2.0	40	0	102	67 - 130				
Acetone	43.84	2.0	40	0	110	39 - 160				
Benzene	18.85	1.0	20	0	94.3	79 - 120				
Bromobenzene	19.5	1.0	20	0	97.5	80 - 120				
Bromochloromethane	19.51	1.0	20	0	97.5	78 - 123				
Bromodichloromethane	19.38	1.0	20	0	96.9	79 - 125				
Bromoform	20.32	1.0	20	0	102	66 - 130				
Bromomethane	19.46	1.0	20	0	97.3	53 - 141				

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191009** Units: **UG/L** Analysis Date: **09-Oct-2019 18:16**
Client ID: Run ID: **VOA6_348062** SeqNo: **5291051** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	38.89	2.0	40	0	97.2	64 - 133				
Carbon tetrachloride	17.59	1.0	20	0	87.9	72 - 136				
Chlorobenzene	19.36	1.0	20	0	96.8	82 - 118				
Chloroethane	21.59	1.0	20	0	108	60 - 138				
Chloroform	19.66	1.0	20	0	98.3	79 - 124				
Chloromethane	19.08	1.0	20	0	95.4	50 - 139				
cis-1,2-Dichloroethene	20.24	1.0	20	0	101	78 - 123				
cis-1,3-Dichloropropene	20.1	1.0	20	0	100	75 - 124				
Dibromochloromethane	19.56	1.0	20	0	97.8	74 - 126				
Dibromomethane	19.95	1.0	20	0	99.8	79 - 123				
Dichlorodifluoromethane	17.6	1.0	20	0	88.0	32 - 152				
Ethylbenzene	18.95	1.0	20	0	94.7	79 - 121				
Hexachlorobutadiene	20.18	1.0	20	0	101	66 - 134				
Isopropylbenzene	18.36	1.0	20	0	91.8	72 - 131				
m,p-Xylene	37.45	2.0	40	0	93.6	80 - 121				
Methylene chloride	20.31	2.0	20	0	102	74 - 124				
Naphthalene	20.27	1.0	20	0	101	61 - 128				
n-Butylbenzene	19.02	1.0	20	0	95.1	75 - 128				
n-Propylbenzene	18.21	1.0	20	0	91.1	76 - 126				
o-Xylene	19.23	1.0	20	0	96.2	78 - 122				
sec-Butylbenzene	18.08	1.0	20	0	90.4	77 - 126				
Styrene	19.44	1.0	20	0	97.2	78 - 123				
tert-Butylbenzene	18.18	1.0	20	0	90.9	78 - 124				
Tetrachloroethene	18.15	1.0	20	0	90.8	74 - 129				
Toluene	19.29	1.0	20	0	96.5	80 - 121				
trans-1,2-Dichloroethene	19.77	1.0	20	0	98.9	75 - 124				
trans-1,3-Dichloropropene	20.37	1.0	20	0	102	73 - 127				
Trichloroethene	18.78	1.0	20	0	93.9	79 - 123				
Trichlorofluoromethane	18.18	1.0	20	0	90.9	65 - 141				
Vinyl chloride	17.47	1.0	20	0	87.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.94*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.05*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*51.86*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*46.37*	*1.0*	*50*	*0*	*92.7*	*89 - 112*				

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19100181-01MS** Units: **UG/L** Analysis Date: **09-Oct-2019 22:17**
Client ID: **LH18/24-SP650_100119** Run ID: **VOA6_348062** SeqNo: **5291055** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.2	1.0	20	0	96.0	78 - 124				
1,1,1-Trichloroethane	18.41	1.0	20	0	92.0	74 - 131				
1,1,2,2-Tetrachloroethane	18.79	1.0	20	0	93.9	71 - 121				
1,1,2-Trichloroethane	18.36	1.0	20	0	91.8	80 - 119				
1,1-Dichloroethane	17.3	1.0	20	0	86.5	77 - 125				
1,1-Dichloroethene	18.21	1.0	20	0	91.0	71 - 131				
1,1-Dichloropropene	18.31	1.0	20	0	91.5	78 - 125				
1,2,3-Trichlorobenzene	16.46	1.0	20	0	82.3	69 - 129				
1,2,3-Trichloropropane	19.14	1.0	20	0	95.7	73 - 122				
1,2,4-Trichlorobenzene	17.92	1.0	20	0	89.6	69 - 130				
1,2,4-Trimethylbenzene	20.31	1.0	20	0	102	76 - 124				
1,2-Dibromo-3-chloropropane	17.3	1.0	20	0	86.5	62 - 128				
1,2-Dibromoethane	18.81	1.0	20	0	94.0	77 - 121				
1,2-Dichlorobenzene	19.64	1.0	20	0	98.2	80 - 119				
1,2-Dichloroethane	18.31	1.0	20	0.369	89.7	73 - 128				
1,2-Dichloropropane	17.62	1.0	20	0	88.1	78 - 122				
1,3,5-Trimethylbenzene	20.81	1.0	20	0	104	75 - 124				
1,3-Dichlorobenzene	20.12	1.0	20	0	101	80 - 119				
1,3-Dichloropropane	18.55	1.0	20	0	92.8	80 - 119				
1,4-Dichlorobenzene	19.23	1.0	20	0	96.1	79 - 118				
2,2-Dichloropropane	17.3	1.0	20	0	86.5	60 - 139				
2-Butanone	32.3	2.0	40	0	80.8	56 - 143				
2-Chlorotoluene	19.76	1.0	20	0	98.8	79 - 122				
2-Hexanone	35.79	2.0	40	0	89.5	57 - 139				
4-Chlorotoluene	19.99	1.0	20	0	99.9	78 - 122				
4-Isopropyltoluene	20.99	1.0	20	0	105	77 - 127				
4-Methyl-2-pentanone	35.35	2.0	40	0	88.4	67 - 130				
Acetone	35.84	2.0	40	5.073	76.9	39 - 160				
Benzene	18.21	1.0	20	0	91.0	79 - 120				
Bromobenzene	20.31	1.0	20	0	102	80 - 120				
Bromochloromethane	16.71	1.0	20	0	83.5	78 - 123				
Bromodichloromethane	17.94	1.0	20	0	89.7	79 - 125				
Bromoform	18.77	1.0	20	0	93.8	66 - 130				
Bromomethane	17.23	1.0	20	0	86.2	53 - 141				

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19100181-01MS** Units: **UG/L** Analysis Date: **09-Oct-2019 22:17**
Client ID: **LH18/24-SP650_100119** Run ID: **VOA6_348062** SeqNo: **5291055** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	35.54	2.0	40	0	88.8	64 - 133				
Carbon tetrachloride	19.03	1.0	20	0	95.1	72 - 136				
Chlorobenzene	18.97	1.0	20	0	94.9	82 - 118				
Chloroethane	17.85	1.0	20	0	89.3	60 - 138				
Chloroform	17.31	1.0	20	0	86.6	79 - 124				
Chloromethane	16.91	1.0	20	0	84.6	50 - 139				
cis-1,2-Dichloroethene	19.62	1.0	20	2.239	86.9	78 - 123				
cis-1,3-Dichloropropene	18.25	1.0	20	0	91.3	75 - 124				
Dibromochloromethane	18.79	1.0	20	0	93.9	74 - 126				
Dibromomethane	17.87	1.0	20	0	89.3	79 - 123				
Dichlorodifluoromethane	14.65	1.0	20	0	73.2	32 - 152				
Ethylbenzene	20.13	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	19.83	1.0	20	0	99.2	66 - 134				
Isopropylbenzene	20.23	1.0	20	0	101	72 - 131				
m,p-Xylene	39.66	2.0	40	0	99.1	80 - 121				
Methylene chloride	18.01	2.0	20	0	90.1	74 - 124				
Naphthalene	16.14	1.0	20	0	80.7	61 - 128				
n-Butylbenzene	21.37	1.0	20	0	107	75 - 128				
n-Propylbenzene	20.96	1.0	20	0	105	76 - 126				
o-Xylene	20.21	1.0	20	0.2569	99.8	78 - 122				
sec-Butylbenzene	21.19	1.0	20	0	106	77 - 126				
Styrene	18.83	1.0	20	0	94.2	78 - 123				
tert-Butylbenzene	21.16	1.0	20	0	106	78 - 124				
Tetrachloroethene	20.53	1.0	20	0	103	74 - 129				
Toluene	19.82	1.0	20	0	99.1	80 - 121				
trans-1,2-Dichloroethene	17.72	1.0	20	0	88.6	75 - 124				
trans-1,3-Dichloropropene	18.08	1.0	20	0	90.4	73 - 127				
Trichloroethene	19.3	1.0	20	0.9828	91.6	79 - 123				
Trichlorofluoromethane	18.14	1.0	20	0	90.7	65 - 141				
Vinyl chloride	16.61	1.0	20	0	83.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.96*	*1.0*	*50*	*0*	*91.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.23*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*48.06*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*89 - 112*				

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19100181-01MSD** Units: **UG/L** Analysis Date: **09-Oct-2019 22:41**
Client ID: **LH18/24-SP650_100119** Run ID: **VOA6_348062** SeqNo: **5291056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.67	1.0	20	0	93.4	78 - 124	19.2	2.77	20	
1,1,1-Trichloroethane	17.98	1.0	20	0	89.9	74 - 131	18.41	2.36	20	
1,1,2,2-Tetrachloroethane	18.31	1.0	20	0	91.5	71 - 121	18.79	2.59	20	
1,1,2-Trichloroethane	18.11	1.0	20	0	90.6	80 - 119	18.36	1.34	20	
1,1-Dichloroethane	16.58	1.0	20	0	82.9	77 - 125	17.3	4.27	20	
1,1-Dichloroethene	17	1.0	20	0	85.0	71 - 131	18.21	6.87	20	
1,1-Dichloropropene	17.78	1.0	20	0	88.9	78 - 125	18.31	2.9	20	
1,2,3-Trichlorobenzene	16.91	1.0	20	0	84.6	69 - 129	16.46	2.72	20	
1,2,3-Trichloropropane	18.34	1.0	20	0	91.7	73 - 122	19.14	4.26	20	
1,2,4-Trichlorobenzene	17.51	1.0	20	0	87.6	69 - 130	17.92	2.32	20	
1,2,4-Trimethylbenzene	19.28	1.0	20	0	96.4	76 - 124	20.31	5.21	20	
1,2-Dibromo-3-chloropropane	17.62	1.0	20	0	88.1	62 - 128	17.3	1.85	20	
1,2-Dibromoethane	18.35	1.0	20	0	91.7	77 - 121	18.81	2.49	20	
1,2-Dichlorobenzene	18.76	1.0	20	0	93.8	80 - 119	19.64	4.57	20	
1,2-Dichloroethane	18.05	1.0	20	0.369	88.4	73 - 128	18.31	1.44	20	
1,2-Dichloropropane	17.57	1.0	20	0	87.9	78 - 122	17.62	0.278	20	
1,3,5-Trimethylbenzene	19.74	1.0	20	0	98.7	75 - 124	20.81	5.3	20	
1,3-Dichlorobenzene	18.95	1.0	20	0	94.8	80 - 119	20.12	6	20	
1,3-Dichloropropane	18.03	1.0	20	0	90.1	80 - 119	18.55	2.87	20	
1,4-Dichlorobenzene	18.24	1.0	20	0	91.2	79 - 118	19.23	5.28	20	
2,2-Dichloropropane	16.76	1.0	20	0	83.8	60 - 139	17.3	3.15	20	
2-Butanone	33.23	2.0	40	0	83.1	56 - 143	32.3	2.83	20	
2-Chlorotoluene	18.55	1.0	20	0	92.8	79 - 122	19.76	6.27	20	
2-Hexanone	36.11	2.0	40	0	90.3	57 - 139	35.79	0.884	20	
4-Chlorotoluene	18.75	1.0	20	0	93.8	78 - 122	19.99	6.4	20	
4-Isopropyltoluene	19.6	1.0	20	0	98.0	77 - 127	20.99	6.86	20	
4-Methyl-2-pentanone	36.24	2.0	40	0	90.6	67 - 130	35.35	2.48	20	
Acetone	35.14	2.0	40	5.073	75.2	39 - 160	35.84	1.98	20	
Benzene	17.82	1.0	20	0	89.1	79 - 120	18.21	2.17	20	
Bromobenzene	18.75	1.0	20	0	93.8	80 - 120	20.31	7.98	20	
Bromochloromethane	16.64	1.0	20	0	83.2	78 - 123	16.71	0.374	20	
Bromodichloromethane	17.94	1.0	20	0	89.7	79 - 125	17.94	0.0116	20	
Bromoform	18.88	1.0	20	0	94.4	66 - 130	18.77	0.582	20	
Bromomethane	15.42	1.0	20	0	77.1	53 - 141	17.23	11.1	20	

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R348062 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19100181-01MSD** Units: **UG/L** Analysis Date: **09-Oct-2019 22:41**
Client ID: **LH18/24-SP650_100119** Run ID: **VOA6_348062** SeqNo: **5291056** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	33.98	2.0	40	0	84.9	64 - 133	35.54	4.48	20	
Carbon tetrachloride	18.22	1.0	20	0	91.1	72 - 136	19.03	4.35	20	
Chlorobenzene	18.6	1.0	20	0	93.0	82 - 118	18.97	1.98	20	
Chloroethane	17.91	1.0	20	0	89.6	60 - 138	17.85	0.338	20	
Chloroform	16.97	1.0	20	0	84.8	79 - 124	17.31	2.03	20	
Chloromethane	16.76	1.0	20	0	83.8	50 - 139	16.91	0.88	20	
cis-1,2-Dichloroethene	19.28	1.0	20	2.239	85.2	78 - 123	19.62	1.77	20	
cis-1,3-Dichloropropene	17.72	1.0	20	0	88.6	75 - 124	18.25	2.95	20	
Dibromochloromethane	18.69	1.0	20	0	93.5	74 - 126	18.79	0.512	20	
Dibromomethane	17.7	1.0	20	0	88.5	79 - 123	17.87	0.956	20	
Dichlorodifluoromethane	13.83	1.0	20	0	69.1	32 - 152	14.65	5.76	20	
Ethylbenzene	19.07	1.0	20	0	95.4	79 - 121	20.13	5.38	20	
Hexachlorobutadiene	19.51	1.0	20	0	97.6	66 - 134	19.83	1.63	20	
Isopropylbenzene	19.64	1.0	20	0	98.2	72 - 131	20.23	2.94	20	
m,p-Xylene	38.57	2.0	40	0	96.4	80 - 121	39.66	2.77	20	
Methylene chloride	17.24	2.0	20	0	86.2	74 - 124	18.01	4.36	20	
Naphthalene	16.44	1.0	20	0	82.2	61 - 128	16.14	1.84	20	
n-Butylbenzene	19.99	1.0	20	0	99.9	75 - 128	21.37	6.67	20	
n-Propylbenzene	19.7	1.0	20	0	98.5	76 - 126	20.96	6.19	20	
o-Xylene	19.46	1.0	20	0.2569	96.0	78 - 122	20.21	3.75	20	
sec-Butylbenzene	19.91	1.0	20	0	99.5	77 - 126	21.19	6.23	20	
Styrene	18.52	1.0	20	0	92.6	78 - 123	18.83	1.68	20	
tert-Butylbenzene	20	1.0	20	0	100	78 - 124	21.16	5.6	20	
Tetrachloroethene	19.64	1.0	20	0	98.2	74 - 129	20.53	4.47	20	
Toluene	18.79	1.0	20	0	94.0	80 - 121	19.82	5.34	20	
trans-1,2-Dichloroethene	17.19	1.0	20	0	86.0	75 - 124	17.72	3	20	
trans-1,3-Dichloropropene	18.08	1.0	20	0	90.4	73 - 127	18.08	0.0179	20	
Trichloroethene	18.95	1.0	20	0.9828	89.8	79 - 123	19.3	1.85	20	
Trichlorofluoromethane	16.98	1.0	20	0	84.9	65 - 141	18.14	6.58	20	
Vinyl chloride	15.9	1.0	20	0	79.5	58 - 137	16.61	4.37	20	
Surr: 1,2-Dichloroethane-d4	*45.79*	*1.0*	*50*	*0*	*91.6*	*81 - 118*	*45.96*	*0.363*	*20*	
Surr: 4-Bromofluorobenzene	*53*	*1.0*	*50*	*0*	*106*	*85 - 114*	*52.23*	*1.47*	*20*	
Surr: Dibromofluoromethane	*47.56*	*1.0*	*50*	*0*	*95.1*	*80 - 119*	*48.06*	*1.05*	*20*	
Surr: Toluene-d8	*49.79*	*1.0*	*50*	*0*	*99.6*	*89 - 112*	*49.9*	*0.231*	*20*	

ALS Houston, US Date: 11-Oct-19

Client:	Bhate Environmental Associates, Inc.
Project:	Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder:	HS19100181

QC BATCH REPORT

Batch ID:	**R348062 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19100181-01 HS19100181-02

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R347908 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-100719** Units: **mg/L** Analysis Date: **07-Oct-2019 20:48**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288352** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-100719** Units: **mg/L** Analysis Date: **07-Oct-2019 21:05**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288353** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.56	0.500	20	0	97.8	80 - 120				
Sulfate	19.63	0.500	20	0	98.1	80 - 120				

LCSD Sample ID: **WLCSDW1-100719** Units: **mg/L** Analysis Date: **07-Oct-2019 21:21**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288354** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.46	0.500	20	0	97.3	80 - 120	19.56	0.528	20	
Sulfate	19.49	0.500	20	0	97.4	80 - 120	19.63	0.729	20	

MS Sample ID: **HS19091343-09MS** Units: **mg/L** Analysis Date: **08-Oct-2019 00:57**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288364** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	606.3	5.00	100	517.6	88.7	80 - 120				O
Sulfate	318	5.00	100	222.7	95.3	80 - 120				

MS Sample ID: **HS19091343-02MS** Units: **mg/L** Analysis Date: **07-Oct-2019 23:01**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288359** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1181	10.0	200	1016	82.4	80 - 120				O
Sulfate	616.8	10.0	200	436.1	90.3	80 - 120				

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100181

QC BATCH REPORT

Batch ID: R347908 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS19091343-09MSD** Units: **mg/L** Analysis Date: **08-Oct-2019 01:14**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288365** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	605.5	5.00	100	517.6	87.9	80 - 120	606.3	0.132	20	O
Sulfate	315.3	5.00	100	222.7	92.6	80 - 120	318	0.861	20	

MSD Sample ID: **HS19091343-02MSD** Units: **mg/L** Analysis Date: **07-Oct-2019 23:17**
Client ID: Run ID: **ICS-Integrion_347908** SeqNo: **5288360** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1189	10.0	200	1016	86.6	80 - 120	1181	0.712	20	O
Sulfate	625.2	10.0	200	436.1	94.5	80 - 120	616.8	1.35	20	

The following samples were analyzed in this batch: HS19100181-01

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: **HS19100181**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 11-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
Work Order: HS19100181

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100181-01	LH18/24-SP650_100119	Login	10/3/2019 11:46:39 AM	JRM	WET202
HS19100181-01	LH18/24-SP650_100119	Login	10/3/2019 11:46:39 AM	JRM	VOA070
HS19100181-02	Trip Blank	Login	10/3/2019 11:46:39 AM	JRM	VOA070

ALS Houston, US Date: 11-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100181
Date/Time Received: **03-Oct-2019 08:33**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 3-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 3-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2°C / 1.2°C UC/C	IR25	
Cooler(s)/Kit(s):	45043		
Date/Time sample(s) sent to storage:	10/03/2019 11:55		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210, Houston, Tx. 77099 ATTN: R.J. Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT BI-WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC	Analyses: CHLORIDE, SULFATE	Analyses	Analyses	Analyses	Analyses	Analyses	Analyses	Analyses	Analyses	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_100119	Water	10/01/19 / 14:00		3	3										HCL	
LH18/24-SP650_100119	Water	10/01/19 / 14:00		1		1									NONE	
Trip Blank	Water	10/01/19		2	2										HCL	

Additional Remarks: STANDARD TAT ON ALL PARAMETERS.

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/01/19	14:30									

9For Lab Use Only

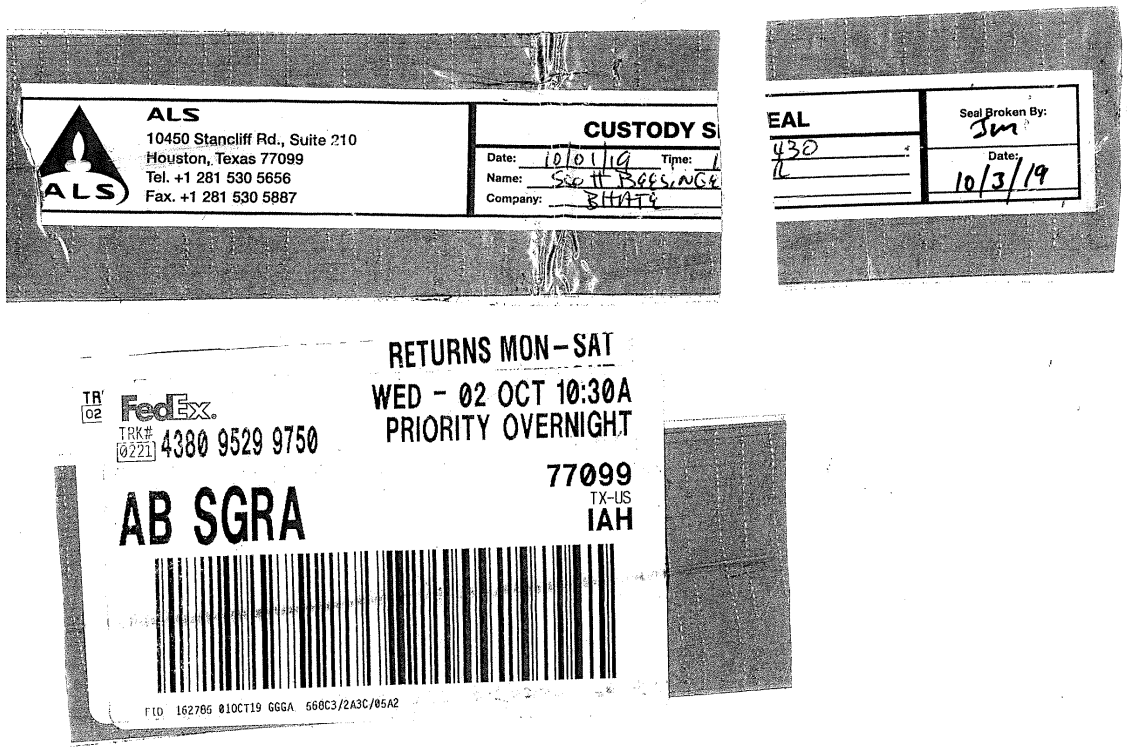
Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
J. Winberry	10/3/19	08:33							

Remarks Cooler 45043 IR25
Temp 1.2 CF 0.0

HS19100181

Bhate Environmental Associates, Inc.
Groundwater Treatment Plant Bi-Weekly Samples

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY S
Date: 10/01/19 Time:
Name: Scott Bass, NGL
Company: BHMT&

EAL
430

Seal Broken By:
JM
Date:
10/3/19

RETURNS MON-SAT
WED - 02 OCT 10:30A
PRIORITY OVERNIGHT

TR 02
FedEx.
TRK# 0221 4380 9529 9750

77099
TX-US
IAH

AB SGRA

FID 162765 010CT19 GGGA 568C3/2A3C/05A2

10450 Stancliff Rd. Suite 210
Houston, TX 77099
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October 22, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100469**

Laboratory Results for: **Longhorn GW Treatment Plant Monthly Influent Samples**

Dear Marcia,

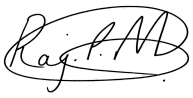
ALS Environmental received 1 sample(s) on Oct 09, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
Work Order: HS19100469

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100469-01	LH18/24-SP140_100819	Water		08-Oct-2019 14:00	09-Oct-2019 08:40	☐

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant Monthly Influent Samples
Work Order: HS19100469

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Metals by Method SW6020

Batch ID: 146462

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW7196

Batch ID: R348376

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: Longhorn GW Treatment Plant Monthly Influent Samples WorkOrder:HS19100469

Sample ID: LH18/24-SP140_100819 Lab ID:HS19100469-01

Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 16-Oct-2019		Analyst: JHD
Selenium	0.00250	U	0.00110	0.00250	0.00500	mg/L	1	21-Oct-2019 21:17
Silver	0.000500	U	0.000200	0.000500	0.00500	mg/L	1	21-Oct-2019 21:17
HEXAVALENT CHROMIUM BY SW7196A		**Method:SW7196**						Analyst: KVL
Chromium, Hexavalent	0.0100	U	0.00600	0.0100	0.0100	mg/L	1	09-Oct-2019 13:22
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Oct-2019 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 22-Oct-19

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
WorkOrder: HS19100469

Batch ID: 146462 **Method:** METALS BY ICPMS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100469-01	1	10	10 (mL)	1

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
WorkOrder: HS19100469

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 146462 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Water	
HS19100469-01	LH18/24-SP140_100819	08 Oct 2019 14:00		16 Oct 2019 14:00	21 Oct 2019 21:17	1
Batch ID: R348376 (0)	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A				**Matrix:** Water	
HS19100469-01	LH18/24-SP140_100819	08 Oct 2019 14:00			09 Oct 2019 13:22	1
Batch ID: R348532 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19100469-01	LH18/24-SP140_100819	08 Oct 2019 14:00			17 Oct 2019 14:54	1

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
WorkOrder: HS19100469

QC BATCH REPORT

Batch ID: 146462 (0) **Instrument: ICPMS05** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-146462** Units: **mg/L** Analysis Date: **21-Oct-2019 21:12**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306441** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.00250	0.00500								U
Silver	0.000500	0.00500								U

LCS Sample ID: **LCS-146462** Units: **mg/L** Analysis Date: **21-Oct-2019 21:15**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306442** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04657	0.00500	0.05	0	93.1	80 - 120				
Silver	0.04774	0.00500	0.05	0	95.5	85 - 116				

MS Sample ID: **HS19100469-01MS** Units: **mg/L** Analysis Date: **21-Oct-2019 21:21**
Client ID: **LH18/24-SP140_100819** Run ID: **ICPMS05_348730** SeqNo: **5306445** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04594	0.00500	0.05	0.000736	90.4	80 - 120				
Silver	0.04366	0.00500	0.05	0.000009	87.3	85 - 116				

MSD Sample ID: **HS19100469-01MSD** Units: **mg/L** Analysis Date: **21-Oct-2019 21:24**
Client ID: **LH18/24-SP140_100819** Run ID: **ICPMS05_348730** SeqNo: **5306446** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.0431	0.00500	0.05	0.000736	84.7	80 - 120	0.04594	6.38	20	
Silver	0.04298	0.00500	0.05	0.000009	85.9	85 - 116	0.04366	1.58	20	

PDS Sample ID: **HS19100469-01PDS** Units: **mg/L** Analysis Date: **21-Oct-2019 21:26**
Client ID: **LH18/24-SP140_100819** Run ID: **ICPMS05_348730** SeqNo: **5306447** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.09856	0.00500	0.1	0.000736	97.8	80 - 120				
Silver	0.09493	0.00500	0.1	0.000009	94.9	80 - 120				

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
WorkOrder: HS19100469

QC BATCH REPORT

Batch ID: 146462 (0) **Instrument: ICPMS05** **Method: METALS BY ICPMS BY SW6020A**

SD Sample ID: **HS19100469-01SD** Units: **mg/L** Analysis Date: **21-Oct-2019 21:19**
Client ID: **LH18/24-SP140_100819** Run ID: **ICPMS05_348730** SeqNo: **5306444** PrepDate: **16-Oct-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Selenium	0.0125	0.0250					0.000736	0	10	U
Silver	0.00250	0.0250					0.000009	0	10	U

The following samples were analyzed in this batch: HS19100469-01

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
WorkOrder: HS19100469

QC BATCH REPORT

Batch ID: R348376 (0) **Instrument: UV-2450** **Method: HEXAVALENT CHROMIUM BY SW7196A**

MBLK Sample ID: **MBLK-R348376** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: Run ID: **UV-2450_348376** SeqNo: **5298286** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.0100	0.0100								U

LCS Sample ID: **LCS-R348376** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: Run ID: **UV-2450_348376** SeqNo: **5298285** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.254	0.0100	0.25	0	102	90 - 111				

MS Sample ID: **HS19100471-01MS** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: Run ID: **UV-2450_348376** SeqNo: **5298288** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.263	0.0100	0.25	0.009	102	90 - 111				

MSD Sample ID: **HS19100471-01MSD** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: Run ID: **UV-2450_348376** SeqNo: **5298287** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.262	0.0100	0.25	0.009	101	90 - 111	0.263	0.381	20	

The following samples were analyzed in this batch: HS19100469-01

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
WorkOrder: **HS19100469**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Houston, US Date: 22-Oct-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Influent Samples
Work Order: HS19100469

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100469-01	LH18/24-SP140_100819	Login	10/9/2019 11:50:17 AM	JRM	Sub
HS19100469-01	LH18/24-SP140_100819	Login	10/9/2019 11:50:17 AM	JRM	WET102
HS19100469-01	LH18/24-SP140_100819	Login	10/9/2019 11:50:17 AM	JRM	MET060

00961523

ALS Houston, US Date: 22-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100469
Date/Time Received: **09-Oct-2019 08:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* 9-Oct-2019
eSignature | Date

Reviewed by: *RJ Modashia* 9-Oct-2019
eSignature | Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.9°C / 3.9°C UC/C	IR25	
Cooler(s)/Kit(s):	3622		
Date/Time sample(s) sent to storage:	10/09/2019 11:55		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00961524

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP MONTHLY INFLUENT

Client Name:

Collected by: Scott Blessinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	Sample Analysis Requested (5): S. Iver, Selenium	Hexavalent Chromium	Perchlorate							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LH8124-SP140_100819		08 OCT 2019	1400	-	N		WG	3	X	X	X										
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	

HS19100469
Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Monthly Influent Sample

COMMENTS:

STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	Scott Blessinger	10/3/19	1430	J.M	10/9/19	0840
2.						
3.						

UIC 3.9 IR#25 CF0.0 3622

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

3622

CUSTODY SEAL

Date: 10/8/19 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By: SM
Date: 10/09/19

3622

OCT 0 9 2018

Must Deliver Next Business Day
Time and Tempature Sensitive!

3622

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 11JUN18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3111
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-RJ

RMA:

FedEx Express

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 0221 4380 9529 9749

WED - 09 OCT 10:30A
PRIORITY OVERNIGHT

FedEx TRK# 0221 4380 9529 9749

77099
TX-US
IAH

AB SGRA

546C3/93BF/53C1

J17016102001uv

10 5Z1960 00OCT19 GGGA 546C3/2A3C/05A2

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1928465; 1929006; 1929010; 1929013

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2302 (249888)

General Set Information: There were four field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 679039) was less than 1/2 the CRDL. The recovery for the LCS (679040) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1928465001 (Client ID: LH18/24-650_100119_BIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (679041/42) passed QC performance limits for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected**.**

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch October 16, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: October 17, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1929006**
Project ID: HS19100469
Purchase Order: HS19100469
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP140_100819	1929006001	10/08/19	10/10/19	

ANALYTICAL REPORT

Workorder: 34-1929006
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP140_100819**	Sampling Site: NA	Collected: 10/08/2019
Lab ID: 1929006001	Media: 125 mL Nalgene	Received: 10/10/2019
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2302 (HBN: 249888)	**%Solids:** NA
	Analyzed: 10/15/2019 11:23	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**12000**	1000	2000	4000	1000	

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 249888)**

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 10/16/2019 07:50	/S/ Stephen Brose 10/17/2019 11:10

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1929006
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1929006

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2302 (HBN: 249888)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 679039
Analyzed: 10/15/2019 10:26
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 679040
Analyzed: 10/15/2019 09:58
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.04	3.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1928465001	**MS:**	679041	**MSD:**	679042
Analyzed:	10/15/2019 10:41	**Analyzed:**	10/15/2019 10:55	**Analyzed:**	10/15/2019 11:09
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.55	3	118	78.8	123.8	2.46	81.9	# 36.5	0.0	20.0

Comments

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
10/16/2019 07:51	10/17/2019 11:10

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

W 1929006

Subcontract Chain of Custody

18698/#2

SAMPLING STATE: **Dept of Defense** **COC ID:** **12345**

1929006

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100469
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100469-01**	**LH18/24-SP140_100819**	**Water**	**08 Oct 2019 14:00**
	SUB_Perch-6850			23 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/9/19 1800.

Received By: _____ Date/Time: 10/10/19 0931

Cooler ID(s): _____ Temperature(s): _____

ALS-Salt Lake City-Related Information Report (CRIR)

Cooler or Container Information Checklist (Fill In or Circle)

192900P

Client Name: ALS Houston

Project/Task/Site: HS19100469

Date/Time of Receipt: 10/10/19 0931

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA	VOA Headspace Present?	Yes/No/NA
	Frozen/Melted/NA		

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C19 9907	4 °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: _____ (Signature) Rebecca Wise (Printed Name) 10/10/19 (Date)

Client-Related Information

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

Briefly Describe the Problem and the Action Taken:

Client Notified? Yes ☐ No ☐

Response Required Within 24 Hours

Project Management

Project Manager Comments:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00961534

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-1204 RIT2 EXP 02/20

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 09OCT19
ACTWGT: 48.10 LB
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: 13 W/O - RJ/BF

551C3/2B3C/104C

FedEx Express

J181118060501uw

TRK# 0201 1251 0290 4296

THU - 10 OCT 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19100469	Split:	Workorder ID: 1929006	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	COOL	EPA 6850, DoD QSM
1	10/08/2019 14:00	LH18/24-SP140_100819	1929006001		Water	A	1		A
2									
3									
4									
5									
6									
7									
8									
9									
10									

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	10/10/2019 09:31	ALS Sample Receiving	Sample Login
[signature] R-33.1	10.11.19 1000 10-15-19/09:10	14B T. Bosch	storage client analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00961535

Batch Worklist

Batch: ELMS/ 2302 Created: 10/15/2019 07:51 Instrument: HBN: 249888

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 1928465 [ENV_LVL4]
Workorder: 1929006 [ENV_LVL4]
Workorder: 1929010 [ENV_LVL4]
Workorder: 1929013 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	679036	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	
2	679037	RLVS for HBN 249888 [ELMS/2302				RLVS	3		E685041C3Q	5311		10/17/2019	
3	679038	ICS for HBN 249888 [ELMS/2302]				ICS	3		E6850..D3Q	5311		10/17/2019	
4	679039	LMB for HBN 249888 [ELMS/2302]				LMB	3		E6850Q413Q	5311		10/17/2019	
5	679040	LCS for HBN 249888 [ELMS/2302]				LCS	3		E6850Q413Q	5311		10/17/2019	
6	1928465001	LH18/24-SP650_100119_BIX				SAMPLE	3	1928465001-A	E6850Q41.3	5480	10/29/2019	10/17/2019	
7	679041	LH18/24-SP650...(1928465001MS)				MS	3		E6850Q413Q	5311		10/17/2019	
8	679042	LH18/24-SP65...(1928465001MSD)				MSD	3		E6850Q413Q	5311		10/17/2019	
9	1929006001	LH18/24-SP140_100819				SAMPLE	3	1929006001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
10	1929010001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929010001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
11	1929013001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929013001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
12	679043	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	

00961536

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1928465 (001); 1929006 (001); 1929010 (001); 1929013 (001)
ELMS Batch/HBN ID: 2302 (249888)
Prep Date: 10/15/2019 Analysis Date: 10/15/2019 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Thomas Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 679040; Target = 3.0µg/L. ASTM type II water was used for LMB 679039.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1928465001 (Client ID's: LH18/24-650_100119_BIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (679041/42) passed QC acceptance criteria for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\249888-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2302 HBN: 249888 **Sample Set IDs if Applicable:** 1928465/1929006/1929010/1929013	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/23/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 05/06/2019 03:05PM **Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

AccuStandard

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

250 SMITH STREET • NORTH KINGSTOWN, RHODE ISLAND 02852 • WWW.ULTRASCI.COM

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO 9001 ISO GUIDE 34 ISO 17025

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ACCREDITATION REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ACCREDITATION TESTING LABORATORY

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: *For isotopically labeled compounds, MW listed is for the fully enriched product.	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\15OCT19D\15OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	679036 CCV@25	Vial 71	1	Control	1	1.33443e6	7.526	26.88759
*	679040 QC@3.0	Vial 72	1	Control	2	1.73380e5	7.567	3.03903
*	679038 ICS@3.0	Vial 73	1	Control	3	1.13696e5	7.369	3.02285
*	679039 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1928465001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	679041 284651S	Vial 76	1	Sample	6	1.33460e5	7.290	3.55332
*	679042 284651D	Vial 77	1	Sample	7	1.25808e5	7.285	2.45603
*	1929006001 1K	Vial 78	1	Sample	8	5.72391e5	7.634	1.23264e4
*	1929010001	Vial 79	1	Sample	9	2.36643e5	7.246	6.04458
*	1929013001	Vial 80	1	Sample	10	2.42664e5	7.272	6.91662
*	679043 CCV@25	Vial 71	1	Control	11	1.14959e6	7.592	26.90349

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	679036 CCV@25	Vial 71	1	Control	1	1.68268e5	7.544	5.00000
*	679040 QC@3.0	Vial 72	1	Control	2	2.09952e5	7.575	5.00000
*	679038 ICS@3.0	Vial 73	1	Control	3	1.38406e5	7.393	5.00000
*	679039 LMB	Vial 74	1	Control	4	1.78248e5	7.632	5.00000
*	1928465001	Vial 75	1	Sample	5	2.08517e5	7.256	5.00000
*	679041 284651S	Vial 76	1	Sample	6	1.38428e5	7.310	5.00000
*	679042 284651D	Vial 77	1	Sample	7	1.87824e5	7.294	5.00000
*	1929006001 1K	Vial 78	1	Sample	8	1.67142e5	7.648	5000.00000
*	1929010001	Vial 79	1	Sample	9	1.43998e5	7.264	5.00000
*	1929013001	Vial 80	1	Sample	10	1.28749e5	7.294	5.00000
*	679043 CCV@25	Vial 71	1	Control	11	1.44866e5	7.612	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	679036 CCV@25	Vial 71	1	Control	1	4.04332e5	7.548	26.75019
*	679040 QC@3.0	Vial 72	1	Control	2	5.40492e4	7.595	3.01622
*	679038 ICS@3.0	Vial 73	1	Control	3	3.88200e4	7.382	3.29691
*	679039 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1928465001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	679041 284651S	Vial 76	1	Sample	6	4.67868e4	7.298	3.99450
*	679042 284651D	Vial 77	1	Sample	7	4.45366e4	7.299	2.76816
*	1929006001 1K	Vial 78	1	Sample	8	1.69566e5	7.658	1.19081e4
*	1929010001	Vial 79	1	Sample	9	8.15441e4	7.262	6.72364
*	1929013001	Vial 80	1	Sample	10	7.97082e4	7.290	7.34615
*	679043 CCV@25	Vial 71	1	Control	11	3.49798e5	7.619	26.86882

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.S

Sequence Table:

Method and Injection Info Part:

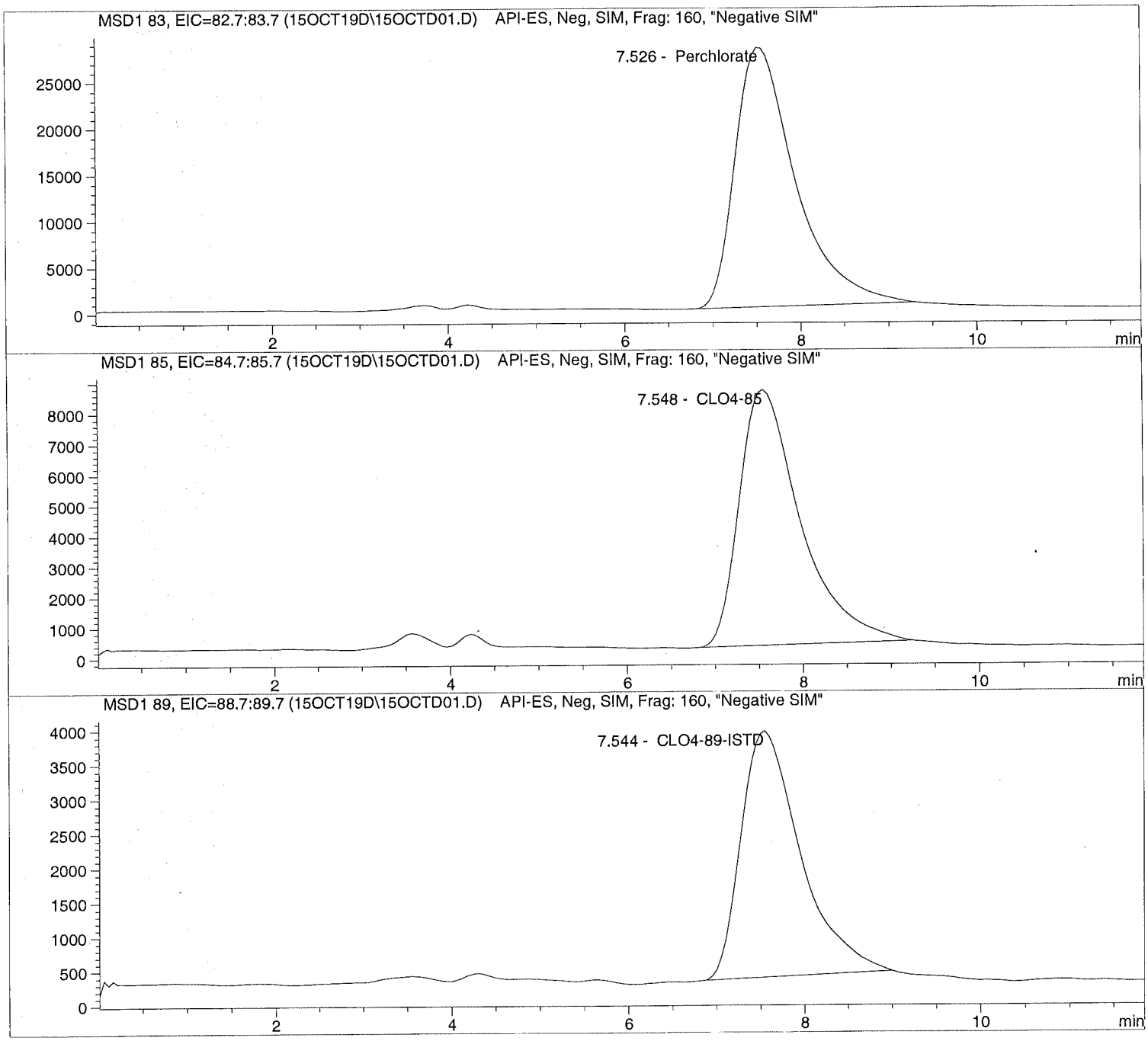
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	679036 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	679040 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	679038 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	679039 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1928465001	CLO4-AQN	1	Sample		
6	Vial 76	679041 284651S	CLO4-AQN	1	Sample		
7	Vial 77	679042 284651D	CLO4-AQN	1	Sample		
8	Vial 78	1929006001 1K	CLO4-AQN	1	Sample		
9	Vial 79	1929010001	CLO4-AQN	1	Sample		
10	Vial 80	1929013001	CLO4-AQN	1	Sample		
11	Vial 71	679043 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.526	PBA	1334425.5	26.8876	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.548	PBA	404331.7	26.7502	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.544	PBA	168268.3	5.0000	CLO4-89-ISTD

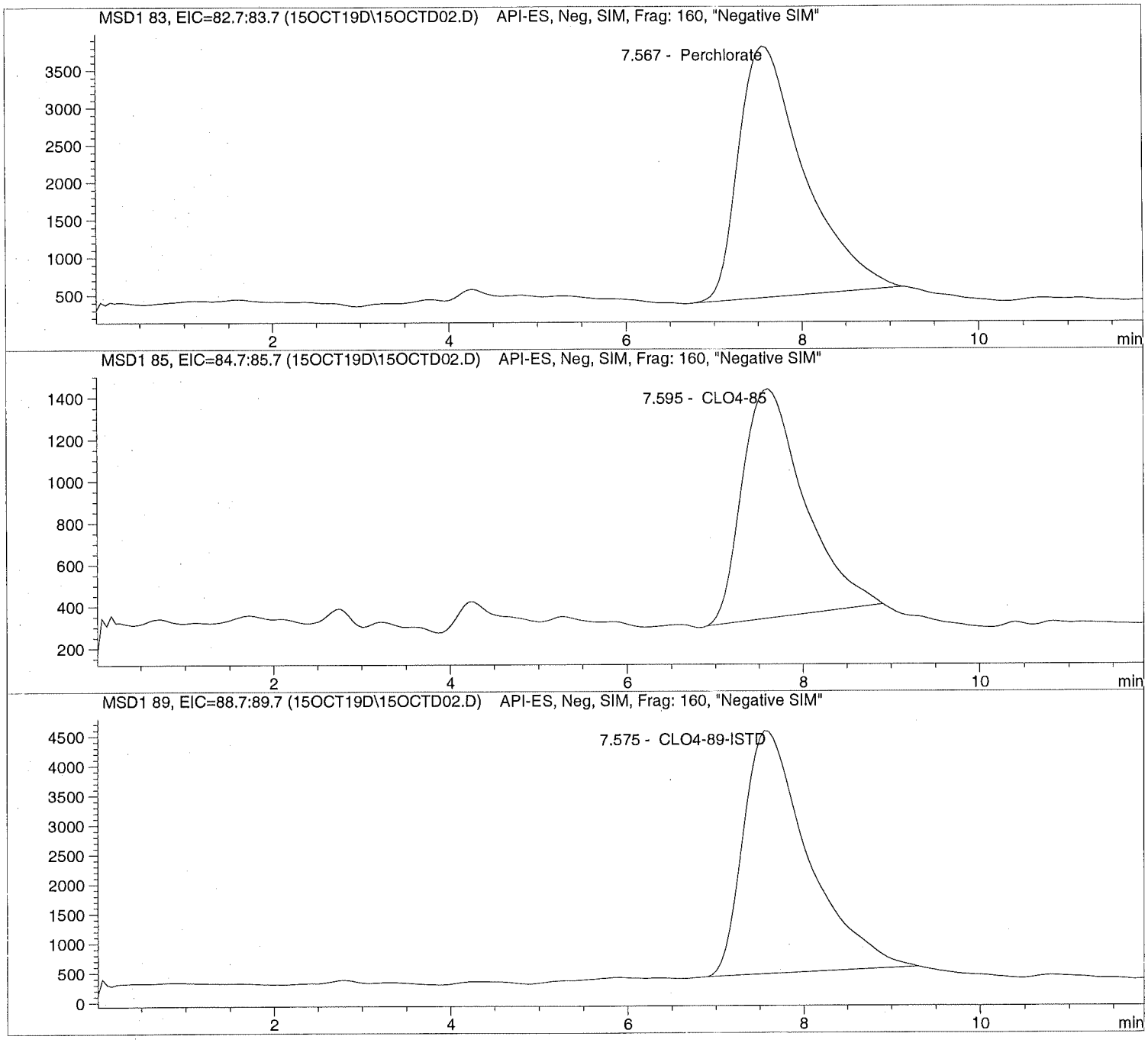
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.567	PBA	173380.0	3.0390	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.595	PBA	54049.2	3.0162	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	209951.5	5.0000	CLO4-89-ISTD

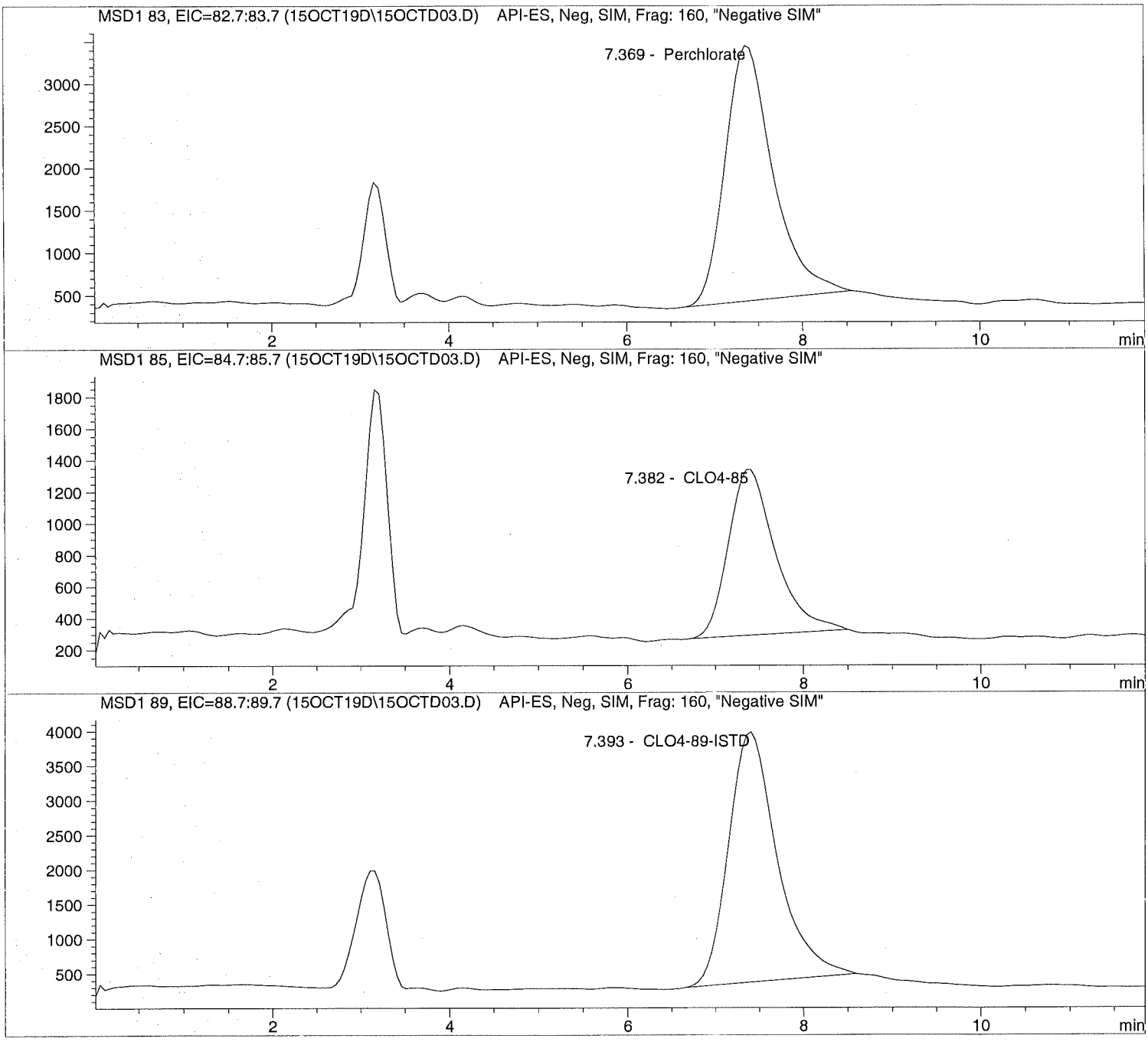
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.369	PBA	113696.3	3.0228	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.382	PBA	38820.0	3.2969	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.393	PBA	138406.3	5.0000	CLO4-89-ISTD

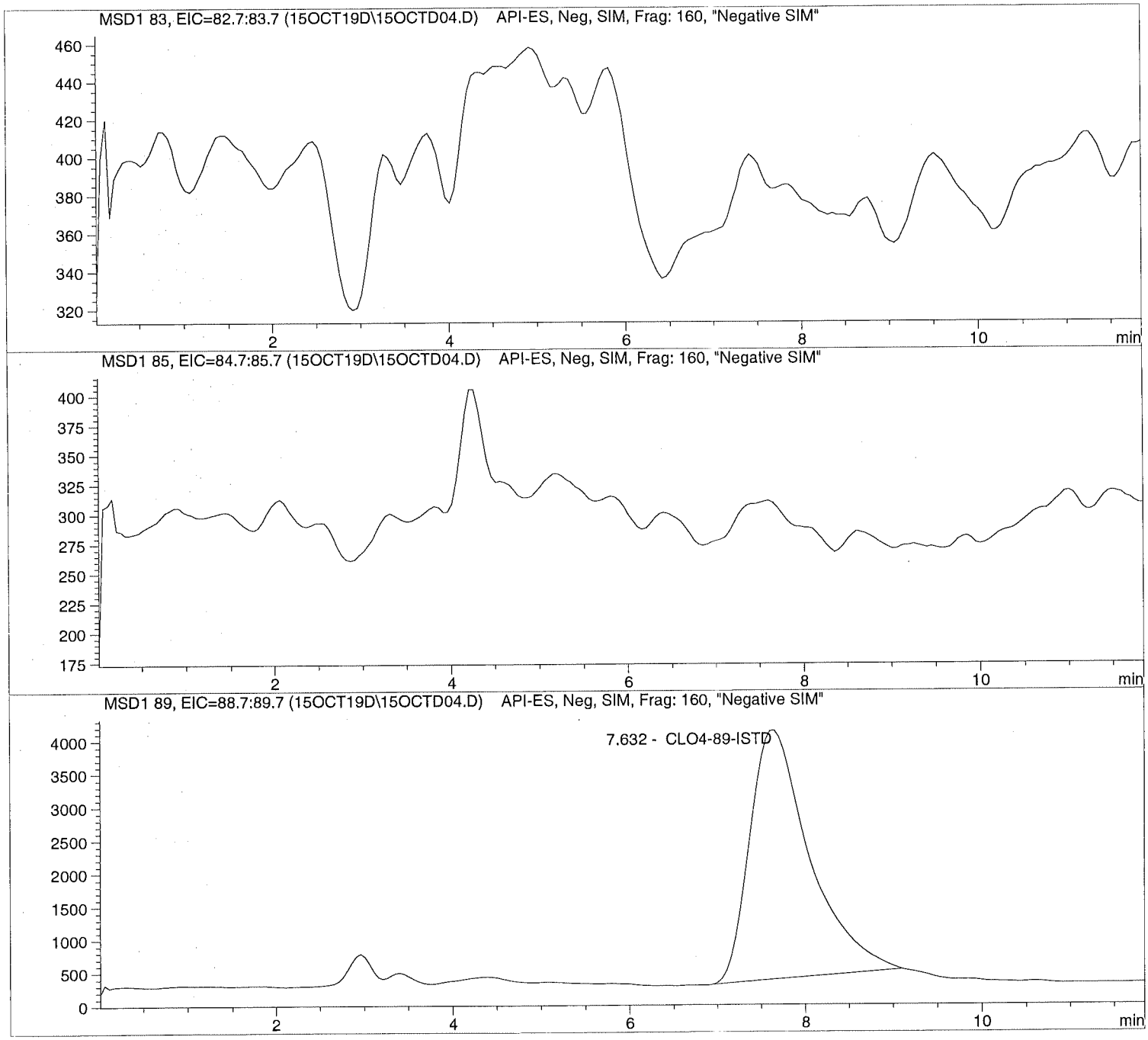
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.632	PBA	178247.9	5.0000	CLO4-89-ISTD

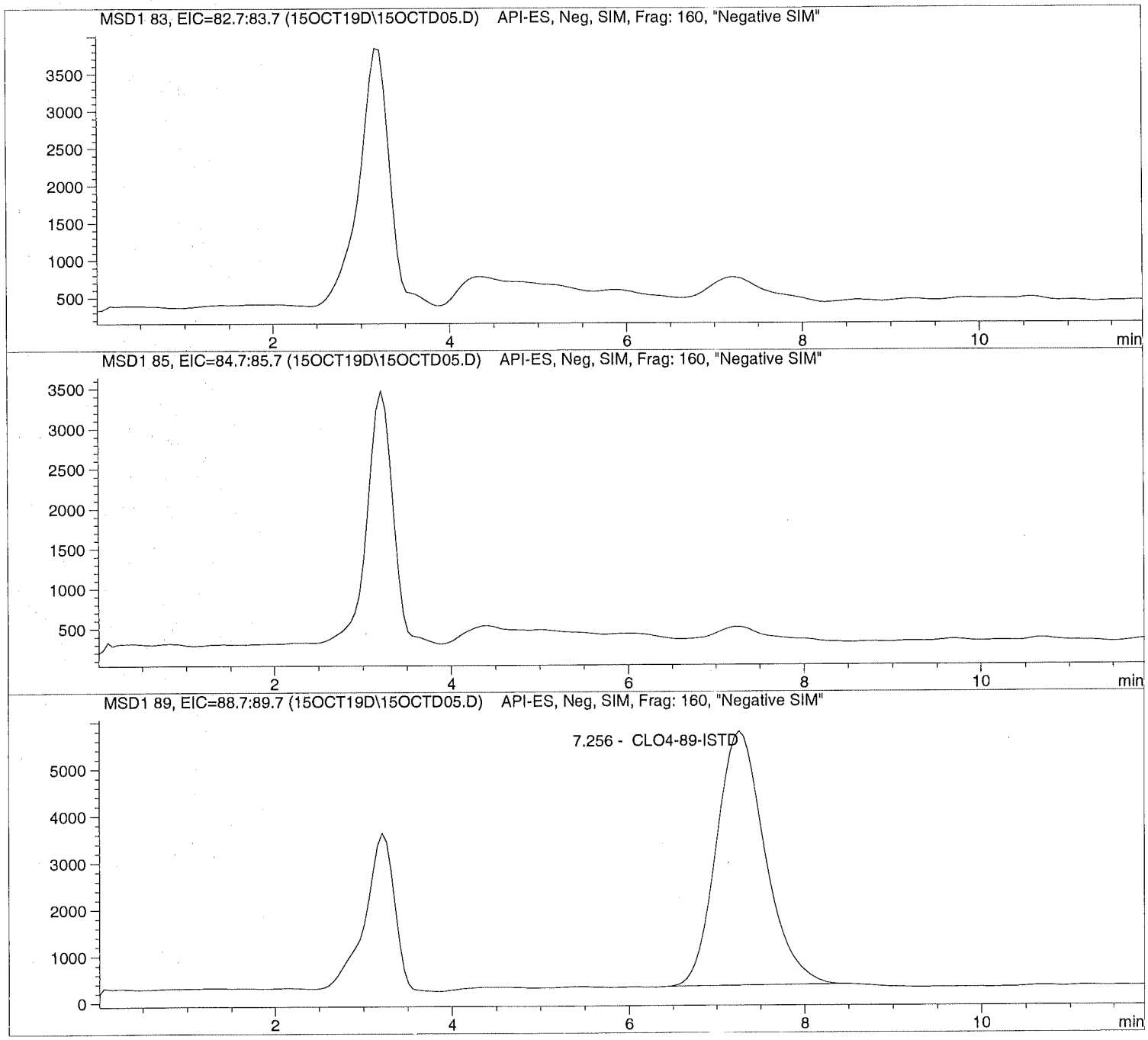
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.256	PBA	208516.8	5.0000	CLO4-89-ISTD

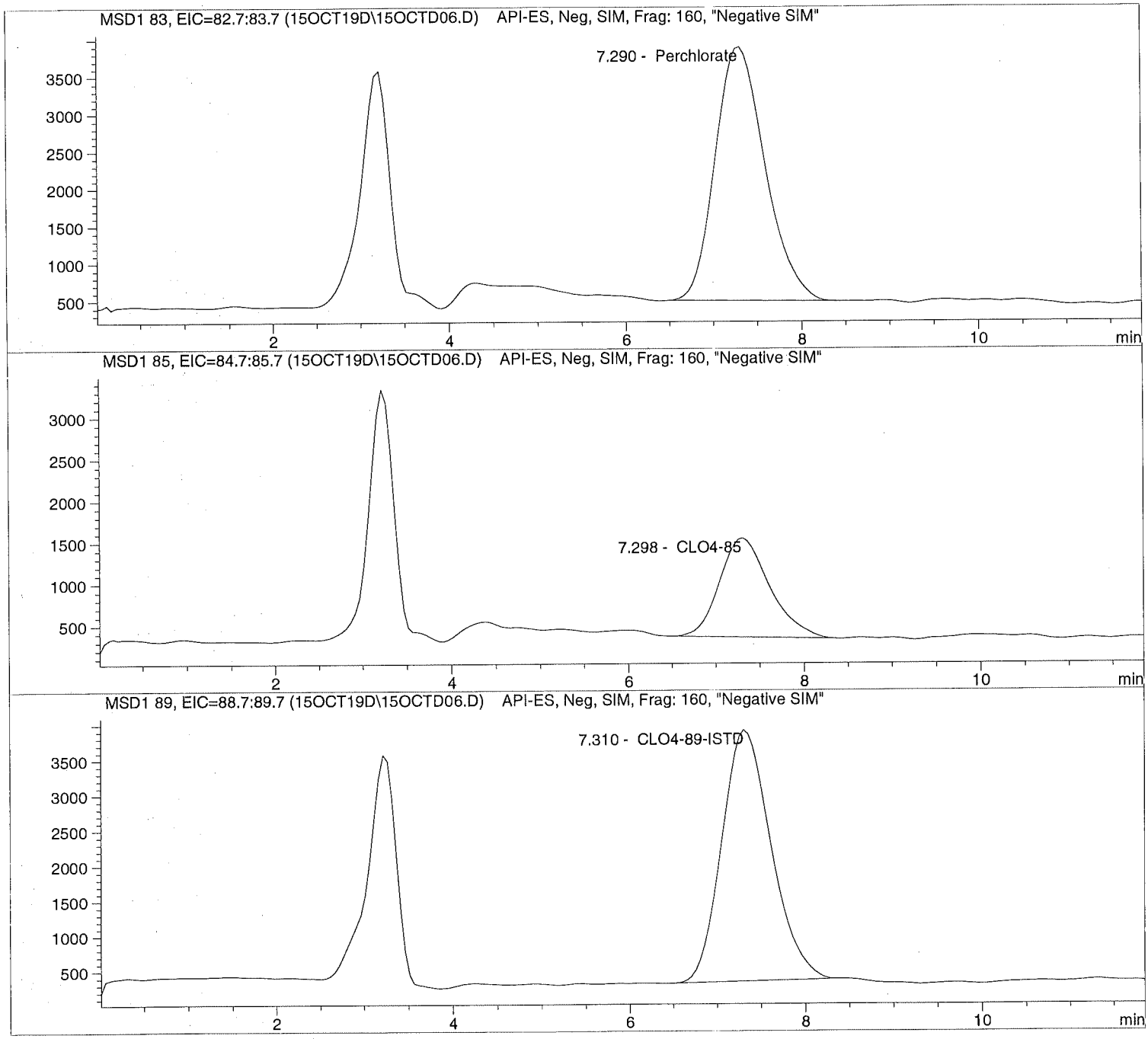
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	133460.4	3.5533	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.298	PBA	46786.8	3.9945	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.310	PBA	138427.8	5.0000	CLO4-89-ISTD

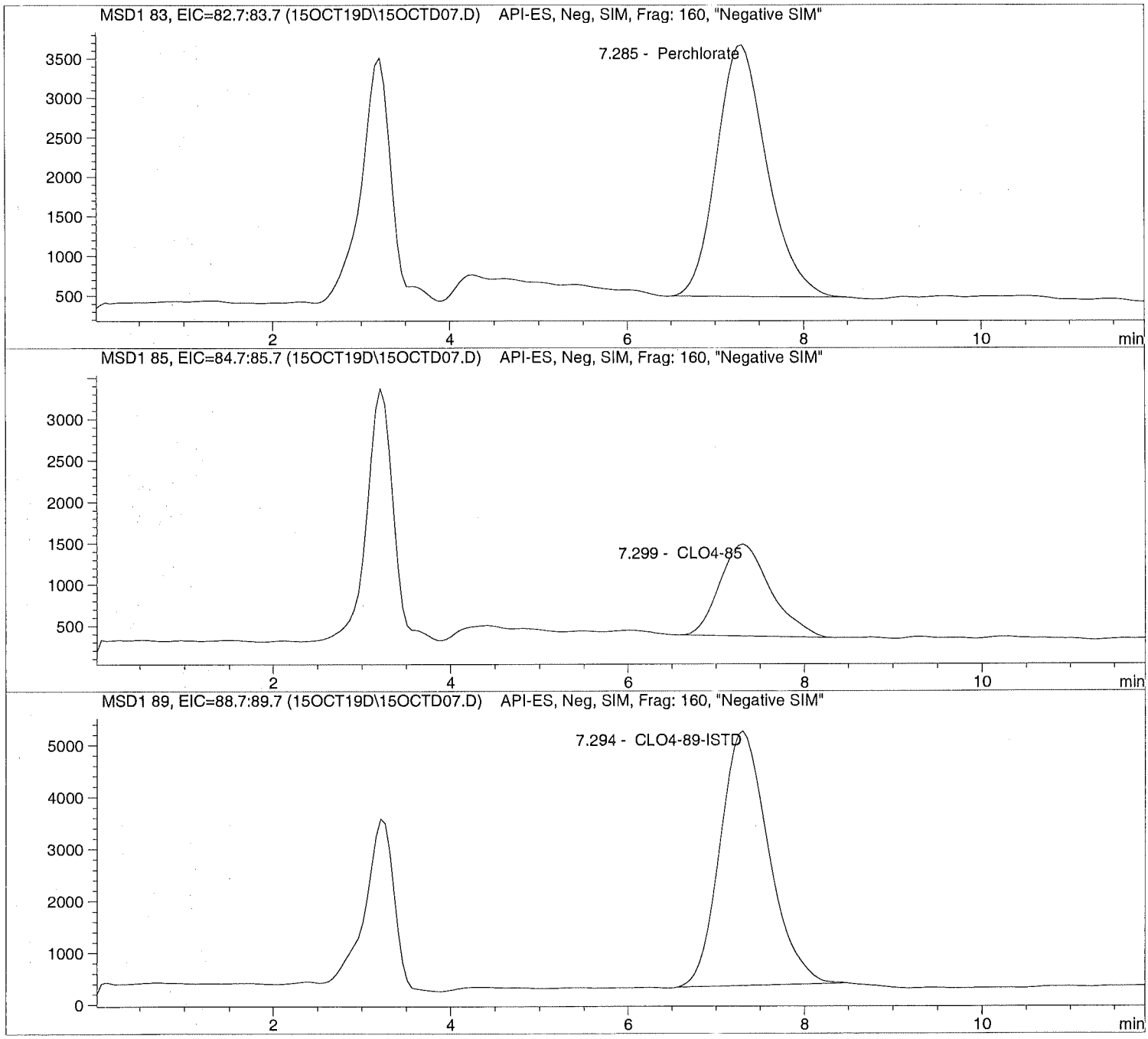
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.285	PBA	125808.1	2.4560	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.299	PBA	44536.6	2.7682	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	PBA	187823.9	5.0000	CLO4-89-ISTD

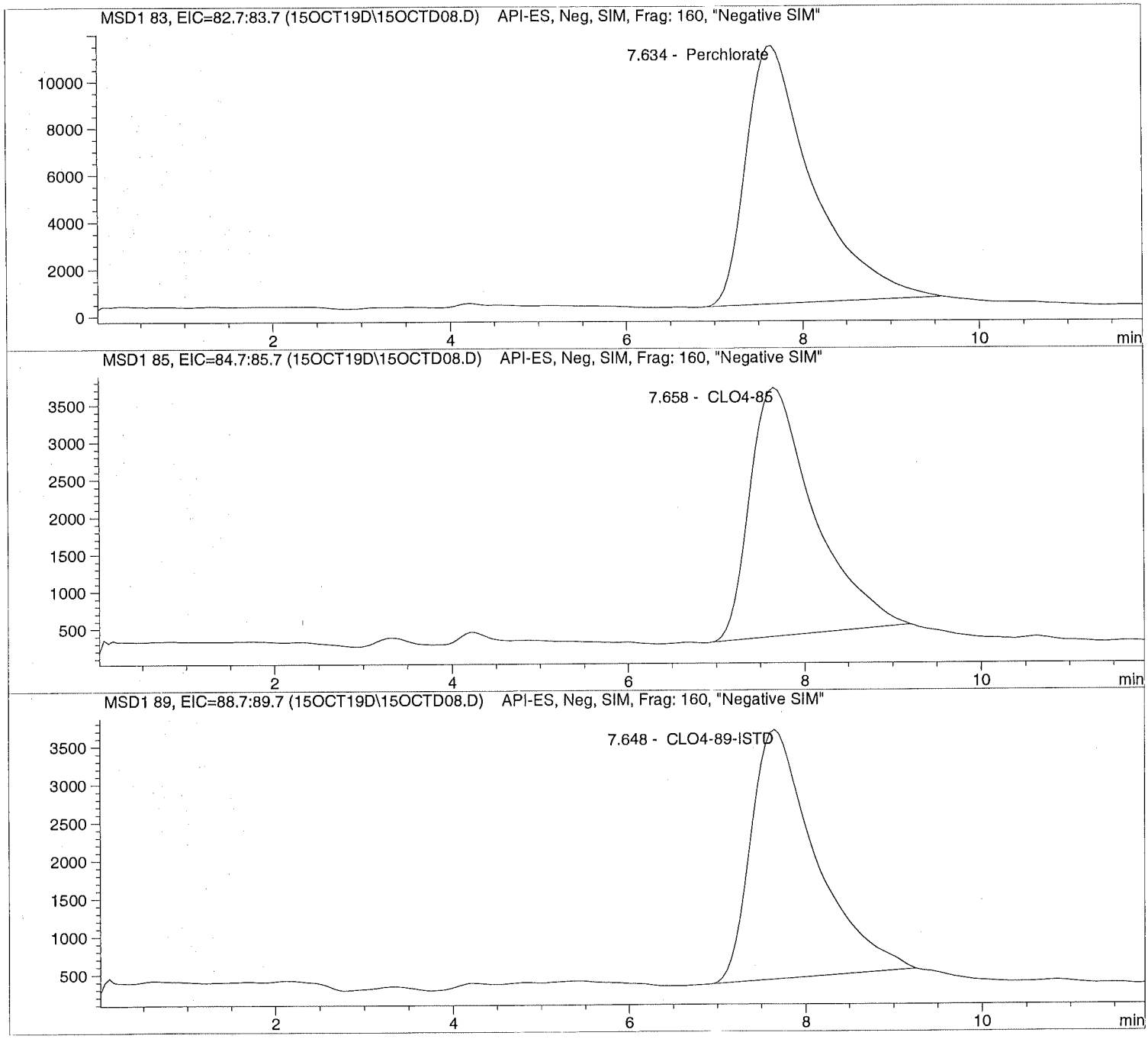
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.634	PBA	572391.3	12326.3509	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.658	PBA	169565.9	11908.1208	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.648	PBA	167142.0	5000.0000	CLO4-89-ISTD

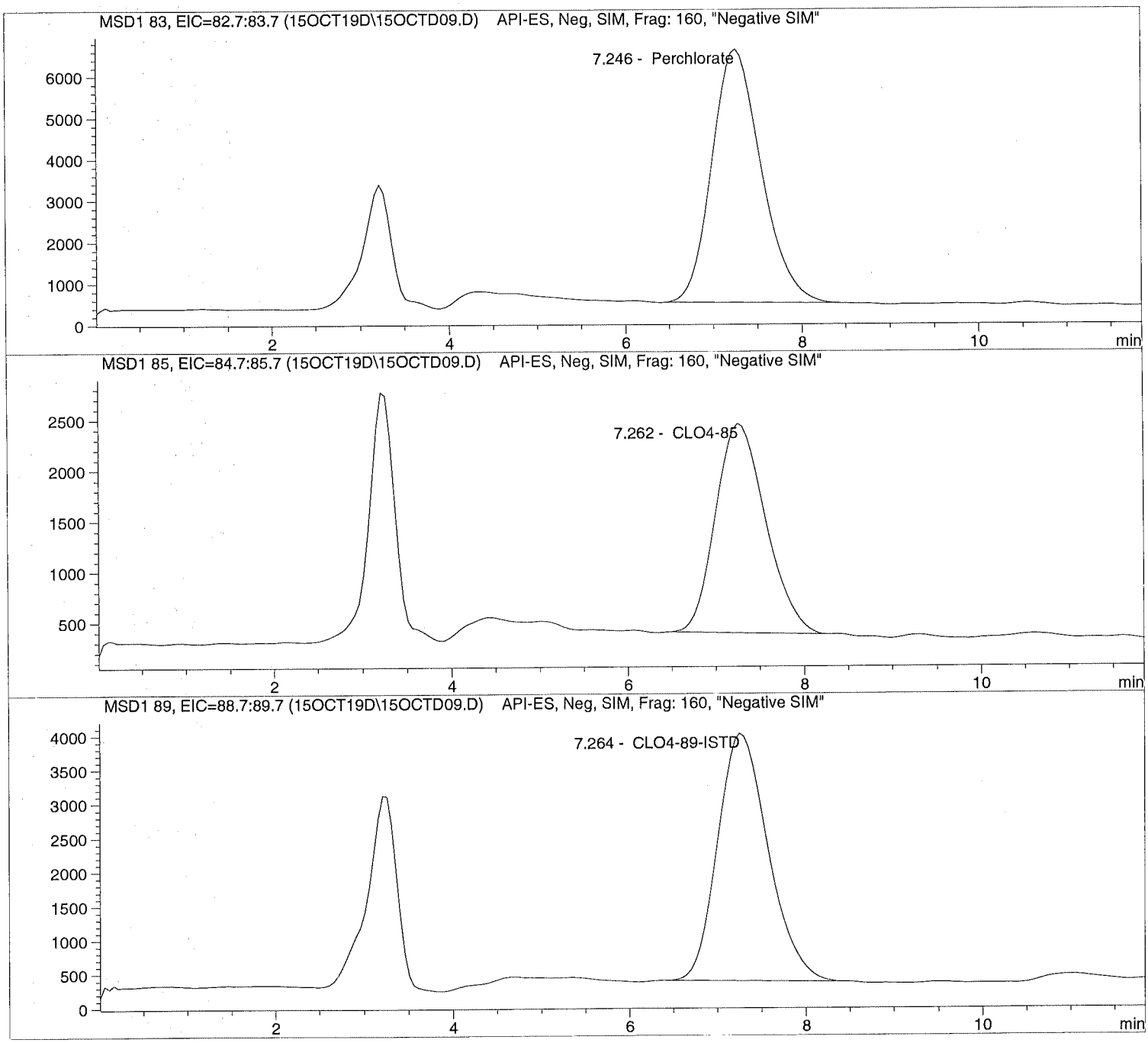
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.246	PBA	236643.2	6.0446	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.262	PBA	81544.1	6.7236	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.264	BBA	143998.5	5.0000	CLO4-89-ISTD

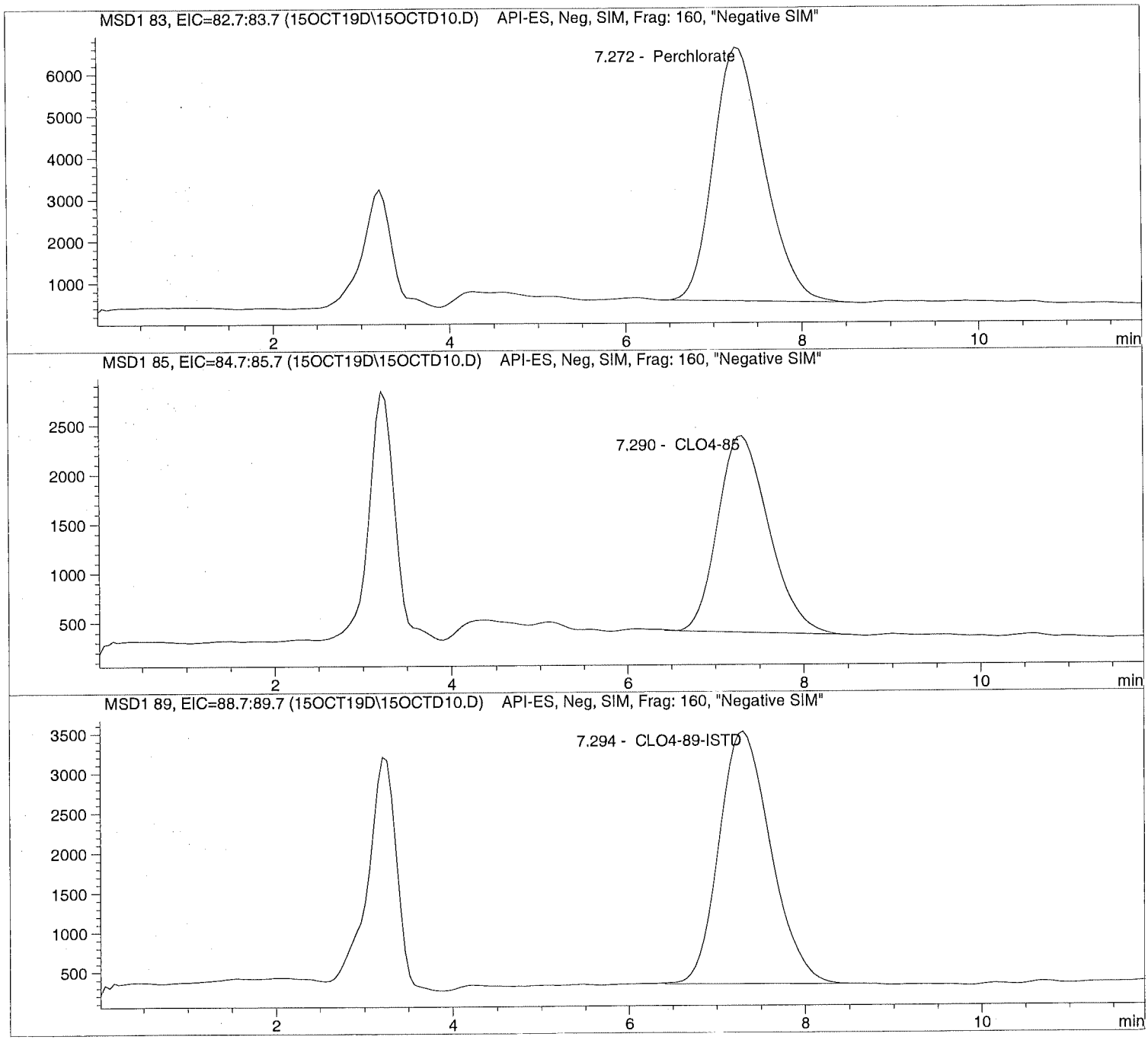
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.272	PBA	242664.3	6.9166	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	BBA	79708.2	7.3461	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	BBA	128749.2	5.0000	CLO4-89-ISTD

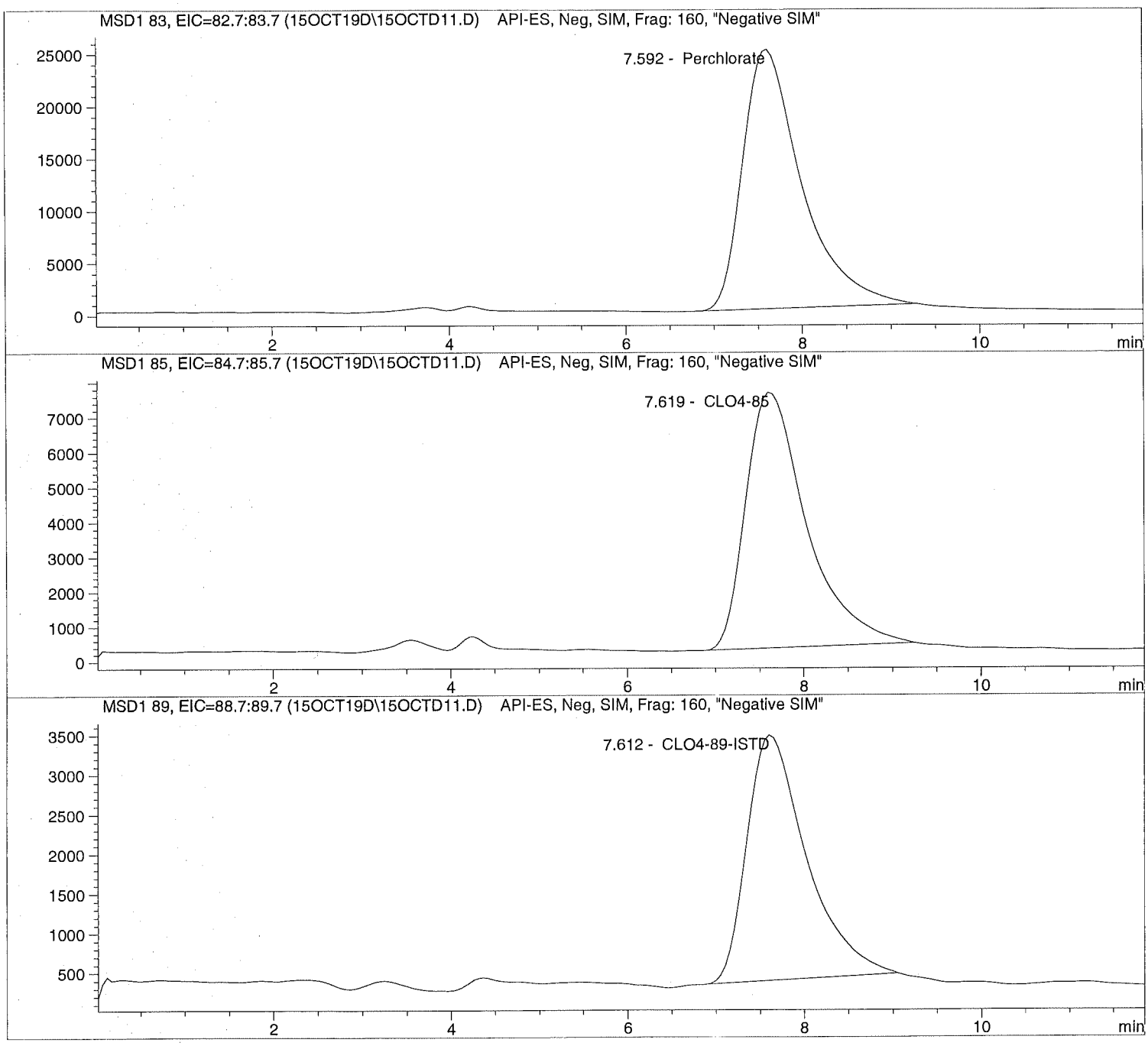
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.592	PBA	1149594.9	26.9035	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.619	PBA	349797.9	26.8688	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.612	PBA	144866.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Lvl Sig		Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

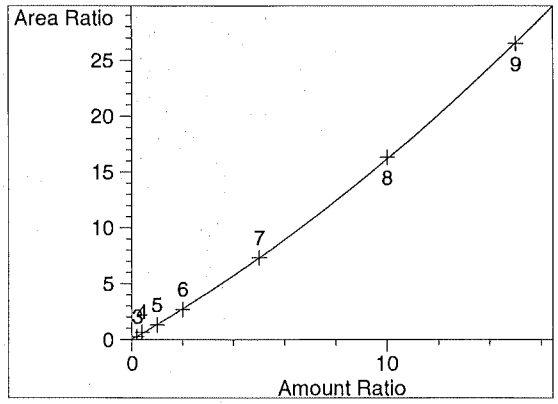
Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

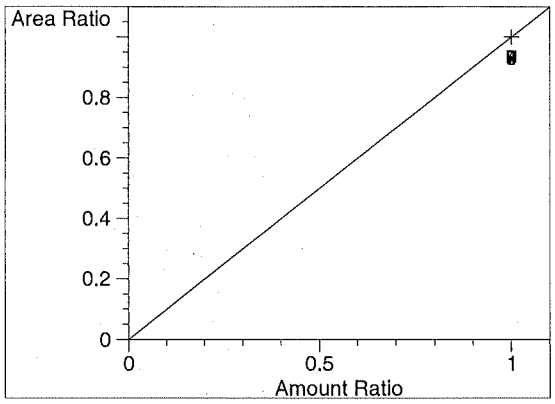
Peak Sum Table

No Entries in table

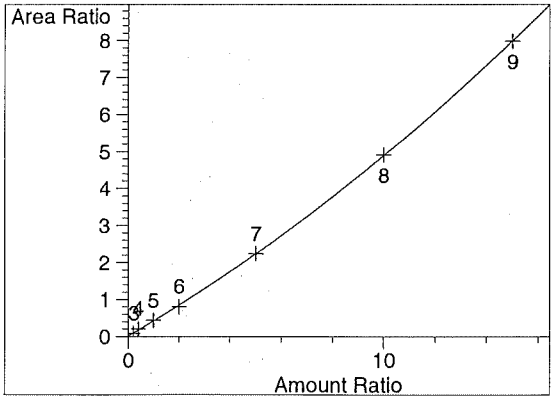
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

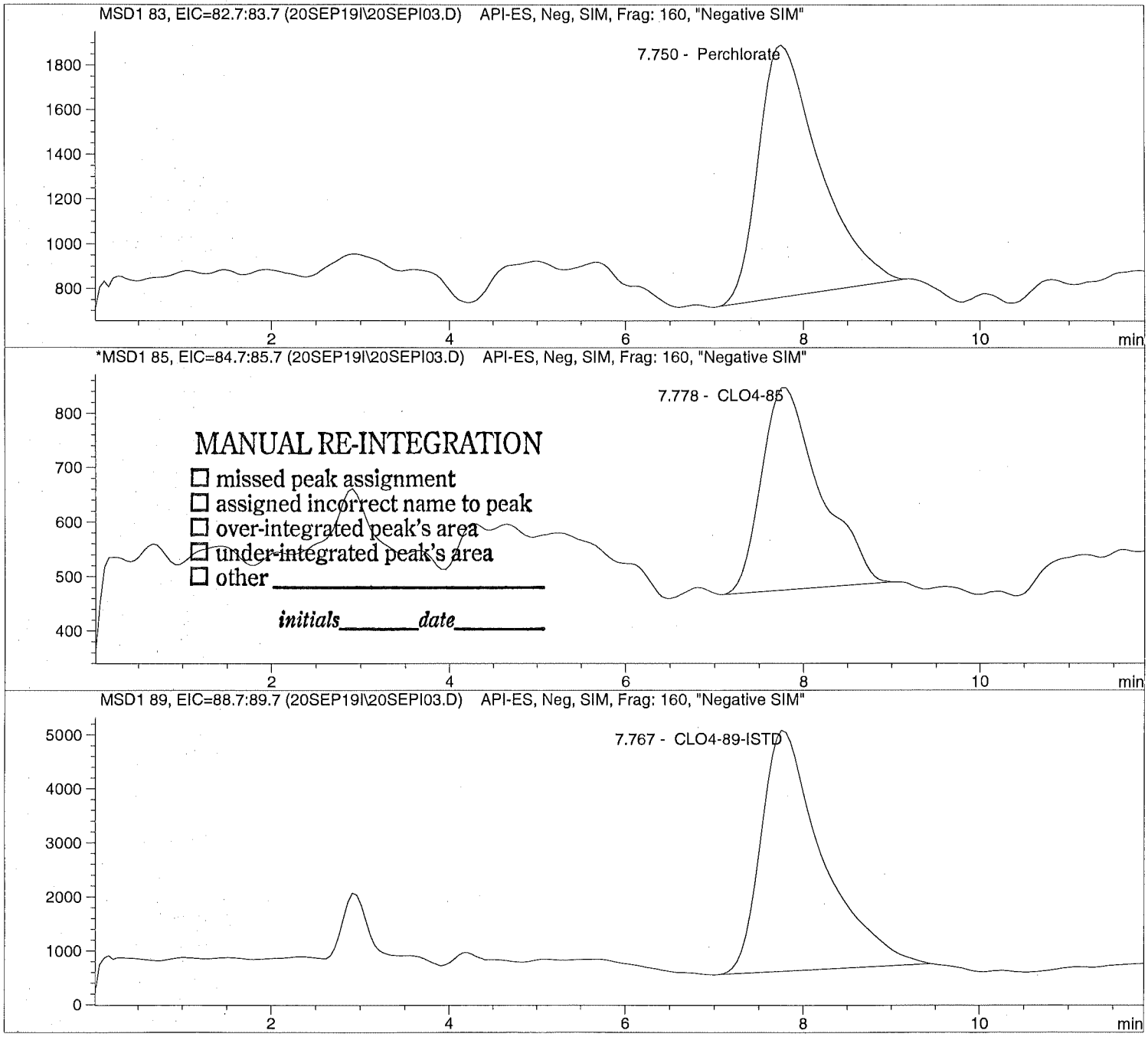
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

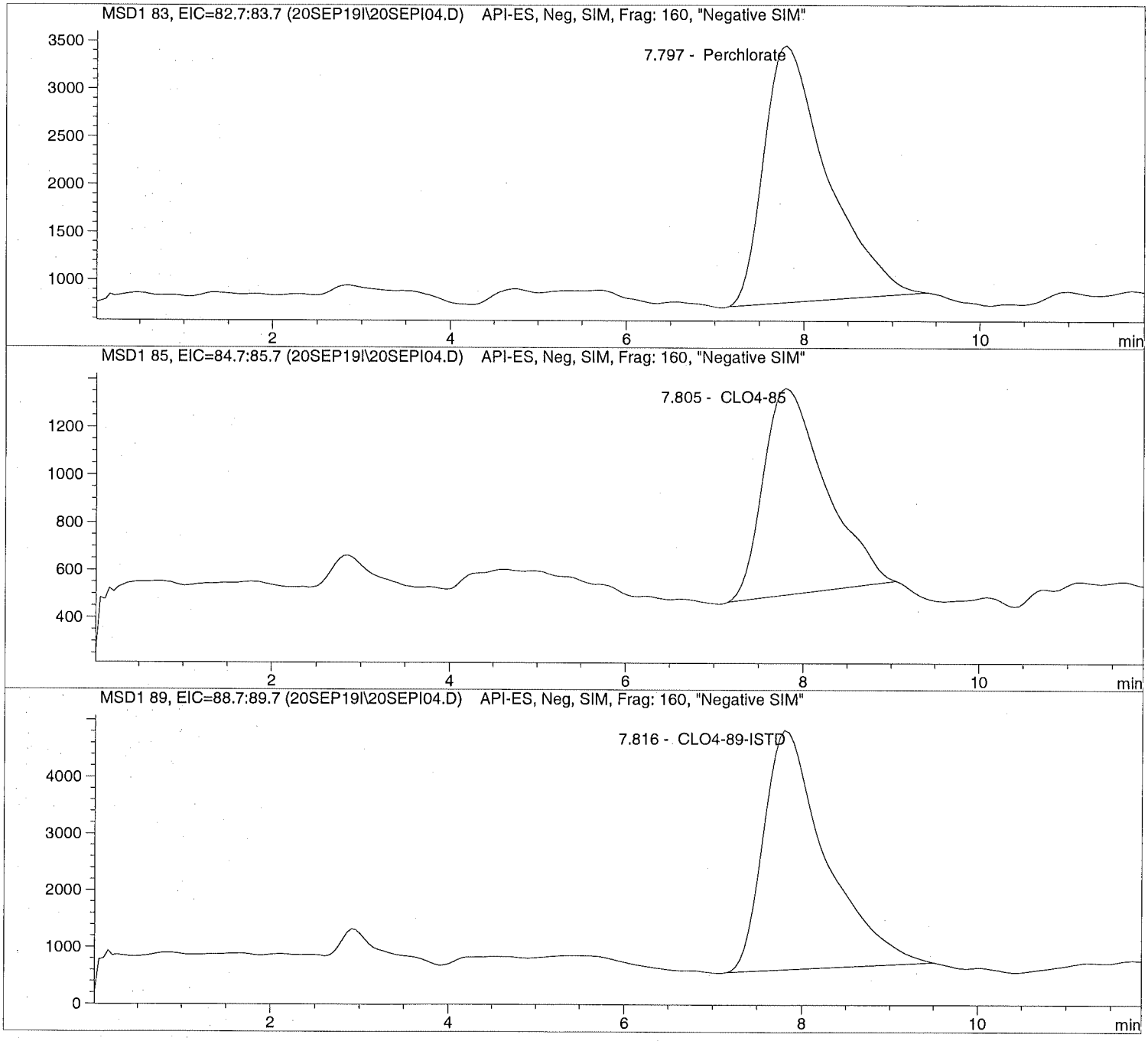
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

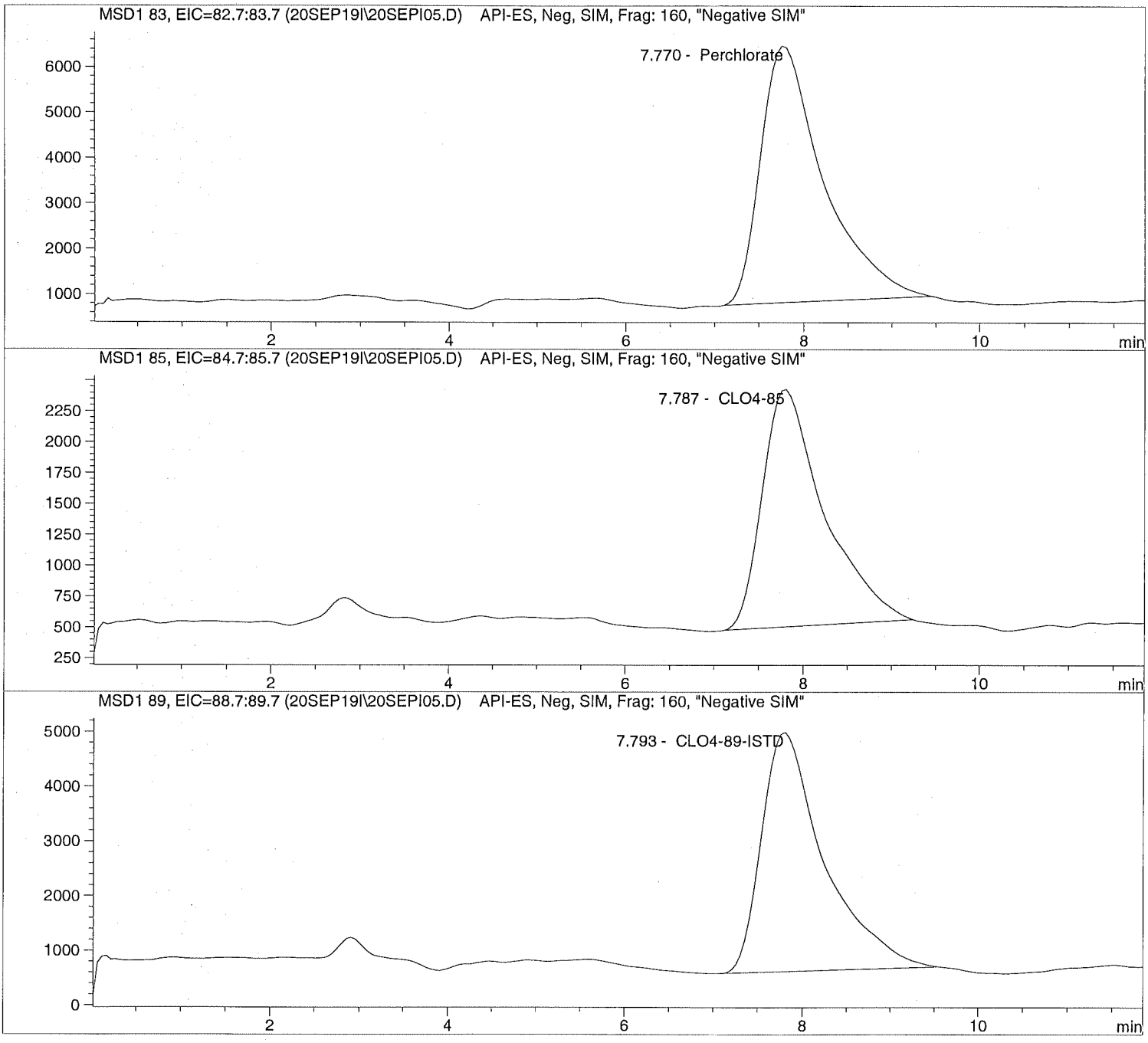
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

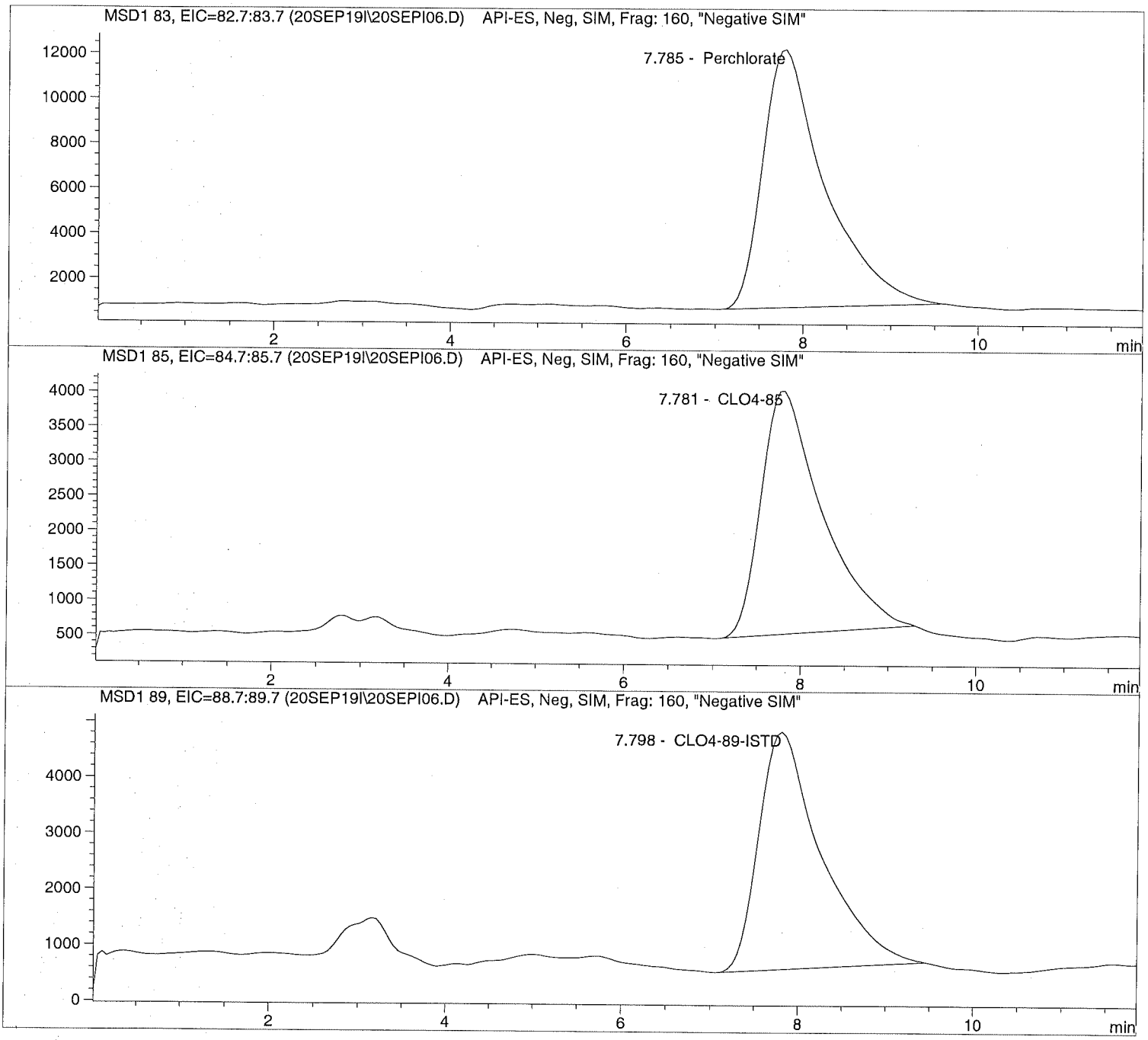
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

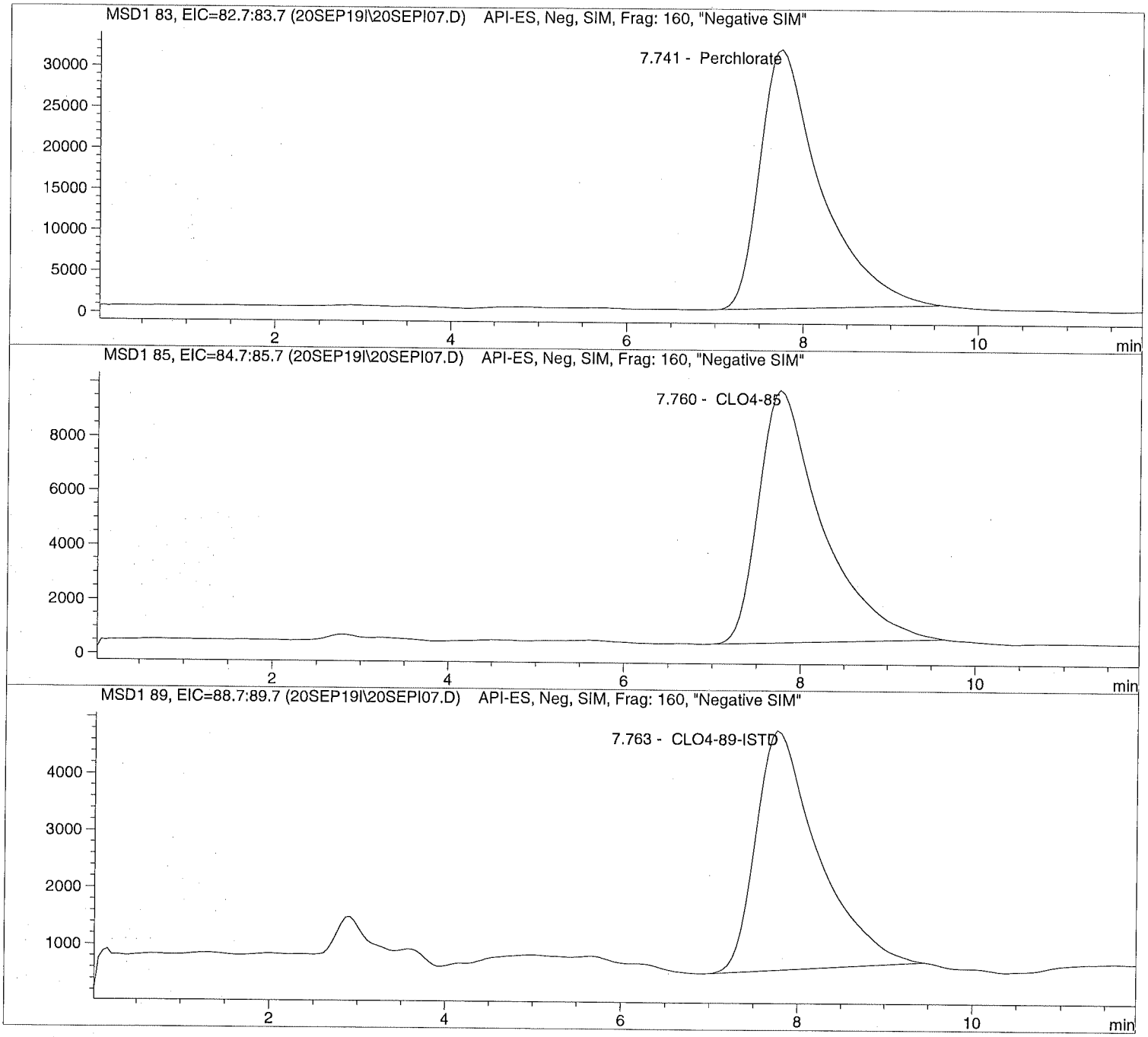
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

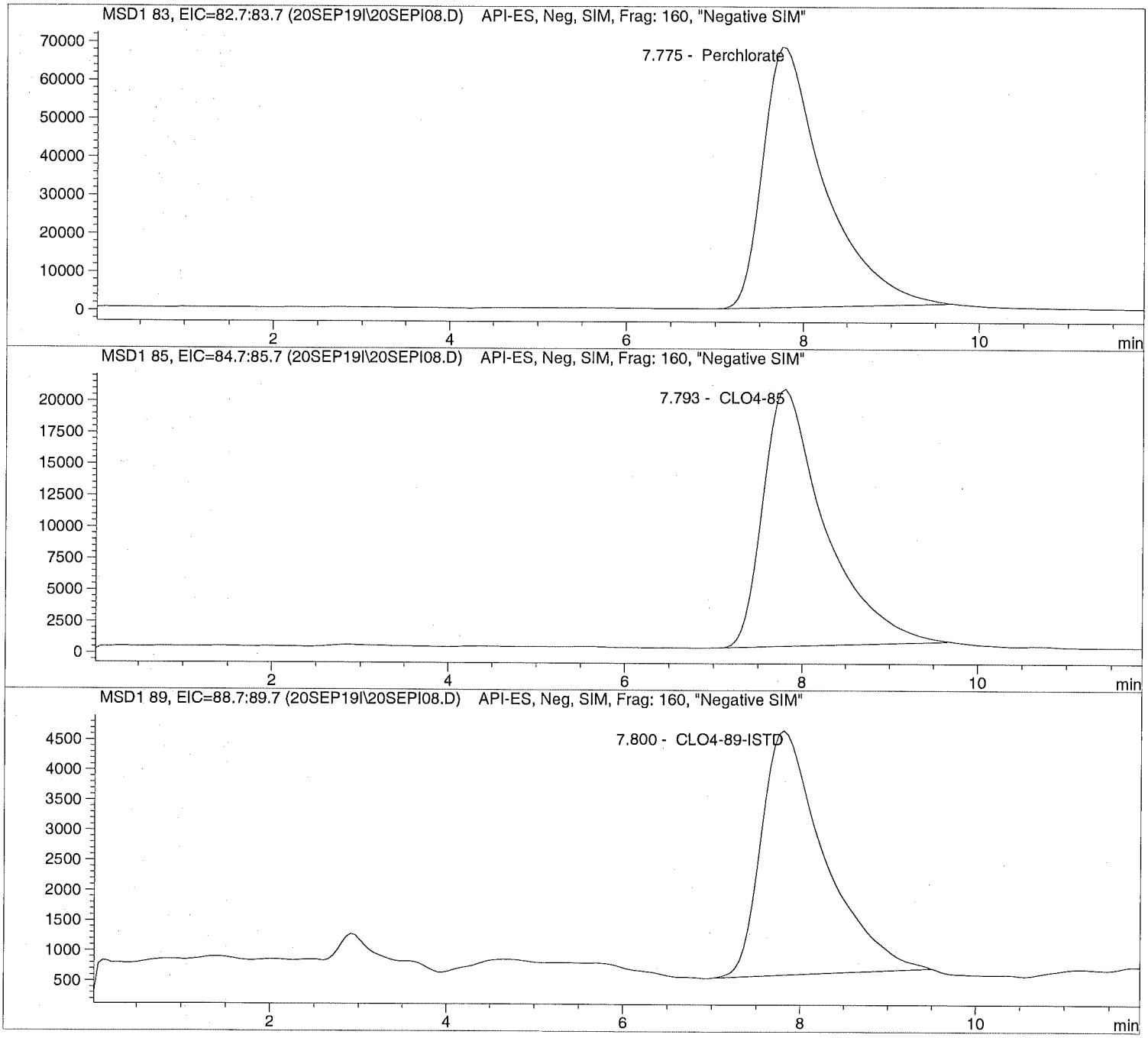
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

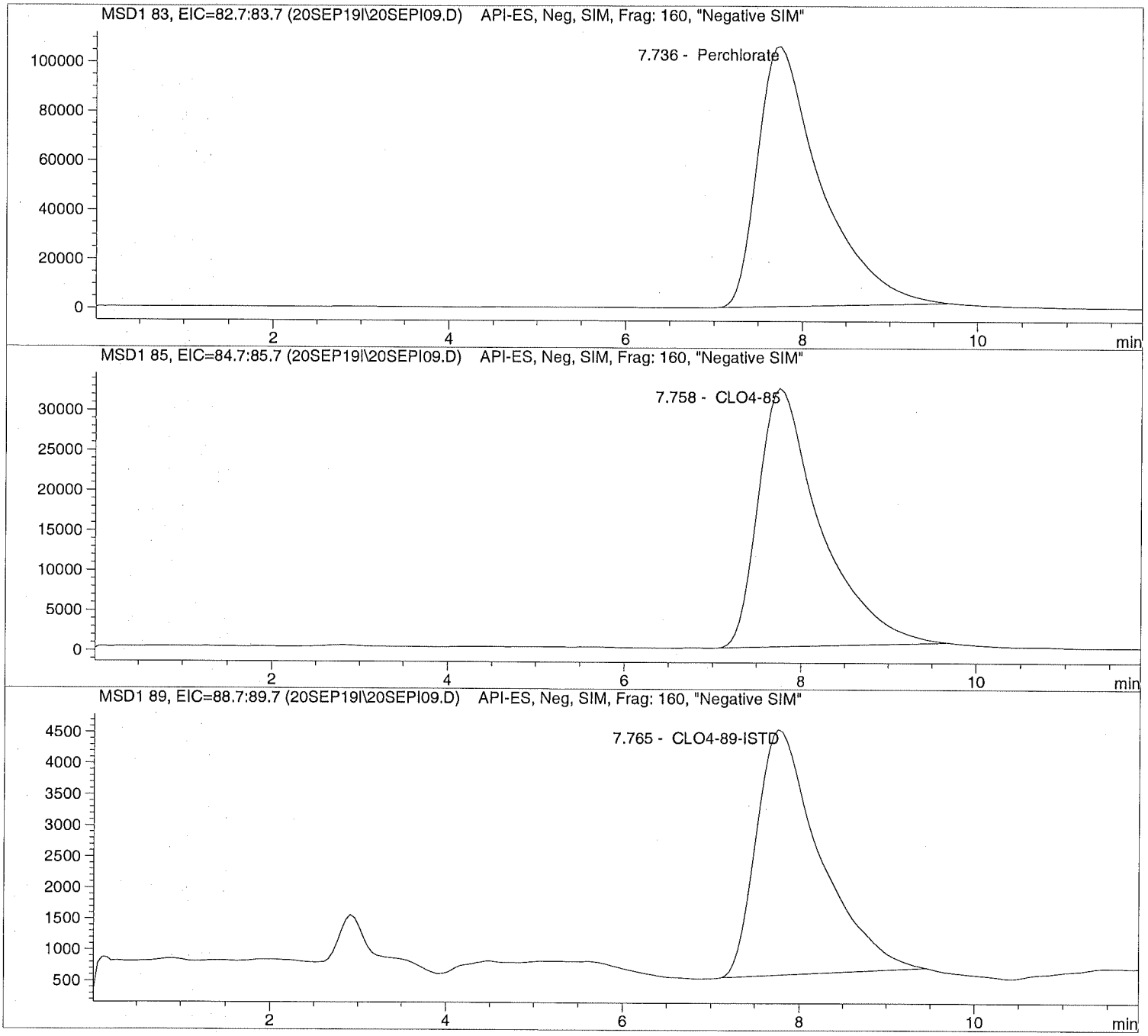
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

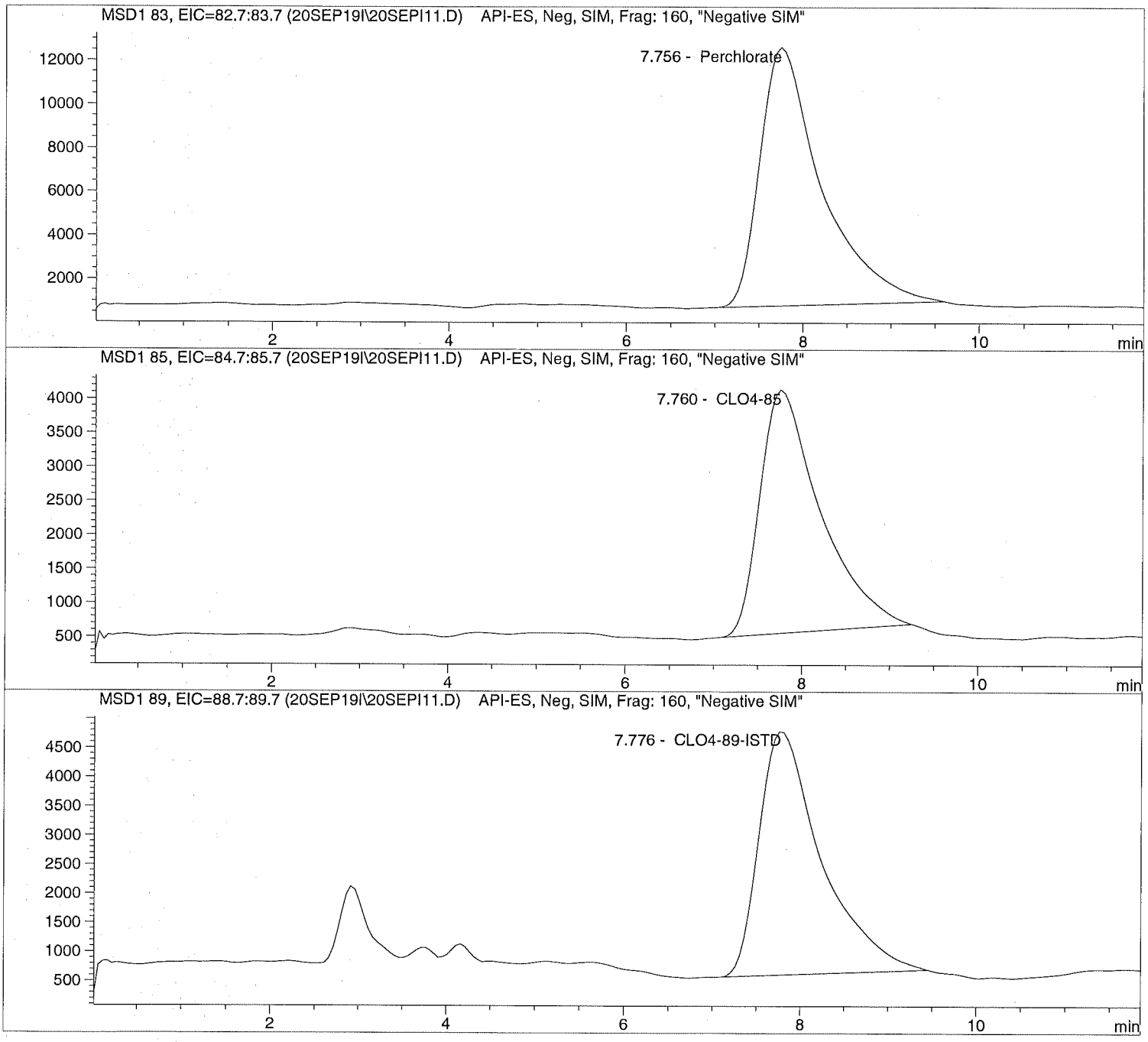
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

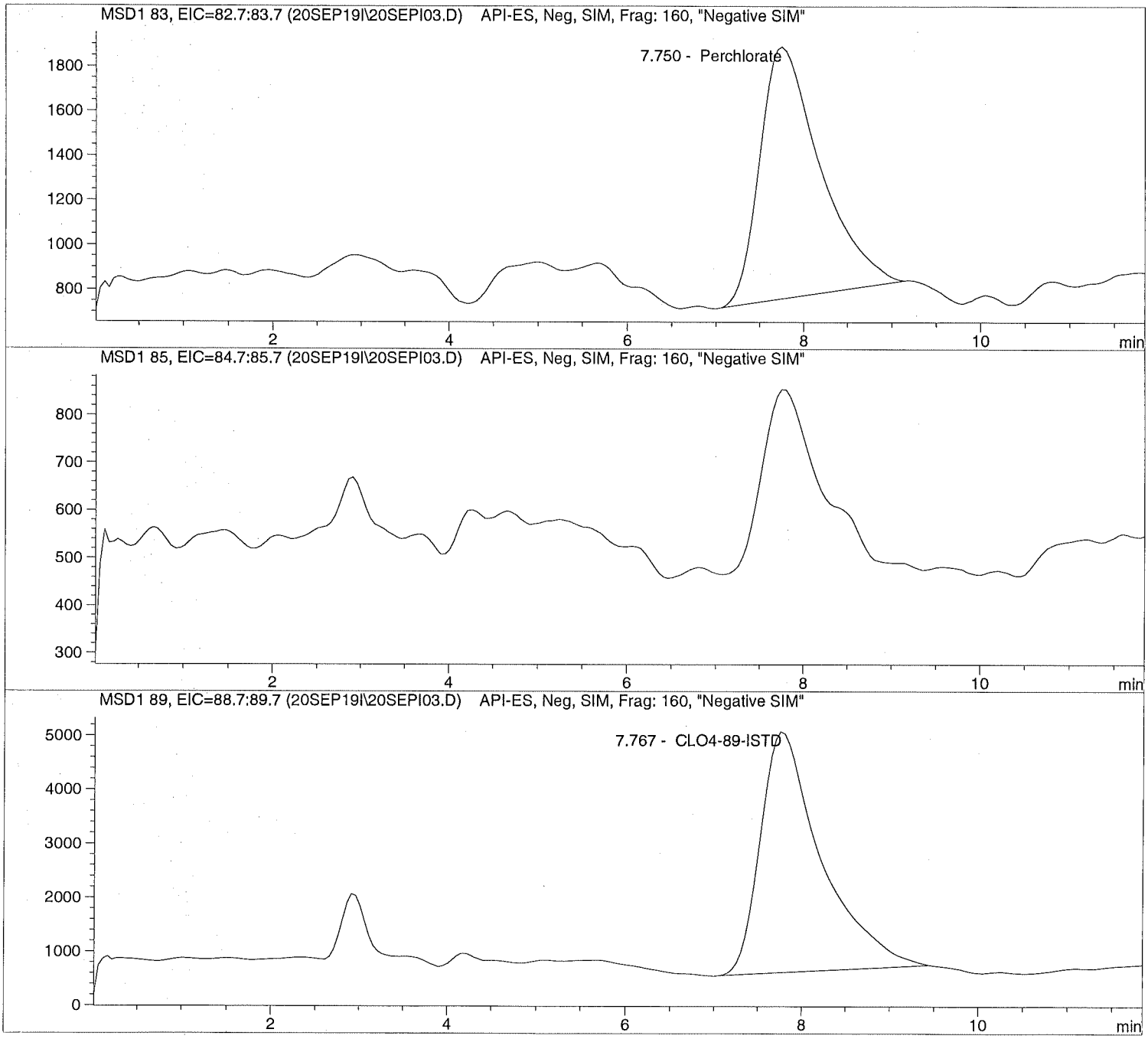
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
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October 22, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100471**

Laboratory Results for: **Longhorn GW Treatment Plant Monthly Effluent Samples**

Dear Marcia,

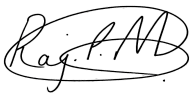
ALS Environmental received 3 sample(s) on Oct 09, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19100471

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100471-01	LH18/24-SP650_100819	Water		08-Oct-2019 14:00	09-Oct-2019 08:40	☐
HS19100471-02	LH18/24-SP650_100819_ AIX	Water		08-Oct-2019 14:00	09-Oct-2019 08:40	☐
HS19100471-03	Trip Blank	Water	ALS 071918-79	08-Oct-2019 14:00	09-Oct-2019 08:40	☐

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19100471

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 146241

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R348096

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020

Batch ID: 146462

Sample ID: HS19100469-01MS

• MS and MSD are for an unrelated sample

WetChemistry by Method SW7196

Batch ID: R348376

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19100471

Sample ID: LH18/24-SP650_100819 Lab ID:HS19100471-01

Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
2-Butanone	**110**		**0.50**	**1.0**	**2.0**	**UG/L**	1	10-Oct-2019 13:42
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	10-Oct-2019 13:42
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	10-Oct-2019 13:42
Acetone	**44**		**0.40**	**1.0**	**2.0**	**UG/L**	1	10-Oct-2019 13:42
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Carbon disulfide	**1.3**	J	**0.60**	**1.0**	**2.0**	**UG/L**	1	10-Oct-2019 13:42
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19100471
Sample ID: LH18/24-SP650_100819 Lab ID:HS19100471-01
Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
cis-1,2-Dichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	10-Oct-2019 13:42
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	10-Oct-2019 13:42
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	10-Oct-2019 13:42
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:42
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Trichloroethene	**0.80**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	10-Oct-2019 13:42
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:42
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*1*	*10-Oct-2019 13:42*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*10-Oct-2019 13:42*
Surr: Dibromofluoromethane	*95.1*			**0**	*80-119*	*%REC*	*1*	*10-Oct-2019 13:42*
Surr: Toluene-d8	*99.1*			**0**	*89-112*	*%REC*	*1*	*10-Oct-2019 13:42*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 10-Oct-2019		Analyst: LG
1,4-Dioxane	**23**		**1.0**	**1.0**	**1.0**	**ug/L**	100	15-Oct-2019 11:02
Surr: 2-Fluorobiphenyl	*115*			**0**	*40-140*	*%REC*	*100*	*15-Oct-2019 11:02*
Surr: 4-Terphenyl-d14	*121*			**0**	*40-140*	*%REC*	*100*	*15-Oct-2019 11:02*
Surr: Nitrobenzene-d5	*93.8*			**0**	*40-140*	*%REC*	*100*	*15-Oct-2019 11:02*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 16-Oct-2019		Analyst: JHD
Barium	**0.0770**		**0.00190**	**0.00250**	**0.00500**	**mg/L**	1	21-Oct-2019 21:28
Lead	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	21-Oct-2019 21:28
Selenium	0.00250	U	0.00110	0.00250	0.00500	mg/L	1	21-Oct-2019 21:28
Silver	0.000500	U	0.000200	0.000500	0.00500	mg/L	1	21-Oct-2019 21:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19100471

Sample ID: LH18/24-SP650_100819 Lab ID:HS19100471-01

Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
HEXAVALENT CHROMIUM BY SW7196A	**Method:SW7196**							Analyst: KVL
Chromium, Hexavalent	**0.00900**	J	**0.00600**	**0.0100**	**0.0100**	**mg/L**	1	09-Oct-2019 13:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19100471

Sample ID: LH18/24-SP650_100819_ AIX Lab ID:HS19100471-02

Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Oct-2019 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19100471
Sample ID: Trip Blank Lab ID:HS19100471-03
Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	10-Oct-2019 13:18
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	10-Oct-2019 13:18
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	10-Oct-2019 13:18
Acetone	**7.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	10-Oct-2019 13:18
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	10-Oct-2019 13:18
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant Monthly Effluent Samples WorkOrder:HS19100471

Sample ID: Trip Blank Lab ID:HS19100471-03

Collection Date: 08-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	10-Oct-2019 13:18
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	10-Oct-2019 13:18
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	10-Oct-2019 13:18
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	10-Oct-2019 13:18
Surr: 1,2-Dichloroethane-d4	*90.4*			**0**	*81-118*	*%REC*	*1*	*10-Oct-2019 13:18*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*10-Oct-2019 13:18*
Surr: Dibromofluoromethane	*93.9*			**0**	*80-119*	*%REC*	*1*	*10-Oct-2019 13:18*
Surr: Toluene-d8	*99.3*			**0**	*89-112*	*%REC*	*1*	*10-Oct-2019 13:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

Batch ID: 146241 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100471-01	1	1000	1 (mL)	0.001

Batch ID: 146462 **Method:** METALS BY ICPMS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19100471-01	1	10	10 (mL)	1

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 146241 (1)	**Test Name :** SEMIVOLATILES SIM				**Matrix:** Water	
HS19100471-01	LH18/24-SP650_100819	08 Oct 2019 14:00		10 Oct 2019 13:11	15 Oct 2019 11:02	100
Batch ID: 146462 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Water	
HS19100471-01	LH18/24-SP650_100819	08 Oct 2019 14:00		16 Oct 2019 14:00	21 Oct 2019 21:28	1
Batch ID: R348096 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19100471-01	LH18/24-SP650_100819	08 Oct 2019 14:00			10 Oct 2019 13:42	1
HS19100471-03	Trip Blank	08 Oct 2019 14:00			10 Oct 2019 13:18	1
Batch ID: R348376 (0)	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A				**Matrix:** Water	
HS19100471-01	LH18/24-SP650_100819	08 Oct 2019 14:00			09 Oct 2019 13:22	1
Batch ID: R348532 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19100471-02	LH18/24-SP650_100819_ AIX	08 Oct 2019 14:00			17 Oct 2019 14:54	1

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: 146462 (0) **Instrument: ICPMS05** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-146462** Units: **mg/L** Analysis Date: **21-Oct-2019 21:12**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306441** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.00250	0.00500								U
Lead	0.00100	0.00500								U
Selenium	0.00250	0.00500								U
Silver	0.000500	0.00500								U

LCS Sample ID: **LCS-146462** Units: **mg/L** Analysis Date: **21-Oct-2019 21:15**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306442** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.04652	0.00500	0.05	0	93.0	86 - 114				
Lead	0.04501	0.00500	0.05	0	90.0	88 - 115				
Selenium	0.04657	0.00500	0.05	0	93.1	80 - 120				
Silver	0.04774	0.00500	0.05	0	95.5	85 - 116				

MS Sample ID: **HS19100469-01MS** Units: **mg/L** Analysis Date: **21-Oct-2019 21:21**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306445** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	1.546	0.00500	0.05	1.527	37.4	86 - 114				SO
Lead	0.0436	0.00500	0.05	0.000262	86.7	88 - 115				S
Selenium	0.04594	0.00500	0.05	0.000736	90.4	80 - 120				
Silver	0.04366	0.00500	0.05	0.000009	87.3	85 - 116				

MSD Sample ID: **HS19100469-01MSD** Units: **mg/L** Analysis Date: **21-Oct-2019 21:24**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306446** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	1.527	0.00500	0.05	1.527	0.482	86 - 114	1.546	1.2	20	SO
Lead	0.04349	0.00500	0.05	0.000262	86.5	88 - 115	0.0436	0.248	20	S
Selenium	0.0431	0.00500	0.05	0.000736	84.7	80 - 120	0.04594	6.38	20	
Silver	0.04298	0.00500	0.05	0.000009	85.9	85 - 116	0.04366	1.58	20	

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: 146462 (0) **Instrument: ICPMS05** **Method: METALS BY ICPMS BY SW6020A**

PDS Sample ID: **HS19100469-01PDS** Units: **mg/L** Analysis Date: **21-Oct-2019 21:26**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306447** PrepDate: **16-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	1.609	0.00500	0.1	1.527	81.7	80 - 120				O
Lead	0.09484	0.00500	0.1	0.000262	94.6	80 - 120				
Selenium	0.09856	0.00500	0.1	0.000736	97.8	80 - 120				
Silver	0.09493	0.00500	0.1	0.000009	94.9	80 - 120				

SD Sample ID: **HS19100469-01SD** Units: **mg/L** Analysis Date: **21-Oct-2019 21:19**
Client ID: Run ID: **ICPMS05_348730** SeqNo: **5306444** PrepDate: **16-Oct-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	1.406	0.0250					1.527	7.91	10	
Lead	0.00500	0.0250					0.000262	0	10	U
Selenium	0.0125	0.0250					0.000736	0	10	U
Silver	0.00250	0.0250					0.000009	0	10	U

The following samples were analyzed in this batch: HS19100471-01

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: 146241 (1) **Instrument: SV-6** **Method: SEMIVOLATILES SIM**

MBLK Sample ID: **MBLK-146241** Units: **ug/L** Analysis Date: **15-Oct-2019 09:40**
Client ID: Run ID: **SV-6_348439** SeqNo: **5299370** PrepDate: **10-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.07418*	*0*	*0.08*	*0*	*92.7*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06411*	*0*	*0.08*	*0*	*80.1*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.08352*	*0*	*0.08*	*0*	*104*	*40 - 140*				

LCS Sample ID: **LCS-146241** Units: **ug/L** Analysis Date: **15-Oct-2019 09:59**
Client ID: Run ID: **SV-6_348439** SeqNo: **5299371** PrepDate: **10-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07249	0.010	0.08	0	90.6	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08027*	*0*	*0.08*	*0*	*100*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06847*	*0*	*0.08*	*0*	*85.6*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.08101*	*0*	*0.08*	*0*	*101*	*40 - 140*				

LCSD Sample ID: **LCSD-146241** Units: **ug/L** Analysis Date: **15-Oct-2019 10:18**
Client ID: Run ID: **SV-6_348439** SeqNo: **5299372** PrepDate: **10-Oct-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07508	0.010	0.08	0	93.9	40 - 140	0.07249	3.51	20	
Surr: 2-Fluorobiphenyl	*0.07021*	*0*	*0.08*	*0*	*87.8*	*40 - 140*	*0.08027*	*13.4*	*20*	
Surr: 4-Terphenyl-d14	*0.07086*	*0*	*0.08*	*0*	*88.6*	*40 - 140*	*0.06847*	*3.43*	*20*	
Surr: Nitrobenzene-d5	*0.08504*	*0*	*0.08*	*0*	*106*	*40 - 140*	*0.08101*	*4.85*	*20*	

The following samples were analyzed in this batch: HS19100471-01

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191010** Units: **UG/L** Analysis Date: **10-Oct-2019 12:54**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292044** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191010** Units: **UG/L** Analysis Date: **10-Oct-2019 12:54**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292044** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.83*	*1.0*	*50*	*0*	*91.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.61*	*1.0*	*50*	*0*	*107*	*85 - 114*				
Surr: Dibromofluoromethane	*47.61*	*1.0*	*50*	*0*	*95.2*	*80 - 119*				
Surr: Toluene-d8	*49.66*	*1.0*	*50*	*0*	*99.3*	*89 - 112*				

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191010** Units: **UG/L** Analysis Date: **10-Oct-2019 12:06**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292043** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.68	1.0	20	0	98.4	78 - 124				
1,1,1-Trichloroethane	19.19	1.0	20	0	96.0	74 - 131				
1,1,2,2-Tetrachloroethane	19.64	1.0	20	0	98.2	71 - 121				
1,1,2-Trichloroethane	19.34	1.0	20	0	96.7	80 - 119				
1,1-Dichloroethane	19.16	1.0	20	0	95.8	77 - 125				
1,1-Dichloroethene	18.85	1.0	20	0	94.3	71 - 131				
1,1-Dichloropropene	18.03	1.0	20	0	90.1	78 - 125				
1,2,3-Trichlorobenzene	20.82	1.0	20	0	104	69 - 129				
1,2,3-Trichloropropane	19.79	1.0	20	0	98.9	73 - 122				
1,2,4-Trichlorobenzene	20.55	1.0	20	0	103	69 - 130				
1,2,4-Trimethylbenzene	18.75	1.0	20	0	93.8	76 - 124				
1,2-Dibromo-3-chloropropane	18.77	1.0	20	0	93.9	62 - 128				
1,2-Dibromoethane	19.8	1.0	20	0	99.0	77 - 121				
1,2-Dichlorobenzene	19.27	1.0	20	0	96.3	80 - 119				
1,2-Dichloroethane	19.84	1.0	20	0	99.2	73 - 128				
1,2-Dichloropropane	19.27	1.0	20	0	96.3	78 - 122				
1,3,5-Trimethylbenzene	18.75	1.0	20	0	93.8	75 - 124				
1,3-Dichlorobenzene	19.11	1.0	20	0	95.6	80 - 119				
1,3-Dichloropropane	19.65	1.0	20	0	98.2	80 - 119				
1,4-Dichlorobenzene	18.58	1.0	20	0	92.9	79 - 118				
2,2-Dichloropropane	20.32	1.0	20	0	102	60 - 139				
2-Butanone	40.97	2.0	40	0	102	56 - 143				
2-Chlorotoluene	18.35	1.0	20	0	91.7	79 - 122				
2-Hexanone	41.18	2.0	40	0	103	57 - 139				
4-Chlorotoluene	18.89	1.0	20	0	94.5	78 - 122				
4-Isopropyltoluene	18.35	1.0	20	0	91.8	77 - 127				
4-Methyl-2-pentanone	40	2.0	40	0	100.0	67 - 130				
Acetone	47.6	2.0	40	0	119	39 - 160				
Benzene	19.22	1.0	20	0	96.1	79 - 120				
Bromobenzene	19.72	1.0	20	0	98.6	80 - 120				
Bromochloromethane	19.37	1.0	20	0	96.9	78 - 123				
Bromodichloromethane	19.8	1.0	20	0	99.0	79 - 125				
Bromoform	20.57	1.0	20	0	103	66 - 130				
Bromomethane	19.42	1.0	20	0	97.1	53 - 141				

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191010** Units: **UG/L** Analysis Date: **10-Oct-2019 12:06**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292043** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.94	2.0	40	0	94.8	64 - 133				
Carbon tetrachloride	18.2	1.0	20	0	91.0	72 - 136				
Chlorobenzene	19.45	1.0	20	0	97.3	82 - 118				
Chloroethane	19.75	1.0	20	0	98.8	60 - 138				
Chloroform	19.21	1.0	20	0	96.0	79 - 124				
Chloromethane	19.05	1.0	20	0	95.2	50 - 139				
cis-1,2-Dichloroethene	19.42	1.0	20	0	97.1	78 - 123				
cis-1,3-Dichloropropene	20.3	1.0	20	0	101	75 - 124				
Dibromochloromethane	19.96	1.0	20	0	99.8	74 - 126				
Dibromomethane	19.75	1.0	20	0	98.7	79 - 123				
Dichlorodifluoromethane	18.74	1.0	20	0	93.7	32 - 152				
Ethylbenzene	19.12	1.0	20	0	95.6	79 - 121				
Hexachlorobutadiene	20.35	1.0	20	0	102	66 - 134				
Isopropylbenzene	18.78	1.0	20	0	93.9	72 - 131				
m,p-Xylene	38.67	2.0	40	0	96.7	80 - 121				
Methylene chloride	20.01	2.0	20	0	100	74 - 124				
Naphthalene	20.03	1.0	20	0	100	61 - 128				
n-Butylbenzene	18.49	1.0	20	0	92.5	75 - 128				
n-Propylbenzene	18.63	1.0	20	0	93.1	76 - 126				
o-Xylene	19.41	1.0	20	0	97.1	78 - 122				
sec-Butylbenzene	17.98	1.0	20	0	89.9	77 - 126				
Styrene	19.97	1.0	20	0	99.8	78 - 123				
tert-Butylbenzene	18.28	1.0	20	0	91.4	78 - 124				
Tetrachloroethene	18.62	1.0	20	0	93.1	74 - 129				
Toluene	19.43	1.0	20	0	97.2	80 - 121				
trans-1,2-Dichloroethene	19.61	1.0	20	0	98.1	75 - 124				
trans-1,3-Dichloropropene	20.73	1.0	20	0	104	73 - 127				
Trichloroethene	19.25	1.0	20	0	96.3	79 - 123				
Trichlorofluoromethane	18.51	1.0	20	0	92.6	65 - 141				
Vinyl chloride	17.92	1.0	20	0	89.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.89*	*1.0*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.72*	*1.0*	*50*	*0*	*107*	*85 - 114*				
Surr: Dibromofluoromethane	*52.4*	*1.0*	*50*	*0*	*105*	*80 - 119*				
Surr: Toluene-d8	*48.16*	*1.0*	*50*	*0*	*96.3*	*89 - 112*				

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19100521-01MS** Units: **UG/L** Analysis Date: **10-Oct-2019 15:43**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292048** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.87	1.0	20	0	99.4	78 - 124				
1,1,1-Trichloroethane	18.83	1.0	20	0	94.1	74 - 131				
1,1,2,2-Tetrachloroethane	18.91	1.0	20	0	94.6	71 - 121				
1,1,2-Trichloroethane	18.76	1.0	20	0	93.8	80 - 119				
1,1-Dichloroethane	17.57	1.0	20	0	87.9	77 - 125				
1,1-Dichloroethene	18.29	1.0	20	0	91.4	71 - 131				
1,1-Dichloropropene	18.84	1.0	20	0	94.2	78 - 125				
1,2,3-Trichlorobenzene	18.89	1.0	20	0	94.4	69 - 129				
1,2,3-Trichloropropane	19.19	1.0	20	0	96.0	73 - 122				
1,2,4-Trichlorobenzene	19.66	1.0	20	0	98.3	69 - 130				
1,2,4-Trimethylbenzene	19.7	1.0	20	0	98.5	76 - 124				
1,2-Dibromo-3-chloropropane	18.42	1.0	20	0	92.1	62 - 128				
1,2-Dibromoethane	19.3	1.0	20	0	96.5	77 - 121				
1,2-Dichlorobenzene	19.47	1.0	20	0	97.4	80 - 119				
1,2-Dichloroethane	18.37	1.0	20	0	91.8	73 - 128				
1,2-Dichloropropane	17.91	1.0	20	0	89.6	78 - 122				
1,3,5-Trimethylbenzene	20.24	1.0	20	0	101	75 - 124				
1,3-Dichlorobenzene	19.68	1.0	20	0	98.4	80 - 119				
1,3-Dichloropropane	19.36	1.0	20	0	96.8	80 - 119				
1,4-Dichlorobenzene	18.73	1.0	20	0	93.7	79 - 118				
2,2-Dichloropropane	19.14	1.0	20	0	95.7	60 - 139				
2-Butanone	35.14	2.0	40	0	87.9	56 - 143				
2-Chlorotoluene	18.97	1.0	20	0	94.8	79 - 122				
2-Hexanone	39.32	2.0	40	0	98.3	57 - 139				
4-Chlorotoluene	19.42	1.0	20	0	97.1	78 - 122				
4-Isopropyltoluene	20.45	1.0	20	0	102	77 - 127				
4-Methyl-2-pentanone	38.93	2.0	40	0	97.3	67 - 130				
Acetone	34.32	2.0	40	0	85.8	39 - 160				
Benzene	18.78	1.0	20	0	93.9	79 - 120				
Bromobenzene	19.22	1.0	20	0	96.1	80 - 120				
Bromochloromethane	16.88	1.0	20	0	84.4	78 - 123				
Bromodichloromethane	18.47	1.0	20	0	92.3	79 - 125				
Bromoform	20.05	1.0	20	0	100	66 - 130				
Bromomethane	16.16	1.0	20	0	80.8	53 - 141				

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19100521-01MS** Units: **UG/L** Analysis Date: **10-Oct-2019 15:43**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292048** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	36.52	2.0	40	0	91.3	64 - 133				
Carbon tetrachloride	19.29	1.0	20	0	96.5	72 - 136				
Chlorobenzene	19.63	1.0	20	0	98.1	82 - 118				
Chloroethane	18.03	1.0	20	0	90.1	60 - 138				
Chloroform	17.78	1.0	20	0	88.9	79 - 124				
Chloromethane	17.17	1.0	20	0	85.9	50 - 139				
cis-1,2-Dichloroethene	18.19	1.0	20	0	91.0	78 - 123				
cis-1,3-Dichloropropene	18.71	1.0	20	0	93.5	75 - 124				
Dibromochloromethane	19.28	1.0	20	0	96.4	74 - 126				
Dibromomethane	18.67	1.0	20	0	93.4	79 - 123				
Dichlorodifluoromethane	15.41	1.0	20	0	77.0	32 - 152				
Ethylbenzene	20.19	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	20.09	1.0	20	0	100	66 - 134				
Isopropylbenzene	20.89	1.0	20	0	104	72 - 131				
m,p-Xylene	40.24	2.0	40	0	101	80 - 121				
Methylene chloride	17.11	2.0	20	0	85.5	74 - 124				
Naphthalene	18.65	1.0	20	0	93.2	61 - 128				
n-Butylbenzene	20.87	1.0	20	0	104	75 - 128				
n-Propylbenzene	20.17	1.0	20	0	101	76 - 126				
o-Xylene	20.26	1.0	20	0	101	78 - 122				
sec-Butylbenzene	20.41	1.0	20	0	102	77 - 126				
Styrene	20.03	1.0	20	0	100	78 - 123				
tert-Butylbenzene	20.33	1.0	20	0	102	78 - 124				
Tetrachloroethene	20.83	1.0	20	0	104	74 - 129				
Toluene	20.01	1.0	20	0	100	80 - 121				
trans-1,2-Dichloroethene	17.78	1.0	20	0	88.9	75 - 124				
trans-1,3-Dichloropropene	18.86	1.0	20	0	94.3	73 - 127				
Trichloroethene	19.02	1.0	20	0	95.1	79 - 123				
Trichlorofluoromethane	18.6	1.0	20	0	93.0	65 - 141				
Vinyl chloride	16.91	1.0	20	0	84.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.82*	*1.0*	*50*	*0*	*93.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.21*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*47.91*	*1.0*	*50*	*0*	*95.8*	*80 - 119*				
Surr: Toluene-d8	*49.67*	*1.0*	*50*	*0*	*99.3*	*89 - 112*				

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19100521-01MSD** Units: **UG/L** Analysis Date: **10-Oct-2019 16:07**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292049** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.19	1.0	20	0	95.9	78 - 124	19.87	3.5	20	
1,1,1-Trichloroethane	18.71	1.0	20	0	93.6	74 - 131	18.83	0.6	20	
1,1,2,2-Tetrachloroethane	19.05	1.0	20	0	95.3	71 - 121	18.91	0.739	20	
1,1,2-Trichloroethane	18.84	1.0	20	0	94.2	80 - 119	18.76	0.387	20	
1,1-Dichloroethane	17.03	1.0	20	0	85.1	77 - 125	17.57	3.16	20	
1,1-Dichloroethene	17.33	1.0	20	0	86.7	71 - 131	18.29	5.36	20	
1,1-Dichloropropene	18.17	1.0	20	0	90.9	78 - 125	18.84	3.59	20	
1,2,3-Trichlorobenzene	20.86	1.0	20	0	104	69 - 129	18.89	9.94	20	
1,2,3-Trichloropropane	19.72	1.0	20	0	98.6	73 - 122	19.19	2.73	20	
1,2,4-Trichlorobenzene	20.7	1.0	20	0	103	69 - 130	19.66	5.14	20	
1,2,4-Trimethylbenzene	19.46	1.0	20	0	97.3	76 - 124	19.7	1.2	20	
1,2-Dibromo-3-chloropropane	19.68	1.0	20	0	98.4	62 - 128	18.42	6.59	20	
1,2-Dibromoethane	18.92	1.0	20	0	94.6	77 - 121	19.3	1.98	20	
1,2-Dichlorobenzene	19.45	1.0	20	0	97.3	80 - 119	19.47	0.0966	20	
1,2-Dichloroethane	17.71	1.0	20	0	88.6	73 - 128	18.37	3.64	20	
1,2-Dichloropropane	17.61	1.0	20	0	88.1	78 - 122	17.91	1.66	20	
1,3,5-Trimethylbenzene	19.98	1.0	20	0	99.9	75 - 124	20.24	1.32	20	
1,3-Dichlorobenzene	19.33	1.0	20	0	96.6	80 - 119	19.68	1.8	20	
1,3-Dichloropropane	19.79	1.0	20	0	98.9	80 - 119	19.36	2.19	20	
1,4-Dichlorobenzene	18.92	1.0	20	0	94.6	79 - 118	18.73	1.01	20	
2,2-Dichloropropane	18.25	1.0	20	0	91.2	60 - 139	19.14	4.8	20	
2-Butanone	34.59	2.0	40	0	86.5	56 - 143	35.14	1.59	20	
2-Chlorotoluene	18.7	1.0	20	0	93.5	79 - 122	18.97	1.4	20	
2-Hexanone	38.92	2.0	40	0	97.3	57 - 139	39.32	1.01	20	
4-Chlorotoluene	19.1	1.0	20	0	95.5	78 - 122	19.42	1.66	20	
4-Isopropyltoluene	20.16	1.0	20	0	101	77 - 127	20.45	1.42	20	
4-Methyl-2-pentanone	38.16	2.0	40	0	95.4	67 - 130	38.93	1.99	20	
Acetone	33.81	2.0	40	0	84.5	39 - 160	34.32	1.49	20	
Benzene	17.93	1.0	20	0	89.6	79 - 120	18.78	4.63	20	
Bromobenzene	19.24	1.0	20	0	96.2	80 - 120	19.22	0.133	20	
Bromochloromethane	16.65	1.0	20	0	83.3	78 - 123	16.88	1.35	20	
Bromodichloromethane	17.99	1.0	20	0	89.9	79 - 125	18.47	2.64	20	
Bromoform	19.67	1.0	20	0	98.3	66 - 130	20.05	1.9	20	
Bromomethane	15.4	1.0	20	0	77.0	53 - 141	16.16	4.79	20	

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348096 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19100521-01MSD** Units: **UG/L** Analysis Date: **10-Oct-2019 16:07**
Client ID: Run ID: **VOA6_348096** SeqNo: **5292049** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	34.93	2.0	40	0	87.3	64 - 133	36.52	4.45	20	
Carbon tetrachloride	18.66	1.0	20	0	93.3	72 - 136	19.29	3.35	20	
Chlorobenzene	18.97	1.0	20	0	94.8	82 - 118	19.63	3.41	20	
Chloroethane	16.56	1.0	20	0	82.8	60 - 138	18.03	8.5	20	
Chloroform	17.13	1.0	20	0	85.6	79 - 124	17.78	3.76	20	
Chloromethane	16.08	1.0	20	0	80.4	50 - 139	17.17	6.59	20	
cis-1,2-Dichloroethene	17.7	1.0	20	0	88.5	78 - 123	18.19	2.73	20	
cis-1,3-Dichloropropene	18.31	1.0	20	0	91.6	75 - 124	18.71	2.13	20	
Dibromochloromethane	19.25	1.0	20	0	96.3	74 - 126	19.28	0.156	20	
Dibromomethane	18.34	1.0	20	0	91.7	79 - 123	18.67	1.78	20	
Dichlorodifluoromethane	14.78	1.0	20	0	73.9	32 - 152	15.41	4.15	20	
Ethylbenzene	19.22	1.0	20	0	96.1	79 - 121	20.19	4.91	20	
Hexachlorobutadiene	21.53	1.0	20	0	108	66 - 134	20.09	6.9	20	
Isopropylbenzene	19.93	1.0	20	0	99.6	72 - 131	20.89	4.73	20	
m,p-Xylene	38.82	2.0	40	0	97.1	80 - 121	40.24	3.58	20	
Methylene chloride	16.84	2.0	20	0	84.2	74 - 124	17.11	1.59	20	
Naphthalene	20.1	1.0	20	0	100	61 - 128	18.65	7.47	20	
n-Butylbenzene	20.79	1.0	20	0	104	75 - 128	20.87	0.363	20	
n-Propylbenzene	19.75	1.0	20	0	98.7	76 - 126	20.17	2.12	20	
o-Xylene	19.47	1.0	20	0	97.3	78 - 122	20.26	3.97	20	
sec-Butylbenzene	20.35	1.0	20	0	102	77 - 126	20.41	0.271	20	
Styrene	19.22	1.0	20	0	96.1	78 - 123	20.03	4.15	20	
tert-Butylbenzene	20	1.0	20	0	100.0	78 - 124	20.33	1.67	20	
Tetrachloroethene	20.12	1.0	20	0	101	74 - 129	20.83	3.44	20	
Toluene	19.13	1.0	20	0	95.6	80 - 121	20.01	4.52	20	
trans-1,2-Dichloroethene	17.41	1.0	20	0	87.0	75 - 124	17.78	2.14	20	
trans-1,3-Dichloropropene	18.47	1.0	20	0	92.3	73 - 127	18.86	2.13	20	
Trichloroethene	18.25	1.0	20	0	91.3	79 - 123	19.02	4.15	20	
Trichlorofluoromethane	17.86	1.0	20	0	89.3	65 - 141	18.6	4.06	20	
Vinyl chloride	16.11	1.0	20	0	80.6	58 - 137	16.91	4.82	20	
Surr: 1,2-Dichloroethane-d4	*45.99*	*1.0*	*50*	*0*	*92.0*	*81 - 118*	*46.82*	*1.79*	*20*	
Surr: 4-Bromofluorobenzene	*52.91*	*1.0*	*50*	*0*	*106*	*85 - 114*	*52.21*	*1.34*	*20*	
Surr: Dibromofluoromethane	*47.88*	*1.0*	*50*	*0*	*95.8*	*80 - 119*	*47.91*	*0.0546*	*20*	
Surr: Toluene-d8	*49.63*	*1.0*	*50*	*0*	*99.3*	*89 - 112*	*49.67*	*0.0737*	*20*	

ALS Houston, US Date: 22-Oct-19

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder:	HS19100471

QC BATCH REPORT

Batch ID:	**R348096 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19100471-01 HS19100471-03

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: HS19100471

QC BATCH REPORT

Batch ID: R348376 (0) **Instrument: UV-2450** **Method: HEXAVALENT CHROMIUM BY SW7196A**

MBLK Sample ID: **MBLK-R348376** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: Run ID: **UV-2450_348376** SeqNo: **5298286** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.0100	0.0100								U

LCS Sample ID: **LCS-R348376** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: Run ID: **UV-2450_348376** SeqNo: **5298285** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.254	0.0100	0.25	0	102	90 - 111				

MS Sample ID: **HS19100471-01MS** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: **LH18/24-SP650_100819** Run ID: **UV-2450_348376** SeqNo: **5298288** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.263	0.0100	0.25	0.009	102	90 - 111				

MSD Sample ID: **HS19100471-01MSD** Units: **mg/L** Analysis Date: **09-Oct-2019 13:22**
Client ID: **LH18/24-SP650_100819** Run ID: **UV-2450_348376** SeqNo: **5298287** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.262	0.0100	0.25	0.009	101	90 - 111	0.263	0.381	20	

The following samples were analyzed in this batch: HS19100471-01

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
WorkOrder: **HS19100471**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Houston, US Date: 22-Oct-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Monthly Effluent Samples
Work Order: HS19100471

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100471-01	LH18/24-SP650_100819	Login	10/9/2019 12:00:19 PM	JRM	EXT004
HS19100471-01	LH18/24-SP650_100819	Login	10/9/2019 12:00:19 PM	JRM	WET102
HS19100471-01	LH18/24-SP650_100819	Login	10/9/2019 12:00:19 PM	JRM	MET060
HS19100471-01	LH18/24-SP650_100819	Login	10/9/2019 12:00:19 PM	JRM	VOA038
HS19100471-02	LH18/24-SP650_100819_ AIX	Login	10/9/2019 12:00:19 PM	JRM	Sub
HS19100471-03	Trip Blank	Login	10/9/2019 12:00:19 PM	JRM	VOA038

00961631

ALS Houston, US Date: 22-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100471
Date/Time Received: **09-Oct-2019 08:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 9-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 9-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.9°C / 3.6°C UC/C	IR25	
Cooler(s)/Kit(s):	3622		
Date/Time sample(s) sent to storage:	10/09/2019 12:04		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00961632

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP MONTHLY EFFLUENT

Client Name:

Collected by: SCOTT BEESINGER

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	Sample Analysis Requested (5): VOC	Sb, Se, Pb, Ba	Hexavalent Chromium	1,4-Dioxane	Perchlorate	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHAAP-SPGSO_100819		08 OCT 2019	1400	-	N		WG	6	X	X	X	X					
LHAAP-SPGTO_100819_AJX		08 OCT 2019	1400	-	N		WG	1					X				
TRIP BLANK		08 OCT 2019	1400	-	TB		W	2	X								
				-													
				-													
				-													
				-													
				-													
				-													

HS19100471

Bhate Environmental Associates, Inc.

ghorn GW Treatment Plant Monthly Effluent Sample

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	10/3/19	1430	1. J.M	10/9/19	08:40
2.			2.		
3.			3.		

S/C 3.9 IR#25 CF0.0 3622

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

00961633

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

3622

CUSTODY SEAL

Date: 10/8/19 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By: SM
Date: 10/09/19

3622

OCT 0 9 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-434 RITE EXP 03/19

3622

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 11JUN18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3111
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 630-5656
REF: LHAAP-58-RJ

RMA:

54GC2/933F/FSC1

FedEx Express

J171010200UYU

TRK# 0221 4380 9529 9749

RETURNS MON-SAT
PRIORITY OVERNIGHT

FedEx
TRK# 0221 4380 9529 9749

WED - 09 OCT 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

FID 8121980 080CT19 GGGA 566C3/2A3C/05A2

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1928465; 1929006; 1929010; 1929013

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2302 (249888)

General Set Information: There were four field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 679039) was less than 1/2 the CRDL. The recovery for the LCS (679040) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1928465001 (Client ID: LH18/24-650_100119_BIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (679041/42) passed QC performance limits for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected**.**

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch October 16, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: October 17, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1929010**
Project ID: HS19100471
Purchase Order: HS19100471
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_100819_AIX	1929010001	10/08/19	10/10/19	

ANALYTICAL REPORT

Workorder: 34-1929010
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_100819_AIX** | Sampling Site: NA | Collected: 10/08/2019
Lab ID: 1929010001 | Media: 125 mL Nalgene | Received: 10/10/2019
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2302 (HBN: 249888) | **%Solids:** NA
Analyzed: 10/15/2019 11:37 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**6.0**	1.0	2.0	4.0	1	

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 249888)**

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 10/16/2019 07:50	/S/ Stephen Brose 10/17/2019 11:10

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1929010
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1929010

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2302 (HBN: 249888)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 679039
Analyzed: 10/15/2019 10:26
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 679040
Analyzed: 10/15/2019 09:58
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.04	3.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1928465001	**MS:**	679041	**MSD:**	679042
Analyzed:	10/15/2019 10:41	**Analyzed:**	10/15/2019 10:55	**Analyzed:**	10/15/2019 11:09
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.55	3	118	78.8	123.8	2.46	81.9	# 36.5	0.0	20.0

Comments

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
10/16/2019 07:51	10/17/2019 11:10

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

18698 / #2

SAMPLING STATE: **Dept of Defense**

COC ID: **12346**

1929010

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100471
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100471-02**	**LH18/24-SP650_100819_AIX**	**Water**	**08 Oct 2019 14:00**
	SUB_Perch-6850			23 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/9/19 1800.

Received By: _____ Date/Time: 10/10/19 0931

Cooler ID(s): _____ Temperature(s): _____

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SHOP 2019

00961641

ALS-Salt Lake City-Related Information Report (CRIR)

Cooler or Container Information Checklist (Fill In or Circle)

Client Name: ALS Houston — Project/Task/Site: HS19100471 192910

Date/Time of Receipt: 10/10/19 0931 — Number of Coolers Received: 1

Condition of Coolers:	(Acceptable)/Unacceptable	Temperature Control:	(Present)/Not Included
Cooler Custody Seals:	~~Present~~/Absent/NA		
	(Intact)/Broken/NA	Location Temp Taken:	(Cntnr)/Between Samples
Container Custody Seals:	Present/~~Absent~~/NA		
	Intact/Broken/(NA)	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	(Yes)/No/NA		
	~~Frozen~~/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH–418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C19 9907	4 °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: [signature] (Signature) Rebecca Mize (Printed Name) 10/10/19 (Date)

Client-Related Information

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

Briefly Describe the Problem and the Action Taken:

Client Notified? Yes ☐ No ☐

Response Required Within 24 Hours

Project Management

Project Manager Comments:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00961642

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-434 RIT2 EXP 02/20

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 09OCT19
ACTWGT: 48.10 LB
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: 13 W/O - RJ/BF

5S1C3/2A3C/104C

FedEx Express

J181118060501uv

TRK# 0201 **1251 0290 4296**

THU - 10 OCT 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US **SLC**

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19100471	Split:	Workorder ID: 1929010	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	COOL	EPA 6850, DoD QSM												
1	10/08/2019 14:00	LH18/24-SP650_100819_AIX	1929010001		Water	A	1		A												
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Waratt, Julie	10/10/2019 09:31	ALS Sample Receiving	Sample Login
Julie Waratt	10/11/19 1000	1453	Storage
R-33-1	10.15.19/09:10	T. Bush	CLO4 analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00961643

Batch Worklist

Batch: ELMS/ 2302 Created: 10/15/2019 07:51 Instrument: HBN: 249888

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 1928465 [ENV_LVL4]
Workorder: 1929006 [ENV_LVL4]
Workorder: 1929010 [ENV_LVL4]
Workorder: 1929013 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	679036	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	
2	679037	RLVS for HBN 249888 [ELMS/2302				RLVS	3		E685041C3Q	5311		10/17/2019	
3	679038	ICS for HBN 249888 [ELMS/2302]				ICS	3		E6850..D3Q	5311		10/17/2019	
4	679039	LMB for HBN 249888 [ELMS/2302]				LMB	3		E6850Q413Q	5311		10/17/2019	
5	679040	LCS for HBN 249888 [ELMS/2302]				LCS	3		E6850Q413Q	5311		10/17/2019	
6	1928465001	LH18/24-SP650_100119_BIX				SAMPLE	3	1928465001-A	E6850Q41.3	5480	10/29/2019	10/17/2019	
7	679041	LH18/24-SP650...(1928465001MS)				MS	3		E6850Q413Q	5311		10/17/2019	
8	679042	LH18/24-SP65...(1928465001MSD)				MSD	3		E6850Q413Q	5311		10/17/2019	
9	1929006001	LH18/24-SP140_100819				SAMPLE	3	1929006001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
10	1929010001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929010001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
11	1929013001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929013001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
12	679043	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	

00961644

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1928465 (001); 1929006 (001); 1929010 (001); 1929013 (001)
ELMS Batch/HBN ID: 2302 (249888)
Prep Date: 10/15/2019 Analysis Date: 10/15/2019 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Thomas Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 679040; Target = 3.0µg/L. ASTM type II water was used for LMB 679039.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1928465001 (Client ID's: LH18/24-650_100119_BIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (679041/42) passed QC acceptance criteria for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\249888-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2302 HBN: 249888 **Sample Set IDs if Applicable:** 1928465/1929006/1929010/1929013	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/23/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 05/06/2019 03:05PM **Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

AccuStandard

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 9001 ISO GUIDE 34 ISO 17025

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDIH-016
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: ** For isotopically labeled compounds, MW listed is for the fully enriched product.*	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\15OCT19D\15OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
	*	679036	CCV@25	Vial 71	1	Control	1	1.33443e6	7.526	26.88759
	*	679040	QC@3.0	Vial 72	1	Control	2	1.73380e5	7.567	3.03903
	*	679038	ICS@3.0	Vial 73	1	Control	3	1.13696e5	7.369	3.02285
	*	679039	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
	*	1928465001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
	*	679041	284651S	Vial 76	1	Sample	6	1.33460e5	7.290	3.55332
	*	679042	284651D	Vial 77	1	Sample	7	1.25808e5	7.285	2.45603
	*	1929006001	1K	Vial 78	1	Sample	8	5.72391e5	7.634	1.23264e4
	*	1929010001		Vial 79	1	Sample	9	2.36643e5	7.246	6.04458
	*	1929013001		Vial 80	1	Sample	10	2.42664e5	7.272	6.91662
	*	679043	CCV@25	Vial 71	1	Control	11	1.14959e6	7.592	26.90349

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
	*	679036	CCV@25	Vial 71	1	Control	1	1.68268e5	7.544	5.00000
	*	679040	QC@3.0	Vial 72	1	Control	2	2.09952e5	7.575	5.00000
	*	679038	ICS@3.0	Vial 73	1	Control	3	1.38406e5	7.393	5.00000
	*	679039	LMB	Vial 74	1	Control	4	1.78248e5	7.632	5.00000
	*	1928465001		Vial 75	1	Sample	5	2.08517e5	7.256	5.00000
	*	679041	284651S	Vial 76	1	Sample	6	1.38428e5	7.310	5.00000
	*	679042	284651D	Vial 77	1	Sample	7	1.87824e5	7.294	5.00000
	*	1929006001	1K	Vial 78	1	Sample	8	1.67142e5	7.648	5000.00000
	*	1929010001		Vial 79	1	Sample	9	1.43998e5	7.264	5.00000
	*	1929013001		Vial 80	1	Sample	10	1.28749e5	7.294	5.00000
	*	679043	CCV@25	Vial 71	1	Control	11	1.44866e5	7.612	5.00000

#	*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
	*	679036	CCV@25	Vial 71	1	Control	1	4.04332e5	7.548	26.75019
	*	679040	QC@3.0	Vial 72	1	Control	2	5.40492e4	7.595	3.01622
	*	679038	ICS@3.0	Vial 73	1	Control	3	3.88200e4	7.382	3.29691
	*	679039	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
	*	1928465001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
	*	679041	284651S	Vial 76	1	Sample	6	4.67868e4	7.298	3.99450
	*	679042	284651D	Vial 77	1	Sample	7	4.45366e4	7.299	2.76816
	*	1929006001	1K	Vial 78	1	Sample	8	1.69566e5	7.658	1.19081e4
	*	1929010001		Vial 79	1	Sample	9	8.15441e4	7.262	6.72364
	*	1929013001		Vial 80	1	Sample	10	7.97082e4	7.290	7.34615
	*	679043	CCV@25	Vial 71	1	Control	11	3.49798e5	7.619	26.86882

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.S

Sequence Table:

Method and Injection Info Part:

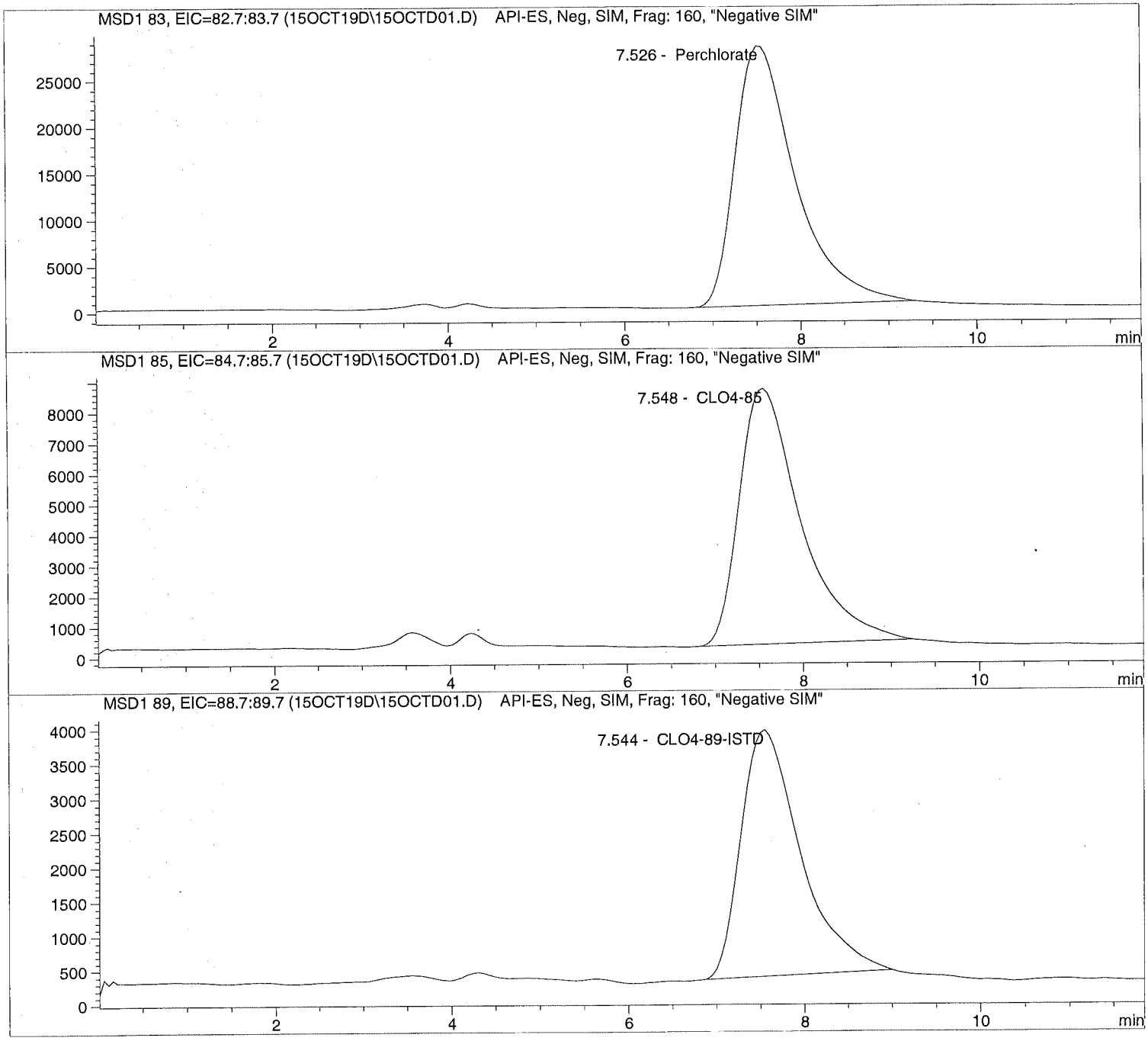
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	679036 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	679040 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	679038 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	679039 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1928465001	CLO4-AQN	1	Sample		
6	Vial 76	679041 284651S	CLO4-AQN	1	Sample		
7	Vial 77	679042 284651D	CLO4-AQN	1	Sample		
8	Vial 78	1929006001 1K	CLO4-AQN	1	Sample		
9	Vial 79	1929010001	CLO4-AQN	1	Sample		
10	Vial 80	1929013001	CLO4-AQN	1	Sample		
11	Vial 71	679043 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.526	PBA	1334425.5	26.8876	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.548	PBA	404331.7	26.7502	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.544	PBA	168268.3	5.0000	CLO4-89-ISTD

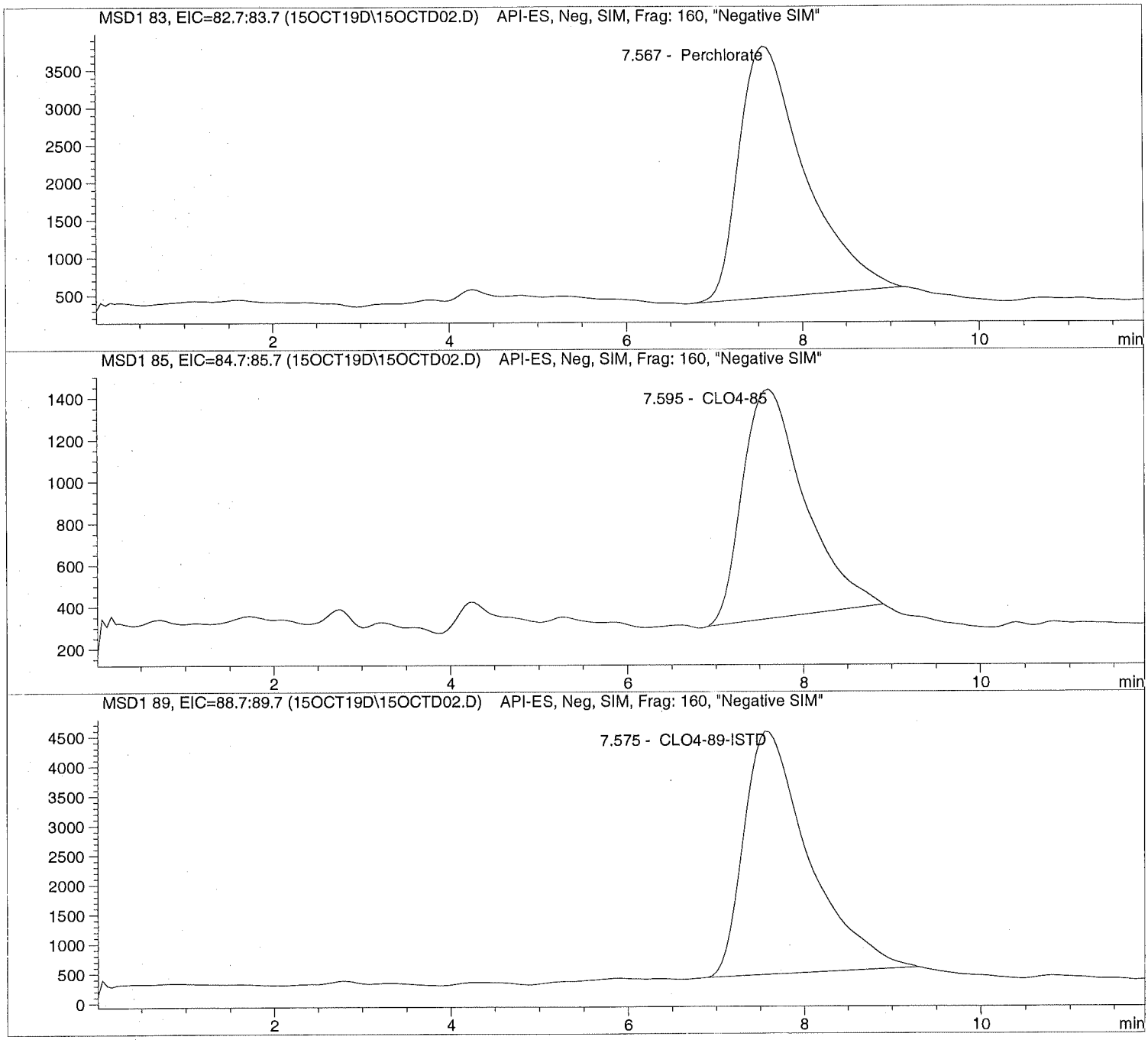
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.567	PBA	173380.0	3.0390	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.595	PBA	54049.2	3.0162	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	209951.5	5.0000	CLO4-89-ISTD

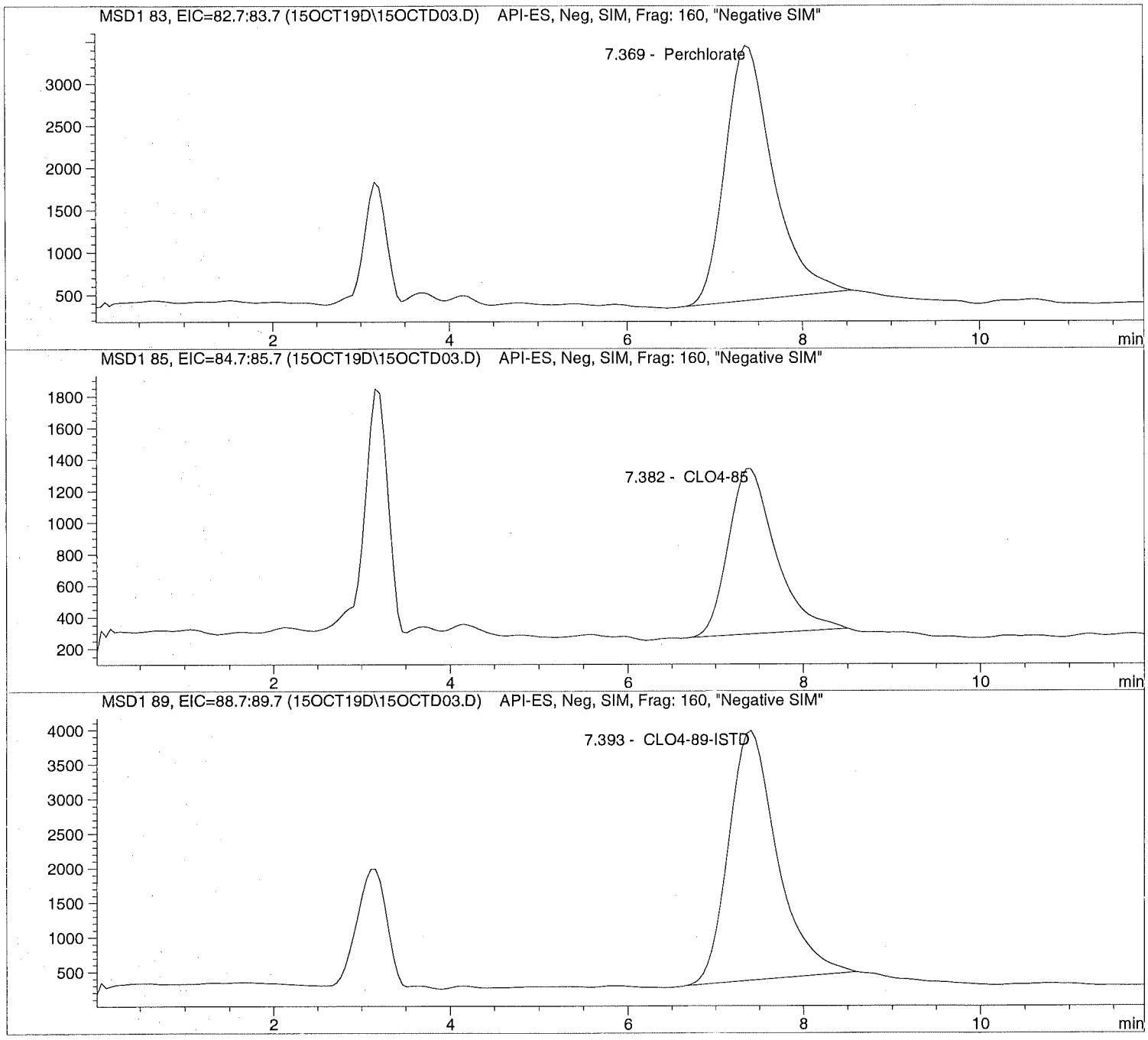
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.369	PBA	113696.3	3.0228	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.382	PBA	38820.0	3.2969	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.393	PBA	138406.3	5.0000	CLO4-89-ISTD

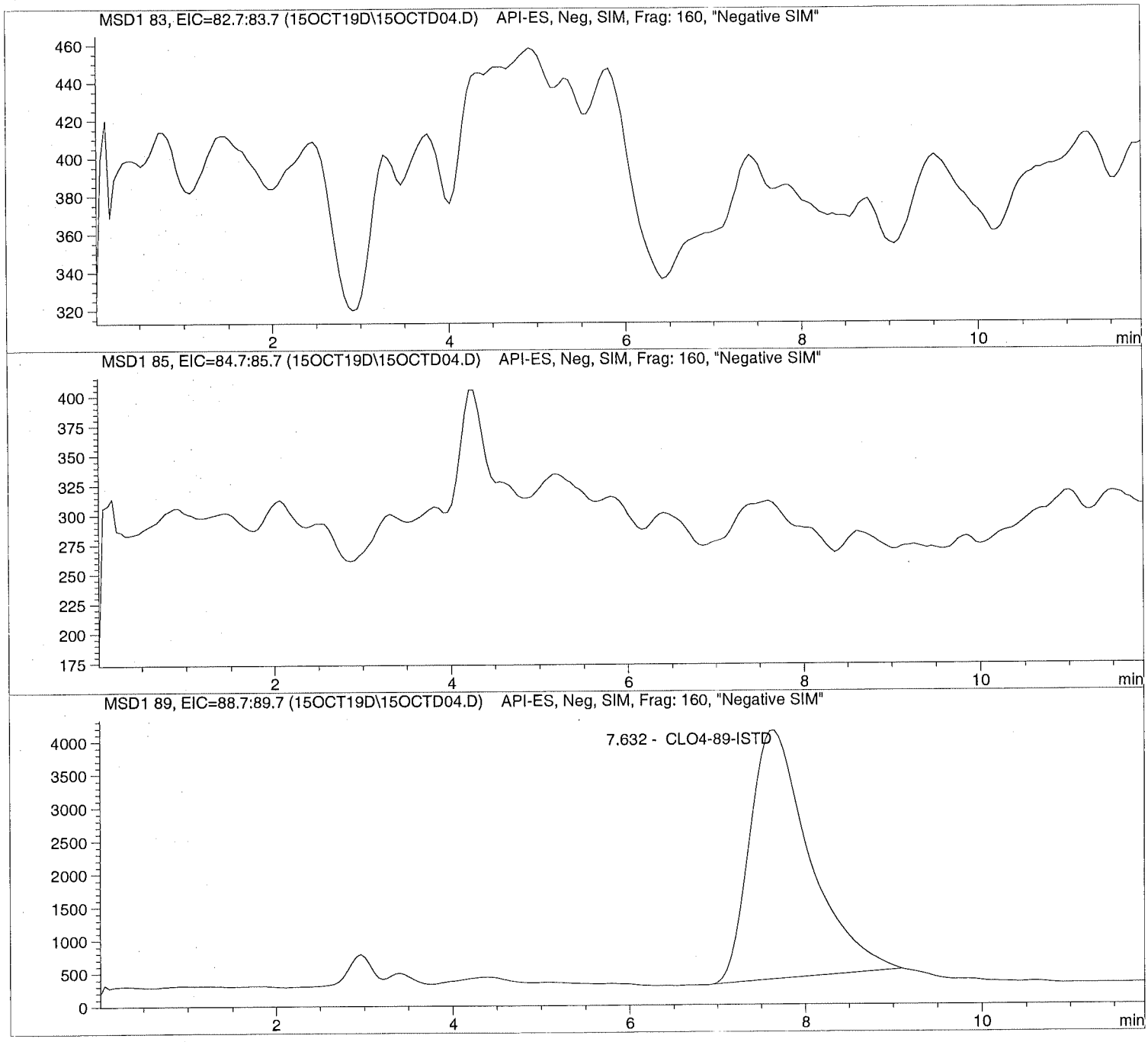
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.632	PBA	178247.9	5.0000	CLO4-89-ISTD

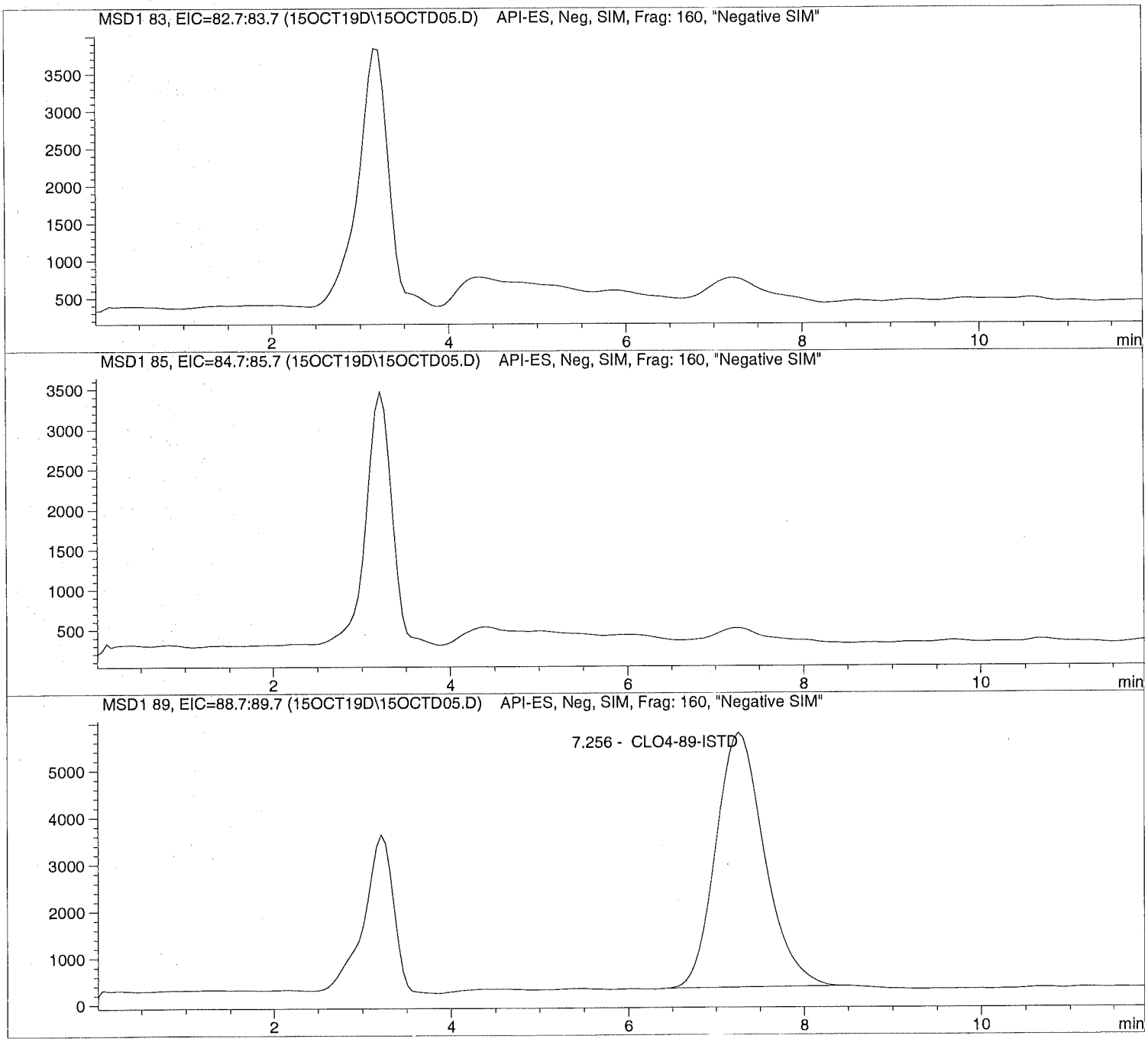
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.256	PBA	208516.8	5.0000	CLO4-89-ISTD

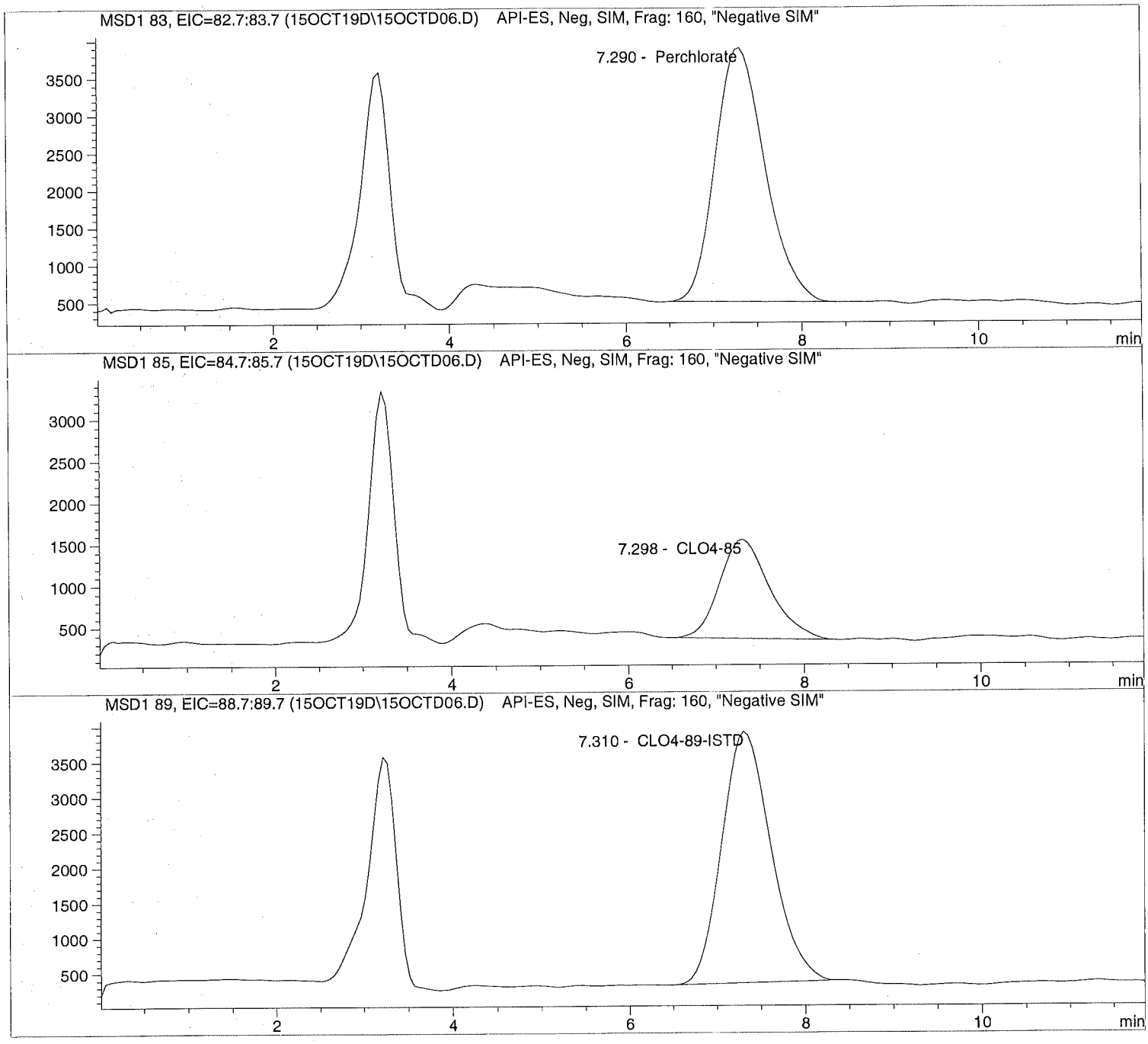
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	133460.4	3.5533	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.298	PBA	46786.8	3.9945	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.310	PBA	138427.8	5.0000	CLO4-89-ISTD

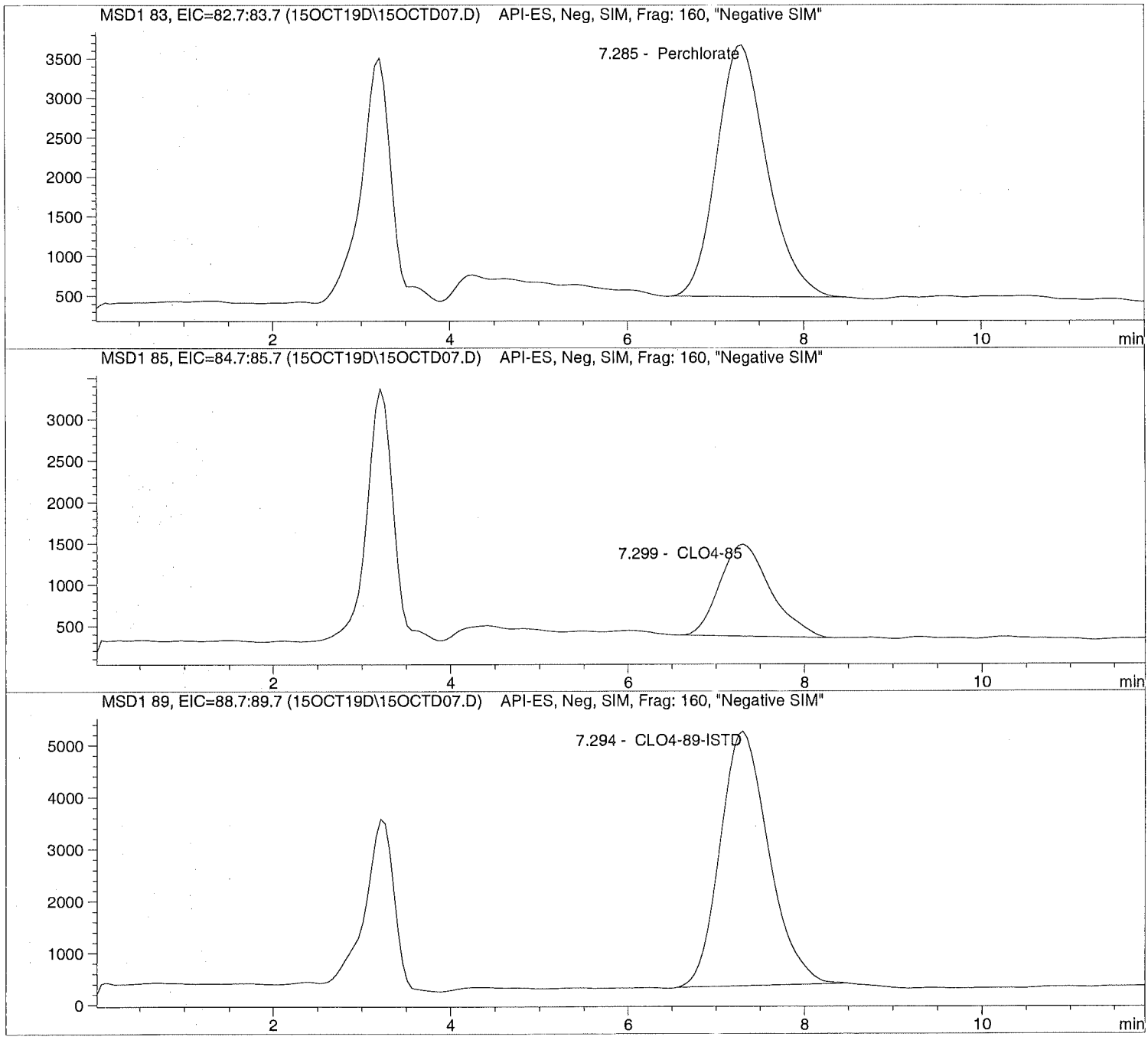
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.285	PBA	125808.1	2.4560	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.299	PBA	44536.6	2.7682	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	PBA	187823.9	5.0000	CLO4-89-ISTD

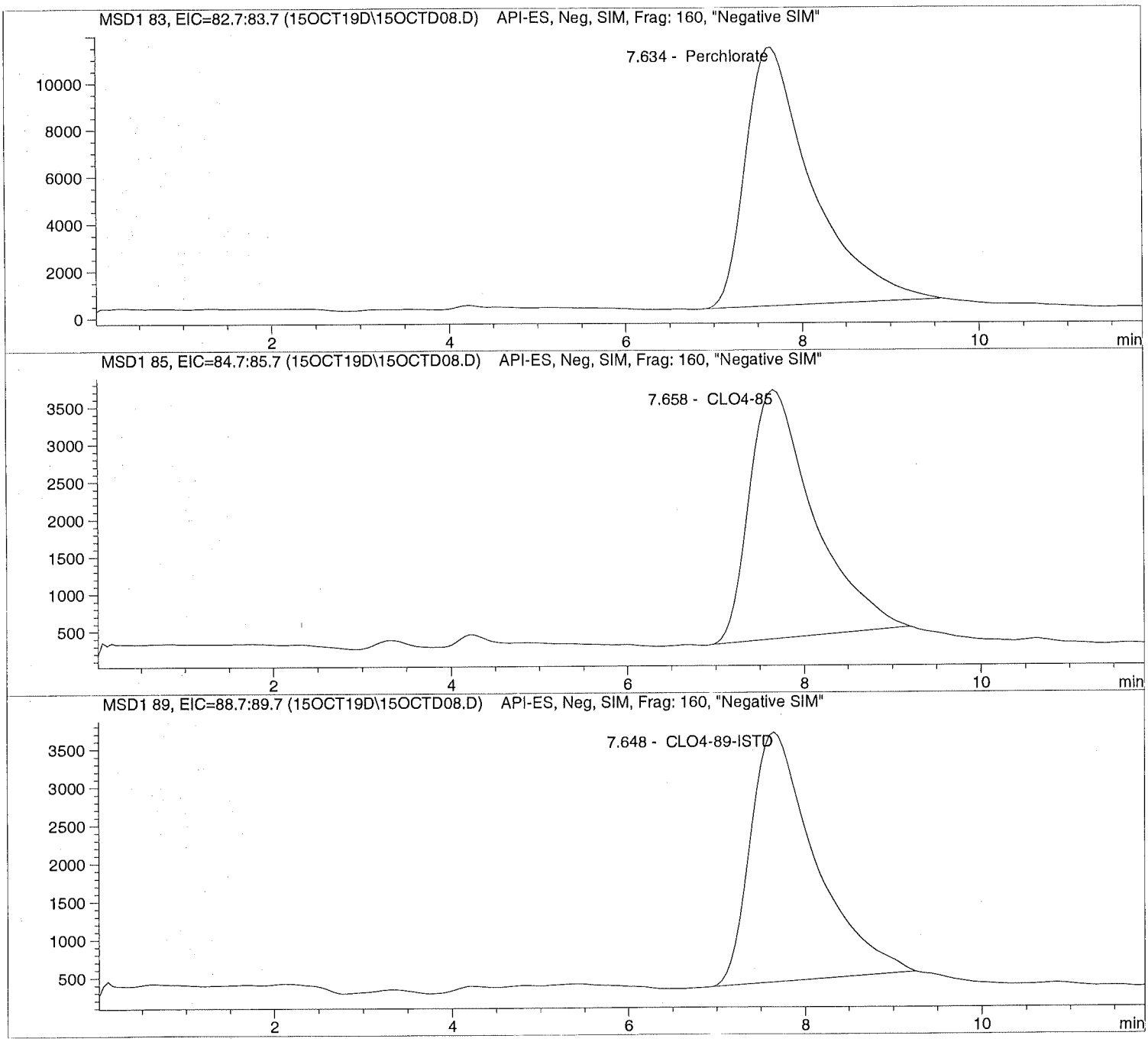
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.634	PBA	572391.3	12326.3509	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.658	PBA	169565.9	11908.1208	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.648	PBA	167142.0	5000.0000	CLO4-89-ISTD

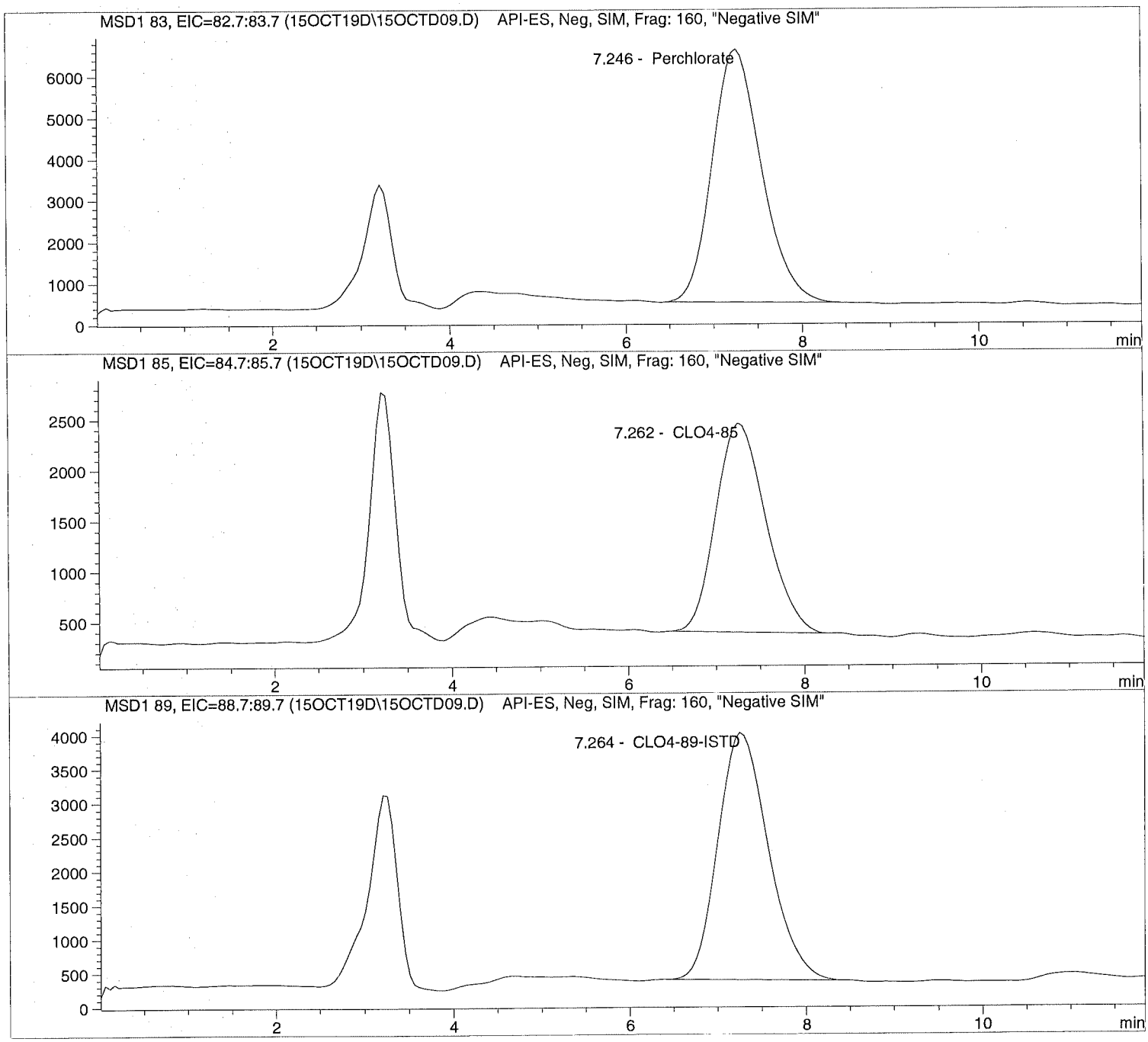
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.246	PBA	236643.2	6.0446	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.262	PBA	81544.1	6.7236	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.264	BBA	143998.5	5.0000	CLO4-89-ISTD

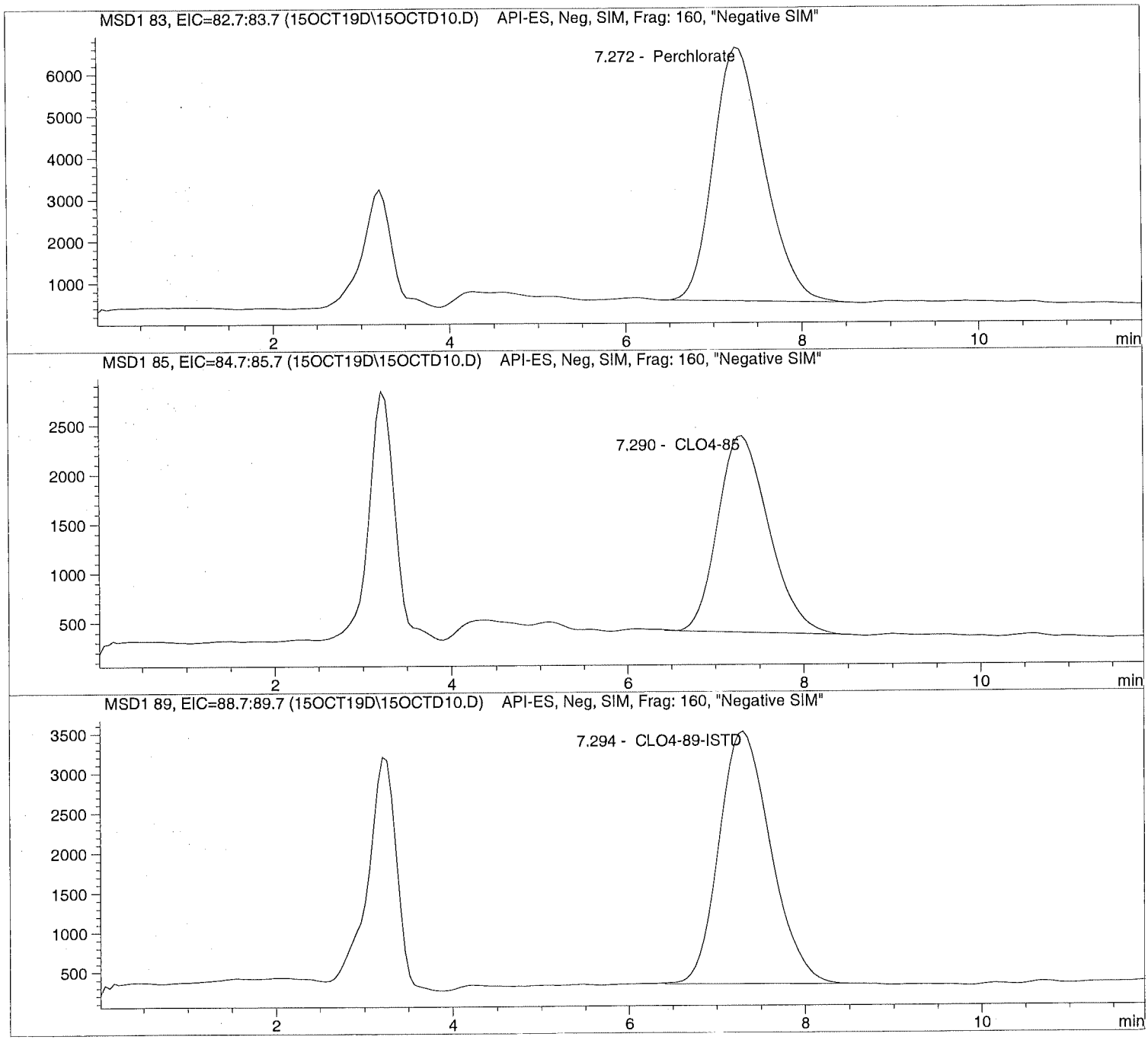
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.272	PBA	242664.3	6.9166	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	BBA	79708.2	7.3461	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	BBA	128749.2	5.0000	CLO4-89-ISTD

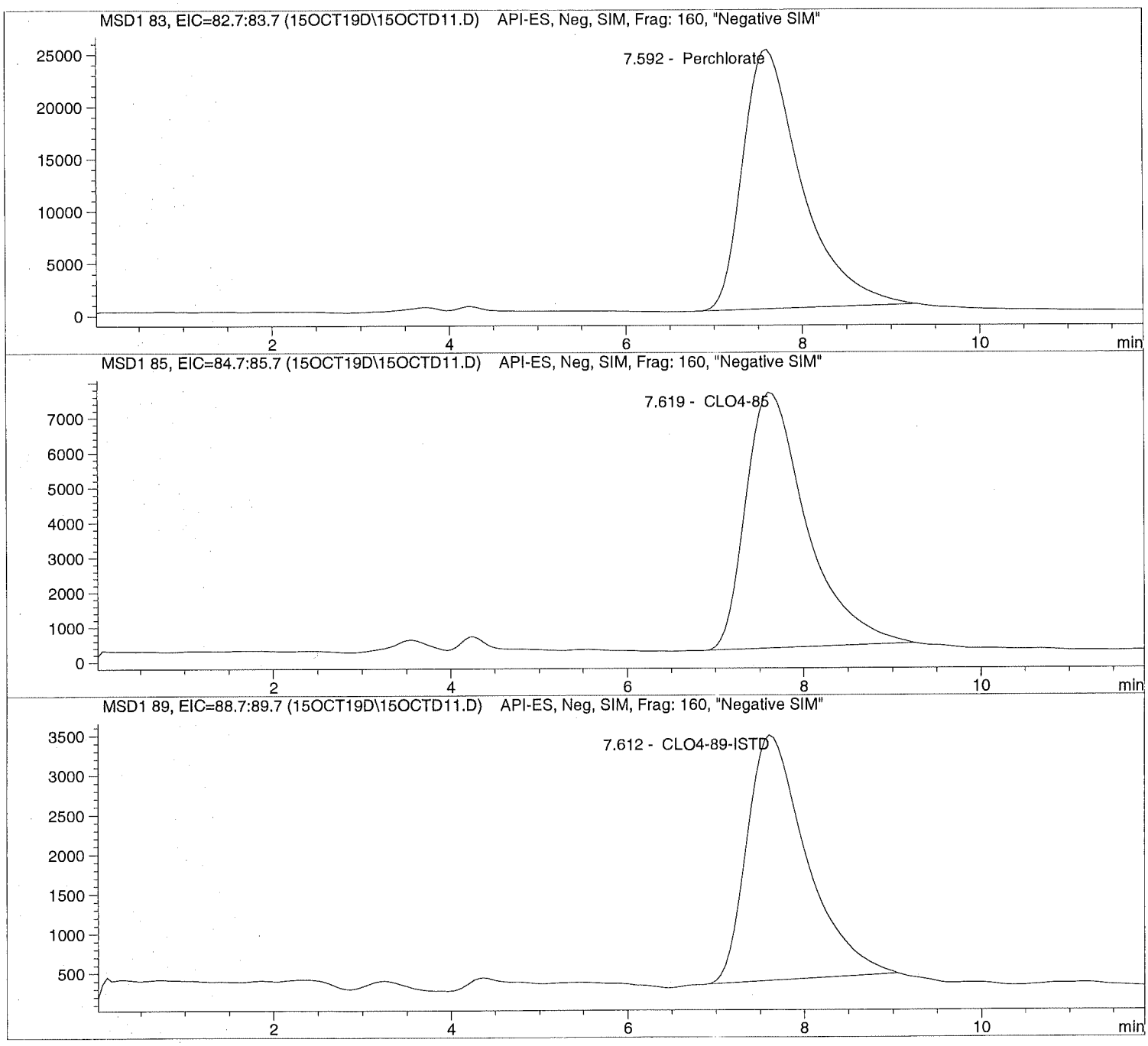
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.592	PBA	1149594.9	26.9035	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.619	PBA	349797.9	26.8688	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.612	PBA	144866.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Lvl Sig		Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5	1		Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5	1		CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
	9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

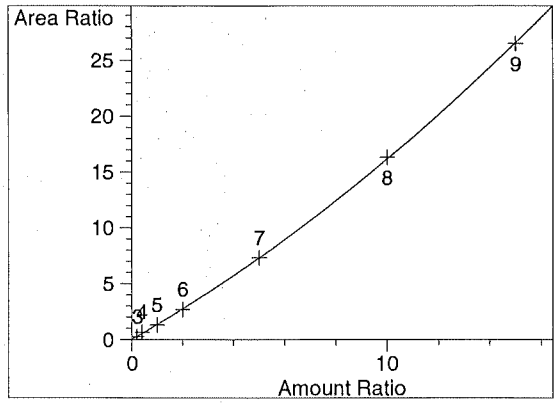
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

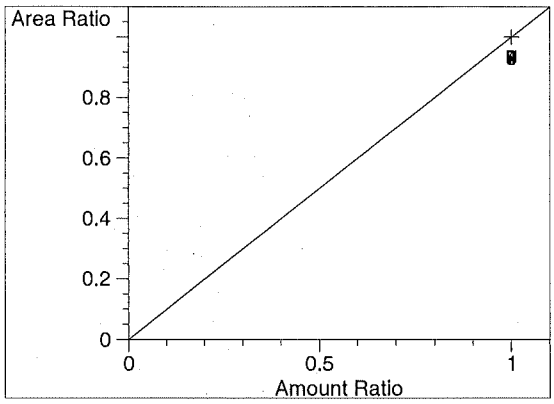
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

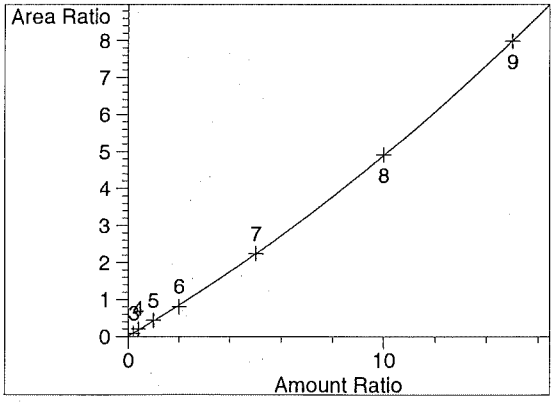
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

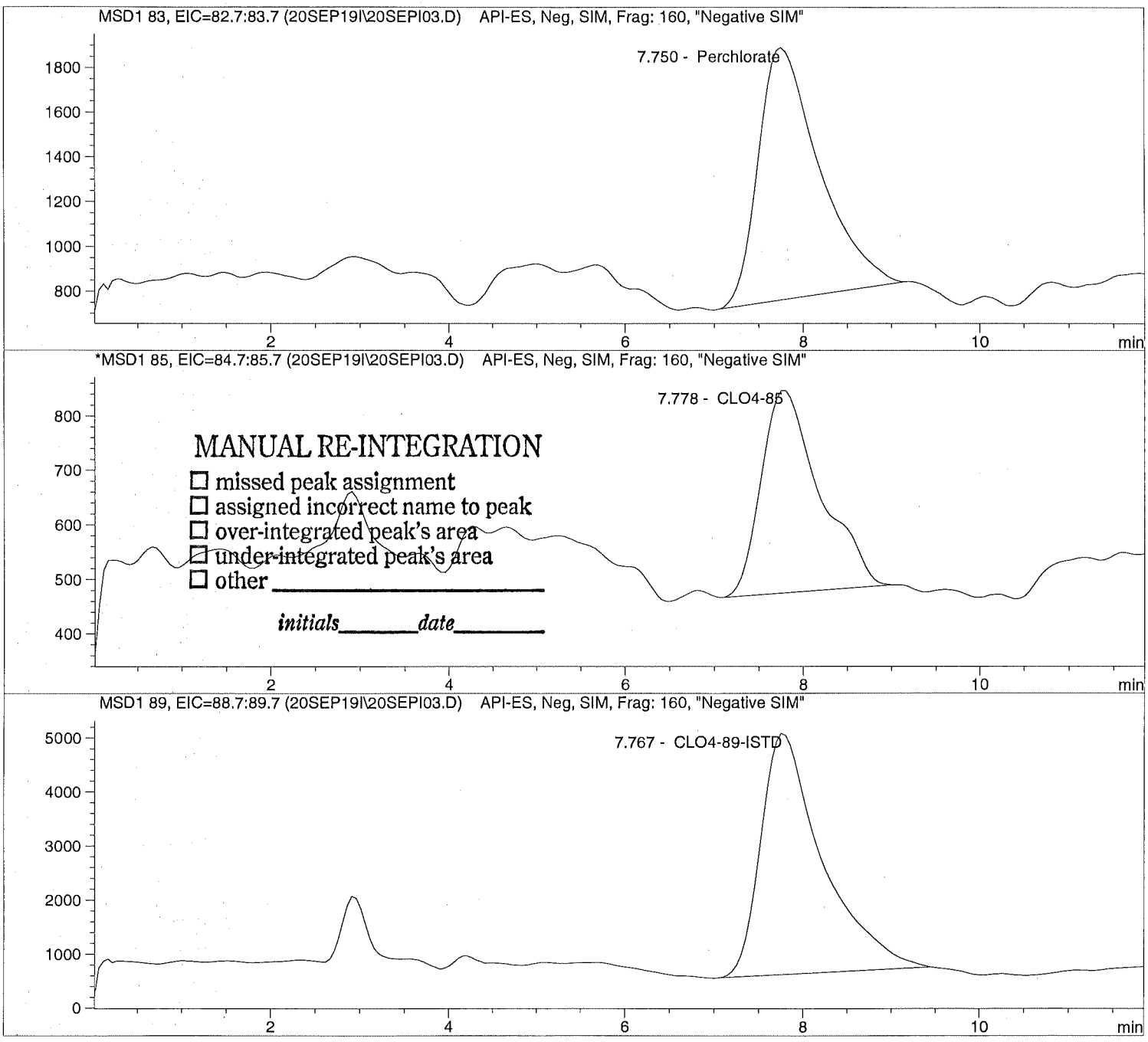
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

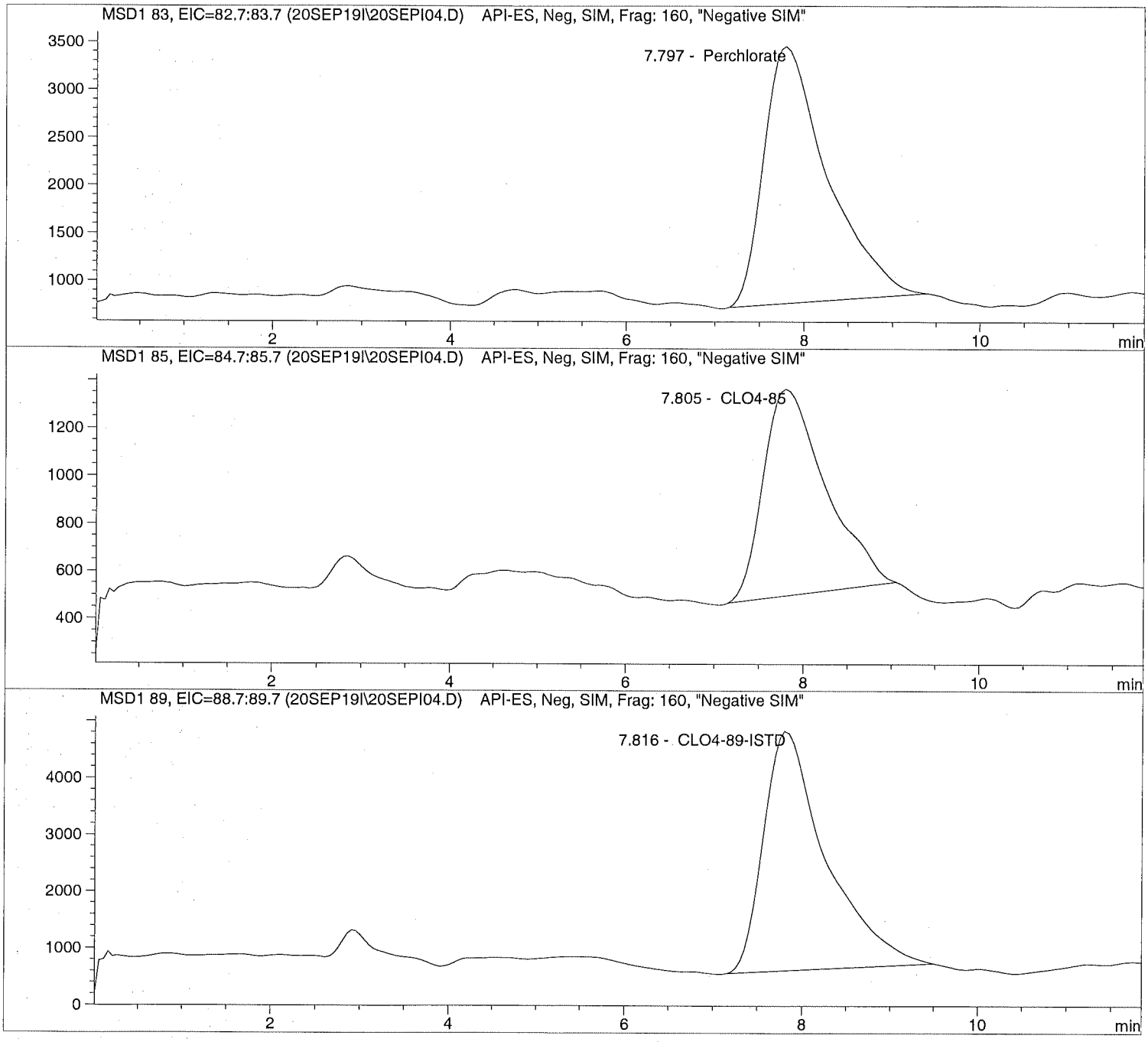
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

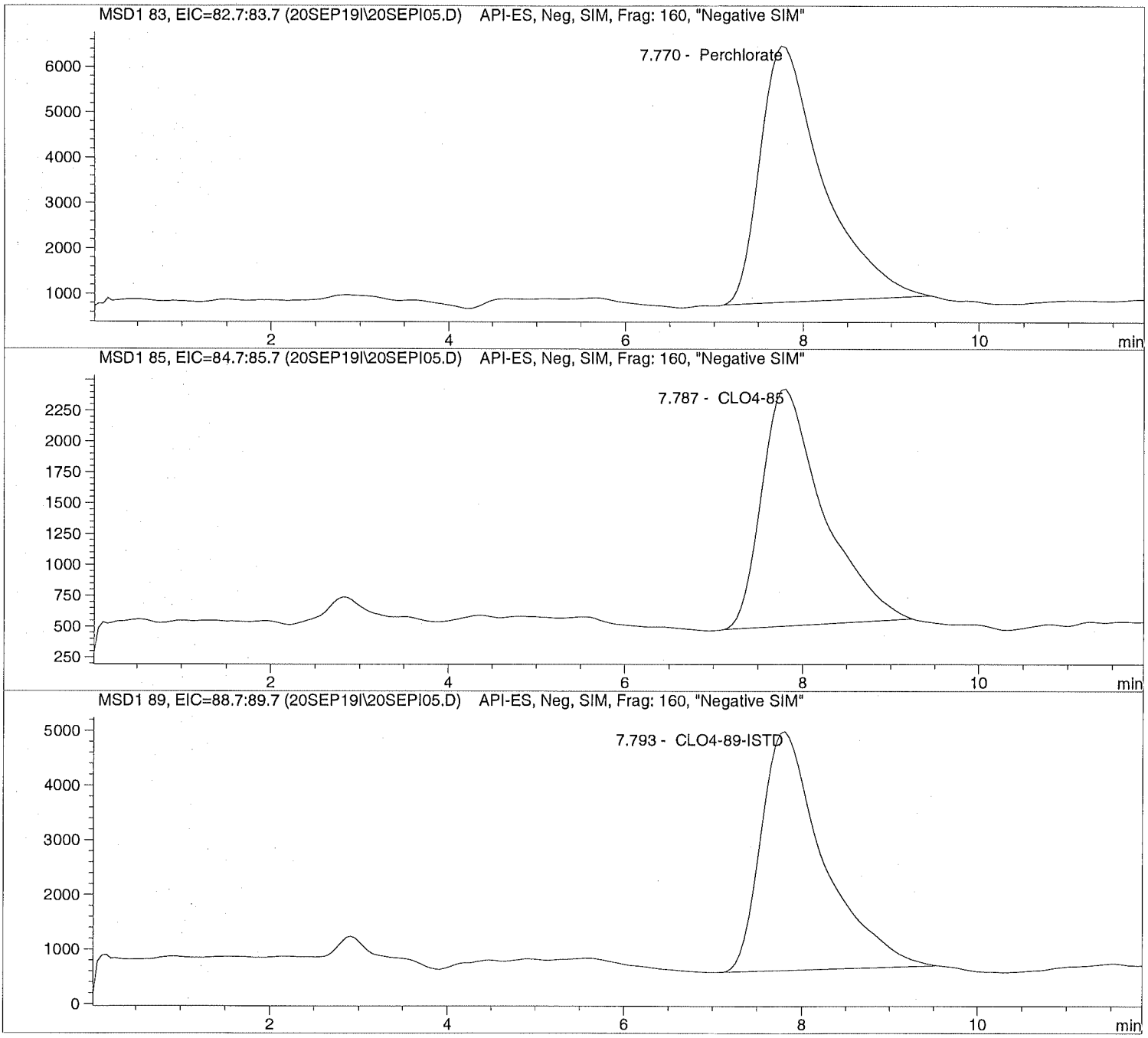
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

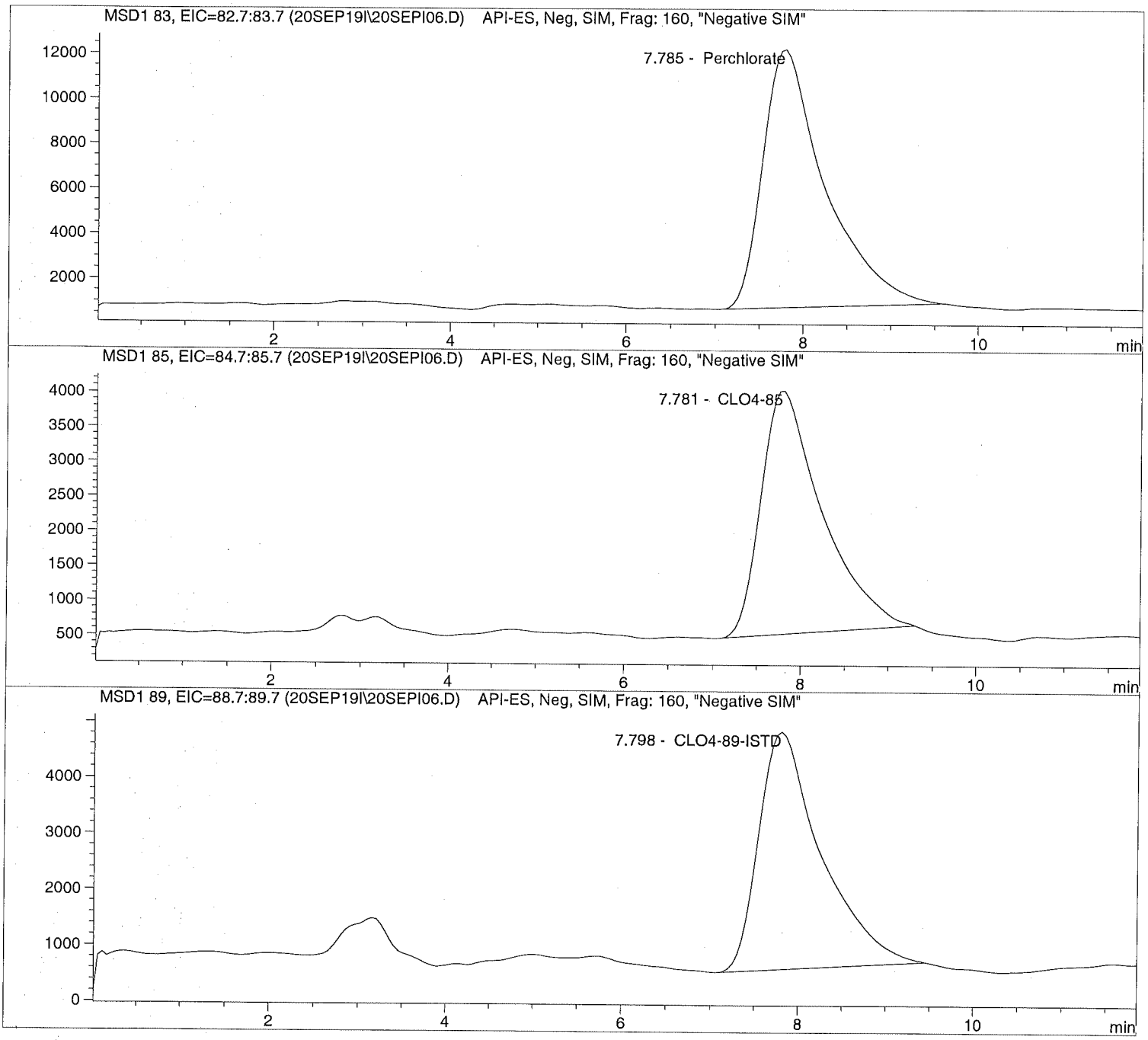
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

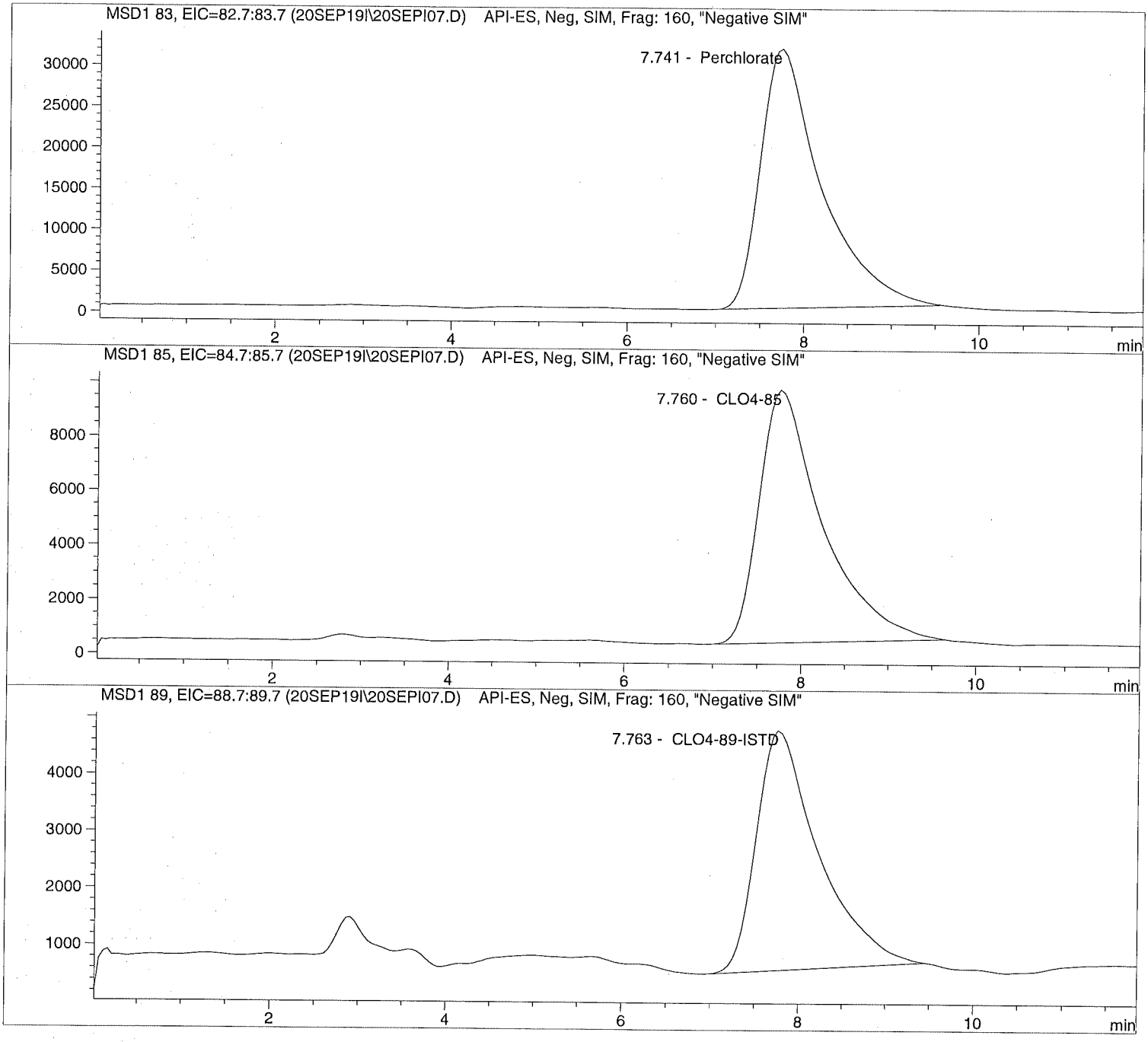
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

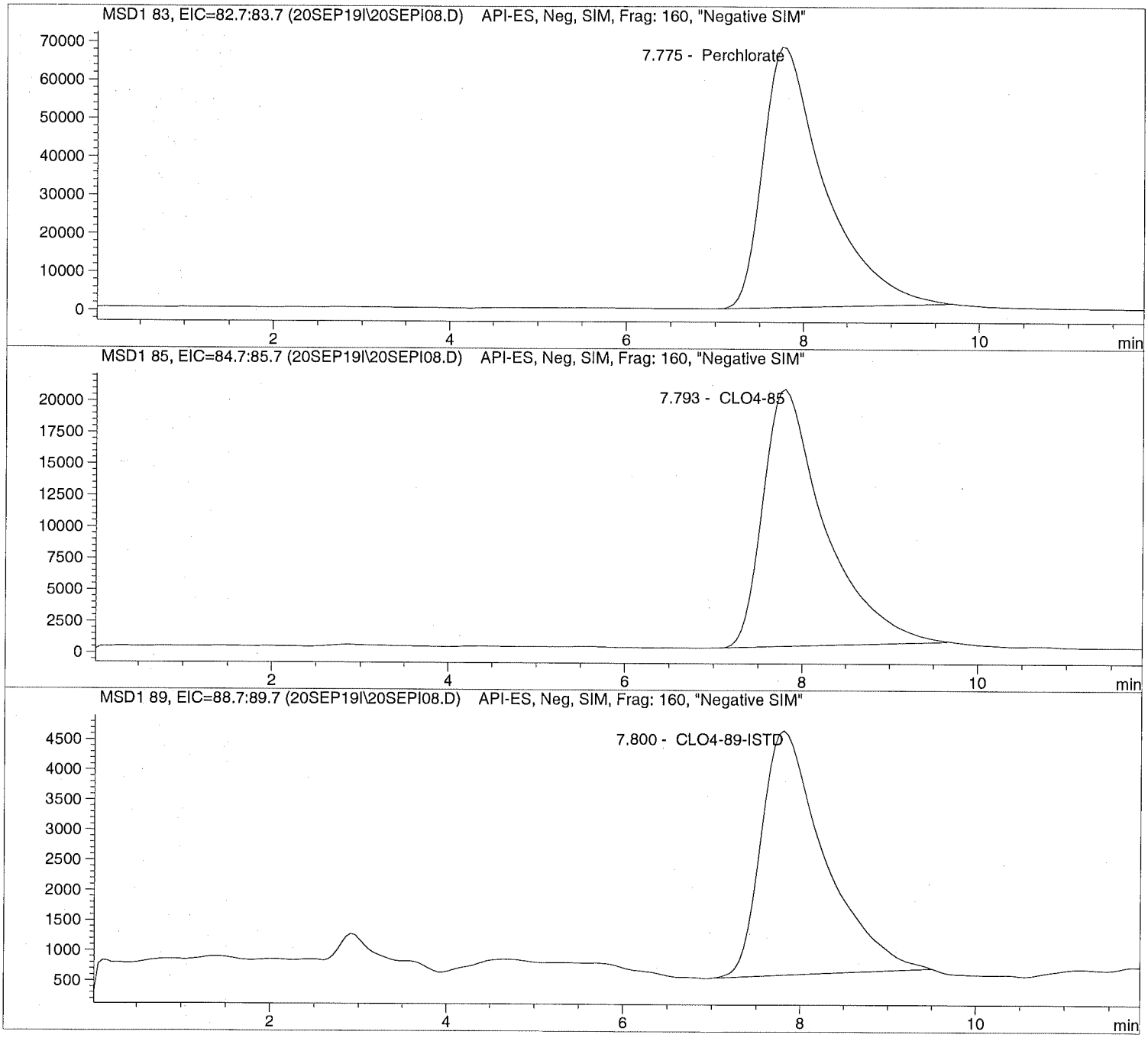
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

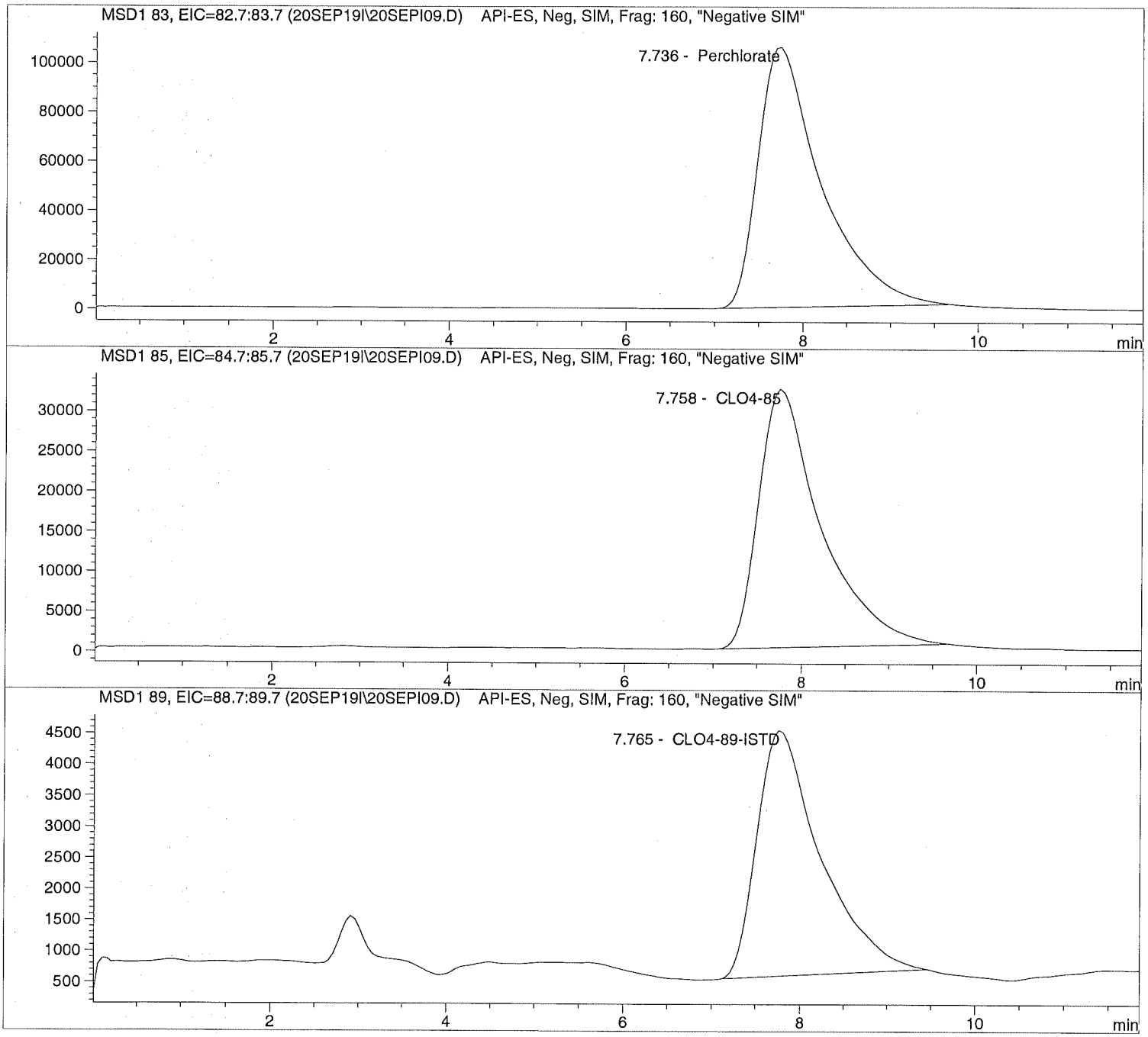
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

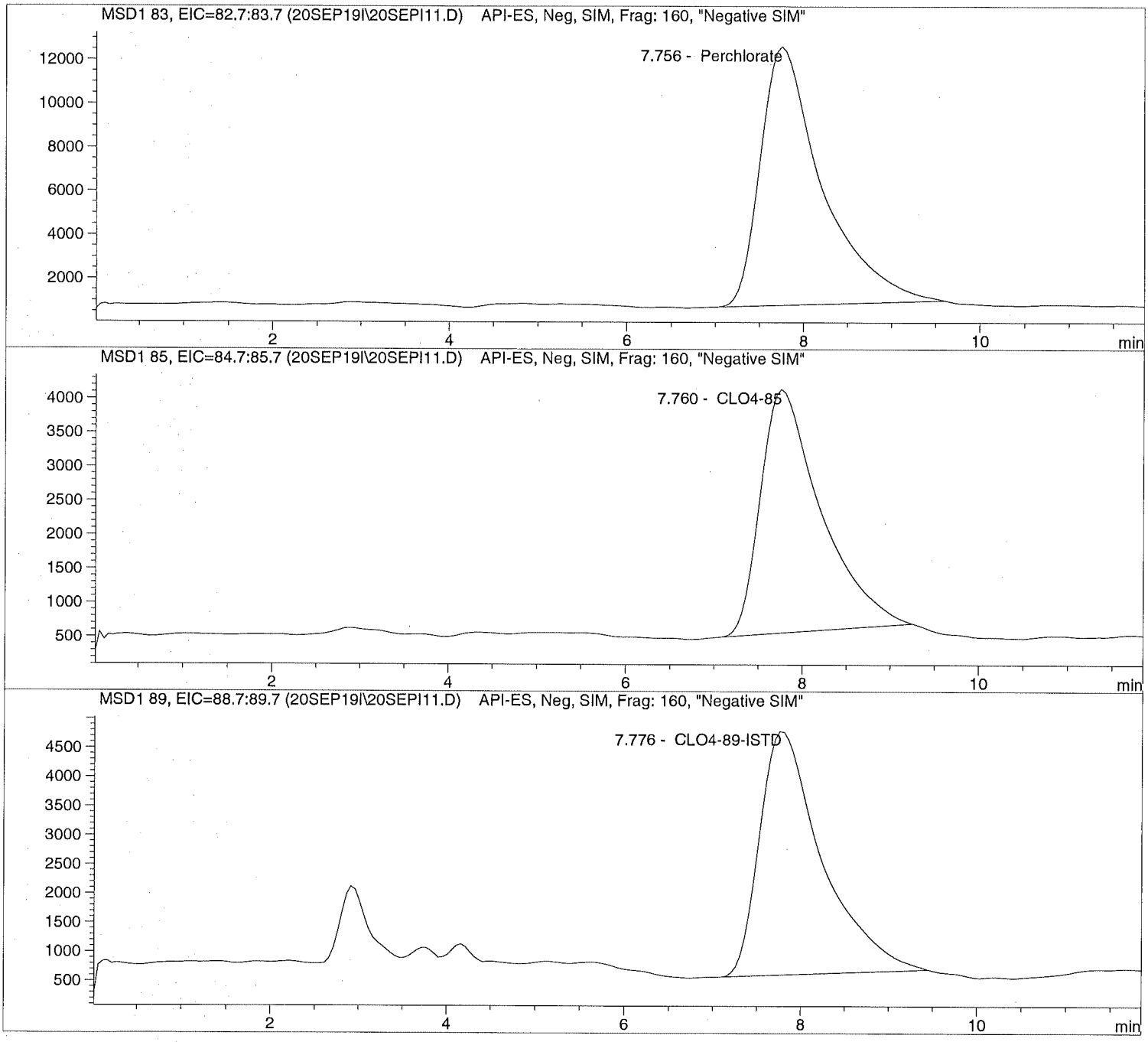
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

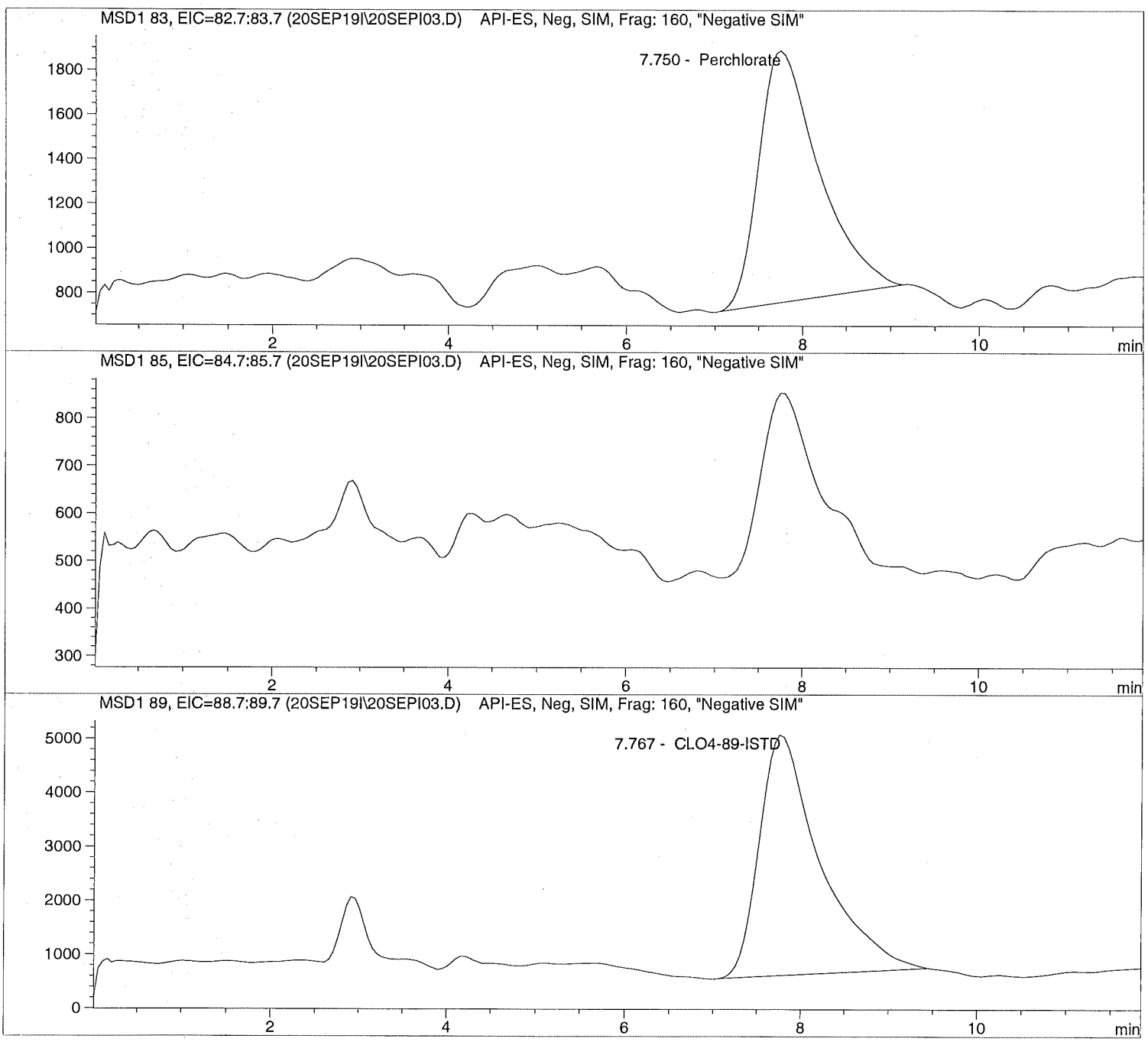
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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October 23, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100472**

Laboratory Results for: **Longhorn GW Treatment Plant - GWTP Weekly Effluent**

Dear Marcia,

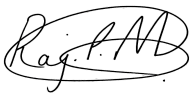
ALS Environmental received 2 sample(s) on Oct 09, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100472

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100472-01	LH18/24-SP650_100819	Groundwater		08-Oct-2019 14:00	09-Oct-2019 08:40	☐
HS19100472-02	LH18/24-SP650_100819_AIX	Groundwater		08-Oct-2019 14:00	09-Oct-2019 08:40	☐

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100472

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

• The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final report attached.

WetChemistry by Method E350.3

Batch ID: R348641

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: R348396

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder:HS19100472
Sample ID: LH18/24-SP650_100819
Lab ID:HS19100472-01
Collection Date: 08-Oct-2019 14:00
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: RG
Nitrogen, Ammonia (As N)	**0.32**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	18-Oct-2019 17:30
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: KVL
Phosphorus, Total Orthophosphate (As P)	**3.36**	a	**0.0500**	**0.125**	**0.125**	**mg/L**	5	10-Oct-2019 14:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	23-Oct-2019 09:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent WorkOrder:HS19100472

Sample ID: LH18/24-SP650_100819_AIX Lab ID:HS19100472-02

Collection Date: 08-Oct-2019 14:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Oct-2019 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100472

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R348396 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Groundwater	
HS19100472-01	LH18/24-SP650_100819	08 Oct 2019 14:00			10 Oct 2019 14:00	5
Batch ID: R348532 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS19100472-02	LH18/24-SP650_100819_AIX	08 Oct 2019 14:00			17 Oct 2019 14:54	1
Batch ID: R348641 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Groundwater	
HS19100472-01	LH18/24-SP650_100819	08 Oct 2019 14:00			18 Oct 2019 17:30	1
Batch ID: R348872 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19100472-01	LH18/24-SP650_100819	08 Oct 2019 14:00			23 Oct 2019 09:19	1

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100472

QC BATCH REPORT

Batch ID: R348396 (0) **Instrument: UV-2450** **Method: ORTHO PHOSPHATE (PO4) AS P BY E365.3**

MBLK Sample ID: **MBLK-R348396** Units: **mg/L** Analysis Date: **10-Oct-2019 14:00**
Client ID: Run ID: **UV-2450_348396** SeqNo: **5298570** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R348396** Units: **mg/L** Analysis Date: **10-Oct-2019 14:00**
Client ID: Run ID: **UV-2450_348396** SeqNo: **5298569** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.251	0.0250	0.25	0	100	85 - 115				

MS Sample ID: **HS19100472-01MS** Units: **mg/L** Analysis Date: **10-Oct-2019 14:00**
Client ID: **LH18/24-SP650_100819** Run ID: **UV-2450_348396** SeqNo: **5298572** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	4.46	0.125	1.25	3.355	88.4	80 - 120				

MSD Sample ID: **HS19100472-01MSD** Units: **mg/L** Analysis Date: **10-Oct-2019 14:00**
Client ID: **LH18/24-SP650_100819** Run ID: **UV-2450_348396** SeqNo: **5298571** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	4.45	0.125	1.25	3.355	87.6	80 - 120	4.46	0.224	20	

The following samples were analyzed in this batch: HS19100472-01

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100472

QC BATCH REPORT

Batch ID: R348641 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-R348641** Units: **mg/L** Analysis Date: **18-Oct-2019 17:30**
Client ID: Run ID: **WetChem_HS_348641** SeqNo: **5303259** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-R348641** Units: **mg/L** Analysis Date: **18-Oct-2019 17:30**
Client ID: Run ID: **WetChem_HS_348641** SeqNo: **5303258** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.5	0.20	10	0	105	80 - 120				

MS Sample ID: **HS19100841-01MS** Units: **mg/L** Analysis Date: **18-Oct-2019 17:30**
Client ID: Run ID: **WetChem_HS_348641** SeqNo: **5303261** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.06	0.20	10	0.174	98.9	80 - 120				

MSD Sample ID: **HS19100841-01MSD** Units: **mg/L** Analysis Date: **18-Oct-2019 17:30**
Client ID: Run ID: **WetChem_HS_348641** SeqNo: **5303260** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.26	0.20	10	0.174	101	80 - 120	10.06	1.91	20	

The following samples were analyzed in this batch: HS19100472-01

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: **HS19100472**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Houston, US Date: 23-Oct-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 23-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100472

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100472-01	LH18/24-SP650_100819	Login	10/9/2019 12:14:30 PM	JRM	WET141
HS19100472-01	LH18/24-SP650_100819	Login	10/9/2019 12:14:30 PM	JRM	WET141
HS19100472-01	LH18/24-SP650_100819	Login	10/9/2019 12:14:30 PM	JRM	Sub
HS19100472-02	LH18/24-SP650_100819_AIX	Login	10/9/2019 12:14:30 PM	JRM	Sub

00961723

ALS Houston, US Date: 23-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100472
Date/Time Received: **09-Oct-2019 08:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 9-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 9-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.9°C / 3.9°C UC/C	IR25	
Cooler(s)/Kit(s):	3622		
Date/Time sample(s) sent to storage:	10/09/2019 12:20		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00961724

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP Weekly Effluent

Client Name:

Collected by: Stan Bussey

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	TOC	Ammonia - N	ORTHOPHOSPHATE	PERCHLORATE							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHAAP-SP650_100819		08 OCT 2019	1400	-	N		WG	4	X	X	X											
LHAAP-SP650_100819-AIX		08 OCT 2019	1400	-	N		WG	1				X										
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		

HS19100472
Bhate Environmental Associates, inc.
ighorn GW Treatment Plant - GWTP Weekly Effluen

COMMENTS:

STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Stan Bussey	10/8/19	1430	1. J.M	10/9/19	08:40
2.			2.		
3.			3.		

U/C 3.9 IR#25 cf=0.2 3622

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

00961725

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

3622

CUSTODY SEAL

Date: 10/8/19 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By: SM
Date: 10/09/19

3622

OCT 0 9 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

3622

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 11JUN18
ACTWGT: 1.00 LB MAN
CAD: 3001307CAFE3111
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5666
REF: LHAAP-58-RJ

RMA:

FedEx Express

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 0221 4380 9529 9749

WED - 09 OCT 10:30A
PRIORITY OVERNIGHT

FedEx TRK# 0221 4380 9529 9749

77099
TX-US
IAH

AB SGRA

546C2/93DF/53C1

J17101610200UYM

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : 1 360 577 7222
F : 1 360 636 1068
www.alsglobal.com

October 22, 2019

Analytical Report for Service Re uest No: K1909475

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19100472

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory October 10, 2019
For your reference, these analyses have been assigned our service request number **K1909475.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS19100472
Sample Matrix: Water

Service Request: K1909475
Date Received: 10/10/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 10/10/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 10/22/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12348**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

KL909475

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100472
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100472-01**	**LH18/24-SP650_100819**	**Groundwater**	**08 Oct 2019 14:00**
	TOC Analysis for DOD Level IV			23 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. MALCOLM Date/Time: 10/9/19 18:00

Received By: A Pedersen Date/Time: 10/10/19 1000

Cooler ID(s): _____ Temperature(s): _____

RIGHT SOLUTIONS | RIGHT PARTNER

PC KL

Cooler Receipt and Preservation Form

Client AIS Houston Service Request *K19* 09475

Received: 10/10/19 Opened: 10/10/19 By: AP Unloaded: 10/10/19 By: AP

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.3	~~-0.7~~ -0.1	0.3	0.5	0.2	385	12348	1251 0290 4311	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1909475
Project:	HS19100472	**Date Collected:**	10/8/19
Sample Matrix:	Water	**Date Received:**	10/10/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_100819	K1909475-001	**2.14**	0.50	0.20	0.07	1	10/17/19 09:55	
Method Blank	K1909475-MB	ND U	0.50	0.20	0.07	1	10/17/19 03:11	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1909475
Project	HS19100472	**Date Collected:**	10/08/19
Sample Matrix:	Water	**Date Received:**	10/10/19
		Date Analyzed:	10/17/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_100819	**Units:**	mg/L
Lab Code:	K1909475-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1909475-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	2.14	2.11	2.13	1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1909475
Project:	HS19100472	**Date Analyzed:**	10/17/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	655835

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1909475-LCS	24.9	25.0	100	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1909475
Project: HS19100472

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	655835	KQ1915161-01	10/17/19 02:38	25.0	25.2	101	90-110
CCV2	655835	KQ1915161-02	10/17/19 07:46	25.0	24.5	98	90-110
CCV3	655835	KQ1915161-03	10/17/19 13:40	25.0	24.4	98	90-110
CCV4	655835	KQ1915161-04	10/17/19 18:48	25.0	24.4	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1909475
Project: HS19100472

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	655835	KQ1915161-05	10/17/19 02:55	0.50	0.20	0.07	ND	U
CCB2	655835	KQ1915161-06	10/17/19 08:02	0.50	0.20	0.07	ND	U
CCB3	655835	KQ1915161-07	10/17/19 13:57	0.50	0.20	0.07	ND	U
CCB4	655835	KQ1915161-08	10/17/19 19:05	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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9295, 9318, 9324, 9380, 9399, 9457, 9568, 9475, 9339, 9557
II II II II II II II IV II IV

Work Request # (Original) K1908869, 8894, 9088, 9105, 9133, 9136, 9159, 9208, 9236,

Tier: IV IV III II II II IV I II

Date Analyzed: 10/18/19

Analyst: AB for BCD

Analysis: TOC/DOC

TOC: 655833
655835
Run # 655836
DOC: 655837

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	(yes)/no/NA
2.	Holding times met for all analyses and for all samples?	(yes)/no/NA
3.	Are calculations correct?	(yes)/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/(NA)
5.	All quality control criteria met?	(yes)/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	(yes)/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	(yes)/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	(yes)/no/NA
9.	Are results for methods blanks all ND?	(yes)/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/(no)/NA
11.	Are all exceptions explained?	(yes)/no/NA
12.	Have all applicable service requests been reviewed?	(yes)/no/NA
13.	Are all samples labeled correctly?	(yes)/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	(yes)/no/NA
15.	Are detection limits and units reported correctly?	(yes)/no/NA
16.	Is the unused space on the benchsheet crossed out?	(yes)/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	(yes)/no/NA

COMMENTS:

10. K1909136-002/2dup RPD is 16%.
- sample concentration less than 5x MRL

* K1909133-06 ag 10/18/19 needs to be RA overdiluted
K1909159-002 needs to be RA under diluted

10. K1909144-1/1dup RPD is 11% } Sample concentration less
K1909339-4/4dup RPD is 46% } than 5x MRL

Final Approved by: _____ Date: 10/18/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655833 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1908869-004	Carbon, Total Organic	N/A		Water	4.78 mg/L	10 ml	47.8 mg/L	10	0.7	5.0			10/16/19 17:15	N	IV
K1908869-005	Carbon, Total Organic	N/A		Water	6.97 mg/L	10 ml	69.7 mg/L	10	0.7	5.0			10/16/19 17:47	N	IV
K1908869-007	Carbon, Total Organic	N/A		Water	29.32 mg/L	10 ml	29.3 mg/L	1	0.07	0.50			10/16/19 18:19	N	IV
K1908894-004	Carbon, Total Organic	N/A		Water	32.98 mg/L	10 ml	33.0 mg/L	1	0.07	0.50			10/16/19 18:51	N	IV
K1909088-001	Carbon, Total Organic	N/A		Surface Water	2.45 mg/L	10 ml	2.45 mg/L	1	0.07	0.50			10/16/19 19:55	Y	III
K1909088-002	Carbon, Total Organic	N/A		Surface Water	2.78 mg/L	10 ml	2.78 mg/L	1	0.07	0.50			10/16/19 19:23	N	III
K1909088-003	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 21:17	N	III
K1909105-001	Carbon, Total Organic	N/A		Drinking Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 21:49	N	II
K1909133-001	Carbon, Total Organic	N/A		Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50			10/16/19 22:21	N	II
K1909133-002	Carbon, Total Organic	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 22:53	N	II
K1909133-003	Carbon, Total Organic	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 23:26	N	II
K1909133-004	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 23:58	N	II
K1909133-006	Carbon, Total Organic	N/A		Water	-0.04 mg/L	10 ml	500 mg/L U	1000	70	500			10/17/19 00:30	N	II
K1909136-001	Carbon, Total Organic	N/A		Ground Water	0.99 mg/L	10 ml	0.99 mg/L	1	0.07	0.50			10/17/19 04:17	N	II
K1909136-002	Carbon, Total Organic	N/A		Ground Water	0.58 mg/L	10 ml	0.58 mg/L	1	0.07	0.50			10/17/19 04:49	N	II
K1909159-001	Carbon, Total Organic	N/A		Water	5.47 mg/L	10 ml	54.7 mg/L	10	0.7	5.0			10/17/19 01:02	N	IV
K1909159-002	Carbon, Total Organic	N/A		Water	60.59 mg/L	10 ml	60.6 mg/L	1	0.07	0.50			10/17/19 01:34	N	IV
K1909159-003	Carbon, Total Organic	N/A		Water	22.03 mg/L	10 ml	220 mg/L	10	0.7	5.0			10/17/19 02:06	N	IV
K1909159-005	Carbon, Total Organic	N/A		Water	3.97 mg/L	10 ml	397 mg/L	100	7	50			10/17/19 03:45	N	IV
KQ1915159-01	Carbon, Total Organic	N/A		Ground Water	2.45 mg/L	10 mL	2.45 mg/L	1	0.07	0.50			10/16/19 19:55:00	N	II
KQ1915159-02	Carbon, Total Organic	MS	KQ1915159-01	Ground Water	28.40 mg/L	10 mL	28.4 mg/L	1	0.07	0.50	104		10/16/19 20:27:00	N	II
KQ1915159-03	Carbon, Total Organic	DUP	KQ1915159-01	Ground Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50		4	10/16/19 19:55:00	N	II
KQ1915159-04	Carbon, Total Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1					10/16/19 15:51	N	IV
KQ1915159-04	Carbon, Total Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1					10/16/19 15:51	N	IV
KQ1915159-05	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 ml	24.9 mg/L	1					10/16/19 20:44	N	IV
KQ1915159-05	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 ml	24.9 mg/L	1					10/16/19 20:44	N	IV
KQ1915159-06	Carbon, Total Organic	CCV		Water	25.16 mg/L	10 ml	25.2 mg/L	1					10/17/19 02:38	N	IV
KQ1915159-06	Carbon, Total Organic	CCV		Water	25.16 mg/L	10 ml	25.2 mg/L	1					10/17/19 02:38	N	IV
KQ1915159-07	Carbon, Total Organic	CCV		Water	24.50 mg/L	10 ml	24.5 mg/L	1					10/17/19 07:46	N	IV
KQ1915159-07	Carbon, Total Organic	CCV		Water	24.50 mg/L	10 ml	24.5 mg/L	1					10/17/19 07:46	N	IV
KQ1915159-08	Carbon, Total Organic	CCB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			10/16/19 16:08	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/18/19

AB for BCD 10/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655833 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915159-08	Carbon, Total Organic	CCB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			10/16/19 16:08	N	IV
KQ1915159-09	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 21:00	N	IV
KQ1915159-09	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 21:00	N	IV
KQ1915159-10	Carbon, Total Organic	CCB		Water	0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 02:55	N	IV
KQ1915159-10	Carbon, Total Organic	CCB		Water	0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 02:55	N	IV
KQ1915159-11	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 08:02	N	IV
KQ1915159-11	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 08:02	N	IV
KQ1915159-12	Carbon, Total Organic	MB		Water	-0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 16:25	N	IV
KQ1915159-12	Carbon, Total Organic	MB		Water	-0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/16/19 16:25	N	IV
KQ1915159-13	Carbon, Total Organic	LCS		Water	25.07 mg/L	10 ml	25.1 mg/L	1	0.07	0.50	100		10/16/19 16:42	N	IV
KQ1915159-13	Carbon, Total Organic	LCS		Water	25.07 mg/L	10 ml	25.1 mg/L	1	0.07	0.50	100		10/16/19 16:42	N	IV
KQ1915159-14	Carbon, Total Organic	MS	K1909088-001	Surface Water	28.40 mg/L	10 ml	28.4 mg/L	1	0.07	0.50	104		10/16/19 20:27	N	III
KQ1915159-15	Carbon, Total Organic	DUP	K1908869-004	Water	4.74 mg/L	10 ml	47.4 mg/L	10	0.7	5.0		<1	10/16/19 17:15	N	IV
KQ1915159-16	Carbon, Total Organic	DUP	K1908869-005	Water	6.91 mg/L	10 ml	69.1 mg/L	10	0.7	5.0		<1	10/16/19 17:47	N	IV
KQ1915159-17	Carbon, Total Organic	DUP	K1908869-007	Water	29.36 mg/L	10 ml	29.4 mg/L	1	0.07	0.50		<1	10/16/19 18:19	N	IV
KQ1915159-18	Carbon, Total Organic	DUP	K1908894-004	Water	32.86 mg/L	10 ml	32.9 mg/L	1	0.07	0.50		<1	10/16/19 18:51	N	IV
KQ1915159-20	Carbon, Total Organic	DUP	K1909105-001	Drinking Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/16/19 21:49	N	II
KQ1915159-21	Carbon, Total Organic	DUP	K1909088-001	Surface Water	2.35 mg/L	10 ml	2.35 mg/L	1	0.07	0.50		4	10/16/19 19:55	N	III
KQ1915159-22	Carbon, Total Organic	DUP	K1909088-002	Surface Water	2.74 mg/L	10 ml	2.74 mg/L	1	0.07	0.50		1	10/16/19 19:23	N	III
KQ1915159-23	Carbon, Total Organic	DUP	K1909088-003	Surface Water	0.07 mg/L	10 ml	0.07 mg/L J	1	0.07	0.50		NC	10/16/19 21:17	N	III
KQ1915159-24	Carbon, Total Organic	DUP	K1909159-002	Water	60.40 mg/L	10 ml	60.4 mg/L	1	0.07	0.50		<1	10/17/19 01:34	N	IV
KQ1915159-25	Carbon, Total Organic	DUP	K1909159-003	Water	22.18 mg/L	10 ml	222 mg/L	10	0.7	5.0		<1	10/17/19 02:06	N	IV
KQ1915159-27	Carbon, Total Organic	DUP	K1909159-005	Water	3.96 mg/L	10 ml	396 mg/L	100	7	50		<1	10/17/19 03:45	N	IV
KQ1915159-28	Carbon, Total Organic	DUP	K1909159-001	Water	6.04 mg/L	10 ml	60.4 mg/L	10	0.7	5.0		10	10/17/19 01:02	N	IV
KQ1915159-29	Carbon, Total Organic	DUP	K1909133-001	Water	0.57 mg/L	10 ml	0.57 mg/L	1	0.07	0.50		2	10/16/19 22:21	N	II
KQ1915159-30	Carbon, Total Organic	DUP	K1909133-002	Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/16/19 22:53	N	II
KQ1915159-31	Carbon, Total Organic	DUP	K1909133-003	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/16/19 23:26	N	II
KQ1915159-32	Carbon, Total Organic	DUP	K1909133-004	Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/16/19 23:58	N	II
KQ1915159-33	Carbon, Total Organic	DUP	K1909136-001	Ground Water	0.95 mg/L	10 ml	0.95 mg/L	1	0.07	0.50		4	10/17/19 04:17	N	II
KQ1915159-34	Carbon, Total Organic	DUP	K1909133-006	Water	-0.04 mg/L	10 ml	500 mg/L U	1000	70	500		NC	10/17/19 00:30	N	II
KQ1915159-35	Carbon, Total Organic	DUP	K1909136-002	Ground Water	0.50 mg/L	10 ml	0.50 mg/L J	1	0.07	0.50		16*	10/17/19 04:49	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

OB for BCD
10/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655835 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909136-003	Carbon, Total Organic	N/A		Ground Water	1.15 mg/L	10 ml	1.15 mg/L	1	0.07	0.50			10/17/19 05:21	N	II
K1909136-004	Carbon, Total Organic	N/A		Ground Water	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50			10/17/19 05:53	N	II
K1909208-001	Carbon, Total Organic	N/A		Drinking Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 08:19	N	I
K1909236-003	Carbon, Total Organic	N/A		Water	3.52 mg/L	10 ml	3.52 mg/L	1	0.07	0.50			10/17/19 10:27	N	II
K1909295-001	Carbon, Total Organic	N/A		Water	1.92 mg/L	10 ml	1.92 mg/L	1	0.07	0.50			10/17/19 10:59	N	II
K1909295-002	Carbon, Total Organic	N/A		Water	28.54 mg/L	10 ml	28.5 mg/L	1	0.07	0.50			10/17/19 11:32	N	II
K1909295-003	Carbon, Total Organic	N/A		Water	2.71 mg/L	10 ml	2.71 mg/L	1	0.07	0.50			10/17/19 12:04	N	II
K1909295-004	Carbon, Total Organic	N/A		Water	0.64 mg/L	10 ml	0.64 mg/L	1	0.07	0.50			10/17/19 12:36	N	II
K1909295-006	Carbon, Total Organic	N/A		Water	1.64 mg/L	10 ml	1.64 mg/L	1	0.07	0.50			10/17/19 13:08	N	II
K1909318-001	Carbon, Total Organic	N/A		Water	1.40 mg/L	10 ml	1.40 mg/L	1	0.07	0.50			10/17/19 17:27	N	II
K1909324-001	Carbon, Total Organic	N/A		Water	5.90 mg/L	10 ml	590 mg/L	100	7	50			10/17/19 14:47	N	II
K1909324-002	Carbon, Total Organic	N/A		Water	5.69 mg/L	10 ml	569 mg/L	100	7	50			10/17/19 15:19	N	II
K1909324-003	Carbon, Total Organic	N/A		Water	5.00 mg/L	10 ml	500 mg/L	100	7	50			10/17/19 15:51	N	II
K1909324-004	Carbon, Total Organic	N/A		Water	3.68 mg/L	10 ml	368 mg/L	100	7	50			10/17/19 16:23	N	II
K1909350-001	Carbon, Total Organic	N/A		Water	3.35 mg/L	10 ml	3.35 mg/L	1	0.07	0.50			10/17/19 06:25	N	II
K1909350-003	Carbon, Total Organic	N/A		Water	2.37 mg/L	10 ml	2.37 mg/L	1	0.07	0.50			10/17/19 06:57	N	II
K1909399-001	Carbon, Total Organic	N/A		Ocean Water	0.64 mg/L	10 ml	1.3 mg/L	2	0.2	1.0			10/17/19 08:51	N	II
K1909457-001	Carbon, Total Organic	N/A		Water	2.13 mg/L	10 ml	2.13 mg/L	1	0.07	0.50			10/17/19 09:23	N	II
K1909475-001	Carbon, Total Organic	N/A		Water	2.14 mg/L	10 ml	2.14 mg/L	1	0.07	0.50			10/17/19 09:55	N	IV
K1909568-001	Carbon, Total Organic	N/A		Water	2.24 mg/L	10 ml	224 mg/L	100	7	50			10/17/19 16:55	N	II
KQ1915161-01	Carbon, Total Organic	CCV		Ground Water	25.16 mg/L	10 ml	25.2 mg/L	1					10/17/19 02:38	N	II
KQ1915161-02	Carbon, Total Organic	CCV		Ground Water	24.50 mg/L	10 ml	24.5 mg/L	1					10/17/19 07:46	N	II
KQ1915161-03	Carbon, Total Organic	CCV		Ground Water	24.44 mg/L	10 ml	24.4 mg/L	1					10/17/19 13:40	N	II
KQ1915161-04	Carbon, Total Organic	CCV		Ground Water	24.38 mg/L	10 ml	24.4 mg/L	1					10/17/19 18:48	N	II
KQ1915161-05	Carbon, Total Organic	CCB		Ground Water	0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 02:55	N	II
KQ1915161-06	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 08:02	N	II
KQ1915161-07	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 13:57	N	II
KQ1915161-08	Carbon, Total Organic	CCB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 19:05	N	II
KQ1915161-09	Carbon, Total Organic	MB		Ground Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 03:11	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/18/19 QB for BCD 10/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655835 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915161-10	Carbon, Total Organic	LCS		Ground Water	24.92 mg/L	10 ml	24.9 mg/L	1	0.07	0.50	100		10/17/19 03:28	N	II
KQ1915161-11	Carbon, Total Organic	MS	K1909350-003	Water	28.11 mg/L	10 ml	28.1 mg/L	1	0.07	0.50	103		10/17/19 07:29	N	II
KQ1915161-12	Carbon, Total Organic	DUP	K1909136-003	Ground Water	1.15 mg/L	10 ml	1.15 mg/L	1	0.07	0.50		<1	10/17/19 05:21	N	II
KQ1915161-13	Carbon, Total Organic	DUP	K1909136-004	Ground Water	0.86 mg/L	10 ml	0.86 mg/L	1	0.07	0.50		5	10/17/19 05:53	N	II
KQ1915161-14	Carbon, Total Organic	DUP	K1909208-001	Drinking Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/17/19 08:19	N	I
KQ1915161-15	Carbon, Total Organic	DUP	K1909236-003	Water	3.55 mg/L	10 ml	3.55 mg/L	1	0.07	0.50		<1	10/17/19 10:27	N	II
KQ1915161-16	Carbon, Total Organic	DUP	K1909295-001	Water	1.79 mg/L	10 ml	1.79 mg/L	1	0.07	0.50		7	10/17/19 10:59	N	II
KQ1915161-17	Carbon, Total Organic	DUP	K1909295-002	Water	28.77 mg/L	10 ml	28.8 mg/L	1	0.07	0.50		<1	10/17/19 11:32	N	II
KQ1915161-18	Carbon, Total Organic	DUP	K1909295-003	Water	2.49 mg/L	10 ml	2.49 mg/L	1	0.07	0.50		8	10/17/19 12:04	N	II
KQ1915161-19	Carbon, Total Organic	DUP	K1909295-004	Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		4	10/17/19 12:36	N	II
KQ1915161-20	Carbon, Total Organic	DUP	K1909295-006	Water	1.62 mg/L	10 ml	1.62 mg/L	1	0.07	0.50		1	10/17/19 13:08	N	II
KQ1915161-21	Carbon, Total Organic	DUP	K1909318-001	Water	1.33 mg/L	10 ml	1.33 mg/L	1	0.07	0.50		5	10/17/19 17:27	N	II
KQ1915161-22	Carbon, Total Organic	DUP	K1909324-001	Water	5.81 mg/L	10 ml	581 mg/L	100	7	50		1	10/17/19 14:47	N	II
KQ1915161-23	Carbon, Total Organic	DUP	K1909350-001	Water	3.31 mg/L	10 ml	3.31 mg/L	1	0.07	0.50		1	10/17/19 06:25	N	II
KQ1915161-24	Carbon, Total Organic	DUP	K1909350-003	Water	2.36 mg/L	10 ml	2.36 mg/L	1	0.07	0.50		<1	10/17/19 06:57	N	II
KQ1915161-25	Carbon, Total Organic	DUP	K1909324-002	Water	5.73 mg/L	10 ml	573 mg/L	100	7	50		<1	10/17/19 15:19	N	II
KQ1915161-26	Carbon, Total Organic	DUP	K1909399-001	Ocean Water	0.65 mg/L	10 ml	1.3 mg/L	2	0.2	1.0		2	10/17/19 08:51	N	II
KQ1915161-27	Carbon, Total Organic	DUP	K1909324-003	Water	4.96 mg/L	10 ml	496 mg/L	100	7	50		<1	10/17/19 15:51	N	II
KQ1915161-28	Carbon, Total Organic	DUP	K1909457-001	Water	1.94 mg/L	10 ml	1.94 mg/L	1	0.07	0.50		10	10/17/19 09:23	N	II
KQ1915161-29	Carbon, Total Organic	DUP	K1909475-001	Water	2.11 mg/L	10 ml	2.11 mg/L	1	0.07	0.50		1	10/17/19 09:55	N	IV
KQ1915161-30	Carbon, Total Organic	DUP	K1909324-004	Water	3.64 mg/L	10 ml	364 mg/L	100	7	50		1	10/17/19 16:23	N	II
KQ1915161-31	Carbon, Total Organic	DUP	K1909568-001	Water	2.13 mg/L	10 ml	213 mg/L	100	7	50		5	10/17/19 16:55	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

QB for BCD
10/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655836 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909318-002	Carbon, Total Organic	N/A		Water	2.76 mg/L	10 ml	2.76 mg/L	1	0.07	0.50			10/17/19 18:00	N	II
K1909318-003	Carbon, Total Organic	N/A		Water	2.92 mg/L	10 ml	2.92 mg/L	1	0.07	0.50			10/17/19 19:22	N	II
K1909318-004	Carbon, Total Organic	N/A		Water	8.59 mg/L	10 ml	8.59 mg/L	1	0.07	0.50			10/17/19 19:54	N	II
K1909318-005	Carbon, Total Organic	N/A		Water	3.03 mg/L	10 ml	3.03 mg/L	1	0.07	0.50			10/17/19 20:26	N	II
K1909339-001	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 20:58	N	II
K1909339-002	Carbon, Total Organic	N/A		Water	0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 21:30	N	II
K1909339-003	Carbon, Total Organic	N/A		Water	0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 22:02	N	II
K1909339-004	Carbon, Total Organic	N/A		Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50			10/17/19 22:34	N	II
K1909339-005	Carbon, Total Organic	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 23:06	N	II
K1909339-006	Carbon, Total Organic	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 23:38	N	II
K1909557-001	Carbon, Total Organic	N/A		Water	24.97 mg/L	10 ml	49.9 mg/L	2	0.2	1.0			10/18/19 00:10	N	IV
K1909557-002	Carbon, Total Organic	N/A		Water	5.99 mg/L	10 ml	12.0 mg/L	2	0.2	1.0			10/18/19 01:49	N	IV
K1909557-003	Carbon, Total Organic	N/A		Water	9.03 mg/L	10 ml	18.1 mg/L	2	0.2	1.0			10/18/19 02:22	N	IV
K1909557-004	Carbon, Total Organic	N/A		Water	4.60 mg/L	10 ml	46.0 mg/L	10	0.7	5.0			10/18/19 02:54	N	IV
K1909557-005	Carbon, Total Organic	N/A		Water	2.30 mg/L	10 ml	11.5 mg/L	5	0.4	2.5			10/18/19 03:26	N	IV
K1909557-006	Carbon, Total Organic	N/A		Water	3.43 mg/L	10 ml	13.7 mg/L	4	0.3	2.0			10/18/19 03:58	N	IV
KQ1915162-01	Carbon, Total Organic	MS	K1909318-002	Water	28.77 mg/L	10 ml	28.8 mg/L	1	0.07	0.50	104		10/17/19 18:32	N	II
KQ1915162-02	Carbon, Total Organic	CCV		Water	24.44 mg/L	10 ml	24.4 mg/L	1					10/17/19 13:40	N	II
KQ1915162-03	Carbon, Total Organic	CCV		Water	24.38 mg/L	10 ml	24.4 mg/L	1					10/17/19 18:48	N	II
KQ1915162-04	Carbon, Total Organic	CCV		Water	24.45 mg/L	10 ml	24.4 mg/L	1					10/18/19 00:43	N	II
KQ1915162-05	Carbon, Total Organic	CCV		Water	24.02 mg/L	10 ml	24.0 mg/L	1					10/18/19 05:52	N	II
KQ1915162-06	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 13:57	N	II
KQ1915162-07	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 19:05	N	II
KQ1915162-08	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 00:59	N	II
KQ1915162-09	Carbon, Total Organic	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 06:08	N	II
KQ1915162-10	Carbon, Total Organic	MB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/17/19 14:14	N	II
KQ1915162-11	Carbon, Total Organic	LCS		Water	24.69 mg/L	10 ml	24.7 mg/L	1	0.07	0.50	99		10/17/19 14:31	N	II
KQ1915162-12	Carbon, Total Organic	DUP	K1909318-002	Water	2.81 mg/L	10 ml	2.81 mg/L	1	0.07	0.50		2	10/17/19 18:00	N	II
KQ1915162-13	Carbon, Total Organic	DUP	K1909318-003	Water	2.96 mg/L	10 ml	2.96 mg/L	1	0.07	0.50		1	10/17/19 19:22	N	II
KQ1915162-14	Carbon, Total Organic	DUP	K1909318-004	Water	8.73 mg/L	10 ml	8.73 mg/L	1	0.07	0.50		2	10/17/19 19:54	N	II
KQ1915162-15	Carbon, Total Organic	DUP	K1909318-005	Water	2.95 mg/L	10 ml	2.95 mg/L	1	0.07	0.50		3	10/17/19 20:26	N	II
KQ1915162-16	Carbon, Total Organic	DUP	K1909339-002	Water	0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/17/19 21:30	N	II
KQ1915162-17	Carbon, Total Organic	DUP	K1909339-003	Water	0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/17/19 22:02	N	II
KQ1915162-18	Carbon, Total Organic	DUP	K1909339-004	Water	0.23 mg/L	10 ml	0.23 mg/L J	1	0.07	0.50		6	10/17/19 22:34	N	II
KQ1915162-19	Carbon, Total Organic	DUP	K1909339-001	Water	-0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/17/19 20:58	N	II
KQ1915162-20	Carbon, Total Organic	DUP	K1909339-005	Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/17/19 23:06	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 10/18/19 14:24

Results Summary

10/18/19

QA for BCD 10/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655836 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915162-21	Carbon, Total Organic	DUP	K1909339-006	Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/17/19 23:38	N	II
KQ1915162-22	Carbon, Total Organic	DUP	K1909557-001	Water	25.37 mg/L	10 ml	50.7 mg/L	2	0.2	1.0		2	10/18/19 00:10	N	IV
KQ1915162-23	Carbon, Total Organic	DUP	K1909557-002	Water	5.94 mg/L	10 ml	11.9 mg/L	2	0.2	1.0		<1	10/18/19 01:49	N	IV
KQ1915162-24	Carbon, Total Organic	DUP	K1909557-003	Water	9.10 mg/L	10 ml	18.2 mg/L	2	0.2	1.0		<1	10/18/19 02:22	N	IV
KQ1915162-25	Carbon, Total Organic	DUP	K1909557-004	Water	4.47 mg/L	10 ml	44.7 mg/L	10	0.7	5.0		3	10/18/19 02:54	N	IV
KQ1915162-26	Carbon, Total Organic	DUP	K1909557-005	Water	2.17 mg/L	10 ml	10.9 mg/L	5	0.4	2.5		6	10/18/19 03:26	N	IV
KQ1915162-27	Carbon, Total Organic	DUP	K1909557-006	Water	3.38 mg/L	10 ml	13.5 mg/L	4	0.3	2.0		2	10/18/19 03:58	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

QB 10/18/19 for BCD

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655837 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909144-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.64 mg/L	10 ml	0.64 mg/L	1	0.07	0.50			10/18/19 09:54	N	II
K1909144-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50			10/18/19 10:26	N	II
K1909339-001	Carbon, Dissolved Organic (DOC)	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 06:42	N	II
K1909339-002	Carbon, Dissolved Organic (DOC)	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 07:14	N	II
K1909339-003	Carbon, Dissolved Organic (DOC)	N/A		Water	-0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 07:46	N	II
K1909339-004	Carbon, Dissolved Organic (DOC)	N/A		Water	0.13 mg/L	10 ml	0.13 mg/L J	1	0.07	0.50			10/18/19 08:18	N	II
K1909339-005	Carbon, Dissolved Organic (DOC)	N/A		Water	0.08 mg/L	10 ml	0.08 mg/L J	1	0.07	0.50			10/18/19 08:50	N	II
K1909339-006	Carbon, Dissolved Organic (DOC)	N/A		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 09:22	N	II
K1909350-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.34 mg/L	10 ml	3.34 mg/L	1	0.07	0.50			10/18/19 04:30	N	II
K1909350-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.12 mg/L	10 ml	2.12 mg/L	1	0.07	0.50			10/18/19 05:03	N	II
KQ1915163-01	Carbon, Dissolved Organic (DOC)	CCV		Water	24.45 mg/L	10 ml	24.4 mg/L	1					10/18/19 00:43	N	II
KQ1915163-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.02 mg/L	10 ml	24.0 mg/L	1					10/18/19 05:52	N	II
KQ1915163-03	Carbon, Dissolved Organic (DOC)	CCV		Water	23.96 mg/L	10 ml	24.0 mg/L	1					10/18/19 10:58	N	II
KQ1915163-04	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 00:59	N	II
KQ1915163-05	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 06:08	N	II
KQ1915163-06	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 11:15	N	II
KQ1915163-07	Carbon, Dissolved Organic (DOC)	MB		Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			10/18/19 01:16	N	II
KQ1915163-08	Carbon, Dissolved Organic (DOC)	LCS		Water	24.32 mg/L	10 ml	24.3 mg/L	1	0.07	0.50	97		10/18/19 01:33	N	II
KQ1915163-09	Carbon, Dissolved Organic (DOC)	MS	K1909350-004	Water	27.68 mg/L	10 ml	27.7 mg/L	1	0.07	0.50	102		10/18/19 05:35	N	II
KQ1915163-10	Carbon, Dissolved Organic (DOC)	DUP	K1909144-001	Water	0.71 mg/L	10 ml	0.71 mg/L	1	0.07	0.50		11*	10/18/19 09:54	N	II
KQ1915163-11	Carbon, Dissolved Organic (DOC)	DUP	K1909144-002	Water	0.69 mg/L	10 ml	0.69 mg/L	1	0.07	0.50		1	10/18/19 10:26	N	II
KQ1915163-12	Carbon, Dissolved Organic (DOC)	DUP	K1909339-002	Water	-0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/18/19 07:14	N	II
KQ1915163-13	Carbon, Dissolved Organic (DOC)	DUP	K1909339-003	Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/18/19 07:46	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/18/19

AB for BCD 10/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 655837 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915163-14	Carbon, Dissolved Organic (DOC)	DUP	K1909339-004	Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50		46*	10/18/19 08:18	N	II
KQ1915163-15	Carbon, Dissolved Organic (DOC)	DUP	K1909339-001	Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/18/19 06:42	N	II
KQ1915163-16	Carbon, Dissolved Organic (DOC)	DUP	K1909339-005	Water	0.06 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/18/19 08:50	N	II
KQ1915163-17	Carbon, Dissolved Organic (DOC)	DUP	K1909339-006	Water	-0.04 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	10/18/19 09:22	N	II
KQ1915163-18	Carbon, Dissolved Organic (DOC)	DUP	K1909350-002	Water	3.23 mg/L	10 ml	3.23 mg/L	1	0.07	0.50		3	10/18/19 04:30	N	II
KQ1915163-19	Carbon, Dissolved Organic (DOC)	DUP	K1909350-004	Water	2.04 mg/L	10 ml	2.04 mg/L	1	0.07	0.50		4	10/18/19 05:03	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

QB for BCD
10/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.971	0.0372	24.9340	24.934	24.9	10/16/2019
3	ccb	1	0.176	0.0372	0.1391	0.1391	<0.5	10/16/2019
4	mb	1	0.016	0.0372	-0.0208	-0.0208	<0.5	10/16/2019
5	lcs	1	25.108	0.0372	25.0704	25.0704	25.1	10/16/2019
6	K1908869-004	10	4.821	0.0372	4.7838	47.838	47.84	10/16/2019
7	K1908869-004	10	4.781	0.0372	4.7440	47.44	47.4	10/16/2019
8	K1908869-005	10	7.010	0.0372	6.9732	69.732	70	10/16/2019
9	K1908869-005	10	6.947	0.0372	6.9101	69.101	69.10	10/16/2019
10	K1908869-007	1	29.357	0.0372	29.3202	29.3202	29.32	10/16/2019
11	K1908869-007	1	29.398	0.0372	29.3604	29.3604	29.4	10/16/2019
12	K1908894-004	1	33.020	0.0372	32.9830	32.983	32.98	10/16/2019
13	K1908894-004	1	32.898	0.0372	32.8611	32.8611	32.86	10/16/2019
14	K1909088-002	1	2.815	0.0372	2.7776	2.7776	2.78	10/16/2019
15	K1909088-002	1	2.782	0.0372	2.7445	2.7445	2.7	10/16/2019
16	K1909088-001	1	2.489	0.0372	2.4516	2.4516	2.5	10/16/2019
17	K1909088-001	1	2.387	0.0372	2.3494	2.3494	2.35	10/16/2019
18	KQ1915159-14	1	28.433	0.0372	28.3954	28.3954	28.4	10/16/2019
19	ccv	1	24.939	0.0372	24.9021	24.9021	24.9	10/16/2019
20	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
21	K1909088-003	1	0.037	0.0372	-0.0006	-0.0006	<0.5	10/16/2019
22	K1909088-003	1	0.111	0.0372	0.0737	0.0737	<0.5	10/16/2019
23	K1909105-001	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
24	K1909105-001	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
25	K1909133-001	1	0.600	0.0372	0.5624	0.5624	0.56	10/16/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By:	QB for BCD	Date Analyzed	10/18/19
Reviewed By:	[signature]	Date Reviewed	10/18/19

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1909133-001	1	0.611	0.0372	0.5733	0.5733	0.57	10/16/2019
27	K1909133-002	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
28	K1909133-002	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
29	K1909133-003	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
30	K1909133-003	1	0.035	0.0372	-0.0026	-0.0026	<0.5	10/16/2019
31	K1909133-004	1	0.050	0.0372	0.0126	0.0126	<0.5	10/16/2019
32	K1909133-004	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/16/2019
33	K1909133-006	1000	0.000	0.0372	-0.0372	-37.2	<0.5	10/17/2019
34	K1909133-006	1000	0.000	0.0372	-0.0372	-37.2	<0.5	10/17/2019
35	K1909159-001	10	5.506	0.0372	5.4685	54.685	54.7	10/17/2019
36	K1909159-001	10	6.078	0.0372	6.0408	60.408	60.4	10/17/2019
37	K1909159-002	1	60.628	0.0372	60.5909	60.5909	60.6	10/17/2019
38	K1909159-002	1	60.436	0.0372	60.3986	60.3986	60.4	10/17/2019
39	K1909159-003	10	22.070	0.0372	22.0328	220.328	220.3	10/17/2019
40	K1909159-003	10	22.221	0.0372	22.1841	221.841	221.8	10/17/2019
41	ccv	1	25.196	0.0372	25.1587	25.1587	25.2	10/17/2019
42	ccb	1	0.058	0.0372	0.0208	0.0208	<0.5	10/17/2019
43	K1909159-005	100	4.004	0.0372	3.9667	396.67	396.7	10/17/2019
44	K1909159-005	100	3.993	0.0372	3.9557	395.57	395.6	10/17/2019
45	K1909136-001	1	1.030	0.0372	0.9928	0.9928	1.0	10/17/2019
46	K1909136-001	1	0.991	0.0372	0.9541	0.9541	1.0	10/17/2019
47	K1909136-002	1	0.621	0.0372	0.5836	0.5836	0.6	10/17/2019
48	K1909136-002	1	0.533	0.0372	0.4954	0.4954	<0.5	10/17/2019
49	ccv	1	24.542	0.0372	24.5043	24.5043	24.5	10/17/2019
50	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019

Analyzed By: AB for BCD	Date Analyzed 10/18/19
Reviewed By:	Date Reviewed 10/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.196	0.0372	25.1587	25.1587	25.2	10/17/2019
3	ccb	1	0.058	0.0372	0.0208	0.0208	<0.5	10/17/2019
4	mb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
5	lcs	1	24.961	0.0372	24.9233	24.9233	24.9	10/17/2019
6	K1909136-003	1	1.190	0.0372	1.1527	1.1527	1.15	10/17/2019
7	K1909136-003	1	1.189	0.0372	1.1519	1.1519	1.2	10/17/2019
8	K1909136-004	1	0.857	0.0372	0.8194	0.8194	1	10/17/2019
9	K1909136-004	1	0.897	0.0372	0.8601	0.8601	0.86	10/17/2019
10	K1909350-001	1	3.387	0.0372	3.3497	3.3497	3.35	10/17/2019
11	K1909350-001	1	3.351	0.0372	3.3133	3.3133	3.3	10/17/2019
12	K1909350-003	1	2.406	0.0372	2.3692	2.3692	2.37	10/17/2019
13	K1909350-003	1	2.394	0.0372	2.3563	2.3563	2.36	10/17/2019
14	KQ1915161-11	1	28.149	0.0372	28.1115	28.1115	28.11	10/17/2019
15	ccv	1	24.542	0.0372	24.5043	24.5043	24.5	10/17/2019
16	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
17	K1909208-001	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
18	K1909208-001	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
19	K1909399-001	2	0.674	0.0372	0.6367	1.2734	1.3	10/17/2019
20	K1909399-001	2	0.687	0.0372	0.6496	1.2992	1.30	10/17/2019
21	K1909457-001	1	2.170	0.0372	2.1325	2.1325	2.13	10/17/2019
22	K1909457-001	1	1.974	0.0372	1.9368	1.9368	1.9	10/17/2019
23	K1909475-001	1	2.175	0.0372	2.1374	2.1374	2.1	10/17/2019
24	K1909475-001	1	2.152	0.0372	2.1149	2.1149	2.11	10/17/2019
25	K1909236-003	1	3.554	0.0372	3.5169	3.5169	3.52	10/17/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: AB for BCD	Date Analyzed	10/18/19	
Reviewed By: [signature]	Date Reviewed	10/18/19	

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1909236-003	1	3.587	0.0372	3.5496	3.5496	3.55	10/17/2019
27	K1909295-001	1	1.956	0.0372	1.9185	1.9185	1.92	10/17/2019
28	K1909295-001	1	1.828	0.0372	1.7912	1.7912	1.8	10/17/2019
29	K1909295-002	1	28.573	0.0372	28.5357	28.5357	28.5	10/17/2019
30	K1909295-002	1	28.805	0.0372	28.7682	28.7682	28.8	10/17/2019
31	K1909295-003	1	2.750	0.0372	2.7127	2.7127	2.7	10/17/2019
32	K1909295-003	1	2.531	0.0372	2.4937	2.4937	2.5	10/17/2019
33	K1909295-004	1	0.678	0.0372	0.6405	0.6405	0.6	10/17/2019
34	K1909295-004	1	0.656	0.0372	0.6183	0.6183	0.6	10/17/2019
35	K1909295-006	1	1.674	0.0372	1.6364	1.6364	1.6	10/17/2019
36	K1909295-006	1	1.655	0.0372	1.6173	1.6173	1.6	10/17/2019
37	ccv	1	24.478	0.0372	24.4410	24.441	24.4	10/17/2019
38	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
39	K1909324-001	100	5.934	0.0372	5.8963	589.63	589.6	10/17/2019
40	K1909324-001	100	5.850	0.0372	5.8124	581.24	581.2	10/17/2019
41	K1909324-002	100	5.732	0.0372	5.6947	569.47	569.5	10/17/2019
42	K1909324-002	100	5.770	0.0372	5.7326	573.26	573.3	10/17/2019
43	K1909324-003	100	5.042	0.0372	5.0049	500.49	500.5	10/17/2019
44	K1909324-003	100	5.000	0.0372	4.9626	496.26	496.3	10/17/2019
45	K1909324-004	100	3.718	0.0372	3.6812	368.12	368.1	10/17/2019
46	K1909324-004	100	3.673	0.0372	3.6358	363.58	363.6	10/17/2019
47	K1909568-001	100	2.278	0.0372	2.2404	224.04	224.0	10/17/2019
48	K1909568-001	100	2.164	0.0372	2.1263	212.63	212.6	10/17/2019
49	K1909318-001	1	1.438	0.0372	1.4007	1.4007	1.4	10/17/2019
50	K1909318-001	1	1.365	0.0372	1.3282	1.3282	1.3	10/17/2019

Analyzed By: AB for BCD	Date Analyzed 10/18/19
Reviewed By:	Date Reviewed 10/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	24.414	0.0372	24.3770	24.377	24.38	10/17/2019
52	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: QB for BCD	Date Analyzed 10/18/19
Reviewed By:	Date Reviewed 10/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.478	0.0372	24.4410	24.441	24.4	10/17/2019
3	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
4	mb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
5	lcs	1	24.724	0.0372	24.6868	24.6868	24.7	10/17/2019
6	K1909318-002	1	2.801	0.0372	2.7633	2.7633	2.76	10/17/2019
7	K1909318-002	1	2.846	0.0372	2.8085	2.8085	2.8	10/17/2019
8	KQ1915162-01	1	28.812	0.0372	28.7748	28.7748	29	10/17/2019
9	ccv	1	24.414	0.0372	24.3770	24.377	24.38	10/17/2019
10	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
11	K1909318-003	1	2.960	0.0372	2.9228	2.9228	2.9	10/17/2019
12	K1909318-003	1	2.992	0.0372	2.9550	2.955	2.96	10/17/2019
13	K1909318-004	1	8.627	0.0372	8.5894	8.5894	8.59	10/17/2019
14	K1909318-004	1	8.763	0.0372	8.7255	8.7255	8.73	10/17/2019
15	K1909318-005	1	3.070	0.0372	3.0324	3.0324	3.0	10/17/2019
16	K1909318-005	1	2.987	0.0372	2.9500	2.95	3.0	10/17/2019
17	K1909339-001	1	0.051	0.0372	0.0133	0.0133	<0.5	10/17/2019
18	K1909339-001	1	0.021	0.0372	-0.0160	-0.016	<0.5	10/17/2019
19	K1909339-002	1	0.075	0.0372	0.0380	0.038	<0.5	10/17/2019
20	K1909339-002	1	0.106	0.0372	0.0687	0.0687	<0.5	10/17/2019
21	K1909339-003	1	0.103	0.0372	0.0662	0.0662	<0.5	10/17/2019
22	K1909339-003	1	0.053	0.0372	0.0154	0.0154	<0.5	10/17/2019
23	K1909339-004	1	0.279	0.0372	0.2418	0.2418	<0.5	10/17/2019
24	K1909339-004	1	0.265	0.0372	0.2281	0.2281	<0.5	10/17/2019
25	K1909339-005	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: QB for BCD	Date Analyzed	10/18/19	
Reviewed By: [signature]	Date Reviewed	10/18/19	

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1909339-005	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
27	K1909339-006	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
28	K1909339-006	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/17/2019
29	K1909557-001	2	25.011	0.0372	24.9738	49.9476	49.9	10/18/2019
30	K1909557-001	2	25.404	0.0372	25.3670	50.734	50.7	10/18/2019
31	ccv	1	24.485	0.0372	24.4473	24.4473	24.4	10/18/2019
32	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
33	K1909557-002	2	6.024	0.0372	5.9869	11.9738	12.0	10/18/2019
34	K1909557-002	2	5.972	0.0372	5.9350	11.87	11.9	10/18/2019
35	K1909557-003	2	9.067	0.0372	9.0293	18.0586	18.1	10/18/2019
36	K1909557-003	2	9.141	0.0372	9.1039	18.2078	18.2	10/18/2019
37	K1909557-004	10	4.635	0.0372	4.5982	45.982	46.0	10/18/2019
38	K1909557-004	10	4.511	0.0372	4.4733	44.733	44.7	10/18/2019
39	K1909557-005	5	2.336	0.0372	2.2984	11.492	11.5	10/18/2019
40	K1909557-005	5	2.208	0.0372	2.1704	10.852	10.9	10/18/2019
41	K1909557-006	4	3.471	0.0372	3.4342	13.7368	13.7	10/18/2019
42	K1909557-006	4	3.420	0.0372	3.3828	13.5312	13.5	10/18/2019
43	ccv	1	24.059	0.0372	24.0214	24.0214	24.0	10/18/2019
44	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	QB for BCD	Date Analyzed	10/18/19
Reviewed By:		Date Reviewed	10/18/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.485	0.0372	24.4473	24.4473	24.4	10/18/2019
3	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
4	mb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
5	lcs	1	24.356	0.0372	24.3184	24.3184	24.3	10/18/2019
6	K1909350-002	1	3.382	0.0372	3.3448	3.3448	3.34	10/18/2019
7	K1909350-002	1	3.268	0.0372	3.2309	3.2309	3.2	10/18/2019
8	K1909350-004	1	2.155	0.0372	2.1173	2.1173	2	10/18/2019
9	K1909350-004	1	2.081	0.0372	2.0436	2.0436	2.04	10/18/2019
10	KQ1915163-09	1	27.716	0.0372	27.6787	27.6787	27.68	10/18/2019
11	ccv	1	24.059	0.0372	24.0214	24.0214	24.0	10/18/2019
12	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
13	K1909339-001	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
14	K1909339-001	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
15	K1909339-002	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
16	K1909339-002	1	0.020	0.0372	-0.0171	-0.0171	<0.5	10/18/2019
17	K1909339-003	1	0.020	0.0372	-0.0176	-0.0176	<0.5	10/18/2019
18	K1909339-003	1	0.024	0.0372	-0.0135	-0.0135	<0.5	10/18/2019
19	K1909339-004	1	0.167	0.0372	0.1301	0.1301	<0.5	10/18/2019
20	K1909339-004	1	0.245	0.0372	0.2080	0.208	<0.5	10/18/2019
21	K1909339-005	1	0.115	0.0372	0.0776	0.0776	<0.5	10/18/2019
22	K1909339-005	1	0.095	0.0372	0.0582	0.0582	<0.5	10/18/2019
23	K1909339-006	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
24	K1909339-006	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
25	K1909144-001	1	0.680	0.0372	0.6431	0.6431	0.64	10/18/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By:	AB for BCD	Date Analyzed	10/18/19
Reviewed By:		Date Reviewed	10/18/19

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1909144-001	1	0.752	0.0372	0.7147	0.7147	0.71	10/18/2019
27	K1909144-002	1	0.715	0.0372	0.6776	0.6776	0.68	10/18/2019
28	K1909144-002	1	0.725	0.0372	0.6875	0.6875	0.7	10/18/2019
29	ccv	1	23.994	0.0372	23.9568	23.9568	24.0	10/18/2019
30	ccb	1	0.000	0.0372	-0.0372	-0.0372	<0.5	10/18/2019
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	QB for BCD	Date Analyzed	10/18/19
Reviewed By:		Date Reviewed	10/18/19

TOC 655933
655835
655836
DOC 655837

Schedule: 10162019

Version: 6
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/10/16 15:21 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	K1908869-004.03 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
4	Sample	K1908869-005.03 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
5	Sample	K1908869-007.03	Extended Reaction 021711 (Extended Reaction 021711)	2
6	Sample	K1908894-004.03	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Sample	K1909088-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
8	Sample	K1909088-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
9	Sample	K1909088-001.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1909088-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1909105-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
12	Sample	K1909133-001.10	Extended Reaction 021711 (Extended Reaction 021711)	2
13	Sample	K1909133-002.10	Extended Reaction 021711 (Extended Reaction 021711)	2
14	Sample	K1909133-003.10	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1909133-004.10	Extended Reaction 021711 (Extended Reaction 021711)	2
16	Sample	K1909133-006.11 1000x	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1909159-001.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1909159-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	K1909159-003.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1909159-005.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1909136-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
23	Sample	K1909136-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
24	Sample	K1909136-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1909136-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	K1909350-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1909350-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1909350-003.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1909208-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1909399-001.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1909457-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
32	Sample	K1909475-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
33	Sample	K1909236-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
34	Sample	K1909295-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	K1909295-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1909295-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	K1909295-004.02	Extended Reaction 021711 (Extended Reaction 021711)	2
38	Sample	K1909295-006.02	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

10/18/19

Schedule: 10162019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB3	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1909324-001.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	K1909324-002.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	K1909324-003.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Sample	K1909324-004.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
44	Sample	K1909568-001.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	K1909318-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
46	Sample	K1909318-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
47	Sample	K1909318-002.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	K1909318-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1909318-004.02	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	K1909318-005.02	Extended Reaction 021711 (Extended Reaction 021711)	2
51	Sample	K1909339-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	K1909339-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	K1909339-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
54	Sample	K1909339-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
55	Sample	K1909339-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
56	Sample	K1909339-006.01	Extended Reaction 021711 (Extended Reaction 021711)	2
57	Sample	K1909557-001.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	MB4	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
59	Sample	K1909557-002.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
60	Sample	K1909557-003.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
61	Sample	K1909557-004.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	K1909557-005.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	K1909557-006.01 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
64	Sample	K1909350-002.02 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
65	Sample	K1909350-004.02 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
66	Sample	K1909350-004.02 ms doc	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
67	Sample	FB 10/8/19	Extended Reaction 021711 (Extended Reaction 021711)	1
68	Sample	K1909339-001.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
69	Sample	K1909339-002.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1909339-003.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	K1909339-004.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
72	Sample	K1909339-005.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
73	Sample	K1909339-006.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
74	Sample	K1909144-001.04 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
75	Sample	K1909144-002.04 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

Schedule: 10162019

Version: 6
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/10/16 15:21 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	K1908869-004.03 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
4	Sample	K1908869-005.03 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
5	Sample	K1908869-007.03	Extended Reaction 021711 (Extended Reaction 021711)	2
6	Sample	K1908894-004.03	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Sample	K1909088-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
8	Sample	K1909088-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
9	Sample	K1909088-001.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1909088-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1909105-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
12	Sample	K1909133-001.10	Extended Reaction 021711 (Extended Reaction 021711)	2
13	Sample	K1909133-002.10	Extended Reaction 021711 (Extended Reaction 021711)	2
14	Sample	K1909133-003.10	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1909133-004.10	Extended Reaction 021711 (Extended Reaction 021711)	2
16	Sample	K1909133-006.11 1000x	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1909159-001.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1909159-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	K1909159-003.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1909159-005.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1909136-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
23	Sample	K1909136-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
24	Sample	K1909136-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1909136-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	K1909350-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1909350-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1909350-003.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1909208-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1909399-001.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1909457-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
32	Sample	K1909475-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
33	Sample	K1909236-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
34	Sample	K1909295-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	K1909295-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1909295-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	K1909295-004.02	Extended Reaction 021711 (Extended Reaction 021711)	2
38	Sample	K1909295-006.02	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

10/18/19

Schedule: 10162019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB3	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1909324-001.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	K1909324-002.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	K1909324-003.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Sample	K1909324-004.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
44	Sample	K1909568-001.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	K1909318-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
46	Sample	K1909318-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
47	Sample	K1909318-002.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	K1909318-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1909318-004.02	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	K1909318-005.02	Extended Reaction 021711 (Extended Reaction 021711)	2
51	Sample	K1909339-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	K1909339-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	K1909339-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
54	Sample	K1909339-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
55	Sample	K1909339-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
56	Sample	K1909339-006.01	Extended Reaction 021711 (Extended Reaction 021711)	2
57	Sample	K1909557-001.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	MB4	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
59	Sample	K1909557-002.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
60	Sample	K1909557-003.01 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
61	Sample	K1909557-004.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	K1909557-005.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	K1909557-006.01 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
64	Sample	K1909350-002.02 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
65	Sample	K1909350-004.02 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
66	Sample	K1909350-004.02 ms doc	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
67	Sample	FB 10/8/19	Extended Reaction 021711 (Extended Reaction 021711)	1
68	Sample	K1909339-001.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
69	Sample	K1909339-002.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1909339-003.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	K1909339-004.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
72	Sample	K1909339-005.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
73	Sample	K1909339-006.03 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
74	Sample	K1909144-001.04 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
75	Sample	K1909144-002.04 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

Fusion Report - 10162019
Wednesday, October 16, 2019 01:55 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/10/18 11:52 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	10162019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6)		
Comment:			

Report Results

10/18/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/16 13:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.17	16.03	3.86	49.51	05:20
2	TC Clean	8.57	12.19	3.62	50.22	04:05
3	TC Clean	2.55	6.21	3.66	50.25	03:48
4	TC Clean	1.67	5.37	3.70	50.24	03:46

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/16 14:17

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	10.59	14.37	3.78	49.67	05:11
2	TC Clean	4.78	8.35	3.57	50.21	04:04
3	TC Clean	3.51	7.13	3.62	50.14	03:46

4	TC Clean	2.06	5.98	3.91	50.19	03:48

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/16 14:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	10.73	14.12	3.39	49.59	05:22
2	TC Clean	5.25	8.82	3.57	50.14	04:02
3	TC Clean	2.42	5.99	3.57	50.21	03:56
4	TC Clean	1.53	5.27	3.75	50.19	03:53

Sample Type: Blank (Creating v1307) From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/10/16 15:01

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	10.54	14.14	3.60	49.59	05:22
2	TC Clean	4.18	7.78	3.60	50.08	04:02
3	TC Clean	1.70	5.53	3.83	50.22	03:51
4	TC Clean	1.23	5.00	3.77	50.16	03:48
5	Reagent Blank	7.74	11.31	3.57	50.23	05:06
6	Acid Blank	2.25	5.84	3.59	49.54	05:25

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	1.0555 ppm	0.0000 ppm	0.0000%	2019/10/16 15:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0555	10.5550	18.13	21.87	3.74	50.32	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.9712 ppm (PASS)	0.0000 ppm	0%	2019/10/16 15:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9712	249.7123	190.22	194.00	3.78	50.33	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.1763 ppm (PASS)	0.0000 ppm	0%	2019/10/16 16:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.1763	1.7627	12.43	16.12	3.69	50.31	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0164 ppm	0.0000 ppm	0.0000%	2019/10/16 16:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0164	0.1635	10.68	14.36	3.68	50.30	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	25.1076 ppm (PASS)	0.0000 ppm	0%	2019/10/16 16:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1076	251.0763	191.19	194.71	3.52	50.27	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.4777 ppm	0.0000 ppm	0.0000%	2019/10/16 16:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4777	4.7770	13.99	17.69	3.70	50.24	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1908869-004.03 10x	4.8011 ppm	0.0282 ppm	0.5900%	2019/10/16 17:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.8210	48.2104	45.13	48.86	3.73	50.25	12:29
2	TOC	4.7812	47.8115	44.85	48.52	3.67	50.27	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1908869-005.03 10x	6.9788 ppm	0.0446 ppm	0.6400%	2019/10/16 17:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.0104	70.1035	60.83	64.44	3.61	50.29	12:26
2	TOC	6.9473	69.4732	60.38	64.05	3.67	50.29	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1908869-007.03	29.3775 ppm	0.0284 ppm	0.1000%	2019/10/16 18:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.3574	293.5743	221.06	224.62	3.56	50.31	12:27
2	TOC	29.3976	293.9760	221.35	224.93	3.58	50.28	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1908894-004.03	32.9592 ppm	0.0862 ppm	0.2600%	2019/10/16 18:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	33.0202	330.2019	247.33	251.17	3.84	50.29	12:28
2	TOC	32.8983	328.9829	246.45	250.13	3.67	50.30	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1909088-002.02	2.7982 ppm	0.0235 ppm	0.8400%	2019/10/16 19:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8148	28.1485	30.75	34.41	3.66	50.29	12:24
2	TOC	2.7817	27.8165	30.51	34.12	3.61	50.31	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1909088-001.02	2.4377 ppm	0.0723 ppm	2.9700%	2019/10/16 19:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4888	24.8878	28.41	32.18	3.77	50.30	12:28
2	TOC	2.3866	23.8655	27.68	31.29	3.62	50.31	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1909088-001.02 ms	28.4326 ppm	0.0000 ppm	0.0000%	2019/10/16 20:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.4326	284.3264	214.43	218.16	3.73	50.31	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.9393 ppm (PASS)	0.0000 ppm	0%	2019/10/16 20:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9393	249.3929	189.99	193.67	3.68	50.32	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/16 21:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	10.09	13.72	3.63	50.32	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1909088-003.02	0.0737 ppm	0.0526 ppm	71.2800%	2019/10/16 21:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0366	0.3658	10.83	14.43	3.60	50.32	12:28
2	TOC	0.1109	1.1091	11.36	14.97	3.61	50.31	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1909105-001.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/16 21:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.23	13.86	3.64	50.34	12:25
2	TOC	0.0000	0.0000	10.13	13.77	3.64	50.33	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC)	Extended Reaction	Extended Reaction

(v1307) 021711 (v4) 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1909133-001.10	0.6050 ppm	0.0077 ppm	1.2700%	2019/10/16 22:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5996	5.9959	14.86	18.49	3.62	50.33	12:27
2	TOC	0.6105	6.1047	14.94	18.65	3.71	50.36	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1909133-002.10	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/16 22:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.57	13.18	3.60	50.36	12:30
2	TOC	0.0000	0.0000	9.77	13.28	3.51	50.35	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1909133-003.10	0.0173 ppm	0.0245 ppm	141.4200%	2019/10/16 23:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.38	14.00	3.62	50.36	12:31
2	TOC	0.0346	0.3462	10.81	14.20	3.39	50.38	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1909133-004.10	0.0249 ppm	0.0352 ppm	141.4200%	2019/10/16 23:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0498	0.4982	10.92	14.53	3.61	50.37	12:31
2	TOC	0.0000	0.0000	10.51	14.16	3.65	50.41	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1909133-006.11 1000x	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/17 00:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.22	12.91	3.69	50.39	12:29
2	TOC	0.0000	0.0000	9.66	13.29	3.62	50.40	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1909159-001.01 10x	5.7919 ppm	0.4047 ppm	6.9900%	2019/10/17 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.5057	55.0567	50.04	53.78	3.74	50.40	12:27
2	TOC	6.0780	60.7803	54.14	57.96	3.81	50.42	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1909159-002.01	60.5320 ppm	0.1360 ppm	0.2200%	2019/10/17 01:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	60.6281	606.2814	445.28	448.98	3.70	50.42	12:28
2	TOC	60.4358	604.3582	443.91	447.59	3.68	50.43	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1909159-003.01 10x	22.1457 ppm	0.1070 ppm	0.4800%	2019/10/17 02:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.0700	220.7000	168.81	172.56	3.75	50.43	12:29
2	TOC	22.2213	222.2132	169.90	173.56	3.66	50.44	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.1959 ppm (PASS)	0.0000 ppm	0%	2019/10/17 02:38

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

	Type		#							Time
B	TOC	25 ppm	1	25.1959	251.9591	191.83	195.40	3.57	50.42	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0580 ppm (PASS)	0.0000 ppm	0%	2019/10/17 02:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0580	0.5800	11.58	15.20	3.62	50.45	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/17 03:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.72	13.39	3.67	50.45	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.9605 ppm (PASS)	0.0000 ppm	0%	2019/10/17 03:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9605	249.6049	190.14	193.71	3.57	50.45	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1909159-005.01 100x	3.9984 ppm	0.0078 ppm	0.1900%	2019/10/17 03:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0039	40.0392	39.27	42.89	3.62	50.46	12:28
2	TOC	3.9929	39.9290	39.19	42.95	3.76	50.47	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1909136-001.01	1.0107 ppm	0.0273 ppm	2.7000%	2019/10/17 04:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0300	10.2998	17.95	21.57	3.62	50.46	12:28
2	TOC	0.9913	9.9135	17.67	21.36	3.69	50.47	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1909136-002.01	0.5767 ppm	0.0623 ppm	10.8100%	2019/10/17 04:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6208	6.2079	15.02	18.60	3.59	50.47	12:28
2	TOC	0.5326	5.3265	14.38	18.15	3.76	50.47	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1909136-003.01	1.1895 ppm	0.0006 ppm	0.0500%	2019/10/17 05:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1899	11.8995	19.10	22.78	3.68	50.47	12:30
2	TOC	1.1891	11.8911	19.09	22.83	3.74	50.52	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1909136-004.01	0.8770 ppm	0.0288 ppm	3.2800%	2019/10/17 05:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.8566	8.5663	16.71	20.43	3.73	50.46	12:25
2	TOC	0.8973	8.9735	17.00	20.63	3.63	50.48	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1909350-001.01	3.3687 ppm	0.0257 ppm	0.7600%	2019/10/17 06:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3869	33.8693	34.85	38.64	3.79	50.47	12:31
2	TOC	3.3505	33.5053	34.59	38.15	3.57	50.47	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1909350-003.01	2.3999 ppm	0.0091 ppm	0.3800%	2019/10/17 06:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4064	24.0635	27.82	31.60	3.78	50.47	12:28
2	TOC	2.3935	23.9352	27.73	31.45	3.72	50.55	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1909350-003.01 ms	28.1487 ppm	0.0000 ppm	0.0000%	2019/10/17 07:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.1487	281.4869	212.40	216.12	3.72	50.48	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.5415 ppm (PASS)	0.0000 ppm	0%	2019/10/17 07:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5415	245.4154	187.13	190.85	3.71	50.46	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/17 08:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	8.99	12.69	3.70	50.46	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1909208-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/17 08:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.30	14.03	3.72	50.45	12:25
2	TOC	0.0000	0.0000	10.36	14.00	3.64	50.45	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1909399-001.01 2x	0.6803 ppm	0.0091 ppm	1.3300%	2019/10/17 08:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6739	6.7393	15.40	19.10	3.71	50.46	12:27
2	TOC	0.6868	6.8676	15.49	19.29	3.80	50.45	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1909457-001.01	2.0718 ppm	0.1384 ppm	6.6800%	2019/10/17 09:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1697	21.6968	26.12	29.81	3.69	50.45	12:24

2	TOC	1.9740	19.7401	24.72	28.47	3.75	50.45	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1909475-001.01	2.1633 ppm	0.0159 ppm	0.7300%	2019/10/17 09:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1746	21.7456	26.16	29.81	3.66	50.47	12:29
2	TOC	2.1521	21.5211	26.00	29.48	3.48	50.44	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1909236-003.01	3.5705 ppm	0.0231 ppm	0.6500%	2019/10/17 10:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5541	35.5415	36.05	39.70	3.66	50.45	12:26
2	TOC	3.5868	35.8678	36.28	39.88	3.59	50.44	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1909295-001.02	1.8921 ppm	0.0900 ppm	4.7600%	2019/10/17 10:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9557	19.5574	24.59	28.19	3.61	50.43	12:29
2	TOC	1.8284	18.2841	23.67	27.20	3.53	50.43	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1909295-002.02	28.6892 ppm	0.1644 ppm	0.5700%	2019/10/17 11:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.5729	285.7294	215.44	219.13	3.69	50.42	12:31
2	TOC	28.8054	288.0543	217.11	220.88	3.77	50.38	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	36	TOC	K1909295-003.02	2.6404 ppm	0.1548 ppm	5.8600%	2019/10/17 12:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7499	27.4986	30.28	33.97	3.69	50.38	12:28
2	TOC	2.5309	25.3090	28.71	32.30	3.59	50.39	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K1909295-004.02	0.6666 ppm	0.0157 ppm	2.3500%	2019/10/17 12:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6777	6.7769	15.42	19.01	3.58	50.37	12:26
2	TOC	0.6555	6.5552	15.26	18.82	3.55	50.37	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1909295-006.02	1.6641 ppm	0.0135 ppm	0.8100%	2019/10/17 13:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6736	16.7361	22.56	26.17	3.60	50.35	12:29
2	TOC	1.6545	16.5450	22.43	26.10	3.67	50.34	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.4782 ppm (PASS)	0.0000 ppm	0%	2019/10/17 13:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4782	244.7822	186.68	190.38	3.70	50.31	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/17 13:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	8.06	11.84	3.78	50.30	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/17 14:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.04	11.63	3.59	50.30	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.7240 ppm (PASS)	0.0000 ppm	0%	2019/10/17 14:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7240	247.2396	188.44	192.09	3.65	50.28	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1909324-001.01 100x	5.8916 ppm	0.0594 ppm	1.0100%	2019/10/17 14:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9335	59.3355	53.11	56.84	3.73	50.28	12:30
2	TOC	5.8496	58.4959	52.51	56.17	3.66	50.30	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K1909324-002.01 100x	5.7509 ppm	0.0268 ppm	0.4700%	2019/10/17 15:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.7319	57.3188	51.66	55.32	3.65	50.30	12:27
2	TOC	5.7698	57.6982	51.93	55.64	3.70	50.30	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K1909324-003.01 100x	5.0210 ppm	0.0299 ppm	0.6000%	2019/10/17 15:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.0421	50.4209	46.72	50.33	3.61	50.30	12:28
2	TOC	4.9998	49.9983	46.41	49.99	3.58	50.31	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K1909324-004.01 100x	3.6957 ppm	0.0321 ppm	0.8700%	2019/10/17 16:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7184	37.1844	37.23	41.02	3.79	50.33	12:25
2	TOC	3.6730	36.7297	36.90	40.74	3.84	50.33	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K1909568-001.01 100x	2.2206 ppm	0.0807 ppm	3.6300%	2019/10/17 16:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2776	22.7763	26.90	30.51	3.62	50.32	12:26
2	TOC	2.1635	21.6355	26.08	29.91	3.83	50.31	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K1909318-001.02	1.4017 ppm	0.0513 ppm	3.6600%	2019/10/17 17:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4379	14.3791	20.87	24.53	3.66	50.33	12:29
2	TOC	1.3654	13.6539	20.35	23.92	3.57	50.32	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1909318-002.02	2.8231 ppm	0.0320 ppm	1.1300%	2019/10/17 18:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8005	28.0048	30.64	34.42	3.78	50.35	12:29
2	TOC	2.8457	28.4567	30.97	34.62	3.66	50.34	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1909318-002.02 ms	28.8120 ppm	0.0000 ppm	0.0000%	2019/10/17 18:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.8120	288.1199	217.15	220.98	3.82	50.37	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.4142 ppm (PASS)	0.0000 ppm	0%	2019/10/17 18:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4142	244.1421	186.22	189.82	3.60	50.36	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm	0.0000 ppm	0%	2019/10/17 19:05

						(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	8.00	11.66	3.67	50.37	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K1909318-003.02	2.9761 ppm	0.0228 ppm	0.7700%	2019/10/17 19:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9600	29.6003	31.79	35.55	3.76	50.38	12:28
2	TOC	2.9922	29.9224	32.02	35.78	3.76	50.39	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K1909318-004.02	8.6947 ppm	0.0962 ppm	1.1100%	2019/10/17 19:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.6266	86.2661	72.42	76.15	3.73	50.40	12:25
2	TOC	8.7627	87.6272	73.40	77.04	3.65	50.40	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	K1909318-005.02	3.0284 ppm	0.0583 ppm	1.9200%	2019/10/17 20:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0696	30.6965	32.57	36.27	3.69	50.41	12:28
2	TOC	2.9872	29.8722	31.98	35.60	3.62	50.43	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	51	TOC	K1909339-001.01	0.0359 ppm	0.0207 ppm	57.7200%	2019/10/17 20:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0505	0.5052	10.93	14.52	3.59	50.43	12:26
2	TOC	0.0212	0.2123	10.72	14.20	3.48	50.42	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1909339-002.01	0.0905 ppm	0.0217 ppm	23.9600%	2019/10/17 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0752	0.7521	11.10	14.71	3.61	50.45	12:30
2	TOC	0.1059	1.0589	11.32	14.94	3.61	50.45	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1909339-003.01	0.0780 ppm	0.0359 ppm	46.0200%	2019/10/17 22:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1034	1.0338	11.30	14.90	3.60	50.46	12:27
2	TOC	0.0526	0.5261	10.94	14.82	3.88	50.46	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1909339-004.01	0.2721 ppm	0.0097 ppm	3.5500%	2019/10/17 22:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2790	2.7896	12.56	16.22	3.66	50.46	12:29
2	TOC	0.2653	2.6530	12.47	16.13	3.67	50.50	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1909339-005.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/17 23:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.71	13.46	3.75	50.47	12:25
2	TOC	0.0000	0.0000	10.09	13.69	3.60	50.50	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1909339-006.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/17 23:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.11	13.80	3.70	50.50	12:26
2	TOC	0.0000	0.0000	10.15	13.49	3.34	50.51	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1909557-001.01 2x	25.2076 ppm	0.2780 ppm	1.1000%	2019/10/18 00:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.0110	250.1102	189.90	193.43	3.53	50.51	12:30
2	TOC	25.4042	254.0417	192.72	196.37	3.65	50.51	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.4845 ppm (PASS)	0.0000 ppm	0%	2019/10/18 00:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4845	244.8450	186.72	190.32	3.60	50.51	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/18 00:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.82	11.47	3.64	50.51	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/18 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.71	10.21	3.50	50.52	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.3556 ppm (PASS)	0.0000 ppm	0%	2019/10/18 01:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.3556	243.5563	185.80	189.35	3.54	50.51	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K1909557-002.01 2x	5.9981 ppm	0.0367 ppm	0.6100%	2019/10/18 01:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.0241	60.2406	53.76	57.36	3.60	50.53	12:29
2	TOC	5.9722	59.7218	53.39	56.99	3.61	50.53	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K1909557-003.01 2x	9.1038 ppm	0.0528 ppm	0.5800%	2019/10/18 02:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	9.0665	90.6648	75.57	79.27	3.70	50.54	12:26
2	TOC	9.1411	91.4109	76.11	79.62	3.51	50.54	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	61	TOC	K1909557-004.01 10x	4.5729 ppm	0.0884 ppm	1.9300%	2019/10/18 02:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6354	46.3541	43.80	47.31	3.51	50.55	12:28
2	TOC	4.5105	45.1045	42.90	46.35	3.45	50.55	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	62	TOC	K1909557-005.01 5x	2.2716 ppm	0.0905 ppm	3.9900%	2019/10/18 03:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3356	23.3565	27.31	30.97	3.66	50.54	12:29
2	TOC	2.2076	22.0762	26.39	29.95	3.55	50.55	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	63	TOC	K1909557-006.01 4x	3.4457 ppm	0.0364 ppm	1.0600%	2019/10/18 03:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4714	34.7144	35.46	39.14	3.68	50.56	12:27
2	TOC	3.4200	34.1998	35.09	38.80	3.72	50.56	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	64	TOC	K1909350-002.02 doc	3.3251 ppm	0.0806 ppm	2.4200%	2019/10/18 04:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3820	33.8205	34.81	38.40	3.59	50.56	12:29
2	TOC	3.2681	32.6810	34.00	37.68	3.69	50.57	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1909350-004.02 doc	2.1177 ppm	0.0521 ppm	2.4600%	2019/10/18 05:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1545	21.5448	26.01	29.73	3.71	50.58	12:29
2	TOC	2.0808	20.8084	25.48	29.23	3.75	50.57	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1909350-004.02 ms doc	27.7159 ppm	0.0000 ppm	0.0000%	2019/10/18 05:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.7159	277.1594	209.30	213.04	3.74	50.58	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.0586 ppm (PASS)	0.0000 ppm	0%	2019/10/18 05:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.0586	240.5857	183.67	187.33	3.66	50.59	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/18 06:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.92	10.58	3.66	50.60	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	FB 10/8/19	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/18 06:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.00	10.73	3.73	50.60	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1909339-001.03 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/18 06:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.82	13.59	3.77	50.60	12:28
2	TOC	0.0000	0.0000	10.09	13.67	3.58	50.62	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1909339-002.03 doc	0.0101 ppm	0.0142 ppm	141.4200%	2019/10/18 07:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.44	14.19	3.75	50.61	12:26
2	TOC	0.0201	0.2012	10.71	14.33	3.62	50.61	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	K1909339-003.03 doc	0.0217 ppm	0.0030 ppm	13.6600%	2019/10/18 07:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0196	0.1956	10.70	14.32	3.61	50.60	12:25
2	TOC	0.0237	0.2374	10.73	14.38	3.65	50.60	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	71	TOC	K1909339-004.03 doc	0.2062 ppm	0.0551 ppm	26.7300%	2019/10/18 08:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1673	1.6725	11.76	15.44	3.67	50.59	12:31
2	TOC	0.2452	2.4521	12.32	15.92	3.60	50.57	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	72	TOC	K1909339-005.03 doc	0.1051 ppm	0.0137 ppm	13.0400%	2019/10/18 08:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1148	1.1481	11.39	15.15	3.76	50.56	12:29
2	TOC	0.0954	0.9543	11.25	14.99	3.74	50.58	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	73	TOC	K1909339-006.03 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/18 09:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.16	12.80	3.63	50.55	12:26
2	TOC	0.0000	0.0000	8.74	12.44	3.69	50.53	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	74	TOC	K1909144-001.04 doc	0.7161 ppm	0.0506 ppm	7.0600%	2019/10/18 09:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6803	6.8034	15.44	19.10	3.66	50.52	12:32
2	TOC	0.7519	7.5189	15.95	19.48	3.52	50.52	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	75	TOC	K1909144-002.04 doc	0.7197 ppm	0.0070 ppm	0.9700%	2019/10/18 10:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7148	7.1479	15.69	19.26	3.58	50.51	12:29
2	TOC	0.7247	7.2469	15.76	19.54	3.78	50.50	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.5637 (IC) (v1307)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.9940 ppm (PASS)	0.0000 ppm	0%	2019/10/18 10:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9940	239.9400	183.21	186.82	3.62	50.48	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/18 11:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.79	10.53	3.74	50.48	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1306	1.7047	1.2920	0.0000	0.0000	0.0000	2019/10/12 13:00	Fusion1 (Fusion1)
v1307	2.5803	2.2490	0.0000	0.0000	0.0000	2019/10/16 15:35	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version:	v27	Calibration curve formula:	TOC: y = 7.170x + 11.164
Ver Creation:	2019/03/11 21:51	r^2 value:	TOC: r^2 = 0.99991
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	10.4100	0.0000		2019/03/11 20:12
0.50 ppm	14.7740	0.5000		2019/03/11 20:28
1.00 ppm	18.0020	1.0000		2019/03/11 20:44
5.00 ppm	47.2310	5.0000		2019/03/11 21:01
10.0 ppm	85.1320	10.0000		2019/03/11 21:17
25.0 ppm	188.5200	25.0000		2019/03/11 21:33
50.0 ppm	370.1610	50.0000		2019/03/11 21:49

Methods

Name: Extended Reaction 021711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/01/31 11:21		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	4.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1

SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/10/18 11:32

StarLIMS Run: 655833, 655835, 655836, 655837

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-81K

21 % H3PO4: 11-GEN-05-81I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: QB for BCD	Date Analyzed: 10/18/19
Reviewed By:	Date Reviewed: 10/18/19

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1928465; 1929006; 1929010; 1929013

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2302 (249888)

General Set Information: There were four field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 679039) was less than 1/2 the CRDL. The recovery for the LCS (679040) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1928465001 (Client ID: LH18/24-650_100119_BIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (679041/42) passed QC performance limits for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected**.**

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch October 16, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: October 17, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1929013**
Project ID: HS19100472
Purchase Order: HS19100472
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_100819_AIX	1929013001	10/08/19	10/10/19	

ANALYTICAL REPORT

Workorder: 34-1929013
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_100819_AIX** | Sampling Site: NA | Collected: 10/08/2019
Lab ID: 1929013001 | Media: 125 mL Nalgene | Received: 10/10/2019
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2302 (HBN: 249888) | **%Solids:** NA
Analyzed: 10/15/2019 11:51 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**6.9**	1.0	2.0	4.0	1	

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 249888)**

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 10/16/2019 07:50	/S/ Stephen Brose 10/17/2019 11:10

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1929013
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1929013

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2302 (HBN: 249888)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 679039
Analyzed: 10/15/2019 10:26
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 679040
Analyzed: 10/15/2019 09:58
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.04	3.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1928465001	**MS:**	679041	**MSD:**	679042
Analyzed:	10/15/2019 10:41	**Analyzed:**	10/15/2019 10:55	**Analyzed:**	10/15/2019 11:09
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.55	3	118	78.8	123.8	2.46	81.9	# 36.5	0.0	20.0

Comments

Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
10/16/2019 07:51	10/17/2019 11:10

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

18698/#2

SAMPLING STATE: **Dept of Defense** **COC ID: 12347**

1929013

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100472
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100472-02**	**LH18/24-SP650_100819_AIX**	**Groundwater**	**08 Oct 2019 14:00**
	SUB_Perch-6850			23 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/9/19 1800

Received By: _____ Date/Time: 10/10/19 0931

Cooler ID(s): _____ Temperature(s): _____

00961802

ALS-Salt Lake City-Related Information Report (CRIR)

Cooler or Container Information Checklist (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: HS19100472 19290B3

Date/Time of Receipt: 10/10/19 0931

Number of Coolers Received: 1

Condition of Coolers: ~~Acceptable~~/Unacceptable

Cooler Custody Seals: ~~Present~~/Absent/NA

~~Intact~~/Broken/NA

Container Custody Seals: Present/~~Absent~~/NA

Intact/Broken/~~NA~~

Ice Present: ~~Yes~~/No/NA

~~Frozen~~/Melted/NA

Temperature Control: ~~Present~~/Not Included

Location Temp Taken: ~~Cooler~~/Between Samples

Are all temperatures within project specific guidelines? Yes/No/NA

VOA Headspace Present? Yes/No/NA

pH Check Performed:							
Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA		
Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA		
Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA		
Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA		

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C19 9907	4 °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: [signature] (Signature) Rebecca Mize (Printed Name) 10/10/19 (Date)

Client-Related Information

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

Briefly Describe the Problem and the Action Taken:

Client Notified? Yes ☐ No ☐

Response Required Within 24 Hours

Project Management

Project Manager Comments:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00961803

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-4194 BIT2 EXP 02/20

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 09OCT19
ACTWGT: 48.10 LB
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: 13 W/O - RJ/BF

551C3/2A3C/104C

FedEx Express

THU - 10 OCT 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0290 4296

AX BTFA

84123
UT-US SLC

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19100472	Split:	Workorder ID: 1929013	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	COOL	EPA 6850, DoD QSM												
1	10/08/2019 14:00	LH18/24-SP650_100819_AIX	1929013001		Water	A	1		A												
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	10/10/2019 09:31	ALS Sample Receiving	Sample Login
Julie Warath R-33.1	10/10/2019 1000 10.15.19/09:10	1453 T. Bush	storage CLOA analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00961804

Batch Worklist

Batch: ELMS/ 2302 Created: 10/15/2019 07:51 Instrument: HBN: 249888

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 1928465 [ENV_LVL4]
Workorder: 1929006 [ENV_LVL4]
Workorder: 1929010 [ENV_LVL4]
Workorder: 1929013 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	679036	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	
2	679037	RLVS for HBN 249888 [ELMS/2302				RLVS	3		E685041C3Q	5311		10/17/2019	
3	679038	ICS for HBN 249888 [ELMS/2302]				ICS	3		E6850..D3Q	5311		10/17/2019	
4	679039	LMB for HBN 249888 [ELMS/2302]				LMB	3		E6850Q413Q	5311		10/17/2019	
5	679040	LCS for HBN 249888 [ELMS/2302]				LCS	3		E6850Q413Q	5311		10/17/2019	
6	1928465001	LH18/24-SP650_100119_BIX				SAMPLE	3	1928465001-A	E6850Q41.3	5480	10/29/2019	10/17/2019	
7	679041	LH18/24-SP650...(1928465001MS)				MS	3		E6850Q413Q	5311		10/17/2019	
8	679042	LH18/24-SP65...(1928465001MSD)				MSD	3		E6850Q413Q	5311		10/17/2019	
9	1929006001	LH18/24-SP140_100819				SAMPLE	3	1929006001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
10	1929010001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929010001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
11	1929013001	LH18/24-SP650_100819_AIX				SAMPLE	3	1929013001-A	E6850Q41.3	5480	11/5/2019	10/23/2019	
12	679043	CCV for HBN 249888 [ELMS/2302]				CCV	3		E685041C3Q	5311		10/17/2019	

00961805

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1928465 (001); 1929006 (001); 1929010 (001); 1929013 (001)
ELMS Batch/HBN ID: 2302 (249888)
Prep Date: 10/15/2019 Analysis Date: 10/15/2019 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Thomas Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 679040; Target = 3.0µg/L. ASTM type II water was used for LMB 679039.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1928465001 (Client ID's: LH18/24-650_100119_BIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 1929006001 was analyzed and reported from 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (679041/42) passed QC acceptance criteria for percent recoveries but failed acceptance criteria for the relative percent difference. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\249888-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 679037) is reported from the analysis of the Laboratory Control Sample (LCS – 679040) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2302 HBN: 249888 **Sample Set IDs if Applicable:** 1928465/1929006/1929010/1929013	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/23/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 05/06/2019 03:05PM **Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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New Haven, CT 06513
USA

AccuStandard®

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Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

AccuStandard

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

250 SMITH STREET • NORTH KINGSTOWN, RHODE ISLAND 02852 • WWW.ULTRASCI.COM

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO 9001 ISO GUIDE 34 ISO 17025

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ACCREDITATION REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ACCREDITATION TESTING LABORATORY

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: *For isotopically labeled compounds, MW listed is for the fully enriched product.	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\15OCT19D\15OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	679036 CCV@25	Vial 71	1	Control	1	1.33443e6	7.526	26.88759
*	679040 QC@3.0	Vial 72	1	Control	2	1.73380e5	7.567	3.03903
*	679038 ICS@3.0	Vial 73	1	Control	3	1.13696e5	7.369	3.02285
*	679039 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1928465001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	679041 284651S	Vial 76	1	Sample	6	1.33460e5	7.290	3.55332
*	679042 284651D	Vial 77	1	Sample	7	1.25808e5	7.285	2.45603
*	1929006001 1K	Vial 78	1	Sample	8	5.72391e5	7.634	1.23264e4
*	1929010001	Vial 79	1	Sample	9	2.36643e5	7.246	6.04458
*	1929013001	Vial 80	1	Sample	10	2.42664e5	7.272	6.91662
*	679043 CCV@25	Vial 71	1	Control	11	1.14959e6	7.592	26.90349

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	679036 CCV@25	Vial 71	1	Control	1	1.68268e5	7.544	5.00000
*	679040 QC@3.0	Vial 72	1	Control	2	2.09952e5	7.575	5.00000
*	679038 ICS@3.0	Vial 73	1	Control	3	1.38406e5	7.393	5.00000
*	679039 LMB	Vial 74	1	Control	4	1.78248e5	7.632	5.00000
*	1928465001	Vial 75	1	Sample	5	2.08517e5	7.256	5.00000
*	679041 284651S	Vial 76	1	Sample	6	1.38428e5	7.310	5.00000
*	679042 284651D	Vial 77	1	Sample	7	1.87824e5	7.294	5.00000
*	1929006001 1K	Vial 78	1	Sample	8	1.67142e5	7.648	5000.00000
*	1929010001	Vial 79	1	Sample	9	1.43998e5	7.264	5.00000
*	1929013001	Vial 80	1	Sample	10	1.28749e5	7.294	5.00000
*	679043 CCV@25	Vial 71	1	Control	11	1.44866e5	7.612	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	679036 CCV@25	Vial 71	1	Control	1	4.04332e5	7.548	26.75019
*	679040 QC@3.0	Vial 72	1	Control	2	5.40492e4	7.595	3.01622
*	679038 ICS@3.0	Vial 73	1	Control	3	3.88200e4	7.382	3.29691
*	679039 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1928465001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	679041 284651S	Vial 76	1	Sample	6	4.67868e4	7.298	3.99450
*	679042 284651D	Vial 77	1	Sample	7	4.45366e4	7.299	2.76816
*	1929006001 1K	Vial 78	1	Sample	8	1.69566e5	7.658	1.19081e4
*	1929010001	Vial 79	1	Sample	9	8.15441e4	7.262	6.72364
*	1929013001	Vial 80	1	Sample	10	7.97082e4	7.290	7.34615
*	679043 CCV@25	Vial 71	1	Control	11	3.49798e5	7.619	26.86882

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\15OCT19D.S

Sequence Table:

Method and Injection Info Part:

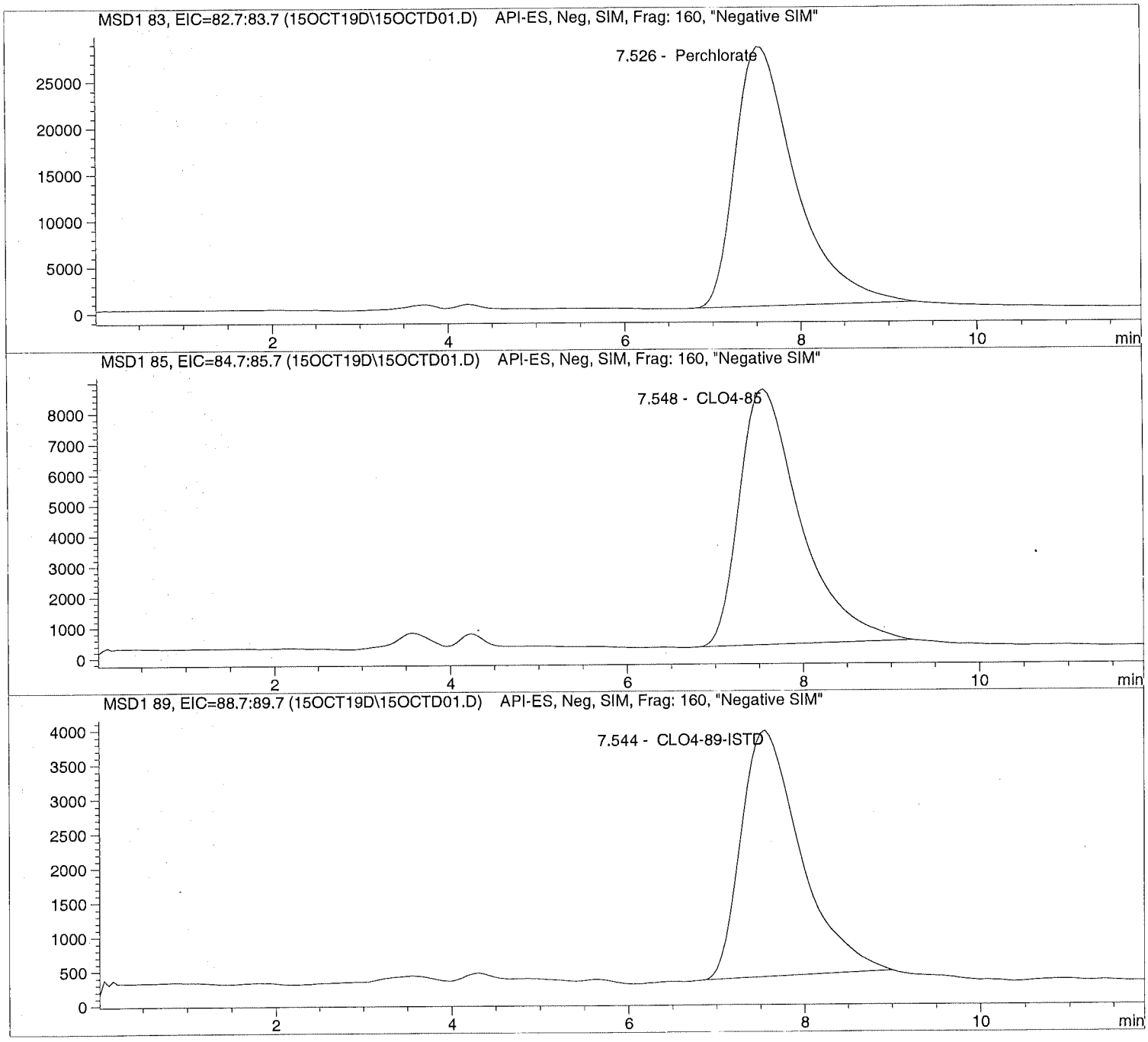
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	679036 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	679040 QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	679038 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	679039 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1928465001	CLO4-AQN	1	Sample		
6	Vial 76	679041 284651S	CLO4-AQN	1	Sample		
7	Vial 77	679042 284651D	CLO4-AQN	1	Sample		
8	Vial 78	1929006001 1K	CLO4-AQN	1	Sample		
9	Vial 79	1929010001	CLO4-AQN	1	Sample		
10	Vial 80	1929013001	CLO4-AQN	1	Sample		
11	Vial 71	679043 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD01.D Sample Name: 679036 CCV@25

Injection Date:	10/15/2019 09:39:40	Seq Line:	1
Sample Name:	679036 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.526	PBA	1334425.5	26.8876	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.548	PBA	404331.7	26.7502	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.544	PBA	168268.3	5.0000	CLO4-89-ISTD

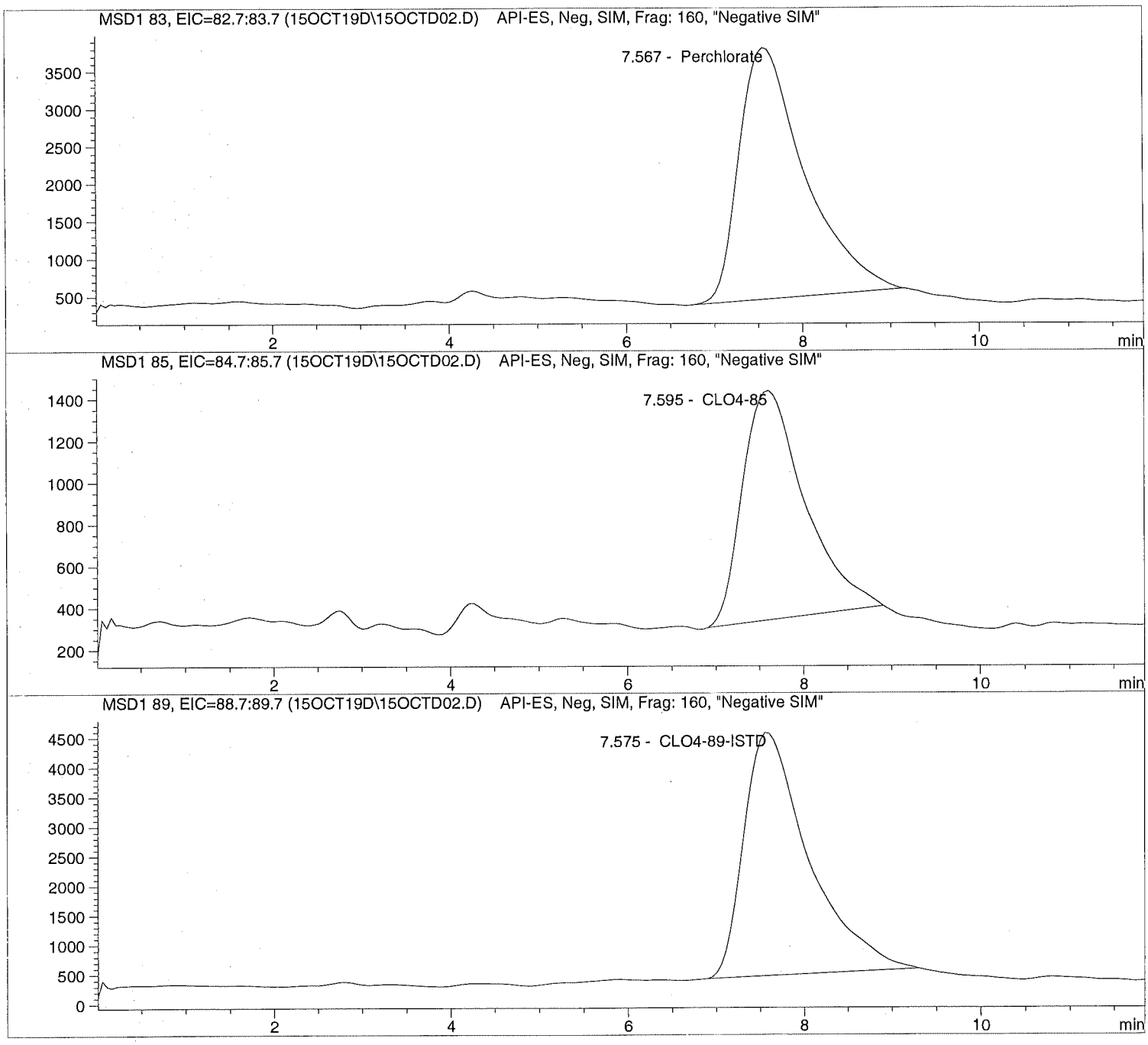
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD02.D Sample Name: 679040 QC@3.0

Injection Date:	10/15/2019 09:58:57	Seq Line:	2
Sample Name:	679040 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.567	PBA	173380.0	3.0390	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.595	PBA	54049.2	3.0162	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	209951.5	5.0000	CLO4-89-ISTD

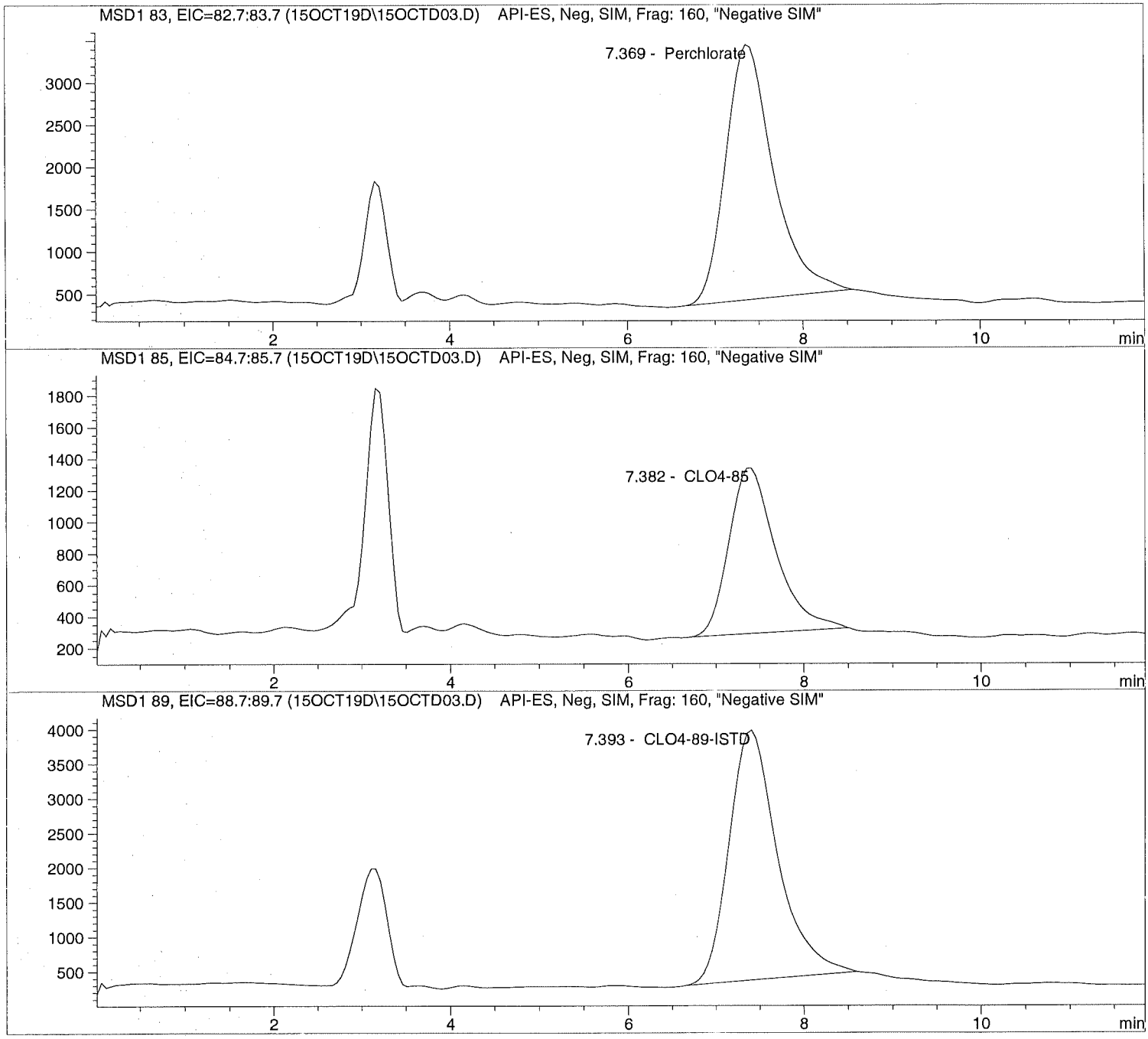
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD03.D Sample Name: 679038 ICS@3.0

Injection Date:	10/15/2019 10:12:51	Seq Line:	3
Sample Name:	679038 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.369	PBA	113696.3	3.0228	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.382	PBA	38820.0	3.2969	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.393	PBA	138406.3	5.0000	CLO4-89-ISTD

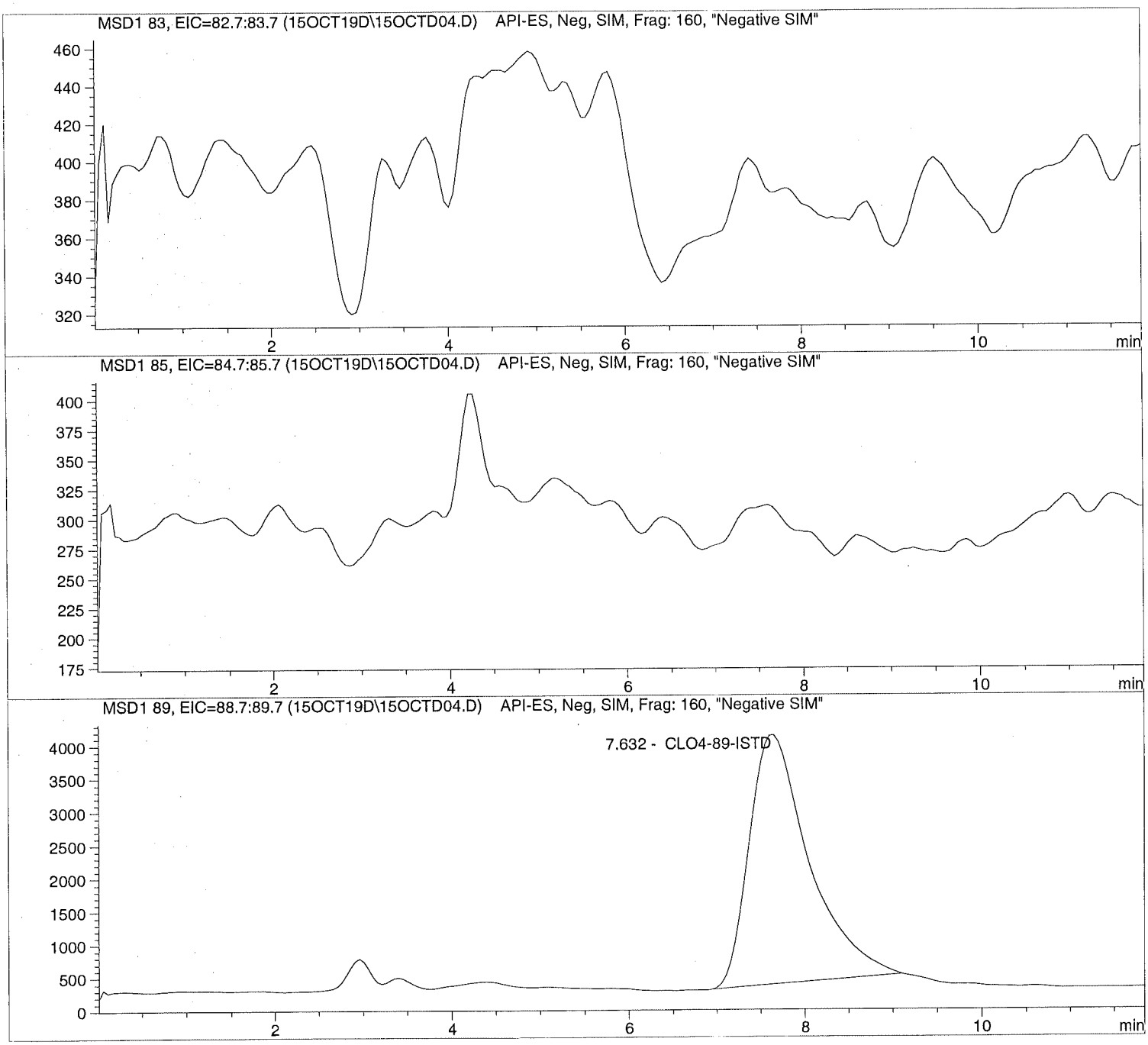
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD04.D Sample Name: 679039 LMB

Injection Date:	10/15/2019 10:26:47	Seq Line:	4
Sample Name:	679039 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.632	PBA	178247.9	5.0000	CLO4-89-ISTD

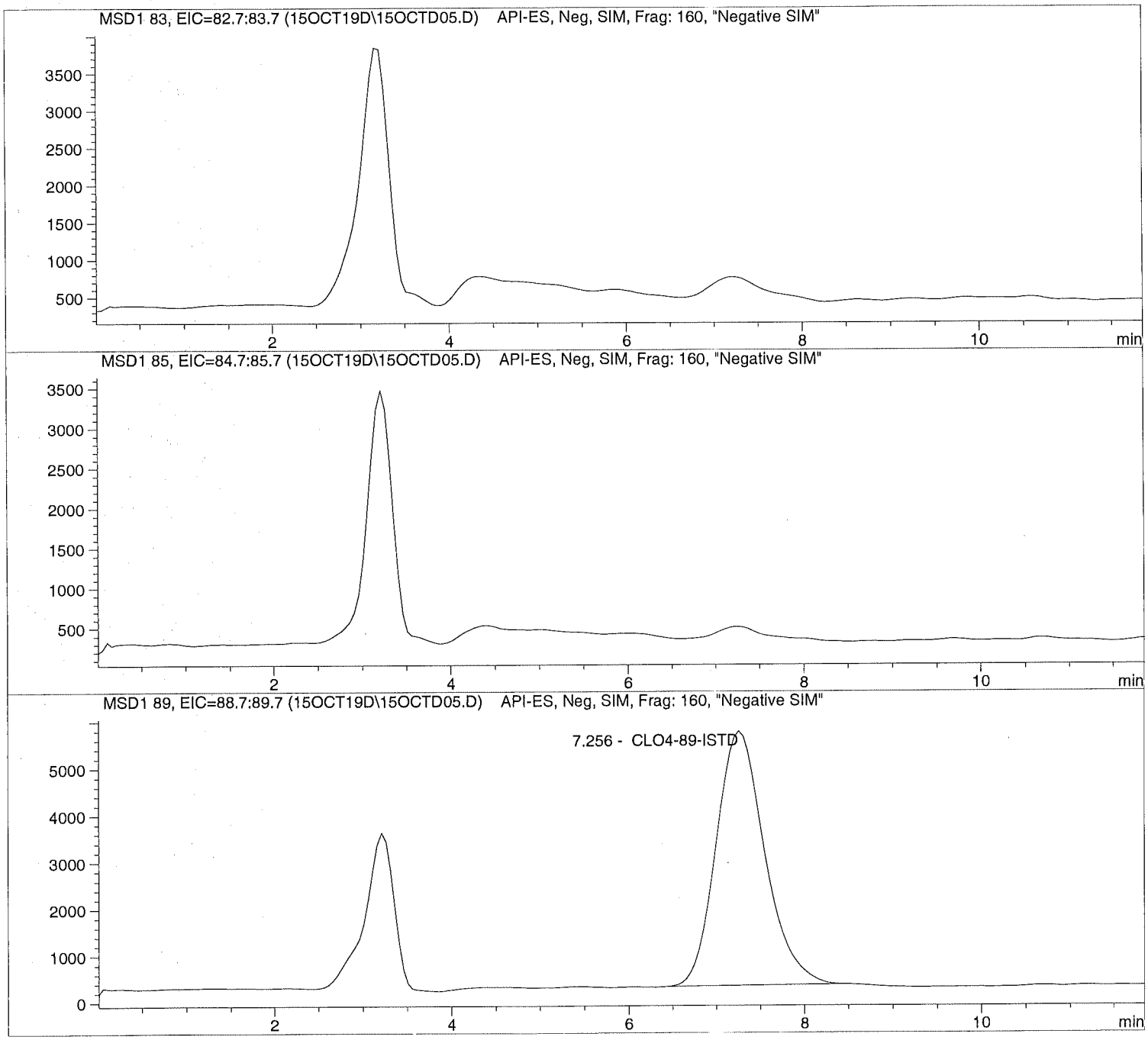
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD05.D Sample Name: 1928465001

Injection Date:	10/15/2019 10:41:27	Seq Line:	5
Sample Name:	1928465001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.256	PBA	208516.8	5.0000	CLO4-89-ISTD

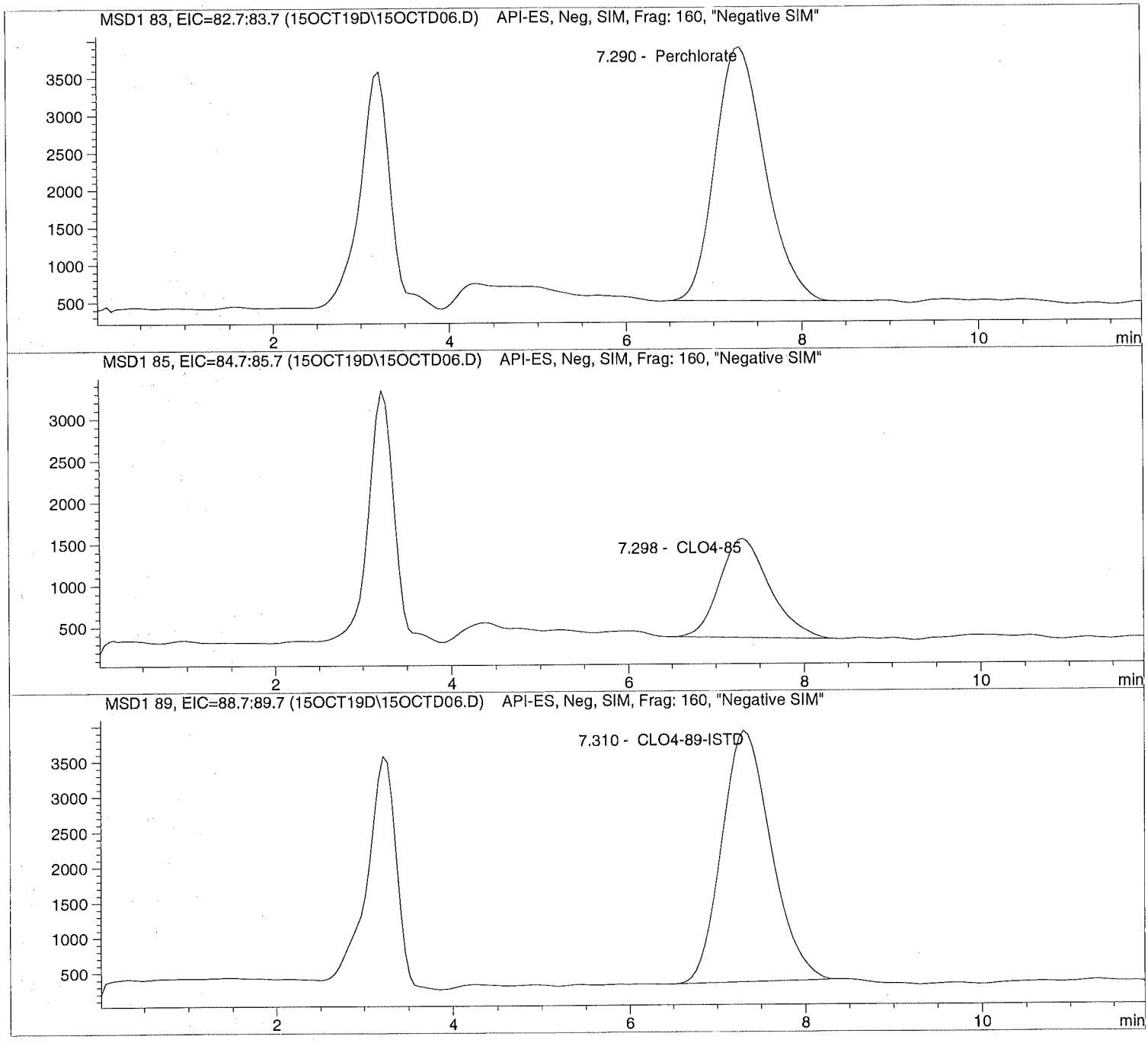
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD06.D Sample Name: 679041 284651S

Injection Date:	10/15/2019 10:55:23	Seq Line:	6
Sample Name:	679041 284651S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	133460.4	3.5533	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.298	PBA	46786.8	3.9945	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.310	PBA	138427.8	5.0000	CLO4-89-ISTD

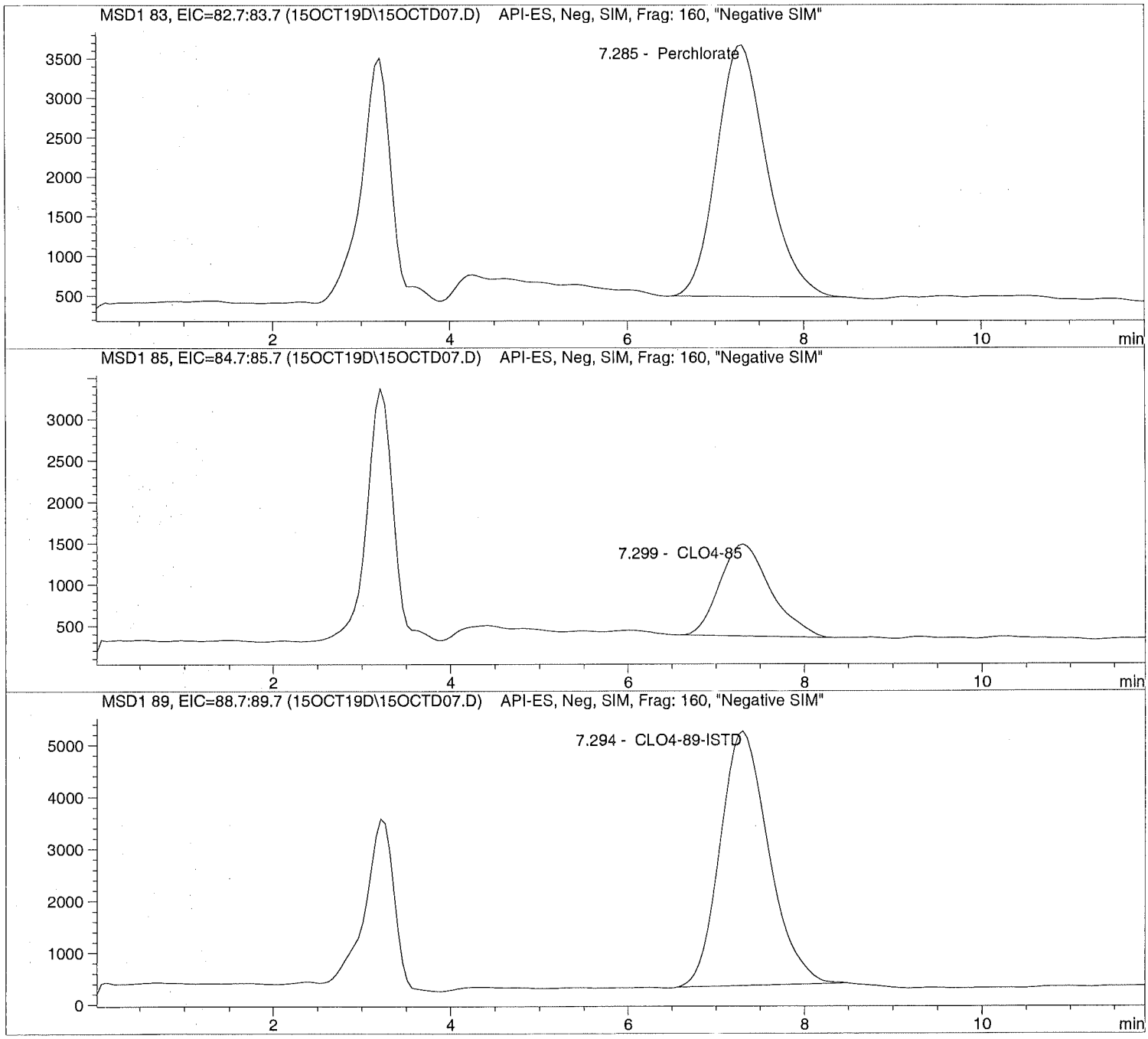
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD07.D Sample Name: 679042 284651D

Injection Date:	10/15/2019 11:09:18	Seq Line:	7
Sample Name:	679042 284651D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.285	PBA	125808.1	2.4560	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.299	PBA	44536.6	2.7682	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	PBA	187823.9	5.0000	CLO4-89-ISTD

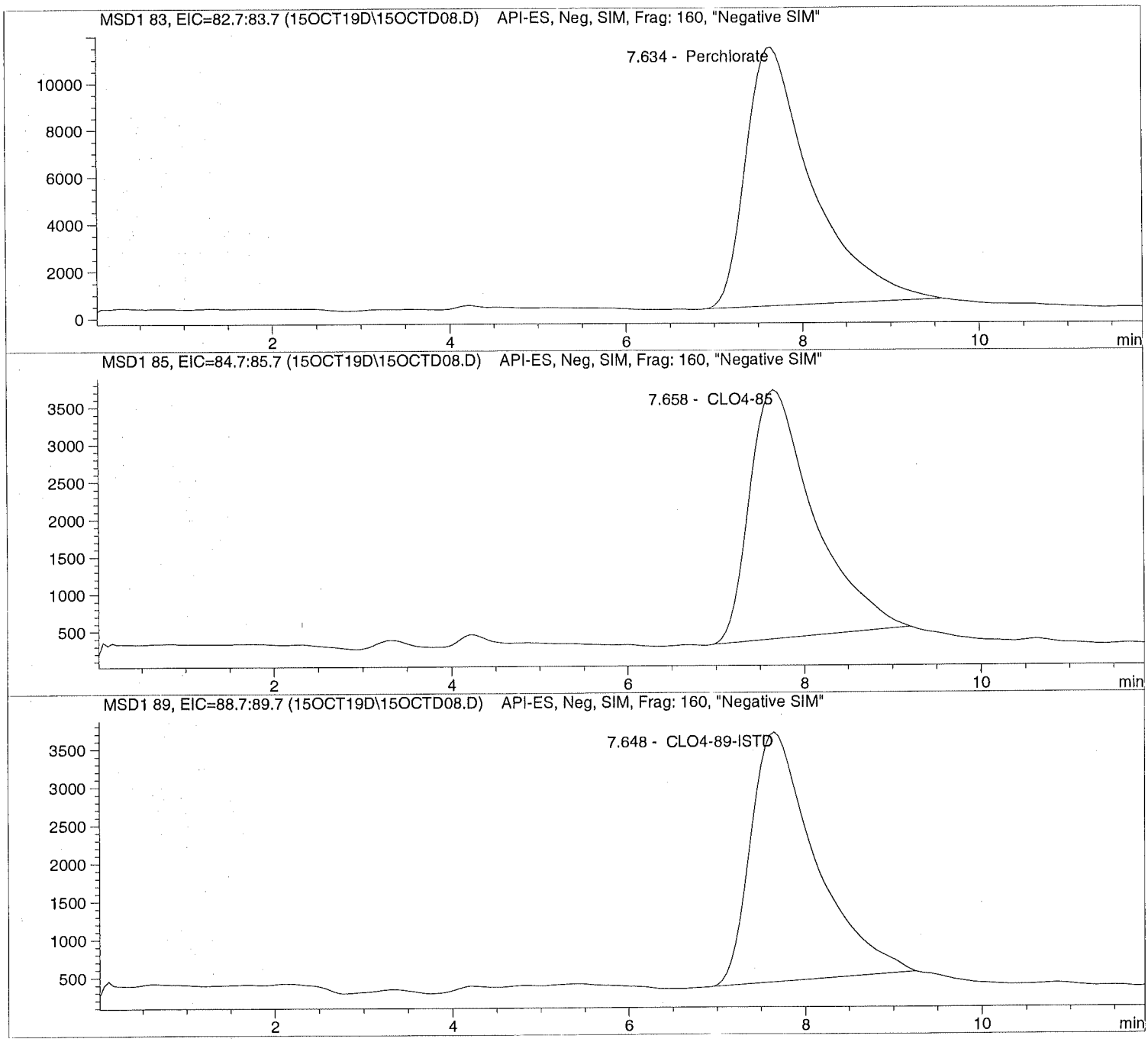
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD08.D Sample Name: 1929006001 1K

Injection Date:	10/15/2019 11:23:21	Seq Line:	8
Sample Name:	1929006001 1K	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.634	PBA	572391.3	12326.3509	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.658	PBA	169565.9	11908.1208	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.648	PBA	167142.0	5000.0000	CLO4-89-ISTD

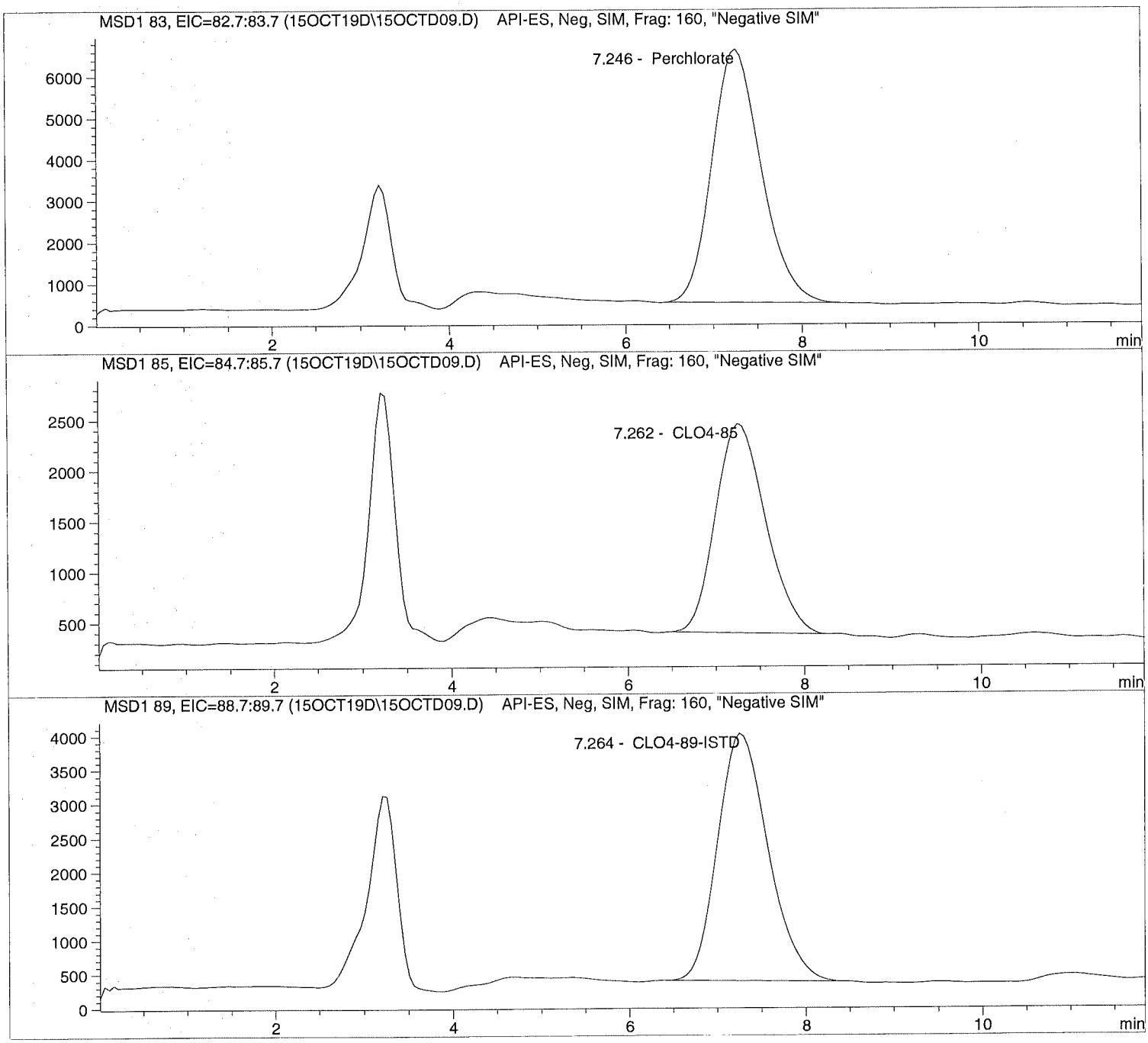
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD09.D Sample Name: 1929010001

Injection Date:	10/15/2019 11:37:14	Seq Line:	9
Sample Name:	1929010001	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.246	PBA	236643.2	6.0446	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.262	PBA	81544.1	6.7236	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.264	BBA	143998.5	5.0000	CLO4-89-ISTD

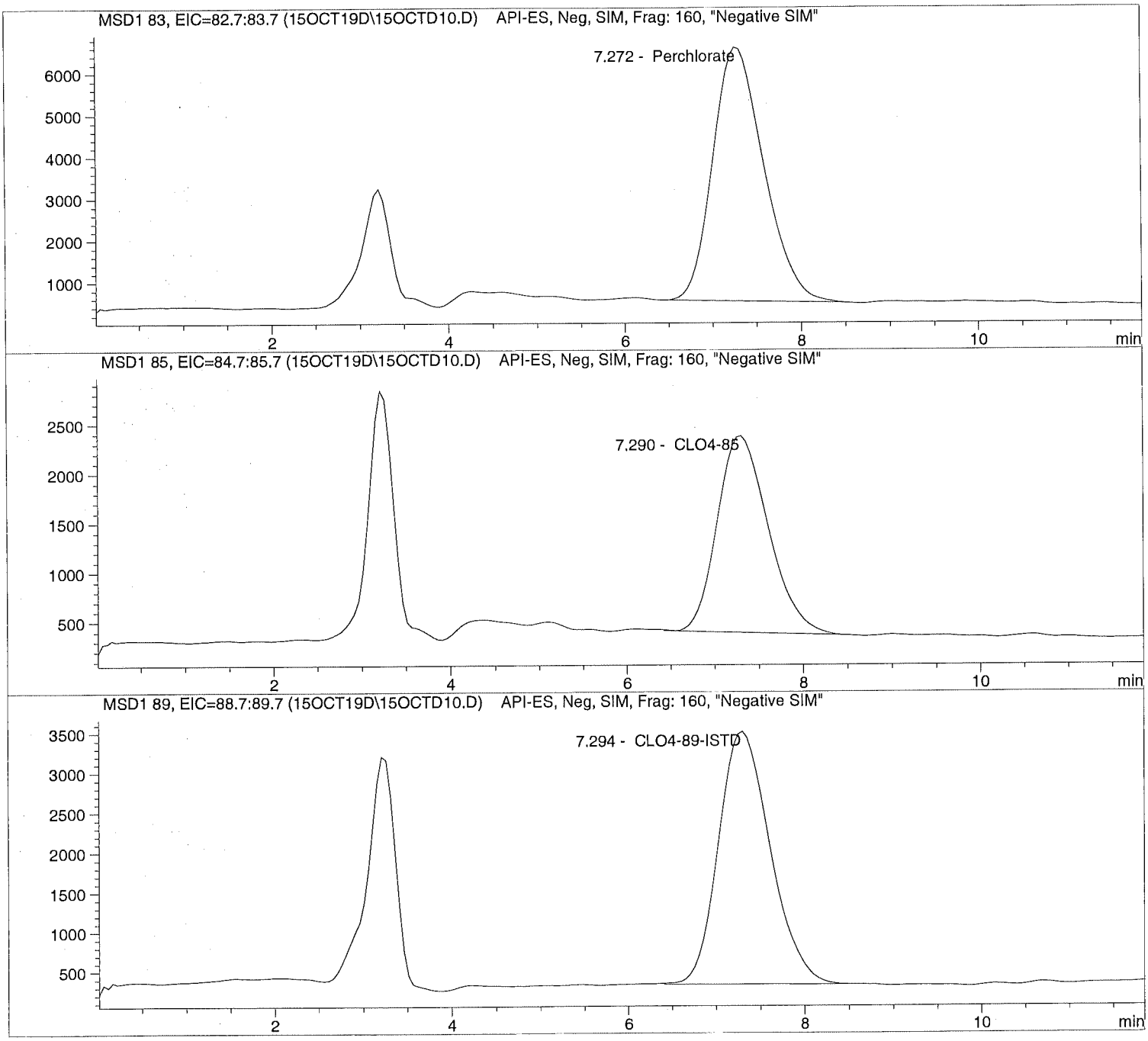
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD10.D Sample Name: 1929013001

Injection Date:	10/15/2019 11:51:08	Seq Line:	10
Sample Name:	1929013001	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.272	PBA	242664.3	6.9166	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	BBA	79708.2	7.3461	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.294	BBA	128749.2	5.0000	CLO4-89-ISTD

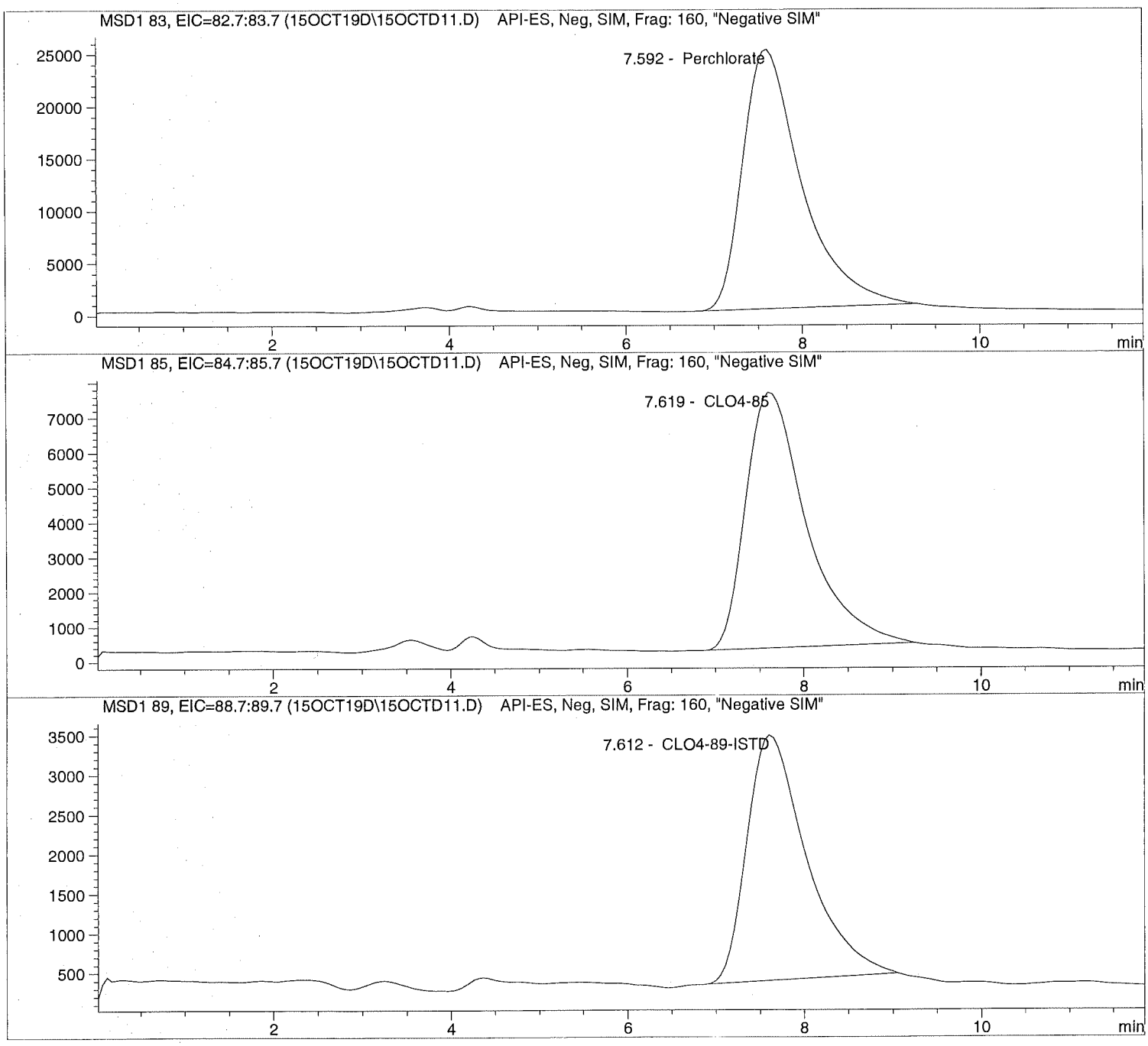
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15OCT19D\15OCTD11.D Sample Name: 679043 CCV@25

Injection Date:	10/15/2019 12:05:04	Seq Line:	11
Sample Name:	679043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.592	PBA	1149594.9	26.9035	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.619	PBA	349797.9	26.8688	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.612	PBA	144866.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

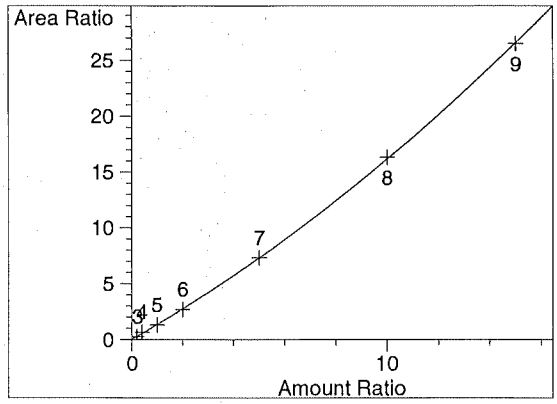
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

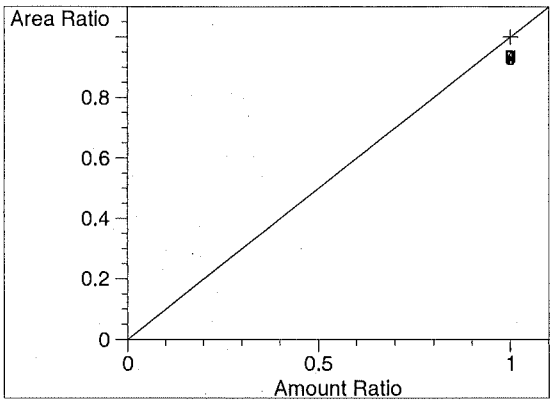
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

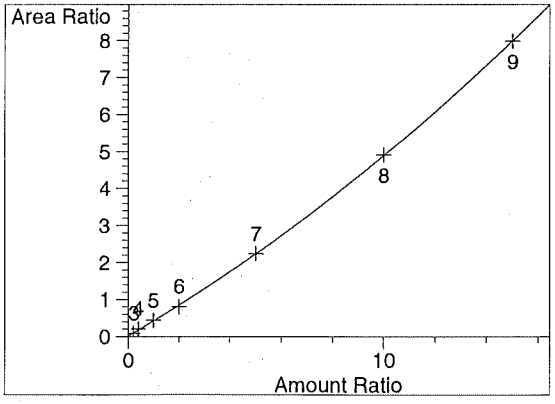
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

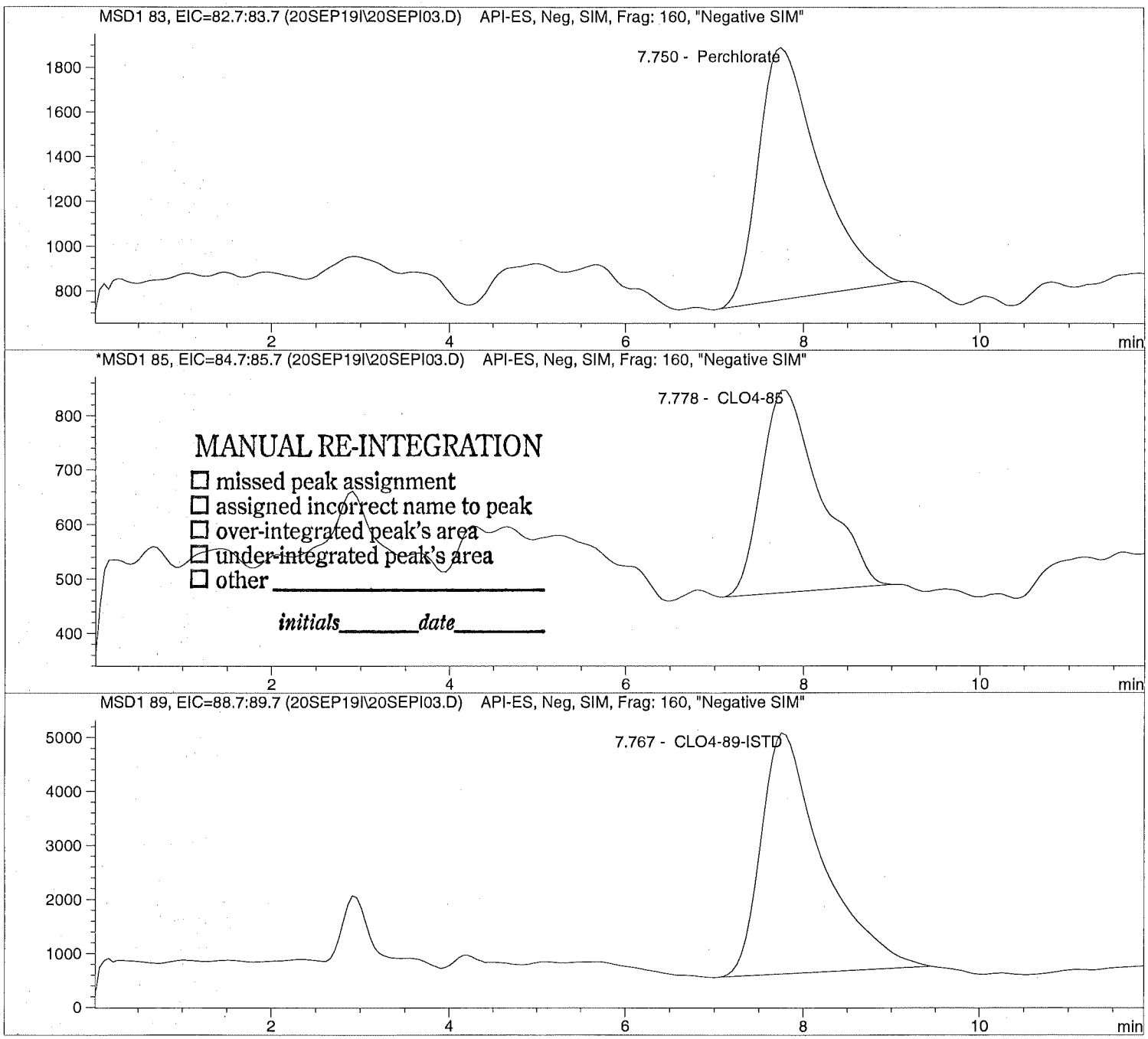
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

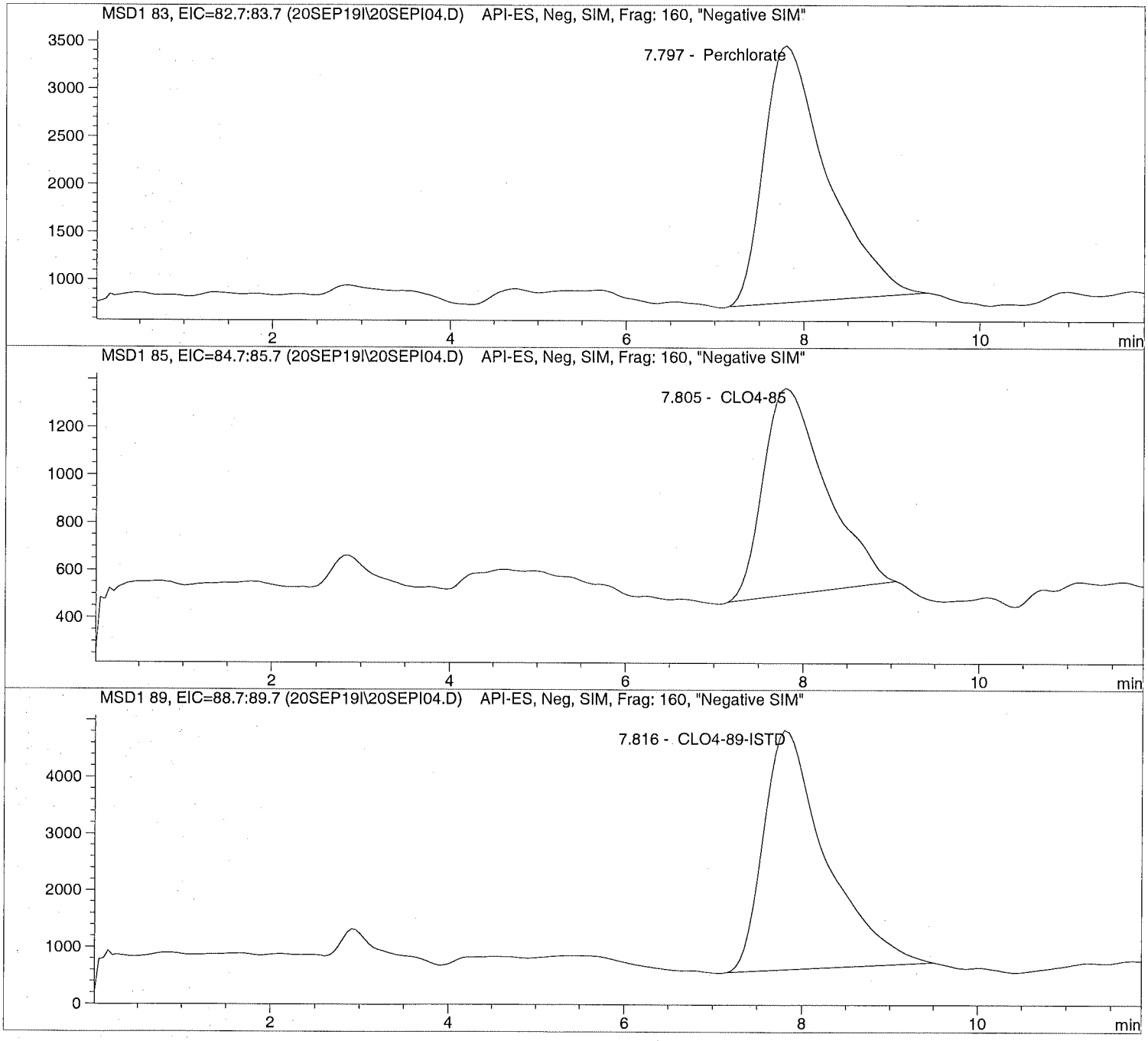
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

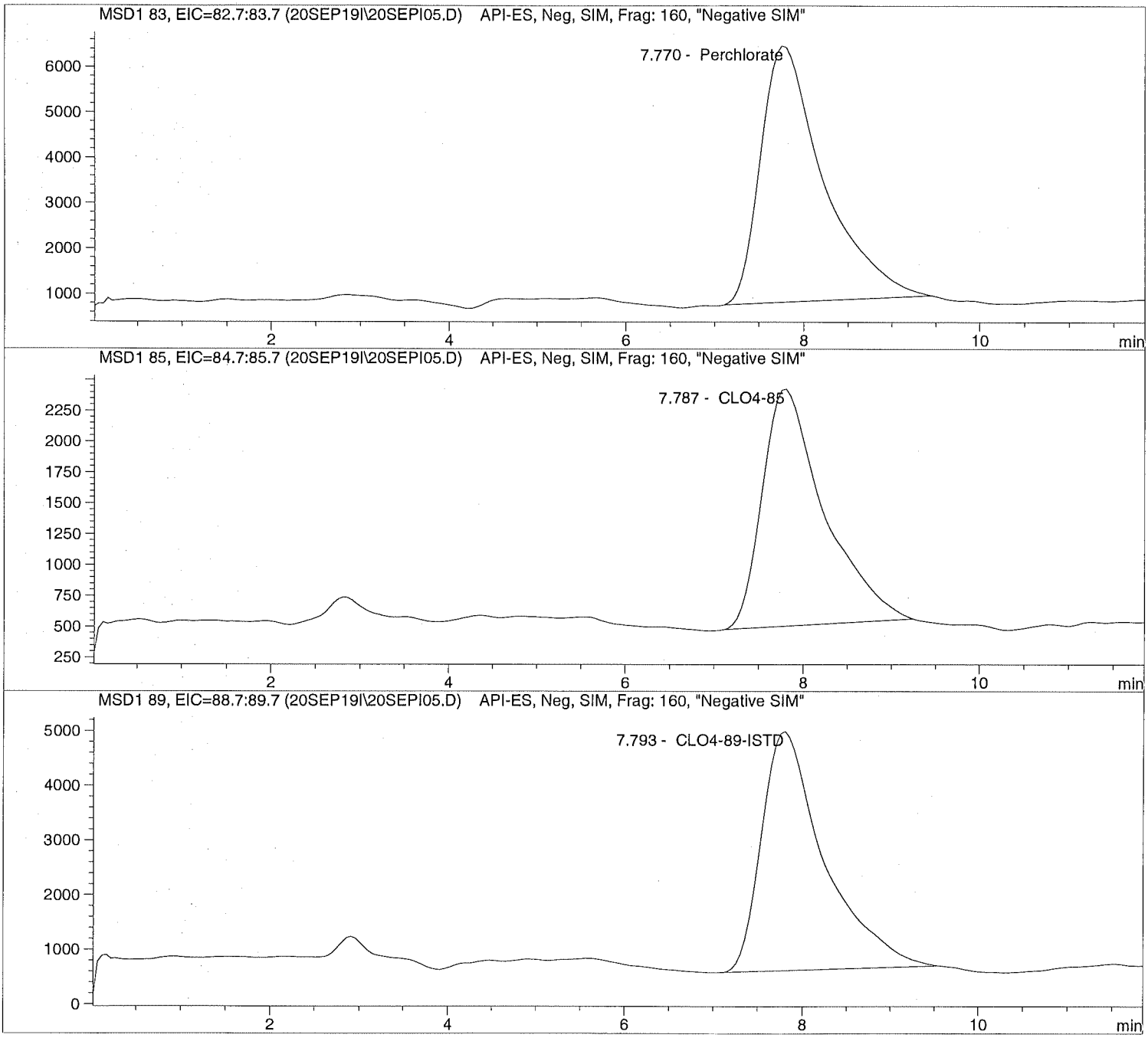
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

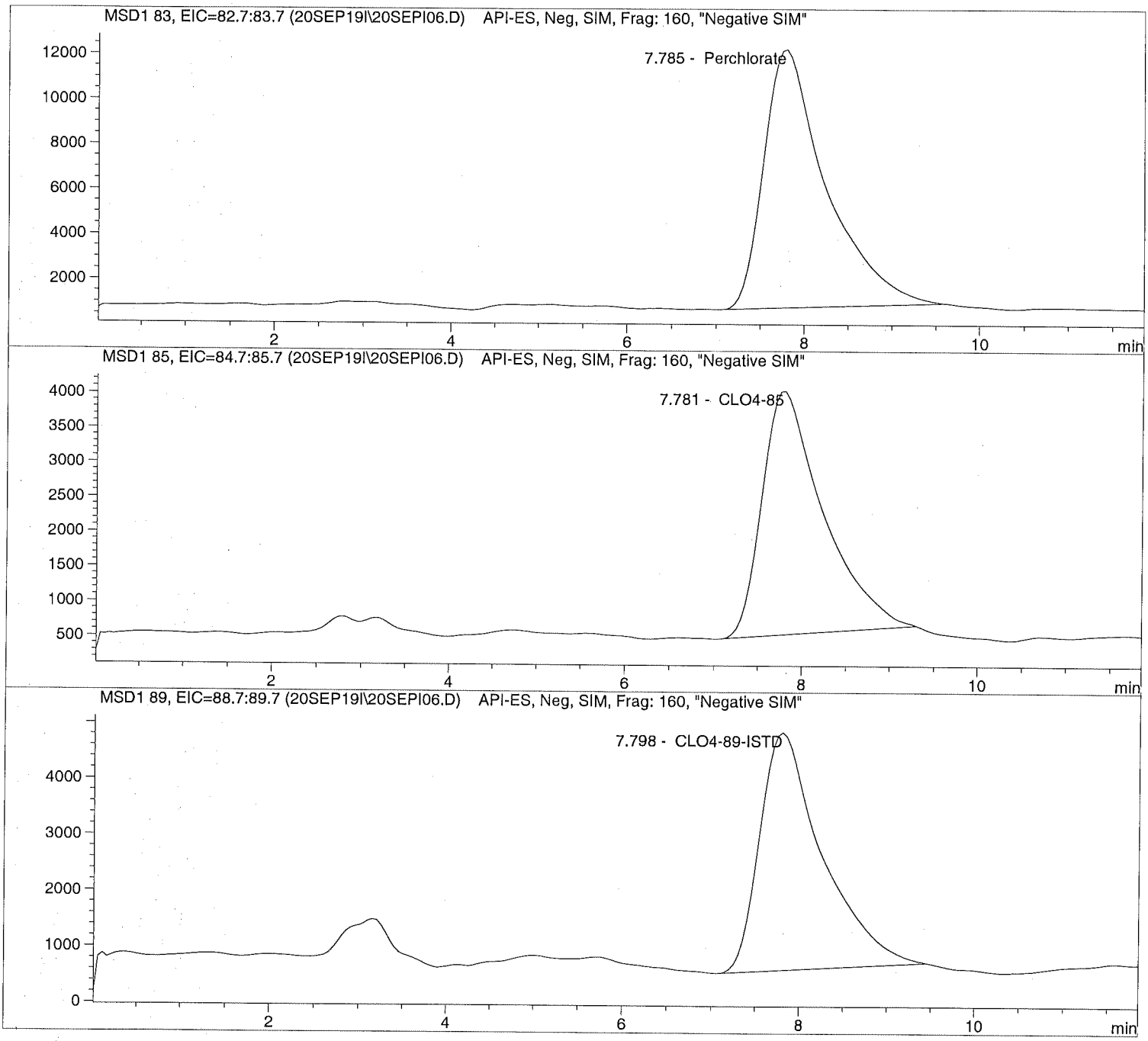
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

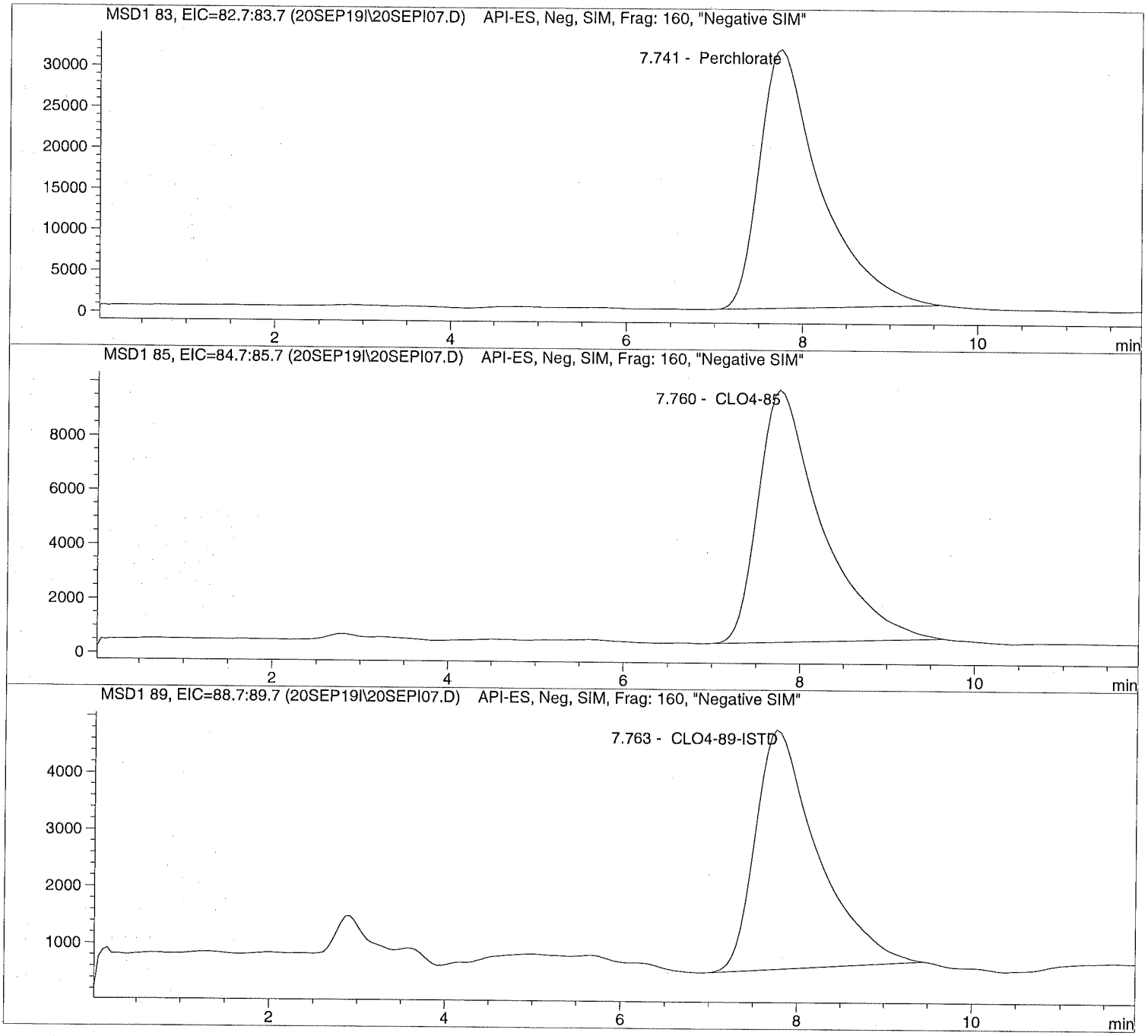
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

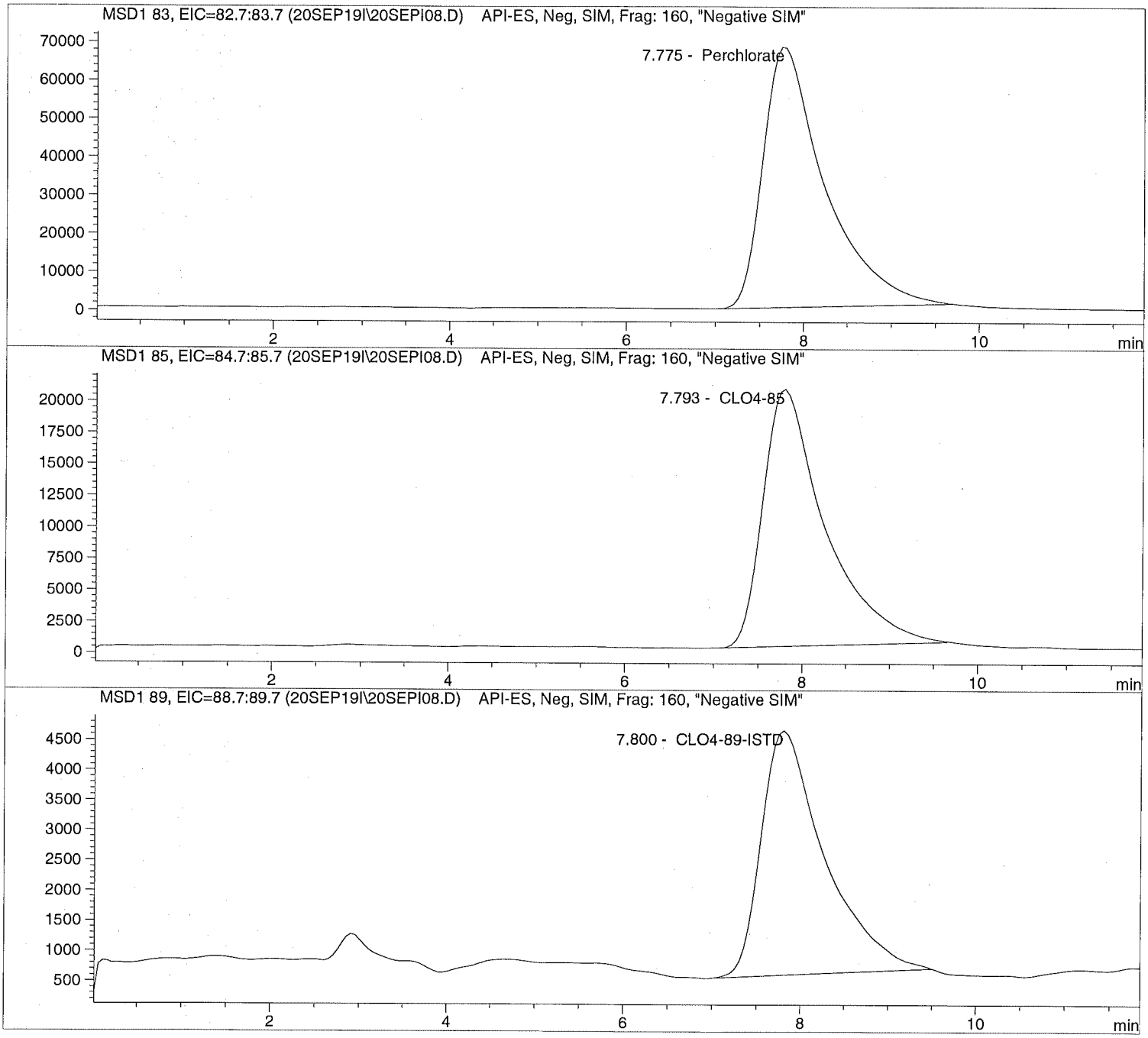
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

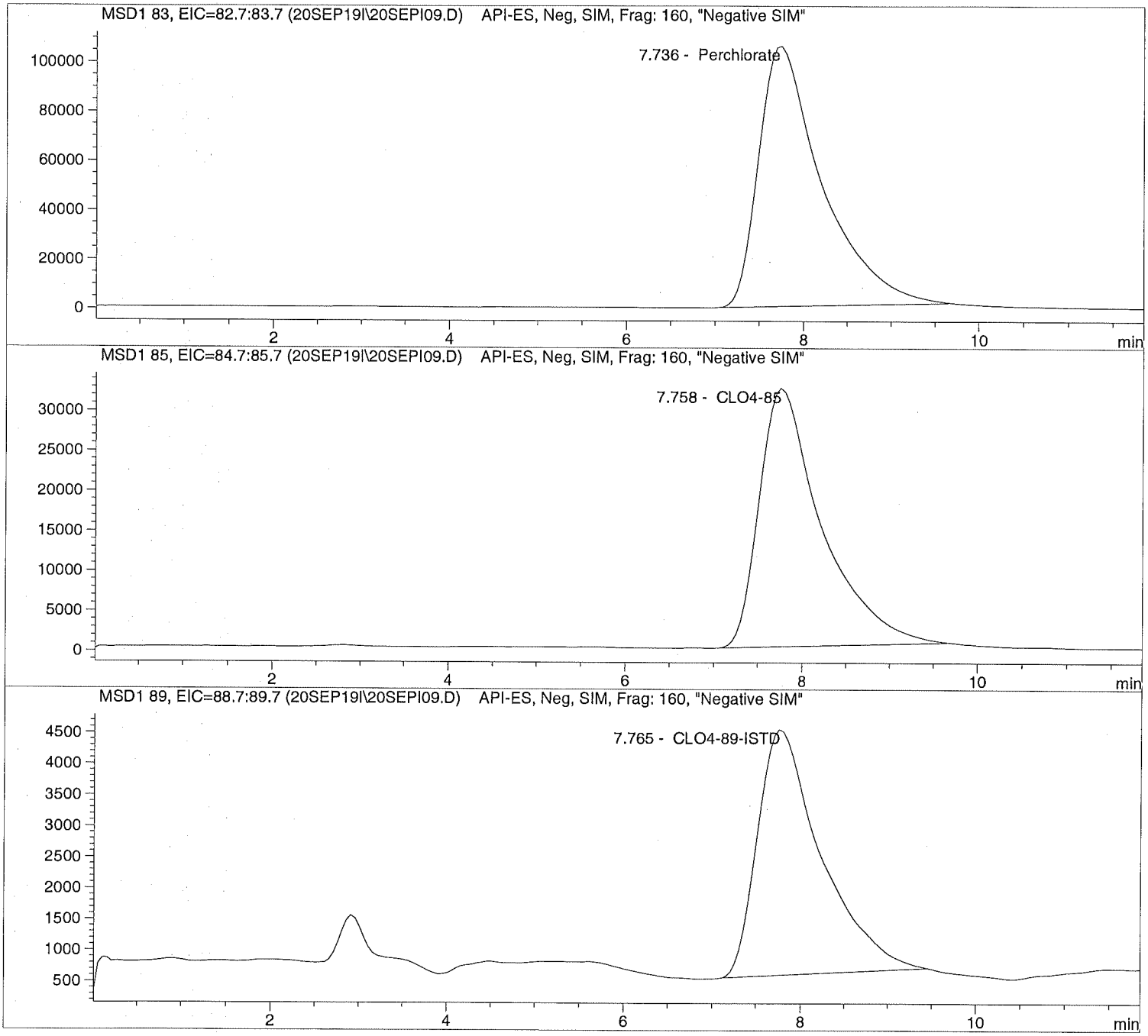
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

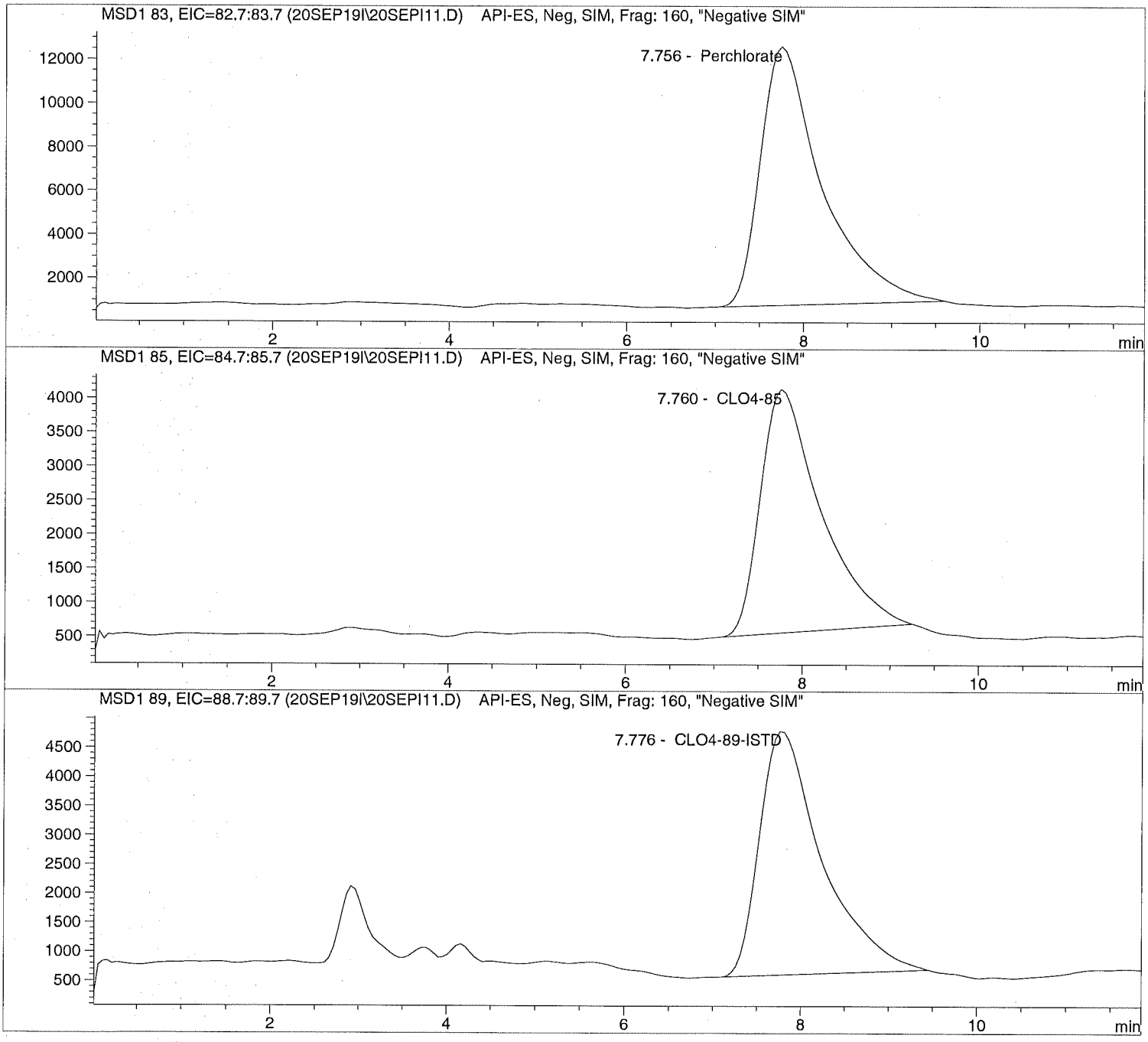
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

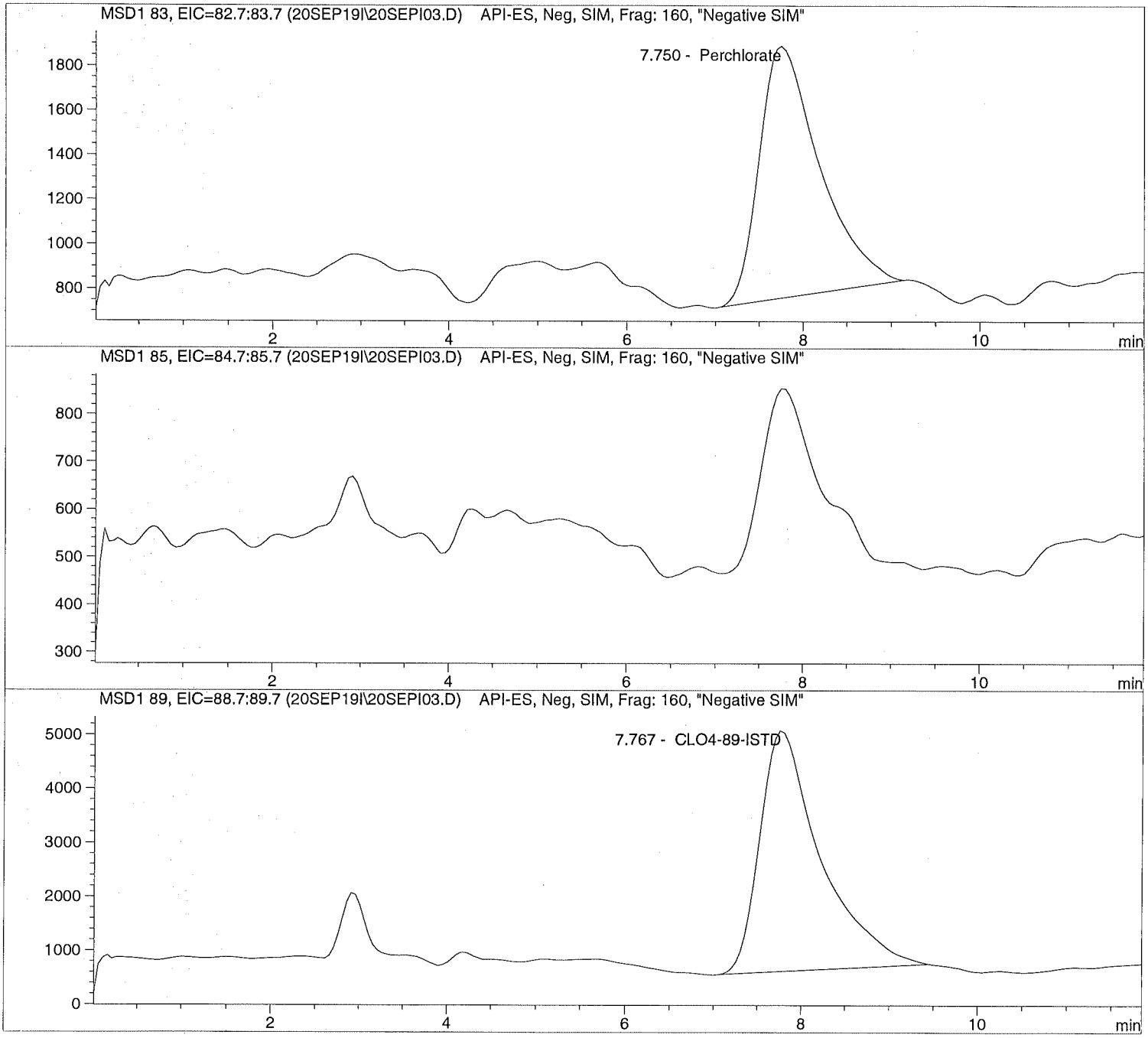
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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October 14, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100680**

Laboratory Results for: **LHAAP / GWTP**

Dear Marcia,

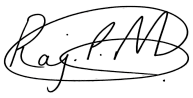
ALS Environmental received 2 sample(s) on Oct 11, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Work Order: HS19100680

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100680-01	LH18/24-SP650_101019	Groundwater		10-Oct-2019 14:00	11-Oct-2019 08:30	☐
HS19100680-02	Trip Blank	Groundwater		10-Oct-2019 00:00	11-Oct-2019 08:30	☐

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Work Order: HS19100680

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R348100

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: LH18/24-SP650_101019
Collection Date: 10-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19100680
Lab ID:HS19100680-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
2-Butanone	2.0	U	0.50	2.0	2.0	UG/L	1	11-Oct-2019 13:52
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	11-Oct-2019 13:52
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	11-Oct-2019 13:52
Acetone	**5.3**		**0.40**	**2.0**	**2.0**	**UG/L**	1	11-Oct-2019 13:52
Benzene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Bromochloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Bromodichloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Carbon disulfide	2.0	U	0.60	2.0	2.0	UG/L	1	11-Oct-2019 13:52
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Chloroform	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: LH18/24-SP650_101019
Collection Date: 10-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19100680
Lab ID:HS19100680-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
cis-1,2-Dichloroethene	**2.4**		**0.20**	**1.0**	**1.0**	**UG/L**	1	11-Oct-2019 13:52
cis-1,3-Dichloropropene	1.0	U	0.10	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Dibromomethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
m,p-Xylene	2.0	U	0.50	2.0	2.0	UG/L	1	11-Oct-2019 13:52
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	11-Oct-2019 13:52
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:52
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Toluene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Trichloroethene	**1.2**		**0.20**	**1.0**	**1.0**	**UG/L**	1	11-Oct-2019 13:52
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Vinyl chloride	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:52
Surr: 1,2-Dichloroethane-d4	*88.1*			**0**	*81-118*	*%REC*	*1*	*11-Oct-2019 13:52*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*11-Oct-2019 13:52*
Surr: Dibromofluoromethane	*92.8*			**0**	*80-119*	*%REC*	*1*	*11-Oct-2019 13:52*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*11-Oct-2019 13:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: Trip Blank
Collection Date: 10-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19100680
Lab ID:HS19100680-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
2-Butanone	2.0	U	0.50	2.0	2.0	UG/L	1	11-Oct-2019 13:28
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	11-Oct-2019 13:28
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	11-Oct-2019 13:28
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	11-Oct-2019 13:28
Benzene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Bromochloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Bromodichloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Carbon disulfide	2.0	U	0.60	2.0	2.0	UG/L	1	11-Oct-2019 13:28
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Chloroform	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: Trip Blank
Collection Date: 10-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19100680
Lab ID:HS19100680-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
cis-1,3-Dichloropropene	1.0	U	0.10	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Dibromomethane	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
m,p-Xylene	2.0	U	0.50	2.0	2.0	UG/L	1	11-Oct-2019 13:28
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	11-Oct-2019 13:28
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	11-Oct-2019 13:28
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Toluene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Trichloroethene	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Vinyl chloride	1.0	U	0.20	1.0	1.0	UG/L	1	11-Oct-2019 13:28
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1*	*11-Oct-2019 13:28*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*11-Oct-2019 13:28*
Surr: Dibromofluoromethane	*93.9*			**0**	*80-119*	*%REC*	*1*	*11-Oct-2019 13:28*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*11-Oct-2019 13:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R348100 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19100680-01	LH18/24-SP650_101019	10 Oct 2019 14:00			11 Oct 2019 13:52	1
HS19100680-02	Trip Blank	10 Oct 2019 00:00			11 Oct 2019 13:28	1

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191011** Units: **UG/L** Analysis Date: **11-Oct-2019 13:04**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294479** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	2.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	2.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	2.0	2.0								U
Acetone	2.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191011** Units: **UG/L** Analysis Date: **11-Oct-2019 13:04**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294479** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	2.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	2.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.26*	*1.0*	*50*	*0*	*88.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.28*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*47.34*	*1.0*	*50*	*0*	*94.7*	*80 - 119*				
Surr: Toluene-d8	*49.57*	*1.0*	*50*	*0*	*99.1*	*89 - 112*				

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191011** Units: **UG/L** Analysis Date: **11-Oct-2019 12:16**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.68	1.0	20	0	98.4	78 - 124				
1,1,1-Trichloroethane	19.64	1.0	20	0	98.2	74 - 131				
1,1,2,2-Tetrachloroethane	17.8	1.0	20	0	89.0	71 - 121				
1,1,2-Trichloroethane	19.32	1.0	20	0	96.6	80 - 119				
1,1-Dichloroethane	18.58	1.0	20	0	92.9	77 - 125				
1,1-Dichloroethene	18.98	1.0	20	0	94.9	71 - 131				
1,1-Dichloropropene	18.29	1.0	20	0	91.5	78 - 125				
1,2,3-Trichlorobenzene	17.5	1.0	20	0	87.5	69 - 129				
1,2,3-Trichloropropane	17.35	1.0	20	0	86.8	73 - 122				
1,2,4-Trichlorobenzene	18.65	1.0	20	0	93.2	69 - 130				
1,2,4-Trimethylbenzene	19.54	1.0	20	0	97.7	76 - 124				
1,2-Dibromo-3-chloropropane	16.32	1.0	20	0	81.6	62 - 128				
1,2-Dibromoethane	18.78	1.0	20	0	93.9	77 - 121				
1,2-Dichlorobenzene	19.53	1.0	20	0	97.7	80 - 119				
1,2-Dichloroethane	19	1.0	20	0	95.0	73 - 128				
1,2-Dichloropropane	18.55	1.0	20	0	92.7	78 - 122				
1,3,5-Trimethylbenzene	19.72	1.0	20	0	98.6	75 - 124				
1,3-Dichlorobenzene	19.66	1.0	20	0	98.3	80 - 119				
1,3-Dichloropropane	18.98	1.0	20	0	94.9	80 - 119				
1,4-Dichlorobenzene	19.3	1.0	20	0	96.5	79 - 118				
2,2-Dichloropropane	20.17	1.0	20	0	101	60 - 139				
2-Butanone	32.07	2.0	40	0	80.2	56 - 143				
2-Chlorotoluene	19.09	1.0	20	0	95.5	79 - 122				
2-Hexanone	33.97	2.0	40	0	84.9	57 - 139				
4-Chlorotoluene	19.69	1.0	20	0	98.5	78 - 122				
4-Isopropyltoluene	19.43	1.0	20	0	97.2	77 - 127				
4-Methyl-2-pentanone	33.09	2.0	40	0	82.7	67 - 130				
Acetone	37.95	2.0	40	0	94.9	39 - 160				
Benzene	19.16	1.0	20	0	95.8	79 - 120				
Bromobenzene	19.9	1.0	20	0	99.5	80 - 120				
Bromochloromethane	18.6	1.0	20	0	93.0	78 - 123				
Bromodichloromethane	19.36	1.0	20	0	96.8	79 - 125				
Bromoform	20	1.0	20	0	100.0	66 - 130				
Bromomethane	19.7	1.0	20	0	98.5	53 - 141				

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191011** Units: **UG/L** Analysis Date: **11-Oct-2019 12:16**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.79	2.0	40	0	94.5	64 - 133				
Carbon tetrachloride	18.82	1.0	20	0	94.1	72 - 136				
Chlorobenzene	19.72	1.0	20	0	98.6	82 - 118				
Chloroethane	18.7	1.0	20	0	93.5	60 - 138				
Chloroform	18.84	1.0	20	0	94.2	79 - 124				
Chloromethane	18.97	1.0	20	0	94.8	50 - 139				
cis-1,2-Dichloroethene	19.3	1.0	20	0	96.5	78 - 123				
cis-1,3-Dichloropropene	19.91	1.0	20	0	99.5	75 - 124				
Dibromochloromethane	19.67	1.0	20	0	98.4	74 - 126				
Dibromomethane	18.7	1.0	20	0	93.5	79 - 123				
Dichlorodifluoromethane	18.06	1.0	20	0	90.3	32 - 152				
Ethylbenzene	19.91	1.0	20	0	99.5	79 - 121				
Hexachlorobutadiene	21.16	1.0	20	0	106	66 - 134				
Isopropylbenzene	19.58	1.0	20	0	97.9	72 - 131				
m,p-Xylene	39.73	2.0	40	0	99.3	80 - 121				
Methylene chloride	18.95	2.0	20	0	94.8	74 - 124				
Naphthalene	16.26	1.0	20	0	81.3	61 - 128				
n-Butylbenzene	19.71	1.0	20	0	98.6	75 - 128				
n-Propylbenzene	19.36	1.0	20	0	96.8	76 - 126				
o-Xylene	20.12	1.0	20	0	101	78 - 122				
sec-Butylbenzene	18.98	1.0	20	0	94.9	77 - 126				
Styrene	20.21	1.0	20	0	101	78 - 123				
tert-Butylbenzene	19.28	1.0	20	0	96.4	78 - 124				
Tetrachloroethene	19.72	1.0	20	0	98.6	74 - 129				
Toluene	20.07	1.0	20	0	100	80 - 121				
trans-1,2-Dichloroethene	19.58	1.0	20	0	97.9	75 - 124				
trans-1,3-Dichloropropene	19.78	1.0	20	0	98.9	73 - 127				
Trichloroethene	19.17	1.0	20	0	95.9	79 - 123				
Trichlorofluoromethane	18.91	1.0	20	0	94.6	65 - 141				
Vinyl chloride	18.05	1.0	20	0	90.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.97*	*1.0*	*50*	*0*	*99.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.91*	*1.0*	*50*	*0*	*108*	*85 - 114*				
Surr: Dibromofluoromethane	*51.05*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*48.98*	*1.0*	*50*	*0*	*98.0*	*89 - 112*				

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19100592-06MS** Units: **UG/L** Analysis Date: **11-Oct-2019 15:28**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294483** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.8	1.0	20	0	94.0	78 - 124				
1,1,1-Trichloroethane	18.58	1.0	20	0	92.9	74 - 131				
1,1,2,2-Tetrachloroethane	16.4	1.0	20	0	82.0	71 - 121				
1,1,2-Trichloroethane	17.31	1.0	20	0	86.6	80 - 119				
1,1-Dichloroethane	16.85	1.0	20	0	84.3	77 - 125				
1,1-Dichloroethene	17.58	1.0	20	0	87.9	71 - 131				
1,1-Dichloropropene	18.13	1.0	20	0	90.7	78 - 125				
1,2,3-Trichlorobenzene	14.84	1.0	20	0	74.2	69 - 129				
1,2,3-Trichloropropane	16.62	1.0	20	0	83.1	73 - 122				
1,2,4-Trichlorobenzene	16.68	1.0	20	0	83.4	69 - 130				
1,2,4-Trimethylbenzene	19.23	1.0	20	0	96.1	76 - 124				
1,2-Dibromo-3-chloropropane	14.79	1.0	20	0	74.0	62 - 128				
1,2-Dibromoethane	17.15	1.0	20	0	85.8	77 - 121				
1,2-Dichlorobenzene	18.8	1.0	20	0	94.0	80 - 119				
1,2-Dichloroethane	18.07	1.0	20	0	90.3	73 - 128				
1,2-Dichloropropane	17.37	1.0	20	0	86.8	78 - 122				
1,3,5-Trimethylbenzene	19.9	1.0	20	0	99.5	75 - 124				
1,3-Dichlorobenzene	19.18	1.0	20	0	95.9	80 - 119				
1,3-Dichloropropane	17.4	1.0	20	0	87.0	80 - 119				
1,4-Dichlorobenzene	18.47	1.0	20	0	92.4	79 - 118				
2,2-Dichloropropane	18.32	1.0	20	0	91.6	60 - 139				
2-Butanone	25.47	2.0	40	0	63.7	56 - 143				
2-Chlorotoluene	18.44	1.0	20	0	92.2	79 - 122				
2-Hexanone	29.59	2.0	40	0	74.0	57 - 139				
4-Chlorotoluene	19.19	1.0	20	0	95.9	78 - 122				
4-Isopropyltoluene	20.18	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	29.63	2.0	40	0	74.1	67 - 130				
Acetone	38.68	2.0	40	0	96.7	39 - 160				
Benzene	19.42	1.0	20	1.399	90.1	79 - 120				
Bromobenzene	18.93	1.0	20	0	94.6	80 - 120				
Bromochloromethane	16.43	1.0	20	0	82.2	78 - 123				
Bromodichloromethane	18.08	1.0	20	0	90.4	79 - 125				
Bromoform	17.6	1.0	20	0	88.0	66 - 130				
Bromomethane	16.54	1.0	20	0	82.7	53 - 141				

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19100592-06MS** Units: **UG/L** Analysis Date: **11-Oct-2019 15:28**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294483** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	34.4	2.0	40	0	86.0	64 - 133				
Carbon tetrachloride	19.02	1.0	20	0	95.1	72 - 136				
Chlorobenzene	18.76	1.0	20	0	93.8	82 - 118				
Chloroethane	16.56	1.0	20	0	82.8	60 - 138				
Chloroform	17.25	1.0	20	0	86.2	79 - 124				
Chloromethane	16.58	1.0	20	0	82.9	50 - 139				
cis-1,2-Dichloroethene	17.35	1.0	20	0	86.7	78 - 123				
cis-1,3-Dichloropropene	18.14	1.0	20	0	90.7	75 - 124				
Dibromochloromethane	18.12	1.0	20	0	90.6	74 - 126				
Dibromomethane	17.1	1.0	20	0	85.5	79 - 123				
Dichlorodifluoromethane	14.8	1.0	20	0	74.0	32 - 152				
Ethylbenzene	19.72	1.0	20	0	98.6	79 - 121				
Hexachlorobutadiene	19.77	1.0	20	0	98.8	66 - 134				
Isopropylbenzene	21.37	1.0	20	1.306	100	72 - 131				
m,p-Xylene	39.69	2.0	40	0	99.2	80 - 121				
Methylene chloride	16.47	2.0	20	0	82.4	74 - 124				
Naphthalene	14.18	1.0	20	0	70.9	61 - 128				
n-Butylbenzene	20.64	1.0	20	0	103	75 - 128				
n-Propylbenzene	20.51	1.0	20	0.6078	99.5	76 - 126				
o-Xylene	19.6	1.0	20	0	98.0	78 - 122				
sec-Butylbenzene	20.56	1.0	20	0	103	77 - 126				
Styrene	19.33	1.0	20	0	96.6	78 - 123				
tert-Butylbenzene	22.63	1.0	20	2.643	100.0	78 - 124				
Tetrachloroethene	20.33	1.0	20	0	102	74 - 129				
Toluene	19.27	1.0	20	0	96.3	80 - 121				
trans-1,2-Dichloroethene	17.33	1.0	20	0	86.6	75 - 124				
trans-1,3-Dichloropropene	17.94	1.0	20	0	89.7	73 - 127				
Trichloroethene	18.6	1.0	20	0	93.0	79 - 123				
Trichlorofluoromethane	17.9	1.0	20	0	89.5	65 - 141				
Vinyl chloride	16.24	1.0	20	0	81.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.7*	*1.0*	*50*	*0*	*89.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.26*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*47.14*	*1.0*	*50*	*0*	*94.3*	*80 - 119*				
Surr: Toluene-d8	*48.71*	*1.0*	*50*	*0*	*97.4*	*89 - 112*				

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19100592-06MSD** Units: **UG/L** Analysis Date: **11-Oct-2019 15:52**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.55	1.0	20	0	92.7	78 - 124	18.8	1.34	20	
1,1,1-Trichloroethane	17.56	1.0	20	0	87.8	74 - 131	18.58	5.66	20	
1,1,2,2-Tetrachloroethane	16.83	1.0	20	0	84.1	71 - 121	16.4	2.58	20	
1,1,2-Trichloroethane	17.8	1.0	20	0	89.0	80 - 119	17.31	2.79	20	
1,1-Dichloroethane	16.39	1.0	20	0	81.9	77 - 125	16.85	2.77	20	
1,1-Dichloroethene	17.27	1.0	20	0	86.4	71 - 131	17.58	1.77	20	
1,1-Dichloropropene	17.4	1.0	20	0	87.0	78 - 125	18.13	4.13	20	
1,2,3-Trichlorobenzene	14.35	1.0	20	0	71.8	69 - 129	14.84	3.33	20	
1,2,3-Trichloropropane	16.63	1.0	20	0	83.2	73 - 122	16.62	0.0856	20	
1,2,4-Trichlorobenzene	16.72	1.0	20	0	83.6	69 - 130	16.68	0.27	20	
1,2,4-Trimethylbenzene	19.49	1.0	20	0	97.4	76 - 124	19.23	1.34	20	
1,2-Dibromo-3-chloropropane	14.75	1.0	20	0	73.8	62 - 128	14.79	0.249	20	
1,2-Dibromoethane	17.54	1.0	20	0	87.7	77 - 121	17.15	2.23	20	
1,2-Dichlorobenzene	19.23	1.0	20	0	96.2	80 - 119	18.8	2.27	20	
1,2-Dichloroethane	17.74	1.0	20	0	88.7	73 - 128	18.07	1.8	20	
1,2-Dichloropropane	17.22	1.0	20	0	86.1	78 - 122	17.37	0.835	20	
1,3,5-Trimethylbenzene	20.01	1.0	20	0	100	75 - 124	19.9	0.548	20	
1,3-Dichlorobenzene	19.43	1.0	20	0	97.2	80 - 119	19.18	1.33	20	
1,3-Dichloropropane	17.39	1.0	20	0	86.9	80 - 119	17.4	0.1	20	
1,4-Dichlorobenzene	18.77	1.0	20	0	93.8	79 - 118	18.47	1.58	20	
2,2-Dichloropropane	17.77	1.0	20	0	88.8	60 - 139	18.32	3.07	20	
2-Butanone	26.09	2.0	40	0	65.2	56 - 143	25.47	2.44	20	
2-Chlorotoluene	18.79	1.0	20	0	93.9	79 - 122	18.44	1.84	20	
2-Hexanone	29.11	2.0	40	0	72.8	57 - 139	29.59	1.64	20	
4-Chlorotoluene	19.4	1.0	20	0	97.0	78 - 122	19.19	1.1	20	
4-Isopropyltoluene	20.54	1.0	20	0	103	77 - 127	20.18	1.8	20	
4-Methyl-2-pentanone	29.36	2.0	40	0	73.4	67 - 130	29.63	0.931	20	
Acetone	37.2	2.0	40	0	93.0	39 - 160	38.68	3.91	20	
Benzene	18.77	1.0	20	1.399	86.8	79 - 120	19.42	3.41	20	
Bromobenzene	19.07	1.0	20	0	95.4	80 - 120	18.93	0.759	20	
Bromochloromethane	16.26	1.0	20	0	81.3	78 - 123	16.43	1.06	20	
Bromodichloromethane	18.08	1.0	20	0	90.4	79 - 125	18.08	0.00914	20	
Bromoform	17.77	1.0	20	0	88.9	66 - 130	17.6	0.965	20	
Bromomethane	16.3	1.0	20	0	81.5	53 - 141	16.54	1.47	20	

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19100680

QC BATCH REPORT

Batch ID: R348100 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19100592-06MSD** Units: **UG/L** Analysis Date: **11-Oct-2019 15:52**
Client ID: Run ID: **VOA6_348100** SeqNo: **5294484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	33.09	2.0	40	0	82.7	64 - 133	34.4	3.89	20	
Carbon tetrachloride	18.44	1.0	20	0	92.2	72 - 136	19.02	3.09	20	
Chlorobenzene	18.34	1.0	20	0	91.7	82 - 118	18.76	2.26	20	
Chloroethane	16.42	1.0	20	0	82.1	60 - 138	16.56	0.812	20	
Chloroform	16.56	1.0	20	0	82.8	79 - 124	17.25	4.1	20	
Chloromethane	15.85	1.0	20	0	79.2	50 - 139	16.58	4.5	20	
cis-1,2-Dichloroethene	16.89	1.0	20	0	84.5	78 - 123	17.35	2.65	20	
cis-1,3-Dichloropropene	17.85	1.0	20	0	89.2	75 - 124	18.14	1.63	20	
Dibromochloromethane	17.78	1.0	20	0	88.9	74 - 126	18.12	1.92	20	
Dibromomethane	17.11	1.0	20	0	85.6	79 - 123	17.1	0.0693	20	
Dichlorodifluoromethane	14.21	1.0	20	0	71.1	32 - 152	14.8	4.04	20	
Ethylbenzene	19.35	1.0	20	0	96.8	79 - 121	19.72	1.88	20	
Hexachlorobutadiene	20.38	1.0	20	0	102	66 - 134	19.77	3.03	20	
Isopropylbenzene	20.86	1.0	20	1.306	97.8	72 - 131	21.37	2.42	20	
m,p-Xylene	38.42	2.0	40	0	96.0	80 - 121	39.69	3.27	20	
Methylene chloride	16.39	2.0	20	0	82.0	74 - 124	16.47	0.488	20	
Naphthalene	13.98	1.0	20	0	69.9	61 - 128	14.18	1.43	20	
n-Butylbenzene	21	1.0	20	0	105	75 - 128	20.64	1.73	20	
n-Propylbenzene	20.76	1.0	20	0.6078	101	76 - 126	20.51	1.17	20	
o-Xylene	19.32	1.0	20	0	96.6	78 - 122	19.6	1.44	20	
sec-Butylbenzene	20.97	1.0	20	0	105	77 - 126	20.56	1.94	20	
Styrene	18.79	1.0	20	0	94.0	78 - 123	19.33	2.81	20	
tert-Butylbenzene	23.06	1.0	20	2.643	102	78 - 124	22.63	1.85	20	
Tetrachloroethene	19.61	1.0	20	0	98.0	74 - 129	20.33	3.61	20	
Toluene	18.9	1.0	20	0	94.5	80 - 121	19.27	1.9	20	
trans-1,2-Dichloroethene	16.81	1.0	20	0	84.1	75 - 124	17.33	3.01	20	
trans-1,3-Dichloropropene	17.66	1.0	20	0	88.3	73 - 127	17.94	1.53	20	
Trichloroethene	18.14	1.0	20	0	90.7	79 - 123	18.6	2.45	20	
Trichlorofluoromethane	17.39	1.0	20	0	86.9	65 - 141	17.9	2.89	20	
Vinyl chloride	15.4	1.0	20	0	77.0	58 - 137	16.24	5.29	20	
Surr: 1,2-Dichloroethane-d4	*44.85*	*1.0*	*50*	*0*	*89.7*	*81 - 118*	*44.7*	*0.321*	*20*	
Surr: 4-Bromofluorobenzene	*51.79*	*1.0*	*50*	*0*	*104*	*85 - 114*	*52.26*	*0.899*	*20*	
Surr: Dibromofluoromethane	*46.62*	*1.0*	*50*	*0*	*93.2*	*80 - 119*	*47.14*	*1.1*	*20*	
Surr: Toluene-d8	*49.02*	*1.0*	*50*	*0*	*98.0*	*89 - 112*	*48.71*	*0.651*	*20*	

ALS Houston, US Date: 14-Oct-19

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP / GWTP
WorkOrder:	HS19100680

QC BATCH REPORT

Batch ID:	**R348100 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19100680-01 HS19100680-02

ALS Houston, US Date: 14-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: **HS19100680**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Houston, US Date: 14-Oct-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

00961892

ALS Houston, US Date: 14-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100680
Date/Time Received: **11-Oct-2019 08:30**
Received by: **AC**

Checklist completed by: *Jared R. Makan* eSignature 11-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 11-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.5°C / 2.0°C UC/C	IR11	
Cooler(s)/Kit(s):	43744		
Date/Time sample(s) sent to storage:	10/11/2019 11:15		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Bhate Environmental Construction Energy

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP

Client Name:

Collected by: Kennie Moore

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHA24-SP1650_101019		10 OCT 2019	1400	-	N		WG	3	X				
TRIP BLANK		10 OCT 2019		-	TB		W	2	X				
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									
				-									

Sample Analysis Requested (5) | Quality Assurance Samples (6)

HS19100680

Bhate Environmental Associates, Inc.
LHAAP / GWTP

COMMENTS: 24 HOUR TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Kennie Moore	10/10/19	1400	1. AC	10/11/19	08:30
2.			2.		
3.			3.		

U/C 2.5 (R#1) CF 0.5

43744

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

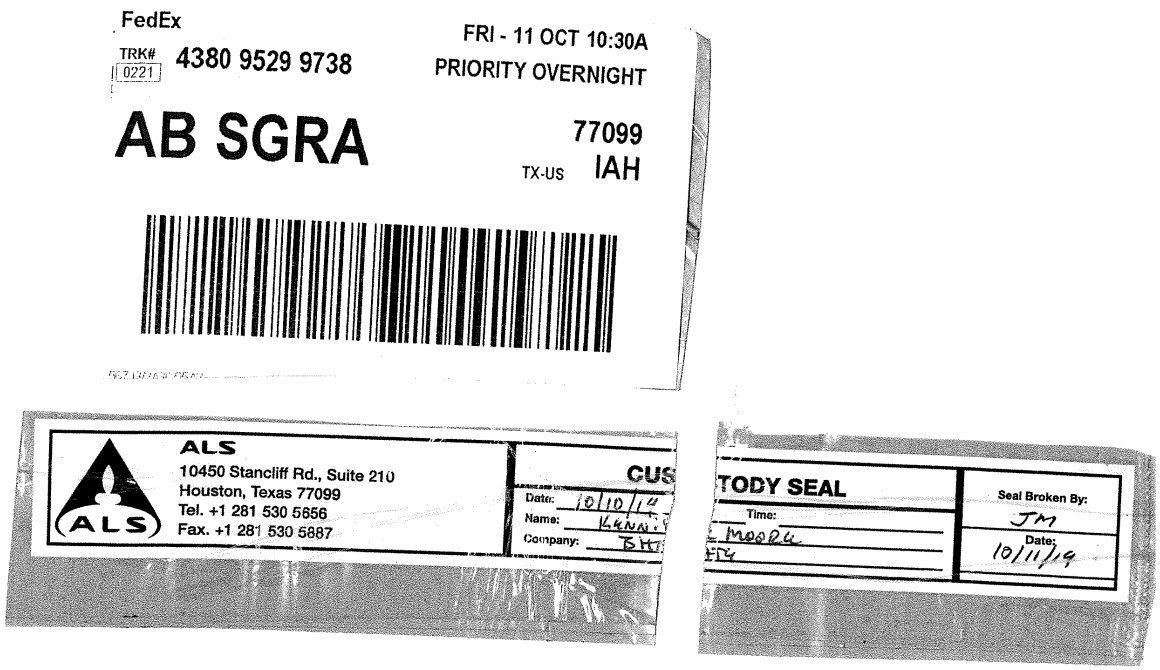
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control


FedEx
TRK# 0221
4380 9529 9738
FRI - 11 OCT 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US IAH
ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUS
Date: 10/10/14
Name: KENN
Company: BH
TODY SEAL
Time:
MOORE
Seal Broken By:
JM
Date:
10/11/14

HS19100916 Cover Page

ALS WO HS19100916

10450 Stancliff Rd. Suite 210
Houston, TX 77099
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www.alsglobal.com

WorkOrder: HS19100916

Longhorn GW Treatment Plant - GWTP Weekly Effluent

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

01-Nov-2019

HS19100916 Longhorn GW Treatment Plant
GWTP Weekly Effluent REV01 Final

ALS WO HS19100916

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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November 08, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100916**

Laboratory Results for: **Longhorn GW Treatment Plant - GWTP Weekly Effluent**

Dear Marcia,

ALS Environmental received 2 sample(s) on Oct 16, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100916

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100916-01	LH18/24-SP650_101519	Groundwater		15-Oct-2019 14:00	16-Oct-2019 09:58	☐
HS19100916-02	LH18/24-SP650_101519_AIX	Groundwater		15-Oct-2019 14:00	16-Oct-2019 09:58	☐

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100916

Work Order Comments

- Revised to report re analysis results for Ammonia

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.
- The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final report attached.

WetChemistry by Method E365.3

Batch ID: R348836

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E350.3

Batch ID: R348641

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder:HS19100916
Sample ID: LH18/24-SP650_101519
Lab ID:HS19100916-01
Collection Date: 15-Oct-2019 14:00
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: MZD
Nitrogen, Ammonia (As N)	**18**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	05-Nov-2019 17:30
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: KVL
Phosphorus, Total Orthophosphate (As P)	**2.54**	a	**0.100**	**0.250**	**0.250**	**mg/L**	10	16-Oct-2019 17:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	29-Oct-2019 09:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent WorkOrder:HS19100916

Sample ID: LH18/24-SP650_101519_AIX Lab ID:HS19100916-02

Collection Date: 15-Oct-2019 14:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Nov-2019 16:32

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100916

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R348836 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Groundwater	
HS19100916-01	LH18/24-SP650_101519	15 Oct 2019 14:00			16 Oct 2019 17:00	10
Batch ID: R349285 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19100916-01	LH18/24-SP650_101519	15 Oct 2019 14:00			29 Oct 2019 09:27	1
Batch ID: R349655 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS19100916-02	LH18/24-SP650_101519_AIX	15 Oct 2019 14:00			01 Nov 2019 16:32	1
Batch ID: R350045 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Groundwater	
HS19100916-01	LH18/24-SP650_101519	15 Oct 2019 14:00			05 Nov 2019 17:30	1

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100916

QC BATCH REPORT

Batch ID: R348836 (0) **Instrument:** UV-2450 **Method:** ORTHO PHOSPHATE (PO4) AS P BY E365.3

MBLK Sample ID: **MBLK-R348836** Units: **mg/L** Analysis Date: **16-Oct-2019 17:00**
Client ID: Run ID: **UV-2450_348836** SeqNo: **5307461** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R348836** Units: **mg/L** Analysis Date: **16-Oct-2019 17:00**
Client ID: Run ID: **UV-2450_348836** SeqNo: **5307460** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.246	0.0250	0.25	0	98.4	85 - 115				

MS Sample ID: **HS19100916-01MS** Units: **mg/L** Analysis Date: **16-Oct-2019 17:00**
Client ID: **LH18/24-SP650_101519** Run ID: **UV-2450_348836** SeqNo: **5307463** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	5.04	0.250	2.5	2.54	100	80 - 120				

MSD Sample ID: **HS19100916-01MSD** Units: **mg/L** Analysis Date: **16-Oct-2019 17:00**
Client ID: **LH18/24-SP650_101519** Run ID: **UV-2450_348836** SeqNo: **5307462** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	4.99	0.250	2.5	2.54	98.0	80 - 120	5.04	0.997	20	

The following samples were analyzed in this batch: HS19100916-01

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19100916

QC BATCH REPORT

Batch ID: R350045 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-R350045** Units: **mg/L** Analysis Date: **05-Nov-2019 17:30**
Client ID: Run ID: **WetChem_HS_350045** SeqNo: **5334808** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-R350045** Units: **mg/L** Analysis Date: **05-Nov-2019 17:30**
Client ID: Run ID: **WetChem_HS_350045** SeqNo: **5334807** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.03	0.20	10	0	100	85 - 115				

LCSD Sample ID: **LCSD-R350045** Units: **mg/L** Analysis Date: **05-Nov-2019 17:30**
Client ID: Run ID: **WetChem_HS_350045** SeqNo: **5334806** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.02	0.20	10	0	100	85 - 115	10.03	0.0998	20	

The following samples were analyzed in this batch: HS19100916-01

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: **HS19100916**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Houston, US Date: 08-Nov-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 08-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19100916

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100916-01	LH18/24-SP650_101519	Login	10/16/2019 1:33:19 PM	JRM	WET282
HS19100916-01	LH18/24-SP650_101519	Login	10/16/2019 1:33:19 PM	JRM	WET282
HS19100916-01	LH18/24-SP650_101519	Login	10/16/2019 1:33:19 PM	JRM	Sub
HS19100916-02	LH18/24-SP650_101519_AIX	Login	10/16/2019 1:33:19 PM	JRM	Sub

00961909

ALS Houston, US Date: 08-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100916
Date/Time Received: **16-Oct-2019 09:58**
Received by: **AC**

Checklist completed by: *Jared R. Makan* eSignature 16-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 16-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	3.5°C / 3.0°C UC/C	IR11
Cooler(s)/Kit(s):	45313	
Date/Time sample(s) sent to storage:	10/16/2019 13:35	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE	Analyses						Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_101519	Water	10/15/19 / 14:00		2	X	X									H2SO4	
LH18/24-SP650_101519	Water	10/15/19 / 14:00		1			X								NONE	
LH18/24-SP650_101519_AIX	Water	10/15/19 / 14:00		1				X							NONE	

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/15/19	14:30	AC	10/16/19	09:58						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
				AC	10/16/19	09:58	3.5c		

Remarks:

IR# 11
CF-0.5
45313

HS19100916

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant - GWTP Weekly Efflu

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

00961911

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45313

CUSTODY SEAL

Date: 10/15/19 Time: 1130
Name: Scott Beesinger
Company: Bhate

Seal Broken By: 827
Date: 10/16/19

45313 OCT 16 2019

Part # 159469-494 RITE EXP 0919

Must Deliver Next Business Day
Time and Tempature Sensitive!

45313

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 11JUN18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3111
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-RJ

56CC2/93DF/53C1

FedEx Express

J1710161720 1uv

TRK# 0221 4380 9529 9716

RETURNS MON-SAT
PRIORITY OVERNIGHT

FedEx
TRK# 0221 4380 9529 9716

WED - 16 OCT 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

AFID 162785 15OCT19 GGGA 56BC3/2A3C/05A2

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1929701; 1930341

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2308 (250608)

General Set Information: There were two field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 680968) was less than 1/2 the CRDL. The recovery for the LCS (680969) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1929701001 (Client ID: LH18/24-650_101519_BIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (680970/71) percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 680966) is reported from the analysis of the Laboratory Control Sample (LCS – 680969) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch October 25, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: October 25, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1929701**
Project ID: HS19100916-02
Purchase Order: HS19100916-02
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_101519_AIX	1929701001	10/15/19	10/17/19	

ANALYTICAL REPORT

Workorder: 34-1929701
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_101519_AIX**	Sampling Site: NA	Collected: 10/15/2019
Lab ID: 1929701001	Media: 125 mL Nalgene	Received: 10/17/2019
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2308 (HBN: 250608)	**%Solids:** NA
	Analyzed: 10/25/2019 09:08	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 10/25/2019 11:00	/S/ Stephen Brose 10/25/2019 12:45

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1929701
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1929701

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/2308 (HBN: 250608)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 680968
Analyzed: 10/25/2019 08:54
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 680969
Analyzed: 10/25/2019 08:27
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	2.89	3.00	96.4	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1929701001	**MS:**	680970
Analyzed:	10/25/2019 09:08	**Analyzed:**	10/25/2019 09:22
Dilution:	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L

	MSD:	680971
	Analyzed:	10/25/2019 09:36
	Dilution:	1
	Units:	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.6	3	120	78.8	123.8	3.61	120	0.133	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
10/25/2019 11:16	10/25/2019 12:45

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

1929701

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

20796/#1

SAMPLING STATE: **Dept of Defense** **COC ID:** **12411**

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100916
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100916-02**	**LH18/24-SP650_101519_AIX**	**Groundwater**	**15 Oct 2019 14:00**
	SUB_Perch-6850			30 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/16/19 1800

Received By: _____ Date/Time: 10/17/19 09:49

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19100916-02	***Split:***	**Workorder ID:** 1929701	**Level:** ENV_LVL2	**Requested Analysis**	
Client: ALS Environmental (Houston)		**Account:** 8001	**Type:** 125Poly		
Comments:			**Preservatives**		
			COOL		
			Containers		

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6850
1	10/15/2019 14:00	LH18/24-SP650_101519_AIX	1929701001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
VanTassell, Tami	10/17/2019 09:49	ALS Sample Receiving	Sample Login
Tami VanTassell R-33-1	10/17/19 16:50	3D	Storage
	10.24.19/09:00	T. Bosch	CLP analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ **Lab Notebook No.:** _____

Prepared / Analyzed by: _____ **Date / Time:** _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00961919

00961920

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: _____

Date/Time of Receipt: 10/17/19 09:49

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.
1	C19 9913	5 °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: Jaylynn Johnson (Signature) Jaylynn Johnson (Printed Name) 10/17/19 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

00961921

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 158480-404 NET EXP 07/20 **

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 16OCT19
ACTWGT: 11.85 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19100916/933 - RJ/BF

551C3/2B3C/104C

FedEx Express

J131118060501UV

THU - 17 OCT 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0290 7148

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2308 **Created:** 10/25/2019 07:39 **Instrument:** **HBN:** 250608

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1929701 [ENV_LVL4]

Workorder: 1930341 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	680965	CCV for HBN 250608 [ELMS/2308]				CCV	3		E685041C3Q	5311		10/31/2019	
2	680966	RLVS for HBN 250608 [ELMS/2308				RLVS	3		E685041C3Q	5311		10/31/2019	
3	680967	ICS for HBN 250608 [ELMS/2308]				ICS	3		E6850..D3Q	5311		10/31/2019	
4	680968	LMB for HBN 250608 [ELMS/2308]				LMB	3		E6850Q413Q	5311		10/31/2019	
5	680969	LCS for HBN 250608 [ELMS/2308]				LCS	3		E6850Q413Q	5311		10/31/2019	
6	1929701001	LH18/24-SP650_101519_AIX				SAMPLE	3	1929701001-A	E6850Q41.3	5480	11/12/2019	10/31/2019	
7	680970	LH18/24-SP650...(1929701001MS)				MS	3		E6850Q413Q	5311		10/31/2019	
8	680971	LH18/24-SP65...(1929701001MSD)				MSD	3		E6850Q413Q	5311		10/31/2019	
9	1930341001	LH18/24-SP650_102219_AIX				SAMPLE	3	1930341001-A	E6850Q41.3	5480	11/19/2019	11/6/2019	
10	680972	CCV for HBN 250608 [ELMS/2308]				CCV	3		E685041C3Q	5311		10/31/2019	

00961922

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1929701 (001); 1930341 (001)
ELMS Batch/HBN ID: 2308 (250608)
Prep Date: 10/25/2019 Analysis Date: 10/25/2019 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\25OCT19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Thomas Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 680969; Target = 3.0µg/L. ASTM type II water was used for LMB 680968.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1929701001 (Client ID's: LH18/24-650_101519_BIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\250608-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 680966) is reported from the analysis of the Laboratory Control Sample (LCS – 680969) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2308 HBN: 250608 **Sample Set IDs if Applicable:** 1929701 / 1930341	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard:	**49946**	**Created By:**	Thomas Bosch	**Amount:**	25 mL
MFG:	ALS/SLC	**Create Date:**	09/23/2019 03:09PM	**Expires:**	09/19/2020
MFG Lot:	TNB: 09/20/2019	**Verified By:**	Thomas Bosch	**Usable:**	Yes
Pipette ID:	Not Provided	**Verify Date:**		**Lab Lot:**	CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 43659
MFG: AccuStandard
MFG Lot: 218065075
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 09/17/2018 09:09AM

Amount: 100 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 49947
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/23/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 47516
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 47515
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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New Haven, CT 06513
USA

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CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

AccuStandard

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

250 SMITH STREET • NORTH KINGSTOWN, RHODE ISLAND 02852 • WWW.ULTRASCI.COM

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO GUIDE 34 ISO 17025 ISO 9001

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

Cambridge Isotope Laboratories, Inc. Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification: ≥98%

MW*: 130.44
** For isotopically labeled compounds, MW listed is for the fully enriched product.*

$NaCl^{18}O_4$

Labeled CAS Number: NA

Unlabeled CAS Number: 7601-89-0

Chemical Formula: NaCl*O4

Storage: Store at room temperature away from light and moisture.
Stability: See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\25OCT19D\25OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	680965 CCV@25	Vial 71	1	Control	1	1.70329e6	7.510	26.49286
*	680969 QC@3.0	Vial 72	1	Control	2	2.05604e5	7.555	2.89284
*	680967 ICS@3.0	Vial 73	1	Control	3	1.48340e5	7.334	2.99490
*	680968 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1929701001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	680970 297011S	Vial 76	1	Sample	6	2.01808e5	7.254	3.60041
*	680971 297011D	Vial 77	1	Sample	7	2.03980e5	7.245	3.60518
*	1930341001	Vial 78	1	Sample	8	9.10986e4	7.269	1.72118
*	680972 CCV@25	Vial 71	1	Control	9	1.58706e6	7.598	26.42773

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	680965 CCV@25	Vial 71	1	Control	1	2.18335e5	7.538	5.00000
*	680969 QC@3.0	Vial 72	1	Control	2	2.61379e5	7.582	5.00000
*	680967 ICS@3.0	Vial 73	1	Control	3	1.82243e5	7.366	5.00000
*	680968 LMB	Vial 74	1	Control	4	2.15449e5	7.630	5.00000
*	1929701001	Vial 75	1	Sample	5	2.19155e5	7.261	5.00000
*	680970 297011S	Vial 76	1	Sample	6	2.06599e5	7.272	5.00000
*	680971 297011D	Vial 77	1	Sample	7	2.08548e5	7.261	5.00000
*	1930341001	Vial 78	1	Sample	8	1.92027e5	7.290	5.00000
*	680972 CCV@25	Vial 71	1	Control	9	2.03992e5	7.612	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	680965 CCV@25	Vial 71	1	Control	1	5.10799e5	7.525	26.10720
*	680969 QC@3.0	Vial 72	1	Control	2	6.93562e4	7.573	3.11266
*	680967 ICS@3.0	Vial 73	1	Control	3	5.28908e4	7.365	3.41539
*	680968 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1929701001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	680970 297011S	Vial 76	1	Sample	6	6.74461e4	7.253	3.85499
*	680971 297011D	Vial 77	1	Sample	7	7.03063e4	7.264	3.98404
*	1930341001	Vial 78	1	Sample	8	3.36624e4	7.283	2.01009
*	680972 CCV@25	Vial 71	1	Control	9	4.81945e5	7.623	26.34139

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\25OCT19D.S

Sequence Table:

Method and Injection Info Part:

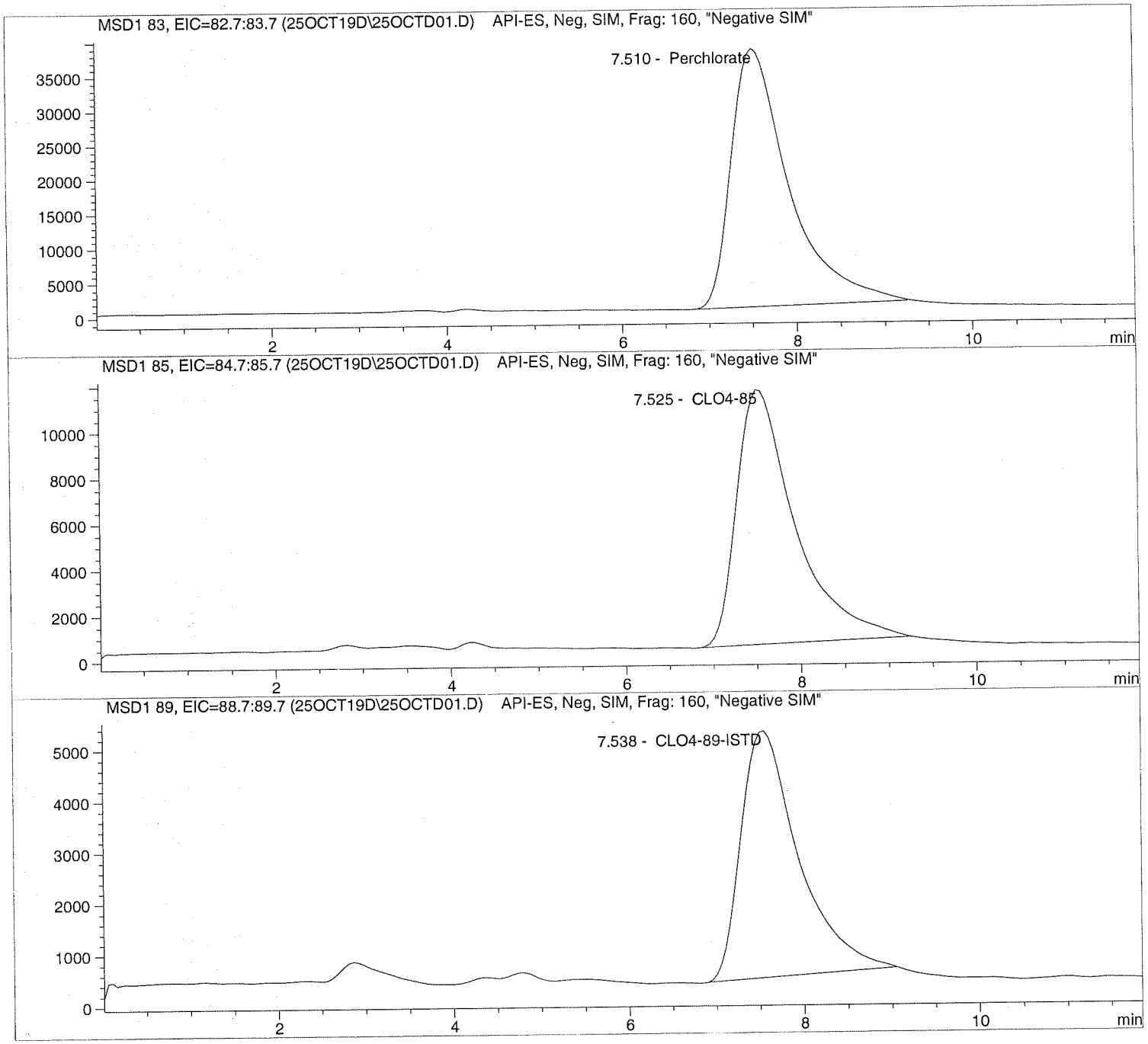
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	680965	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	680969	QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	680967	ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	680968	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1929701001		CLO4-AQN	1	Sample		
6	Vial 76	680970	297011S	CLO4-AQN	1	Sample		
7	Vial 77	680971	297011D	CLO4-AQN	1	Sample		
8	Vial 78	1930341001		CLO4-AQN	1	Sample		
9	Vial 71	680972	CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD01.D Sample Name: 680965 CCV@25

Injection Date:	10/25/2019 08:12:20	Seq Line:	1
Sample Name:	680965 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD01.D Sample Name: 680965 CCV@25

Injection Date:	10/25/2019 08:12:20	Seq Line:	1
Sample Name:	680965 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.510	PBA	1703287.4	26.4929	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.525	PBA	510798.5	26.1072	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.538	PBA	218334.9	5.0000	CLO4-89-ISTD

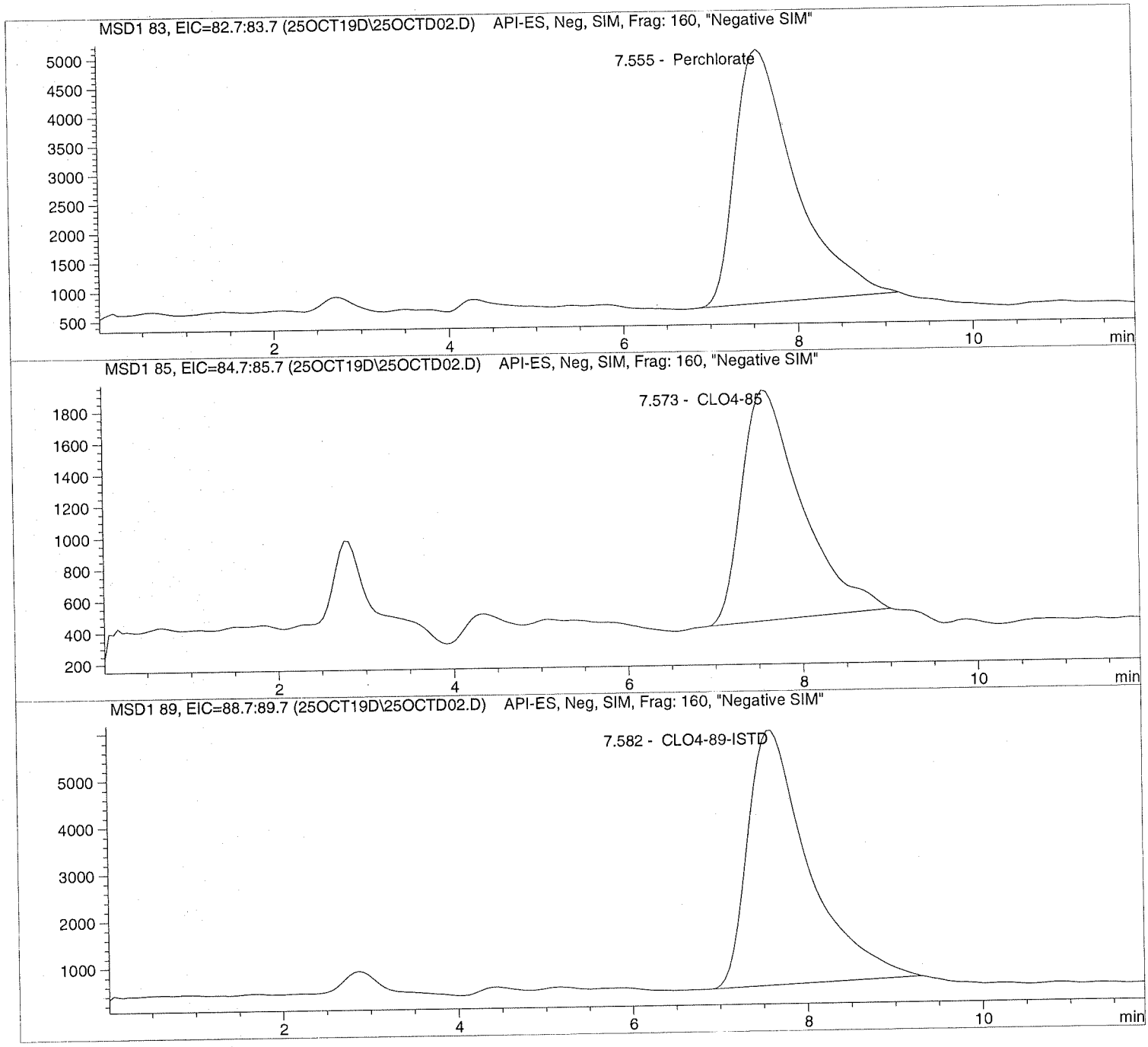
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD02.D Sample Name: 680969 QC@3.0

Injection Date:	10/25/2019 08:27:07	Seq Line:	2
Sample Name:	680969 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD02.D Sample Name: 680969 QC@3.0

Injection Date:	10/25/2019 08:27:07	Seq Line:	2
Sample Name:	680969 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.555	PBA	205604.3	2.8928	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.573	PBA	69356.2	3.1127	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.582	PBA	261379.1	5.0000	CLO4-89-ISTD

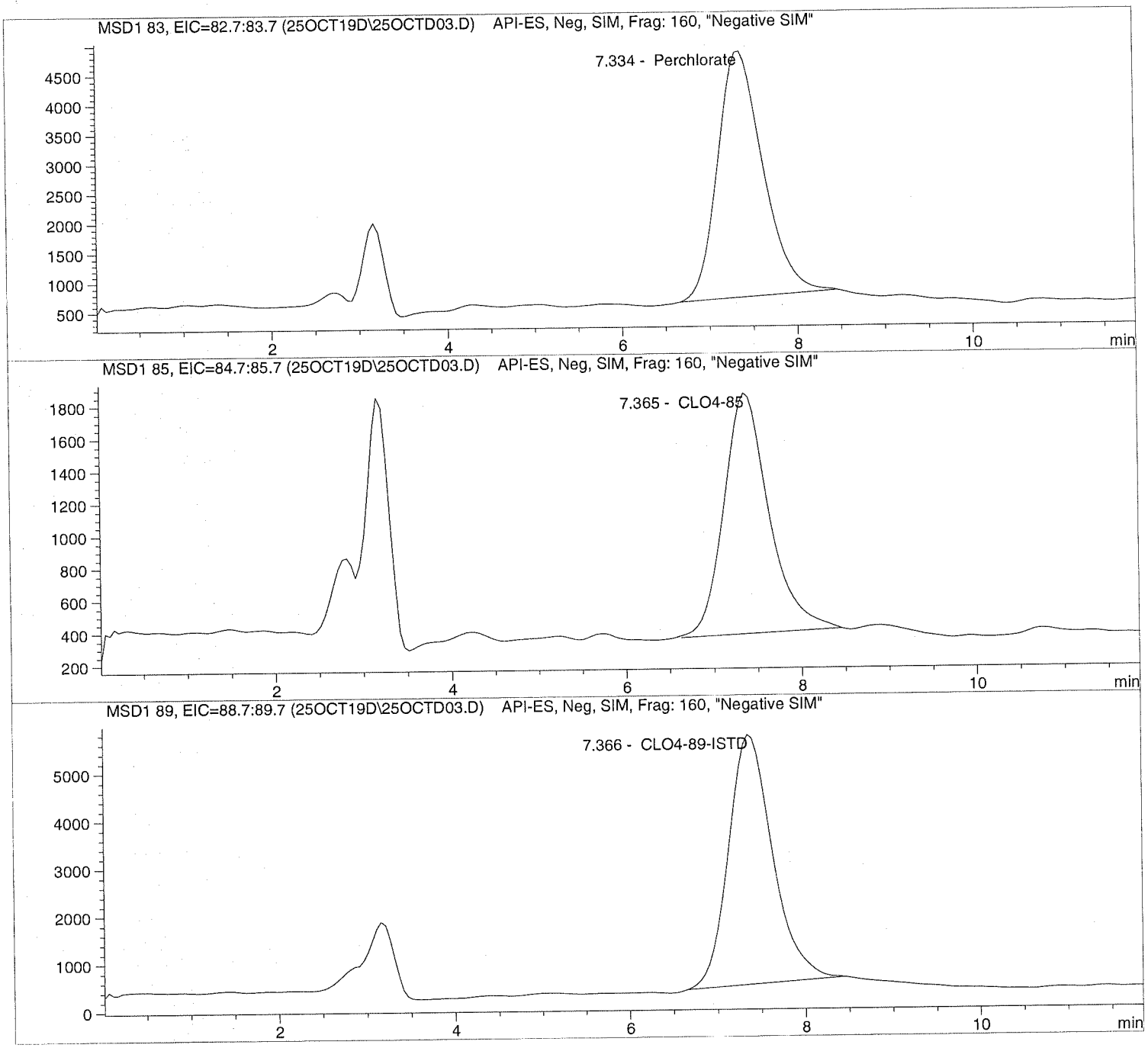
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD03.D Sample Name: 680967 ICS@3.0

Injection Date:	10/25/2019 08:41:01	Seq Line:	3
Sample Name:	680967 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD03.D Sample Name: 680967 ICS@3.0

Injection Date:	10/25/2019 08:41:01	Seq Line:	3
Sample Name:	680967 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.334	PBA	148340.2	2.9949	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.365	PBA	52890.8	3.4154	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.366	PBA	182242.7	5.0000	CLO4-89-ISTD

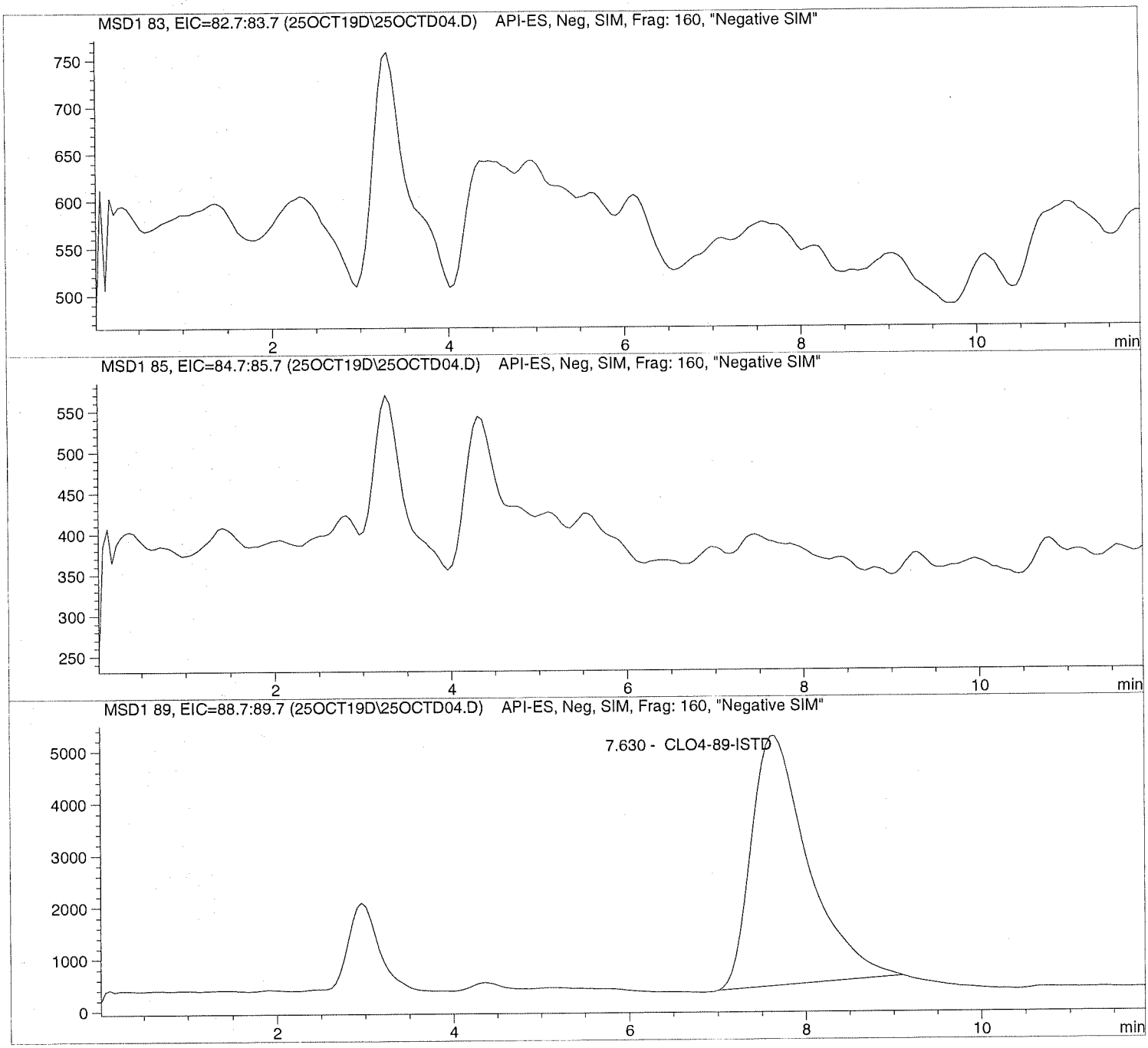
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD04.D Sample Name: 680968 LMB

Injection Date:	10/25/2019 08:54:59	Seq Line:	4
Sample Name:	680968 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD04.D Sample Name: 680968 LMB

Injection Date:	10/25/2019 08:54:59	Seq Line:	4
Sample Name:	680968 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.630	PBA	215449.3	5.0000	CLO4-89-ISTD

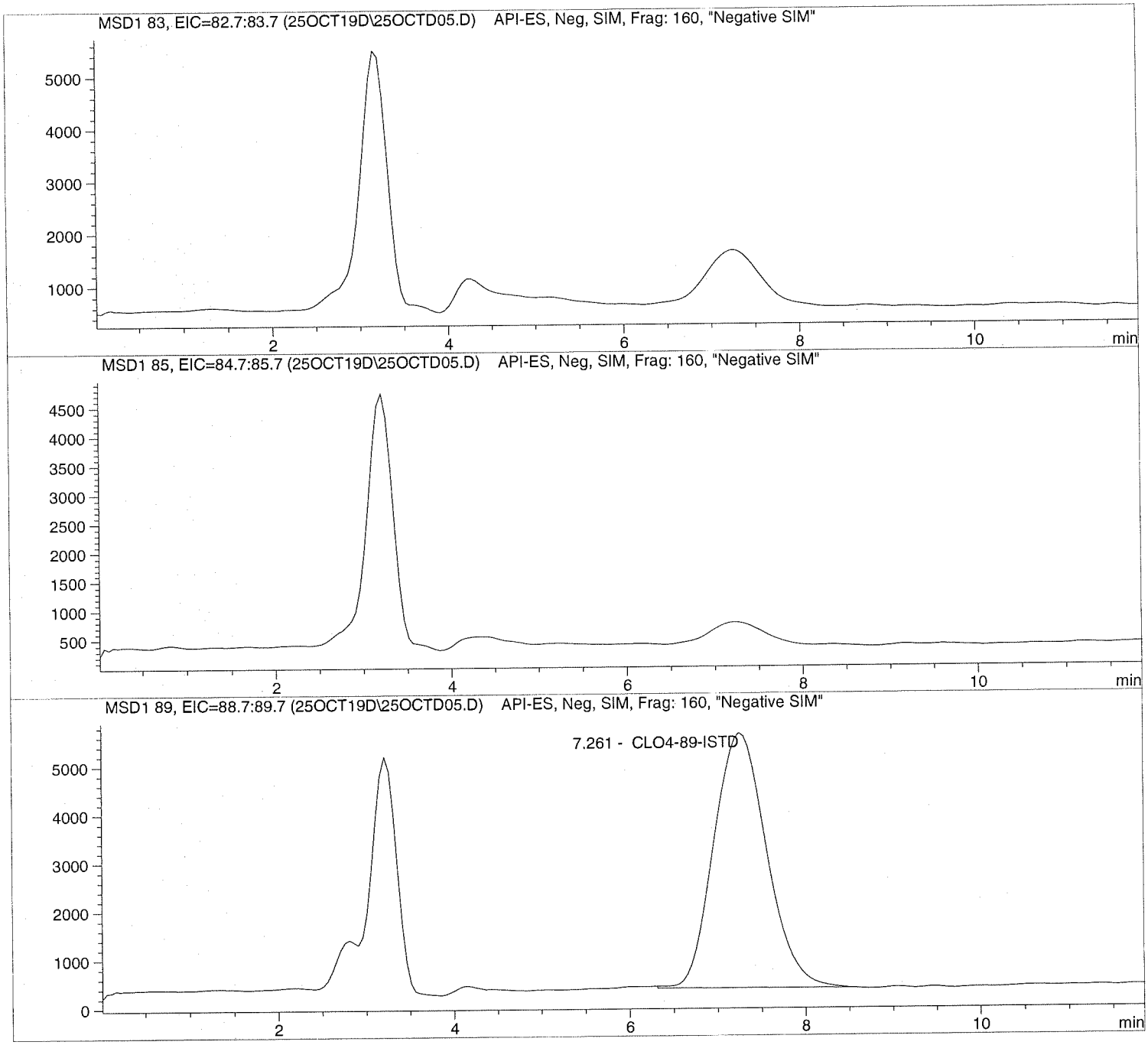
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD05.D Sample Name: 1929701001

Injection Date:	10/25/2019 09:08:55	Seq Line:	5
Sample Name:	1929701001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD05.D Sample Name: 1929701001

Injection Date:	10/25/2019 09:08:55	Seq Line:	5
Sample Name:	1929701001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.261	BBA	219155.0	5.0000	CLO4-89-ISTD

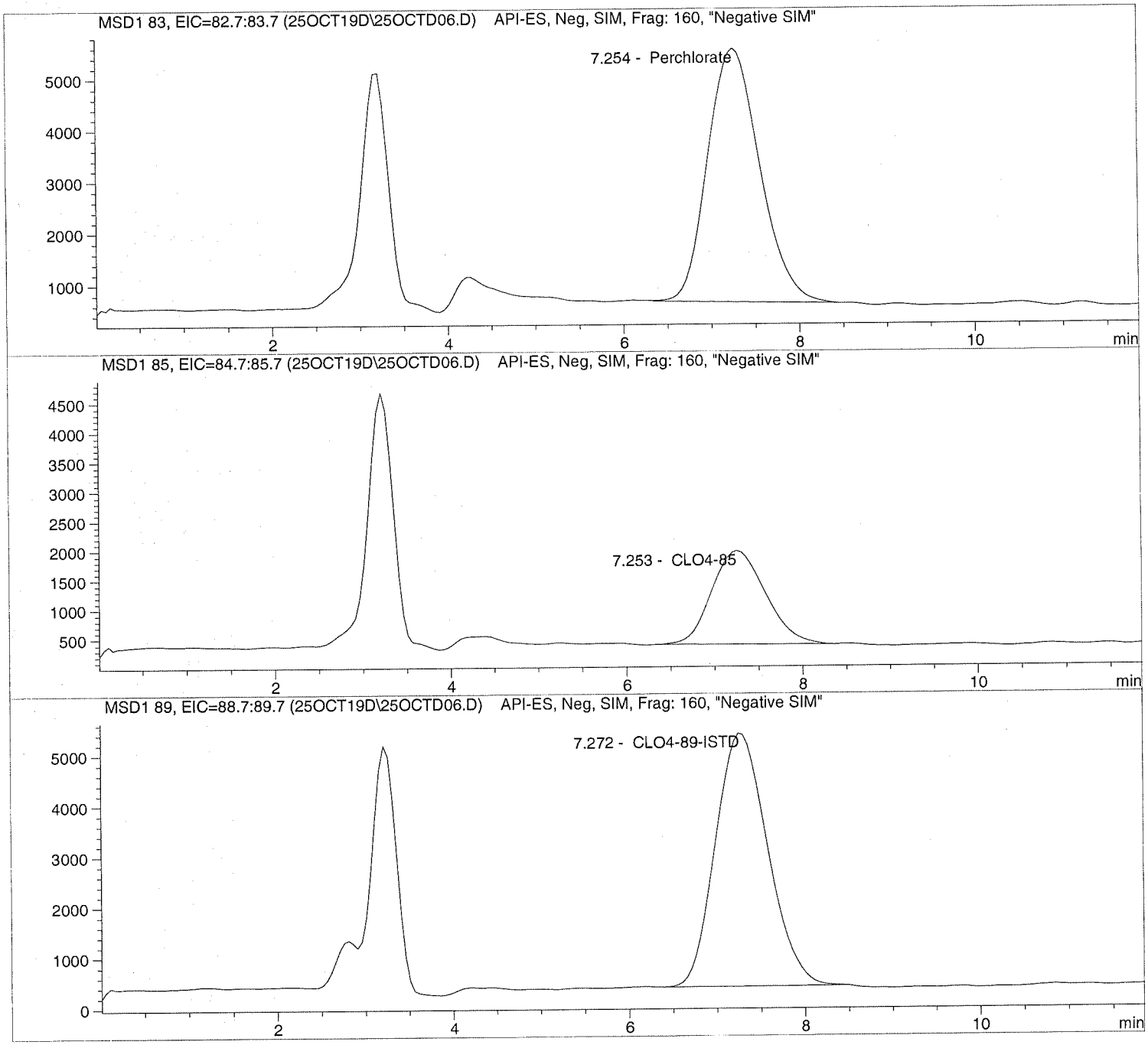
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD06.D Sample Name: 680970 297011S

Injection Date:	10/25/2019 09:22:50	Seq Line:	6
Sample Name:	680970 297011S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD06.D Sample Name: 680970 297011S

Injection Date:	10/25/2019 09:22:50	Seq Line:	6
Sample Name:	680970 297011S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.254	BBA	201808.5	3.6004	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.253	PBA	67446.1	3.8550	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.272	BBA	206599.3	5.0000	CLO4-89-ISTD

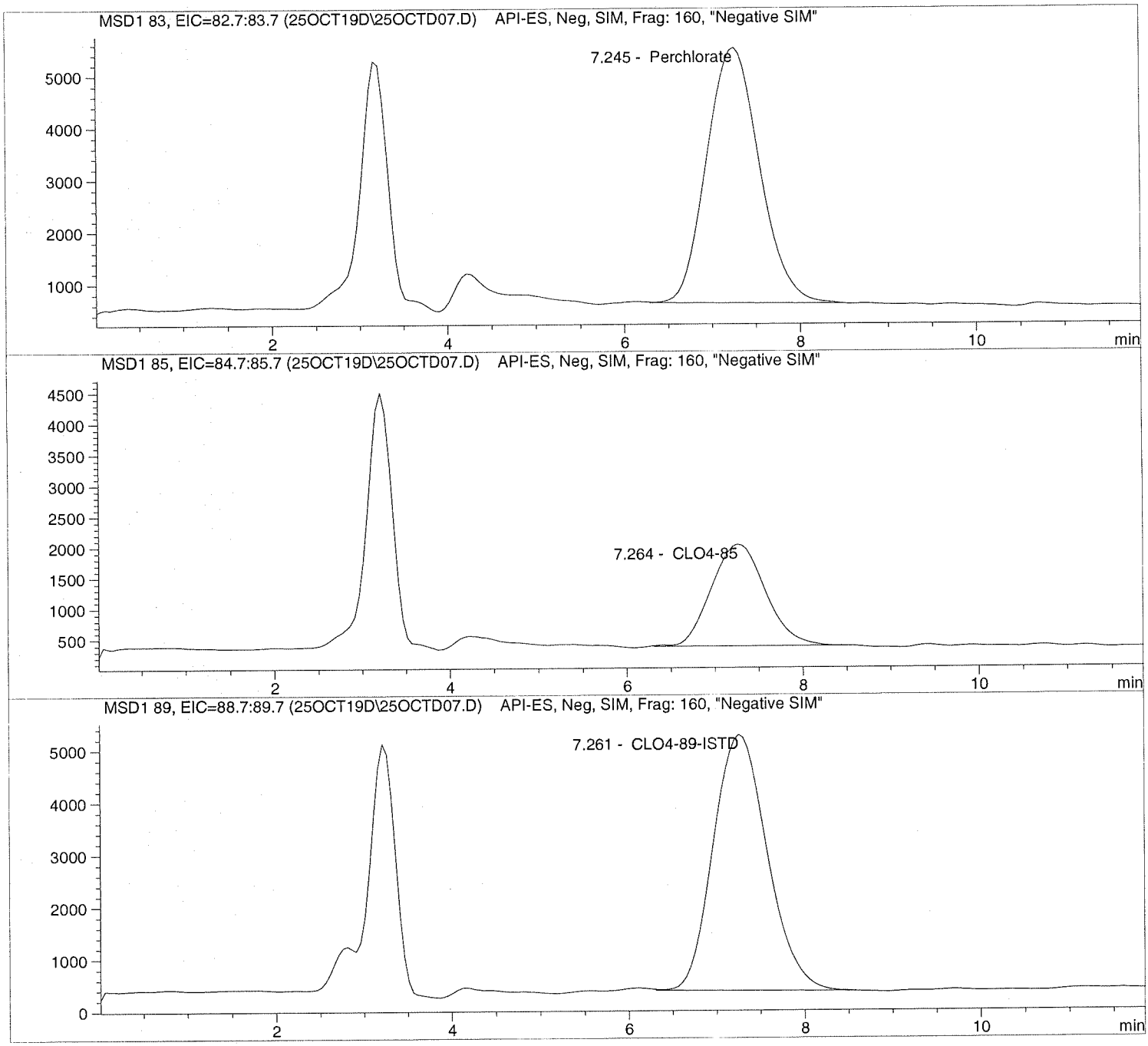
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD07.D Sample Name: 680971 297011D

Injection Date:	10/25/2019 09:36:45	Seq Line:	7
Sample Name:	680971 297011D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD07.D Sample Name: 680971 297011D

Injection Date:	10/25/2019 09:36:45	Seq Line:	7
Sample Name:	680971 297011D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.245	BBA	203980.5	3.6052	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.264	PBA	70306.3	3.9840	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.261	BBA	208548.1	5.0000	CLO4-89-ISTD

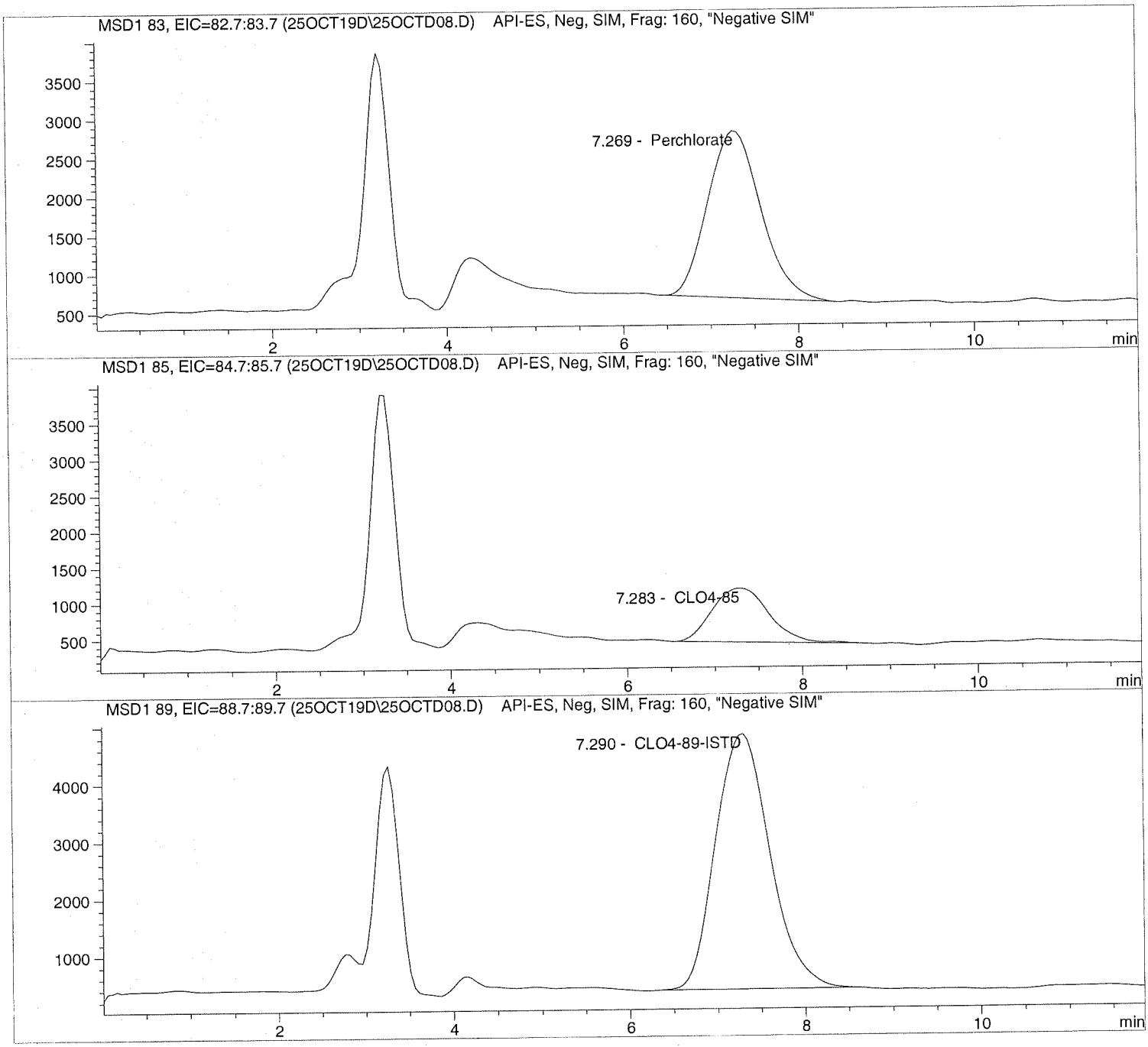
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD08.D Sample Name: 1930341001

Injection Date:	10/25/2019 09:50:39	Seq Line:	8
Sample Name:	1930341001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD08.D Sample Name: 1930341001

Injection Date:	10/25/2019 09:50:39	Seq Line:	8
Sample Name:	1930341001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.269	PBA	91098.6	1.7212	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.283	PBA	33662.4	2.0101	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	192027.2	5.0000	CLO4-89-ISTD

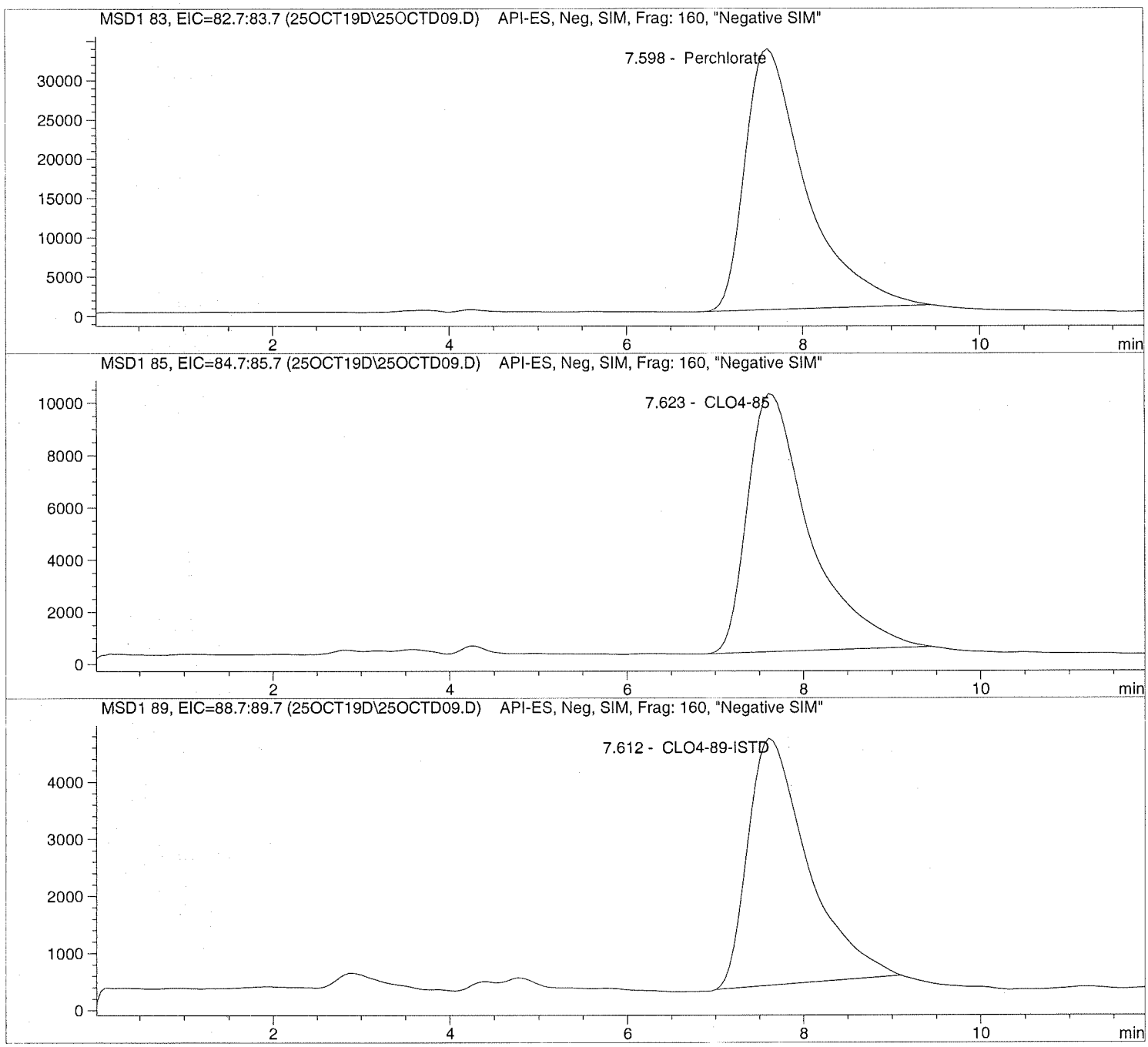
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD09.D Sample Name: 680972 CCV@25

Injection Date:	10/25/2019 10:04:36	Seq Line:	9
Sample Name:	680972 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD09.D Sample Name: 680972 CCV@25

Injection Date:	10/25/2019 10:04:36	Seq Line:	9
Sample Name:	680972 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.598	PBA	1587056.3	26.4277	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.623	PBA	481944.9	26.3414	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.612	PBA	203991.8	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

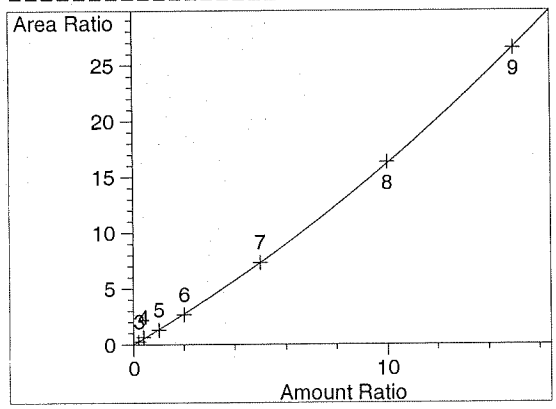
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

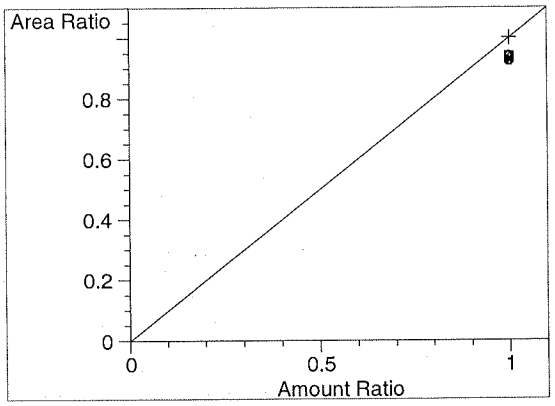
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

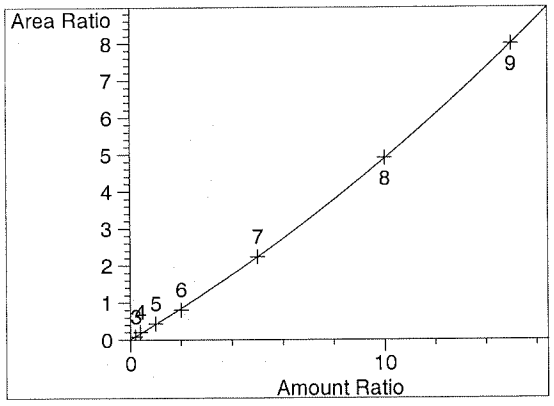
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

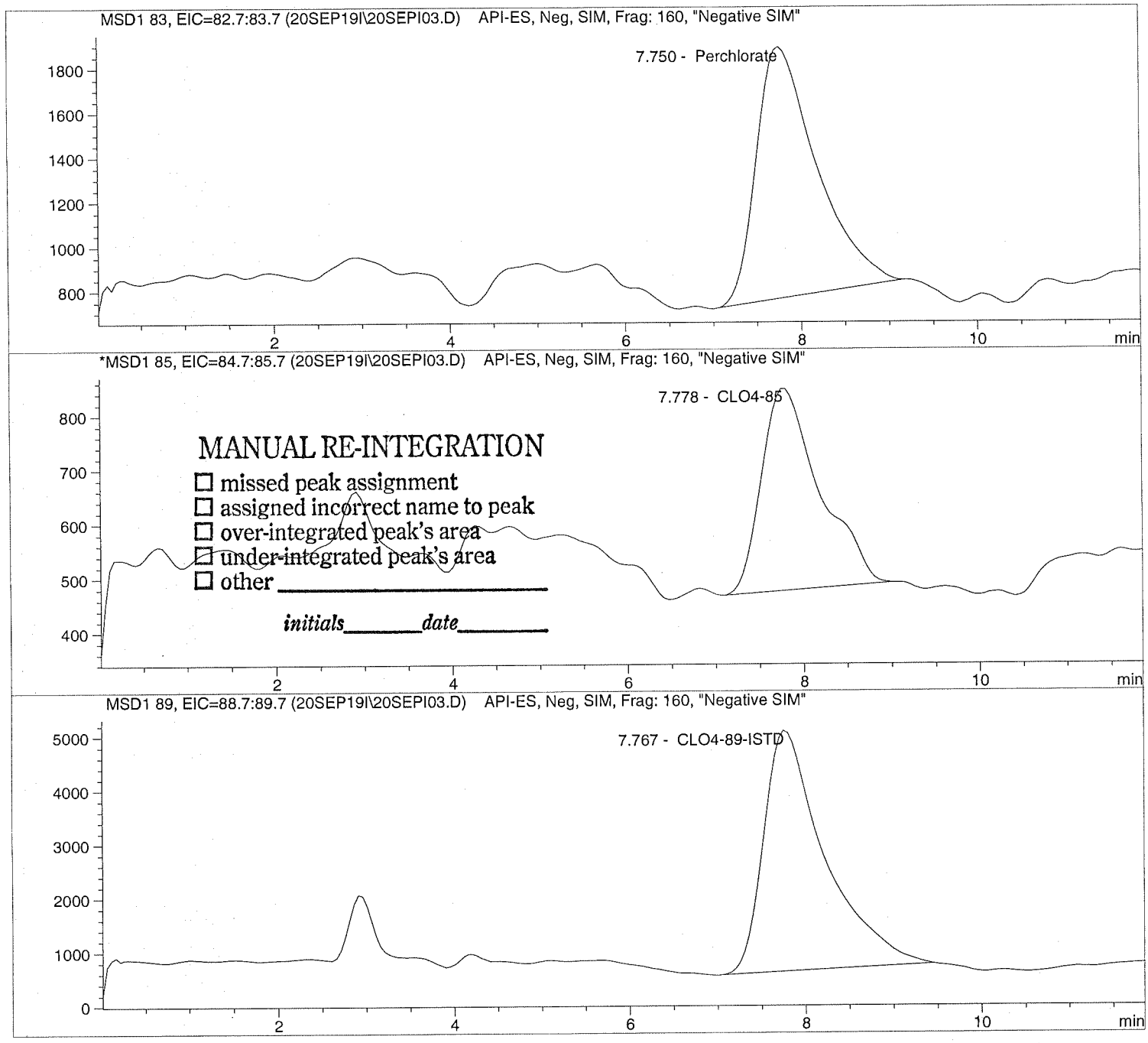
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

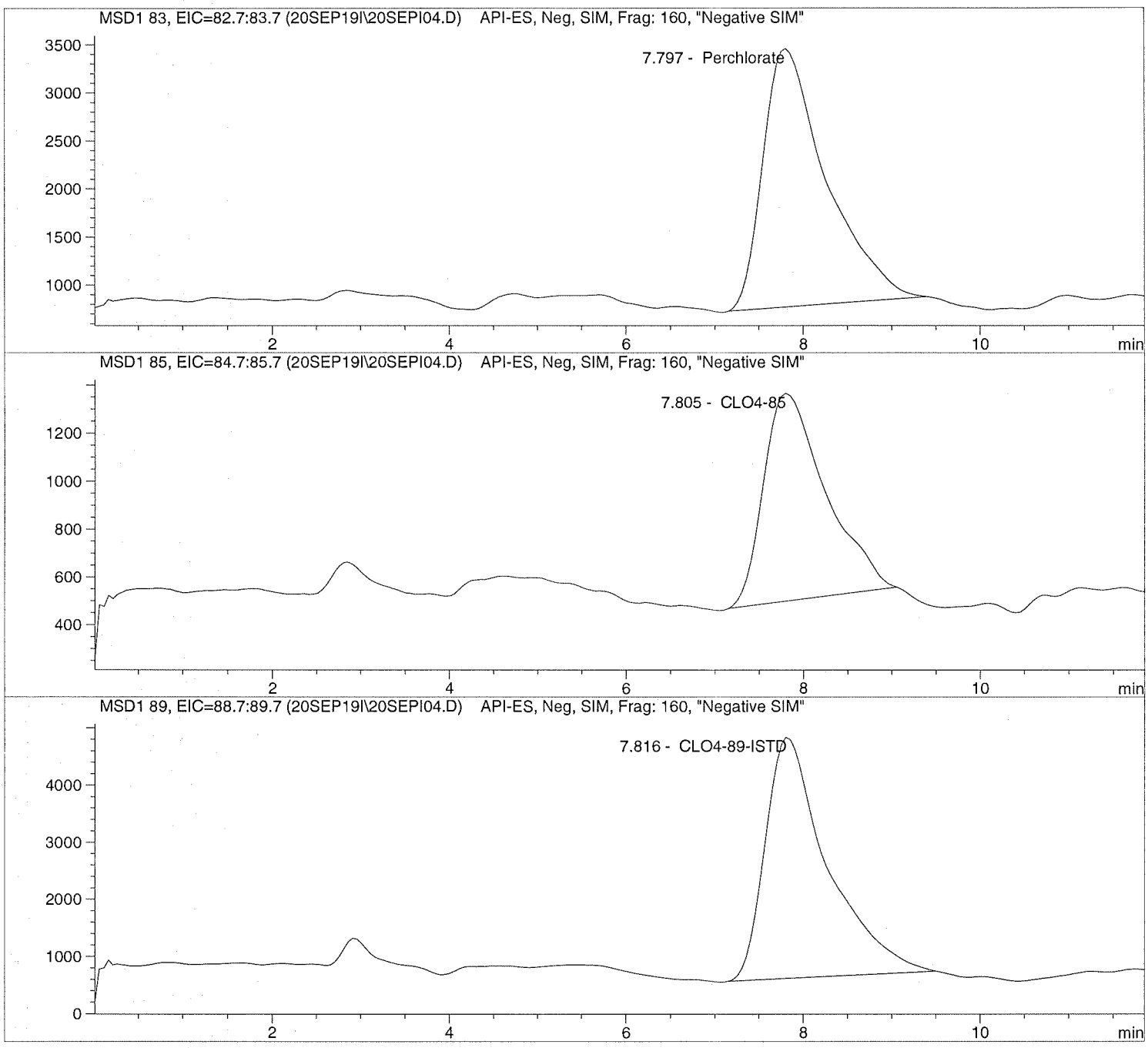
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

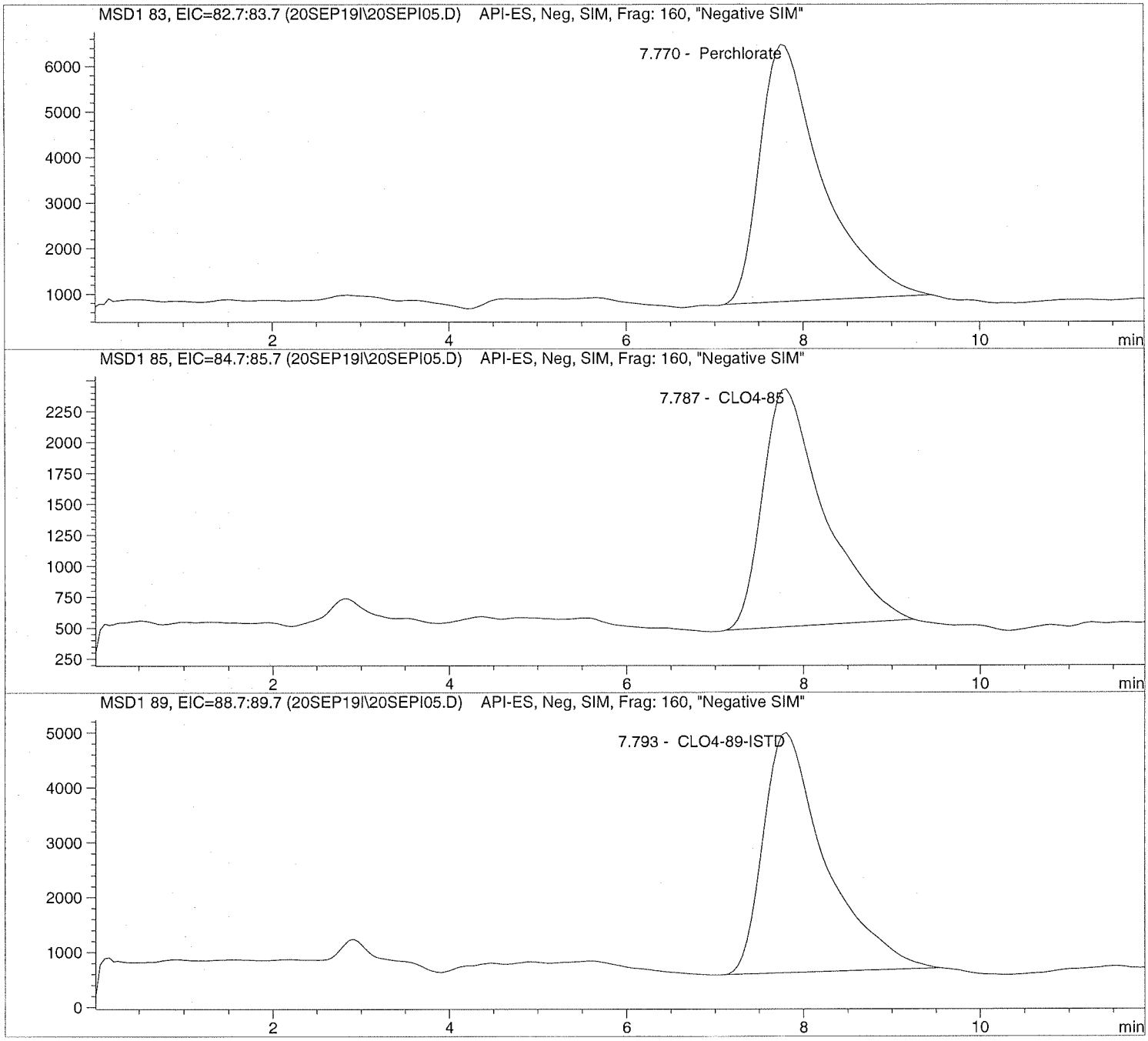
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

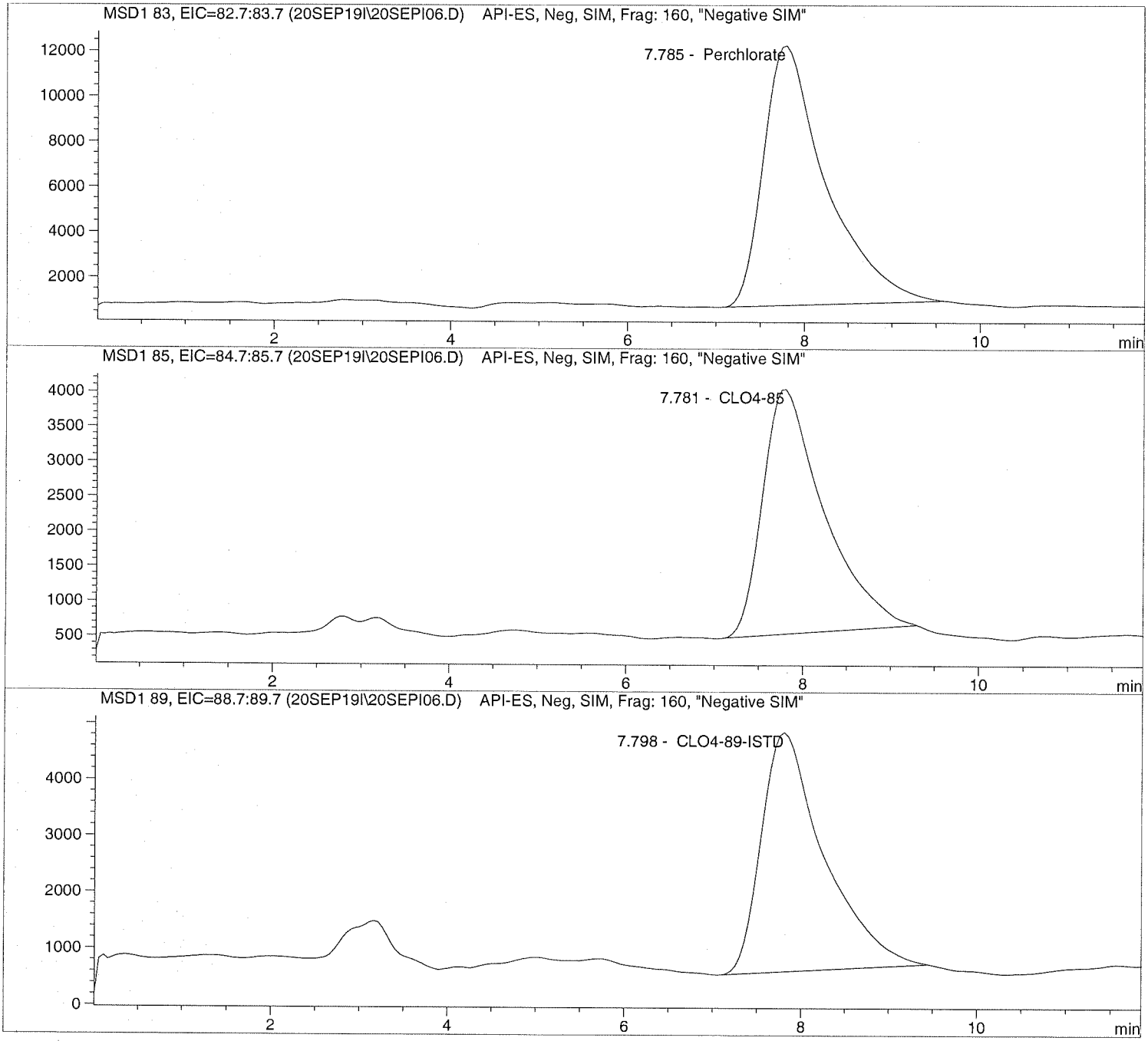
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

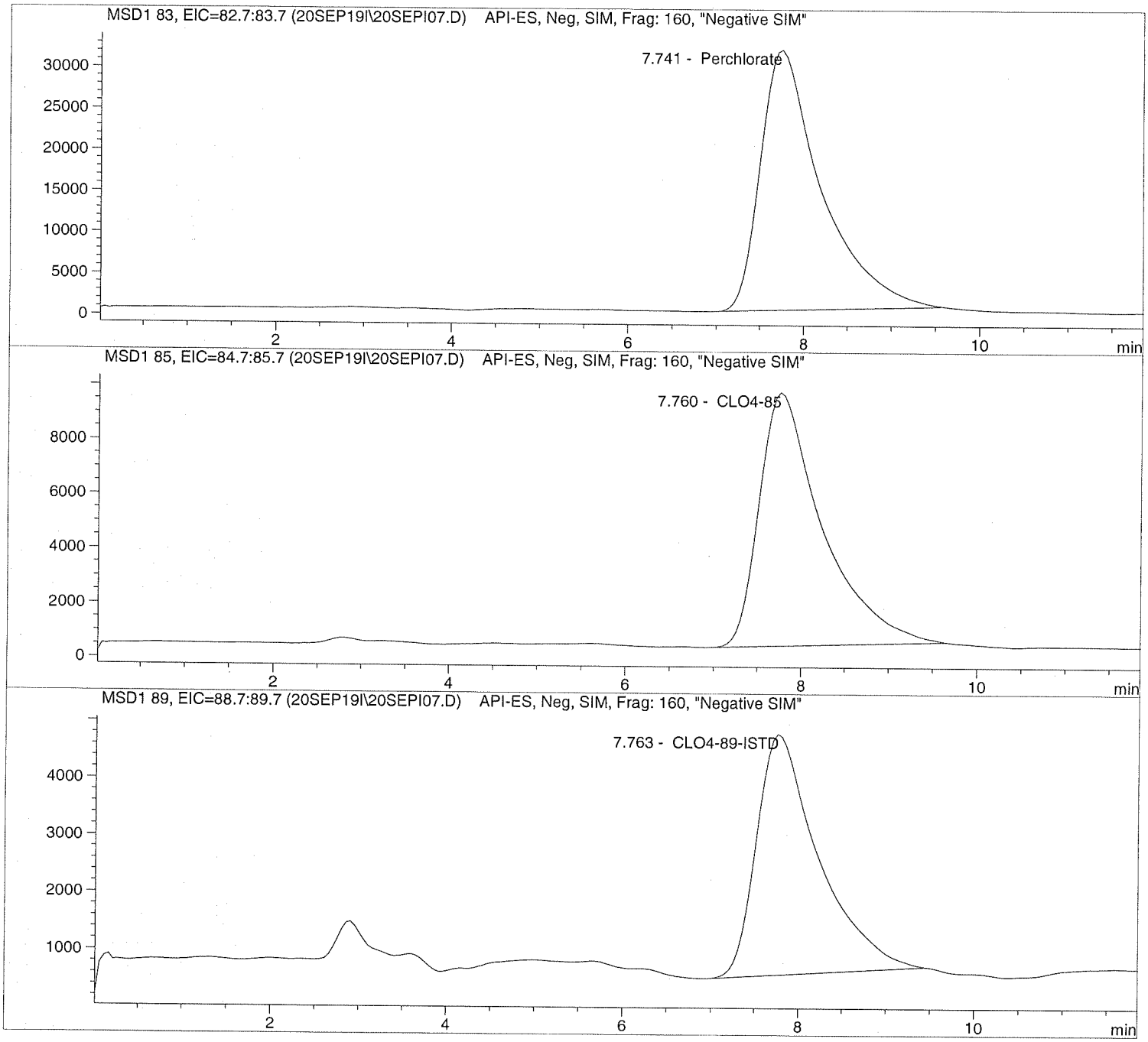
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

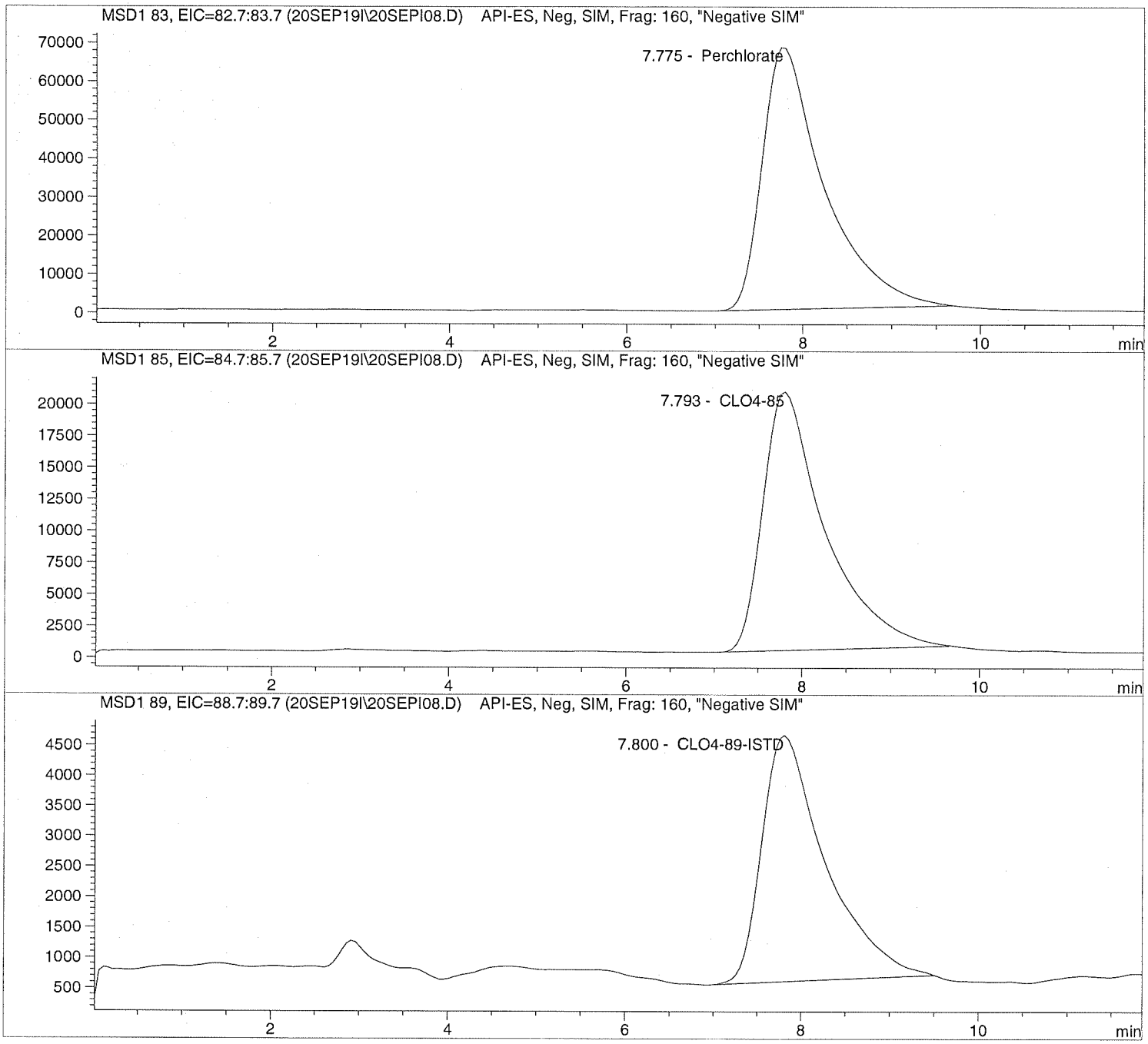
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

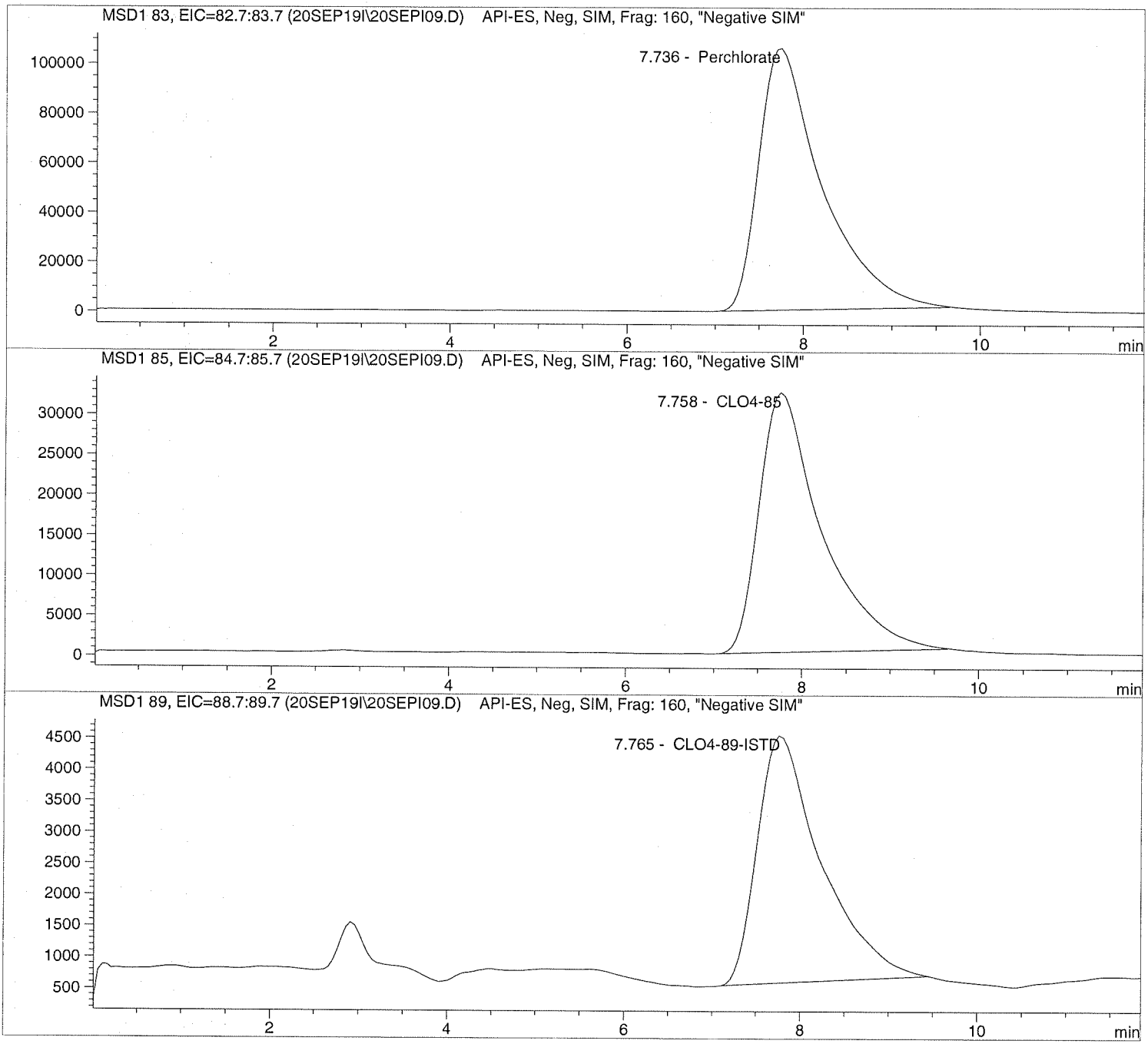
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

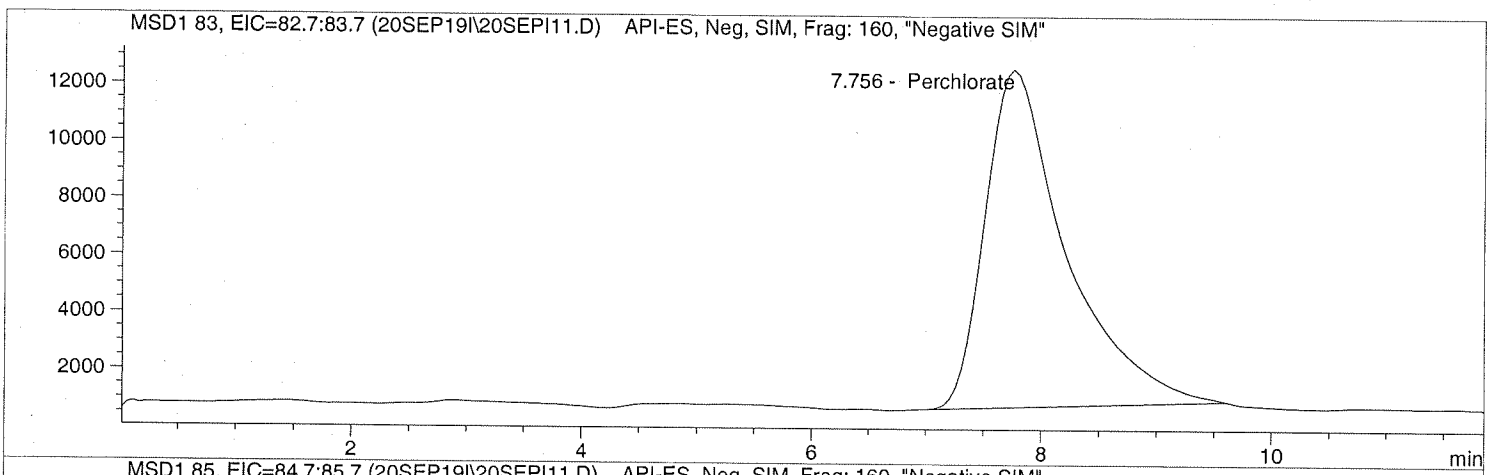
*** End of Report ***

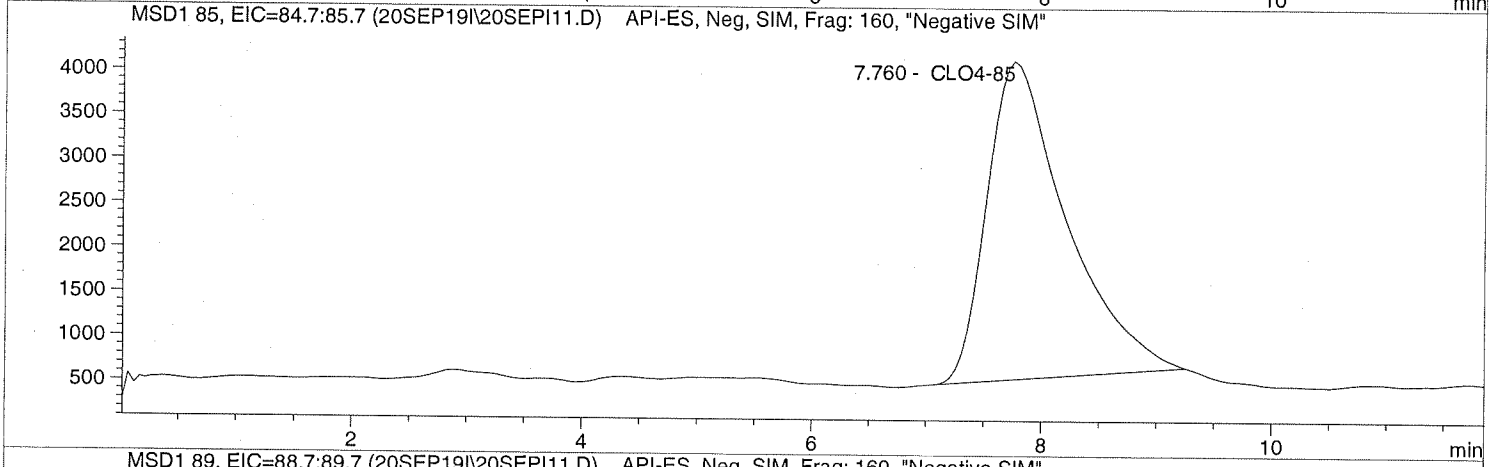
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

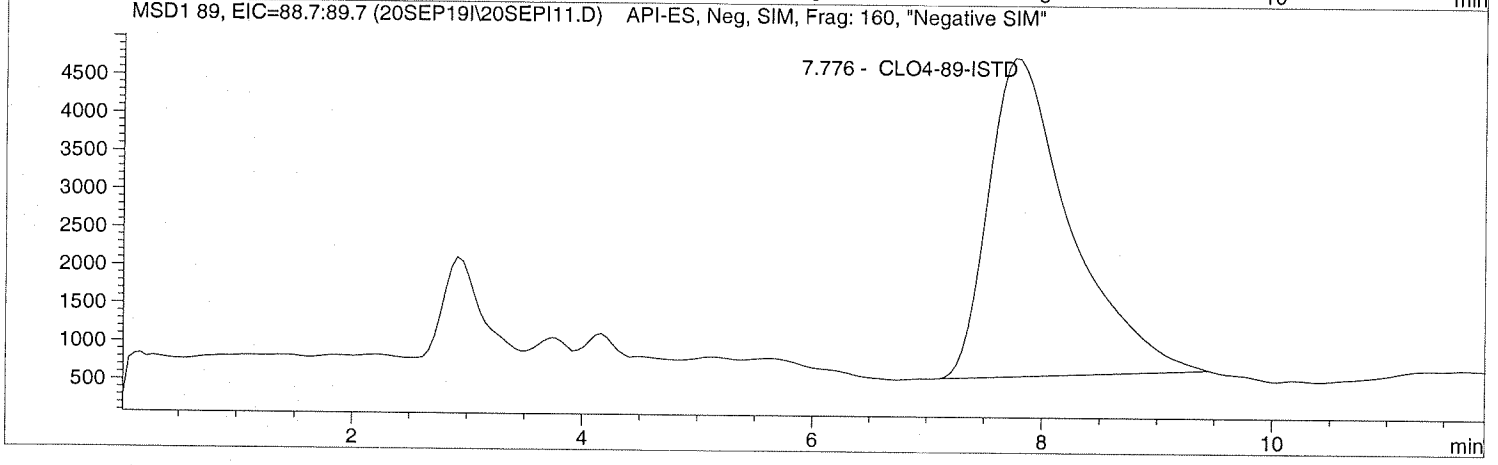
Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

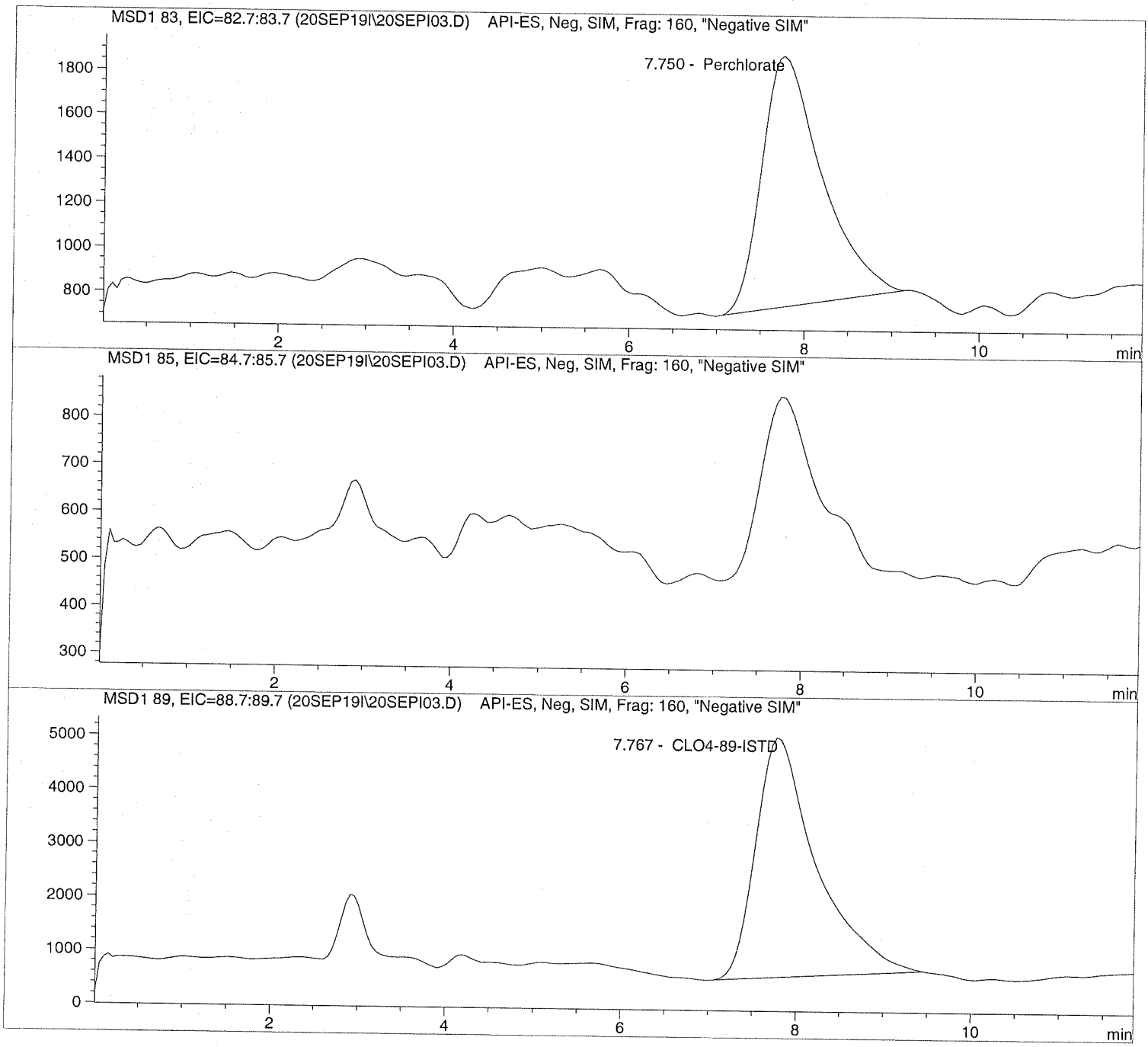
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Environmental
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www.alsglobal.com

October 28, 2019

Analytical Report for Service Re uest No: K1909742

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: ALS Houston DOD TOC HS19100916

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory October 17, 2019
For your reference, these analyses have been assigned our service request number **K1909742.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Water

Service Request: K1909742
Date Received: 10/17/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 10/17/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 10/28/2019

Chain of Custody

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K1909742

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Houston, TX 77099
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www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12410**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19100916
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19100916-01**	**LH18/24-SP650_101519**	**Groundwater**	**15 Oct 2019 14:00**
	TOC Analysis for DOD Level IV			30 Oct 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Mussmann Date/Time: 10/16/19 18:00

Received By: ALS Date/Time: 10/17/19 0930

Cooler ID(s): Temperature(s):

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request *K19* 09742

Received: 10/17/19 Opened: 10/17/19 By: [signature] Unloaded: 10/17/19 By: [signature]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.2	-0.1	/	/	+0.1	379	12410	1251 0290 7160	

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1909742
Project:	ALS Houston DOD TOC/HS19100916	**Date Collected:**	10/15/19
Sample Matrix:	Water	**Date Received:**	10/17/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_101519	K1909742-001	**1.30**	0.50	0.20	0.07	1	10/23/19 23:02	
Method Blank	K1909742-MB	ND U	0.50	0.20	0.07	1	10/23/19 17:33	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1909742
Project	ALS Houston DOD TOC/HS19100916	**Date Collected:**	10/15/19
Sample Matrix:	Water	**Date Received:**	10/17/19
		Date Analyzed:	10/23/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_101519	**Units:**	mg/L
Lab Code:	K1909742-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1909742-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	1.30	1.30	1.30	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1909742
Project:	ALS Houston DOD TOC/HS19100916	**Date Analyzed:**	10/23/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	656845

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1909742-LCS	24.9	25.0	100	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1909742
Project: ALS Houston DOD TOC/HS19100916

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	656845	KQ1915679-01	10/23/19 17:04	25.0	25.0	100	90-110
CCV2	656845	KQ1915679-02	10/23/19 20:40	25.0	24.0	96	90-110
CCV3	656845	KQ1915679-03	10/24/19 01:23	25.0	23.9	96	90-110
CCV4	656845	KQ1915679-04	10/24/19 05:39	25.0	23.1	92	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1909742
Project: ALS Houston DOD TOC/HS19100916

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	656845	KQ1915679-05	10/23/19 17:18	0.50	0.20	0.07	ND	U
CCB2	656845	KQ1915679-06	10/23/19 20:54	0.50	0.20	0.07	ND	U
CCB3	656845	KQ1915679-07	10/24/19 01:37	0.50	0.20	0.07	ND	U
CCB4	656845	KQ1915679-08	10/24/19 05:54	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # (Original) K1909842, 9752, 9830 / K1909133, 9159, 9469, 9579, 9646, 9688, 9711, 9742, 9791, 9794, 9800, 9568, 9822, 9850, 9872, 9627, 9863

Tier: I / IV / I / IV / II / IV / II / I / II / I / I / IV / II / II / II / II / II / II / I / I

Date Analyzed: 10/23/19

Analyst: BCD

Run # DOC: 656847, 656849 / TOC: 656845, 656846

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K1909800-1/2dup sent for reanalysis due to being above calibration.
K1909794-1/1dup report a high %RSD due to non-homogenous sample.
K1909627-2/2dup sent for reanalysis due to being overdiluted.
K1909627-1/1dup, 9850-3/3dup report a high %RSD. However these samples are less than 5x the MCL.

Final Approved by: [signature] Date: 10/28/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656845 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909133-006	Carbon, Total Organic	N/A		Water	12.57 mg/L	10 mL	126 mg/L	10	0.7	5.0			10/23/19 19:15:00	N	II
K1909159-002	Carbon, Total Organic	N/A		Water	6.02 mg/L	10 mL	60.2 mg/L	10	0.7	5.0			10/23/19 19:43:00	N	IV
K1909159-004	Carbon, Total Organic	N/A		Water	4.94 mg/L	10 mL	247 mg/L	50	4	25			10/23/19 20:11:00	N	IV
K1909469-002	Carbon, Total Organic	N/A		Drinking Water	0.35 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 21:09:00	N	II
K1909579-001	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 18:46:00	N	I
K1909579-002	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 19:01:00	N	I
K1909646-001	Carbon, Total Organic	N/A		Ground Water	14.26 mg/L	10 mL	14.3 mg/L	1	0.07	0.50			10/24/19 02:21:00	N	II
K1909646-003	Carbon, Total Organic	N/A		Ground Water	2.62 mg/L	10 mL	26.2 mg/L	10	0.7	5.0			10/24/19 02:49:00	N	II
K1909688-003	Carbon, Total Organic	N/A		Drinking Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50			10/23/19 22:06:00	N	I
K1909688-004	Carbon, Total Organic	N/A		Drinking Water	0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 22:34:00	N	I
K1909711-001	Carbon, Total Organic	N/A		Water	18.64 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			10/24/19 03:17:00	N	I
K1909742-001	Carbon, Total Organic	N/A		Water	1.30 mg/L	10 mL	1.30 mg/L	1	0.07	0.50			10/23/19 23:02:00	N	IV
K1909791-001	Carbon, Total Organic	N/A		Water	30.71 mg/L	10 mL	30.7 mg/L	1	0.07	0.50			10/24/19 00:26:00	N	II
K1909794-001	Carbon, Total Organic	N/A		Water	3.01 mg/L	10 mL	3.01 mg/L	1	0.07	0.50			10/24/19 00:54:00	N	II
K1909800-001	Carbon, Total Organic	N/A		Water	19.96 mg/L	10 mL	20.0 mg/L	1	0.07	0.50			10/23/19 23:30:00	N	II
K1909800-002.R01	Carbon, Total Organic	N/A		Water	133.90 mg/L	10 mL	134 mg/L	1	0.07	0.50			10/23/19 23:58:00	N	II
KQ1915679-01	Carbon, Total Organic	CCV		Water	24.95 mg/L	10 mL	25.0 mg/L	1					10/23/19 17:04:00	N	I
KQ1915679-02	Carbon, Total Organic	CCV		Water	24.01 mg/L	10 mL	24.0 mg/L	1					10/23/19 20:40:00	N	I
KQ1915679-03	Carbon, Total Organic	CCV		Water	23.89 mg/L	10 mL	23.9 mg/L	1					10/24/19 01:23:00	N	I
KQ1915679-04	Carbon, Total Organic	CCV		Water	23.10 mg/L	10 mL	23.1 mg/L	1					10/24/19 05:39:00	N	I
KQ1915679-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 17:18:00	N	I
KQ1915679-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 20:54:00	N	I
KQ1915679-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 01:37:00	N	I
KQ1915679-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 05:54:00	N	I
KQ1915679-09	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/23/19 17:33:00	N	I
KQ1915679-10	Carbon, Total Organic	LCS		Water	24.91 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	100		10/23/19 17:48:00	N	I
KQ1915679-13	Carbon, Total Organic	MS	K1909469-002	Drinking Water	26.26 mg/L	10 mL	26.3 mg/L	1	0.07	0.50	105		10/23/19 21:37:00	N	II
KQ1915679-14	Carbon, Total Organic	DUP	K1909133-006	Water	12.69 mg/L	10 mL	127 mg/L	10	0.7	5.0		<1	10/23/19 19:15:00	N	II
KQ1915679-15	Carbon, Total Organic	DUP	K1909159-002	Water	5.97 mg/L	10 mL	59.7 mg/L	10	0.7	5.0		<1	10/23/19 19:43:00	N	IV
KQ1915679-16	Carbon, Total Organic	DUP	K1909159-004	Water	4.87 mg/L	10 mL	243 mg/L	50	4	25		2	10/23/19 20:11:00	N	IV
KQ1915679-17	Carbon, Total Organic	DUP	K1909469-002	Drinking Water	0.38 mg/L	10 mL	0.38 mg/L J	1	0.07	0.50		NC	10/23/19 21:09:00	N	II
KQ1915679-21	Carbon, Total Organic	DUP	K1909646-003	Ground Water	2.59 mg/L	10 mL	25.9 mg/L	10	0.7	5.0		<1	10/24/19 02:49:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Results Summary

10/28/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656845 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915679-22	Carbon, Total Organic	DUP	K1909646-001	Ground Water	13.85 mg/L	10 mL	13.9 mg/L	1	0.07	0.50		3	10/24/19 02:21:00	N	II
KQ1915679-24	Carbon, Total Organic	DUP	K1909711-001	Water	18.22 mg/L	10 mL	18.2 mg/L	1	0.07	0.50		2	10/24/19 03:17:00	N	I
KQ1915679-25	Carbon, Total Organic	DUP	K1909742-001	Water	1.30 mg/L	10 mL	1.30 mg/L	1	0.07	0.50		<1	10/23/19 23:02:00	N	IV
KQ1915679-26	Carbon, Total Organic	DUP	K1909791-001	Water	29.46 mg/L	10 mL	29.5 mg/L	1	0.07	0.50		4	10/24/19 00:26:00	N	II
KQ1915679-27	Carbon, Total Organic	DUP	K1909794-001	Water	2.60 mg/L	10 mL	2.60 mg/L	1	0.07	0.50		15*	10/24/19 00:54:00	N	II
KQ1915679-28	Carbon, Total Organic	DUP	K1909800-001	Water	20.22 mg/L	10 mL	20.2 mg/L	1	0.07	0.50		1	10/23/19 23:30:00	N	II
KQ1915679-29	Carbon, Total Organic	DUP	K1909800-002	Water	135.24 mg/L	10 mL	135 mg/L	1	0.07	0.50		<1	10/23/19 23:58:00	N	II
KQ1915679-30	Carbon, Total Organic	DUP	K1909688-003	Drinking Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50		6	10/23/19 22:06:00	N	I
KQ1915679-31	Carbon, Total Organic	DUP	K1909688-004	Drinking Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		NC	10/23/19 22:34:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656846 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909568-002	Carbon, Total Organic	N/A		Water	4.43 mg/L	10 mL	443 mg/L	100	7	50			10/25/19 11:24:00	N	II
K1909568-003	Carbon, Total Organic	N/A		Water	4.49 mg/L	10 mL	449 mg/L	100	7	50			10/25/19 11:52:00	N	II
K1909568-004	Carbon, Total Organic	N/A		Water	6.76 mg/L	10 mL	676 mg/L	100	7	50			10/25/19 12:20:00	N	II
K1909711-002	Carbon, Total Organic	N/A		Water	6.72 mg/L	10 mL	6.72 mg/L	1	0.07	0.50			10/24/19 03:45:00	N	I
K1909822-001	Carbon, Total Organic	N/A		Water	4.62 mg/L	10 mL	462 mg/L	100	7	50			10/25/19 12:48:00	N	II
K1909822-002	Carbon, Total Organic	N/A		Water	5.81 mg/L	10 mL	581 mg/L	100	7	50			10/25/19 13:16:00	N	II
K1909822-003	Carbon, Total Organic	N/A		Water	6.79 mg/L	10 mL	679 mg/L	100	7	50			10/25/19 13:44:00	N	II
K1909850-001	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 04:43:00	N	II
K1909850-002	Carbon, Total Organic	N/A		Water	0.05 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 05:11:00	N	II
K1909850-003	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 06:08:00	N	II
K1909850-004	Carbon, Total Organic	N/A		Water	1.12 mg/L	10 mL	1.12 mg/L	1	0.07	0.50			10/24/19 06:36:00	N	II
K1909850-005	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	0.38 mg/L J	1	0.07	0.50			10/24/19 07:05:00	N	II
K1909850-006	Carbon, Total Organic	N/A		Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50			10/24/19 07:33:00	N	II
K1909872-001	Carbon, Total Organic	N/A		Ground Water	1.84 mg/L	10 mL	1.84 mg/L	1	0.07	0.50			10/24/19 08:01:00	N	II
K1909872-003	Carbon, Total Organic	N/A		Ground Water	5.80 mg/L	10 mL	5.80 mg/L	1	0.07	0.50			10/24/19 08:29:00	N	II
K1909872-004	Carbon, Total Organic	N/A		Ground Water	5.95 mg/L	10 mL	5.95 mg/L	1	0.07	0.50			10/24/19 08:57:00	N	II
KQ1915682-01	Carbon, Total Organic	CCV		Water	23.89 mg/L	10 mL	23.9 mg/L	1					10/24/19 01:23:00	N	I
KQ1915682-02	Carbon, Total Organic	CCV		Water	23.10 mg/L	10 mL	23.1 mg/L	1					10/24/19 05:39:00	N	I
KQ1915682-03	Carbon, Total Organic	CCV		Water	23.32 mg/L	10 mL	23.3 mg/L	1					10/24/19 10:22:00	N	I
KQ1915682-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 01:37:00	N	I
KQ1915682-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 05:54:00	N	I
KQ1915682-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 10:37:00	N	I
KQ1915682-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 01:52:00	N	I
KQ1915682-08	Carbon, Total Organic	LCS		Water	24.11 mg/L	10 mL	24.1 mg/L	1	0.07	0.50	96		10/24/19 02:07:00	N	I
KQ1915682-09	Carbon, Total Organic	MS	K1909711-002	Water	27.93 mg/L	10 mL	27.9 mg/L	1	0.07	0.50	85		10/24/19 04:13:00	N	I
KQ1915682-10	Carbon, Total Organic	CCV		Water	23.26 mg/L	10 mL	23.3 mg/L	1					10/25/19 08:07:00	N	I
KQ1915682-11	Carbon, Total Organic	CCV		Water	24.46 mg/L	10 mL	24.5 mg/L	1					10/25/19 14:12:00	N	I
KQ1915682-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/25/19 08:22:00	N	I
KQ1915682-13	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/25/19 14:27:00	N	I
KQ1915682-16	Carbon, Total Organic	DUP	K1909711-002	Water	6.67 mg/L	10 mL	6.67 mg/L	1	0.07	0.50		<1	10/24/19 03:45:00	N	I
KQ1915682-17	Carbon, Total Organic	DUP	K1909568-004	Water	6.80 mg/L	10 mL	680 mg/L	100	7	50		<1	10/25/19 12:20:00	N	II
KQ1915682-18	Carbon, Total Organic	DUP	K1909822-001	Water	4.61 mg/L	10 mL	461 mg/L	100	7	50		<1	10/25/19 12:48:00	N	II
KQ1915682-19	Carbon, Total Organic	DUP	K1909822-002	Water	5.91 mg/L	10 mL	591 mg/L	100	7	50		2	10/25/19 13:16:00	N	II
KQ1915682-20	Carbon, Total Organic	DUP	K1909822-003	Water	6.81 mg/L	10 mL	681 mg/L	100	7	50		<1	10/25/19 13:44:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/28/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656846 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915682-21	Carbon, Total Organic	DUP	K1909850-001	Water	0.05 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	10/24/19 04:43:00	N	II
KQ1915682-22	Carbon, Total Organic	DUP	K1909850-002	Water	0.04 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	10/24/19 05:11:00	N	II
KQ1915682-23	Carbon, Total Organic	DUP	K1909850-003	Water	0.08 mg/L	10 mL	0.08 mg/L J	1	0.07	0.50		NC	10/24/19 06:08:00	N	II
KQ1915682-24	Carbon, Total Organic	DUP	K1909850-004	Water	1.15 mg/L	10 mL	1.15 mg/L	1	0.07	0.50		2	10/24/19 06:36:00	N	II
KQ1915682-25	Carbon, Total Organic	DUP	K1909850-005	Water	0.37 mg/L	10 mL	0.37 mg/L J	1	0.07	0.50		<1	10/24/19 07:05:00	N	II
KQ1915682-26	Carbon, Total Organic	DUP	K1909850-006	Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50		3	10/24/19 07:33:00	N	II
KQ1915682-27	Carbon, Total Organic	DUP	K1909872-001	Ground Water	1.85 mg/L	10 mL	1.85 mg/L	1	0.07	0.50		<1	10/24/19 08:01:00	N	II
KQ1915682-28	Carbon, Total Organic	DUP	K1909872-003	Ground Water	5.89 mg/L	10 mL	5.89 mg/L	1	0.07	0.50		1	10/24/19 08:29:00	N	II
KQ1915682-29	Carbon, Total Organic	DUP	K1909872-004	Ground Water	5.85 mg/L	10 mL	5.85 mg/L	1	0.07	0.50		2	10/24/19 08:57:00	N	II
KQ1915682-30	Carbon, Total Organic	DUP	K1909568-002	Water	4.51 mg/L	10 mL	451 mg/L	100	7	50		2	10/25/19 11:24:00	N	II
KQ1915682-31	Carbon, Total Organic	DUP	K1909568-003	Water	4.81 mg/L	10 mL	481 mg/L	100	7	50		7	10/25/19 11:52:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656847 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909627-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.60 mg/L	10 mL	0.60 mg/L	1	0.07	0.50			10/24/19 09:39:00	N	I
K1909627-002.R01	Carbon, Dissolved Organic (DOC)	N/A		Water	0.05 mg/L	10 mL	50 mg/L U	100	7	50			10/24/19 11:21:00	N	I
K1909636-001	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	12.99 mg/L	10 mL	13.0 mg/L	1	0.07	0.50			10/24/19 11:49:00	N	I
K1909642-001	Carbon, Dissolved Organic (DOC)	N/A		Water	1.36 mg/L	10 mL	13.6 mg/L	10	0.7	5.0			10/24/19 12:17:00	N	I
K1909642-002	Carbon, Dissolved Organic (DOC)	N/A		Water	5.58 mg/L	10 mL	5.58 mg/L	1	0.07	0.50			10/24/19 12:45:00	N	I
K1909791-002	Carbon, Dissolved Organic (DOC)	N/A		Water	6.59 mg/L	10 mL	32900 mg/L	5000	400	2500			10/24/19 13:13:00	N	II
K1909850-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 14:24:00	N	II
K1909850-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.04 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 15:21:00	N	II
K1909850-003	Carbon, Dissolved Organic (DOC)	N/A		Water	0.12 mg/L	10 mL	0.12 mg/L J	1	0.07	0.50			10/24/19 15:50:00	N	II
K1909850-004	Carbon, Dissolved Organic (DOC)	N/A		Water	1.17 mg/L	10 mL	1.17 mg/L	1	0.07	0.50			10/24/19 16:18:00	N	II
K1909850-005	Carbon, Dissolved Organic (DOC)	N/A		Water	0.36 mg/L	10 mL	0.36 mg/L J	1	0.07	0.50			10/24/19 16:46:00	N	II
K1909850-006	Carbon, Dissolved Organic (DOC)	N/A		Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50			10/24/19 17:14:00	N	II
KQ1915683-01	Carbon, Dissolved Organic (DOC)	CCV		Water	23.10 mg/L	10 mL	23.1 mg/L	1					10/24/19 05:39:00	N	I
KQ1915683-02	Carbon, Dissolved Organic (DOC)	CCV		Water	23.32 mg/L	10 mL	23.3 mg/L	1					10/24/19 10:22:00	N	I
KQ1915683-03	Carbon, Dissolved Organic (DOC)	CCV		Water	23.94 mg/L	10 mL	23.9 mg/L	1					10/24/19 14:52:00	N	I
KQ1915683-04	Carbon, Dissolved Organic (DOC)	CCV		Water	23.87 mg/L	10 mL	23.9 mg/L	1					10/24/19 22:20:00	N	I
KQ1915683-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 05:54:00	N	I
KQ1915683-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 10:37:00	N	I
KQ1915683-07	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 15:07:00	N	I
KQ1915683-08	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 22:35:00	N	I
KQ1915683-09	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/24/19 10:51:00	N	I
KQ1915683-10	Carbon, Dissolved Organic (DOC)	LCS		Water	23.85 mg/L	10 mL	23.9 mg/L	1	0.07	0.50	95		10/24/19 11:06:00	N	I
KQ1915683-11	Carbon, Dissolved Organic (DOC)	MS	K1909627-001	Water	25.78 mg/L	10 mL	25.8 mg/L	1	0.07	0.50	101		10/24/19 10:07:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/28/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656847 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915683-12	Carbon, Dissolved Organic (DOC)	DUP	K1909627-001	Water	0.69 mg/L	10 mL	0.69 mg/L	1	0.07	0.50		15*	10/24/19 09:39:00	N	I
KQ1915683-13	Carbon, Dissolved Organic (DOC)	DUP	K1909627-002	Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50		NC	10/24/19 11:21:00	N	I
KQ1915683-14	Carbon, Dissolved Organic (DOC)	DUP	K1909636-001	Wastewater	13.42 mg/L	10 mL	13.4 mg/L	1	0.07	0.50		3	10/24/19 11:49:00	N	I
KQ1915683-15	Carbon, Dissolved Organic (DOC)	DUP	K1909642-001	Water	1.32 mg/L	10 mL	13.2 mg/L	10	0.7	5.0		3	10/24/19 12:17:00	N	I
KQ1915683-16	Carbon, Dissolved Organic (DOC)	DUP	K1909642-002	Water	5.60 mg/L	10 mL	5.60 mg/L	1	0.07	0.50		<1	10/24/19 12:45:00	N	I
KQ1915683-17	Carbon, Dissolved Organic (DOC)	DUP	K1909850-001	Water	0.15 mg/L	10 mL	0.15 mg/L J	1	0.07	0.50		NC	10/24/19 14:24:00	N	II
KQ1915683-18	Carbon, Dissolved Organic (DOC)	DUP	K1909850-002	Water	0.07 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	10/24/19 15:21:00	N	II
KQ1915683-19	Carbon, Dissolved Organic (DOC)	DUP	K1909850-003	Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		28*	10/24/19 15:50:00	N	II
KQ1915683-20	Carbon, Dissolved Organic (DOC)	DUP	K1909850-004	Water	1.15 mg/L	10 mL	1.15 mg/L	1	0.07	0.50		2	10/24/19 16:18:00	N	II
KQ1915683-21	Carbon, Dissolved Organic (DOC)	DUP	K1909850-005	Water	0.39 mg/L	10 mL	0.39 mg/L J	1	0.07	0.50		8	10/24/19 16:46:00	N	II
KQ1915683-22	Carbon, Dissolved Organic (DOC)	DUP	K1909850-006	Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50		<1	10/24/19 17:14:00	N	II
KQ1915683-23	Carbon, Dissolved Organic (DOC)	DUP	K1909791-002	Water	6.99 mg/L	10 mL	34900 mg/L	5000	400	2500		6	10/24/19 13:13:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656849 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909752-011	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.77 mg/L	10 mL	0.77 mg/L	1		0.50			10/24/19 19:34:00	N	IV
K1909752-012	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.68 mg/L	10 mL	0.68 mg/L	1		0.50			10/24/19 20:29:00	N	IV
K1909752-013	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.50 mg/L	10 mL	0.50 mg/L	1		0.50			10/25/19 00:42:00	N	IV
K1909752-014	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.52 mg/L	10 mL	0.52 mg/L	1		0.50			10/25/19 01:37:00	N	IV
K1909752-015	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.37 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 02:33:00	N	IV
K1909752-017	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.79 mg/L	10 mL	1.79 mg/L	1		0.50			10/25/19 03:29:00	N	IV
K1909752-018	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	4.16 mg/L	10 mL	4.16 mg/L	1		0.50			10/25/19 04:25:00	N	IV
K1909752-019	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.47 mg/L	10 mL	1.47 mg/L	1		0.50			10/25/19 05:20:00	N	IV
K1909752-020	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.57 mg/L	10 mL	1.57 mg/L	1		0.50			10/25/19 06:16:00	N	IV
K1909830-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 07:12:00	N	IV
K1909830-003	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.17 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 08:37:00	N	IV
K1909830-004	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.43 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 09:33:00	N	IV
K1909830-005	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.49 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 10:28:00	N	IV
KQ1915684-01	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	23.94 mg/L	10 mL	23.9 mg/L	1					10/24/19 14:52:00	N	IV
KQ1915684-02	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	23.87 mg/L	10 mL	23.9 mg/L	1					10/24/19 22:20:00	N	IV
KQ1915684-03	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	23.26 mg/L	10 mL	23.3 mg/L	1					10/25/19 08:07:00	N	IV
KQ1915684-04	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.46 mg/L	10 mL	24.5 mg/L	1					10/25/19 14:12:00	N	IV
KQ1915684-05	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/24/19 15:07:00	N	IV
KQ1915684-06	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/24/19 22:35:00	N	IV
KQ1915684-07	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 08:22:00	N	IV
KQ1915684-08	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/25/19 14:27:00	N	IV
KQ1915684-09	Carbon, Dissolved Organic (DOC)	MS	K1909752-012	Pore Water	25.76 mg/L	10 mL	25.8 mg/L	1		0.50	100		10/24/19 21:25:00	N	IV
KQ1915684-10	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/24/19 22:50:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

10/28/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656849 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915684-11	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	23.82 mg/L	10 mL	23.8 mg/L	1		0.50	95		10/24/19 23:46:00	N	IV
KQ1915684-12	Carbon, Dissolved Organic (DOC)	MS	K1909752-012	Pore Water	25.49 mg/L	10 mL	25.5 mg/L	1		0.50	99		10/24/19 21:25:00	N	IV
KQ1915684-13	Carbon, Dissolved Organic (DOC)	MS	K1909752-012	Pore Water	25.81 mg/L	10 mL	25.8 mg/L	1		0.50	101		10/24/19 21:25:00	N	IV
KQ1915684-14	Carbon, Dissolved Organic (DOC)	MS	K1909752-012	Pore Water	26.03 mg/L	10 mL	26.0 mg/L	1		0.50	101		10/24/19 21:25:00	N	IV
KQ1915684-15	Carbon, Dissolved Organic (DOC)	DUP	K1909752-011	Pore Water	0.80 mg/L	10 mL	0.80 mg/L	1		0.50		3	10/24/19 19:34:00	N	IV
KQ1915684-16	Carbon, Dissolved Organic (DOC)	TRP	K1909752-011	Pore Water	0.76 mg/L	10 mL	0.76 mg/L	1		0.50		2	10/24/19 19:34:00	N	IV
KQ1915684-17	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-011	Pore Water	0.77 mg/L	10 mL	0.77 mg/L	1		0.50		2	10/24/19 19:34:00	N	IV
KQ1915684-18	Carbon, Dissolved Organic (DOC)	DUP	K1909752-012	Pore Water	0.70 mg/L	10 mL	0.70 mg/L	1		0.50		3	10/24/19 20:29:00	N	IV
KQ1915684-19	Carbon, Dissolved Organic (DOC)	TRP	K1909752-012	Pore Water	0.76 mg/L	10 mL	0.76 mg/L	1		0.50		6	10/24/19 20:29:00	N	IV
KQ1915684-20	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-012	Pore Water	0.83 mg/L	10 mL	0.83 mg/L	1		0.50		9	10/24/19 20:29:00	N	IV
KQ1915684-21	Carbon, Dissolved Organic (DOC)	DUP	K1909752-013	Pore Water	0.35 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 00:42:00	N	IV
KQ1915684-22	Carbon, Dissolved Organic (DOC)	TRP	K1909752-013	Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 00:42:00	N	IV
KQ1915684-23	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-013	Pore Water	0.37 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 00:42:00	N	IV
KQ1915684-24	Carbon, Dissolved Organic (DOC)	DUP	K1909752-014	Pore Water	0.48 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 01:37:00	N	IV
KQ1915684-25	Carbon, Dissolved Organic (DOC)	TRP	K1909752-014	Pore Water	0.52 mg/L	10 mL	0.52 mg/L	1		0.50		NC	10/25/19 01:37:00	N	IV
KQ1915684-26	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-014	Pore Water	0.49 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 01:37:00	N	IV
KQ1915684-27	Carbon, Dissolved Organic (DOC)	DUP	K1909752-015	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 02:33:00	N	IV
KQ1915684-28	Carbon, Dissolved Organic (DOC)	TRP	K1909752-015	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 02:33:00	N	IV
KQ1915684-29	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-015	Pore Water	0.40 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 02:33:00	N	IV
KQ1915684-30	Carbon, Dissolved Organic (DOC)	DUP	K1909752-017	Pore Water	1.81 mg/L	10 mL	1.81 mg/L	1		0.50		2	10/25/19 03:29:00	N	IV
KQ1915684-31	Carbon, Dissolved Organic (DOC)	TRP	K1909752-017	Pore Water	1.88 mg/L	10 mL	1.88 mg/L	1		0.50		3	10/25/19 03:29:00	N	IV
KQ1915684-32	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-017	Pore Water	1.89 mg/L	10 mL	1.89 mg/L	1		0.50		3	10/25/19 03:29:00	N	IV
KQ1915684-33	Carbon, Dissolved Organic (DOC)	DUP	K1909752-018	Pore Water	4.20 mg/L	10 mL	4.20 mg/L	1		0.50		<1	10/25/19 04:25:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656849 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915684-34	Carbon, Dissolved Organic (DOC)	TRP	K1909752-018	Pore Water	4.23 mg/L	10 mL	4.23 mg/L	1		0.50		<1	10/25/19 04:25:00	N	IV
KQ1915684-35	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-018	Pore Water	4.27 mg/L	10 mL	4.27 mg/L	1		0.50		1	10/25/19 04:25:00	N	IV
KQ1915684-36	Carbon, Dissolved Organic (DOC)	DUP	K1909752-019	Pore Water	1.46 mg/L	10 mL	1.46 mg/L	1		0.50		<1	10/25/19 05:20:00	N	IV
KQ1915684-37	Carbon, Dissolved Organic (DOC)	TRP	K1909752-019	Pore Water	1.48 mg/L	10 mL	1.48 mg/L	1		0.50		<1	10/25/19 05:20:00	N	IV
KQ1915684-38	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-019	Pore Water	1.48 mg/L	10 mL	1.48 mg/L	1		0.50		<1	10/25/19 05:20:00	N	IV
KQ1915684-39	Carbon, Dissolved Organic (DOC)	DUP	K1909752-020	Pore Water	1.58 mg/L	10 mL	1.58 mg/L	1		0.50		<1	10/25/19 06:16:00	N	IV
KQ1915684-40	Carbon, Dissolved Organic (DOC)	TRP	K1909752-020	Pore Water	1.57 mg/L	10 mL	1.57 mg/L	1		0.50		<1	10/25/19 06:16:00	N	IV
KQ1915684-41	Carbon, Dissolved Organic (DOC)	QUAD	K1909752-020	Pore Water	1.54 mg/L	10 mL	1.54 mg/L	1		0.50		1	10/25/19 06:16:00	N	IV
KQ1915684-42	Carbon, Dissolved Organic (DOC)	DUP	K1909830-001	Pore Water	0.45 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 07:12:00	N	IV
KQ1915684-43	Carbon, Dissolved Organic (DOC)	TRP	K1909830-001	Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 07:12:00	N	IV
KQ1915684-44	Carbon, Dissolved Organic (DOC)	QUAD	K1909830-001	Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 07:12:00	N	IV
KQ1915684-45	Carbon, Dissolved Organic (DOC)	DUP	K1909830-003	Pore Water	0.25 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 08:37:00	N	IV
KQ1915684-46	Carbon, Dissolved Organic (DOC)	TRP	K1909830-003	Pore Water	0.19 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 08:37:00	N	IV
KQ1915684-47	Carbon, Dissolved Organic (DOC)	QUAD	K1909830-003	Pore Water	0.15 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 08:37:00	N	IV
KQ1915684-48	Carbon, Dissolved Organic (DOC)	DUP	K1909830-004	Pore Water	0.44 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 09:33:00	N	IV
KQ1915684-49	Carbon, Dissolved Organic (DOC)	TRP	K1909830-004	Pore Water	0.47 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 09:33:00	N	IV
KQ1915684-50	Carbon, Dissolved Organic (DOC)	QUAD	K1909830-004	Pore Water	0.51 mg/L	10 mL	0.51 mg/L	1		0.50		NC	10/25/19 09:33:00	N	IV
KQ1915684-51	Carbon, Dissolved Organic (DOC)	DUP	K1909830-005	Pore Water	0.45 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	10/25/19 10:28:00	N	IV
KQ1915684-52	Carbon, Dissolved Organic (DOC)	TRP	K1909830-005	Pore Water	0.54 mg/L	10 mL	0.54 mg/L	1		0.50		NC	10/25/19 10:28:00	N	IV
KQ1915684-53	Carbon, Dissolved Organic (DOC)	QUAD	K1909830-005	Pore Water	0.55 mg/L	10 mL	0.55 mg/L	1		0.50		NC	10/25/19 10:28:00	N	IV
KQ1915684-54	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/24/19 22:50:00	N	IV
KQ1915684-55	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/24/19 22:50:00	N	IV
KQ1915684-56	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			10/24/19 22:50:00	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 656849 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915684-57	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	23.62 mg/L	10 mL	23.6 mg/L	1		0.50	94		10/24/19 23:46:00	N	IV
KQ1915684-58	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	23.61 mg/L	10 mL	23.6 mg/L	1		0.50	94		10/24/19 23:46:00	N	IV
KQ1915684-59	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	23.58 mg/L	10 mL	23.6 mg/L	1		0.50	94		10/24/19 23:46:00	N	IV

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DOC: 656847, 656849

TOC: 656845, 656846

Schedule: 10232019

Version: 7
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/10/23 17:05 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	LOD	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
4	Sample	LOQ	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	K1909579-001.01	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1909579-002.01	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	K1909133-006.10 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1909159-002.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1909159-004.01 50x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1909469-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1909469-002.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
12	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
13	Sample	K1909688-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1909688-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1909742-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1909800-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1909800-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1909791-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1909794-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1909646-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1909646-003.08 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1909711-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1909711-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1909711-002.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
26	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
27	Sample	K1909850-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1909850-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1909850-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1909850-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1909850-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1909850-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1909872-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1909872-003.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1909872-004.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	FB 10/17/19	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
37	Sample	K1909627-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1909627-001.01 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 10232019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1909627-002.01 doc 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1909636-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1909642-001.01 doc 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1909642-002.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1909791-002.01 doc 5000x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	FB 10/22/19	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
47	Sample	K1909850-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1909850-002.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1909850-003.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1909850-004.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1909850-005.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1909850-006.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	LOD	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
54	Sample	LOQ	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
55	Sample	K1909752-011.05 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
56	Sample	K1909752-012.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
57	Sample	K1909752-012.04 ms doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
59	Sample	K1909752-013.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
60	Sample	K1909752-014.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
61	Sample	K1909752-015.05 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
62	Sample	K1909752-017.05 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
63	Sample	K1909752-018.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
64	Sample	K1909752-019.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
65	Sample	K1909752-020.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
66	Sample	K1909830-001.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1909830-003.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
68	Sample	K1909830-004.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
69	Sample	K1909830-005.04 doc	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
70	Sample	K1909568-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1909568-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	K1909568-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample	K1909822-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1909822-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample	K1909822-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 10232019
Wednesday, October 23, 2019 02:04 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/10/26 10:31 - Saturday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	10232019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)		
Comment:			

10/28/19
10/28/19

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/23 14:04

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.39	16.73	4.34	49.44	05:19
2	TC Clean	34.01	38.50	4.49	50.14	03:53
3	TC Clean	5.75	9.77	4.02	50.11	03:42
4	TC Clean	4.01	7.79	3.79	50.17	03:42

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/23 14:25

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.23	4.82	3.60	49.52	05:10
2	TC Clean	12.39	16.50	4.11	50.25	04:00

3	TC Clean	5.71	9.95	4.23	50.31	03:45
4	TC Clean	4.35	8.28	3.94	50.23	03:45

Sample Type: Clean From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/23 14:47

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.03	12.88	3.85	49.45	05:11
2	TC Clean	8.17	11.95	3.78	50.27	04:02
3	TC Clean	3.64	7.41	3.77	50.16	03:55
4	TC Clean	2.87	6.67	3.80	50.26	03:53

Sample Type: Blank (Creating v1309) From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/10/23 15:10

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	10.94	14.59	3.65	49.57	05:22
2	TC Clean	5.97	9.56	3.59	50.22	04:04
3	TC Clean	2.86	6.59	3.73	50.27	03:48
4	TC Clean	2.35	6.03	3.68	50.23	03:49
5	Reagent Blank	4.28	8.01	3.73	50.25	05:05
6	Acid Blank	1.29	4.81	3.52	49.54	05:25

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/23 16:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.68	10.27	3.60	50.11	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9524 ppm (PASS)	0.0000 ppm	0%	2019/10/23 17:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9524	249.5241	178.84	182.48	3.65	50.06	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/23 17:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.51	11.35	3.84	50.11	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/23 17:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.90	10.74	3.84	50.12	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.9081 ppm (PASS)	0.0000 ppm	0%	2019/10/23 17:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9081	249.0807	178.54	182.41	3.87	50.12	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.1972 ppm	0.0000 ppm	0.0000%	2019/10/23 18:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1972	1.9722	10.14	14.07	3.93	50.14	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	LOD	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/23 18:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.18	11.05	3.87	50.16	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	LOQ	0.1162 ppm	0.0000 ppm	0.0000%	2019/10/23 18:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1162	1.1619	9.59	13.40	3.81	50.17	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1909579-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/23 18:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.69	9.45	3.76	50.22	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1909579-002.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/23 19:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.53	9.37	3.84	50.23	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1909133-006.10 10x	12.6305 ppm	0.0828 ppm	0.6600%	2019/10/23 19:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.5720	125.7196	94.14	97.83	3.69	50.24	10:28
2	TOC	12.6891	126.8908	94.93	98.56	3.63	50.29	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1909159-002.01 10x	5.9957 ppm	0.0372 ppm	0.6200%	2019/10/23 19:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.0220	60.2196	49.68	53.38	3.71	50.28	10:29
2	TOC	5.9694	59.6936	49.32	52.94	3.62	50.33	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1909159-004.01 50x	4.9039 ppm	0.0524 ppm	1.0700%	2019/10/23 20:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9409	49.4092	42.34	45.94	3.60	50.32	10:28
2	TOC	4.8668	48.6682	41.84	45.44	3.61	50.35	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.0104 ppm (PASS)	0.0000 ppm	0%	2019/10/23 20:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.0104	240.1045	172.44	176.05	3.61	50.36	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/23 20:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.39	10.00	3.61	50.37	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1909469-002.01	0.3660 ppm	0.0250 ppm	6.8300%	2019/10/23 21:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3484	3.4837	11.17	14.91	3.75	50.38	10:29
2	TOC	0.3837	3.8372	11.41	14.95	3.54	50.42	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1909469-002.01 ms	26.2571 ppm	0.0000 ppm	0.0000%	2019/10/23 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.2571	262.5711	187.03	190.57	3.53	50.43	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/23 21:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.34	9.94	3.60	50.44	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1909688-003.01	0.5438 ppm	0.0241 ppm	4.4300%	2019/10/23 22:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5268	5.2677	12.38	15.99	3.61	50.47	10:28
2	TOC	0.5608	5.6080	12.61	16.12	3.51	50.47	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1909688-004.01	0.0948 ppm	0.0967 ppm	101.9400%	2019/10/23 22:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0265	0.2647	8.98	12.76	3.78	50.49	10:26
2	TOC	0.1632	1.6319	9.91	13.35	3.45	50.55	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1909742-001.02	1.3023 ppm	0.0014 ppm	0.1000%	2019/10/23 23:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3033	13.0330	17.65	21.23	3.59	50.51	10:29
2	TOC	1.3014	13.0138	17.63	21.37	3.73	50.52	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1909800-001.01	20.0902 ppm	0.1895 ppm	0.9400%	2019/10/23 23:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	19.9562	199.5623	144.26	147.91	3.64	50.55	10:29
2	TOC	20.2242	202.2420	146.08	149.81	3.73	50.60	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1909800-002.01	134.5726 ppm	0.9484 ppm	0.7000%	2019/10/23 23:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	133.9020	1339.0198	917.72	921.22	3.50	50.57	10:28
2	TOC	135.2432	1352.4318	926.82	931.24	4.41	50.60	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1909791-001.01	30.0859 ppm	0.8814 ppm	2.9300%	2019/10/24 00:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.7091	307.0912	217.25	221.53	4.27	50.60	10:24
2	TOC	29.4626	294.6265	208.79	212.68	3.89	50.63	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1909794-001.02	2.8043 ppm	0.2891 ppm	10.3100%	2019/10/24 00:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0087	30.0867	29.22	33.01	3.79	50.63	10:27
2	TOC	2.5999	25.9986	26.45	30.16	3.71	50.64	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8870 ppm (PASS)	0.0000 ppm	0%	2019/10/24 01:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8870	238.8700	171.61	175.20	3.59	50.63	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/24 01:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.08	12.69	3.61	50.66	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 01:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.04	11.63	3.59	50.69	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.1050 ppm (PASS)	0.0000 ppm	0%	2019/10/24 02:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.1050	241.0503	173.09	176.74	3.65	50.71	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K1909646-001.08	14.0565 ppm	0.2904 ppm	2.0700%	2019/10/24 02:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	14.2619	142.6186	105.61	109.19	3.58	50.70	10:28
2	TOC	13.8511	138.5114	102.82	106.41	3.59	50.73	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1909646-003.08 10x	2.6058 ppm	0.0164 ppm	0.6300%	2019/10/24 02:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6174	26.1739	26.57	30.19	3.62	50.75	10:29
2	TOC	2.5943	25.9426	26.41	30.01	3.60	50.76	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K1909711-001.01	18.4309 ppm	0.2944 ppm	1.6000%	2019/10/24 03:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.6390	186.3904	135.32	139.07	3.75	50.78	10:28
2	TOC	18.2227	182.2271	132.50	136.29	3.79	50.76	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K1909711-002.01	6.6968 ppm	0.0366 ppm	0.5500%	2019/10/24 03:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.7226	67.2261	54.43	58.13	3.69	50.80	10:27
2	TOC	6.6709	66.7090	54.08	57.78	3.70	50.80	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K1909711-002.01 ms	27.9332 ppm	0.0000 ppm	0.0000%	2019/10/24 04:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.9332	279.3317	198.41	202.02	3.61	50.78	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◈	26	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 04:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.15	9.93	3.77	50.81	10:36

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1909850-001.01	0.0331 ppm	0.0283 ppm	85.6000%	2019/10/24 04:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0131	0.1307	8.89	12.61	3.72	50.81	10:30
2	TOC	0.0531	0.5314	9.16	12.76	3.60	50.82	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1909850-002.01	0.0471 ppm	0.0035 ppm	7.5200%	2019/10/24 05:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0496	0.4960	9.14	12.81	3.67	50.84	10:27
2	TOC	0.0446	0.4459	9.10	12.79	3.69	50.85	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.1044 ppm (PASS)	0.0000 ppm	0%	2019/10/24 05:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.1044	231.0443	166.29	169.89	3.60	50.86	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/24 05:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.46	9.11	3.65	50.88	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K1909850-003.01	0.0430 ppm	0.0484 ppm	112.5300%	2019/10/24 06:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0088	0.0879	8.86	12.45	3.58	50.87	10:28
2	TOC	0.0773	0.7730	9.33	12.85	3.52	50.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K1909850-004.01	1.1325 ppm	0.0178 ppm	1.5700%	2019/10/24 06:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1199	11.1988	16.40	19.95	3.55	50.89	10:29
2	TOC	1.1451	11.4507	16.57	20.18	3.61	50.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K1909850-005.01	0.3749 ppm	0.0021 ppm	0.5600%	2019/10/24 07:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3764	3.7636	11.36	15.03	3.67	50.91	10:29
2	TOC	0.3734	3.7341	11.34	14.94	3.61	50.91	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K1909850-006.01	0.5678 ppm	0.0132 ppm	2.3300%	2019/10/24 07:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5772	5.7715	12.72	16.30	3.58	50.91	10:28
2	TOC	0.5584	5.5845	12.59	16.03	3.44	50.94	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1909872-001.08	1.8448 ppm	0.0058 ppm	0.3200%	2019/10/24 08:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8407	18.4072	21.30	24.89	3.59	50.93	10:27
2	TOC	1.8490	18.4897	21.35	24.99	3.64	50.89	10:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1909872-003.08	5.8438 ppm	0.0590 ppm	1.0100%	2019/10/24 08:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8022	58.0216	48.19	51.78	3.59	50.88	10:28
2	TOC	5.8855	58.8554	48.75	52.31	3.56	50.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1909872-004.08	5.8959 ppm	0.0713 ppm	1.2100%	2019/10/24 08:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9462	59.4624	49.16	52.78	3.61	50.88	10:28
2	TOC	5.8455	58.4547	48.48	52.12	3.64	50.84	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	FB 10/17/19	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 09:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.02	8.62	3.60	50.84	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1909627-001.01 doc	0.6439 ppm	0.0683 ppm	10.6100%	2019/10/24 09:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5956	5.9557	12.84	16.63	3.78	50.84	10:26
2	TOC	0.6922	6.9221	13.50	17.24	3.74	50.82	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1909627-001.01 ms doc	25.7752 ppm	0.0000 ppm	0.0000%	2019/10/24 10:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.7752	257.7522	183.76	187.47	3.71	50.81	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.3201 ppm (PASS)	0.0000 ppm	0%	2019/10/24 10:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.3201	233.2011	167.76	171.49	3.73	50.80	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/24 10:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.53	9.01	3.47	50.79	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 10:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.85	8.32	3.47	50.78	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.8502 ppm (PASS)	0.0000 ppm	0%	2019/10/24 11:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.8502	238.5017	171.36	174.88	3.53	50.78	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1909627-002.01 doc 100x	0.0241 ppm	0.0340 ppm	141.4200%	2019/10/24 11:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0481	0.4813	9.13	12.69	3.57	50.72	10:29
2	TOC	0.0000	0.0000	8.70	12.20	3.51	50.72	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1909636-001.01 doc	13.2053 ppm	0.3081 ppm	2.3300%	2019/10/24 11:49

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	12.9874	129.8740	96.96	100.58	3.63	50.69	10:29
2	TOC	13.4232	134.2317	99.92	103.51	3.59	50.70	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1909642-001.01 doc 10x	1.3442 ppm	0.0293 ppm	2.1800%	2019/10/24 12:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3649	13.6488	18.07	21.72	3.65	50.69	10:28
2	TOC	1.3235	13.2348	17.78	21.39	3.60	50.67	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1909642-002.01 doc	5.5922 ppm	0.0114 ppm	0.2000%	2019/10/24 12:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.5841	55.8412	46.71	50.33	3.62	50.64	10:26
2	TOC	5.6002	56.0018	46.82	50.48	3.66	50.62	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1909791-002.01 doc 5000x	6.7877 ppm	0.2859 ppm	4.2100%	2019/10/24 13:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5855	65.8546	53.50	56.98	3.48	50.58	10:28
2	TOC	6.9899	69.8985	56.25	59.78	3.53	50.54	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 13:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.43	11.00	3.57	50.49	10:28
2	TOC	0.0000	0.0000	6.18	9.73	3.55	50.45	10:25

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	FB 10/22/19	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 14:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.07	9.64	3.57	50.39	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1909850-001.01 doc	0.0822 ppm	0.1004 ppm	122.2300%	2019/10/24 14:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0112	0.1115	8.88	12.57	3.70	50.35	10:27
2	TOC	0.1532	1.5317	9.84	13.24	3.40	50.32	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.9419 ppm (PASS)	0.0000 ppm	0%	2019/10/24 14:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9419	239.4195	171.98	175.66	3.68	50.27	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/24 15:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.03	9.62	3.60	50.22	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K1909850-002.01 doc	0.0555 ppm	0.0185 ppm	33.4100%	2019/10/24 15:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0424	0.4238	9.09	12.64	3.55	50.18	10:27
2	TOC	0.0686	0.6861	9.27	12.98	3.71	50.15	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K1909850-003.01 doc	0.1394 ppm	0.0278 ppm	19.9500%	2019/10/24 15:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1197	1.1973	9.61	13.14	3.53	50.09	10:28
2	TOC	0.1591	1.5906	9.88	13.43	3.55	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	K1909850-004.01 doc	1.1581 ppm	0.0172 ppm	1.4800%	2019/10/24 16:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1703	11.7027	16.74	20.15	3.40	49.99	10:29
2	TOC	1.1460	11.4596	16.58	20.11	3.53	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	51	TOC	K1909850-005.01 doc	0.3769 ppm	0.0221 ppm	5.8600%	2019/10/24 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3613	3.6133	11.25	14.79	3.53	50.00	10:27
2	TOC	0.3926	3.9256	11.47	15.03	3.56	49.96	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1909850-006.01 doc	0.6105 ppm	0.0036 ppm	0.6000%	2019/10/24 17:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6131	6.1310	12.96	16.48	3.51	49.93	10:30
2	TOC	0.6079	6.0794	12.93	16.58	3.65	49.92	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	LOD	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 17:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.32	9.01	3.69	49.94	10:30
2	TOC	0.0000	0.0000	6.53	10.06	3.52	49.95	10:28
3	TOC	0.0000	0.0000	6.22	9.83	3.61	49.96	10:27
4	TOC	0.0000	0.0000	5.42	9.01	3.59	49.99	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	LOQ	0.0204 ppm	0.0408 ppm	200.0000%	2019/10/24 18:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.14	11.68	3.54	50.01	10:28
2	TOC	0.0816	0.8157	9.36	12.79	3.44	50.02	10:26
3	TOC	0.0000	0.0000	8.73	12.42	3.68	50.03	10:30
4	TOC	0.0000	0.0000	8.07	11.78	3.71	50.05	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1909752-011.05 doc	0.7730 ppm	0.0150 ppm	1.9400%	2019/10/24 19:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7691	7.6911	14.02	17.68	3.65	50.07	10:28
2	TOC	0.7950	7.9504	14.20	17.84	3.64	50.09	10:29
3	TOC	0.7623	7.6234	13.98	17.60	3.62	50.09	10:27
4	TOC	0.7654	7.6543	14.00	17.52	3.53	50.12	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1909752-012.04 doc	0.7416 ppm	0.0703 ppm	9.4800%	2019/10/24 20:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6754	6.7542	13.39	17.03	3.64	50.15	10:26
2	TOC	0.6985	6.9855	13.54	17.09	3.55	50.16	10:32
3	TOC	0.7601	7.6013	13.96	17.46	3.50	50.17	10:25
4	TOC	0.8325	8.3246	14.45	18.15	3.69	50.20	10:25

Dilution: 1:10
Blank Contribution: (TC) 8.8013 (IC) (v1309)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1909752-012.04 ms doc	25.7703 ppm	0.2235 ppm	0.8700%	2019/10/24 21:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.0302	260.3024	185.49	189.22	3.73	50.21	10:26
2	TOC	25.8066	258.0660	183.98	187.77	3.79	50.24	10:25
3	TOC	25.4860	254.8603	181.80	185.42	3.63	50.25	10:29
4	TOC	25.7584	257.5843	183.65	187.47	3.82	50.28	10:23

Dilution: 1:10
Blank Contribution: (TC) 8.8013 (IC) (v1309)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8690 ppm (PASS)	0.0000 ppm	0%	2019/10/24 22:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8690	238.6902	171.48	175.04	3.56	50.28	10:33

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/24 22:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.50	9.09	3.60	50.32	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/24 22:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.52	8.23	3.71	50.32	10:29
2	TOC	0.0000	0.0000	4.53	8.32	3.80	50.37	10:26
3	TOC	0.0000	0.0000	4.73	8.32	3.60	50.37	10:24
4	TOC	0.0000	0.0000	4.62	8.25	3.63	50.38	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.6566 ppm (PASS)	0.1125 ppm	0.48%	2019/10/24 23:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.8234	238.2335	171.17	174.79	3.62	50.40	10:29
C	TOC	25.0 ppm	2	23.6165	236.1652	169.77	173.47	3.70	50.40	10:25
C	TOC	25.0 ppm	3	23.6102	236.1018	169.73	173.45	3.72	50.42	10:30
C	TOC	25.0 ppm	4	23.5764	235.7644	169.50	173.01	3.51	50.44	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1909752-013.04 doc	0.4113 ppm	0.0663 ppm	16.1100%	2019/10/25 00:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.5000	4.9996	12.20	15.72	3.52	50.46	10:29
2	TOC	0.3528	3.5279	11.20	14.86	3.66	50.46	10:26
3	TOC	0.4229	4.2291	11.67	15.17	3.50	50.47	10:30
4	TOC	0.3694	3.6943	11.31	14.84	3.53	50.48	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K1909752-014.04 doc	0.5010 ppm	0.0191 ppm	3.8100%	2019/10/25 01:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5156	5.1558	12.30	15.77	3.47	50.51	10:28
2	TOC	0.4823	4.8228	12.08	15.66	3.59	50.52	10:26
3	TOC	0.5193	5.1926	12.33	15.86	3.53	50.53	10:25
4	TOC	0.4870	4.8699	12.11	15.75	3.65	50.55	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	61	TOC	K1909752-015.05 doc	0.3920 ppm	0.0148 ppm	3.7900%	2019/10/25 02:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3699	3.6988	11.31	14.89	3.58	50.56	10:30
2	TOC	0.3976	3.9757	11.50	15.17	3.67	50.56	10:28
3	TOC	0.4007	4.0067	11.52	15.09	3.57	50.56	10:26
4	TOC	0.4001	4.0008	11.52	15.30	3.78	50.56	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	62	TOC	K1909752-017.05 doc	1.8426 ppm	0.0515 ppm	2.8000%	2019/10/25 03:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7853	17.8533	20.92	24.50	3.58	50.59	10:31
2	TOC	1.8138	18.1376	21.11	24.85	3.74	50.61	10:26
3	TOC	1.8765	18.7652	21.54	25.05	3.52	50.61	10:28
4	TOC	1.8946	18.9464	21.66	25.26	3.60	50.61	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	63	TOC	K1909752-018.04 doc	4.2130 ppm	0.0446 ppm	1.0600%	2019/10/25 04:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1623	41.6234	37.06	40.75	3.70	50.63	10:29
2	TOC	4.1961	41.9607	37.28	40.87	3.58	50.63	10:30
3	TOC	4.2264	42.2642	37.49	41.17	3.68	50.65	10:27
4	TOC	4.2671	42.6708	37.77	41.33	3.56	50.67	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	64	TOC	K1909752-019.04 doc	1.4725 ppm	0.0105 ppm	0.7200%	2019/10/25 05:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4670	14.6697	18.76	22.41	3.66	50.68	10:30
2	TOC	1.4609	14.6093	18.72	22.31	3.59	50.69	10:28
3	TOC	1.4844	14.8435	18.88	22.58	3.70	50.69	10:28
4	TOC	1.4779	14.7787	18.83	22.34	3.50	50.68	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	65	TOC	K1909752-020.04 doc	1.5636 ppm	0.0169 ppm	1.0800%	2019/10/25 06:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5671	15.6715	19.44	23.08	3.64	50.70	10:29
2	TOC	1.5795	15.7952	19.52	23.28	3.76	50.71	10:25
3	TOC	1.5679	15.6788	19.44	22.99	3.54	50.74	10:30
4	TOC	1.5397	15.3974	19.25	22.81	3.56	50.74	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	66	TOC	K1909830-001.04 doc	0.4276 ppm	0.0152 ppm	3.5600%	2019/10/25 07:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4195	4.1952	11.65	15.24	3.60	50.71	10:27
2	TOC	0.4503	4.5031	11.86	15.47	3.62	50.72	10:30
3	TOC	0.4188	4.1879	11.64	15.30	3.66	50.71	10:27
4	TOC	0.4216	4.2158	11.66	15.42	3.76	50.71	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.2563 ppm (PASS)	0.0000 ppm	0%	2019/10/25 08:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.2563	232.5632	167.32	170.97	3.64	50.70	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/25 08:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.97	8.65	3.68	50.69	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1909830-003.04 doc	0.1896 ppm	0.0428 ppm	22.6100%	2019/10/25 08:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1726	1.7261	9.97	13.59	3.62	50.67	10:29
2	TOC	0.2501	2.5010	10.50	14.03	3.53	50.66	10:29
3	TOC	0.1851	1.8514	10.06	13.78	3.72	50.63	10:24
4	TOC	0.1504	1.5037	9.82	13.43	3.61	50.64	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1909830-004.04 doc	0.4602 ppm	0.0347 ppm	7.5400%	2019/10/25 09:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.4301	4.3013	11.72	15.46	3.74	50.63	10:27
2	TOC	0.4379	4.3794	11.77	15.55	3.78	50.61	10:27
3	TOC	0.4658	4.6578	11.96	15.67	3.71	50.58	10:27
4	TOC	0.5069	5.0688	12.24	16.00	3.76	50.60	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1909830-005.04 doc	0.5087 ppm	0.0435 ppm	8.5500%	2019/10/25 10:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4927	4.9274	12.15	15.58	3.43	50.57	10:28
2	TOC	0.4547	4.5473	11.89	15.55	3.66	50.55	10:23
3	TOC	0.5377	5.3767	12.45	16.00	3.54	50.53	10:29
4	TOC	0.5495	5.4946	12.53	16.10	3.57	50.52	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	K1909568-002.01 100x	4.4706 ppm	0.0611 ppm	1.3700%	2019/10/25 11:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4274	44.2737	38.85	42.56	3.70	50.50	10:26
2	TOC	4.5138	45.1384	39.44	43.21	3.77	50.50	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	71	TOC	K1909568-003.01 100x	4.6505 ppm	0.2293 ppm	4.9300%	2019/10/25 11:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4884	44.8836	39.27	42.77	3.50	50.46	10:27
2	TOC	4.8126	48.1261	41.47	45.02	3.56	50.42	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	72	TOC	K1909568-004.01 100x	6.7803 ppm	0.0284 ppm	0.4200%	2019/10/25 12:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.7602	67.6018	54.69	58.21	3.52	50.41	10:25
2	TOC	6.8004	68.0040	54.96	58.65	3.69	50.62	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1909822-001.01 100x	4.6106 ppm	0.0070 ppm	0.1500%	2019/10/25 12:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6155	46.1549	40.13	43.64	3.51	51.08	10:30
2	TOC	4.6056	46.0562	40.06	43.62	3.56	50.83	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1909822-002.01 100x	5.8608 ppm	0.0744 ppm	1.2700%	2019/10/25 13:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8082	58.0820	48.23	51.88	3.66	50.41	10:31
2	TOC	5.9134	59.1338	48.94	52.52	3.58	50.37	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	K1909822-003.01 100x	6.7975 ppm	0.0113 ppm	0.1700%	2019/10/25 13:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.7895	67.8950	54.89	58.64	3.75	50.38	10:30
2	TOC	6.8054	68.0541	55.00	58.61	3.61	50.38	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.8013 (IC) (v1309)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4557 ppm (PASS)	0.0000 ppm	0%	2019/10/25 14:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4557	244.5565	175.47	179.23	3.76	50.37	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC

met.	(v4)	(v30)

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/25 14:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.95	11.59	3.64	50.38	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1308	1.3413	1.2270	0.0000	0.0000	0.0000	2019/10/19 12:28	Fusion1 (Fusion1)
v1309	1.4253	1.2890	0.0000	0.0000	0.0000	2019/10/23 15:43	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12

25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)

Ver Creation: 2019/02/21 17:57

Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/10/25 14:43

ALS Environmental

StarLIMS Run: 656845, 656846, 656847, 656849

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-81N

21 % H3PO4: 11-GEN-05-81M

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCD	Date Analyzed: 10/23/19
Reviewed By: [signature]	Date Reviewed: 10/28/19

HS19100916 Wet Chem Raw Data REV001

ALS WO HS19100916

HS1910096[1] NIT-AMN-WISE

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Logbook **31114**

Ion Selective Electrode Logbook

Analyst: MD				Date: 11/05/19 MD 5:30pm	
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F					
Probe Calibration Date: 11/05/19		Cal Std ID: 311087-5(06-10)		Probe ID: SR1-15910	
Std Level		mV	Conc., mg/L:	Sodium Thiosulfate ID:	
STD 1 (mg/L):	0.2	129.2	0.204	Std Level	mV / Conc., mg/L:
STD 2 (mg/L):	1	91.2	1.019	STD 4 (mg/L): 10	31.2 / 10.012
STD 3 (mg/L):	5	45.9	5.000	STD 5 (mg/L): 50	27.2 / 50.19
LSC / MS Spike ID: 3100600519				ICAL Date & Slope: 96.9 % / -56.6mV	
ICV Cal STD ID: 311087505.					
DPD Reagent ID: 2970208234					

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/–)	Comments
ICV		50ml	50ml	1X	10.019			
CCB					0.029			
mBlk					0.028			
LCS					10.03			
HS1910096-01					18.25			TNC Rechecked.
CCV					10.02			
CCB					0.021			
LCSD					10.02			
CCV					10.19			
CCB					0.021			

Batch ID: 350045	Reported By MD	Reviewed By: KL

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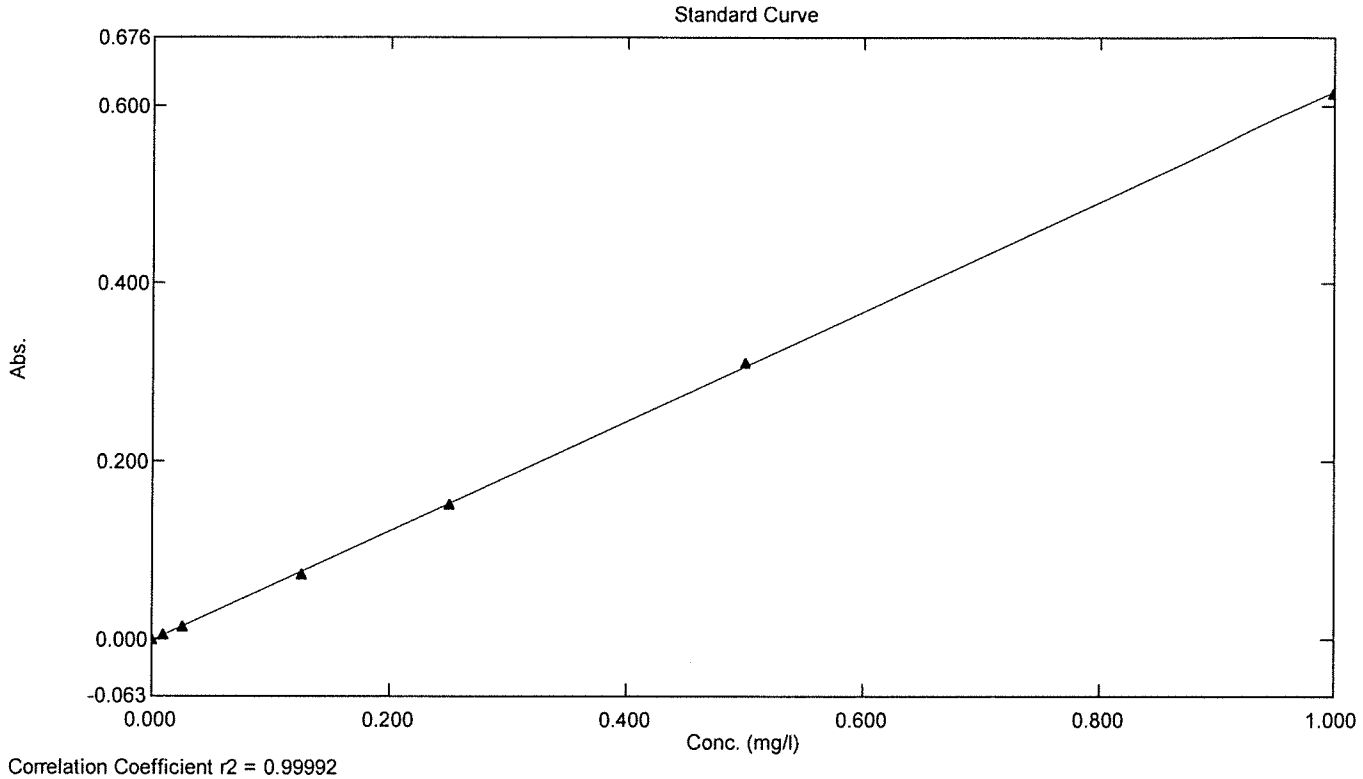
HS19100916

Standard Table Report

10/24/2019 04:41:10 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\2019\10162019_P_ORTHO_.ph



Correlation Coefficient r2 = 0.99992

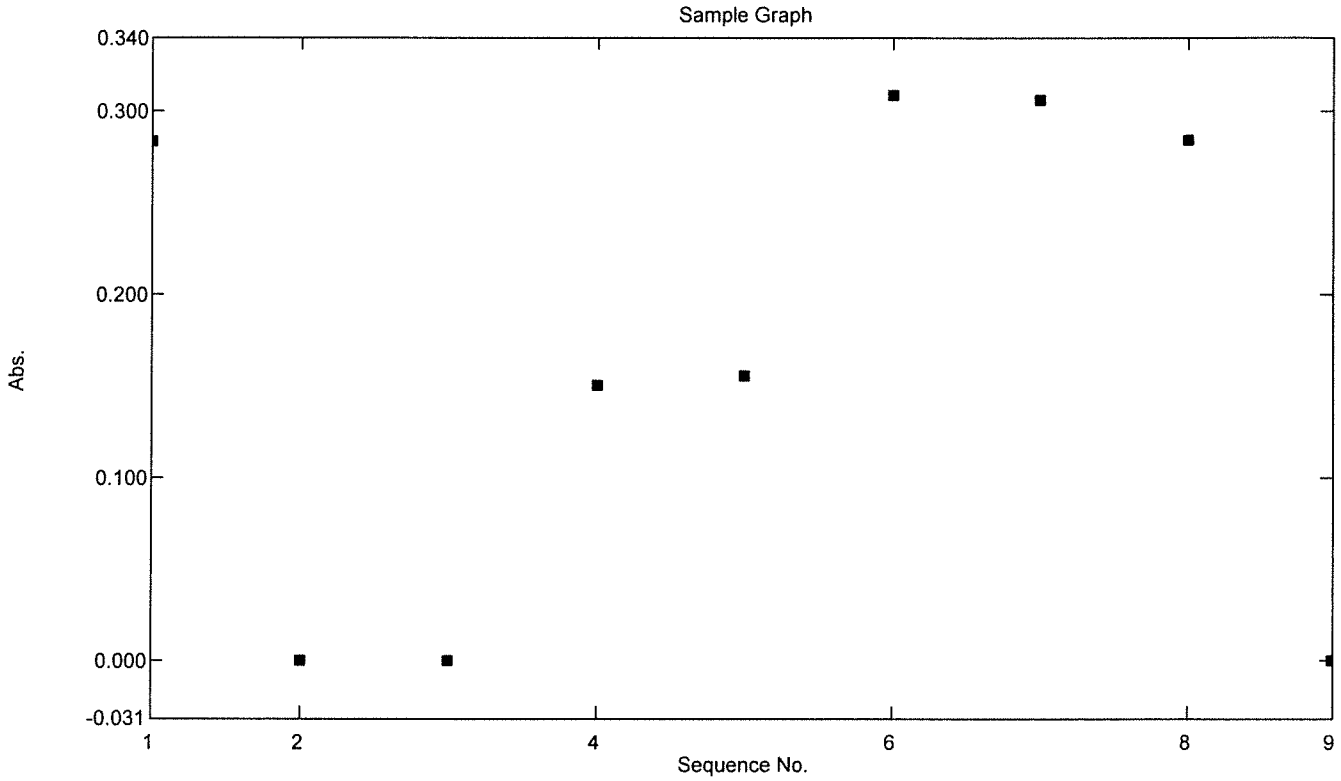
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.001	1.000	
2	STD2	Standard		0.010	0.005	1.000	
3	STD3	Standard		0.025	0.013	1.000	
4	STD4	Standard		0.125	0.074	1.000	
5	STD5	Standard		0.250	0.152	1.000	
6	STD6	Standard		0.500	0.311	1.000	
7	STD7	Standard		1.000	0.614	1.000	
8							

Sample Table Report

10/24/2019 04:41:16 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\2019\10162019_P_ORTHO_.ph



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.462	0.283	311084002 UV-06
2	CCB	Unknown		0.002	-0.000	
3	MBLK	Unknown		0.003	0.000	311086205 C UV-11
4	LCS	Unknown		0.246	0.150	311084001 UV-06
5	19100916.01	Unknown		0.254	0.155	5:09PM PF-10X
6	19100916.01MS	Unknown		0.504	0.309	5:10PM PF-10X
7	19100916.01MSD	Unknown		0.499	0.306	5:10PM PF-10X
8	CCV2	Unknown		0.464	0.285	
9	CCB2	Unknown		0.001	-0.001	
10						

10450 Stancliff Rd. Suite 210
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October 22, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19100919**

Laboratory Results for: **Groundwater Treatment Plant Bi-Weekly Samples**

Dear Marcia,

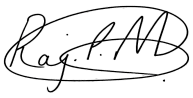
ALS Environmental received 2 sample(s) on Oct 16, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
Work Order: HS19100919

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19100919-01	LH18/24-SP650_101519	Water		15-Oct-2019 14:00	16-Oct-2019 09:58	☐
HS19100919-02	Trip Blank	Water	CG 050119 -172	15-Oct-2019 00:00	16-Oct-2019 09:58	☐

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
Work Order: HS19100919

CASE NARRATIVE

WetChemistry by Method SW9056

Batch ID: R348818

Sample ID: HS19101168-01MS

- MS and MSD are for an unrelated sample (Sulfate)

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: Groundwater Treatment Plant Bi-Weekly Samples WorkOrder:HS19100919

Sample ID: LH18/24-SP650_101519 Lab ID:HS19100919-01

Collection Date: 15-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY SW9056A	**Method:SW9056**							Analyst: KMU
Chloride	**444**		**2.00**	**5.00**	**5.00**	**mg/L**	10	21-Oct-2019 13:29
Sulfate	**118**		**2.00**	**5.00**	**5.00**	**mg/L**	10	21-Oct-2019 13:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100919

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R348818 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS19100919-01	LH18/24-SP650_101519	15 Oct 2019 14:00			21 Oct 2019 13:29	10

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: HS19100919

QC BATCH REPORT

Batch ID: R348818 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-102119** Units: **mg/L** Analysis Date: **21-Oct-2019 12:06**
Client ID: Run ID: **ICS-Integrion_348818** SeqNo: **5307099** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-102119** Units: **mg/L** Analysis Date: **21-Oct-2019 12:23**
Client ID: Run ID: **ICS-Integrion_348818** SeqNo: **5307100** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.83	0.500	20	0	99.2	80 - 120				
Sulfate	19.75	0.500	20	0	98.8	80 - 120				

LCSD Sample ID: **WLCSDW1-102119** Units: **mg/L** Analysis Date: **21-Oct-2019 12:40**
Client ID: Run ID: **ICS-Integrion_348818** SeqNo: **5307101** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.84	0.500	20	0	99.2	80 - 120	19.83	0.0655	20	
Sulfate	19.87	0.500	20	0	99.3	80 - 120	19.75	0.567	20	

MS Sample ID: **HS19101168-01MS** Units: **mg/L** Analysis Date: **21-Oct-2019 16:15**
Client ID: Run ID: **ICS-Integrion_348818** SeqNo: **5307110** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	37.24	1.00	20	17.92	96.6	80 - 120				
Sulfate	566	1.00	20	564.4	8.35	80 - 120				SEO

MSD Sample ID: **HS19101168-01MSD** Units: **mg/L** Analysis Date: **21-Oct-2019 16:32**
Client ID: Run ID: **ICS-Integrion_348818** SeqNo: **5307111** PrepDate: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	37.26	1.00	20	17.92	96.7	80 - 120	37.24	0.0537	20	
Sulfate	570.8	1.00	20	564.4	32.2	80 - 120	566	0.839	20	SEO

The following samples were analyzed in this batch: HS19100919-01

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
WorkOrder: **HS19100919**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US Date: 22-Oct-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 22-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: Groundwater Treatment Plant Bi-Weekly Samples
Work Order: HS19100919

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19100919-01	LH18/24-SP650_101519	Login	10/16/2019 1:51:38 PM	JRM	WET202
HS19100919-01	LH18/24-SP650_101519	Login	10/16/2019 1:51:38 PM	JRM	VOA070
HS19100919-02	Trip Blank	Login	10/16/2019 1:51:38 PM	JRM	VOA070

00962060

ALS Houston, US Date: 22-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19100919
Date/Time Received: **16-Oct-2019 09:58**
Received by: **AC**

Checklist completed by: *Jared R. Makan* eSignature 16-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 16-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.5°C / 3.0°C UC/C	IR11	
Cooler(s)/Kit(s):	45313		
Date/Time sample(s) sent to storage:	10/16/2019 13:55		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00962061

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210, Houston, Tx. 77099 ATTN: R.J. Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT BI-WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC	Analyses: CHLORIDE, SULFATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_101519	Water	10/15/19 / 14:00		3	3		HCL	
LH18/24-SP650_101519	Water	10/15/19 / 14:00		1		1	NONE	
Trip Blank	Water	10/15/19		2	2		HCL	

Additional Remarks: **STANDARD TAT ON ALL PARAMETERS.**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/15/19	14:30	AC	10/16/19	09:58						

9For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
				AC	10/16/19	09:58	3.5c		

Remarks

IR#11
CF.-0.5
45313

HS19100919

Bhate Environmental Associates, Inc.
Groundwater Treatment Plant Bi-Weekly Samples

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

00962062

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45313

CUSTODY SEAL

Date: 10/15/19 Time: 1630
Name: Scott Beesinger
Company: Bhate

Seal Broken By: SZY
Date: 10/16/19

45313 OCT 16 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

45313

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 11JUN18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3111
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099

(281) 530-5656
REF: LHAAP-58 RJ

FedEx Express

TRK# 0221 4380 9529 9716

RETURNS MON-SAT
PRIORITY OVERNIGHT

FedEx
TRK# 0221 4380 9529 9716

WED - 16 OCT 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

ID J62705 15OCT19 GGGA 568C3/2A3C/85A2

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 21, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19101087**

Laboratory Results for: **LHAAP / GWTP**

Dear Marcia,

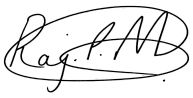
ALS Environmental received 2 sample(s) on Oct 18, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Work Order: HS19101087

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101087-01	LH18/24-SP650_101719	Groundwater		17-Oct-2019 14:00	18-Oct-2019 08:45	☐
HS19101087-02	Trip Blank	Water		17-Oct-2019 00:00	18-Oct-2019 08:45	☐

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Work Order: HS19101087

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R348661

Sample ID: LH18/24-SP650_101719(HS19101087-01)

- MS and or MSD recovered outside the control limits for multiple compounds due to suspect matrix effect.

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: LH18/24-SP650_101719
Collection Date: 17-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101087
Lab ID:HS19101087-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,2-Dichloroethane	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	18-Oct-2019 15:28
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	18-Oct-2019 15:28
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	18-Oct-2019 15:28
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	18-Oct-2019 15:28
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	18-Oct-2019 15:28
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	18-Oct-2019 15:28
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: LH18/24-SP650_101719
Collection Date: 17-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101087
Lab ID:HS19101087-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
cis-1,2-Dichloroethene	**12**		**0.20**	**0.50**	**1.0**	**UG/L**	1	18-Oct-2019 15:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	18-Oct-2019 15:28
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	18-Oct-2019 15:28
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:28
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Trichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	18-Oct-2019 15:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:28
Surr: 1,2-Dichloroethane-d4	*84.3*			**0**	*81-118*	*%REC*	*1*	*18-Oct-2019 15:28*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*18-Oct-2019 15:28*
Surr: Dibromofluoromethane	*90.0*			**0**	*80-119*	*%REC*	*1*	*18-Oct-2019 15:28*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*18-Oct-2019 15:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: Trip Blank
Collection Date: 17-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19101087
Lab ID:HS19101087-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	18-Oct-2019 15:04
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	18-Oct-2019 15:04
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	18-Oct-2019 15:04
Acetone	**5.8**		**0.40**	**1.0**	**2.0**	**UG/L**	1	18-Oct-2019 15:04
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	18-Oct-2019 15:04
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Sample ID: Trip Blank
Collection Date: 17-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19101087
Lab ID:HS19101087-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	18-Oct-2019 15:04
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	18-Oct-2019 15:04
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	18-Oct-2019 15:04
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	18-Oct-2019 15:04
Surr: 1,2-Dichloroethane-d4	*84.6*			**0**	*81-118*	*%REC*	*1*	*18-Oct-2019 15:04*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*18-Oct-2019 15:04*
Surr: Dibromofluoromethane	*90.4*			**0**	*80-119*	*%REC*	*1*	*18-Oct-2019 15:04*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*18-Oct-2019 15:04*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R348661 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19101087-02	Trip Blank	17 Oct 2019 00:00			18 Oct 2019 15:04	1
Batch ID: R348661 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19101087-01	LH18/24-SP650_101719	17 Oct 2019 14:00			18 Oct 2019 15:28	1

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-191018** Units: **UG/L** Analysis Date: **18-Oct-2019 14:40**
Client ID: Run ID: **VOA6_348661** SeqNo: **5303787** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191018** Units: **UG/L** Analysis Date: **18-Oct-2019 14:40**
Client ID: Run ID: **VOA6_348661** SeqNo: **5303787** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.35*	*1.0*	*50*	*0*	*84.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.15*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*44.53*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*50.28*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191018** Units: **UG/L** Analysis Date: **18-Oct-2019 13:52**
Client ID: Run ID: **VOA6_348661** SeqNo: **5303786** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.35	1.0	20	0	107	78 - 124				
1,1,1-Trichloroethane	20.56	1.0	20	0	103	74 - 131				
1,1,2,2-Tetrachloroethane	18.76	1.0	20	0	93.8	71 - 121				
1,1,2-Trichloroethane	20.01	1.0	20	0	100	80 - 119				
1,1-Dichloroethane	19.09	1.0	20	0	95.4	77 - 125				
1,1-Dichloroethene	19.37	1.0	20	0	96.9	71 - 131				
1,1-Dichloropropene	19.43	1.0	20	0	97.2	78 - 125				
1,2,3-Trichlorobenzene	14.03	1.0	20	0	70.1	69 - 129				
1,2,3-Trichloropropane	19.06	1.0	20	0	95.3	73 - 122				
1,2,4-Trichlorobenzene	15.59	1.0	20	0	78.0	69 - 130				
1,2,4-Trimethylbenzene	21.06	1.0	20	0	105	76 - 124				
1,2-Dibromo-3-chloropropane	15.26	1.0	20	0	76.3	62 - 128				
1,2-Dibromoethane	20.28	1.0	20	0	101	77 - 121				
1,2-Dichlorobenzene	20.72	1.0	20	0	104	80 - 119				
1,2-Dichloroethane	20.44	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	19.56	1.0	20	0	97.8	78 - 122				
1,3,5-Trimethylbenzene	21.69	1.0	20	0	108	75 - 124				
1,3-Dichlorobenzene	21.21	1.0	20	0	106	80 - 119				
1,3-Dichloropropane	19.86	1.0	20	0	99.3	80 - 119				
1,4-Dichlorobenzene	20.5	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	20.96	1.0	20	0	105	60 - 139				
2-Butanone	34.41	2.0	40	0	86.0	56 - 143				
2-Chlorotoluene	20.79	1.0	20	0	104	79 - 122				
2-Hexanone	35.34	2.0	40	0	88.3	57 - 139				
4-Chlorotoluene	21.01	1.0	20	0	105	78 - 122				
4-Isopropyltoluene	21.29	1.0	20	0	106	77 - 127				
4-Methyl-2-pentanone	35.11	2.0	40	0	87.8	67 - 130				
Acetone	39.63	2.0	40	0	99.1	39 - 160				
Benzene	20.05	1.0	20	0	100	79 - 120				
Bromobenzene	21.76	1.0	20	0	109	80 - 120				
Bromochloromethane	19.55	1.0	20	0	97.7	78 - 123				
Bromodichloromethane	20.18	1.0	20	0	101	79 - 125				
Bromoform	20.44	1.0	20	0	102	66 - 130				
Bromomethane	19.73	1.0	20	0	98.6	53 - 141				

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191018** Units: **UG/L** Analysis Date: **18-Oct-2019 13:52**
Client ID: Run ID: **VOA6_348661** SeqNo: **5303786** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.92	2.0	40	0	94.8	64 - 133				
Carbon tetrachloride	19.83	1.0	20	0	99.2	72 - 136				
Chlorobenzene	21.14	1.0	20	0	106	82 - 118				
Chloroethane	18.81	1.0	20	0	94.1	60 - 138				
Chloroform	19.9	1.0	20	0	99.5	79 - 124				
Chloromethane	17.44	1.0	20	0	87.2	50 - 139				
cis-1,2-Dichloroethene	20.39	1.0	20	0	102	78 - 123				
cis-1,3-Dichloropropene	20.79	1.0	20	0	104	75 - 124				
Dibromochloromethane	20.57	1.0	20	0	103	74 - 126				
Dibromomethane	20.47	1.0	20	0	102	79 - 123				
Dichlorodifluoromethane	15.4	1.0	20	0	77.0	32 - 152				
Ethylbenzene	21.18	1.0	20	0	106	79 - 121				
Hexachlorobutadiene	18.7	1.0	20	0	93.5	66 - 134				
Isopropylbenzene	21.44	1.0	20	0	107	72 - 131				
m,p-Xylene	42.47	2.0	40	0	106	80 - 121				
Methylene chloride	19.73	2.0	20	0	98.6	74 - 124				
Naphthalene	14.4	1.0	20	0	72.0	61 - 128				
n-Butylbenzene	21.27	1.0	20	0	106	75 - 128				
n-Propylbenzene	21.17	1.0	20	0	106	76 - 126				
o-Xylene	21.31	1.0	20	0	107	78 - 122				
sec-Butylbenzene	21.03	1.0	20	0	105	77 - 126				
Styrene	21.39	1.0	20	0	107	78 - 123				
tert-Butylbenzene	21.3	1.0	20	0	106	78 - 124				
Tetrachloroethene	21.47	1.0	20	0	107	74 - 129				
Toluene	21.08	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	20.4	1.0	20	0	102	75 - 124				
trans-1,3-Dichloropropene	20.69	1.0	20	0	103	73 - 127				
Trichloroethene	20.77	1.0	20	0	104	79 - 123				
Trichlorofluoromethane	19.56	1.0	20	0	97.8	65 - 141				
Vinyl chloride	17.04	1.0	20	0	85.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.4*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.29*	*1.0*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*52.73*	*1.0*	*50*	*0*	*105*	*80 - 119*				
Surr: Toluene-d8	*50.04*	*1.0*	*50*	*0*	*100*	*89 - 112*				

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19101087-01MS** Units: **UG/L** Analysis Date: **18-Oct-2019 16:16**
Client ID: **LH18/24-SP650_101719** Run ID: **VOA6_348661** SeqNo: **5303790** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.87	1.0	20	0	89.4	78 - 124				
1,1,1-Trichloroethane	16.46	1.0	20	0	82.3	74 - 131				
1,1,2,2-Tetrachloroethane	16.85	1.0	20	0	84.3	71 - 121				
1,1,2-Trichloroethane	16.62	1.0	20	0	83.1	80 - 119				
1,1-Dichloroethane	14.79	1.0	20	0	73.9	77 - 125				S
1,1-Dichloroethene	15.63	1.0	20	0	78.2	71 - 131				
1,1-Dichloropropene	16.22	1.0	20	0	81.1	78 - 125				
1,2,3-Trichlorobenzene	12	1.0	20	0	60.0	69 - 129				S
1,2,3-Trichloropropane	16.76	1.0	20	0	83.8	73 - 122				
1,2,4-Trichlorobenzene	13.72	1.0	20	0	68.6	69 - 130				S
1,2,4-Trimethylbenzene	19.37	1.0	20	0	96.9	76 - 124				
1,2-Dibromo-3-chloropropane	14.01	1.0	20	0	70.1	62 - 128				
1,2-Dibromoethane	16.62	1.0	20	0	83.1	77 - 121				
1,2-Dichlorobenzene	18.31	1.0	20	0	91.6	80 - 119				
1,2-Dichloroethane	16.82	1.0	20	1.166	78.3	73 - 128				
1,2-Dichloropropane	15.44	1.0	20	0	77.2	78 - 122				S
1,3,5-Trimethylbenzene	19.86	1.0	20	0	99.3	75 - 124				
1,3-Dichlorobenzene	18.92	1.0	20	0	94.6	80 - 119				
1,3-Dichloropropane	16.3	1.0	20	0	81.5	80 - 119				
1,4-Dichlorobenzene	18.63	1.0	20	0	93.2	79 - 118				
2,2-Dichloropropane	16.49	1.0	20	0	82.5	60 - 139				
2-Butanone	24.33	2.0	40	0	60.8	56 - 143				
2-Chlorotoluene	18.7	1.0	20	0	93.5	79 - 122				
2-Hexanone	28.99	2.0	40	0	72.5	57 - 139				
4-Chlorotoluene	19.03	1.0	20	0	95.1	78 - 122				
4-Isopropyltoluene	19.82	1.0	20	0	99.1	77 - 127				
4-Methyl-2-pentanone	29.38	2.0	40	0	73.5	67 - 130				
Acetone	26.21	2.0	40	0	65.5	39 - 160				
Benzene	16.27	1.0	20	0	81.3	79 - 120				
Bromobenzene	19.28	1.0	20	0	96.4	80 - 120				
Bromochloromethane	14.74	1.0	20	0	73.7	78 - 123				S
Bromodichloromethane	15.98	1.0	20	0	79.9	79 - 125				
Bromoform	16.89	1.0	20	0	84.4	66 - 130				
Bromomethane	13.45	1.0	20	0	67.3	53 - 141				

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19101087-01MS** Units: **UG/L** Analysis Date: **18-Oct-2019 16:16**
Client ID: **LH18/24-SP650_101719** Run ID: **VOA6_348661** SeqNo: **5303790** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	29.44	2.0	40	0	73.6	64 - 133				
Carbon tetrachloride	17.04	1.0	20	0	85.2	72 - 136				
Chlorobenzene	17.85	1.0	20	0	89.2	82 - 118				
Chloroethane	13.6	1.0	20	0	68.0	60 - 138				
Chloroform	15.34	1.0	20	0	76.7	79 - 124				S
Chloromethane	13.01	1.0	20	0	65.1	50 - 139				
cis-1,2-Dichloroethene	27.26	1.0	20	11.82	77.2	78 - 123				S
cis-1,3-Dichloropropene	16.41	1.0	20	0	82.1	75 - 124				
Dibromochloromethane	17.15	1.0	20	0	85.8	74 - 126				
Dibromomethane	15.94	1.0	20	0	79.7	79 - 123				
Dichlorodifluoromethane	11.79	1.0	20	0	59.0	32 - 152				
Ethylbenzene	18.28	1.0	20	0	91.4	79 - 121				
Hexachlorobutadiene	16.29	1.0	20	0	81.4	66 - 134				
Isopropylbenzene	18.82	1.0	20	0	94.1	72 - 131				
m,p-Xylene	36.86	2.0	40	0	92.1	80 - 121				
Methylene chloride	15.46	2.0	20	0	77.3	74 - 124				
Naphthalene	11.31	1.0	20	0	56.6	61 - 128				S
n-Butylbenzene	19.69	1.0	20	0	98.4	75 - 128				
n-Propylbenzene	19.91	1.0	20	0	99.6	76 - 126				
o-Xylene	18.64	1.0	20	0	93.2	78 - 122				
sec-Butylbenzene	20.12	1.0	20	0	101	77 - 126				
Styrene	17.94	1.0	20	0	89.7	78 - 123				
tert-Butylbenzene	20.45	1.0	20	0	102	78 - 124				
Tetrachloroethene	19.18	1.0	20	0	95.9	74 - 129				
Toluene	18.04	1.0	20	0	90.2	80 - 121				
trans-1,2-Dichloroethene	15.51	1.0	20	0	77.5	75 - 124				
trans-1,3-Dichloropropene	16.01	1.0	20	0	80.1	73 - 127				
Trichloroethene	18.01	1.0	20	1.049	84.8	79 - 123				
Trichlorofluoromethane	16.03	1.0	20	0	80.1	65 - 141				
Vinyl chloride	14.08	1.0	20	0	70.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.12*	*1.0*	*50*	*0*	*88.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.26*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*45.75*	*1.0*	*50*	*0*	*91.5*	*80 - 119*				
Surr: Toluene-d8	*49.11*	*1.0*	*50*	*0*	*98.2*	*89 - 112*				

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19101087-01MSD** Units: **UG/L** Analysis Date: **18-Oct-2019 16:40**
Client ID: **LH18/24-SP650_101719** Run ID: **VOA6_348661** SeqNo: **5303791** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.42	1.0	20	0	92.1	78 - 124	17.87	3.03	20	
1,1,1-Trichloroethane	16	1.0	20	0	80.0	74 - 131	16.46	2.88	20	
1,1,2,2-Tetrachloroethane	16.94	1.0	20	0	84.7	71 - 121	16.85	0.541	20	
1,1,2-Trichloroethane	17.14	1.0	20	0	85.7	80 - 119	16.62	3.05	20	
1,1-Dichloroethane	14.44	1.0	20	0	72.2	77 - 125	14.79	2.37	20	S
1,1-Dichloroethene	15.17	1.0	20	0	75.8	71 - 131	15.63	3.02	20	
1,1-Dichloropropene	16.37	1.0	20	0	81.8	78 - 125	16.22	0.88	20	
1,2,3-Trichlorobenzene	13.4	1.0	20	0	67.0	69 - 129	12	11	20	S
1,2,3-Trichloropropane	17.41	1.0	20	0	87.0	73 - 122	16.76	3.79	20	
1,2,4-Trichlorobenzene	14.88	1.0	20	0	74.4	69 - 130	13.72	8.14	20	
1,2,4-Trimethylbenzene	19.8	1.0	20	0	99.0	76 - 124	19.37	2.17	20	
1,2-Dibromo-3-chloropropane	14.55	1.0	20	0	72.7	62 - 128	14.01	3.75	20	
1,2-Dibromoethane	17.19	1.0	20	0	86.0	77 - 121	16.62	3.37	20	
1,2-Dichlorobenzene	19.04	1.0	20	0	95.2	80 - 119	18.31	3.87	20	
1,2-Dichloroethane	17.35	1.0	20	1.166	80.9	73 - 128	16.82	3.1	20	
1,2-Dichloropropane	15.57	1.0	20	0	77.9	78 - 122	15.44	0.869	20	S
1,3,5-Trimethylbenzene	20.45	1.0	20	0	102	75 - 124	19.86	2.95	20	
1,3-Dichlorobenzene	19.34	1.0	20	0	96.7	80 - 119	18.92	2.17	20	
1,3-Dichloropropane	17.1	1.0	20	0	85.5	80 - 119	16.3	4.79	20	
1,4-Dichlorobenzene	19.21	1.0	20	0	96.1	79 - 118	18.63	3.05	20	
2,2-Dichloropropane	16.42	1.0	20	0	82.1	60 - 139	16.49	0.467	20	
2-Butanone	23.06	2.0	40	0	57.7	56 - 143	24.33	5.35	20	
2-Chlorotoluene	19.38	1.0	20	0	96.9	79 - 122	18.7	3.58	20	
2-Hexanone	29.85	2.0	40	0	74.6	57 - 139	28.99	2.9	20	
4-Chlorotoluene	19.62	1.0	20	0	98.1	78 - 122	19.03	3.06	20	
4-Isopropyltoluene	20.43	1.0	20	0	102	77 - 127	19.82	3.01	20	
4-Methyl-2-pentanone	30.32	2.0	40	0	75.8	67 - 130	29.38	3.15	20	
Acetone	25.16	2.0	40	0	62.9	39 - 160	26.21	4.1	20	
Benzene	16.15	1.0	20	0	80.8	79 - 120	16.27	0.704	20	
Bromobenzene	19.9	1.0	20	0	99.5	80 - 120	19.28	3.12	20	
Bromochloromethane	15.06	1.0	20	0	75.3	78 - 123	14.74	2.15	20	S
Bromodichloromethane	16.4	1.0	20	0	82.0	79 - 125	15.98	2.61	20	
Bromoform	17.71	1.0	20	0	88.6	66 - 130	16.89	4.76	20	
Bromomethane	13.17	1.0	20	0	65.8	53 - 141	13.45	2.12	20	

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: HS19101087

QC BATCH REPORT

Batch ID: R348661 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19101087-01MSD** Units: **UG/L** Analysis Date: **18-Oct-2019 16:40**
Client ID: **LH18/24-SP650_101719** Run ID: **VOA6_348661** SeqNo: **5303791** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	28.47	2.0	40	0	71.2	64 - 133	29.44	3.36	20	
Carbon tetrachloride	17.32	1.0	20	0	86.6	72 - 136	17.04	1.65	20	
Chlorobenzene	18.48	1.0	20	0	92.4	82 - 118	17.85	3.51	20	
Chloroethane	13.27	1.0	20	0	66.3	60 - 138	13.6	2.44	20	
Chloroform	15.03	1.0	20	0	75.2	79 - 124	15.34	2	20	S
Chloromethane	12.85	1.0	20	0	64.3	50 - 139	13.01	1.23	20	
cis-1,2-Dichloroethene	26.92	1.0	20	11.82	75.5	78 - 123	27.26	1.26	20	S
cis-1,3-Dichloropropene	16.32	1.0	20	0	81.6	75 - 124	16.41	0.589	20	
Dibromochloromethane	17.56	1.0	20	0	87.8	74 - 126	17.15	2.33	20	
Dibromomethane	16.09	1.0	20	0	80.5	79 - 123	15.94	0.954	20	
Dichlorodifluoromethane	11.28	1.0	20	0	56.4	32 - 152	11.79	4.45	20	
Ethylbenzene	19.04	1.0	20	0	95.2	79 - 121	18.28	4.11	20	
Hexachlorobutadiene	17.84	1.0	20	0	89.2	66 - 134	16.29	9.12	20	
Isopropylbenzene	19.23	1.0	20	0	96.2	72 - 131	18.82	2.15	20	
m,p-Xylene	37.94	2.0	40	0	94.9	80 - 121	36.86	2.91	20	
Methylene chloride	15.39	2.0	20	0	76.9	74 - 124	15.46	0.454	20	
Naphthalene	12.58	1.0	20	0	62.9	61 - 128	11.31	10.6	20	
n-Butylbenzene	20.61	1.0	20	0	103	75 - 128	19.69	4.58	20	
n-Propylbenzene	20.26	1.0	20	0	101	76 - 126	19.91	1.72	20	
o-Xylene	18.73	1.0	20	0	93.7	78 - 122	18.64	0.497	20	
sec-Butylbenzene	20.38	1.0	20	0	102	77 - 126	20.12	1.31	20	
Styrene	18.47	1.0	20	0	92.3	78 - 123	17.94	2.94	20	
tert-Butylbenzene	20.64	1.0	20	0	103	78 - 124	20.45	0.916	20	
Tetrachloroethene	19.69	1.0	20	0	98.5	74 - 129	19.18	2.64	20	
Toluene	18.6	1.0	20	0	93.0	80 - 121	18.04	3.03	20	
trans-1,2-Dichloroethene	15.21	1.0	20	0	76.1	75 - 124	15.51	1.94	20	
trans-1,3-Dichloropropene	16.38	1.0	20	0	81.9	73 - 127	16.01	2.27	20	
Trichloroethene	17.63	1.0	20	1.049	82.9	79 - 123	18.01	2.12	20	
Trichlorofluoromethane	15.52	1.0	20	0	77.6	65 - 141	16.03	3.24	20	
Vinyl chloride	13.23	1.0	20	0	66.1	58 - 137	14.08	6.26	20	
Surr: 1,2-Dichloroethane-d4	*42.43*	*1.0*	*50*	*0*	*84.9*	*81 - 118*	*44.12*	*3.9*	*20*	
Surr: 4-Bromofluorobenzene	*50.67*	*1.0*	*50*	*0*	*101*	*85 - 114*	*51.26*	*1.16*	*20*	
Surr: Dibromofluoromethane	*45.48*	*1.0*	*50*	*0*	*91.0*	*80 - 119*	*45.75*	*0.596*	*20*	
Surr: Toluene-d8	*50.04*	*1.0*	*50*	*0*	*100*	*89 - 112*	*49.11*	*1.88*	*20*	

ALS Houston, US Date: 21-Oct-19

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP / GWTP
WorkOrder:	HS19101087

QC BATCH REPORT

Batch ID:	**R348661 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19101087-01 HS19101087-02

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
WorkOrder: **HS19101087**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 21-Oct-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP / GWTP
Work Order: HS19101087

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19101087-01	LH18/24-SP650_101719	Login	10/18/2019 10:17:16 AM	NDR	VOA040
HS19101087-02	Trip Blank	Login	10/18/2019 10:17:16 AM	NDR	VOA040

ALS Houston, US Date: 21-Oct-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19101087
Date/Time Received: **18-Oct-2019 08:45**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* eSignature 18-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 18-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.0°C UC/C	IR25	
Cooler(s)/Kit(s):	Red		
Date/Time sample(s) sent to storage:	10/18/2019 10:50am		
Water - VOA vials have zero headspace?	Yes ☐	No ☑	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Trip blank has headspace greater than 6mm

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate
ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP

Client Name:

Collected by: Scott Bessinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	VOC										Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHAB24-SP650-101719		17 OCT 2019	1400	-	N		WG	3	X													
TRIP BLANK		17 OCT 2019		-	TB		W	2	X													
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		

COMMENTS: 24 HOUR TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Bessinger	10/17/19	1430	1. PG	10/18/19	08:45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

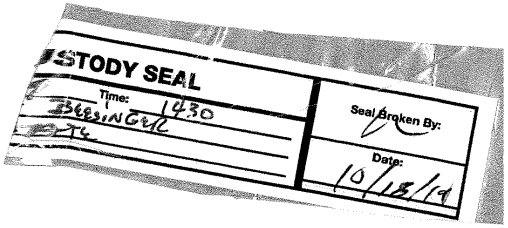
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Red Temp. 1.0 C/F 0

12# 25

Bhate Environmental Associates, Inc.
LHAAP / GWTP
HS19101087

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Date:
Name:
Company:


STODY SEAL
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1430
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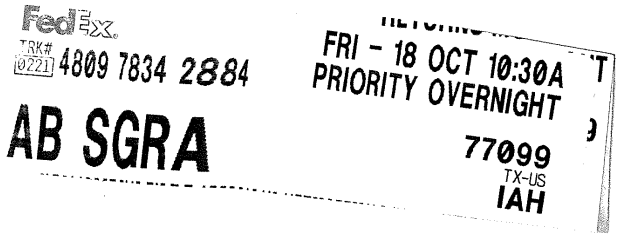
Date:
10/18/19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AB SGRA
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PRIORITY OVERNIGHT
77099
TX-US
IAH

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 07, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19101325**

Laboratory Results for: **Longhorn GW Treatment Plant - GWTP Weekly Effluent**

Dear Marcia,

ALS Environmental received 3 sample(s) on Oct 23, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19101325

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101325-01	LH18/24-SP650_102219	Groundwater		22-Oct-2019 14:00	23-Oct-2019 08:50	☐
HS19101325-02	LH18/24-SP650_102219_AIX	Groundwater		22-Oct-2019 14:00	23-Oct-2019 08:50	☐
HS19101325-03	Trip Blank	Water	ALS-070918-83	22-Oct-2019 00:00	23-Oct-2019 08:50	☑

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19101325

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

• The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

WetChemistry by Method E350.3

Batch ID: R349656

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: R348980

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder:HS19101325
Sample ID: LH18/24-SP650_102219
Lab ID:HS19101325-01
Collection Date: 22-Oct-2019 14:00
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: RG
Nitrogen, Ammonia (As N)	**5.9**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	01-Nov-2019 13:30
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: KVL
Phosphorus, Total Orthophosphate (As P)	**4.06**	a	**0.100**	**0.250**	**0.250**	**mg/L**	10	23-Oct-2019 18:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	05-Nov-2019 09:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder:HS19101325
Sample ID: LH18/24-SP650_102219_AIX
Lab ID:HS19101325-02
Collection Date: 22-Oct-2019 14:00
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Nov-2019 16:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19101325

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R348980 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Groundwater	
HS19101325-01	LH18/24-SP650_102219	22 Oct 2019 14:00			23 Oct 2019 18:00	10
Batch ID: R349656 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Groundwater	
HS19101325-01	LH18/24-SP650_102219	22 Oct 2019 14:00			01 Nov 2019 13:30	1
Batch ID: R349770 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19101325-01	LH18/24-SP650_102219	22 Oct 2019 14:00			05 Nov 2019 09:36	1
Batch ID: R350024 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS19101325-02	LH18/24-SP650_102219_AIX	22 Oct 2019 14:00			07 Nov 2019 16:10	1

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19101325

QC BATCH REPORT

Batch ID: R348980 (0) **Instrument:** UV-2450 **Method:** ORTHO PHOSPHATE (PO4) AS P BY E365.3

MBLK Sample ID: **MBLK-R348980** Units: **mg/L** Analysis Date: **23-Oct-2019 18:00**
Client ID: Run ID: **UV-2450_348980** SeqNo: **5310988** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R348980** Units: **mg/L** Analysis Date: **23-Oct-2019 18:00**
Client ID: Run ID: **UV-2450_348980** SeqNo: **5310987** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.254	0.0250	0.25	0	102	85 - 115				

MS Sample ID: **HS19101325-01MS** Units: **mg/L** Analysis Date: **23-Oct-2019 18:00**
Client ID: **LH18/24-SP650_102219** Run ID: **UV-2450_348980** SeqNo: **5310990** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	6.29	0.250	2.5	4.06	89.2	80 - 120				

MSD Sample ID: **HS19101325-01MSD** Units: **mg/L** Analysis Date: **23-Oct-2019 18:00**
Client ID: **LH18/24-SP650_102219** Run ID: **UV-2450_348980** SeqNo: **5310989** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	6.29	0.250	2.5	4.06	89.2	80 - 120	6.29	0	20	

The following samples were analyzed in this batch: HS19101325-01

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: HS19101325

QC BATCH REPORT

Batch ID: R349656 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-R349656** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-R349656** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326339** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.17	0.20	10	0	102	80 - 120				

MS Sample ID: **HS19101541-01MS** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326342** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.34	0.20	10	0.181	102	80 - 120				

MSD Sample ID: **HS19101541-01MSD** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.16	0.20	10	0.181	99.8	80 - 120	10.34	1.75	20	

The following samples were analyzed in this batch: HS19101325-01

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
WorkOrder: **HS19101325**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 07-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant - GWTP Weekly Effluent
Work Order: HS19101325

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19101325-01	LH18/24-SP650_102219	Login	10/23/2019 10:27:03 AM	NDR	WET025
HS19101325-01	LH18/24-SP650_102219	Login	10/23/2019 10:27:03 AM	NDR	WET025
HS19101325-01	LH18/24-SP650_102219	Login	10/23/2019 10:27:03 AM	NDR	Sub
HS19101325-02	LH18/24-SP650_102219_AIX	Login	10/23/2019 10:27:03 AM	NDR	Sub

ALS Houston, US Date: 07-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19101325
Date/Time Received: **23-Oct-2019 08:50**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 23-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature — 23-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:N/A
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0c/1.5°C UC/C	IR11	
Cooler(s)/Kit(s):	44704		
Date/Time sample(s) sent to storage:	10/23/2019 10:45am		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Trip Blank rec'd not on COC logged in on HOLD

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate ENVIRONMENTAL CONSTRUCTION LHLHGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP Weekly Effluent

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	TOC	Ammonia-N	Orthophosphate	Perchlorate	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
L418/24-SP650-102219		22 OCT 2019	1400	-	N		WG	4	X	X	X					
L418/24-SP650-102219-AIX		22 OCT 2019	1400	-	N		WG	1				X				
				-												
				-												
				-												
				-												
				-												
				-												
				-												

Sample Analysis Requested [5] | Quality Assurance Samples [6]

COMMENTS: STANDARD TAT

HS19101325

Bhate Environmental Associates, Inc.
Lighorn GW Treatment Plant - GWTP Weekly Effluen

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	Scott Beesinger	10/22/19	1430	1. RB	10/23/19	0850
2.				2.		
3.				3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

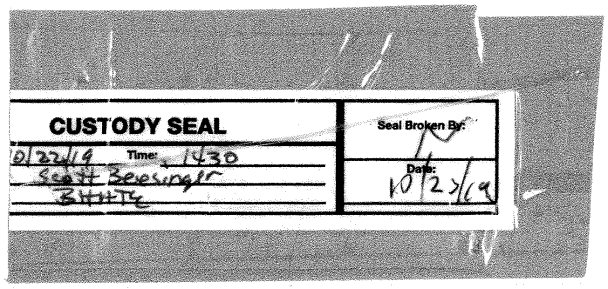
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

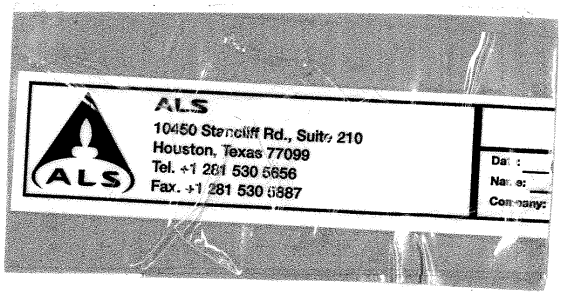
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Temp 4°C 2.0

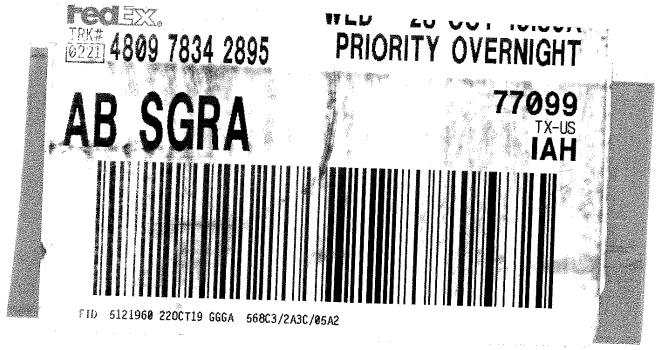
44704

12 N 11


CUSTODY SEAL
Seal Broken By:
Time: 1430
Scott Beesinger
Date:
10/23/19


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Date:
Name:
Company:

1


FedEx
TRK#
0221
4809 7834 2895
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH
FID 5121960 220CT19 GGGA 568C3/2A3C/05A2

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1929701; 1930341

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2308 (250608)

General Set Information: There were two field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 680968) was less than 1/2 the CRDL. The recovery for the LCS (680969) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 1929701001 (Client ID: LH18/24-650_101519_BIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (680970/71) percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 680966) is reported from the analysis of the Laboratory Control Sample (LCS – 680969) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Thomas Bosch October 25, 2019
Analyst Date

ANALYTICAL REPORT

Report Date: October 25, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1930341**
Project ID: HS19101325-02 102219
Purchase Order: NA
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_102219_AIX	1930341001	10/22/19	10/24/19	HS19101325-02

ANALYTICAL REPORT

Workorder: 34-1930341
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_102219_AIX**	Sampling Site: HS19101325-02	Collected: 10/22/2019
Lab ID: 1930341001	Media: 125 mL Nalgene	Received: 10/24/2019
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2308 (HBN: 250608)	**%Solids:** NA
	Analyzed: 10/25/2019 09:50	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	1.7	1.0	2.0	4.0	1	J

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 10/25/2019 11:00	/S/ Stephen Brose 10/25/2019 12:45

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1930341
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1930341

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2308 (HBN: 250608)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 680968
Analyzed: 10/25/2019 08:54
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 680969
Analyzed: 10/25/2019 08:27
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	2.89	3.00	96.4	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1929701001	**MS:**	680970
Analyzed:	10/25/2019 09:08	**Analyzed:**	10/25/2019 09:22
Dilution:	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L

		MSD:	680971
		Analyzed:	10/25/2019 09:36
		Dilution:	1
		Units:	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.6	3	120	78.8	123.8	3.61	120	0.133	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
10/25/2019 11:16	10/25/2019 12:45

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

R303341

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

18698/#2

SAMPLING STATE: **Dept of Defense** **COC ID:** **12469**

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19101325
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19101325-02**	**LH18/24-SP650_102219_AIX**	**Groundwater**	**22 Oct 2019 14:00**
	SUB_Perch-6850			06 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: Agreed Hs Date/Time: 10/25/19 17:00

Received By: Date/Time: 10/24/19 0852

Cooler ID(s): Temperature(s):

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task:	Split:	Workorder ID: 1930341	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	COOL	EPA 6850, DoD QSM
1	10/22/2019 14:00	LH18/24-SP650_102219_AIX	1930341001		Water	A	1		A
2									
3									
4									
5									
6									
7									
8									
9									
10									

22 of 147

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
VanTassell, Tami	10/24/2019 08:52	ALS Sample Receiving	Sample Login
[signature] R.33-1	10-24-19 14:30 10-25-19/08:00	ISB T. Bush	Storage CLOA analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: PO: HS19101525

Date/Time of Receipt: 10/24/19 0852

Number of Coolers Received: 1

Condition of Coolers:	(Acceptable)/Unacceptable	Temperature Control:	(Present)/Not Included
Cooler Custody Seals:	(Present)/Absent/NA		
	(Intact)/Broken/NA	Location Temp Taken:	(Control)/Between Samples
Container Custody Seals:	Present/(Absent)/NA		
	Intact/Broken/(NA)	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	(Yes)/No/NA		
	(Frozen)/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.
1	C19 9922	3 °C	4	C19	°C	7	C19	°C
2	C19	°C	5	C19	°C	8	C19	°C
3	C19	°C	6	C19	°C	9	C19	°C

Taken By: _____ (Signature) Rebecca Wise (Printed Name) 10/24/19 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

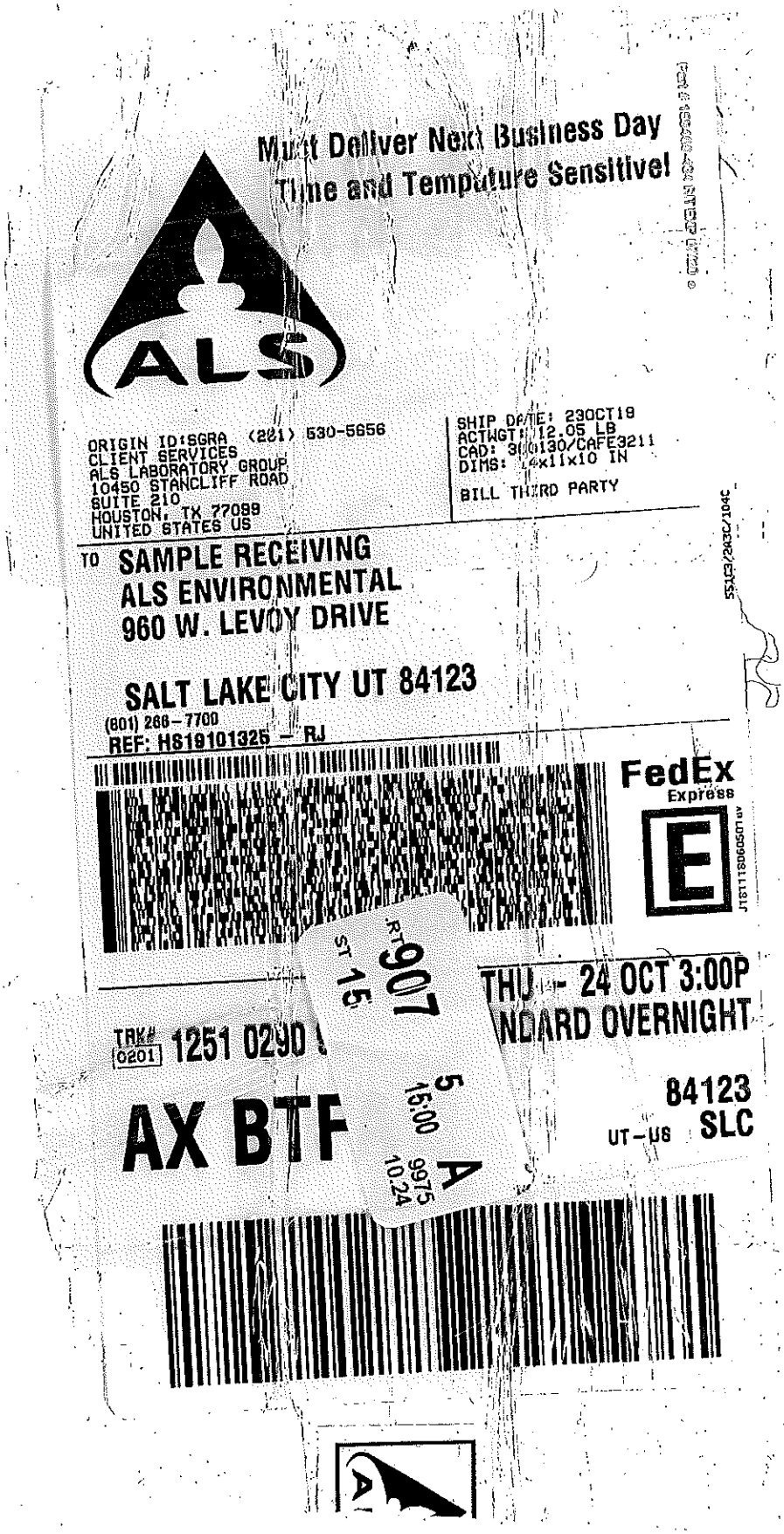
Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____


Must Deliver Next Business Day
Time and Tempature Sensitive!
ALS
ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US
SHIP DATE: 23OCT18
ACTWGT: 12.05 LB
CAD: 3[illegible]130/CAFE3211
DIMS: 14x11x10 IN
BILL THIRD PARTY
TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE
SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19101325 - RJ
FedEx
Express
THU - 24 OCT 3:00P
NOARD OVERNIGHT
TRK# 0201 1251 0290
AX BTF
84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2308 **Created:** 10/25/2019 07:39 **Instrument:** **HBN:** 250608

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1929701 [ENV_LVL4]

Workorder: 1930341 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	680965	CCV for HBN 250608 [ELMS/2308]				CCV	3		E685041C3Q	5311		10/31/2019	
2	680966	RLVS for HBN 250608 [ELMS/2308				RLVS	3		E685041C3Q	5311		10/31/2019	
3	680967	ICS for HBN 250608 [ELMS/2308]				ICS	3		E6850..D3Q	5311		10/31/2019	
4	680968	LMB for HBN 250608 [ELMS/2308]				LMB	3		E6850Q413Q	5311		10/31/2019	
5	680969	LCS for HBN 250608 [ELMS/2308]				LCS	3		E6850Q413Q	5311		10/31/2019	
6	1929701001	LH18/24-SP650_101519_AIX				SAMPLE	3	1929701001-A	E6850Q41.3	5480	11/12/2019	10/31/2019	
7	680970	LH18/24-SP650...(1929701001MS)				MS	3		E6850Q413Q	5311		10/31/2019	
8	680971	LH18/24-SP65...(1929701001MSD)				MSD	3		E6850Q413Q	5311		10/31/2019	
9	1930341001	LH18/24-SP650_102219_AIX				SAMPLE	3	1930341001-A	E6850Q41.3	5480	11/19/2019	11/6/2019	
10	680972	CCV for HBN 250608 [ELMS/2308]				CCV	3		E685041C3Q	5311		10/31/2019	

00962110

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1929701 (001); 1930341 (001)
ELMS Batch/HBN ID: 2308 (250608)
Prep Date: 10/25/2019 Analysis Date: 10/25/2019 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\25OCT19D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Thomas Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 680969; Target = 3.0µg/L. ASTM type II water was used for LMB 680968.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1929701001 (Client ID's: LH18/24-650_101519_BIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\250608-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 680966) is reported from the analysis of the Laboratory Control Sample (LCS – 680969) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2308 HBN: 250608 **Sample Set IDs if Applicable:** 1929701 / 1930341	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 49946
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/23/2019 03:09PM
Verified By: Thomas Bosch
Verify Date:

Amount: 25 mL
Expires: 09/19/2020
Usable: Yes
Lab Lot: CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 43659
MFG: AccuStandard
MFG Lot: 218065075
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 09/17/2018 09:09AM

Amount: 100 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 49947
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/23/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 47516
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		Description - 6850 QC Stock STD 1,000ug/mL
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 47515
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO GUIDE 34 ISO 17025 ISO 9001

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: ** For isotopically labeled compounds, MW listed is for the fully enriched product.*	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\25OCT19D\25OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	680965	CCV@25	Vial 71	1	Control	1	1.70329e6	7.510	26.49286
*	680969	QC@3.0	Vial 72	1	Control	2	2.05604e5	7.555	2.89284
*	680967	ICS@3.0	Vial 73	1	Control	3	1.48340e5	7.334	2.99490
*	680968	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1929701001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	680970	297011S	Vial 76	1	Sample	6	2.01808e5	7.254	3.60041
*	680971	297011D	Vial 77	1	Sample	7	2.03980e5	7.245	3.60518
*	1930341001		Vial 78	1	Sample	8	9.10986e4	7.269	1.72118
*	680972	CCV@25	Vial 71	1	Control	9	1.58706e6	7.598	26.42773

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	680965	CCV@25	Vial 71	1	Control	1	2.18335e5	7.538	5.00000
*	680969	QC@3.0	Vial 72	1	Control	2	2.61379e5	7.582	5.00000
*	680967	ICS@3.0	Vial 73	1	Control	3	1.82243e5	7.366	5.00000
*	680968	LMB	Vial 74	1	Control	4	2.15449e5	7.630	5.00000
*	1929701001		Vial 75	1	Sample	5	2.19155e5	7.261	5.00000
*	680970	297011S	Vial 76	1	Sample	6	2.06599e5	7.272	5.00000
*	680971	297011D	Vial 77	1	Sample	7	2.08548e5	7.261	5.00000
*	1930341001		Vial 78	1	Sample	8	1.92027e5	7.290	5.00000
*	680972	CCV@25	Vial 71	1	Control	9	2.03992e5	7.612	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	680965	CCV@25	Vial 71	1	Control	1	5.10799e5	7.525	26.10720
*	680969	QC@3.0	Vial 72	1	Control	2	6.93562e4	7.573	3.11266
*	680967	ICS@3.0	Vial 73	1	Control	3	5.28908e4	7.365	3.41539
*	680968	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	1929701001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	680970	297011S	Vial 76	1	Sample	6	6.74461e4	7.253	3.85499
*	680971	297011D	Vial 77	1	Sample	7	7.03063e4	7.264	3.98404
*	1930341001		Vial 78	1	Sample	8	3.36624e4	7.283	2.01009
*	680972	CCV@25	Vial 71	1	Control	9	4.81945e5	7.623	26.34139

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\25OCT19D.S

Sequence Table:

Method and Injection Info Part:

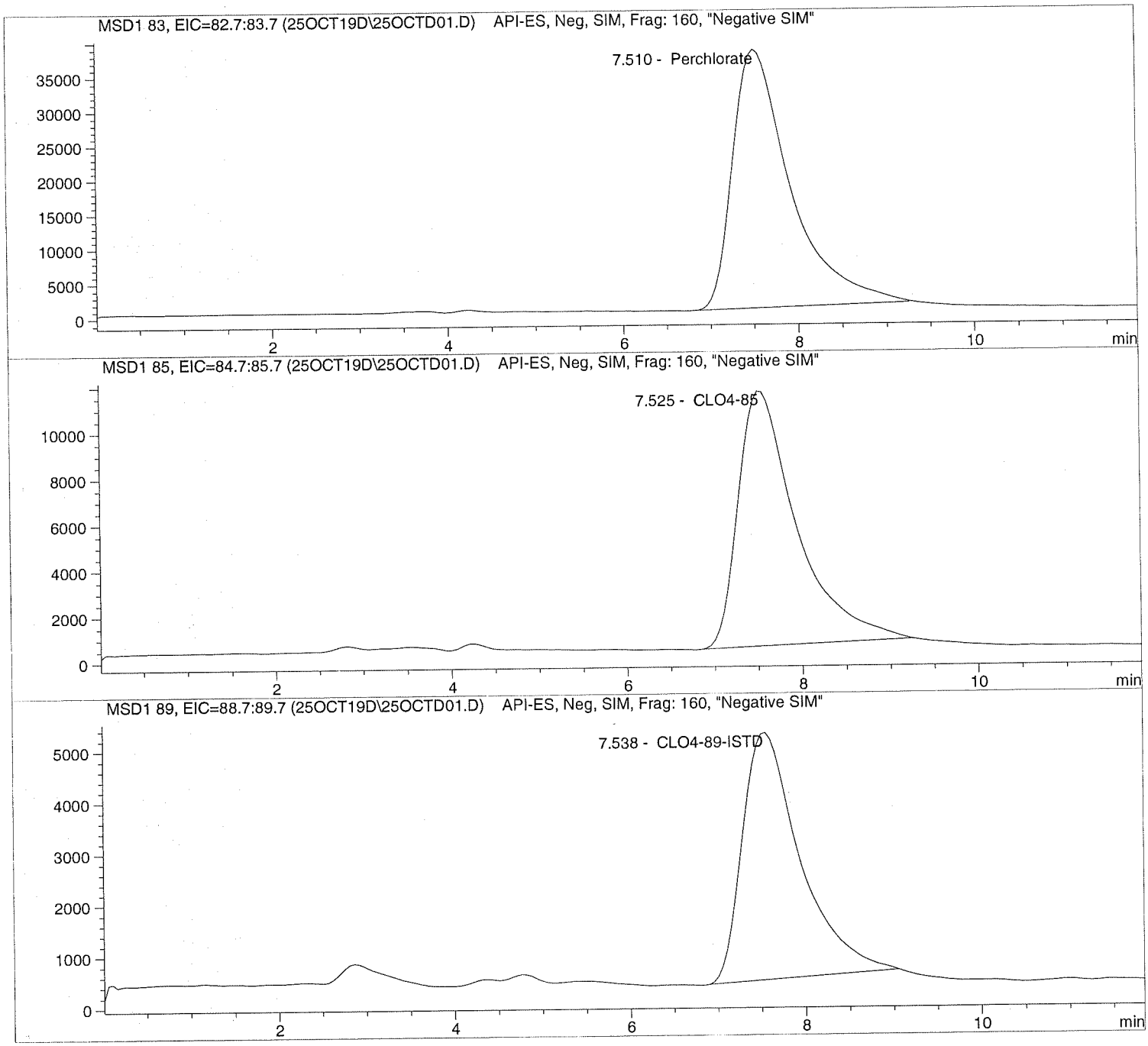
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	680965	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	680969	QC@3.0	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	680967	ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	680968	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	1929701001		CLO4-AQN	1	Sample		
6	Vial 76	680970	297011S	CLO4-AQN	1	Sample		
7	Vial 77	680971	297011D	CLO4-AQN	1	Sample		
8	Vial 78	1930341001		CLO4-AQN	1	Sample		
9	Vial 71	680972	CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD01.D Sample Name: 680965 CCV@25

Injection Date:	10/25/2019 08:12:20	Seq Line:	1
Sample Name:	680965 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD01.D Sample Name: 680965 CCV@25

Injection Date:	10/25/2019 08:12:20	Seq Line:	1
Sample Name:	680965 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.510	PBA	1703287.4	26.4929	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.525	PBA	510798.5	26.1072	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.538	PBA	218334.9	5.0000	CLO4-89-ISTD

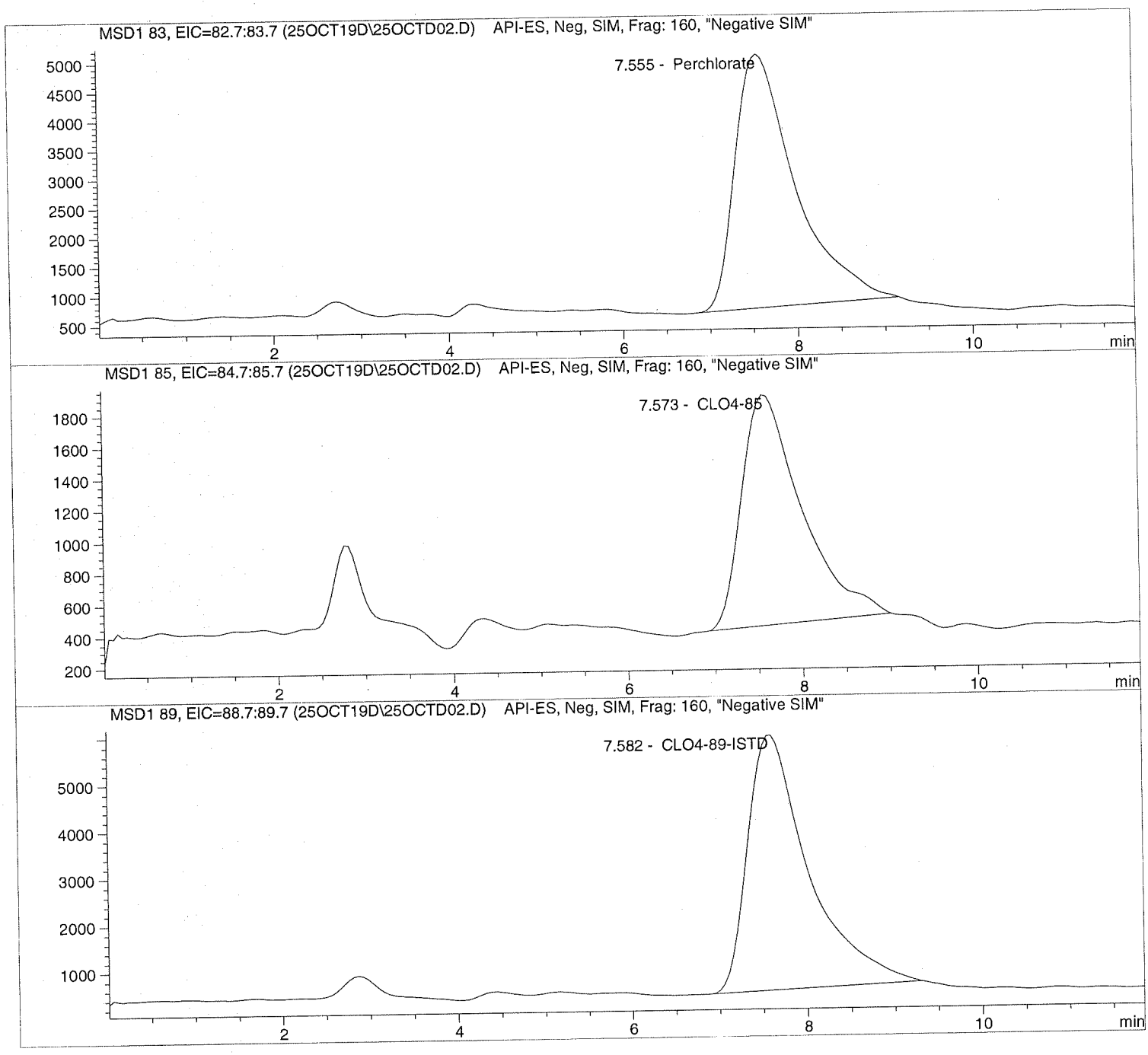
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD02.D Sample Name: 680969 QC@3.0

Injection Date:	10/25/2019 08:27:07	Seq Line:	2
Sample Name:	680969 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD02.D Sample Name: 680969 QC@3.0

Injection Date:	10/25/2019 08:27:07	Seq Line:	2
Sample Name:	680969 QC@3.0	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.555	PBA	205604.3	2.8928	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.573	PBA	69356.2	3.1127	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.582	PBA	261379.1	5.0000	CLO4-89-ISTD

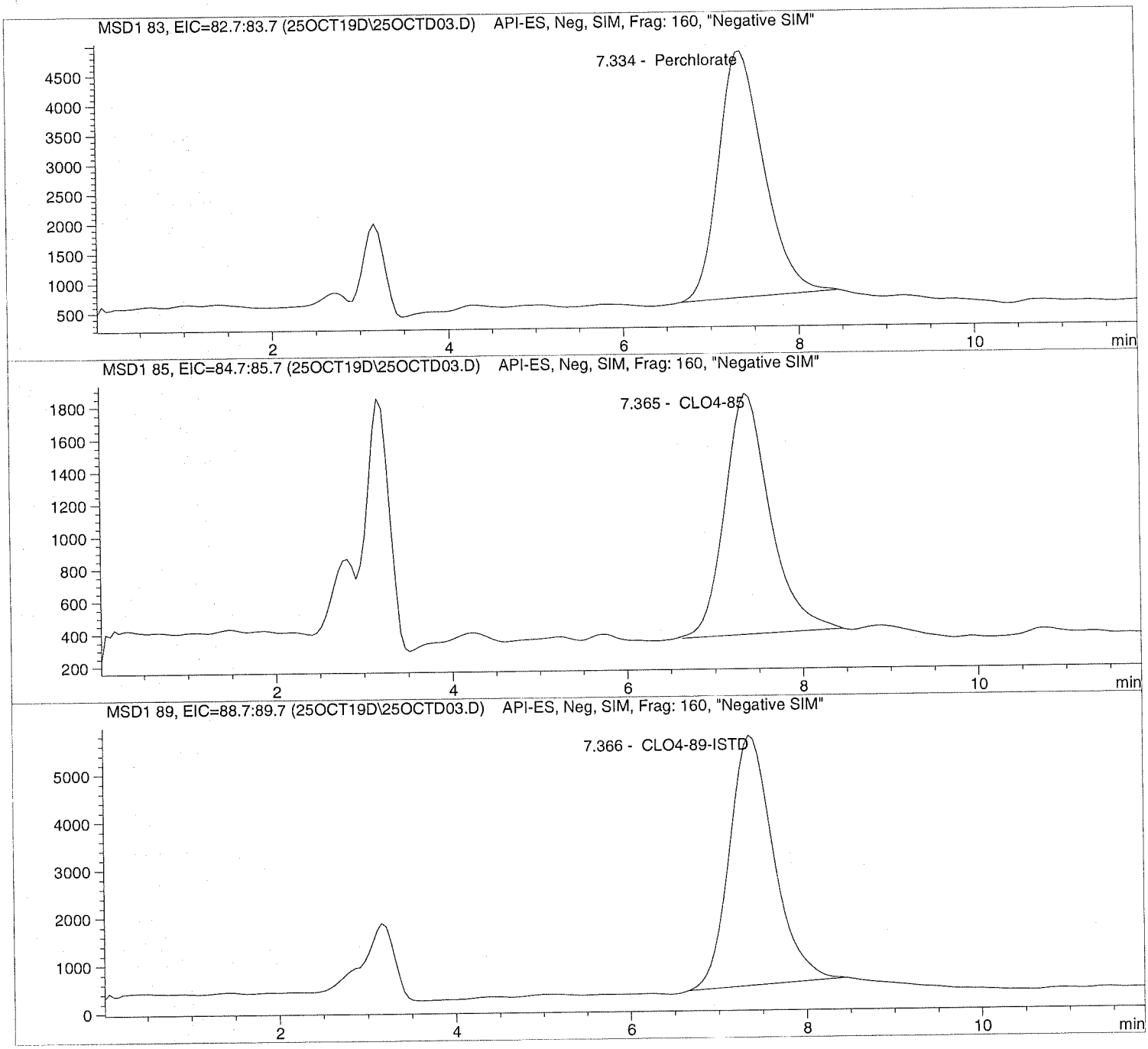
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD03.D Sample Name: 680967 ICS@3.0

Injection Date:	10/25/2019 08:41:01	Seq Line:	3
Sample Name:	680967 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD03.D Sample Name: 680967 ICS@3.0

Injection Date:	10/25/2019 08:41:01	Seq Line:	3
Sample Name:	680967 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.334	PBA	148340.2	2.9949	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.365	PBA	52890.8	3.4154	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.366	PBA	182242.7	5.0000	CLO4-89-ISTD

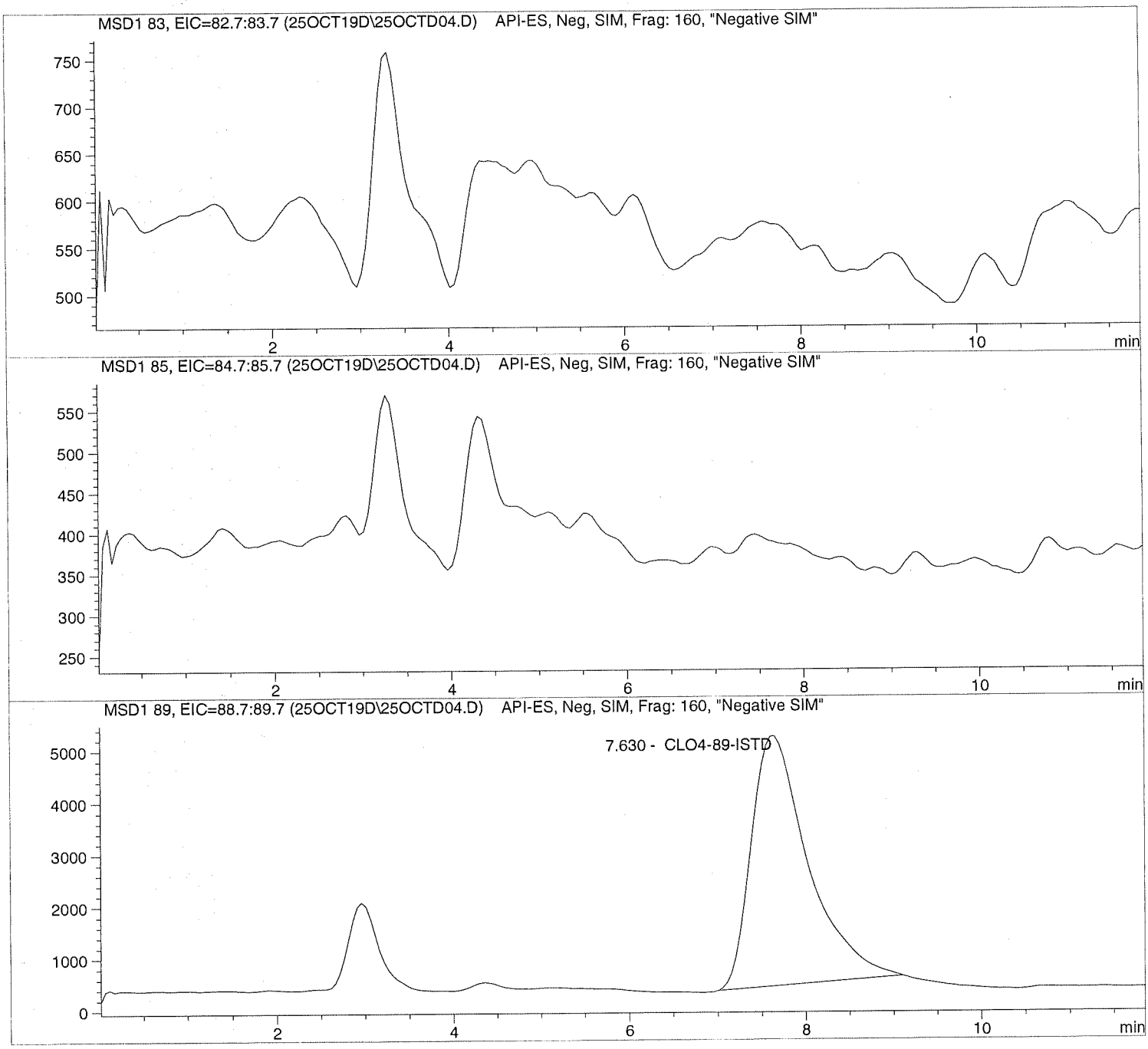
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD04.D Sample Name: 680968 LMB

Injection Date:	10/25/2019 08:54:59	Seq Line:	4
Sample Name:	680968 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD04.D Sample Name: 680968 LMB

Injection Date:	10/25/2019 08:54:59	Seq Line:	4
Sample Name:	680968 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.630	PBA	215449.3	5.0000	CLO4-89-ISTD

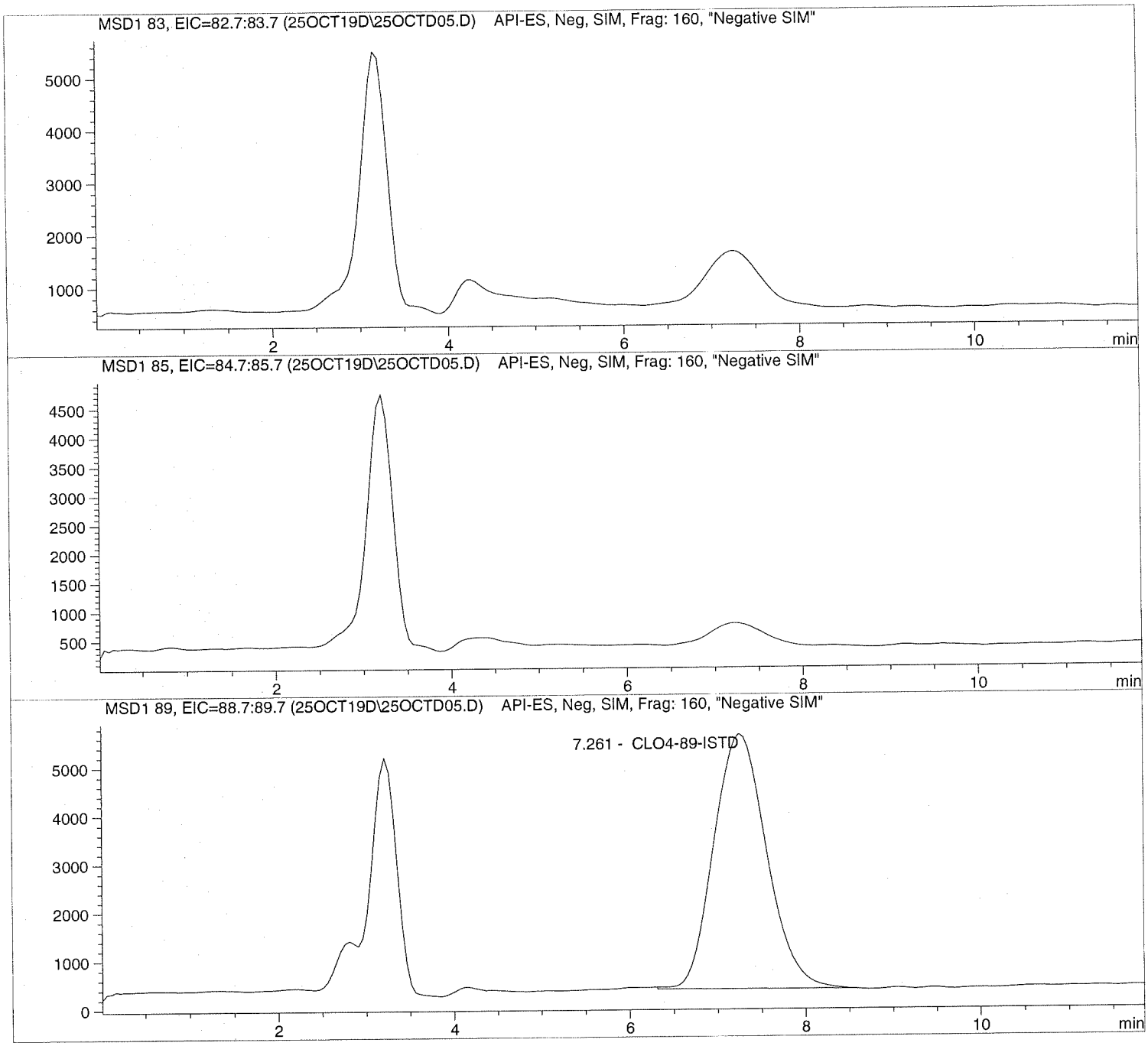
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD05.D Sample Name: 1929701001

Injection Date:	10/25/2019 09:08:55	Seq Line:	5
Sample Name:	1929701001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD05.D Sample Name: 1929701001

Injection Date:	10/25/2019 09:08:55	Seq Line:	5
Sample Name:	1929701001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.261	BBA	219155.0	5.0000	CLO4-89-ISTD

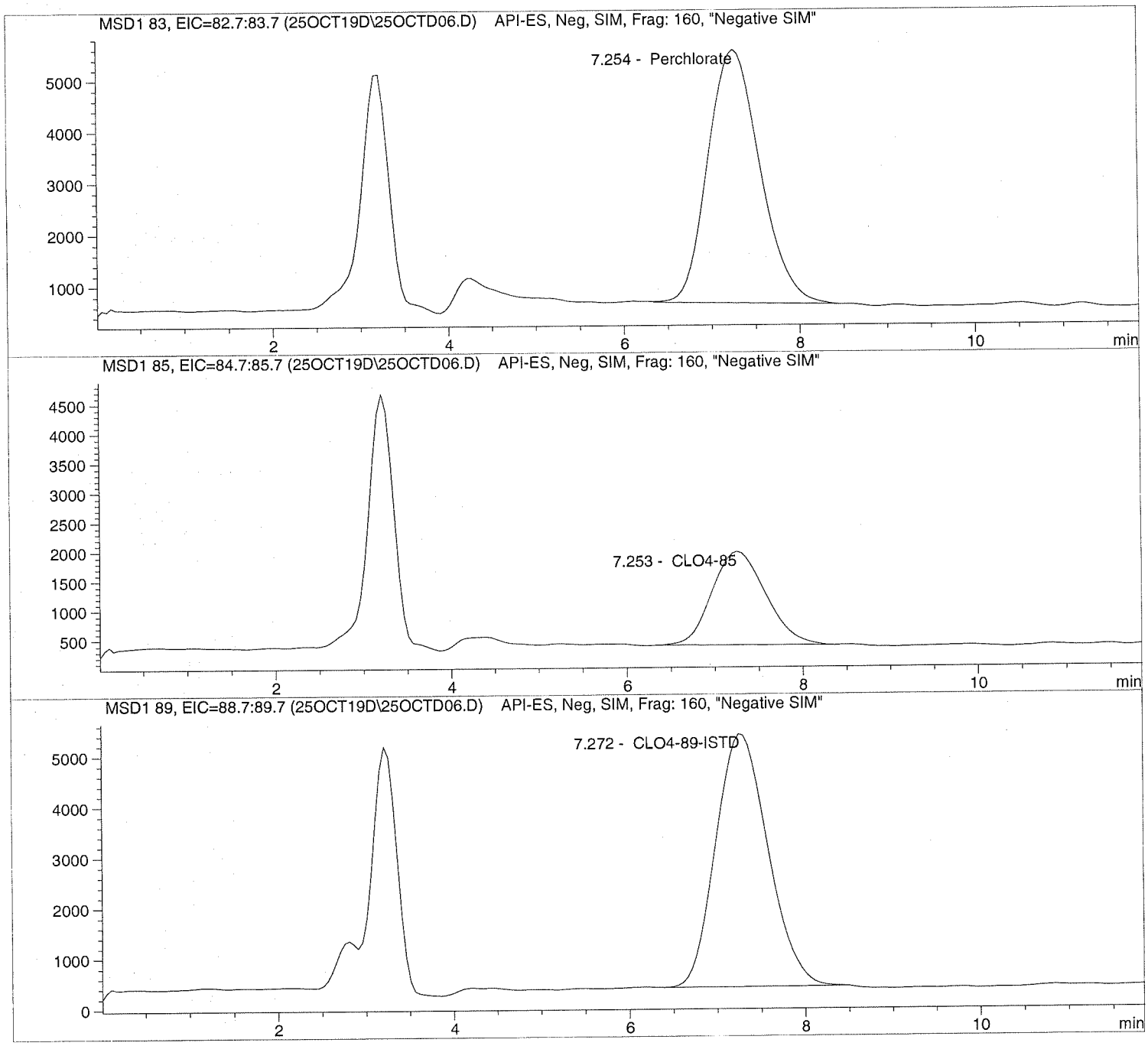
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD06.D Sample Name: 680970 297011S

Injection Date:	10/25/2019 09:22:50	Seq Line:	6
Sample Name:	680970 297011S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD06.D Sample Name: 680970 297011S

Injection Date:	10/25/2019 09:22:50	Seq Line:	6
Sample Name:	680970 297011S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.254	BBA	201808.5	3.6004	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.253	PBA	67446.1	3.8550	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.272	BBA	206599.3	5.0000	CLO4-89-ISTD

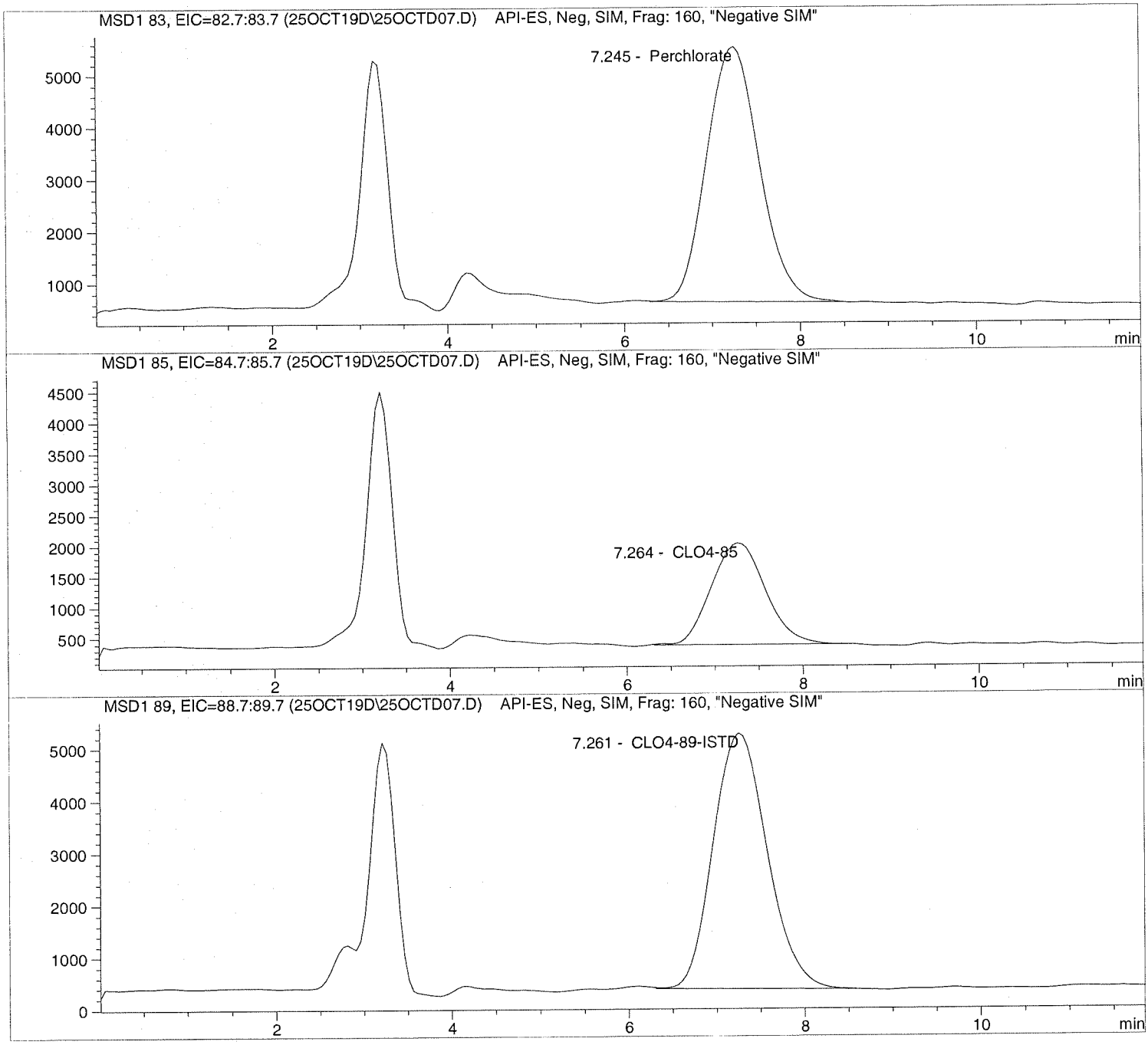
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD07.D Sample Name: 680971 297011D

Injection Date:	10/25/2019 09:36:45	Seq Line:	7
Sample Name:	680971 297011D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD07.D Sample Name: 680971 297011D

Injection Date:	10/25/2019 09:36:45	Seq Line:	7
Sample Name:	680971 297011D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.245	BBA	203980.5	3.6052	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.264	PBA	70306.3	3.9840	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.261	BBA	208548.1	5.0000	CLO4-89-ISTD

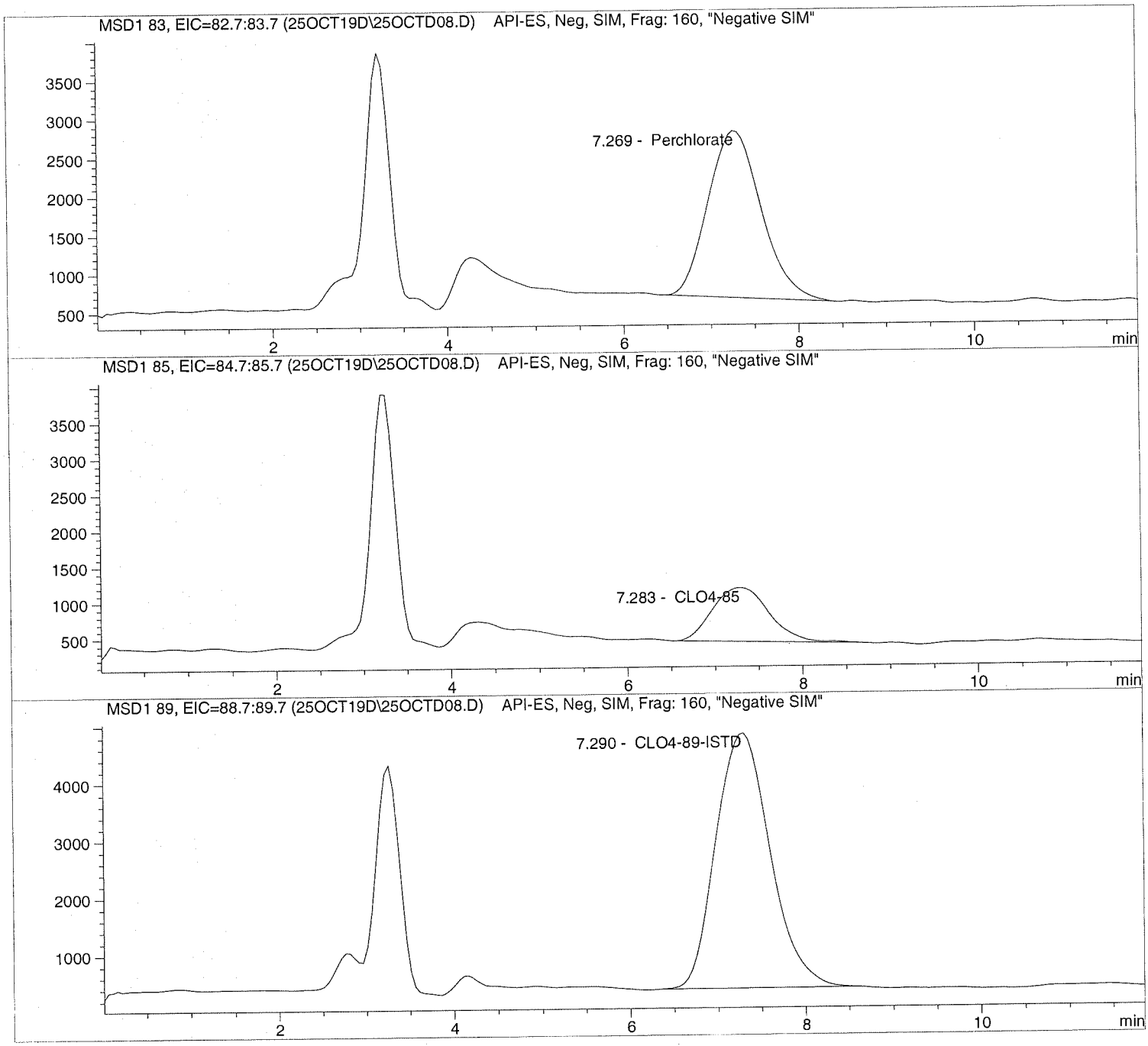
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD08.D Sample Name: 1930341001

Injection Date:	10/25/2019 09:50:39	Seq Line:	8
Sample Name:	1930341001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD08.D Sample Name: 1930341001

Injection Date:	10/25/2019 09:50:39	Seq Line:	8
Sample Name:	1930341001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.269	PBA	91098.6	1.7212	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.283	PBA	33662.4	2.0101	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.290	PBA	192027.2	5.0000	CLO4-89-ISTD

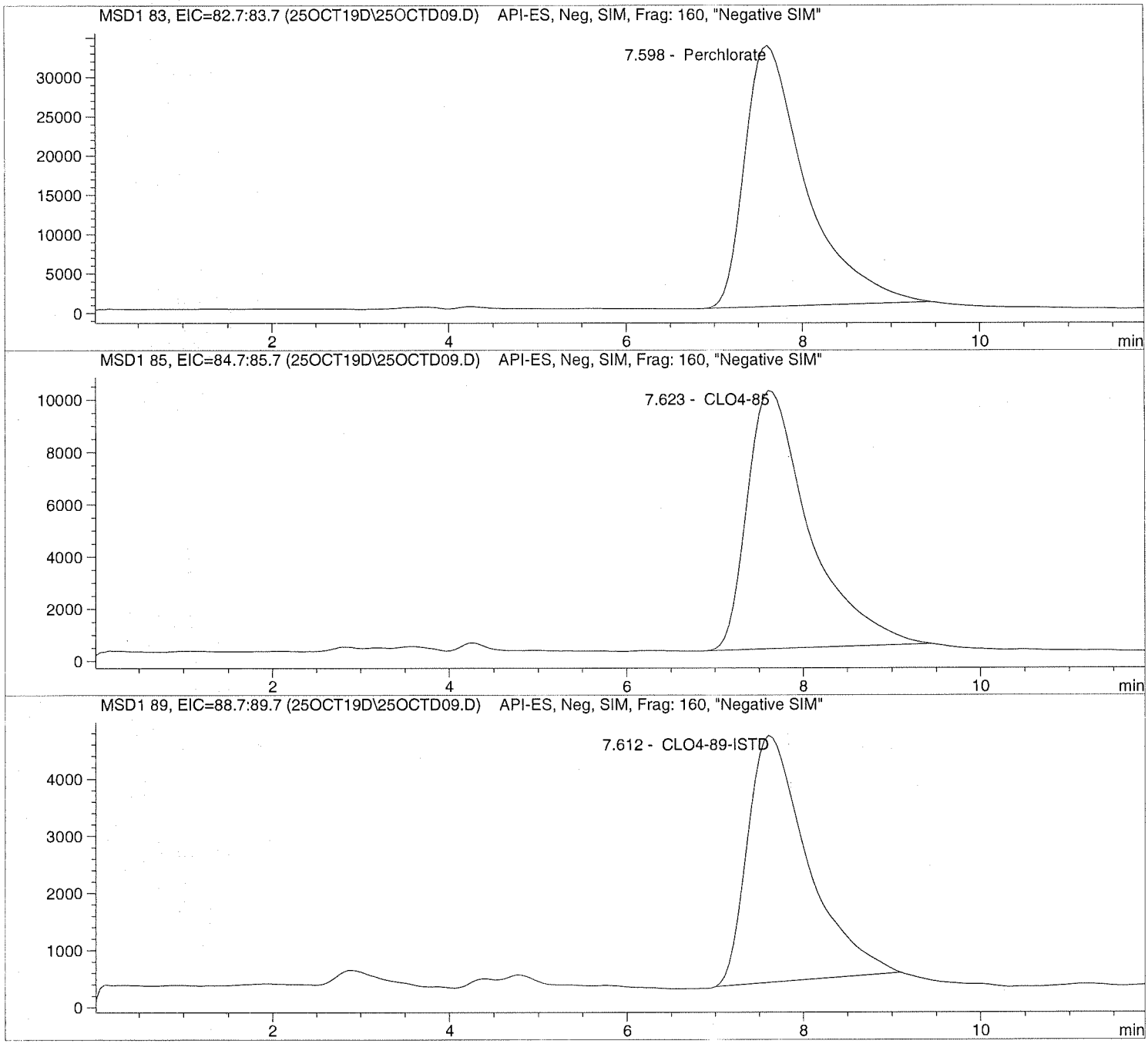
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD09.D Sample Name: 680972 CCV@25

Injection Date:	10/25/2019 10:04:36	Seq Line:	9
Sample Name:	680972 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\25OCT19D\25OCTD09.D Sample Name: 680972 CCV@25

Injection Date:	10/25/2019 10:04:36	Seq Line:	9
Sample Name:	680972 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.598	PBA	1587056.3	26.4277	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.623	PBA	481944.9	26.3414	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.612	PBA	203991.8	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

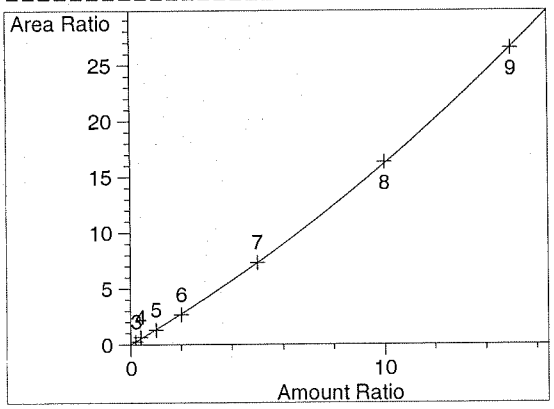
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

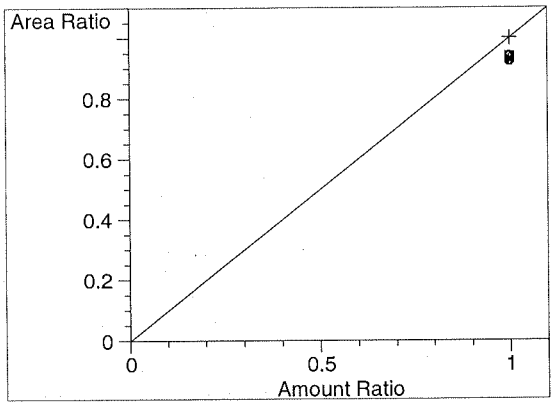
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

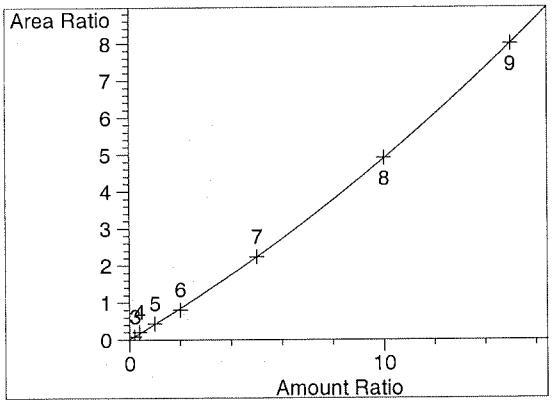
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

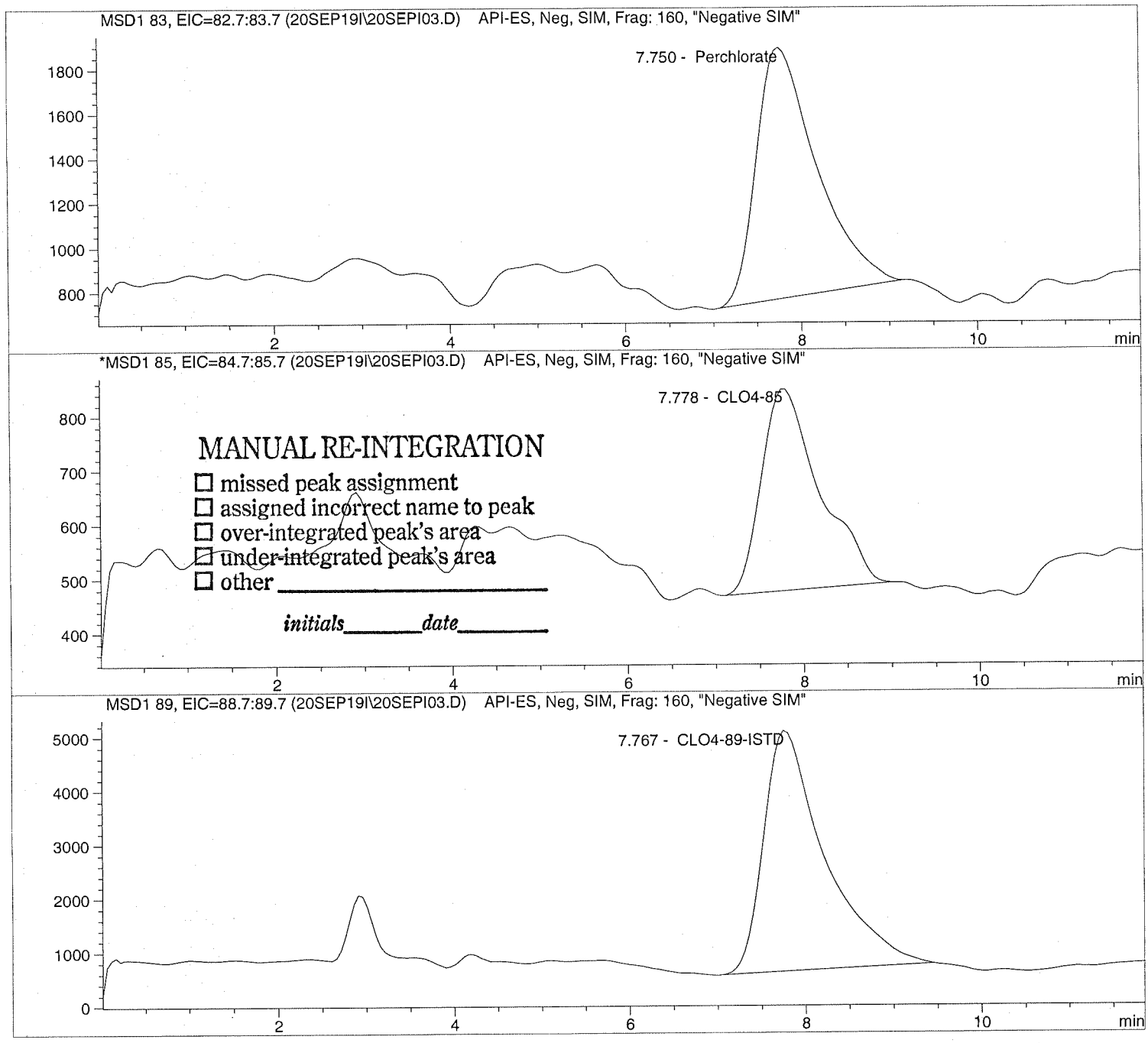
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

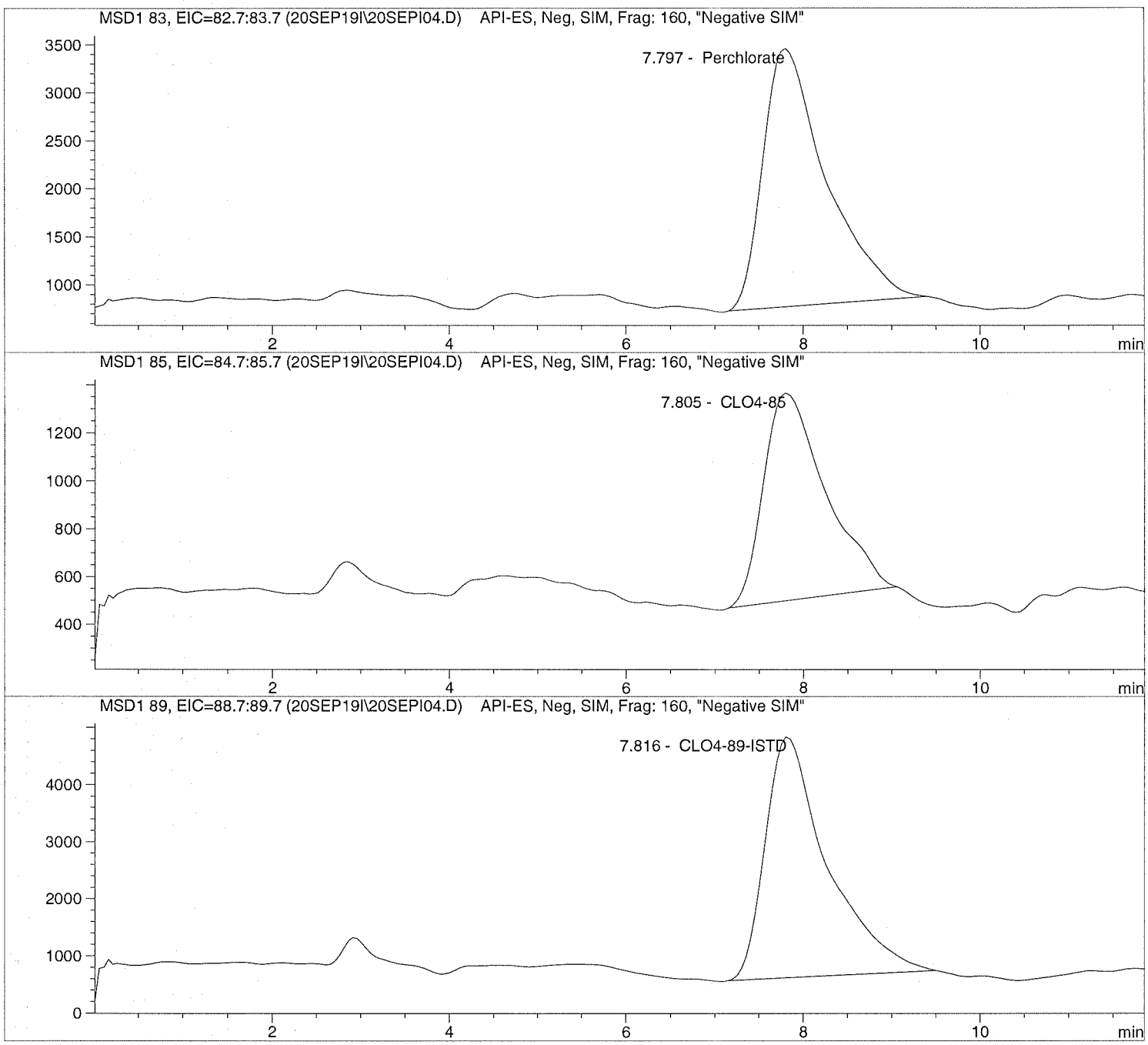
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

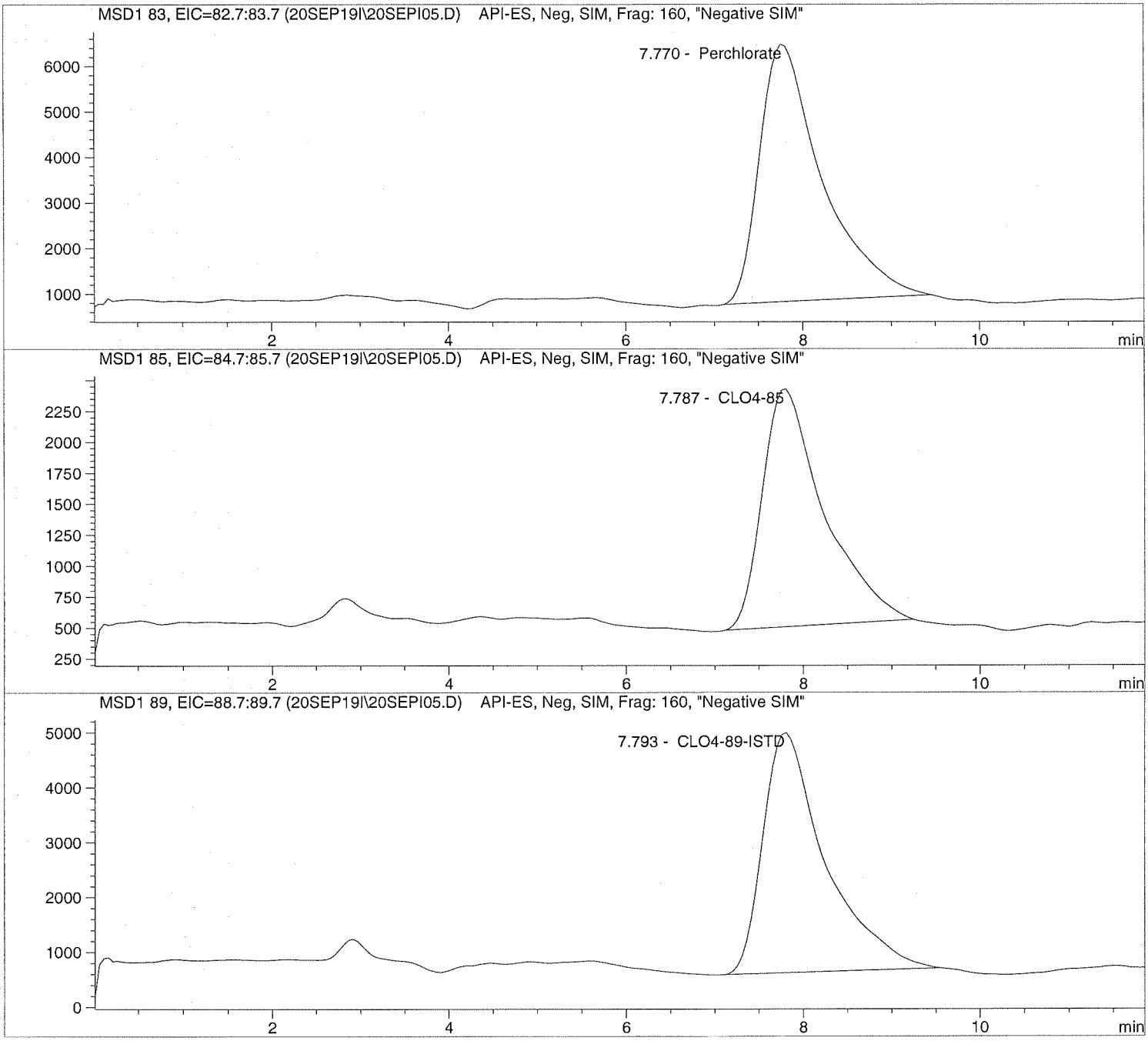
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

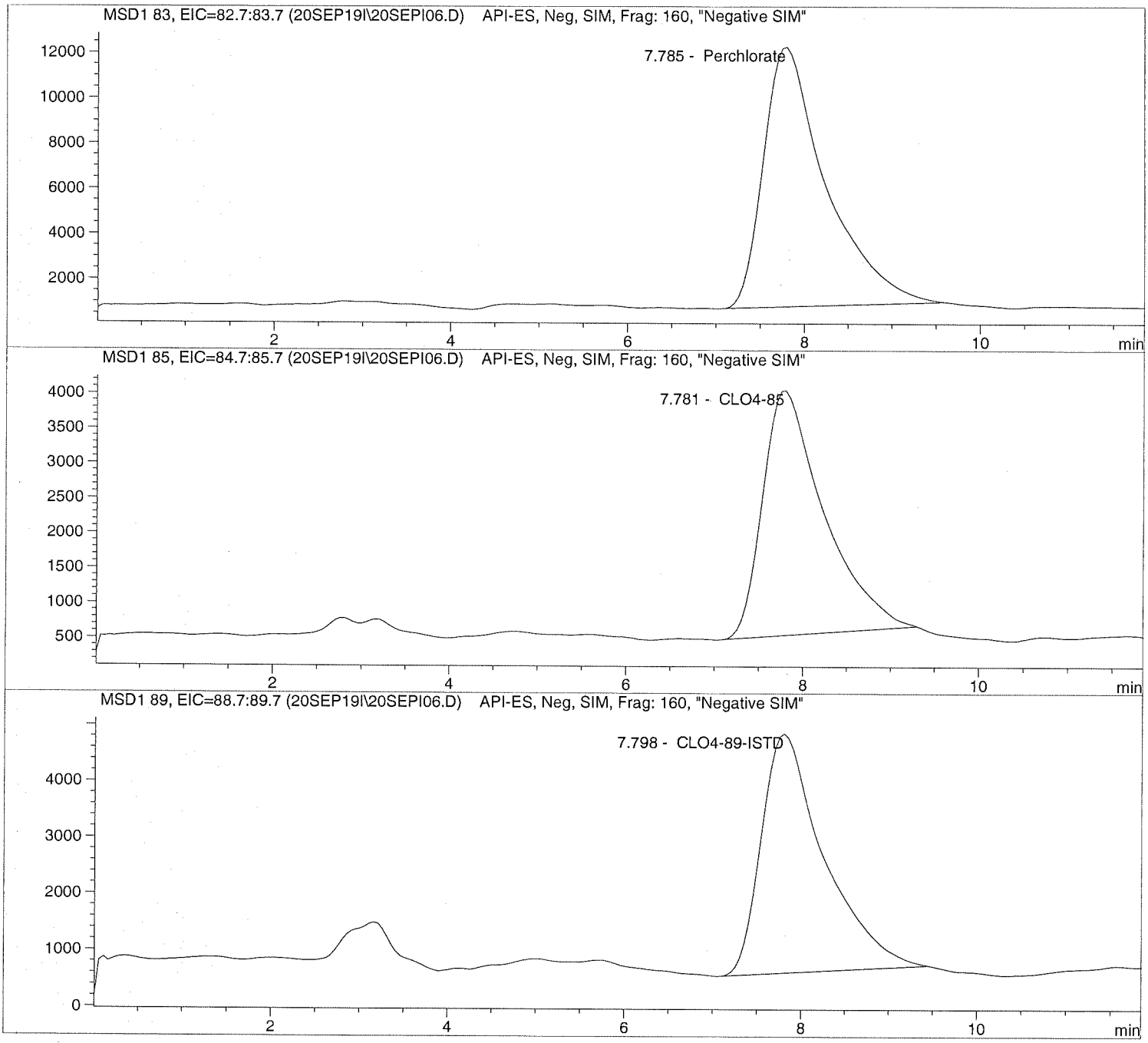
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

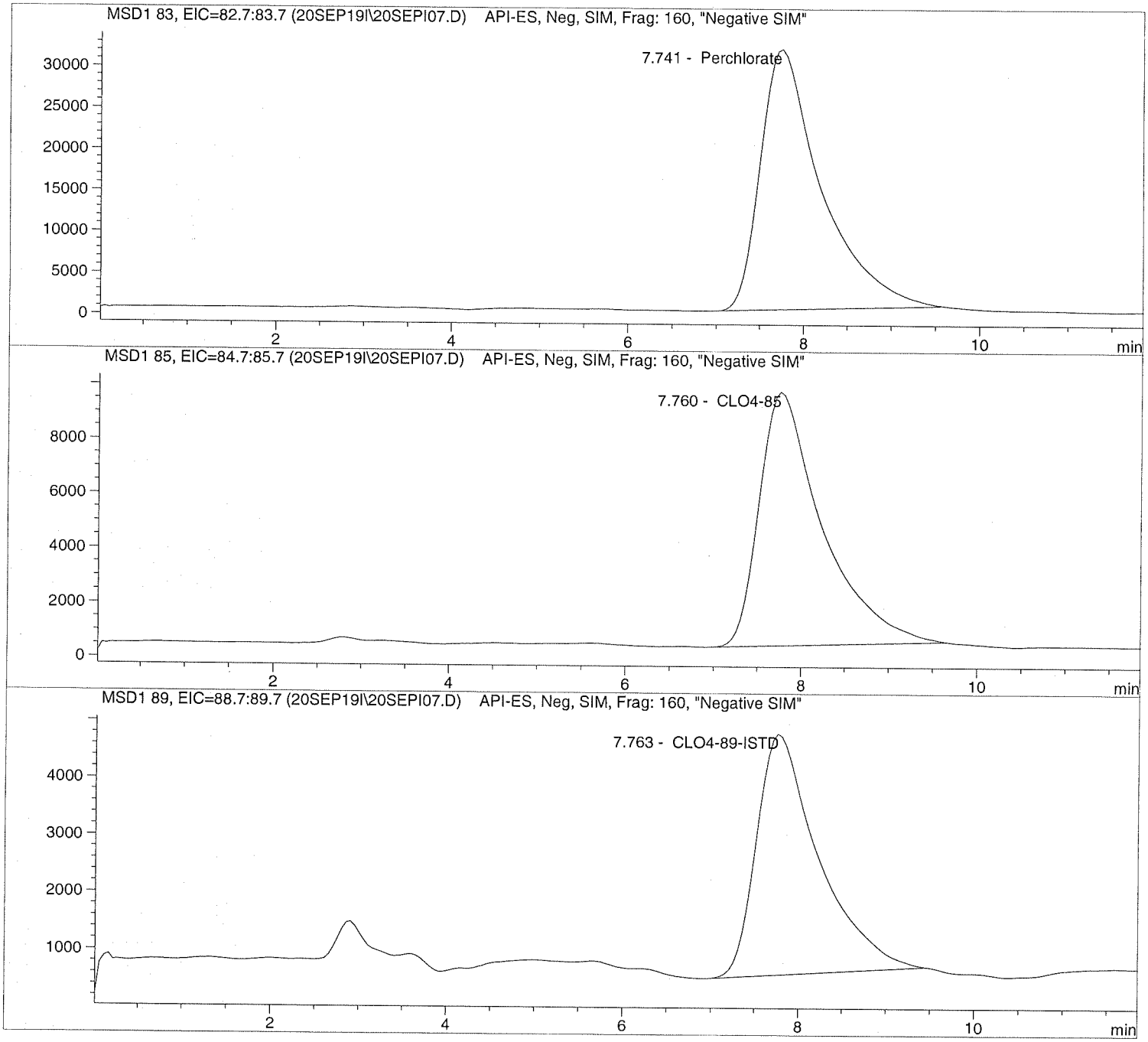
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

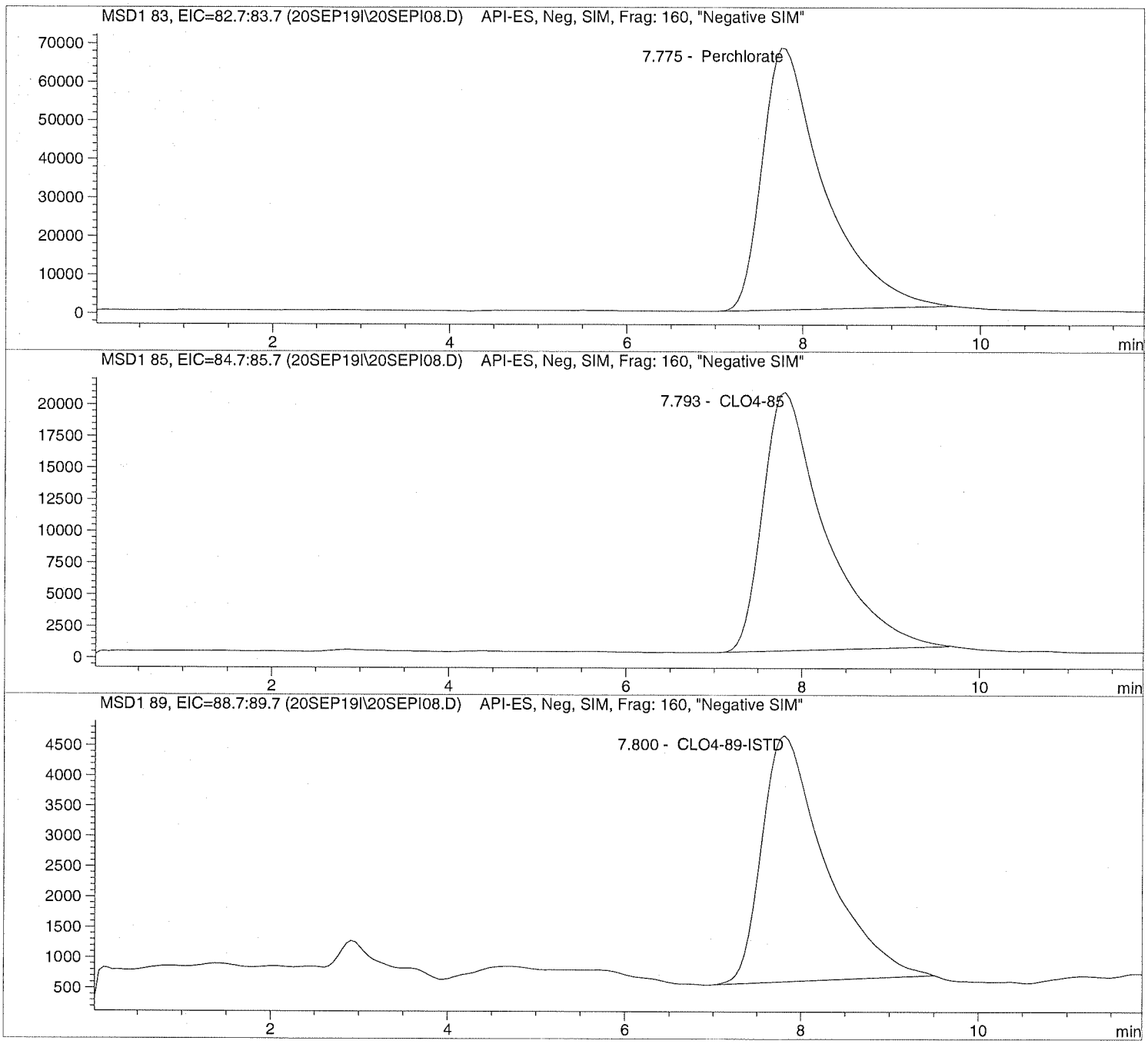
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

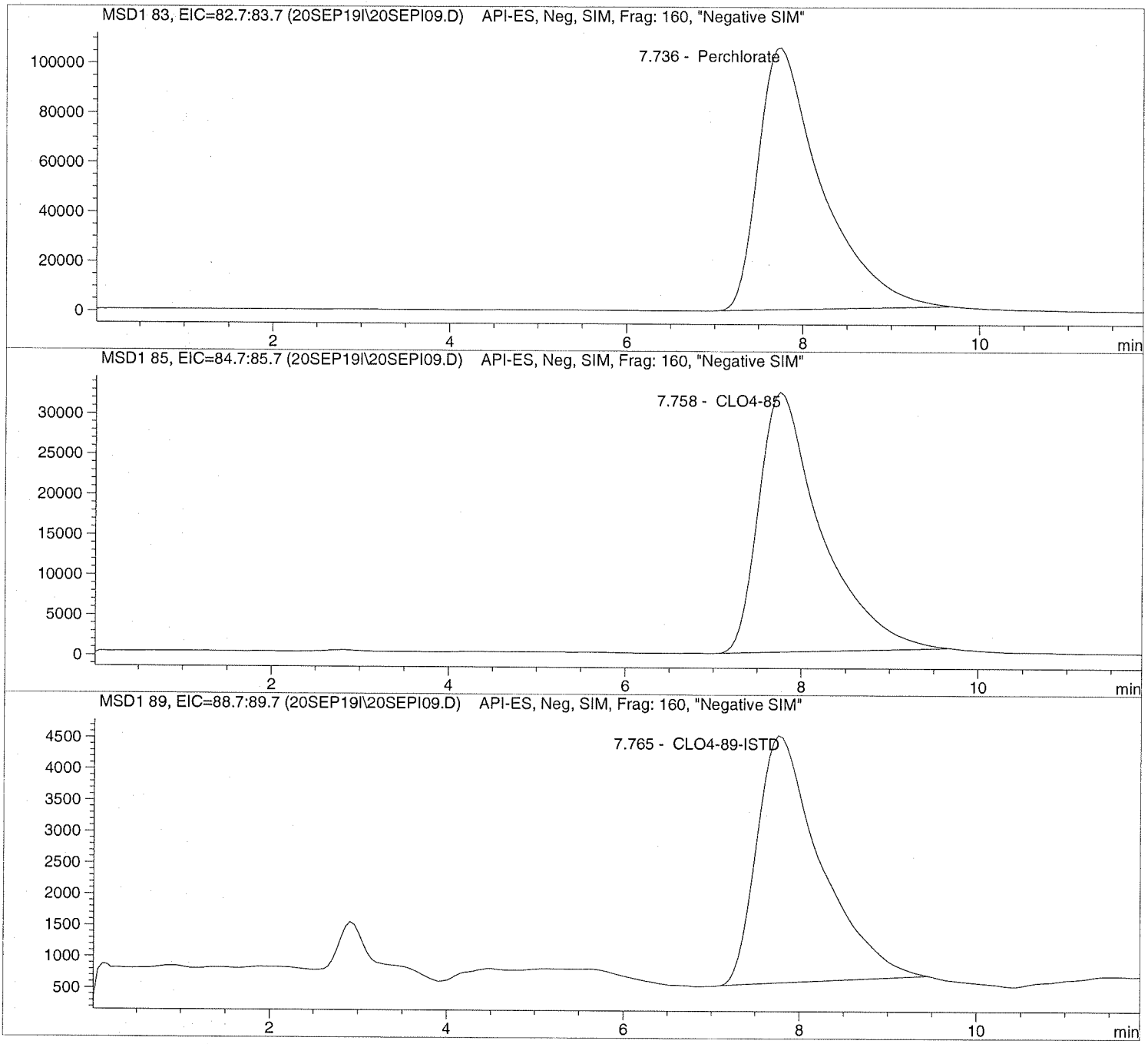
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

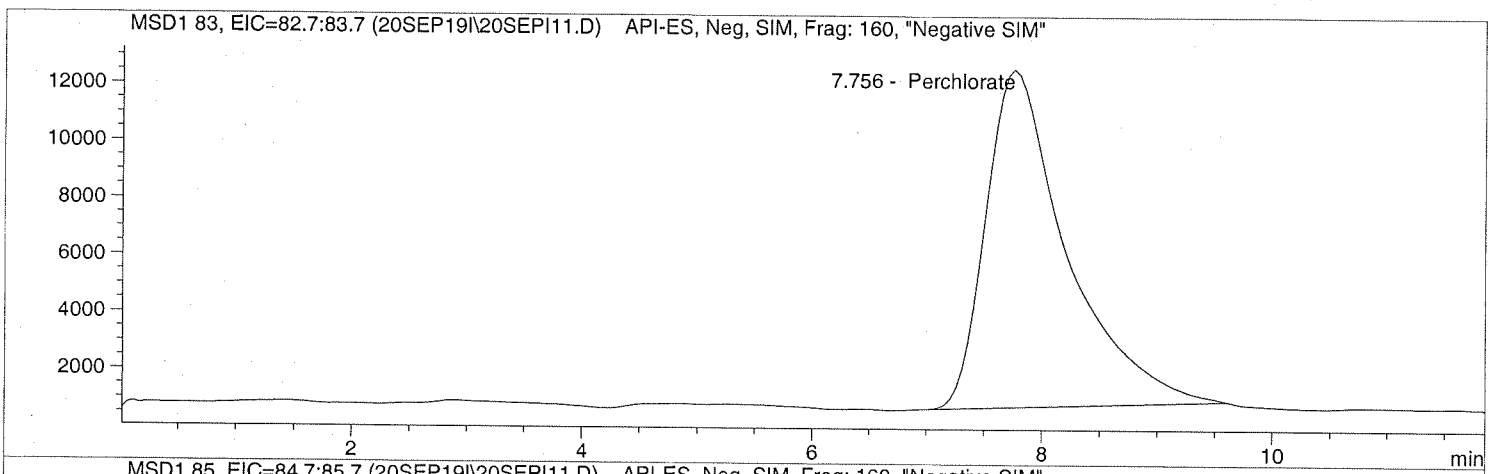
*** End of Report ***

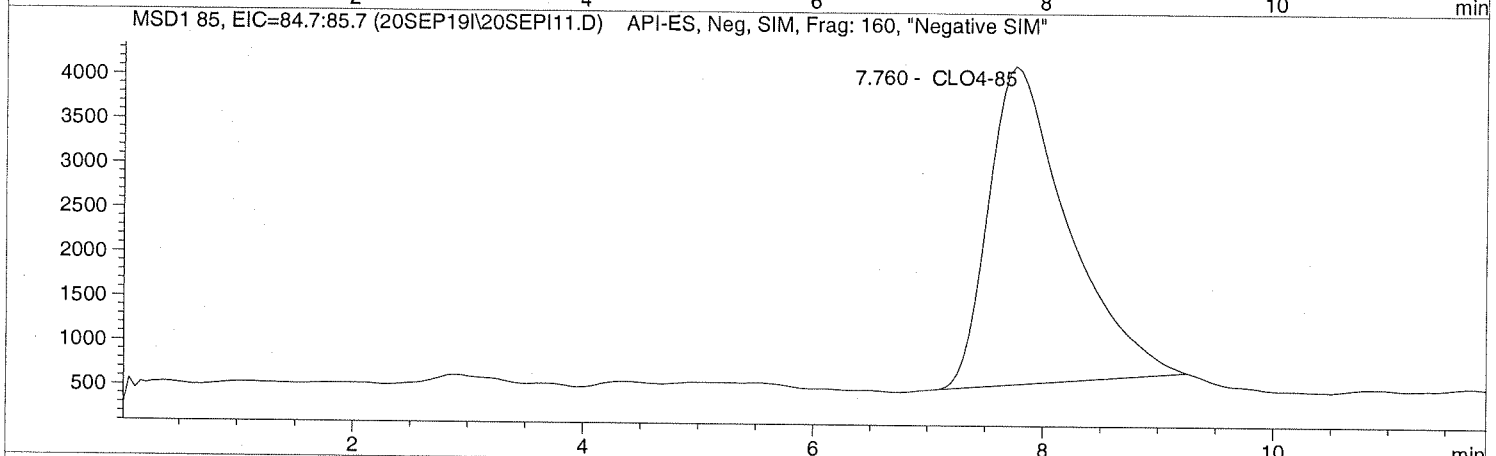
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

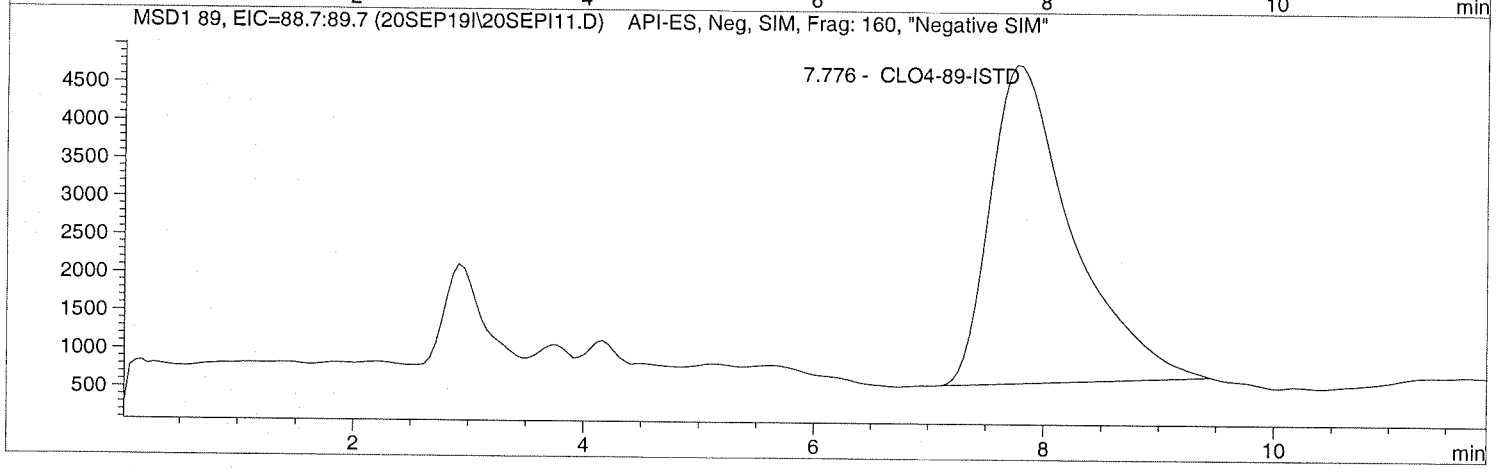
Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

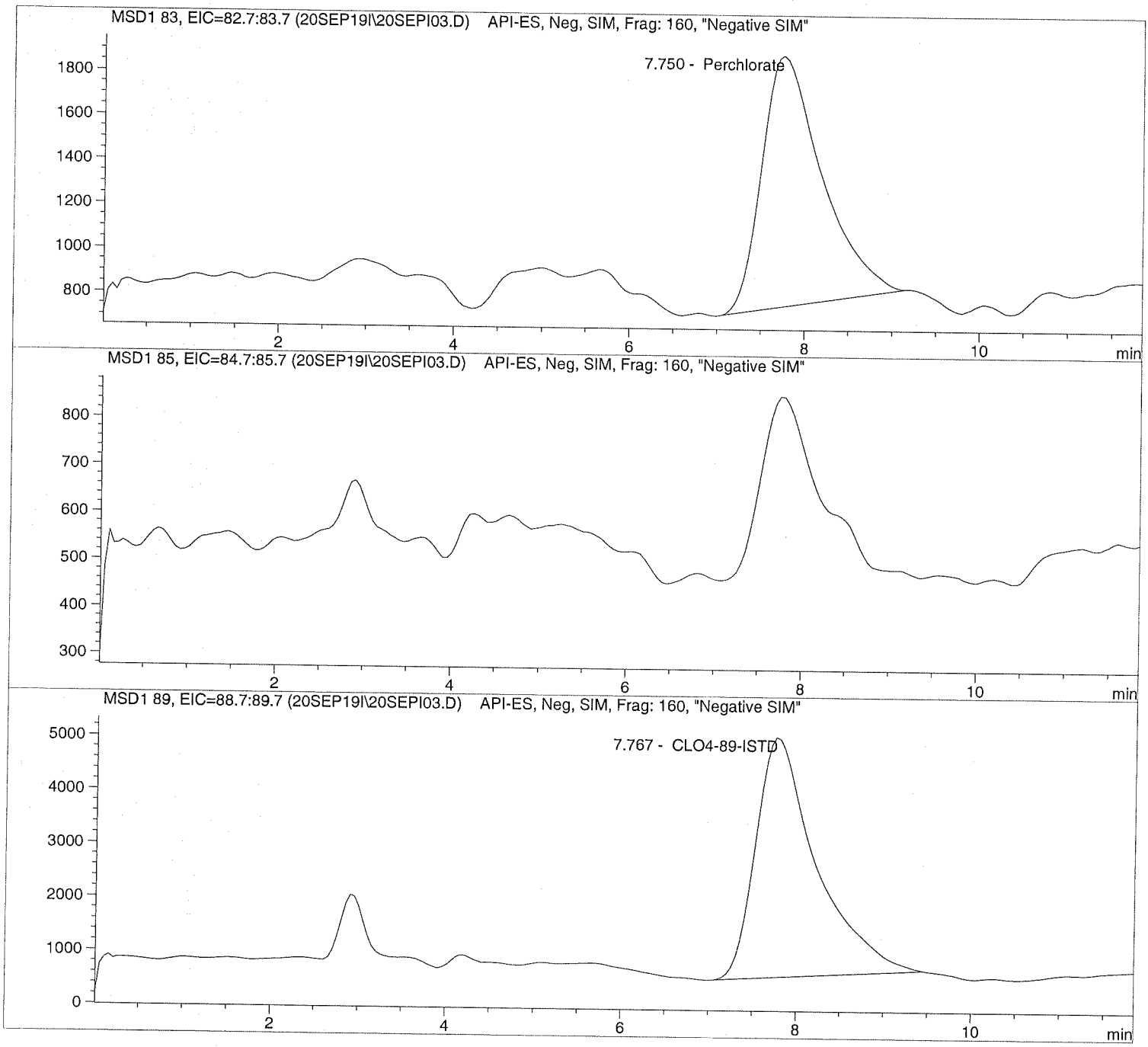
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
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T : 1 360 577 7222
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www.alsglobal.com

November 04, 2019

Analytical Report for Service Re uest No: K1910007

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19101325

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory October 24, 2019
For your reference, these analyses have been assigned our service request number **K1910007.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS19101325
Sample Matrix: Water

Service Request: K1910007
Date Received: 10/24/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 10/24/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 11/04/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

HS19101007

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12468**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19101325
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19101325-01**	**LH18/24-SP650_102219**	**Groundwater**	**22 Oct 2019 14:00**
	TOC Analysis for DOD Level IV			06 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: Asad Mu Date/Time: 10/23/19 17:00

Received By: J Morrow ALS Kelso Date/Time: 10/24/19 0945

Cooler ID(s): RED Temperature(s):

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Purchase Order

PO: HS19101325

VENDOR:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	12468
TSR:	Danielle Winnings

Item	Catalog No	Unit Price	Quantity	Ext Price
1. TOC Analysis for DOD Level IV	NA	$9.00	1	$9.00

Order Total: $9.00

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request K1910007

Received: 10/24/19 Opened: 10/24/2019 By: KM Unloaded: 10/24/19 By: KM

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.4	-0.3	1.9	2.0	+0.1	360	12468	X	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* Bubble Bags
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Did not record tracking number before I threw garbage away. KM

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1910007
Project:	HS19101325	**Date Collected:**	10/22/19
Sample Matrix:	Water	**Date Received:**	10/24/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_102219	K1910007-001	**1.56**	0.50	0.20	0.07	1	10/30/19 20:58	
Method Blank	K1910007-MB	ND U	0.50	0.20	0.07	1	10/30/19 12:52	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910007
Project	HS19101325	**Date Collected:**	10/22/19
Sample Matrix:	Water	**Date Received:**	10/24/19
		Date Analyzed:	10/30/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_102219	**Units:**	mg/L
Lab Code:	K1910007-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1910007-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	1.56	1.63	1.60	4	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910007
Project:	HS19101325	**Date Analyzed:**	10/30/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	657829

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1910007-LCS	24.6	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1910007
Project: HS19101325

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	657829	KQ1915963-03	10/30/19 12:18	25.0	23.9	96	90-110
CCV2	657829	KQ1915963-04	10/30/19 16:40	25.0	24.2	97	90-110
CCV3	657829	KQ1915963-05	10/30/19 22:34	25.0	24.2	97	90-110
CCV4	657829	KQ1915963-06	10/31/19 03:42	25.0	24.2	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1910007
Project: HS19101325

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	657829	KQ1915963-07	10/30/19 12:35	0.50	0.20	0.07	ND	U
CCB2	657829	KQ1915963-08	10/30/19 16:57	0.50	0.20	0.07	ND	U
CCB3	657829	KQ1915963-09	10/30/19 22:51	0.50	0.20	0.07	ND	U
CCB4	657829	KQ1915963-10	10/31/19 03:59	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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General Chemistry

ALS Environmental—Kelso Laboratory
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Work Request # Original ( ) T1908809, V815 IV IV, K1908800, 9822, 9860, 9892, 9998, 10007, 10066, 10079, 9912, 9995, 9627, 9892, 9913, 9958

Tier: II II I II II IV IV IV II IV I II II IV

Date Analyzed: 10/30/19

Analyst: BCD

Analysis: TOC/DOC

TOC: 657829, 657830

DOC: 657831, 657832

Run #

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	(yes)/no/NA
2.	Holding times met for all analyses and for all samples?	(yes)/no/NA
3.	Are calculations correct?	(yes)/no/NA
4.	Is the reporting basis correct? (Dry Weight)	(yes)/no/NA
5.	All quality control criteria met?	(yes)/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	(yes)/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	(yes)/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	(yes)/no/NA
9.	Are results for methods blanks all ND?	(yes)/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/(no)/NA
11.	Are all exceptions explained?	(yes)/no/NA
12.	Have all applicable service requests been reviewed?	(yes)/no/NA
13.	Are all samples labeled correctly?	(yes)/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	(yes)/no/NA
15.	Are detection limits and units reported correctly?	(yes)/no/NA
16.	Is the unused space on the benchsheet crossed out?	(yes)/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/(no)/NA

COMMENTS: K1909995-S/6 sent for RA due to being above the calibration curve.
K1909995-7 sent for RA due to previous sample carry over.
K1909892-S/S dup report a high %RSD. However, these samples are less than 5x the MRL.
T1901809-VBL report a high %RSD due to suspected non-homogenous sample.

Final Approved by: Date: 11/01/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657829 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909800-002	Carbon, Total Organic	N/A		Water	2.78 mg/L	10 mL	278 mg/L	100	7	50			10/30/19 14:15:00	N	II
K1909822-004	Carbon, Total Organic	N/A		Water	6.88 mg/L	10 mL	688 mg/L	100	7	50			10/30/19 14:47:00	N	II
K1909822-005	Carbon, Total Organic	N/A		Water	5.89 mg/L	10 mL	589 mg/L	100	7	50			10/30/19 15:19:00	N	II
K1909860-026	Carbon, Total Organic	N/A		Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50			10/30/19 13:59:00	N	I
K1909892-001	Carbon, Total Organic	N/A		Water	4.52 mg/L	10 mL	4.52 mg/L	1	0.07	0.50			10/30/19 22:02:00	N	II
K1909892-002	Carbon, Total Organic	N/A		Water	5.21 mg/L	10 mL	5.21 mg/L	1	0.07	0.50			10/30/19 23:41:00	N	II
K1909892-003	Carbon, Total Organic	N/A		Water	2.41 mg/L	10 mL	2.41 mg/L	1	0.07	0.50			10/31/19 00:13:00	N	II
K1909892-004	Carbon, Total Organic	N/A		Water	0.96 mg/L	10 mL	0.96 mg/L	1	0.07	0.50			10/31/19 00:45:00	N	II
K1909892-005	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	0.38 mg/L J	1	0.07	0.50			10/31/19 01:17:00	N	II
K1909998-001	Carbon, Total Organic	N/A		Water	2.05 mg/L	10 mL	2.05 mg/L	1	0.07	0.50			10/30/19 20:26:00	N	II
K1910007-001	Carbon, Total Organic	N/A		Water	1.56 mg/L	10 mL	1.56 mg/L	1	0.07	0.50			10/30/19 20:58:00	N	IV
K1910066-001	Carbon, Total Organic	N/A		Water	0.99 mg/L	10 mL	0.99 mg/L	1	0.07	0.50			10/30/19 17:13:00	N	IV
K1910066-002	Carbon, Total Organic	N/A		Water	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50			10/30/19 17:46:00	N	IV
K1910066-003	Carbon, Total Organic	N/A		Water	0.83 mg/L	10 mL	0.83 mg/L	1	0.07	0.50			10/30/19 18:18:00	N	IV
K1910066-004	Carbon, Total Organic	N/A		Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50			10/30/19 18:50:00	N	IV
K1910066-005	Carbon, Total Organic	N/A		Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50			10/30/19 19:22:00	N	IV
K1910066-006	Carbon, Total Organic	N/A		Water	1.69 mg/L	10 mL	1.69 mg/L	1	0.07	0.50			10/30/19 15:52:00	Y	IV
K1910066-007	Carbon, Total Organic	N/A		Water	0.93 mg/L	10 mL	0.93 mg/L	1	0.07	0.50			10/30/19 19:54:00	N	IV
K1910079-001	Carbon, Total Organic	N/A		Water	7.72 mg/L	10 mL	7.72 mg/L	1	0.07	0.50			10/30/19 21:30:00	N	IV
KQ1915963-01	Carbon, Total Organic	LOQV		Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50			10/30/19 13:59:00	N	I
KQ1915963-02	Carbon, Total Organic	LODV		Water	0.08 mg/L	10 mL	0.08 mg/L J	1	0.07	0.50			10/30/19 13:42:00	N	I
KQ1915963-03	Carbon, Total Organic	CCV		Water	23.90 mg/L	10 mL	23.9 mg/L	1					10/30/19 12:18:00	N	II
KQ1915963-04	Carbon, Total Organic	CCV		Water	24.15 mg/L	10 mL	24.2 mg/L	1					10/30/19 16:40:00	N	II
KQ1915963-05	Carbon, Total Organic	CCV		Water	24.21 mg/L	10 mL	24.2 mg/L	1					10/30/19 22:34:00	N	II
KQ1915963-06	Carbon, Total Organic	CCV		Water	24.18 mg/L	10 mL	24.2 mg/L	1					10/31/19 03:42:00	N	II
KQ1915963-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/30/19 12:35:00	N	II
KQ1915963-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/30/19 16:57:00	N	II
KQ1915963-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/30/19 22:51:00	N	II
KQ1915963-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 03:59:00	N	II
KQ1915963-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/30/19 12:52:00	N	II
KQ1915963-12	Carbon, Total Organic	LCS		Water	24.60 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		10/30/19 13:09:00	N	II
KQ1915963-13	Carbon, Total Organic	MS	K1910066-006	Water	25.97 mg/L	10 mL	26.0 mg/L	1	0.07	0.50	97		10/30/19 16:24:00	N	IV
KQ1915963-14	Carbon, Total Organic	DUP	K1909800-002	Water	2.71 mg/L	10 mL	271 mg/L	100	7	50		2	10/30/19 14:15:00	N	II
KQ1915963-16	Carbon, Total Organic	DUP	K1909822-004	Water	7.13 mg/L	10 mL	713 mg/L	100	7	50		3	10/30/19 14:47:00	N	II
KQ1915963-17	Carbon, Total Organic	DUP	K1909892-001	Water	4.58 mg/L	10 mL	4.58 mg/L	1	0.07	0.50		1	10/30/19 22:02:00	N	II
KQ1915963-18	Carbon, Total Organic	DUP	K1909892-002	Water	5.21 mg/L	10 mL	5.21 mg/L	1	0.07	0.50		<1	10/30/19 23:41:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657829 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915963-19	Carbon, Total Organic	DUP	K1909892-003	Water	2.34 mg/L	10 mL	2.34 mg/L	1	0.07	0.50		3	10/31/19 00:13:00	N	II
KQ1915963-20	Carbon, Total Organic	DUP	K1909892-004	Water	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50		2	10/31/19 00:45:00	N	II
KQ1915963-21	Carbon, Total Organic	DUP	K1909892-005	Water	0.34 mg/L	10 mL	0.34 mg/L J	1	0.07	0.50		10	10/31/19 01:17:00	N	II
KQ1915963-22	Carbon, Total Organic	DUP	K1909822-005	Water	5.88 mg/L	10 mL	588 mg/L	100	7	50		<1	10/30/19 15:19:00	N	II
KQ1915963-23	Carbon, Total Organic	DUP	K1909998-001	Water	2.08 mg/L	10 mL	2.08 mg/L	1	0.07	0.50		1	10/30/19 20:26:00	N	II
KQ1915963-24	Carbon, Total Organic	DUP	K1910007-001	Water	1.63 mg/L	10 mL	1.63 mg/L	1	0.07	0.50		4	10/30/19 20:58:00	N	IV
KQ1915963-25	Carbon, Total Organic	DUP	K1910066-001	Water	1.05 mg/L	10 mL	1.05 mg/L	1	0.07	0.50		6	10/30/19 17:13:00	N	IV
KQ1915963-26	Carbon, Total Organic	DUP	K1910066-002	Water	0.92 mg/L	10 mL	0.92 mg/L	1	0.07	0.50		3	10/30/19 17:46:00	N	IV
KQ1915963-27	Carbon, Total Organic	DUP	K1910066-003	Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50		5	10/30/19 18:18:00	N	IV
KQ1915963-28	Carbon, Total Organic	DUP	K1910066-004	Water	0.84 mg/L	10 mL	0.84 mg/L	1	0.07	0.50		6	10/30/19 18:50:00	N	IV
KQ1915963-29	Carbon, Total Organic	DUP	K1910066-005	Water	0.83 mg/L	10 mL	0.83 mg/L	1	0.07	0.50		5	10/30/19 19:22:00	N	IV
KQ1915963-30	Carbon, Total Organic	DUP	K1910066-006	Water	1.63 mg/L	10 mL	1.63 mg/L	1	0.07	0.50		4	10/30/19 15:52:00	N	IV
KQ1915963-31	Carbon, Total Organic	DUP	K1910066-007	Water	1.02 mg/L	10 mL	1.02 mg/L	1	0.07	0.50		9	10/30/19 19:54:00	N	IV
KQ1915963-32	Carbon, Total Organic	DUP	K1910079-001	Water	7.65 mg/L	10 mL	7.65 mg/L	1	0.07	0.50		<1	10/30/19 21:30:00	N	IV

11/01/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657830 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909912-001	Carbon, Total Organic	N/A		Ground Water	10.42 mg/L	10 mL	10.4 mg/L	1	0.07	0.50			10/31/19 01:49:00	N	II
K1909912-002	Carbon, Total Organic	N/A		Ground Water	10.79 mg/L	10 mL	10.8 mg/L	1	0.07	0.50			10/31/19 02:21:00	N	II
K1909995-001	Carbon, Total Organic	N/A		Water	1.84 mg/L	10 mL	1.84 mg/L	1	0.07	0.50			10/31/19 02:53:00	Y	IV
K1909995-002	Carbon, Total Organic	N/A		Water	1.78 mg/L	10 mL	1.78 mg/L	1	0.07	0.50			10/31/19 04:15:00	N	IV
K1909995-003	Carbon, Total Organic	N/A		Water	1.91 mg/L	10 mL	1.91 mg/L	1	0.07	0.50			10/31/19 04:48:00	N	IV
K1909995-004	Carbon, Total Organic	N/A		Water	3.53 mg/L	10 mL	3.53 mg/L	1	0.07	0.50			10/31/19 05:20:00	N	IV
K1909995-005	Carbon, Total Organic	N/A		Water	82.04 mg/L	10 mL	82.0 mg/L	1	0.07	0.50			10/31/19 05:52:00	N	IV
K1909995-006	Carbon, Total Organic	N/A		Water	82.43 mg/L	10 mL	82.4 mg/L	1	0.07	0.50			10/31/19 06:24:00	N	IV
K1909995-007	Carbon, Total Organic	N/A		Water	12.67 mg/L	10 mL	12.7 mg/L	1	0.07	0.50			10/31/19 06:56:00	N	IV
KQ1915964-01	Carbon, Total Organic	CCV		Ground Water	24.21 mg/L	10 mL	24.2 mg/L	1					10/30/19 22:34:00	N	II
KQ1915964-02	Carbon, Total Organic	CCV		Ground Water	24.18 mg/L	10 mL	24.2 mg/L	1					10/31/19 03:42:00	N	II
KQ1915964-03	Carbon, Total Organic	CCV		Ground Water	24.73 mg/L	10 mL	24.7 mg/L	1					10/31/19 09:06:00	N	II
KQ1915964-04	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/30/19 22:51:00	N	II
KQ1915964-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 03:59:00	N	II
KQ1915964-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 09:22:00	N	II
KQ1915964-07	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/30/19 23:08:00	N	II
KQ1915964-08	Carbon, Total Organic	LCS		Ground Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		10/30/19 23:24:00	N	II
KQ1915964-10	Carbon, Total Organic	DUP	K1909912-001	Ground Water	10.50 mg/L	10 mL	10.5 mg/L	1	0.07	0.50		<1	10/31/19 01:49:00	N	II
KQ1915964-11	Carbon, Total Organic	DUP	K1909912-002	Ground Water	11.04 mg/L	10 mL	11.0 mg/L	1	0.07	0.50		2	10/31/19 02:21:00	N	II
KQ1915964-12	Carbon, Total Organic	MS	K1909995-001	Water	26.97 mg/L	10 mL	27.0 mg/L	1	0.07	0.50	101		10/31/19 03:25:00	N	IV
KQ1915964-13	Carbon, Total Organic	DUP	K1909995-002	Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50		3	10/31/19 04:15:00	N	IV
KQ1915964-14	Carbon, Total Organic	DUP	K1909995-001	Water	1.78 mg/L	10 mL	1.78 mg/L	1	0.07	0.50		3	10/31/19 02:53:00	N	IV
KQ1915964-15	Carbon, Total Organic	DUP	K1909995-003	Water	1.80 mg/L	10 mL	1.80 mg/L	1	0.07	0.50		6	10/31/19 04:48:00	N	IV
KQ1915964-16	Carbon, Total Organic	DUP	K1909995-004	Water	3.44 mg/L	10 mL	3.44 mg/L	1	0.07	0.50		3	10/31/19 05:20:00	N	IV
KQ1915964-17	Carbon, Total Organic	DUP	K1909995-005	Water	99.72 mg/L	10 mL	99.7 mg/L	1	0.07	0.50		19*	10/31/19 05:52:00	N	IV
KQ1915964-18	Carbon, Total Organic	DUP	K1909995-006	Water	46.55 mg/L	10 mL	46.5 mg/L	1	0.07	0.50		56*	10/31/19 06:24:00	N	IV
KQ1915964-19	Carbon, Total Organic	DUP	K1909995-007	Water	10.81 mg/L	10 mL	10.8 mg/L	1	0.07	0.50		16*	10/31/19 06:56:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/01/19

Printed 11/1/19 13:05

Results Summary

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657831 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909627-002	Carbon, Dissolved Organic (DOC)	N/A		Water	6.72 mg/L	10 mL	67.2 mg/L	10	0.7	5.0			10/31/19 07:45:00	N	I
K1909892-001	Carbon, Dissolved Organic (DOC)	N/A		Water	3.45 mg/L	10 mL	3.45 mg/L	1	0.07	0.50			10/31/19 16:23:00	N	II
K1909892-002	Carbon, Dissolved Organic (DOC)	N/A		Water	4.12 mg/L	10 mL	4.12 mg/L	1	0.07	0.50			10/31/19 16:55:00	N	II
K1909892-003	Carbon, Dissolved Organic (DOC)	N/A		Water	1.74 mg/L	10 mL	1.74 mg/L	1	0.07	0.50			10/31/19 17:28:00	N	II
K1909892-004	Carbon, Dissolved Organic (DOC)	N/A		Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50			10/31/19 18:00:00	N	II
K1909892-005	Carbon, Dissolved Organic (DOC)	N/A		Water	0.28 mg/L	10 mL	0.28 mg/L J	1	0.07	0.50			10/31/19 18:32:00	N	II
K1909913-001	Carbon, Dissolved Organic (DOC)	N/A		Water	2.53 mg/L	10 mL	2.53 mg/L	1	0.07	0.50			10/31/19 15:35:00	N	II
KQ1915965-01	Carbon, Dissolved Organic (DOC)	CCV		Water	24.18 mg/L	10 mL	24.2 mg/L	1					10/31/19 03:42:00	N	I
KQ1915965-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.73 mg/L	10 mL	24.7 mg/L	1					10/31/19 09:06:00	N	I
KQ1915965-03	Carbon, Dissolved Organic (DOC)	CCV		Water	24.07 mg/L	10 mL	24.1 mg/L	1					10/31/19 14:29:00	N	I
KQ1915965-04	Carbon, Dissolved Organic (DOC)	CCV		Water	23.97 mg/L	10 mL	24.0 mg/L	1					10/31/19 20:08:00	N	I
KQ1915965-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 03:59:00	N	I
KQ1915965-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 09:22:00	N	I
KQ1915965-07	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 14:46:00	N	I
KQ1915965-08	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 20:25:00	N	I
KQ1915965-09	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 09:39:00	N	I
KQ1915965-10	Carbon, Dissolved Organic (DOC)	LCS		Water	24.93 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	100		10/31/19 09:56:00	N	I
KQ1915965-11	Carbon, Dissolved Organic (DOC)	MS	T1901809-001	Water	29.36 mg/L	10 mL	29.4 mg/L	1	0.07	0.50	101		10/31/19 08:49:00	N	IV
KQ1915965-12	Carbon, Dissolved Organic (DOC)	DUP	K1909627-002	Water	6.34 mg/L	10 mL	63.4 mg/L	10	0.7	5.0		6	10/31/19 07:45:00	N	I
KQ1915965-13	Carbon, Dissolved Organic (DOC)	DUP	T1901809-010	Water	2.88 mg/L	10 mL	2.88 mg/L	1	0.07	0.50		<1	10/31/19 15:02:00	N	IV
KQ1915965-14	Carbon, Dissolved Organic (DOC)	DUP	T1901809-009	Water	3.47 mg/L	10 mL	3.47 mg/L	1	0.07	0.50		2	10/31/19 13:57:00	N	IV
KQ1915965-15	Carbon, Dissolved Organic (DOC)	DUP	T1901809-008	Water	3.69 mg/L	10 mL	3.69 mg/L	1	0.07	0.50		5	10/31/19 13:25:00	N	IV
KQ1915965-16	Carbon, Dissolved Organic (DOC)	DUP	T1901809-007	Water	3.33 mg/L	10 mL	3.33 mg/L	1	0.07	0.50		<1	10/31/19 12:53:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/01/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657831 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915965-17	Carbon, Dissolved Organic (DOC)	DUP	T1901809-006	Water	3.27 mg/L	10 mL	3.27 mg/L	1	0.07	0.50		<1	10/31/19 12:21:00	N	IV
KQ1915965-18	Carbon, Dissolved Organic (DOC)	DUP	T1901809-005	Water	3.06 mg/L	10 mL	3.06 mg/L	1	0.07	0.50		1	10/31/19 11:49:00	N	IV
KQ1915965-19	Carbon, Dissolved Organic (DOC)	DUP	T1901809-004	Water	3.11 mg/L	10 mL	3.11 mg/L	1	0.07	0.50		4	10/31/19 11:17:00	N	IV
KQ1915965-20	Carbon, Dissolved Organic (DOC)	DUP	T1901809-003	Water	3.24 mg/L	10 mL	3.24 mg/L	1	0.07	0.50		4	10/31/19 10:45:00	N	IV
KQ1915965-21	Carbon, Dissolved Organic (DOC)	DUP	T1901809-002	Water	3.32 mg/L	10 mL	3.32 mg/L	1	0.07	0.50		2	10/31/19 10:12:00	N	IV
KQ1915965-22	Carbon, Dissolved Organic (DOC)	DUP	T1901809-001	Water	3.80 mg/L	10 mL	3.80 mg/L	1	0.07	0.50		11*	10/31/19 08:17:00	N	IV
KQ1915965-23	Carbon, Dissolved Organic (DOC)	DUP	K1909892-001	Water	3.38 mg/L	10 mL	3.38 mg/L	1	0.07	0.50		2	10/31/19 16:23:00	N	II
KQ1915965-24	Carbon, Dissolved Organic (DOC)	DUP	K1909892-002	Water	3.93 mg/L	10 mL	3.93 mg/L	1	0.07	0.50		5	10/31/19 16:55:00	N	II
KQ1915965-25	Carbon, Dissolved Organic (DOC)	DUP	K1909892-003	Water	1.71 mg/L	10 mL	1.71 mg/L	1	0.07	0.50		1	10/31/19 17:28:00	N	II
KQ1915965-26	Carbon, Dissolved Organic (DOC)	DUP	K1909892-004	Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50		<1	10/31/19 18:00:00	N	II
KQ1915965-27	Carbon, Dissolved Organic (DOC)	DUP	K1909892-005	Water	0.24 mg/L	10 mL	0.24 mg/L J	1	0.07	0.50		14*	10/31/19 18:32:00	N	II
KQ1915965-28	Carbon, Dissolved Organic (DOC)	DUP	K1909913-001	Water	2.59 mg/L	10 mL	2.59 mg/L	1	0.07	0.50		2	10/31/19 15:35:00	N	II
T1901809-001	Carbon, Dissolved Organic (DOC)	N/A		Water	4.23 mg/L	10 mL	4.23 mg/L	1	0.07	0.50			10/31/19 08:17:00	Y	IV
T1901809-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.41 mg/L	10 mL	3.41 mg/L	1	0.07	0.50			10/31/19 10:12:00	Y	IV
T1901809-003	Carbon, Dissolved Organic (DOC)	N/A		Water	3.36 mg/L	10 mL	3.36 mg/L	1	0.07	0.50			10/31/19 10:45:00	Y	IV
T1901809-004	Carbon, Dissolved Organic (DOC)	N/A		Water	3.23 mg/L	10 mL	3.23 mg/L	1	0.07	0.50			10/31/19 11:17:00	Y	IV
T1901809-005	Carbon, Dissolved Organic (DOC)	N/A		Water	3.02 mg/L	10 mL	3.02 mg/L	1	0.07	0.50			10/31/19 11:49:00	Y	IV
T1901809-006	Carbon, Dissolved Organic (DOC)	N/A		Water	3.30 mg/L	10 mL	3.30 mg/L	1	0.07	0.50			10/31/19 12:21:00	Y	IV
T1901809-007	Carbon, Dissolved Organic (DOC)	N/A		Water	3.34 mg/L	10 mL	3.34 mg/L	1	0.07	0.50			10/31/19 12:53:00	Y	IV
T1901809-008	Carbon, Dissolved Organic (DOC)	N/A		Water	3.50 mg/L	10 mL	3.50 mg/L	1	0.07	0.50			10/31/19 13:25:00	Y	IV
T1901809-009	Carbon, Dissolved Organic (DOC)	N/A		Water	3.55 mg/L	10 mL	3.55 mg/L	1	0.07	0.50			10/31/19 13:57:00	Y	IV
T1901809-010	Carbon, Dissolved Organic (DOC)	N/A		Water	2.86 mg/L	10 mL	2.86 mg/L	1	0.07	0.50			10/31/19 15:02:00	Y	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657832 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909958-001	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 01:50:00	N	IV
K1909958-002	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 02:22:00	N	IV
K1909958-003	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 02:54:00	N	IV
K1909958-004	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 03:26:00	N	IV
K1909958-005	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 03:58:00	N	IV
K1909958-006	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 04:30:00	N	IV
K1909958-007	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 05:02:00	N	IV
K1909958-008	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 05:35:00	N	IV
K1909958-010	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/1/19 06:07:00	N	IV
KQ1915967-01	Carbon, Dissolved Organic (DOC)	CCV		Water	24.07 mg/L	10 mL	24.1 mg/L	1					10/31/19 14:29:00	N	IV
KQ1915967-02	Carbon, Dissolved Organic (DOC)	CCV		Water	23.97 mg/L	10 mL	24.0 mg/L	1					10/31/19 20:08:00	N	IV
KQ1915967-03	Carbon, Dissolved Organic (DOC)	CCV		Water	23.98 mg/L	10 mL	24.0 mg/L	1					11/1/19 01:16:00	N	IV
KQ1915967-04	Carbon, Dissolved Organic (DOC)	CCV		Water	24.42 mg/L	10 mL	24.4 mg/L	1					11/1/19 06:39:00	N	IV
KQ1915967-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 14:46:00	N	IV
KQ1915967-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 20:25:00	N	IV
KQ1915967-07	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/1/19 01:33:00	N	IV
KQ1915967-08	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/1/19 06:56:00	N	IV
KQ1915967-09	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 20:41:00	N	IV
KQ1915967-10	Carbon, Dissolved Organic (DOC)	LCS		Water	24.45 mg/L	10 mL	24.5 mg/L	1	0.07	0.50	98		10/31/19 20:58:00	N	IV
KQ1915967-11	Carbon, Dissolved Organic (DOC)	MS	T1901815-009	Water	28.44 mg/L	10 mL	28.4 mg/L	1	0.07	0.50	102		11/1/19 01:00:00	N	IV
KQ1915967-12	Carbon, Dissolved Organic (DOC)	DUP	T1901815-009	Water	2.84 mg/L	10 mL	2.84 mg/L	1	0.07	0.50		<1	11/1/19 00:28:00	N	IV
KQ1915967-13	Carbon, Dissolved Organic (DOC)	DUP	T1901815-008	Water	2.84 mg/L	10 mL	2.84 mg/L	1	0.07	0.50		2	10/31/19 23:56:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 11/1/19 13:26

Results Summary

11/01/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657832 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1915967-14	Carbon, Dissolved Organic (DOC)	DUP	T1901815-007	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	10/31/19 23:23:00	N	IV
KQ1915967-15	Carbon, Dissolved Organic (DOC)	DUP	T1901815-006	Water	2.86 mg/L	10 mL	2.86 mg/L	1	0.07	0.50		2	10/31/19 22:51:00	N	IV
KQ1915967-16	Carbon, Dissolved Organic (DOC)	DUP	T1901815-005	Water	2.81 mg/L	10 mL	2.81 mg/L	1	0.07	0.50		<1	10/31/19 22:19:00	N	IV
KQ1915967-17	Carbon, Dissolved Organic (DOC)	DUP	T1901815-004	Water	2.92 mg/L	10 mL	2.92 mg/L	1	0.07	0.50		<1	10/31/19 21:47:00	N	IV
KQ1915967-18	Carbon, Dissolved Organic (DOC)	DUP	T1901815-003	Water	2.81 mg/L	10 mL	2.81 mg/L	1	0.07	0.50		3	10/31/19 21:15:00	N	IV
KQ1915967-19	Carbon, Dissolved Organic (DOC)	DUP	T1901815-002	Water	2.83 mg/L	10 mL	2.83 mg/L	1	0.07	0.50		<1	10/31/19 19:36:00	N	IV
KQ1915967-20	Carbon, Dissolved Organic (DOC)	DUP	T1901815-001	Water	2.81 mg/L	10 mL	2.81 mg/L	1	0.07	0.50		3	10/31/19 19:04:00	N	IV
KQ1915967-21	Carbon, Dissolved Organic (DOC)	DUP	K1909958-001	Ocean Water	0.02 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 01:50:00	N	IV
KQ1915967-22	Carbon, Dissolved Organic (DOC)	DUP	K1909958-005	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 03:58:00	N	IV
KQ1915967-23	Carbon, Dissolved Organic (DOC)	DUP	K1909958-002	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 02:22:00	N	IV
KQ1915967-24	Carbon, Dissolved Organic (DOC)	DUP	K1909958-003	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 02:54:00	N	IV
KQ1915967-25	Carbon, Dissolved Organic (DOC)	DUP	K1909958-004	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 03:26:00	N	IV
KQ1915967-26	Carbon, Dissolved Organic (DOC)	DUP	K1909958-007	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 05:02:00	N	IV
KQ1915967-27	Carbon, Dissolved Organic (DOC)	DUP	K1909958-006	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 04:30:00	N	IV
KQ1915967-28	Carbon, Dissolved Organic (DOC)	DUP	K1909958-008	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 05:35:00	N	IV
KQ1915967-29	Carbon, Dissolved Organic (DOC)	DUP	K1909958-010	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/1/19 06:07:00	N	IV
T1901815-001	Carbon, Dissolved Organic (DOC)	N/A		Water	2.74 mg/L	10 mL	2.74 mg/L	1	0.07	0.50			10/31/19 19:04:00	Y	IV
T1901815-002	Carbon, Dissolved Organic (DOC)	N/A		Water	2.81 mg/L	10 mL	2.81 mg/L	1	0.07	0.50			10/31/19 19:36:00	Y	IV
T1901815-003	Carbon, Dissolved Organic (DOC)	N/A		Water	2.90 mg/L	10 mL	2.90 mg/L	1	0.07	0.50			10/31/19 21:15:00	Y	IV
T1901815-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.93 mg/L	10 mL	2.93 mg/L	1	0.07	0.50			10/31/19 21:47:00	Y	IV
T1901815-005	Carbon, Dissolved Organic (DOC)	N/A		Water	2.83 mg/L	10 mL	2.83 mg/L	1	0.07	0.50			10/31/19 22:19:00	Y	IV
T1901815-006	Carbon, Dissolved Organic (DOC)	N/A		Water	2.80 mg/L	10 mL	2.80 mg/L	1	0.07	0.50			10/31/19 22:51:00	Y	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 657832 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
T1901815-007	Carbon, Dissolved Organic (DOC)	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			10/31/19 23:23:00	Y	IV
T1901815-008	Carbon, Dissolved Organic (DOC)	N/A		Water	2.79 mg/L	10 mL	2.79 mg/L	1	0.07	0.50			10/31/19 23:56:00	Y	IV
T1901815-009	Carbon, Dissolved Organic (DOC)	N/A		Water	2.84 mg/L	10 mL	2.84 mg/L	1	0.07	0.50			11/1/19 00:28:00	Y	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: 657829, 657830
DOC: 657831, 657832

Schedule: 10302019

Version: 6
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/10/30 11:50 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	LOD	Extended Reaction 021711 (Extended Reaction 021711)	1
4	Sample	LOQ	Extended Reaction 021711 (Extended Reaction 021711)	1
5	Sample	K1909800-002.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
6	Sample	K1909822-004.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Sample	K1909822-005.01 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
8	Sample	K1910066-006.06	Extended Reaction 021711 (Extended Reaction 021711)	2
9	Sample	K1910066-006.06 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1910066-001.06	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1910066-002.06	Extended Reaction 021711 (Extended Reaction 021711)	2
12	Sample	K1910066-003.06	Extended Reaction 021711 (Extended Reaction 021711)	2
13	Sample	K1910066-004.06	Extended Reaction 021711 (Extended Reaction 021711)	2
14	Sample	K1910066-005.06	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1910066-007.06	Extended Reaction 021711 (Extended Reaction 021711)	2
16	Sample	K1909998-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1910007-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1910079-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	K1909892-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1909892-002.02	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1909892-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
23	Sample	K1909892-004.02	Extended Reaction 021711 (Extended Reaction 021711)	2
24	Sample	K1909892-005.02	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1909912-001.08	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	K1909912-002.08	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1909995-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1909995-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1909995-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1909995-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1909995-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
32	Sample	K1909995-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
33	Sample	K1909995-006.01	Extended Reaction 021711 (Extended Reaction 021711)	2
34	Sample	K1909995-007.01	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	FB 10/22/19	Extended Reaction 021711 (Extended Reaction 021711)	1
36	Sample	K1909627-002.01 10x doc	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	T1901809-001.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
38	Sample	T1901809-001.05 ms doc	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

11/01/19

Schedule: 10302019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB3	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	T1901809-002.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	T1901809-003.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	T1901809-004.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Sample	T1901809-005.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
44	Sample	T1901809-006.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	T1901809-007.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
46	Sample	T1901809-008.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
47	Sample	T1901809-009.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	T1901809-010.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1909913-001.02 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	FB 10/25/19	Extended Reaction 021711 (Extended Reaction 021711)	1
51	Sample	K1909892-001.01 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	K1909892-002.01 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	K1909892-003.01 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
54	Sample	K1909892-004.01 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
55	Sample	K1909892-005.01 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
56	Sample	T1901815-001.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
57	Sample	T1901815-002.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	MB4	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
59	Sample	T1901815-003.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
60	Sample	T1901815-004.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
61	Sample	T1901815-005.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	T1901815-006.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	T1901815-007.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
64	Sample	T1901815-008.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
65	Sample	T1901815-009.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
66	Sample	T1901815-009.05 ms doc	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
67	Sample	K1909958-001.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
68	Sample	K1909958-002.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
69	Sample	K1909958-003.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1909958-004.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	K1909958-005.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
72	Sample	K1909958-006.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
73	Sample	K1909958-007.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
74	Sample	K1909958-008.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
75	Sample	K1909958-010.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

Fusion Report - 10302019
Wednesday, October 30, 2019 10:13 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/11/01 09:29 - Friday

Report Summary Information

Company Location: Gen Chem Lab
Schedule Name: 10302019
Instrument Name: Fusion1
Report Version: 1 of 1
Report Creation by Operators (schedule version): Fusion1 (Fusion1) (v2), Fusion1 (Fusion1) (v3), Fusion1 (Fusion1) (v4), Fusion1 (Fusion1) (v5), Fusion1 (Fusion1) (v6)
Comment:

Engine Version: 1.1.5.1
Firmware Version: 1.2.0696
Connection: RS232 COM1

Report Results

11/01/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/30 10:13

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.91	16.94	4.03	49.70	05:25
2	TC Clean	7.62	11.16	3.54	50.08	04:06
3	TC Clean	2.25	6.02	3.76	50.08	03:50
4	TC Clean	1.93	5.70	3.77	50.07	03:47

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/30 10:36

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.27	15.02	3.75	49.55	05:13
2	TC Clean	4.83	8.68	3.85	50.08	04:02
3	TC Clean	2.46	6.27	3.82	50.09	03:56

4	TC Clean	1.67	5.40	3.72	50.09	03:55

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/10/30 10:58

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.34	14.99	3.64	49.59	05:22
2	TC Clean	4.27	8.05	3.78	50.07	04:01
3	TC Clean	2.14	5.89	3.74	50.08	03:46
4	TC Clean	1.49	5.48	3.99	50.11	03:48

Sample Type: Blank (Creating v1311) From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/10/30 11:28

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.27	14.97	3.70	49.72	05:12
2	TC Clean	5.39	9.01	3.63	50.04	04:04
3	TC Clean	1.96	5.66	3.70	50.12	03:50
4	TC Clean	1.58	5.29	3.70	50.10	03:50
5	Reagent Blank	3.44	7.27	3.83	50.11	05:03
6	Acid Blank	1.26	5.01	3.75	49.56	05:29

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0050 ppm	0.0000 ppm	0.0000%	2019/10/30 12:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0050	0.0504	10.31	14.28	3.97	50.24	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.8974 ppm (PASS)	0.0000 ppm	0%	2019/10/30 12:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8974	238.9735	182.52	186.53	4.02	50.27	12:32

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/30 12:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.61	11.42	3.81	50.32	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/30 12:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.90	10.65	3.75	50.33	12:28

Dilution: 1:10
Blank Contribution: (TC) 10.2769 (IC) (v1311)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.6040 ppm (PASS)	0.0000 ppm	0%	2019/10/30 13:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6040	246.0402	187.58	191.31	3.73	50.35	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.0251 ppm	0.0000 ppm	0.0000%	2019/10/30 13:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0251	0.2512	10.46	14.33	3.87	50.35	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	LOD	0.0769 ppm	0.0000 ppm	0.0000%	2019/10/30 13:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0769	0.7686	10.83	14.44	3.61	50.36	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	LOQ	0.5307 ppm	0.0000 ppm	0.0000%	2019/10/30 13:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5307	5.3068	14.08	17.77	3.68	50.41	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K1909800-002.01 100x	2.7458 ppm	0.0438 ppm	1.5900%	2019/10/30 14:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7768	27.7675	30.19	33.77	3.58	50.35	12:24
2	TOC	2.7148	27.1483	29.74	33.52	3.78	50.31	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC)	Extended Reaction	Extended Reaction

(v1311) 021711 (v4) 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K1909822-004.01 100x	7.0041 ppm	0.1720 ppm	2.4600%	2019/10/30 14:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.8824	68.8245	59.63	63.37	3.75	50.32	12:26
2	TOC	7.1257	71.2567	61.37	65.03	3.66	50.30	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1909822-005.01 100x	5.8830 ppm	0.0045 ppm	0.0800%	2019/10/30 15:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8863	58.8625	52.48	56.12	3.64	50.25	12:31
2	TOC	5.8798	58.7984	52.44	56.33	3.90	50.26	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1910066-006.06	1.6603 ppm	0.0439 ppm	2.6400%	2019/10/30 15:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6913	16.9130	22.40	26.22	3.81	50.23	12:26
2	TOC	1.6292	16.2924	21.96	25.73	3.77	50.23	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K1910066-006.06 ms	25.9734 ppm	0.0000 ppm	0.0000%	2019/10/30 16:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.9734	259.7345	196.51	200.24	3.73	50.24	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV	0 / infinity	24.1506	0.0000	0%	2019/10/30 16:40

					021711 [25 ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1506	241.5062	184.33	188.16	3.83	50.26	12:31

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/30 16:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.33	11.07	3.75	50.24	12:32

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1910066-001.06	1.0238 ppm	0.0428 ppm	4.1800%	2019/10/30 17:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9936	9.9356	17.40	21.16	3.76	50.26	12:29
2	TOC	1.0541	10.5409	17.84	21.49	3.66	50.27	12:28

Dilution: 1:10
Blank Contribution: (TC) 10.2769 (IC) (v1311)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1910066-002.06	0.9378 ppm	0.0181 ppm	1.9300%	2019/10/30 17:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9506	9.5061	17.09	20.69	3.59	50.29	12:31
2	TOC	0.9249	9.2494	16.91	20.60	3.69	50.33	12:27

Dilution: 1:10
Blank Contribution: (TC) 10.2769 (IC) (v1311)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K1910066-003.06	0.8130 ppm	0.0298 ppm	3.6600%	2019/10/30 18:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8340	8.3401	16.26	19.88	3.62	50.34	12:28
2	TOC	0.7919	7.9190	15.96	19.73	3.77	50.36	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K1910066-004.06	0.8159 ppm	0.0327 ppm	4.0100%	2019/10/30 18:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7927	7.9273	15.96	19.55	3.59	50.41	12:29
2	TOC	0.8390	8.3903	16.29	19.96	3.67	50.44	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K1910066-005.06	0.8121 ppm	0.0316 ppm	3.8900%	2019/10/30 19:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7898	7.8980	15.94	19.66	3.72	50.48	12:26
2	TOC	0.8344	8.3443	16.26	20.01	3.75	50.51	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K1910066-007.06	0.9765 ppm	0.0650 ppm	6.6600%	2019/10/30 19:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9305	9.3052	16.95	20.57	3.62	50.50	12:27
2	TOC	1.0224	10.2243	17.61	21.31	3.70	50.54	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K1909998-001.01	2.0648 ppm	0.0181 ppm	0.8800%	2019/10/30 20:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0520	20.5196	24.99	28.75	3.76	50.60	12:27

2	TOC	2.0776	20.7762	25.17	28.91	3.73	50.57	12:26

Dilution 1:10 **Blank Contribution** (TC) 10.2769 (IC) (v1311) **Method** Extended Reaction 021711 (v4) **Calibration** Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1910007-001.01	1.5991 ppm	0.0499 ppm	3.1200%	2019/10/30 20:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5638	15.6383	21.49	25.18	3.69	50.57	12:30
2	TOC	1.6344	16.3440	22.00	25.83	3.83	50.51	12:30

Dilution 1:10 **Blank Contribution** (TC) 10.2769 (IC) (v1311) **Method** Extended Reaction 021711 (v4) **Calibration** Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1910079-001.01	7.6851 ppm	0.0534 ppm	0.7000%	2019/10/30 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.7229	77.2286	65.65	69.19	3.54	50.48	12:26
2	TOC	7.6473	76.4727	65.11	68.69	3.58	50.43	12:26

Dilution 1:10 **Blank Contribution** (TC) 10.2769 (IC) (v1311) **Method** Extended Reaction 021711 (v4) **Calibration** Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1909892-001.02	4.5500 ppm	0.0446 ppm	0.9800%	2019/10/30 22:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5185	45.1852	42.68	46.42	3.74	50.42	12:29
2	TOC	4.5816	45.8156	43.13	46.73	3.60	50.43	12:27

Dilution 1:10 **Blank Contribution** (TC) 10.2769 (IC) (v1311) **Method** Extended Reaction 021711 (v4) **Calibration** Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.2124 ppm (PASS)	0.0000 ppm	0%	2019/10/30 22:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2124	242.1240	184.77	188.44	3.67	50.42	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/30 22:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.13	10.91	3.77	50.37	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/30 23:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.47	10.06	3.59	50.37	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.6226 ppm (PASS)	0.0000 ppm	0%	2019/10/30 23:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6226	246.2257	187.72	191.45	3.74	50.39	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1909892-002.02	5.2118 ppm	0.0036 ppm	0.0700%	2019/10/30 23:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2093	52.0929	47.63	51.49	3.86	50.36	12:28
2	TOC	5.2143	52.1431	47.66	51.31	3.65	50.34	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1909892-003.02	2.3771 ppm	0.0502 ppm	2.1100%	2019/10/31 00:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4126	24.1261	27.58	31.12	3.54	50.34	12:26
2	TOC	2.3416	23.4162	27.07	30.54	3.47	50.35	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1909892-004.02	0.9562 ppm	0.0103 ppm	1.0700%	2019/10/31 00:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9634	9.6344	17.18	20.83	3.65	50.33	12:29
2	TOC	0.9489	9.4893	17.08	20.71	3.63	50.35	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1909892-005.02	0.3620 ppm	0.0255 ppm	7.0600%	2019/10/31 01:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3801	3.8006	13.00	16.58	3.57	50.31	12:28
2	TOC	0.3439	3.4394	12.74	16.38	3.64	50.30	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1909912-001.08	10.4580 ppm	0.0581 ppm	0.5600%	2019/10/31 01:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.4169	104.1689	84.97	88.56	3.59	50.31	12:29

2	TOC	10.4990	104.9904	85.56	89.22	3.66	50.28	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K1909912-002.08	10.9148 ppm	0.1755 ppm	1.6100%	2019/10/31 02:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.7907	107.9066	87.65	91.47	3.82	50.28	12:29
2	TOC	11.0389	110.3890	89.43	92.99	3.56	50.26	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K1909995-001.01	1.8084 ppm	0.0397 ppm	2.2000%	2019/10/31 02:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8365	18.3648	23.44	27.08	3.64	50.28	12:31
2	TOC	1.7803	17.8028	23.04	26.77	3.73	50.24	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K1909995-001.01 ms	26.9727 ppm	0.0000 ppm	0.0000%	2019/10/31 03:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.9727	269.7271	203.68	207.37	3.69	50.22	12:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.1830 ppm (PASS)	0.0000 ppm	0%	2019/10/31 03:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1830	241.8298	184.56	188.26	3.69	50.23	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/31 03:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.48	10.14	3.66	50.21	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K1909995-002.01	1.8055 ppm	0.0336 ppm	1.8600%	2019/10/31 04:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7817	17.8167	23.05	26.76	3.70	50.24	12:29
2	TOC	1.8292	18.2923	23.39	27.10	3.71	50.24	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K1909995-003.01	1.8575 ppm	0.0768 ppm	4.1400%	2019/10/31 04:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9118	19.1179	23.98	27.67	3.68	50.22	12:31
2	TOC	1.8032	18.0315	23.21	26.91	3.70	50.19	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K1909995-004.01	3.4859 ppm	0.0672 ppm	1.9300%	2019/10/31 05:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5333	35.3335	35.61	39.37	3.76	50.21	12:28
2	TOC	3.4384	34.3837	34.93	38.63	3.70	50.17	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K1909995-005.01	90.8814 ppm	12.4971 ppm	13.7500%	2019/10/31 05:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	82.0446	820.4456	598.56	602.14	3.58	50.17	12:27
2	TOC	99.7182	997.1818	725.29	740.59	15.31	50.14	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	K1909995-006.01	64.4891 ppm	25.3768 ppm	39.3500%	2019/10/31 06:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	82.4332	824.3324	601.35	612.54	11.19	50.16	12:28
2	TOC	46.5450	465.4501	344.02	348.32	4.30	50.17	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	34	TOC	K1909995-007.01	11.7386 ppm	1.3159 ppm	11.2100%	2019/10/31 06:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.6691	126.6910	101.12	104.92	3.81	50.14	12:29
2	TOC	10.8081	108.0809	87.77	91.50	3.72	50.16	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	35	TOC	FB 10/22/19	1.8617 ppm	0.0000 ppm	0.0000%	2019/10/31 07:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8617	18.6173	23.63	27.38	3.76	50.14	12:30

NR/read in previous runs as 0.

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	36	TOC	K1909627-002.01 10x doc	6.5320 ppm	0.2655 ppm	4.0600%	2019/10/31 07:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.7197	67.1969	58.46	62.05	3.59	50.17	12:27
2	TOC	6.3443	63.4425	55.77	59.36	3.60	50.21	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	T1901809-001.05 doc	4.0152 ppm	0.3093 ppm	7.7000%	2019/10/31 08:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2339	42.3388	40.64	44.25	3.62	50.20	12:30
2	TOC	3.7965	37.9652	37.50	41.09	3.59	50.16	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	T1901809-001.05 ms doc	29.3634 ppm	0.0000 ppm	0.0000%	2019/10/31 08:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.3634	293.6341	220.82	224.53	3.71	50.22	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.7333 ppm (PASS)	0.0000 ppm	0%	2019/10/31 09:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7333	247.3330	188.51	192.31	3.80	50.31	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB	0 / infinity	0.0000	0.0000	0%	2019/10/31 09:22

					021711 [0.0 ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	9.95	13.60	3.65	50.23	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/31 09:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.55	12.25	3.70	50.24	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.9298 ppm (PASS)	0.0000 ppm	0%	2019/10/31 09:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9298	249.2981	189.92	193.47	3.56	50.26	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	T1901809-002.05 doc	3.3643 ppm	0.0592 ppm	1.7600%	2019/10/31 10:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4062	34.0616	34.70	38.42	3.72	50.32	12:24
2	TOC	3.3225	33.2248	34.10	37.77	3.67	50.26	12:27

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	T1901809-003.05 doc	3.2974 ppm	0.0852 ppm	2.5800%	2019/10/31 10:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3576	33.5762	34.35	38.00	3.65	50.26	12:29
2	TOC	3.2371	32.3713	33.49	37.30	3.81	50.40	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	T1901809-004.05 doc	3.1700 ppm	0.0902 ppm	2.8500%	2019/10/31 11:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2338	32.3378	33.46	37.05	3.59	50.45	12:28
2	TOC	3.1062	31.0617	32.55	36.25	3.70	50.45	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	T1901809-005.05 doc	3.0399 ppm	0.0236 ppm	0.7800%	2019/10/31 11:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0232	30.2319	31.95	35.78	3.82	50.45	12:29
2	TOC	3.0565	30.5652	32.19	35.84	3.64	50.47	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	T1901809-006.05 doc	3.2827 ppm	0.0232 ppm	0.7100%	2019/10/31 12:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2990	32.9905	33.93	37.51	3.58	50.47	12:29
2	TOC	3.2663	32.6627	33.70	37.16	3.47	50.46	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	T1901809-007.05 doc	3.3363 ppm	0.0081 ppm	0.2400%	2019/10/31 12:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3420	33.4200	34.24	37.82	3.58	50.43	12:25
2	TOC	3.3306	33.3057	34.16	37.64	3.48	50.54	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	T1901809-008.05 doc	3.5967 ppm	0.1311 ppm	3.6400%	2019/10/31 13:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5041	35.0406	35.40	38.94	3.54	50.46	12:25
2	TOC	3.6894	36.8941	36.73	40.51	3.78	50.44	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	T1901809-009.05 doc	3.5135 ppm	0.0571 ppm	1.6300%	2019/10/31 13:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5538	35.5385	35.76	39.45	3.69	50.40	12:26
2	TOC	3.4731	34.7310	35.18	38.80	3.62	50.39	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.0662 ppm (PASS)	0.0000 ppm	0%	2019/10/31 14:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.0662	240.6624	183.73	187.25	3.52	50.37	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/31 14:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.17	10.83	3.66	50.34	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	T1901809-010.05 doc	3.8690 ppm	0.0129 ppm	0.3300%	2019/10/31 15:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8598	38.5983	37.95	41.64	3.68	50.34	12:26
2	TOC	3.8781	38.7810	38.08	41.81	3.73	50.34	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K1909913-001.02 doc	2.5600 ppm	0.0425 ppm	1.6600%	2019/10/31 15:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5299	25.2990	28.42	31.93	3.51	50.30	12:31
2	TOC	2.5900	25.9001	28.85	32.39	3.54	50.29	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	FB 10/25/19	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/31 16:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.06	12.62	3.56	50.30	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	51	TOC	K1909892-001.01 doc	3.4160 ppm	0.0464 ppm	1.3600%	2019/10/31 16:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	3.4488	34.4883	35.01	38.59	3.59	50.30	12:28
2	TOC	3.3831	33.8314	34.54	38.20	3.66	50.28	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1909892-002.01 doc	4.0237 ppm	0.1383 ppm	3.4400%	2019/10/31 16:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1215	41.2147	39.83	43.36	3.53	50.30	12:28
2	TOC	3.9259	39.2594	38.43	42.12	3.70	50.30	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1909892-003.01 doc	1.7260 ppm	0.0157 ppm	0.9100%	2019/10/31 17:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7370	17.3705	22.73	26.39	3.65	50.32	12:29
2	TOC	1.7149	17.1487	22.57	26.26	3.69	50.32	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1909892-004.01 doc	0.7056 ppm	0.0009 ppm	0.1300%	2019/10/31 18:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7050	7.0501	15.33	19.05	3.72	50.33	12:26
2	TOC	0.7063	7.0626	15.34	18.99	3.65	50.36	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1909892-005.01 doc	0.2612 ppm	0.0259 ppm	9.9300%	2019/10/31 18:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2795	2.7950	12.28	15.94	3.66	50.40	12:26
2	TOC	0.2428	2.4282	12.02	15.64	3.62	50.42	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	T1901815-001.05 doc	2.7758 ppm	0.0529 ppm	1.9000%	2019/10/31 19:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7384	27.3840	29.91	33.56	3.65	50.42	12:27
2	TOC	2.8132	28.1315	30.45	33.99	3.55	50.43	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	T1901815-002.05 doc	2.8200 ppm	0.0197 ppm	0.7000%	2019/10/31 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8060	28.0604	30.40	34.07	3.67	50.47	12:27
2	TOC	2.8339	28.3393	30.60	34.16	3.56	50.47	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.9653 ppm (PASS)	0.0000 ppm	0%	2019/10/31 20:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9653	239.6527	183.00	186.59	3.59	50.47	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/10/31 20:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.16	9.84	3.68	50.48	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/31 20:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.00	9.61	3.61	50.52	12:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.4549 ppm (PASS)	0.0000 ppm	0%	2019/10/31 20:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.4549	244.5493	186.51	190.22	3.71	50.49	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	T1901815-003.05 doc	2.8546 ppm	0.0575 ppm	2.0100%	2019/10/31 21:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8953	28.9530	31.04	34.53	3.49	50.40	12:26
2	TOC	2.8140	28.1399	30.45	34.16	3.70	50.43	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	T1901815-004.05 doc	2.9233 ppm	0.0093 ppm	0.3200%	2019/10/31 21:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	2.9299	29.2989	31.28	34.96	3.68	50.40	12:30
2	TOC	2.9168	29.1678	31.19	34.90	3.71	50.47	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	T1901815-005.05 doc	2.8190 ppm	0.0172 ppm	0.6100%	2019/10/31 22:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8311	28.3114	30.58	34.26	3.68	50.38	12:29
2	TOC	2.8069	28.0688	30.40	34.12	3.72	50.38	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	T1901815-006.05 doc	2.8285 ppm	0.0454 ppm	1.6000%	2019/10/31 22:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7964	27.9642	30.33	34.01	3.68	50.37	12:30
2	TOC	2.8606	28.6057	30.79	34.38	3.59	50.34	12:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	T1901815-007.05 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/10/31 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.05	10.53	3.47	50.30	12:29
2	TOC	0.0000	0.0000	6.60	10.21	3.61	50.27	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	T1901815-008.05 doc	2.8124 ppm	0.0360 ppm	1.2800%	2019/10/31 23:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7869	27.8693	30.26	33.91	3.65	50.30	12:30
2	TOC	2.8378	28.3784	30.62	34.23	3.60	50.29	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	65	TOC	T1901815-009.05 doc	2.8408 ppm	0.0032 ppm	0.1100%	2019/11/01 00:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8430	28.4300	30.66	34.31	3.65	50.28	12:30
2	TOC	2.8385	28.3854	30.63	34.48	3.85	50.26	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	66	TOC	T1901815-009.05 ms doc	28.4399 ppm	0.0000 ppm	0.0000%	2019/11/01 01:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.4399	284.3988	214.20	217.85	3.66	50.24	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.9838 ppm (PASS)	0.0000 ppm	0%	2019/11/01 01:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9838	239.8382	183.14	186.73	3.59	50.25	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/01 01:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.86	10.56	3.70	50.17	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1909958-001.01 doc 2x	0.0077 ppm	0.0109 ppm	141.4200%	2019/11/01 01:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.17	14.01	3.84	50.22	12:26
2	TOC	0.0154	0.1536	10.39	14.18	3.79	50.27	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1909958-002.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 02:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.54	13.27	3.72	50.22	12:26
2	TOC	0.0000	0.0000	9.44	13.21	3.77	50.21	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1909958-003.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 02:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.84	12.63	3.79	50.21	12:31
2	TOC	0.0000	0.0000	8.33	12.11	3.77	50.17	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1909958-004.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 03:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.69	12.38	3.69	50.18	12:26
2	TOC	0.0000	0.0000	8.65	12.23	3.58	50.17	12:26

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	71	TOC	K1909958-005.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 03:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.69	12.27	3.58	50.17	12:24
2	TOC	0.0000	0.0000	8.95	12.56	3.61	50.15	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	72	TOC	K1909958-006.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 04:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.23	11.83	3.60	50.14	12:30
2	TOC	0.0000	0.0000	8.76	12.38	3.62	50.12	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	73	TOC	K1909958-007.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 05:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.03	12.54	3.51	50.11	12:27
2	TOC	0.0000	0.0000	8.56	12.15	3.59	50.12	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	74	TOC	K1909958-008.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 05:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.68	12.28	3.61	50.12	12:28
2	TOC	0.0000	0.0000	8.51	12.25	3.74	50.09	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◆	75	TOC	K1909958-010.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/01 06:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.06	11.59	3.54	50.04	12:29
2	TOC	0.0000	0.0000	8.09	11.76	3.67	49.93	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.2769 (IC) (v1311)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.4201 ppm (PASS)	0.0000 ppm	0%	2019/11/01 06:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4201	244.2007	186.26	189.82	3.55	49.85	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/01 06:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.31	10.77	3.46	49.81	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1310	1.4213	1.4340	0.0000	0.0000	0.0000	2019/10/26 13:10	Fusion1 (Fusion1)
v1311	1.1460	1.2580	0.0000	0.0000	0.0000	2019/10/30 12:02	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v27

Ver Creation: 2019/03/11 21:51

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 7.170x + 11.164

r^2 value: TOC: r^2 = 0.99991

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	10.4100	0.0000		2019/03/11 20:12
0.50 ppm	14.7740	0.5000		2019/03/11 20:28
1.00 ppm	18.0020	1.0000		2019/03/11 20:44
5.00 ppm	47.2310	5.0000		2019/03/11 21:01
10.0 ppm	85.1320	10.0000		2019/03/11 21:17
25.0 ppm	188.5200	25.0000		2019/03/11 21:33
50.0 ppm	370.1610	50.0000		2019/03/11 21:49

Methods

Name: Extended Reaction 021711 (TOC)

Version: v4

Ver Creation: 2019/01/31 11:21

Comment:

Operator: Fusion1 (Fusion1)

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	4.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4

SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/01 07:13

ALS Environmental

StarLIMS Run: 657829, 657830, 657831, 657832

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-82B

21 % H3PO4: 11-GEN-05-82A

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCD	Date Analyzed: 10/30/19
Reviewed By:	Date Reviewed: 11/01/19

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 13, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19101506**

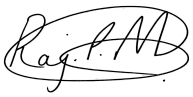
Laboratory Results for: **LHAAP 18 24**

Dear Marcia,

ALS Environmental received 2 sample(s) on Oct 25, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,



Generated By: RJ.MODASHIA
RJ Modashia
Project Manager

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS19101506

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101506-01	LH18/24-SP650_102419	Water		24-Oct-2019 14:00	25-Oct-2019 09:10	☐
HS19101506-02	Trip Blank	Water	ALS-112818-40	24-Oct-2019 00:00	25-Oct-2019 09:10	☑

Revision:1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Work Order: HS19101506

CASE NARRATIVE

Work Order Comments

- Revised to remove the closing CCV comment.

GCMS Volatiles by Method SW8260

Batch ID: R349596

Sample ID: VLCSW-191031

- 1,2,3_trichlorobenzene exceeded QC recovery limits. Samples are ND for this compound.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
Sample ID: LH18/24-SP650_102419
Collection Date: 24-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101506
Lab ID:HS19101506-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,2-Dichloroethane	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	31-Oct-2019 18:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	31-Oct-2019 18:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	31-Oct-2019 18:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	31-Oct-2019 18:44
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	31-Oct-2019 18:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	31-Oct-2019 18:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP 18 24 WorkOrder:HS19101506
Sample ID: LH18/24-SP650_102419 Lab ID:HS19101506-01
Collection Date: 24-Oct-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
cis-1,2-Dichloroethene	**21**		**0.20**	**0.50**	**1.0**	**UG/L**	1	31-Oct-2019 18:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	31-Oct-2019 18:44
Methylene chloride	**22**		**0.40**	**1.0**	**2.0**	**UG/L**	1	31-Oct-2019 18:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	31-Oct-2019 18:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Trichloroethene	**1.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	31-Oct-2019 18:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	31-Oct-2019 18:44
Vinyl chloride	**1.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	31-Oct-2019 18:44
Surr: 1,2-Dichloroethane-d4	*91.1*			**0**	*81-118*	*%REC*	*1*	*31-Oct-2019 18:44*
Surr: 4-Bromofluorobenzene	*99.6*			**0**	*85-114*	*%REC*	*1*	*31-Oct-2019 18:44*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*1*	*31-Oct-2019 18:44*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*31-Oct-2019 18:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R349596 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19101506-01	LH18/24-SP650_102419	24 Oct 2019 14:00			31 Oct 2019 18:44	1

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-191031** Units: **UG/L** Analysis Date: **31-Oct-2019 18:20**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324840** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-191031** Units: **UG/L** Analysis Date: **31-Oct-2019 18:20**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324840** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.62*	*1.0*	*50*	*0*	*89.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.01*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*46.39*	*1.0*	*50*	*0*	*92.8*	*80 - 119*				
Surr: Toluene-d8	*50.42*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191031** Units: **UG/L** Analysis Date: **31-Oct-2019 17:08**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324839** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.98	1.0	20	0	89.9	78 - 124				
1,1,1-Trichloroethane	18.98	1.0	20	0	94.9	74 - 131				
1,1,2,2-Tetrachloroethane	19.25	1.0	20	0	96.2	71 - 121				
1,1,2-Trichloroethane	19.69	1.0	20	0	98.5	80 - 119				
1,1-Dichloroethane	19.19	1.0	20	0	96.0	77 - 125				
1,1-Dichloroethene	18.72	1.0	20	0	93.6	71 - 131				
1,1-Dichloropropene	18.3	1.0	20	0	91.5	78 - 125				
1,2,3-Trichlorobenzene	27.06	1.0	20	0	135	69 - 129				S
1,2,3-Trichloropropane	19.36	1.0	20	0	96.8	73 - 122				
1,2,4-Trichlorobenzene	19.43	1.0	20	0	97.1	69 - 130				
1,2,4-Trimethylbenzene	16.81	1.0	20	0	84.1	76 - 124				
1,2-Dibromo-3-chloropropane	18.83	1.0	20	0	94.1	62 - 128				
1,2-Dibromoethane	19.77	1.0	20	0	98.9	77 - 121				
1,2-Dichlorobenzene	16.84	1.0	20	0	84.2	80 - 119				
1,2-Dichloroethane	19.53	1.0	20	0	97.6	73 - 128				
1,2-Dichloropropane	18.57	1.0	20	0	92.9	78 - 122				
1,3,5-Trimethylbenzene	16.85	1.0	20	0	84.3	75 - 124				
1,3-Dichlorobenzene	16.81	1.0	20	0	84.1	80 - 119				
1,3-Dichloropropane	19.2	1.0	20	0	96.0	80 - 119				
1,4-Dichlorobenzene	16.8	1.0	20	0	84.0	79 - 118				
2,2-Dichloropropane	18.98	1.0	20	0	94.9	60 - 139				
2-Butanone	38.61	2.0	40	0	96.5	56 - 143				
2-Chlorotoluene	16.92	1.0	20	0	84.6	79 - 122				
2-Hexanone	37.84	2.0	40	0	94.6	57 - 139				
4-Chlorotoluene	17.09	1.0	20	0	85.5	78 - 122				
4-Isopropyltoluene	16.54	1.0	20	0	82.7	77 - 127				
4-Methyl-2-pentanone	36.92	2.0	40	0	92.3	67 - 130				
Acetone	40.72	2.0	40	0	102	39 - 160				
Benzene	19.32	1.0	20	0	96.6	79 - 120				
Bromobenzene	17.75	1.0	20	0	88.7	80 - 120				
Bromochloromethane	19.1	1.0	20	0	95.5	78 - 123				
Bromodichloromethane	19.61	1.0	20	0	98.1	79 - 125				
Bromoform	18.93	1.0	20	0	94.6	66 - 130				
Bromomethane	19.07	1.0	20	0	95.4	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-191031** Units: **UG/L** Analysis Date: **31-Oct-2019 17:08**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324839** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	38.81	2.0	40	0	97.0	64 - 133				
Carbon tetrachloride	17.25	1.0	20	0	86.3	72 - 136				
Chlorobenzene	18.35	1.0	20	0	91.7	82 - 118				
Chloroethane	18.82	1.0	20	0	94.1	60 - 138				
Chloroform	19.61	1.0	20	0	98.1	79 - 124				
Chloromethane	18.81	1.0	20	0	94.0	50 - 139				
cis-1,2-Dichloroethene	20.03	1.0	20	0	100	78 - 123				
cis-1,3-Dichloropropene	19.53	1.0	20	0	97.7	75 - 124				
Dibromochloromethane	18.9	1.0	20	0	94.5	74 - 126				
Dibromomethane	19.47	1.0	20	0	97.3	79 - 123				
Dichlorodifluoromethane	18.26	1.0	20	0	91.3	32 - 152				
Ethylbenzene	17.39	1.0	20	0	87.0	79 - 121				
Hexachlorobutadiene	20.02	1.0	20	0	100	66 - 134				
Isopropylbenzene	16.73	1.0	20	0	83.7	72 - 131				
m,p-Xylene	35.18	2.0	40	0	88.0	80 - 121				
Methylene chloride	19.72	2.0	20	0	98.6	74 - 124				
Naphthalene	23.78	1.0	20	0	119	61 - 128				
n-Butylbenzene	17.07	1.0	20	0	85.4	75 - 128				
n-Propylbenzene	16.09	1.0	20	0	80.5	76 - 126				
o-Xylene	17.48	1.0	20	0	87.4	78 - 122				
sec-Butylbenzene	16.2	1.0	20	0	81.0	77 - 126				
Styrene	18.06	1.0	20	0	90.3	78 - 123				
tert-Butylbenzene	16.1	1.0	20	0	80.5	78 - 124				
Tetrachloroethene	17.52	1.0	20	0	87.6	74 - 129				
Toluene	18.25	1.0	20	0	91.3	80 - 121				
trans-1,2-Dichloroethene	20.46	1.0	20	0	102	75 - 124				
trans-1,3-Dichloropropene	19.92	1.0	20	0	99.6	73 - 127				
Trichloroethene	19.17	1.0	20	0	95.9	79 - 123				
Trichlorofluoromethane	17.89	1.0	20	0	89.5	65 - 141				
Vinyl chloride	18.99	1.0	20	0	95.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.06*	*1.0*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.86*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*50.66*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*48.85*	*1.0*	*50*	*0*	*97.7*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19101523-05MS** Units: **UG/L** Analysis Date: **31-Oct-2019 21:32**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.66	1.0	20	0	93.3	78 - 124				
1,1,1-Trichloroethane	18.58	1.0	20	0	92.9	74 - 131				
1,1,2,2-Tetrachloroethane	19.98	1.0	20	0	99.9	71 - 121				
1,1,2-Trichloroethane	19.27	1.0	20	0	96.4	80 - 119				
1,1-Dichloroethane	17.67	1.0	20	0	88.4	77 - 125				
1,1-Dichloroethene	18.2	1.0	20	0	91.0	71 - 131				
1,1-Dichloropropene	19.46	1.0	20	0	97.3	78 - 125				
1,2,3-Trichlorobenzene	20.81	1.0	20	0	104	69 - 129				
1,2,3-Trichloropropane	20.06	1.0	20	0	100	73 - 122				
1,2,4-Trichlorobenzene	18.65	1.0	20	0	93.2	69 - 130				
1,2,4-Trimethylbenzene	20.77	1.0	20	0	104	76 - 124				
1,2-Dibromo-3-chloropropane	20.26	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	19.39	1.0	20	0	97.0	77 - 121				
1,2-Dichlorobenzene	19.77	1.0	20	0	98.8	80 - 119				
1,2-Dichloroethane	18.29	1.0	20	0	91.4	73 - 128				
1,2-Dichloropropane	17.97	1.0	20	0	89.9	78 - 122				
1,3,5-Trimethylbenzene	21.22	1.0	20	0	106	75 - 124				
1,3-Dichlorobenzene	19.97	1.0	20	0	99.8	80 - 119				
1,3-Dichloropropane	18.96	1.0	20	0	94.8	80 - 119				
1,4-Dichlorobenzene	19.76	1.0	20	0	98.8	79 - 118				
2,2-Dichloropropane	17.41	1.0	20	0	87.0	60 - 139				
2-Butanone	30.1	2.0	40	0	75.2	56 - 143				
2-Chlorotoluene	20.82	1.0	20	0	104	79 - 122				
2-Hexanone	35.05	2.0	40	0	87.6	57 - 139				
4-Chlorotoluene	20.49	1.0	20	0	102	78 - 122				
4-Isopropyltoluene	21.32	1.0	20	0	107	77 - 127				
4-Methyl-2-pentanone	34.7	2.0	40	0	86.8	67 - 130				
Acetone	26.2	2.0	40	0	65.5	39 - 160				
Benzene	18.63	1.0	20	0	93.1	79 - 120				
Bromobenzene	20.22	1.0	20	0	101	80 - 120				
Bromochloromethane	17.56	1.0	20	0	87.8	78 - 123				
Bromodichloromethane	19.3	1.0	20	0	96.5	79 - 125				
Bromoform	21.3	1.0	20	2.289	95.0	66 - 130				
Bromomethane	20.63	1.0	20	0	103	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19101523-05MS** Units: **UG/L** Analysis Date: **31-Oct-2019 21:32**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.26	2.0	40	0	93.1	64 - 133				
Carbon tetrachloride	19.14	1.0	20	0	95.7	72 - 136				
Chlorobenzene	19.33	1.0	20	0	96.6	82 - 118				
Chloroethane	17.57	1.0	20	0	87.8	60 - 138				
Chloroform	18.07	1.0	20	0	90.4	79 - 124				
Chloromethane	17.45	1.0	20	0	87.2	50 - 139				
cis-1,2-Dichloroethene	18.34	1.0	20	0	91.7	78 - 123				
cis-1,3-Dichloropropene	18.25	1.0	20	0	91.2	75 - 124				
Dibromochloromethane	20.81	1.0	20	2.174	93.2	74 - 126				
Dibromomethane	18.96	1.0	20	0.7208	91.2	79 - 123				
Dichlorodifluoromethane	17.37	1.0	20	0	86.8	32 - 152				
Ethylbenzene	19.97	1.0	20	0	99.9	79 - 121				
Hexachlorobutadiene	19.76	1.0	20	0	98.8	66 - 134				
Isopropylbenzene	20.42	1.0	20	0	102	72 - 131				
m,p-Xylene	40.62	2.0	40	0	102	80 - 121				
Methylene chloride	17.71	2.0	20	0	88.6	74 - 124				
Naphthalene	20.6	1.0	20	0	103	61 - 128				
n-Butylbenzene	21.93	1.0	20	0	110	75 - 128				
n-Propylbenzene	21.16	1.0	20	0	106	76 - 126				
o-Xylene	19.63	1.0	20	0	98.2	78 - 122				
sec-Butylbenzene	21.65	1.0	20	0	108	77 - 126				
Styrene	19.76	1.0	20	0	98.8	78 - 123				
tert-Butylbenzene	21.24	1.0	20	0	106	78 - 124				
Tetrachloroethene	20.72	1.0	20	0	104	74 - 129				
Toluene	19.95	1.0	20	0	99.7	80 - 121				
trans-1,2-Dichloroethene	19.23	1.0	20	0	96.2	75 - 124				
trans-1,3-Dichloropropene	17.94	1.0	20	0	89.7	73 - 127				
Trichloroethene	19.25	1.0	20	0	96.2	79 - 123				
Trichlorofluoromethane	18.02	1.0	20	0	90.1	65 - 141				
Vinyl chloride	18.19	1.0	20	0	90.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.7*	*1.0*	*50*	*0*	*89.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.7*	*1.0*	*50*	*0*	*99.4*	*85 - 114*				
Surr: Dibromofluoromethane	*46.57*	*1.0*	*50*	*0*	*93.1*	*80 - 119*				
Surr: Toluene-d8	*51.02*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19101523-05MSD** Units: **UG/L** Analysis Date: **31-Oct-2019 21:56**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.78	1.0	20	0	93.9	78 - 124	18.66	0.645	20	
1,1,1-Trichloroethane	18.3	1.0	20	0	91.5	74 - 131	18.58	1.51	20	
1,1,2,2-Tetrachloroethane	18.98	1.0	20	0	94.9	71 - 121	19.98	5.16	20	
1,1,2-Trichloroethane	19	1.0	20	0	95.0	80 - 119	19.27	1.44	20	
1,1-Dichloroethane	17.5	1.0	20	0	87.5	77 - 125	17.67	1.01	20	
1,1-Dichloroethene	17.83	1.0	20	0	89.1	71 - 131	18.2	2.06	20	
1,1-Dichloropropene	18.97	1.0	20	0	94.8	78 - 125	19.46	2.53	20	
1,2,3-Trichlorobenzene	20.91	1.0	20	0	105	69 - 129	20.81	0.473	20	
1,2,3-Trichloropropane	19.09	1.0	20	0	95.5	73 - 122	20.06	4.91	20	
1,2,4-Trichlorobenzene	18.8	1.0	20	0	94.0	69 - 130	18.65	0.834	20	
1,2,4-Trimethylbenzene	19.94	1.0	20	0	99.7	76 - 124	20.77	4.09	20	
1,2-Dibromo-3-chloropropane	19.05	1.0	20	0	95.3	62 - 128	20.26	6.17	20	
1,2-Dibromoethane	19.12	1.0	20	0	95.6	77 - 121	19.39	1.4	20	
1,2-Dichlorobenzene	18.59	1.0	20	0	92.9	80 - 119	19.77	6.13	20	
1,2-Dichloroethane	18.49	1.0	20	0	92.4	73 - 128	18.29	1.08	20	
1,2-Dichloropropane	17.63	1.0	20	0	88.1	78 - 122	17.97	1.94	20	
1,3,5-Trimethylbenzene	20.05	1.0	20	0	100	75 - 124	21.22	5.64	20	
1,3-Dichlorobenzene	19.04	1.0	20	0	95.2	80 - 119	19.97	4.75	20	
1,3-Dichloropropane	19.09	1.0	20	0	95.5	80 - 119	18.96	0.727	20	
1,4-Dichlorobenzene	19.18	1.0	20	0	95.9	79 - 118	19.76	3.01	20	
2,2-Dichloropropane	16.75	1.0	20	0	83.7	60 - 139	17.41	3.87	20	
2-Butanone	29.32	2.0	40	0	73.3	56 - 143	30.1	2.64	20	
2-Chlorotoluene	19.78	1.0	20	0	98.9	79 - 122	20.82	5.12	20	
2-Hexanone	34.03	2.0	40	0	85.1	57 - 139	35.05	2.96	20	
4-Chlorotoluene	19.64	1.0	20	0	98.2	78 - 122	20.49	4.28	20	
4-Isopropyltoluene	20.48	1.0	20	0	102	77 - 127	21.32	3.99	20	
4-Methyl-2-pentanone	34.76	2.0	40	0	86.9	67 - 130	34.7	0.153	20	
Acetone	26.04	2.0	40	0	65.1	39 - 160	26.2	0.623	20	
Benzene	18.46	1.0	20	0	92.3	79 - 120	18.63	0.882	20	
Bromobenzene	19.2	1.0	20	0	96.0	80 - 120	20.22	5.2	20	
Bromochloromethane	17.16	1.0	20	0	85.8	78 - 123	17.56	2.32	20	
Bromodichloromethane	19.42	1.0	20	0	97.1	79 - 125	19.3	0.645	20	
Bromoform	20.78	1.0	20	2.289	92.5	66 - 130	21.3	2.43	20	
Bromomethane	19.48	1.0	20	0	97.4	53 - 141	20.63	5.72	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: HS19101506

QC BATCH REPORT

Batch ID: R349596 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19101523-05MSD** Units: **UG/L** Analysis Date: **31-Oct-2019 21:56**
Client ID: Run ID: **VOA6_349596** SeqNo: **5324849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	36.02	2.0	40	0	90.1	64 - 133	37.26	3.37	20	
Carbon tetrachloride	18.75	1.0	20	0	93.8	72 - 136	19.14	2.05	20	
Chlorobenzene	19.16	1.0	20	0	95.8	82 - 118	19.33	0.867	20	
Chloroethane	17.14	1.0	20	0	85.7	60 - 138	17.57	2.45	20	
Chloroform	17.82	1.0	20	0	89.1	79 - 124	18.07	1.45	20	
Chloromethane	17.29	1.0	20	0	86.5	50 - 139	17.45	0.887	20	
cis-1,2-Dichloroethene	18.25	1.0	20	0	91.3	78 - 123	18.34	0.472	20	
cis-1,3-Dichloropropene	18.15	1.0	20	0	90.8	75 - 124	18.25	0.531	20	
Dibromochloromethane	20.68	1.0	20	2.174	92.5	74 - 126	20.81	0.626	20	
Dibromomethane	19.15	1.0	20	0.7208	92.1	79 - 123	18.96	0.978	20	
Dichlorodifluoromethane	16.92	1.0	20	0	84.6	32 - 152	17.37	2.63	20	
Ethylbenzene	19.84	1.0	20	0	99.2	79 - 121	19.97	0.684	20	
Hexachlorobutadiene	19.89	1.0	20	0	99.5	66 - 134	19.76	0.66	20	
Isopropylbenzene	19.92	1.0	20	0	99.6	72 - 131	20.42	2.47	20	
m,p-Xylene	39.11	2.0	40	0	97.8	80 - 121	40.62	3.78	20	
Methylene chloride	17.61	2.0	20	0	88.1	74 - 124	17.71	0.57	20	
Naphthalene	19.53	1.0	20	0	97.6	61 - 128	20.6	5.32	20	
n-Butylbenzene	21.05	1.0	20	0	105	75 - 128	21.93	4.13	20	
n-Propylbenzene	20.14	1.0	20	0	101	76 - 126	21.16	4.95	20	
o-Xylene	19.57	1.0	20	0	97.9	78 - 122	19.63	0.309	20	
sec-Butylbenzene	20.88	1.0	20	0	104	77 - 126	21.65	3.63	20	
Styrene	19.38	1.0	20	0	96.9	78 - 123	19.76	1.92	20	
tert-Butylbenzene	20.32	1.0	20	0	102	78 - 124	21.24	4.39	20	
Tetrachloroethene	20.68	1.0	20	0	103	74 - 129	20.72	0.18	20	
Toluene	19.37	1.0	20	0	96.8	80 - 121	19.95	2.93	20	
trans-1,2-Dichloroethene	18.33	1.0	20	0	91.6	75 - 124	19.23	4.82	20	
trans-1,3-Dichloropropene	18.15	1.0	20	0	90.8	73 - 127	17.94	1.19	20	
Trichloroethene	19.06	1.0	20	0	95.3	79 - 123	19.25	0.984	20	
Trichlorofluoromethane	17.91	1.0	20	0	89.5	65 - 141	18.02	0.616	20	
Vinyl chloride	17.9	1.0	20	0	89.5	58 - 137	18.19	1.59	20	
Surr: 1,2-Dichloroethane-d4	*45.36*	*1.0*	*50*	*0*	*90.7*	*81 - 118*	*44.7*	*1.45*	*20*	
Surr: 4-Bromofluorobenzene	*50.32*	*1.0*	*50*	*0*	*101*	*85 - 114*	*49.7*	*1.24*	*20*	
Surr: Dibromofluoromethane	*46.34*	*1.0*	*50*	*0*	*92.7*	*80 - 119*	*46.57*	*0.486*	*20*	
Surr: Toluene-d8	*50.56*	*1.0*	*50*	*0*	*101*	*89 - 112*	*51.02*	*0.908*	*20*	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP 18 24
WorkOrder:	HS19101506

QC BATCH REPORT

Batch ID:	**R349596 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19101506-01

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP 18 24
WorkOrder: **HS19101506**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19101506
Date/Time Received: **25-Oct-2019 09:10**
Received by: **PMG**

Checklist completed by: *Paresh M. Giga* eSignature 25-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 25-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9c/0.4c U/C	IR11	
Cooler(s)/Kit(s):	Blue		
Date/Time sample(s) sent to storage:	10/25/19 11:05		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Trip Blank logged in on hold

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Page 1 of 1

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT SPECIAL SAMPLES**	
Prepared By: Scott Beesinger	P.O. Number

HS19101506

Bhate Environmental Associates. Inc.

LHAAP 18 24

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_102419	Water	10/24/19 / 14:00		3	X	HCl	

Additional Remarks: [redacted] 24 HOUR TAT

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/24/19	14:30		10/25/19	0810						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

Blue ULC. 0.90. #11 CIF-0.1°

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTO
Date: 10/24/19
Name:
Company:

DY SEAL
Time: 1430
Seal Broken By:
Date:

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (303) 597-2450
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 24MAY19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-BO 65588-DW

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7834 2873

FRI - 25 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 11, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19101768**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 1 sample(s) on Oct 30, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101768

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101768-01	LH18/24-SP650_102919	Water		29-Oct-2019 14:00	30-Oct-2019 09:30	☐

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101768

CASE NARRATIVE

Work Order Comments

- The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached

WetChemistry by Method E350.3

Batch ID: R349656

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: R349524

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_102919
Collection Date: 29-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101768
Lab ID:HS19101768-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: RG
Nitrogen, Ammonia (As N)	**7.8**	a	**0.20**	**0.10**	**0.20**	**mg/L**	1	01-Nov-2019 13:30
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**2.17**	a	**0.100**	**0.250**	**0.250**	**mg/L**	10	31-Oct-2019 09:28
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Nov-2019 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101768

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R349524 (0)	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3				**Matrix:** Water	
HS19101768-01	LH18/24-SP650_102919	29 Oct 2019 14:00			31 Oct 2019 09:28	10
Batch ID: R349656 (0)	**Test Name :** AMMONIA AS N BY E350.3(ISE)				**Matrix:** Water	
HS19101768-01	LH18/24-SP650_102919	29 Oct 2019 14:00			01 Nov 2019 13:30	1
Batch ID: R350144 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Water	
HS19101768-01	LH18/24-SP650_102919	29 Oct 2019 14:00			11 Nov 2019 10:01	1

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101768

QC BATCH REPORT

Batch ID: R349524 (0) **Instrument:** UV-2450 **Method:** ORTHO PHOSPHATE (PO4) AS P BY E365.3

MBLK Sample ID: **MBLK-R349524** Units: **mg/L** Analysis Date: **31-Oct-2019 09:28**
Client ID: Run ID: **UV-2450_349524** SeqNo: **5323153** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0250	0.0250								U

LCS Sample ID: **LCS-R349524** Units: **mg/L** Analysis Date: **31-Oct-2019 09:28**
Client ID: Run ID: **UV-2450_349524** SeqNo: **5323152** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.233	0.0250	0.25	0	93.2	85 - 115				

MS Sample ID: **HS19101768-01MS** Units: **mg/L** Analysis Date: **31-Oct-2019 09:28**
Client ID: **LH18/24-SP650_102919** Run ID: **UV-2450_349524** SeqNo: **5323155** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	4.61	0.250	2.5	2.17	97.6	80 - 120				

MSD Sample ID: **HS19101768-01MSD** Units: **mg/L** Analysis Date: **31-Oct-2019 09:28**
Client ID: **LH18/24-SP650_102919** Run ID: **UV-2450_349524** SeqNo: **5323154** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	4.55	0.250	2.5	2.17	95.2	80 - 120	4.61	1.31	20	

The following samples were analyzed in this batch: HS19101768-01

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101768

QC BATCH REPORT

Batch ID: R349656 (0) **Instrument: WetChem_HS** **Method: AMMONIA AS N BY E350.3(ISE)**

MBLK Sample ID: **MBLK-R349656** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326340** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.10	0.20								U

LCS Sample ID: **LCS-R349656** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326339** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.17	0.20	10	0	102	80 - 120				

MS Sample ID: **HS19101541-01MS** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326342** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.34	0.20	10	0.181	102	80 - 120				

MSD Sample ID: **HS19101541-01MSD** Units: **mg/L** Analysis Date: **01-Nov-2019 13:30**
Client ID: Run ID: **WetChem_HS_349656** SeqNo: **5326341** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.16	0.20	10	0.181	99.8	80 - 120	10.34	1.75	20	

The following samples were analyzed in this batch: HS19101768-01

ALS Houston, US Date: 11-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS19101768**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 11-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19101768
Date/Time Received: **30-Oct-2019 09:30**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature — 30-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature — 30-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:nONE
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8c U/C	IR25	
Cooler(s)/Kit(s):	43599		
Date/Time sample(s) sent to storage:	10/30/19 12:05		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_102919	Water	10/29/19 / 14:00		3	X	X		H2SO4	
LH18/24-SP650_102919	Water	10/29/19 / 14:00		1			X	NONE	

Analyses

HS19101768

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/29/19	14:30	JM	10/30/19	09:30						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

43599 SIC. 0.80 @ 25 C/F 0.0°

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43595

Date: 10
Name:
Company:

CUSTODY SEAL
10/29/19 Time: 1430
Scott Beesinger
BHATS

Seal Broken By:
Date: 10/30/19

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (903) 930-6193
ATT: SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRAST. INC
1203-B EAST GRAND AVE PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28NOV18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-BO 62490-RJ
RMA:

FedEx Express

FedEx
TRK# 0221 4380 9535 0854

WED - 30 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

#475872 10/29 567J3/2A3C/05A2

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : 1 360 577 7222
F : 1 360 636 1068
www.alsglobal.com

November 08, 2019

Analytical Report for Service Re uest No: K1910215

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS19101768

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory October 31, 2019
For your reference, these analyses have been assigned our service request number **K1910215.**

Analyses were performed according to our laboratory s NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : 1 360 577 7222
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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS19101768
Sample Matrix: Water

Service Request: K1910215
Date Received: 10/31/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 10/31/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Bourjoy Date 11/08/2019

Chain of Custody

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LH910215

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **12522**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19101768
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19101768-01**	**LH18/24-SP650_102919**	**Water**	**29 Oct 2019 14:00**
	TOC Analysis for DOD Level IV			07 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/30/19 1800

Received By: Liz Aguilar Date/Time: 10/31/19 9:30

Cooler ID(s): _____ Temperature(s): _____

RIGHT SOLUTIONS | RIGHT PARTNER

PC KL

Cooler Receipt and Preservation Form

Client ALS HOUSTON Service Request *K19* 10215

Received: 10/31/19 Opened: 10/31/19 By: LA Unloaded: 10/31/19 By: LA

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 FRONT
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.1	-0.1	1.3	1.3	0.0	376	1of1/12522	125102911861	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1910215
Project:	HS19101768	**Date Collected:**	10/29/19
Sample Matrix:	Water	**Date Received:**	10/31/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
LH18/24-SP650_102919	K1910215-001	**4.2**	1.0	0.4	0.2	2	11/06/19 08:09	
Method Blank	K1910215-MB	ND U	0.50	0.20	0.07	1	11/06/19 07:36	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910215
Project	HS19101768	**Date Collected:**	10/29/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	11/06/19

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	LH18/24-SP650_102919	**Units:**	mg/L
Lab Code:	K1910215-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1910215-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	1.0	0.4	0.2	4.2	4.2	4.21	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910215
Project:	HS19101768	**Date Collected:**	10/29/19
Sample Matrix:	Water	**Date Received:**	10/31/19
		Date Analyzed:	11/6/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	LH18/24-SP650_102919	**Units:**	mg/L
Lab Code:	K1910215-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1910215-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	4.2	55.0	50.0	102	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1910215
Project:	HS19101768	**Date Analyzed:**	11/06/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	658207

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1910215-LCS	24.1	25.0	96	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1910215
Project: HS19101768

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	658207	KQ1916154-01	11/05/19 21:27	25.0	23.7	95	90-110
CCV2	658207	KQ1916154-02	11/06/19 07:02	25.0	23.6	94	90-110
CCV3	658207	KQ1916154-03	11/06/19 11:55	25.0	23.7	95	90-110
CCV4	658207	KQ1916154-04	11/06/19 17:49	25.0	23.7	95	90-110
CCV5	658207	KQ1916154-05	11/06/19 22:41	25.0	23.4	94	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1910215
Project: HS19101768

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	658207	KQ1916154-06	11/05/19 21:44	0.50	0.20	0.07	ND	U
CCB2	658207	KQ1916154-07	11/06/19 07:19	0.50	0.20	0.07	ND	U
CCB3	658207	KQ1916154-08	11/06/19 12:11	0.50	0.20	0.07	ND	U
CCB4	658207	KQ1916154-09	11/06/19 18:06	0.50	0.20	0.07	ND	U
CCB5	658207	KQ1916154-10	11/06/19 22:58	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K1911070, K1909958, 9995, K1910215, T190863

Tier: IV IV IV IV IV

Date Analyzed: 11/5/19

Analyst: BCV

Analysis: TOC/DOC

Run # TOC: 658206 658207 658208 658209

DOC: 658206 658207

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K1909995-S Sent for RA due to being above the calibration curve.
K1909995-6 Sent for RA due to previous sample carry over.
K1909958-1MS, 9958-11MS report a low % recovery due to matrix interference from salt water.

Final Approved by: _____ Date: 11/08/19

DQREPORT

 OTH 11/08/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658206 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1910070-001	Carbon, Total Organic (TOC)	N/A		Pore Water	0.83 mg/L	10 mL	0.83 mg/L	1		0.50			11/5/19 15:52:00	N	IV
K1910070-002	Carbon, Total Organic (TOC)	N/A		Pore Water	0.69 mg/L	10 mL	0.69 mg/L	1		0.50			11/5/19 18:16:00	N	IV
K1910070-003	Carbon, Total Organic (TOC)	N/A		Pore Water	0.63 mg/L	10 mL	0.63 mg/L	1		0.50			11/5/19 19:20:00	N	IV
K1910070-004	Carbon, Total Organic (TOC)	N/A		Pore Water	0.87 mg/L	10 mL	0.87 mg/L	1		0.50			11/5/19 20:24:00	N	IV
K1910070-006	Carbon, Total Organic (TOC)	N/A		Pore Water	0.65 mg/L	10 mL	0.65 mg/L	1		0.50			11/5/19 22:01:00	N	IV
K1910070-007	Carbon, Total Organic (TOC)	N/A		Pore Water	0.55 mg/L	10 mL	0.55 mg/L	1		0.50			11/5/19 23:04:00	N	IV
K1910070-008	Carbon, Total Organic (TOC)	N/A		Pore Water	0.60 mg/L	10 mL	0.60 mg/L	1		0.50			11/6/19 00:08:00	N	IV
K1910070-009	Carbon, Total Organic (TOC)	N/A		Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50			11/6/19 01:12:00	N	IV
K1910070-010	Carbon, Total Organic (TOC)	N/A		Pore Water	0.55 mg/L	10 mL	0.55 mg/L	1		0.50			11/6/19 02:15:00	N	IV
K1910070-011	Carbon, Total Organic (TOC)	N/A		Pore Water	0.52 mg/L	10 mL	0.52 mg/L	1		0.50			11/6/19 03:19:00	N	IV
K1910070-012	Carbon, Total Organic (TOC)	N/A		Pore Water	0.49 mg/L	10 mL	0.50 mg/L U	1		0.50			11/6/19 04:23:00	N	IV
KQ1916153-01	Carbon, Total Organic (TOC)	CCV		Pore Water	24.12 mg/L	10 mL	24.1 mg/L	1					11/5/19 11:51:00	N	IV
KQ1916153-02	Carbon, Total Organic (TOC)	CCV		Pore Water	23.72 mg/L	10 mL	23.7 mg/L	1					11/5/19 21:27:00	N	IV
KQ1916153-03	Carbon, Total Organic (TOC)	CCV		Pore Water	23.59 mg/L	10 mL	23.6 mg/L	1					11/6/19 07:02:00	N	IV
KQ1916153-04	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 12:07:00	N	IV
KQ1916153-05	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 21:44:00	N	IV
KQ1916153-06	Carbon, Total Organic (TOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/6/19 07:19:00	N	IV
KQ1916153-07	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 12:24:00	N	IV
KQ1916153-08	Carbon, Total Organic (TOC)	LCS		Pore Water	24.55 mg/L	10 mL	24.6 mg/L	1		0.50	98		11/5/19 13:28:00	N	IV
KQ1916153-09	Carbon, Total Organic (TOC)	MS	K1910070-001	Pore Water	25.83 mg/L	10 mL	25.8 mg/L	1		0.50	100		11/5/19 16:56:00	N	IV
KQ1916153-10	Carbon, Total Organic (TOC)	LODV		Pore Water	0.08 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 14:49:00	N	IV
KQ1916153-11	Carbon, Total Organic (TOC)	MS	K1910070-001	Pore Water	25.78 mg/L	10 mL	25.8 mg/L	1		0.50	100		11/5/19 16:56:00	N	IV
KQ1916153-12	Carbon, Total Organic (TOC)	MS	K1910070-001	Pore Water	25.80 mg/L	10 mL	25.8 mg/L	1		0.50	100		11/5/19 16:56:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/08/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658206 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916153-13	Carbon, Total Organic (TOC)	MS	K1910070-001	Pore Water	25.90 mg/L	10 mL	25.9 mg/L	1		0.50	100		11/5/19 16:56:00	N	IV
KQ1916153-14	Carbon, Total Organic (TOC)	DUP	K1910070-003	Pore Water	0.74 mg/L	10 mL	0.74 mg/L	1		0.50		15	11/5/19 19:20:00	N	IV
KQ1916153-15	Carbon, Total Organic (TOC)	TRP	K1910070-003	Pore Water	0.75 mg/L	10 mL	0.75 mg/L	1		0.50		9	11/5/19 19:20:00	N	IV
KQ1916153-16	Carbon, Total Organic (TOC)	QUAD	K1910070-003	Pore Water	0.75 mg/L	10 mL	0.75 mg/L	1		0.50		8	11/5/19 19:20:00	N	IV
KQ1916153-17	Carbon, Total Organic (TOC)	DUP	K1910070-004	Pore Water	0.90 mg/L	10 mL	0.90 mg/L	1		0.50		4	11/5/19 20:24:00	N	IV
KQ1916153-18	Carbon, Total Organic (TOC)	TRP	K1910070-004	Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50		7	11/5/19 20:24:00	N	IV
KQ1916153-19	Carbon, Total Organic (TOC)	QUAD	K1910070-004	Pore Water	0.75 mg/L	10 mL	0.75 mg/L	1		0.50		9	11/5/19 20:24:00	N	IV
KQ1916153-20	Carbon, Total Organic (TOC)	DUP	K1910070-006	Pore Water	0.63 mg/L	10 mL	0.63 mg/L	1		0.50		3	11/5/19 22:01:00	N	IV
KQ1916153-21	Carbon, Total Organic (TOC)	TRP	K1910070-006	Pore Water	0.64 mg/L	10 mL	0.64 mg/L	1		0.50		2	11/5/19 22:01:00	N	IV
KQ1916153-22	Carbon, Total Organic (TOC)	QUAD	K1910070-006	Pore Water	0.65 mg/L	10 mL	0.65 mg/L	1		0.50		2	11/5/19 22:01:00	N	IV
KQ1916153-23	Carbon, Total Organic (TOC)	DUP	K1910070-007	Pore Water	0.54 mg/L	10 mL	0.54 mg/L	1		0.50		3	11/5/19 23:04:00	N	IV
KQ1916153-24	Carbon, Total Organic (TOC)	TRP	K1910070-007	Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50		2	11/5/19 23:04:00	N	IV
KQ1916153-25	Carbon, Total Organic (TOC)	QUAD	K1910070-007	Pore Water	0.64 mg/L	10 mL	0.64 mg/L	1		0.50		8	11/5/19 23:04:00	N	IV
KQ1916153-26	Carbon, Total Organic (TOC)	DUP	K1910070-008	Pore Water	0.60 mg/L	10 mL	0.60 mg/L	1		0.50		<1	11/6/19 00:08:00	N	IV
KQ1916153-27	Carbon, Total Organic (TOC)	TRP	K1910070-008	Pore Water	0.57 mg/L	10 mL	0.57 mg/L	1		0.50		2	11/6/19 00:08:00	N	IV
KQ1916153-28	Carbon, Total Organic (TOC)	QUAD	K1910070-008	Pore Water	0.54 mg/L	10 mL	0.54 mg/L	1		0.50		5	11/6/19 00:08:00	N	IV
KQ1916153-29	Carbon, Total Organic (TOC)	DUP	K1910070-009	Pore Water	0.64 mg/L	10 mL	0.64 mg/L	1		0.50		13	11/6/19 01:12:00	N	IV
KQ1916153-30	Carbon, Total Organic (TOC)	TRP	K1910070-009	Pore Water	0.61 mg/L	10 mL	0.61 mg/L	1		0.50		7	11/6/19 01:12:00	N	IV
KQ1916153-31	Carbon, Total Organic (TOC)	QUAD	K1910070-009	Pore Water	0.66 mg/L	10 mL	0.66 mg/L	1		0.50		7	11/6/19 01:12:00	N	IV
KQ1916153-32	Carbon, Total Organic (TOC)	DUP	K1910070-010	Pore Water	0.59 mg/L	10 mL	0.59 mg/L	1		0.50		6	11/6/19 02:15:00	N	IV
KQ1916153-33	Carbon, Total Organic (TOC)	TRP	K1910070-010	Pore Water	0.58 mg/L	10 mL	0.58 mg/L	1		0.50		3	11/6/19 02:15:00	N	IV
KQ1916153-34	Carbon, Total Organic (TOC)	QUAD	K1910070-010	Pore Water	0.58 mg/L	10 mL	0.58 mg/L	1		0.50		3	11/6/19 02:15:00	N	IV
KQ1916153-35	Carbon, Total Organic (TOC)	DUP	K1910070-011	Pore Water	0.56 mg/L	10 mL	0.56 mg/L	1		0.50		6	11/6/19 03:19:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658206 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916153-36	Carbon, Total Organic (TOC)	TRP	K1910070-011	Pore Water	0.48 mg/L	10 mL	0.50 mg/L U	1		0.50		NC	11/6/19 03:19:00	N	IV
KQ1916153-37	Carbon, Total Organic (TOC)	QUAD	K1910070-011	Pore Water	0.55 mg/L	10 mL	0.55 mg/L	1		0.50		NC	11/6/19 03:19:00	N	IV
KQ1916153-38	Carbon, Total Organic (TOC)	DUP	K1910070-012	Pore Water	0.53 mg/L	10 mL	0.53 mg/L	1		0.50		NC	11/6/19 04:23:00	N	IV
KQ1916153-39	Carbon, Total Organic (TOC)	TRP	K1910070-012	Pore Water	0.54 mg/L	10 mL	0.54 mg/L	1		0.50		NC	11/6/19 04:23:00	N	IV
KQ1916153-40	Carbon, Total Organic (TOC)	QUAD	K1910070-012	Pore Water	0.55 mg/L	10 mL	0.55 mg/L	1		0.50		NC	11/6/19 04:23:00	N	IV
KQ1916153-41	Carbon, Total Organic (TOC)	DUP	K1910070-001	Pore Water	0.76 mg/L	10 mL	0.76 mg/L	1		0.50		8	11/5/19 15:52:00	N	IV
KQ1916153-42	Carbon, Total Organic (TOC)	TRP	K1910070-001	Pore Water	0.78 mg/L	10 mL	0.78 mg/L	1		0.50		4	11/5/19 15:52:00	N	IV
KQ1916153-43	Carbon, Total Organic (TOC)	QUAD	K1910070-001	Pore Water	0.80 mg/L	10 mL	0.80 mg/L	1		0.50		4	11/5/19 15:52:00	N	IV
KQ1916153-44	Carbon, Total Organic (TOC)	DUP	K1910070-002	Pore Water	0.72 mg/L	10 mL	0.72 mg/L	1		0.50		4	11/5/19 18:16:00	N	IV
KQ1916153-45	Carbon, Total Organic (TOC)	TRP	K1910070-002	Pore Water	0.68 mg/L	10 mL	0.68 mg/L	1		0.50		3	11/5/19 18:16:00	N	IV
KQ1916153-46	Carbon, Total Organic (TOC)	QUAD	K1910070-002	Pore Water	0.71 mg/L	10 mL	0.71 mg/L	1		0.50		3	11/5/19 18:16:00	N	IV
KQ1916153-47	Carbon, Total Organic (TOC)	LODV		Pore Water	0.20 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 14:49:00	N	IV
KQ1916153-48	Carbon, Total Organic (TOC)	LODV		Pore Water	0.19 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 14:49:00	N	IV
KQ1916153-49	Carbon, Total Organic (TOC)	LODV		Pore Water	0.15 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 14:49:00	N	IV
KQ1916153-50	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 12:24:00	N	IV
KQ1916153-51	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 12:24:00	N	IV
KQ1916153-52	Carbon, Total Organic (TOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			11/5/19 12:24:00	N	IV
KQ1916153-53	Carbon, Total Organic (TOC)	LCS		Pore Water	24.53 mg/L	10 mL	24.5 mg/L	1		0.50	98		11/5/19 13:28:00	N	IV
KQ1916153-54	Carbon, Total Organic (TOC)	LCS		Pore Water	24.53 mg/L	10 mL	24.5 mg/L	1		0.50	98		11/5/19 13:28:00	N	IV
KQ1916153-55	Carbon, Total Organic (TOC)	LCS		Pore Water	24.52 mg/L	10 mL	24.5 mg/L	1		0.50	98		11/5/19 13:28:00	N	IV

35 of 77

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658207 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909958-001	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 09:14:00	N	IV
K1909958-002	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 09:46:00	N	IV
K1909958-003	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 10:18:00	N	IV
K1909958-004	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 10:51:00	N	IV
K1909958-005	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 11:23:00	N	IV
K1909958-006	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 12:28:00	N	IV
K1909958-007	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 13:00:00	N	IV
K1909958-008	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 13:32:00	N	IV
K1909958-010	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 14:04:00	N	IV
K1909958-011	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 14:36:00	N	IV
K1909958-012	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 15:08:00	N	IV
K1909958-013	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 15:41:00	N	IV
K1909958-014	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 16:13:00	N	IV
K1909958-016	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 16:45:00	N	IV
K1909958-017	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 17:17:00	N	IV
K1909958-018	Carbon, Total Organic	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 18:56:00	N	IV
K1909995-005	Carbon, Total Organic	N/A		Water	58.59 mg/L	10 mL	2930 mg/L	50	4	25			11/6/19 05:26:00	N	IV
K1909995-006	Carbon, Total Organic	N/A		Water	0.97 mg/L	10 mL	48 mg/L	50	4	25			11/6/19 05:58:00	N	IV
K1909995-007	Carbon, Total Organic	N/A		Water	7.51 mg/L	10 mL	7.51 mg/L	1	0.07	0.50			11/6/19 06:30:00	N	IV
K1910215-001	Carbon, Total Organic	N/A		Water	2.11 mg/L	10 mL	4.2 mg/L	2	0.2	1.0			11/6/19 08:09:00	N	IV
KQ1916154-01	Carbon, Total Organic	CCV		Water	23.72 mg/L	10 mL	23.7 mg/L	1					11/5/19 21:27:00	N	IV
KQ1916154-02	Carbon, Total Organic	CCV		Water	23.59 mg/L	10 mL	23.6 mg/L	1					11/6/19 07:02:00	N	IV
KQ1916154-03	Carbon, Total Organic	CCV		Water	23.70 mg/L	10 mL	23.7 mg/L	1					11/6/19 11:55:00	N	IV
KQ1916154-04	Carbon, Total Organic	CCV		Water	23.66 mg/L	10 mL	23.7 mg/L	1					11/6/19 17:49:00	N	IV
KQ1916154-05	Carbon, Total Organic	CCV		Water	23.40 mg/L	10 mL	23.4 mg/L	1					11/6/19 22:41:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/08/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658207 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916154-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/5/19 21:44:00	N	IV
KQ1916154-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 07:19:00	N	IV
KQ1916154-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 12:11:00	N	IV
KQ1916154-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 18:06:00	N	IV
KQ1916154-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 22:58:00	N	IV
KQ1916154-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 07:36:00	N	IV
KQ1916154-15	Carbon, Total Organic	LCS		Water	24.06 mg/L	10 mL	24.1 mg/L	1	0.07	0.50	96		11/6/19 07:52:00	N	IV
KQ1916154-19	Carbon, Total Organic	MS	K1910215-001	Water	27.52 mg/L	10 mL	55.0 mg/L	2	0.2	1.0	102		11/6/19 08:41:00	N	IV
KQ1916154-20	Carbon, Total Organic	DUP	K1909995-005	Water	58.43 mg/L	10 mL	2920 mg/L	50	4	25		<1	11/6/19 05:26:00	N	IV
KQ1916154-21	Carbon, Total Organic	DUP	K1909995-006	Water	0.58 mg/L	10 mL	29 mg/L	50	4	25		49*	11/6/19 05:58:00	N	IV
KQ1916154-22	Carbon, Total Organic	DUP	K1909995-007	Water	7.36 mg/L	10 mL	7.36 mg/L	1	0.07	0.50		2	11/6/19 06:30:00	N	IV
KQ1916154-23	Carbon, Total Organic	DUP	K1909958-005	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 11:23:00	N	IV
KQ1916154-24	Carbon, Total Organic	DUP	K1909958-006	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 12:28:00	N	IV
KQ1916154-25	Carbon, Total Organic	DUP	K1909958-007	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 13:00:00	N	IV
KQ1916154-26	Carbon, Total Organic	DUP	K1909958-008	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 13:32:00	N	IV
KQ1916154-27	Carbon, Total Organic	DUP	K1909958-017	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 17:17:00	N	IV
KQ1916154-28	Carbon, Total Organic	DUP	K1909958-016	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 16:45:00	N	IV
KQ1916154-29	Carbon, Total Organic	DUP	K1909958-018	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 18:56:00	N	IV
KQ1916154-30	Carbon, Total Organic	DUP	K1909958-010	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 14:04:00	N	IV
KQ1916154-31	Carbon, Total Organic	DUP	K1909958-011	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 14:36:00	N	IV
KQ1916154-32	Carbon, Total Organic	DUP	K1909958-012	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 15:08:00	N	IV
KQ1916154-33	Carbon, Total Organic	DUP	K1909958-013	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 15:41:00	N	IV
KQ1916154-34	Carbon, Total Organic	DUP	K1909958-014	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 16:13:00	N	IV
KQ1916154-35	Carbon, Total Organic	DUP	K1909958-004	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 10:51:00	N	IV
KQ1916154-36	Carbon, Total Organic	DUP	K1909958-001	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 09:14:00	N	IV
KQ1916154-37	Carbon, Total Organic	DUP	K1909958-002	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 09:46:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658207 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916154-38	Carbon, Total Organic	DUP	K1909958-003	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 10:18:00	N	IV
KQ1916154-39	Carbon, Total Organic	DUP	K1910215-001	Water	2.10 mg/L	10 mL	4.2 mg/L	2	0.2	1.0		<1	11/6/19 08:09:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658208 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909958-011	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 19:28:00	N	IV
K1909958-012	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 20:33:00	N	IV
K1909958-013	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 21:05:00	N	IV
K1909958-014	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 21:37:00	N	IV
K1909958-016	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 22:09:00	N	IV
K1909958-017	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 23:15:00	N	IV
K1909958-018	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/6/19 23:47:00	N	IV
K1909958-019	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 00:19:00	N	IV
K1909958-020	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 00:51:00	N	IV
KQ1916155-01	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.66 mg/L	10 mL	23.7 mg/L	1					11/6/19 17:49:00	N	IV
KQ1916155-02	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.40 mg/L	10 mL	23.4 mg/L	1					11/6/19 22:41:00	N	IV
KQ1916155-03	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.33 mg/L	10 mL	23.3 mg/L	1					11/6/19 04:36:00	N	IV
KQ1916155-04	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.69 mg/L	10 mL	23.7 mg/L	1					11/7/19 09:28:00	N	IV
KQ1916155-05	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 18:06:00	N	IV
KQ1916155-06	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 22:58:00	N	IV
KQ1916155-07	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 04:52:00	N	IV
KQ1916155-08	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/7/19 09:45:00	N	IV
KQ1916155-09	Carbon, Dissolved Organic (DOC)	MB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/6/19 18:22:00	N	IV
KQ1916155-10	Carbon, Dissolved Organic (DOC)	LCS		Ocean Water	24.43 mg/L	10 mL	24.4 mg/L	1	0.07	0.50	98		11/6/19 18:39:00	N	IV
KQ1916155-11	Carbon, Dissolved Organic (DOC)	MS	K1909958-011	Ocean Water	13.71 mg/L	10 mL	27.4 mg/L	2	0.2	1.0	55*		11/6/19 20:00:00	N	IV
KQ1916155-12	Carbon, Dissolved Organic (DOC)	DUP	K1909958-012	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 20:33:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

11/08/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658208 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916155-13	Carbon, Dissolved Organic (DOC)	DUP	K1909958-011	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 19:28:00	N	IV
KQ1916155-14	Carbon, Dissolved Organic (DOC)	DUP	K1909958-013	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 21:05:00	N	IV
KQ1916155-15	Carbon, Dissolved Organic (DOC)	DUP	K1909958-014	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 21:37:00	N	IV
KQ1916155-16	Carbon, Dissolved Organic (DOC)	DUP	K1909958-017	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 23:15:00	N	IV
KQ1916155-17	Carbon, Dissolved Organic (DOC)	DUP	K1909958-016	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 22:09:00	N	IV
KQ1916155-18	Carbon, Dissolved Organic (DOC)	DUP	K1909958-018	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/6/19 23:47:00	N	IV
KQ1916155-19	Carbon, Dissolved Organic (DOC)	DUP	K1909958-019	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 00:19:00	N	IV
KQ1916155-20	Carbon, Dissolved Organic (DOC)	DUP	K1909958-020	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 00:51:00	N	IV
KQ1916155-21	Carbon, Dissolved Organic (DOC)	DUP	T1901863-009	Water	4.23 mg/L	10 mL	4.23 mg/L	1	0.07	0.50		<1	11/7/19 06:47:00	N	IV
KQ1916155-22	Carbon, Dissolved Organic (DOC)	DUP	T1901863-008	Water	4.04 mg/L	10 mL	4.04 mg/L	1	0.07	0.50		<1	11/7/19 06:15:00	N	IV
KQ1916155-23	Carbon, Dissolved Organic (DOC)	DUP	T1901863-007	Water	4.17 mg/L	10 mL	4.17 mg/L	1	0.07	0.50		<1	11/7/19 04:36:00	N	IV
KQ1916155-24	Carbon, Dissolved Organic (DOC)	DUP	T1901863-006	Water	3.97 mg/L	10 mL	3.97 mg/L	1	0.07	0.50		2	11/7/19 04:04:00	N	IV
KQ1916155-25	Carbon, Dissolved Organic (DOC)	DUP	T1901863-005	Water	4.02 mg/L	10 mL	4.02 mg/L	1	0.07	0.50		<1	11/7/19 03:32:00	N	IV
KQ1916155-26	Carbon, Dissolved Organic (DOC)	DUP	T1901863-004	Water	3.92 mg/L	10 mL	3.92 mg/L	1	0.07	0.50		<1	11/7/19 03:00:00	N	IV
KQ1916155-27	Carbon, Dissolved Organic (DOC)	DUP	T1901863-003	Water	3.91 mg/L	10 mL	3.91 mg/L	1	0.07	0.50		1	11/7/19 02:27:00	N	IV
KQ1916155-28	Carbon, Dissolved Organic (DOC)	DUP	T1901863-002	Water	3.84 mg/L	10 mL	3.84 mg/L	1	0.07	0.50		2	11/7/19 01:55:00	N	IV
KQ1916155-29	Carbon, Dissolved Organic (DOC)	DUP	T1901863-001	Water	3.92 mg/L	10 mL	3.92 mg/L	1	0.07	0.50		1	11/7/19 01:23:00	N	IV
T1901863-001	Carbon, Dissolved Organic (DOC)	N/A		Water	3.97 mg/L	10 mL	3.97 mg/L	1	0.07	0.50			11/7/19 01:23:00	N	IV
T1901863-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.91 mg/L	10 mL	3.91 mg/L	1	0.07	0.50			11/7/19 01:55:00	N	IV
T1901863-003	Carbon, Dissolved Organic (DOC)	N/A		Water	3.96 mg/L	10 mL	3.96 mg/L	1	0.07	0.50			11/7/19 02:27:00	N	IV
T1901863-004	Carbon, Dissolved Organic (DOC)	N/A		Water	3.95 mg/L	10 mL	3.95 mg/L	1	0.07	0.50			11/7/19 03:00:00	N	IV
T1901863-005	Carbon, Dissolved Organic (DOC)	N/A		Water	3.98 mg/L	10 mL	3.98 mg/L	1	0.07	0.50			11/7/19 03:32:00	N	IV
T1901863-006	Carbon, Dissolved Organic (DOC)	N/A		Water	3.90 mg/L	10 mL	3.90 mg/L	1	0.07	0.50			11/7/19 04:04:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658208 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
T1901863-007	Carbon, Dissolved Organic (DOC)	N/A		Water	4.19 mg/L	10 mL	4.19 mg/L	1	0.07	0.50			11/7/19 04:36:00	N	IV
T1901863-008	Carbon, Dissolved Organic (DOC)	N/A		Water	4.06 mg/L	10 mL	4.06 mg/L	1	0.07	0.50			11/7/19 06:15:00	N	IV
T1901863-009	Carbon, Dissolved Organic (DOC)	N/A		Water	4.21 mg/L	10 mL	4.21 mg/L	1	0.07	0.50			11/7/19 06:47:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658209 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1909955-001	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 07:19:00	N	IV
K1909955-002	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 08:24:00	N	IV
K1909955-003	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 08:56:00	N	IV
K1909955-004	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 10:02:00	N	IV
K1909955-005	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 10:34:00	N	IV
K1909955-006	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 11:06:00	N	IV
K1909955-007	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 11:39:00	N	IV
K1909955-008	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 12:11:00	N	IV
K1909955-009	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 12:43:00	N	IV
K1909955-010	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 13:15:00	N	IV
K1909955-012	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 13:47:00	N	IV
K1909955-013	Carbon, Dissolved Organic (DOC)	N/A		Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0			11/7/19 14:19:00	N	IV
KQ1916156-01	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.33 mg/L	10 mL	23.3 mg/L	1					11/7/19 04:36:00	N	IV
KQ1916156-02	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.69 mg/L	10 mL	23.7 mg/L	1					11/7/19 09:28:00	N	IV
KQ1916156-03	Carbon, Dissolved Organic (DOC)	CCV		Ocean Water	23.68 mg/L	10 mL	23.7 mg/L	1					11/7/19 14:51:00	N	IV
KQ1916156-04	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/7/19 04:52:00	N	IV
KQ1916156-05	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/7/19 09:45:00	N	IV
KQ1916156-06	Carbon, Dissolved Organic (DOC)	CCB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/7/19 15:08:00	N	IV
KQ1916156-07	Carbon, Dissolved Organic (DOC)	MB		Ocean Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			11/7/19 05:09:00	N	IV
KQ1916156-08	Carbon, Dissolved Organic (DOC)	LCS		Ocean Water	24.24 mg/L	10 mL	24.2 mg/L	1	0.07	0.50	97		11/7/19 05:26:00	N	IV
KQ1916156-09	Carbon, Dissolved Organic (DOC)	MS	K1909955-001	Ocean Water	14.39 mg/L	10 mL	28.8 mg/L	2	0.2	1.0	58*		11/7/19 07:51:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Printed 11/7/19 16:45

Results Summary

11/08/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 658209 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1916156-10	Carbon, Dissolved Organic (DOC)	DUP	K1909955-007	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 11:39:00	N	IV
KQ1916156-11	Carbon, Dissolved Organic (DOC)	DUP	K1909955-008	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 12:11:00	N	IV
KQ1916156-12	Carbon, Dissolved Organic (DOC)	DUP	K1909955-001	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 07:19:00	N	IV
KQ1916156-13	Carbon, Dissolved Organic (DOC)	DUP	K1909955-002	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 08:24:00	N	IV
KQ1916156-14	Carbon, Dissolved Organic (DOC)	DUP	K1909955-003	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 08:56:00	N	IV
KQ1916156-15	Carbon, Dissolved Organic (DOC)	DUP	K1909955-004	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 10:02:00	N	IV
KQ1916156-16	Carbon, Dissolved Organic (DOC)	DUP	K1909955-005	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 10:34:00	N	IV
KQ1916156-17	Carbon, Dissolved Organic (DOC)	DUP	K1909955-009	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 12:43:00	N	IV
KQ1916156-18	Carbon, Dissolved Organic (DOC)	DUP	K1909955-010	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 13:15:00	N	IV
KQ1916156-19	Carbon, Dissolved Organic (DOC)	DUP	K1909955-012	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 13:47:00	N	IV
KQ1916156-20	Carbon, Dissolved Organic (DOC)	DUP	K1909955-013	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 14:19:00	N	IV
KQ1916156-21	Carbon, Dissolved Organic (DOC)	DUP	K1909955-006	Ocean Water	0.00 mg/L	10 mL	1.0 mg/L U	2	0.2	1.0		NC	11/7/19 11:06:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: 658206, 658207
DOC: 658208, 658209

Schedule: 11052019

Version: 1
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/11/05 09:40 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	4
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	4
2	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	LOD	Extended Reaction 021711 (Extended Reaction 021711)	4
4	Sample	K1910070-001.05	Extended Reaction 021711 (Extended Reaction 021711)	4
5	Sample	K1910070-001.05 ms	Extended Reaction 021711 (Extended Reaction 021711)	4
6	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
7	Sample	K1910070-002.05	Extended Reaction 021711 (Extended Reaction 021711)	4
8	Sample	K1910070-003.05	Extended Reaction 021711 (Extended Reaction 021711)	4
9	Sample	K1910070-004.05	Extended Reaction 021711 (Extended Reaction 021711)	4
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1910070-006.05	Extended Reaction 021711 (Extended Reaction 021711)	4
11	Sample	K1910070-007.05	Extended Reaction 021711 (Extended Reaction 021711)	4
12	Sample	K1910070-008.05	Extended Reaction 021711 (Extended Reaction 021711)	4
13	Sample	K1910070-009.05	Extended Reaction 021711 (Extended Reaction 021711)	4
14	Sample	K1910070-010.05	Extended Reaction 021711 (Extended Reaction 021711)	4
15	Sample	K1910070-011.05	Extended Reaction 021711 (Extended Reaction 021711)	4
16	Sample	K1910070-012.05	Extended Reaction 021711 (Extended Reaction 021711)	4
17	Sample	K1909995-005.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1909995-006.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	K1909995-007.01	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1910215-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1910215-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
23	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
24	Sample	K1909958-001.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1909958-002.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	K1909958-003.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1909958-004.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1909958-005.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1909958-006.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1909958-007.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1909958-008.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
32	Sample	K1909958-010.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
33	Sample	K1909958-011.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
34	Sample	K1909958-012.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	K1909958-013.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1909958-014.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	K1909958-016.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
38	Sample	K1909958-017.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

11/08/19

Schedule: 11052019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB3	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1909958-018.06 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	K1909958-011.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	K1909958-011.01 ms doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	1
43	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
44	Sample	K1909958-012.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	K1909958-013.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
46	Sample	K1909958-014.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
47	Sample	K1909958-016.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	K1909958-017.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1909958-018.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	K1909958-019.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
51	Sample	K1909958-020.01 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	T1901863-001.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	T1901863-002.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
54	Sample	T1901863-003.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
55	Sample	T1901863-004.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
56	Sample	T1901863-005.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
57	Sample	T1901863-006.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	MB4	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
59	Sample	T1901863-007.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
60	Sample	T1901863-008.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
61	Sample	T1901863-009.05 doc	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	K1909955-001.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	K1909955-001.10 ms doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	1
64	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
65	Sample	K1909955-002.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
66	Sample	K1909955-003.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
67	Sample	K1909955-004.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
68	Sample	K1909955-005.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
69	Sample	K1909955-006.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1909955-007.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	K1909955-008.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
72	Sample	K1909955-009.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
73	Sample	K1909955-010.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
74	Sample	K1909955-012.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
75	Sample	K1909955-013.10 doc 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

Fusion Report - 11052019
Tuesday, November 05, 2019 09:55 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/11/07 15:38 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	11052019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1)		
Comment:			

Report Results

11/08/19

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/05 09:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.42	19.59	6.17	49.73	05:25
2	TC Clean	15.48	19.29	3.81	50.39	04:06
3	TC Clean	5.36	9.02	3.66	50.25	03:49
4	TC Clean	3.97	7.61	3.64	50.17	03:56

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/11/05 10:17

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.19	4.68	3.49	49.77	05:23
2	TC Clean	9.94	13.51	3.57	50.40	04:03
3	TC Clean	2.93	6.57	3.64	50.15	03:47
4	TC Clean	2.03	5.72	3.70	50.19	03:47

Sample Type: Clean From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/11/05 10:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.92	4.70	3.78	49.59	05:09
2	TC Clean	5.73	9.30	3.57	50.35	04:02
3	TC Clean	2.50	6.26	3.75	50.34	03:45
4	TC Clean	2.11	5.81	3.69	50.28	03:45

Sample Type: Blank (Creating v1314) From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/11/05 11:01

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.97	4.55	3.58	49.64	05:09
2	TC Clean	6.16	9.85	3.69	50.35	04:03
3	TC Clean	2.48	6.18	3.69	50.29	03:47
4	TC Clean	2.43	6.18	3.75	50.23	03:48
5	Reagent Blank	4.43	8.21	3.77	50.29	05:05
6	Acid Blank	1.02	4.69	3.68	49.62	05:26

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.5614 ppm	0.0000 ppm	0.0000%	2019/11/05 11:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5614	5.6144	14.37	18.18	3.82	50.45	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.1171 ppm (PASS)	0.0000 ppm	0%	2019/11/05 11:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1171	241.1715	184.09	187.88	3.78	50.45	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/05 12:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	8.73	12.40	3.68	50.44	12:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/05 12:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.02	11.73	3.71	50.45	12:26
2	TOC	0.0000	0.0000	7.89	11.66	3.77	50.44	12:28
3	TOC	0.0000	0.0000	8.09	11.66	3.57	50.43	12:30
4	TOC	0.0000	0.0000	7.98	11.64	3.66	50.45	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.5315 ppm	0.0138 ppm	0.06%	2019/11/05 13:28

						(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.5513	245.5130	187.20	190.82	3.61	50.41	12:31
C	TOC	25.0 ppm	2	24.5283	245.2829	187.04	190.82	3.78	50.50	12:27
C	TOC	25.0 ppm	3	24.5268	245.2676	187.03	190.73	3.70	50.41	12:26
C	TOC	25.0 ppm	4	24.5195	245.1950	186.98	190.79	3.82	50.42	12:26

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.1329 ppm	0.0000 ppm	0.0000%	2019/11/05 14:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1329	1.3287	11.30	14.92	3.63	50.42	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	LOD	0.1552 ppm	0.0522 ppm	33.6400%	2019/11/05 14:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1479	1.4793	11.40	15.11	3.71	50.40	12:28
2	TOC	0.1874	1.8740	11.69	15.37	3.69	50.40	12:25
3	TOC	0.2008	2.0079	11.78	15.40	3.61	50.38	12:27
4	TOC	0.0845	0.8448	10.95	14.89	3.94	50.37	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1910070-001.05	0.7930 ppm	0.0289 ppm	3.6400%	2019/11/05 15:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8295	8.2950	16.29	19.85	3.56	50.38	12:30
2	TOC	0.7644	7.6437	15.82	19.57	3.75	50.39	12:25
3	TOC	0.7764	7.7636	15.91	19.70	3.79	50.41	12:27
4	TOC	0.8016	8.0160	16.09	19.75	3.66	50.43	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC)	Extended Reaction	Extended Reaction

(v1314) 021711 (v4) 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K1910070-001.05 ms	25.8271 ppm	0.0518 ppm	0.2000%	2019/11/05 16:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.8964	258.9641	196.03	199.64	3.62	50.44	12:30
2	TOC	25.8006	258.0060	195.34	199.06	3.72	50.45	12:28
3	TOC	25.7770	257.7703	195.17	198.79	3.62	50.48	12:28
4	TOC	25.8342	258.3421	195.58	199.29	3.70	50.48	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/05 17:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.53	11.28	3.74	50.48	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1910070-002.05	0.6982 ppm	0.0185 ppm	2.6500%	2019/11/05 18:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6910	6.9101	15.30	18.98	3.68	50.50	12:30
2	TOC	0.7189	7.1890	15.50	19.01	3.51	50.53	12:30
3	TOC	0.6764	6.7636	15.19	18.80	3.61	50.54	12:29
4	TOC	0.7066	7.0663	15.41	19.02	3.61	50.56	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1910070-003.05	0.7175 ppm	0.0574 ppm	8.0000%	2019/11/05 19:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6320	6.3201	14.88	18.48	3.61	50.57	12:32
2	TOC	0.7373	7.3731	15.63	19.15	3.52	50.60	12:28
3	TOC	0.7543	7.5432	15.75	19.30	3.55	50.61	12:26
4	TOC	0.7464	7.4637	15.69	19.28	3.59	50.63	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8730	8.7301	16.60	20.17	3.57	50.64	12:29
2	TOC	0.9044	9.0439	16.83	20.61	3.78	50.64	12:30
3	TOC	0.7941	7.9407	16.04	19.82	3.78	50.66	12:26
4	TOC	0.7474	7.4735	15.70	19.41	3.71	50.67	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.7236 ppm (PASS)	0.0000 ppm	0%	2019/11/05 21:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.7236	237.2358	181.27	184.69	3.42	50.69	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/05 21:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.82	10.46	3.64	50.72	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1910070-006.05	0.6407 ppm	0.0109 ppm	1.7000%	2019/11/05 22:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6465	6.4652	14.98	18.51	3.53	50.73	12:26
2	TOC	0.6259	6.2588	14.83	18.32	3.49	50.80	12:28
3	TOC	0.6397	6.3968	14.93	18.44	3.51	50.74	12:28
4	TOC	0.6507	6.5070	15.01	18.76	3.75	50.73	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1910070-007.05	0.5704 ppm	0.0444 ppm	7.7800%	2019/11/05 23:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5546	5.5461	14.32	17.93	3.61	50.74	12:28
2	TOC	0.5356	5.3564	14.18	17.86	3.67	50.73	12:25
3	TOC	0.5560	5.5601	14.33	17.95	3.62	50.73	12:27
4	TOC	0.6355	6.3550	14.90	18.38	3.48	50.72	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1910070-008.05	0.5765 ppm	0.0277 ppm	4.8000%	2019/11/06 00:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5960	5.9603	14.62	18.21	3.59	50.72	12:27
2	TOC	0.5977	5.9771	14.63	18.29	3.66	50.71	12:27
3	TOC	0.5741	5.7414	14.46	18.11	3.65	50.70	12:30
4	TOC	0.5383	5.3829	14.20	17.81	3.61	50.70	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1910070-009.05	0.6194 ppm	0.0439 ppm	7.0900%	2019/11/06 01:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5626	5.6256	14.38	18.02	3.65	50.67	12:27
2	TOC	0.6419	6.4192	14.95	18.51	3.56	50.67	12:26
3	TOC	0.6096	6.0956	14.71	18.34	3.63	50.76	12:28
4	TOC	0.6635	6.6353	15.10	18.53	3.43	50.70	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◆	14	TOC	K1910070-010.05	0.5749 ppm	0.0156 ppm	2.7100%	2019/11/06 02:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5518	5.5182	14.30	17.89	3.59	50.70	12:26
2	TOC	0.5859	5.8585	14.54	18.08	3.54	50.70	12:26
3	TOC	0.5799	5.7985	14.50	18.06	3.56	50.72	12:25
4	TOC	0.5822	5.8222	14.52	18.16	3.64	50.72	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K1910070-011.05	0.5266 ppm	0.0355 ppm	6.7400%	2019/11/06 03:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5231	5.2309	14.09	17.67	3.58	50.70	12:28
2	TOC	0.5563	5.5628	14.33	18.09	3.76	50.72	12:31
3	TOC	0.4779	4.7791	13.77	17.54	3.77	50.79	12:29
4	TOC	0.5492	5.4917	14.28	17.92	3.64	50.72	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K1910070-012.05	0.5268 ppm	0.0271 ppm	5.1500%	2019/11/06 04:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4874	4.8739	13.84	17.49	3.65	50.71	12:31
2	TOC	0.5303	5.3034	14.15	17.85	3.71	50.71	12:25
3	TOC	0.5428	5.4276	14.24	17.95	3.71	50.72	12:27
4	TOC	0.5465	5.4652	14.26	18.01	3.75	50.73	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1909995-005.01 50x	58.5081 ppm	0.1162 ppm	0.2000%	2019/11/06 05:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	58.5902	585.9021	430.45	434.04	3.59	50.73	12:29
2	TOC	58.4259	584.2592	429.27	433.06	3.78	50.73	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	18	TOC	K1909995-006.01 50x	0.7745 ppm	0.2699 ppm	34.8500%	2019/11/06 05:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9653	9.6533	17.26	21.00	3.74	50.74	12:31
2	TOC	0.5836	5.8362	14.53	18.16	3.63	50.82	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1909995-007.01	7.4337 ppm	0.1045 ppm	1.4100%	2019/11/06 06:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.5076	75.0761	64.18	67.70	3.53	50.73	12:31
2	TOC	7.3598	73.5978	63.11	66.83	3.72	50.74	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.5947 ppm (PASS)	0.0000 ppm	0%	2019/11/06 07:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.5947	235.9472	180.34	183.87	3.53	50.74	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/06 07:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.46	10.11	3.66	50.74	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria	Do Nothing	Extended Reaction	Extended Reaction	0 ppmC

met.	021711 (v4)	021711 (v27)

Sample Type: Sample — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 07:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.82	9.51	3.70	50.72	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER — From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.0602 ppm (PASS)	0.0000 ppm	0%	2019/11/06 07:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.0602	240.6025	183.68	187.32	3.63	50.70	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K1910215-001.01	2.1062 ppm	0.0075 ppm	0.3600%	2019/11/06 08:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1115	21.1145	25.48	29.17	3.69	50.71	12:26
2	TOC	2.1009	21.0085	25.41	29.11	3.70	50.57	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1910215-001.01 ms	27.5240 ppm	0.0000 ppm	0.0000%	2019/11/06 08:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.5240	275.2396	207.70	211.22	3.52	50.53	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 08:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.99	10.47	3.47	50.52	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1909958-001.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 09:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.65	13.16	3.51	50.52	12:28
2	TOC	0.0000	0.0000	9.98	13.81	3.83	50.48	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1909958-002.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 09:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.30	13.14	3.85	50.43	12:29
2	TOC	0.0000	0.0000	9.37	12.94	3.58	50.46	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1909958-003.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 10:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.84	12.34	3.51	50.44	12:26
2	TOC	0.0000	0.0000	8.75	12.32	3.57	50.42	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1909958-004.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 10:51

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	0.0000	0.0000	8.53	11.91	3.38	50.42	12:26
2	TOC	0.0000	0.0000	8.30	11.99	3.69	50.48	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1909958-005.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 11:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.22	11.75	3.53	50.38	12:26
2	TOC	0.0000	0.0000	8.43	12.05	3.62	50.47	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.6979 ppm (PASS)	0.0000 ppm	0%	2019/11/06 11:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6979	236.9792	181.08	184.67	3.59	50.67	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/06 12:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.70	10.32	3.62	50.72	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1909958-006.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 12:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.91	11.44	3.53	50.69	12:30
2	TOC	0.0000	0.0000	7.67	11.15	3.49	50.58	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1909958-007.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 13:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.47	11.16	3.69	50.52	12:28
2	TOC	0.0000	0.0000	7.44	11.07	3.64	50.50	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1909958-008.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 13:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.37	11.15	3.78	50.49	12:28
2	TOC	0.0000	0.0000	7.71	11.32	3.61	50.46	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1909958-010.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 14:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.27	11.08	3.81	50.46	12:30
2	TOC	0.0000	0.0000	7.77	11.19	3.42	50.43	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1909958-011.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 14:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0000	0.0000	7.20	10.72	3.52	50.42	12:30
2	TOC	0.0000	0.0000	7.33	10.98	3.65	50.42	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1909958-012.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 15:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.49	10.97	3.48	50.39	12:30
2	TOC	0.0000	0.0000	6.86	10.36	3.50	50.37	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1909958-013.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 15:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.07	10.73	3.66	50.36	12:31
2	TOC	0.0000	0.0000	7.14	10.84	3.70	50.39	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1909958-014.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 16:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.04	10.49	3.45	50.39	12:28
2	TOC	0.0000	0.0000	7.00	10.73	3.74	50.41	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1909958-016.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 16:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.02	10.58	3.55	50.41	12:26
2	TOC	0.0000	0.0000	7.19	11.02	3.83	50.43	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1909958-017.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 17:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.36	10.98	3.61	50.44	12:29
2	TOC	0.0000	0.0000	7.37	11.14	3.77	50.44	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.6593 ppm (PASS)	0.0000 ppm	0%	2019/11/06 17:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6593	236.5929	180.81	184.33	3.52	50.43	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/06 18:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.52	10.16	3.64	50.45	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0000	0.0000	5.80	9.55	3.74	50.46	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.4252 ppm (PASS)	0.0000 ppm	0%	2019/11/06 18:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.4252	244.2523	186.30	189.99	3.69	50.45	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1909958-018.06 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 18:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.12	11.77	3.65	50.45	12:26
2	TOC	0.0000	0.0000	7.26	10.88	3.62	50.46	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K1909958-011.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 19:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.42	11.07	3.65	50.48	12:25
2	TOC	0.0000	0.0000	7.16	10.79	3.64	50.48	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K1909958-011.01 ms doc 2x	13.7121 ppm	0.0000 ppm	0.0000%	2019/11/06 20:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.7121	137.1210	108.66	112.26	3.59	50.48	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 20:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.11	10.76	3.65	50.50	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1909958-012.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.45	10.97	3.51	50.48	12:27
2	TOC	0.0000	0.0000	7.03	10.59	3.56	50.57	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1909958-013.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 21:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.30	10.92	3.63	50.49	12:28
2	TOC	0.0000	0.0000	7.28	10.81	3.53	50.52	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1909958-014.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.54	11.14	3.59	50.50	12:27
2	TOC	0.0000	0.0000	7.93	11.48	3.55	50.52	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC)	Extended Reaction	Extended Reaction

(v1314) 021711 (v4) 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1909958-016.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 22:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.83	11.38	3.55	50.49	12:29
2	TOC	0.0000	0.0000	7.33	10.92	3.59	50.52	12:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.3988 ppm (PASS)	0.0000 ppm	0%	2019/11/06 22:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.3988	233.9877	178.94	182.68	3.74	50.56	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/06 22:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.61	10.25	3.64	50.56	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1909958-017.01 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 23:15

			2x					

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.26	11.80	3.54	50.53	12:28
2	TOC	0.0000	0.0000	8.07	11.65	3.57	50.51	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1909958-018.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/06 23:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.14	10.86	3.72	50.52	12:27
2	TOC	0.0000	0.0000	7.33	11.11	3.78	50.54	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1909958-019.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 00:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.80	11.46	3.65	50.55	12:26
2	TOC	0.0000	0.0000	7.77	11.43	3.66	50.52	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1909958-020.01 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 00:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.01	10.61	3.60	50.50	12:28
2	TOC	0.0000	0.0000	6.97	10.63	3.66	50.52	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	T1901863-001.05 doc	3.9460 ppm	0.0331 ppm	0.8400%	2019/11/07 01:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9694	39.6940	38.80	42.45	3.64	50.55	12:26

2	TOC	3.9225	39.2254	38.47	42.00	3.53	50.58	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	T1901863-002.05 doc	3.8734 ppm	0.0521 ppm	1.3400%	2019/11/07 01:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9103	39.1026	38.38	41.91	3.53	50.52	12:26
2	TOC	3.8366	38.3663	37.85	41.39	3.54	50.53	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	T1901863-003.05 doc	3.9378 ppm	0.0338 ppm	0.8600%	2019/11/07 02:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9617	39.6173	38.75	42.24	3.49	50.57	12:26
2	TOC	3.9139	39.1389	38.41	41.93	3.52	50.62	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	T1901863-004.05 doc	3.9352 ppm	0.0203 ppm	0.5200%	2019/11/07 03:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9496	39.4959	38.66	42.28	3.62	50.56	12:28
2	TOC	3.9209	39.2086	38.46	42.05	3.59	50.56	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	T1901863-005.05 doc	4.0026 ppm	0.0276 ppm	0.6900%	2019/11/07 03:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9831	39.8306	38.90	42.57	3.66	50.52	12:32
2	TOC	4.0221	40.2211	39.18	42.65	3.47	50.56	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	57	TOC	T1901863-006.05 doc	3.9347 ppm	0.0480 ppm	1.2200%	2019/11/07 04:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9008	39.0078	38.31	41.93	3.62	50.55	12:29
2	TOC	3.9687	39.6870	38.80	42.37	3.57	50.53	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.3313 ppm (PASS)	0.0000 ppm	0%	2019/11/07 04:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.3313	233.3127	178.46	181.95	3.49	50.52	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/07 04:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.12	9.70	3.58	50.54	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 05:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.53	9.16	3.64	50.50	12:32

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> LCS ER From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.2431 ppm (PASS)	0.0000 ppm	0%	2019/11/07 05:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.2431	242.4309	184.99	188.60	3.60	50.53	12:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	25 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	T1901863-007.05 doc	4.1795 ppm	0.0123 ppm	0.2900%	2019/11/07 05:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1882	41.8822	40.37	43.94	3.57	50.52	12:27
2	TOC	4.1708	41.7078	40.25	43.88	3.64	50.48	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	T1901863-008.05 doc	4.0509 ppm	0.0094 ppm	0.2300%	2019/11/07 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0575	40.5754	39.44	43.08	3.64	50.43	12:29
2	TOC	4.0443	40.4429	39.34	43.11	3.77	50.51	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	61	TOC	T1901863-009.05 doc	4.2158 ppm	0.0137 ppm	0.3300%	2019/11/07 06:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2061	42.0607	40.50	44.21	3.71	50.55	12:26
2	TOC	4.2255	42.2545	40.64	44.20	3.56	50.50	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1909955-001.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 07:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.37	11.90	3.53	50.51	12:30
2	TOC	0.0000	0.0000	7.86	11.46	3.60	50.61	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1909955-001.10 ms doc 2x	14.3921 ppm	0.0000 ppm	0.0000%	2019/11/07 07:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.3921	143.9213	113.54	117.08	3.54	50.51	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 08:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.46	11.24	3.78	50.50	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1909955-002.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 08:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.99	11.53	3.54	50.47	12:30
2	TOC	0.0000	0.0000	7.93	11.55	3.62	50.50	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1909955-003.10 doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 08:56

			2x						

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.12	10.67	3.55	50.47	12:30
2	TOC	0.0000	0.0000	6.94	10.52	3.57	50.49	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.6886 ppm (PASS)	0.0000 ppm	0%	2019/11/07 09:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6886	236.8857	181.02	184.61	3.59	50.47	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/07 09:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	6.43	9.92	3.49	50.43	12:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1909955-004.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 10:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.41	11.07	3.66	50.40	12:27

2	TOC	0.0000	0.0000	7.66	11.24	3.58	50.31	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1909955-005.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 10:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.56	11.24	3.68	50.32	12:29
2	TOC	0.0000	0.0000	8.20	11.68	3.49	50.35	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1909955-006.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 11:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.48	12.23	3.75	50.32	12:32
2	TOC	0.0000	0.0000	8.94	12.42	3.49	50.35	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1909955-007.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 11:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.62	11.22	3.60	50.40	12:28
2	TOC	0.0000	0.0000	7.87	11.46	3.59	50.39	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1909955-008.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 12:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.61	12.13	3.52	50.40	12:31
2	TOC	0.0000	0.0000	8.85	12.34	3.49	50.40	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC)	Extended Reaction	Extended Reaction

(v1314) 021711 (v4) 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	72	TOC	K1909955-009.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 12:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.31	11.91	3.60	50.37	12:31
2	TOC	0.0000	0.0000	8.64	12.29	3.64	50.37	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	73	TOC	K1909955-010.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 13:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.55	12.14	3.59	50.32	12:27
2	TOC	0.0000	0.0000	8.12	11.88	3.76	50.31	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	74	TOC	K1909955-012.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 13:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.36	11.95	3.59	50.30	12:27
2	TOC	0.0000	0.0000	8.38	12.16	3.78	50.27	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	75	TOC	K1909955-013.10 doc 2x	0.0000 ppm	0.0000 ppm	0.0000%	2019/11/07 14:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.41	12.01	3.60	50.23	12:29
2	TOC	0.0000	0.0000	8.36	11.94	3.58	50.23	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 10.3433 (IC) (v1314)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	23.6840 ppm (PASS)	0.0000 ppm	0%	2019/11/07 14:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6840	236.8397	180.98	184.40	3.41	50.20	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 1

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/11/07 15:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	7.26	10.69	3.43	50.20	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v27)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1313	1.1747	1.1290	0.0000	0.0000	0.0000	2019/11/02 12:41	Fusion1 (Fusion1)
v1314	1.4780	1.0180	0.0000	0.0000	0.0000	2019/11/05 11:34	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version:	v27	Calibration curve formula:	TOC: y = 7.170x + 11.164
Ver Creation:	2019/03/11 21:51	r^2 value:	TOC: r^2 = 0.99991
Comment:			

Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	10.4100	0.0000		2019/03/11 20:12
0.50 ppm	14.7740	0.5000		2019/03/11 20:28
1.00 ppm	18.0020	1.0000		2019/03/11 20:44
5.00 ppm	47.2310	5.0000		2019/03/11 21:01
10.0 ppm	85.1320	10.0000		2019/03/11 21:17
25.0 ppm	188.5200	25.0000		2019/03/11 21:33
50.0 ppm	370.1610	50.0000		2019/03/11 21:49

Methods

Name: Extended Reaction 021711 (TOC)

Version: v4
Ver Creation: 2019/01/31 11:21
Operator: Fusion1 (Fusion1)
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	4.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/11/07 15:25

ALS Environmental

StarLIMS Run: 658206, 658207, 658208, 658209

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-82E

21 % H3PO4: 11-GEN-05-82G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BEN	Date Analyzed: 11/5/19
Reviewed By:	Date Reviewed: 11/08/19

00962328

Method Detection Limit - LOD Verification

ALS - Kelso

Analytical Method:	9060/9060A	Instrument:	Fusion K- TOC-03
Extr./Dig. Method:		Analyst(s):	BCD
Matrix:	Water		
Units:	mg/L		

Analyte	MDL	Sample ID:	K1900530-26		K1902807-14		K1906524-014		K1909860-14	
		Date Analyzed:	3/12/2019		4/10/2019		7/27/2019		11/5/2019	
		Runno	628235		631516		645183		658206	
		Spike Level	Result 1	s/n >3	Result 2	s/n >3	Result 3	s/n >3	Result 4	s/n >3
total organic carbon	0.08	0.16	0.030	y	0.233	y	0.0983	y	0.14790	y
total organic carbon	0.08	0.16	0.021	y	0.18726	y	0.0869	y	0.1874	y'
total organic carbon	0.08	0.16	0.007	y	0.21016	y	0.1085	y	0.2008	y
total organic carbon	0.08	0.16	0.052	y	0.17816	y	0.0506	y	0.0845	y
Supervisor Approval:			TH 03/15/19		TH 04/12/19		IF 07/31/19		TH 11/08/19	

00962329

r.02/24/10

Limit of Quantitation - LOQ Verification

ALS Environmental - Kelso

Analytical Method:	9060/9060A								
Extr./Dig. Method:				Instrument:	Fusion K-TOC-03				
Matrix:	Water			Analyst(s):	BCD				
Units:	mg/L								
		K1902807-14	K1906524-14	K1909860-14					
	Date Analyzed:	4/10/2019	7/27/2019	10/26/2019		Avg Percent	Percent		% RSD
Analyte	Spike Level	Result	Result	Result	Result	Recovery	RSD	% Rec Limits	Limits
total organic carbon	0.500	0.582	0.409	0.628		108	21.40	50-150	20
total organic carbon	0.500	0.519	0.442	0.713		112	25.05		
total organic carbon	0.500	0.495	0.396	0.656		103	25.41		
total organic carbon	0.500	0.528	0.411	0.638		105	21.61		
		R-631516	Run: 645183	R-657284		#DIV/0!	#DIV/0!		
						#DIV/0!	#DIV/0!		
Supervisor Approval:		TH 04/12/19	IF 7/31/19	TH 11/08/19					

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS19101773

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

04-Nov-2019

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 04, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19101773**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 1 sample(s) on Oct 30, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 04-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101773

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101773-01	LH18/24-SP650_102919_AIX	Water		29-Oct-2019 14:00	30-Oct-2019 09:30	☐

Revision:1

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ALS Houston, US Date: 04-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101773

CASE NARRATIVE

Work Order Comments

- Revised to report Perchlorate at DL/LOD/LOQ
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

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ALS Houston, US Date: 04-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_102919_AIX
Collection Date: 29-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101773
Lab ID:HS19101773-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	01-Nov-2019 16:32

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

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Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101773

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R349655 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS19101773-01	LH18/24-SP650_102919_AIX	29 Oct 2019 14:00			01 Nov 2019 16:32	1

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Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS19101773**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

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ALS Houston, US Date: 04-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101773

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19101773-01	LH18/24-SP650_102919_AIX	Login	10/30/2019 12:12:45 PM	PMG	WET279
HS19101773-01	LH18/24-SP650_102919_AIX	Login	10/30/2019 12:12:45 PM	PMG	WET279
HS19101773-01	LH18/24-SP650_102919_AIX	Login	10/30/2019 12:12:45 PM	PMG	Sub

ALS Houston, US Date: 04-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19101773
Date/Time Received: **30-Oct-2019 09:30**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature 30-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 30-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8c U/C	IR25	
Cooler(s)/Kit(s):	43599		
Date/Time sample(s) sent to storage:	10/30/19 12:20		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: PERCHLORATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_102919_AIX	Water	10/29/19 / 14:00		1	X	HCl	

HS19101773
Bhate Environmental Associates. Inc.
Longhorn GW Treatment Plant

Additional Remarks: 24 hour TAT

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/29/19	14:30	JM	10/30/19	09:30						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

43599 0.8° 11:25 4°C

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43599

Date: 10
Name:
Company:

CUSTODY SEAL
10/29/19 Time: 1430
Scott Beesinger
BHATT

Seal Broken By:
Date: 10/30/19

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (903) 930-6193
ATT: SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRAST. INC
1203-B EAST GRAND AVE PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28NOV18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-BO 62490-RJ
RMA:

FedEx Express

FedEx
TRK# 0221 4380 9535 0854

WED - 30 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

#475872 10/29 567J3/2A3C/05A2

S51C1/FIFE/104C

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Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1930921

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2310 (250994)

General Set Information: There was one field sample in this Work Order. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 681874) was less than 1/2 the CRDL. The recovery for the LCS (681875) was within acceptable parameters.

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MS/MSD Analysis: MS/MSD was performed on sample 1930921001 (Client ID: LH18/24-SP650_102919_AIX). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (681876/77) percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 681872) is reported from the analysis of the Laboratory Control Sample (LCS – 681875) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03).
.

Stephen Brose November 1, 2019
Analyst Date

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ANALYTICAL REPORT
Amended-20191104

Report Date: November 04, 2019

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1930921**
Project ID: HS19101773
Purchase Order: HS19101773
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_102919_AIX	1930921001	10/29/19	10/31/19	

ANALYTICAL REPORT
Amended-20191104

Workorder: 34-1930921
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_102919_AIX**	Sampling Site: NA	Collected: 10/29/2019
Lab ID: 1930921001	Media: 125 mL Nalgene	Received: 10/31/2019
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2310 (HBN: 250994)	**%Solids:** NA
	Analyzed: 10/31/2019 15:29	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Stephen Brose 11/01/2019 06:54	/S/ Thomas T. McKay 11/01/2019 14:23

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT
Amended-20191104

Workorder: 34-1930921
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1930921

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2310 (HBN: 250994)
		Prepared By:	NA	**Analyzed By:**	Stephen Brose

Blank

LMB: 681874
Analyzed: 10/31/2019 15:15
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 681875
Analyzed: 10/31/2019 14:47
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	2.98	3.00	99.4	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1930921001	**MS:** 681876	**MSD:** 681877
Analyzed: 10/31/2019 15:29	**Analyzed:** 10/31/2019 15:42	**Analyzed:** 10/31/2019 15:56
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.48	3	116	78.8	123.8	3.44	115	0.986	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Stephen Brose	/S/ Thomas T. McKay
11/01/2019 06:54	11/01/2019 14:23

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

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10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

W 1930921

Subcontract Chain of Custody

18698/#7

SAMPLING STATE: **Dept of Defense**

COC ID: **12524**

1930921

RUSH

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19101773
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19101773-01**	**LH18/24-SP650_102919_AIX**	**Water**	**29 Oct 2019 14:00**
	SUB_Perch-6850			01 Nov 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
RUSH

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/30/19 1800.

Received By: _____ Date/Time: 10/31/19 09:43

Cooler ID(s): _____ Temperature(s): _____

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ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19101773	***Split:***	**Workorder ID:** 1930921	**Level:** ENV_LVL4	**Requested Analysis**	
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly		
Comments:			**Preservatives**		
			COOL		
			Containers		

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6950, DoD QSM
1	10/29/2019 14:00	LH18/24-SP650_102919_AIX	1930921001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Werath, Julie	10/31/2019 09:43	ALS Sample Receiving	Sample Login
[signature]	10/31/19 1040	13B	Storage
13B	10/31/19 1100	[signature]	Analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

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ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 1930921

Date/Time of Receipt: 10/31/19 09:43

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable
Cooler Custody Seals:	Present/Absent/NA
	Intact/Broken/NA
Container Custody Seals:	Present/Absent/NA
	Intact/Broken/NA
Ice Present:	Yes/No/NA
	Frozen/Melted/NA
Temperature Control:	Present/Not Included
Location Temp Taken:	Control/Between Samples
Are all temperatures within project specific guidelines?	Yes/No/NA
VOA Headspace Present?	Yes/No/NA

pH Check Performed:								
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA		
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA		
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA		
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA		

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	Good	3 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: Jaylynn Johnson (Signature) Jaylynn Johnson (Printed Name) 10/31/19 (Date)

CLIENT-RELATED INFORMATION

- ☐ Missing Cooler
- ☐ Cooler Conditions
- ☐ Missing Paperwork
- ☐ Missing/Incorrect Bottle Labels
- ☐ Missing Samples/Bottles
- ☐ Broken/Leaking Samples
- ☐ Incorrect Bottle Type
- ☐ Cooler Temperatures Out of Range
- ☐ Incorrect Preservation
- ☐ pH Criteria Not Met
- ☐ Residual Chlorine Present
- ☐ Head Space in Bottles
- ☐ Insufficient Sample Volume
- ☐ Chain of Custody Problems
- ☐ Other:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

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Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (281) 530-5656
CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 30OCT19
ACTWGT: 5.10 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS19101773 - RJ (RUSH)

FedEx Express

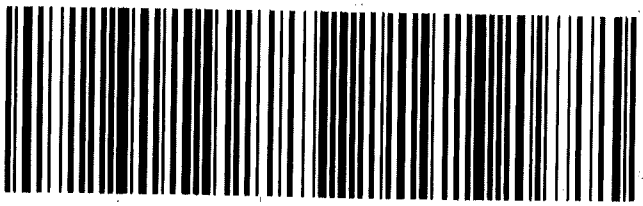
RT 907 5 A
ST 13 10:30 1839
10.31

1251 0291 1839

THU - 31 OCT 10:30A
PRIORITY OVERNIGHT

AX BTFA

84123
UT-US SLC



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ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS19101773	***Split:***	**Workorder ID:** 1930921	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives**

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6950, DoD QSM
1	10/29/2019 14:00	LH18/24-SP650_102919_AIX	1930921001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Werath, Julie	10/31/2019 09:43	ALS Sample Receiving	Sample Login
[signature]	10/31/19 1040	13B	Storage
13B	10/31/19 1100	[signature]	Analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

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ch Worklist

Batch: ELMS/ 2310 **Created:** 10/31/2019 12:10 **Instrument:** **HBN:** 250994

Rule: EPA 6850, DoD QSM Water **Analyst:** S. Brose **Status:** WP

Workorder: 1930921 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	681871	CCV for HBN 250994 [ELMS/2310]				CCV	3		E685041C3Q	6214		11/1/2019	
2	681872	RLVS for HBN 250994 [ELMS/2310				RLVS	3		E685041C3Q	6214		11/1/2019	
3	681873	ICS for HBN 250994 [ELMS/2310]				ICS	3		E6850..D3Q	6214		11/1/2019	
4	681874	LMB for HBN 250994 [ELMS/2310]				LMB	3		E6850Q413Q	6214		11/1/2019	
5	681875	LCS for HBN 250994 [ELMS/2310]				LCS	3		E6850Q413Q	6214		11/1/2019	
6	1930921001	LH18/24-SP650_102919_AIX				SAMPLE	3	1930921001-A	E6850Q41.3	5480	11/26/2019	11/1/2019	
7	681876	LH18/24-SP650...(1930921001MS)				MS	3		E6850Q413Q	6214		11/1/2019	
8	681877	LH18/24-SP65...(1930921001MSD)				MSD	3		E6850Q413Q	6214		11/1/2019	
9	681878	CCV for HBN 250994 [ELMS/2310]				CCV	3		E685041C3Q	6214		11/1/2019	

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

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Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 1930921(001)
ELMS Batch/HBN ID: 2310 (250994)
Prep Date: 10/31/2019 Analysis Date: 10/31/2019 Analyst: S. Brose
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2019\OCT\31OCT19A.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Stephen Brose. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 8 Injection Volume: 35µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 681875; Target = 3.0µg/L. ASTM type II water was used for LMB 681874.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 1930921001 (Client ID's: LH18/24-SP650_102919_AIX). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2019\OCT\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2019\250994-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 681872) is reported from the analysis of the Laboratory Control Sample (LCS – 681875) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03).

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5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:**_____ **Sample Set IDs if Applicable:**_____	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	SB	NA
Calibration standards analyzed and meets criteria	SB	TM
Standards traceability checked and meets criteria	SB	TM
Standard curve coefficients evaluated and meet criteria	SB	TM
ICVs analyzed and meet acceptance criteria	SB	TM
CCVs analyzed and meet acceptance criteria	SB	TM
Retention Time Windows checked	SB	TM
For method 8081A, Endrin/DDT Breakdown is checked for compliance	/	—
Surrogate recoveries checked and appropriately addressed	SB	TM
Method Preparation Blanks analyzed and meet acceptance criteria	SB	TM
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	SB	TM
RLVS analyzed	SB	TM
Preparation and analysis hold times met	SB	TM
Preparation deviations and re-preparations noted when performed	SB	TM
Analysis deviations and re-analyses noted when performed	SB	TM
Sample dilution factors noted on reports	SB	TM
Electronic records in HBN transcription accuracy and completeness	SB	TM
Preparation and analysis calculations checked	SB	TM
NCRs are completed as necessary NC/CAR#_____	SB	TM
Report forms are complete and accurate	SB	TM
Manual integrations checked	SB	TM

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STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L	
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL	
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020	
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes	
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

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STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

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STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK		Description - 6850 WKG Std 100.ug/L
Standard: 49948	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/20/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard:	43659	**Created By:**	Thomas Bosch	**Amount:**	100 mL
MFG:	AccuStandard	**Create Date:**	09/17/2018 09:09AM	**Expires:**	07/25/2020
MFG Lot:	218065075			**Usable:**	Yes
Part ID:	IC-PER-10X-1			**Lab Lot:**	CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

RIGHT SOLUTIONS | RIGHT PARTNER

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 49947
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/23/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

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STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 47516
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

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STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

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STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard:	36748	**Created By:**	Thomas Bosch	**Amount:**	100 mL
MFG:	Ultra Scientific	**Create Date:**	05/11/2017 01:05PM	**Expires:**	03/31/2020
MFG Lot:	CP-0860			**Usable:**	Yes
Part ID:	ICC-013			**Lab Lot:**	CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

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STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard:	47515	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG:	ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot:	TNB: 05/06/2019		**Usable:** Yes
Pipette ID:	Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

Unofficial

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

Page 1 of 1

For use in routine laboratory analysis.

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 9001 ISO GUIDE 34 ISO 17025 ULTRA

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ACCREDITED REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ACCREDITED TESTING LABORATORY

ALS
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Cambridge Isotope Laboratories, Inc. Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: * For isotopically labeled compounds, MW listed is for the fully enriched product.	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ubscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.
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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

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Batch Report: C:\HPCHEM\1\DATA\31OCT19A\31OCT19S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
	*	681871	CCV@25	Vial 71	1	Control	1	1.69038e6	7.433	26.02950
	*	681875	QC@3.0	Vial 72	1	Control	2	2.10810e5	7.515	2.98084
	*	681873	ICS@3.0	Vial 73	1	Control	3	1.63255e5	7.309	2.99620
	*	681874	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
	*	1930921001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
	*	681876	309211S	Vial 76	1	Sample	6	1.80115e5	7.240	3.47600
	*	681876	309211D	Vial 77	1	Sample	7	1.84004e5	7.202	3.44186
	*	681878	CCV@25	Vial 71	1	Control	8	1.57568e6	7.497	26.36661

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
	*	681871	CCV@25	Vial 71	1	Control	1	2.20958e5	7.467	5.00000
	*	681875	QC@3.0	Vial 72	1	Control	2	2.60195e5	7.532	5.00000
	*	681873	ICS@3.0	Vial 73	1	Control	3	2.00480e5	7.321	5.00000
	*	681874	LMB	Vial 74	1	Control	4	2.28624e5	7.525	5.00000
	*	1930921001		Vial 75	1	Sample	5	2.03170e5	7.284	5.00000
	*	681876	309211S	Vial 76	1	Sample	6	1.90946e5	7.259	5.00000
	*	681876	309211D	Vial 77	1	Sample	7	1.96989e5	7.219	5.00000
	*	681878	CCV@25	Vial 71	1	Control	8	2.03050e5	7.526	5.00000

#	*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
	*	681871	CCV@25	Vial 71	1	Control	1	5.09455e5	7.445	25.76249
	*	681875	QC@3.0	Vial 72	1	Control	2	6.84635e4	7.519	3.08556
	*	681873	ICS@3.0	Vial 73	1	Control	3	5.60492e4	7.317	3.28591
	*	681874	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
	*	1930921001		Vial 75	1	Sample	5	0.00000	0.000	0.00000
	*	681876	309211S	Vial 76	1	Sample	6	6.39612e4	7.235	3.95801
	*	681876	309211D	Vial 77	1	Sample	7	6.40246e4	7.206	3.83753
	*	681878	CCV@25	Vial 71	1	Control	8	4.79130e5	7.511	26.31188

*** End of Report ***

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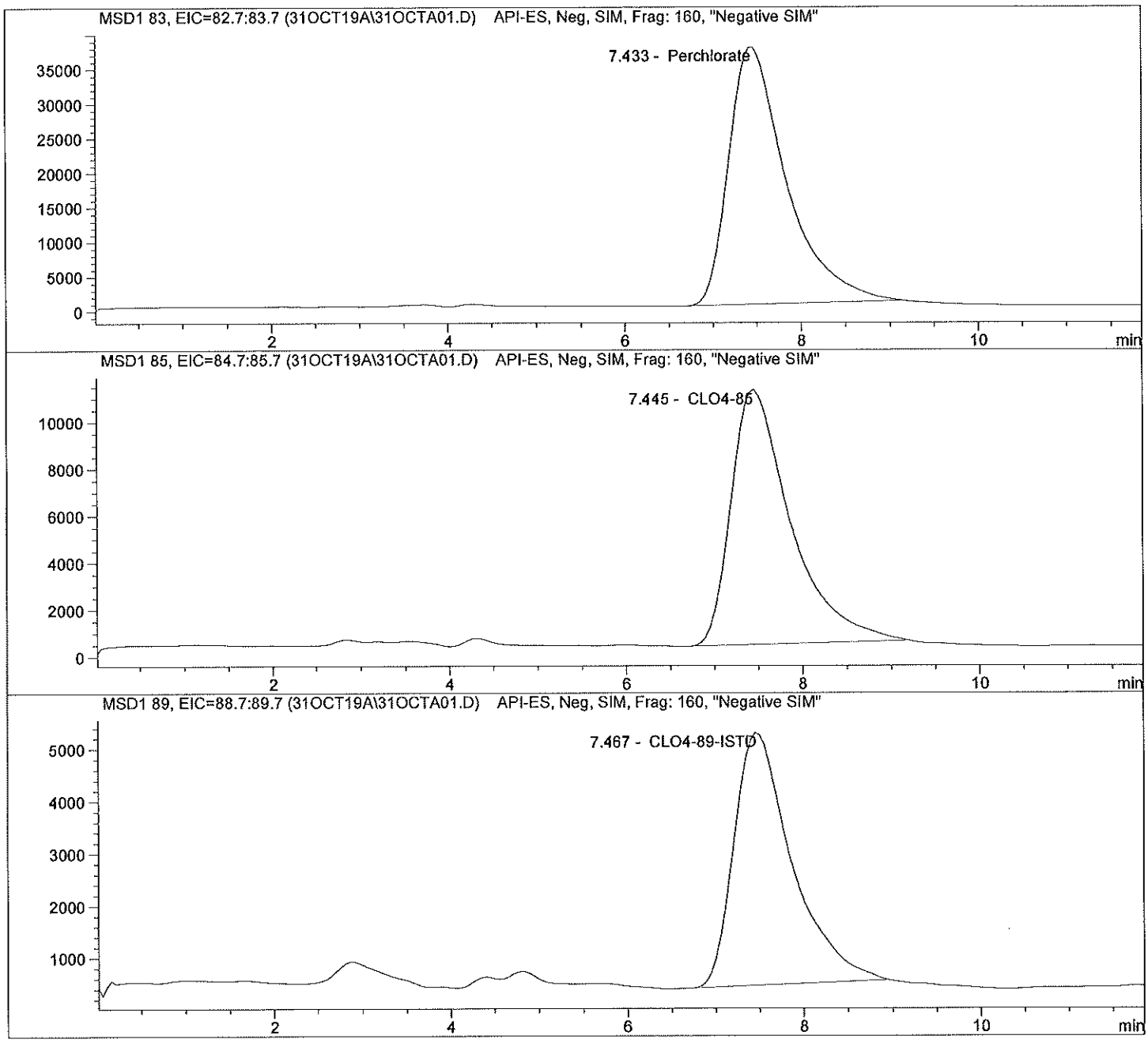
Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA01.D Sample Name: 681871 CCV@25

Injection Date:	10/31/2019 14:33:29	Seq Line:	1
Sample Name:	681871 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



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Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA01.D Sample Name: 681871 CCV@25

Injection Date:	10/31/2019 14:33:29	Seq Line:	1
Sample Name:	681871 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.433	PBA	1690379.6	26.0295	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.445	PBA	509454.7	25.7625	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.467	PBA	220958.3	5.0000	CLO4-89-ISTD

*** End of Report ***

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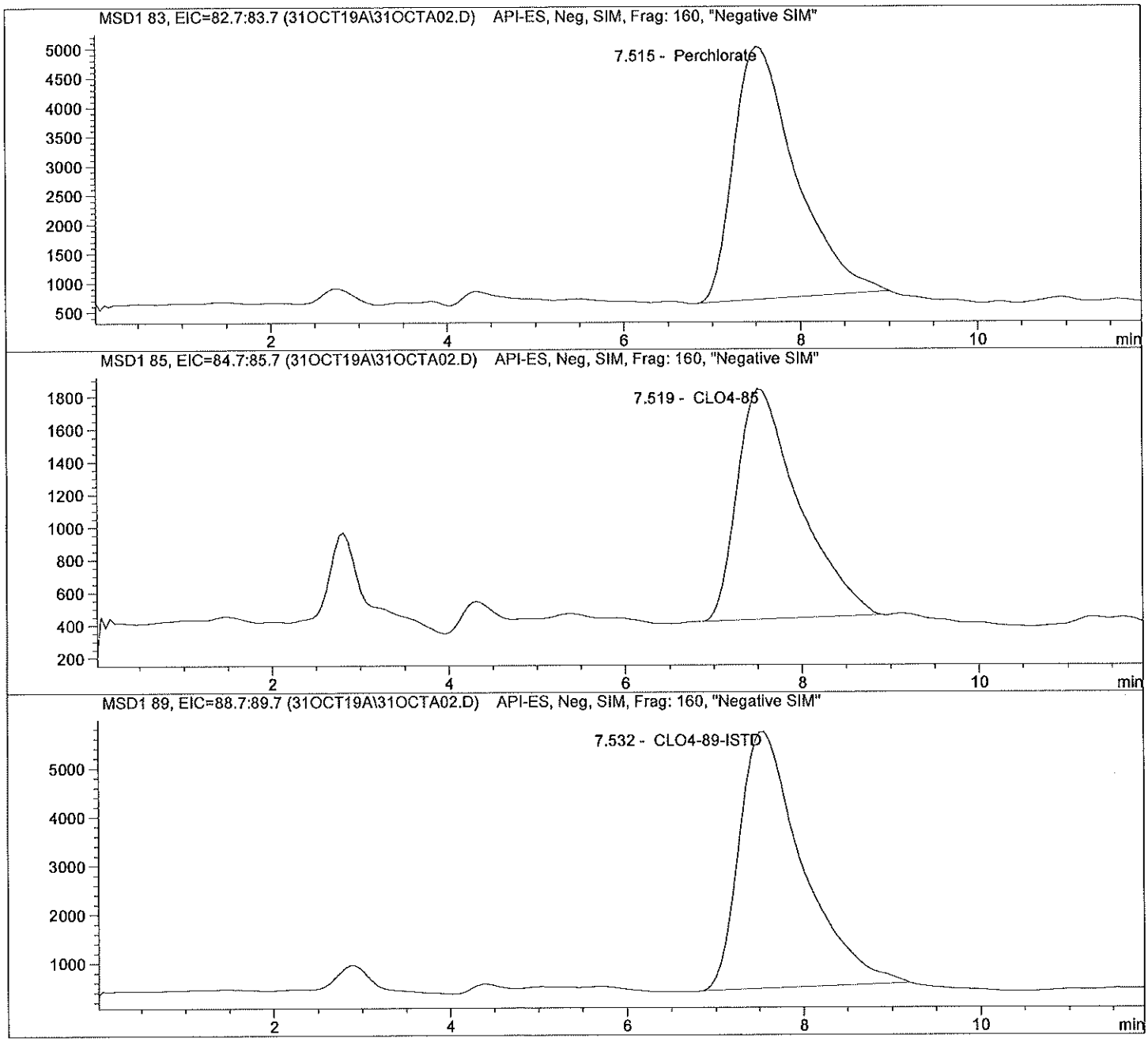
Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA02.D Sample Name: 681875 QC@3.0

Injection Date:	10/31/2019 14:47:18	Seq Line:	2
Sample Name:	681875 QC@3.0	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



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Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA02.D Sample Name: 681875 QC@3.0

Injection Date:	10/31/2019 14:47:18	Seq Line:	2
Sample Name:	681875 QC@3.0	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.515	PBA	210810.5	2.9808	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.519	PBA	68463.5	3.0856	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.532	PBA	260194.9	5.0000	CLO4-89-ISTD

*** End of Report ***

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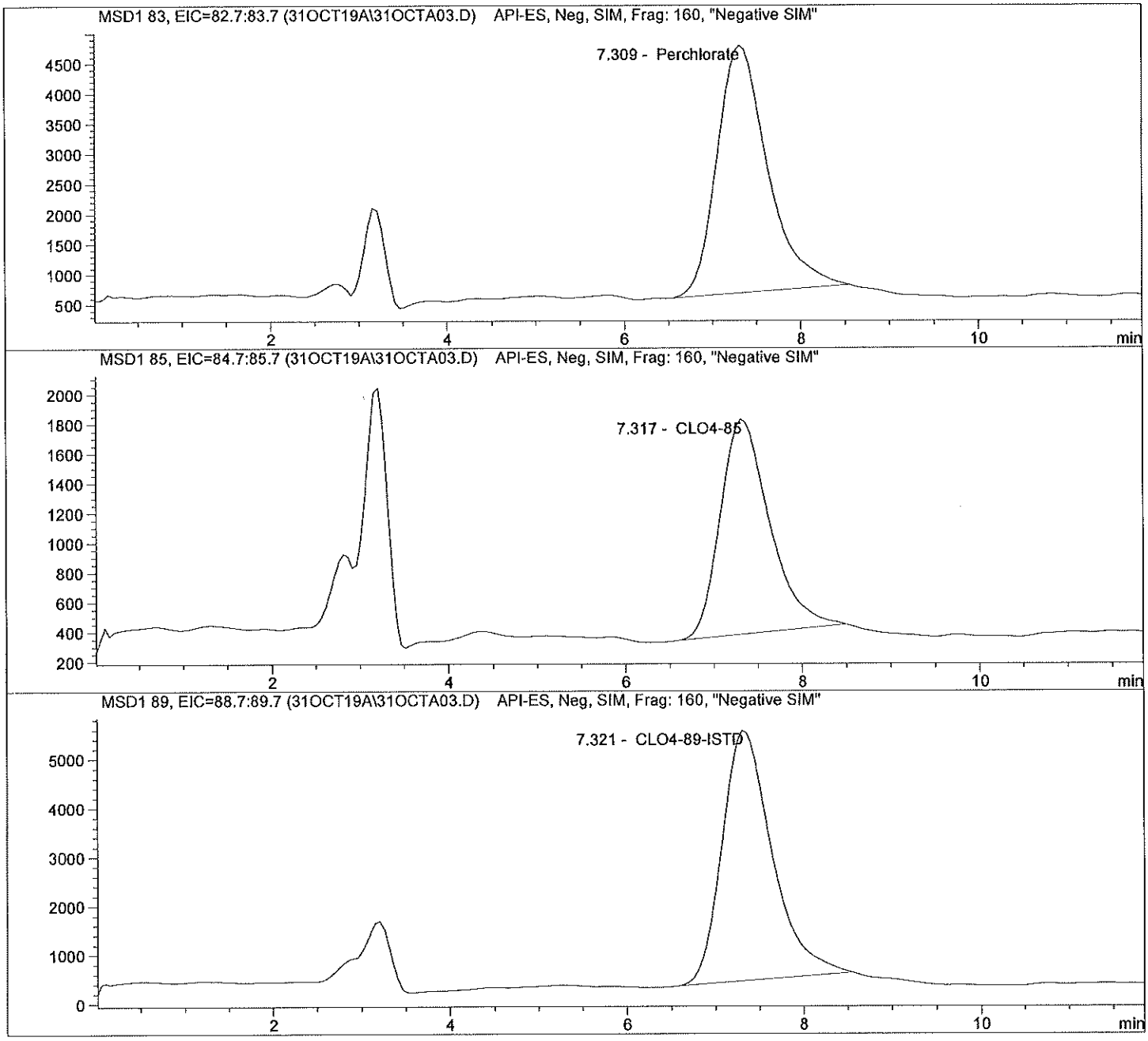
Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA03.D Sample Name: 681873 ICS@3.0

Injection Date:	10/31/2019 15:01:10	Seq Line:	3
Sample Name:	681873 ICS@3.0	Location:	Vial 73
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



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Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA03.D Sample Name: 681873 ICS@3.0

Injection Date:	10/31/2019 15:01:10	Seq Line:	3
Sample Name:	681873 ICS@3.0	Location:	Vial 73
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.309	PBA	163254.9	2.9962	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.317	PBA	56049.2	3.2859	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.321	PBA	200479.8	5.0000	CLO4-89-ISTD

*** End of Report ***

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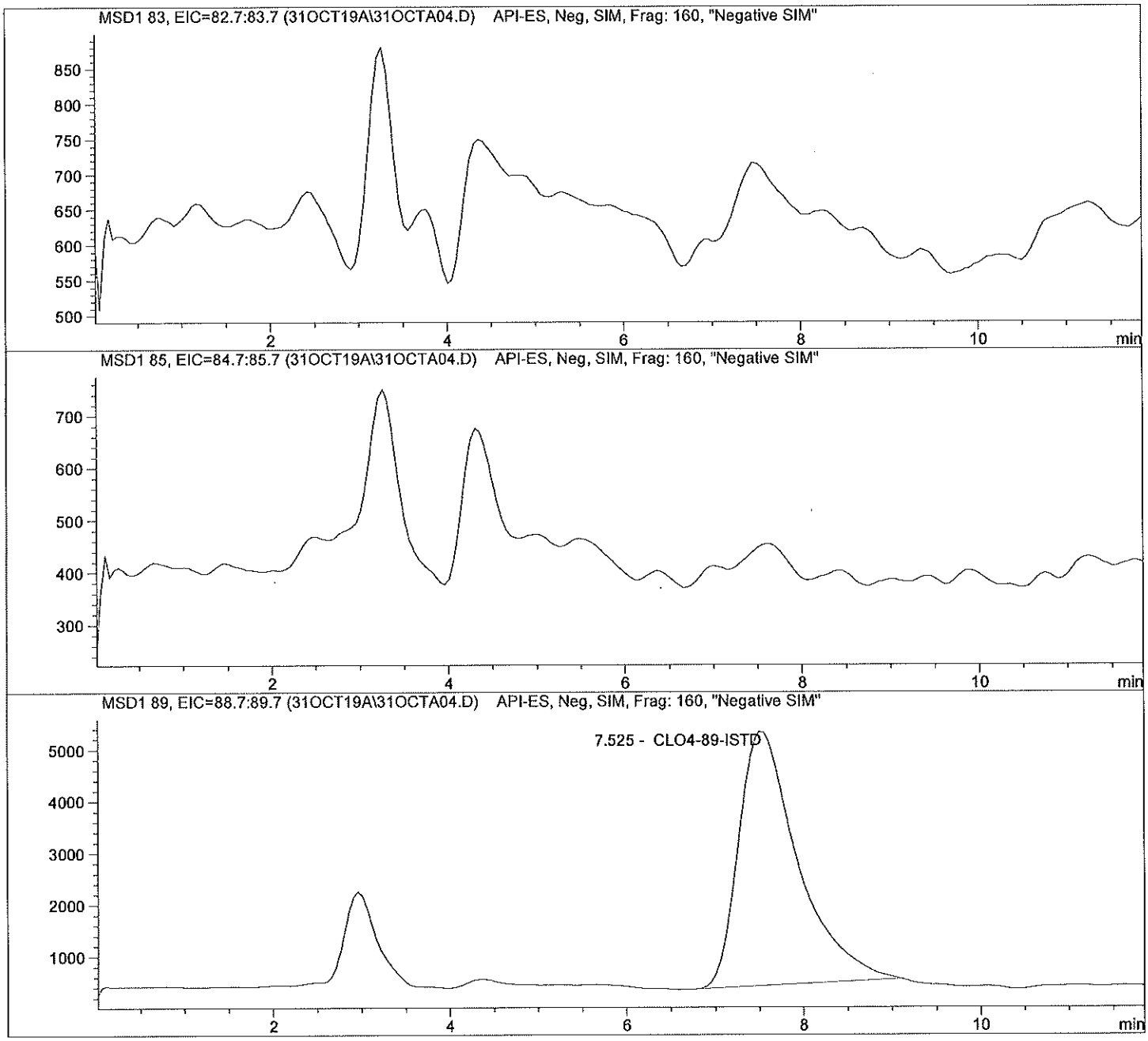
Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA04.D Sample Name: 681874 LMB

Injection Date:	10/31/2019 15:15:06	Seq Line:	4
Sample Name:	681874 LMB	Location:	Vial 74
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA04.D Sample Name: 681874 LMB

Injection Date:	10/31/2019 15:15:06	Seq Line:	4
Sample Name:	681874 LMB	Location:	Vial 74
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.525	PBA	228623.6	5.0000	CLO4-89-ISTD

*** End of Report ***

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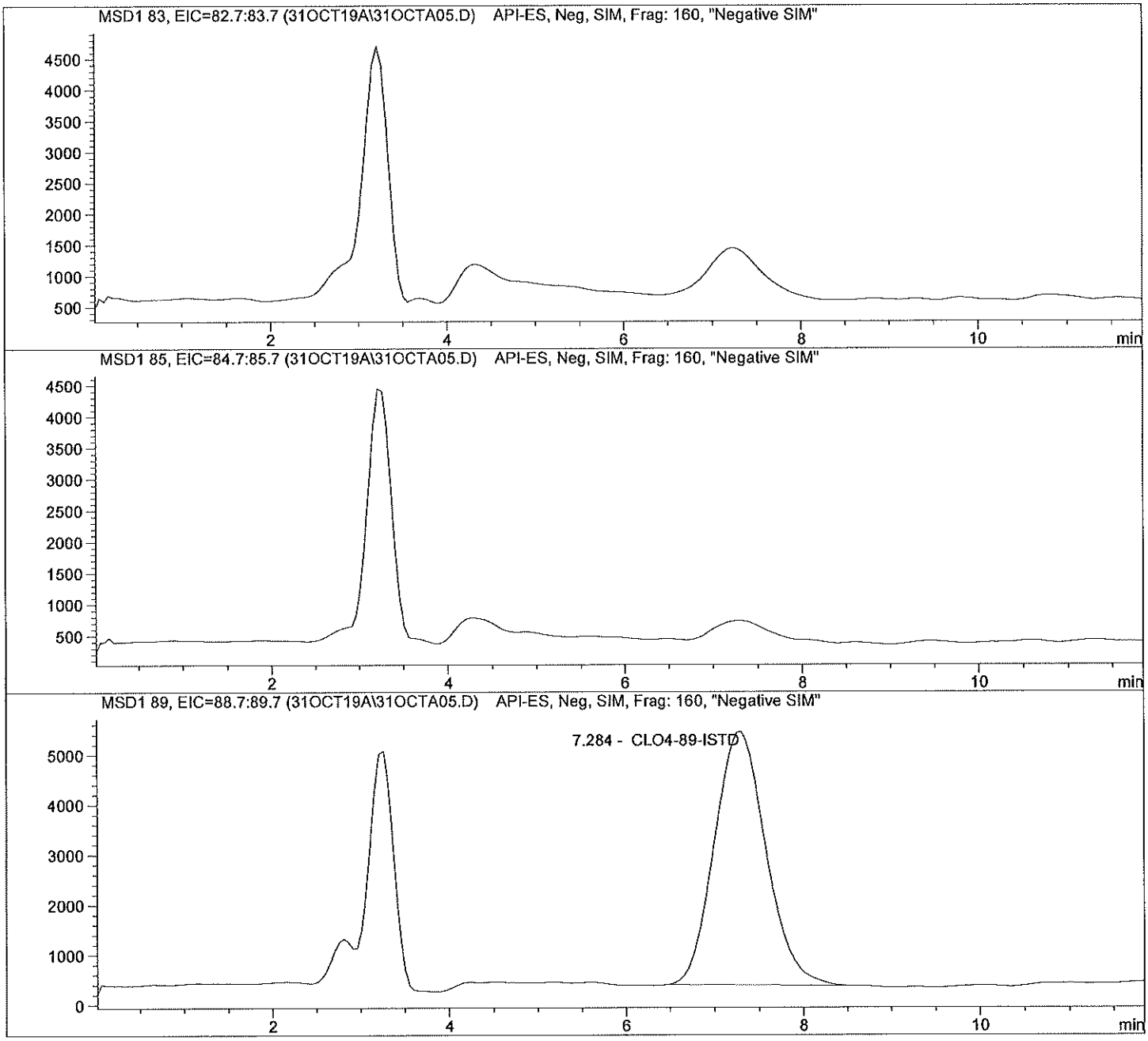
Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA05.D Sample Name: 1930921001

Injection Date:	10/31/2019 15:29:00	Seq Line:	5
Sample Name:	1930921001	Location:	Vial 75
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



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Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA05.D Sample Name: 1930921001

Injection Date:	10/31/2019 15:29:00	Seq Line:	5
Sample Name:	1930921001	Location:	Vial 75
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.284	PBA	203169.9	5.0000	CLO4-89-ISTD

*** End of Report ***

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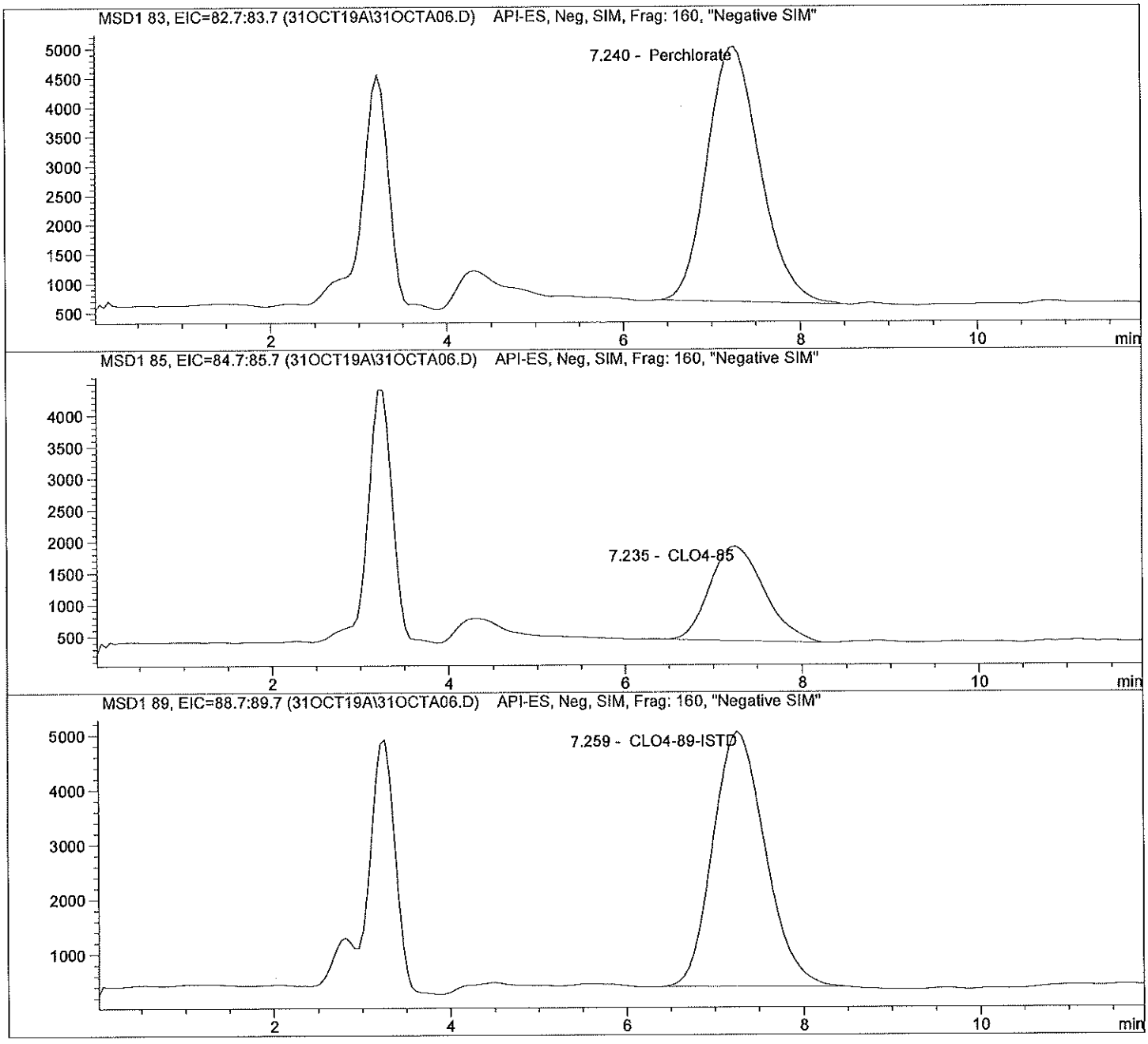
Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA06.D Sample Name: 681876 309211S

Injection Date:	10/31/2019 15:42:53	Seq Line:	6
Sample Name:	681876 309211S	Location:	Vial 76
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA06.D Sample Name: 681876 309211S

Injection Date:	10/31/2019 15:42:53	Seq Line:	6
Sample Name:	681876 309211S	Location:	Vial 76
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.240	PBA	180114.9	3.4760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.235	BBA	63961.2	3.9580	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.259	PBA	190945.7	5.0000	CLO4-89-ISTD

*** End of Report ***

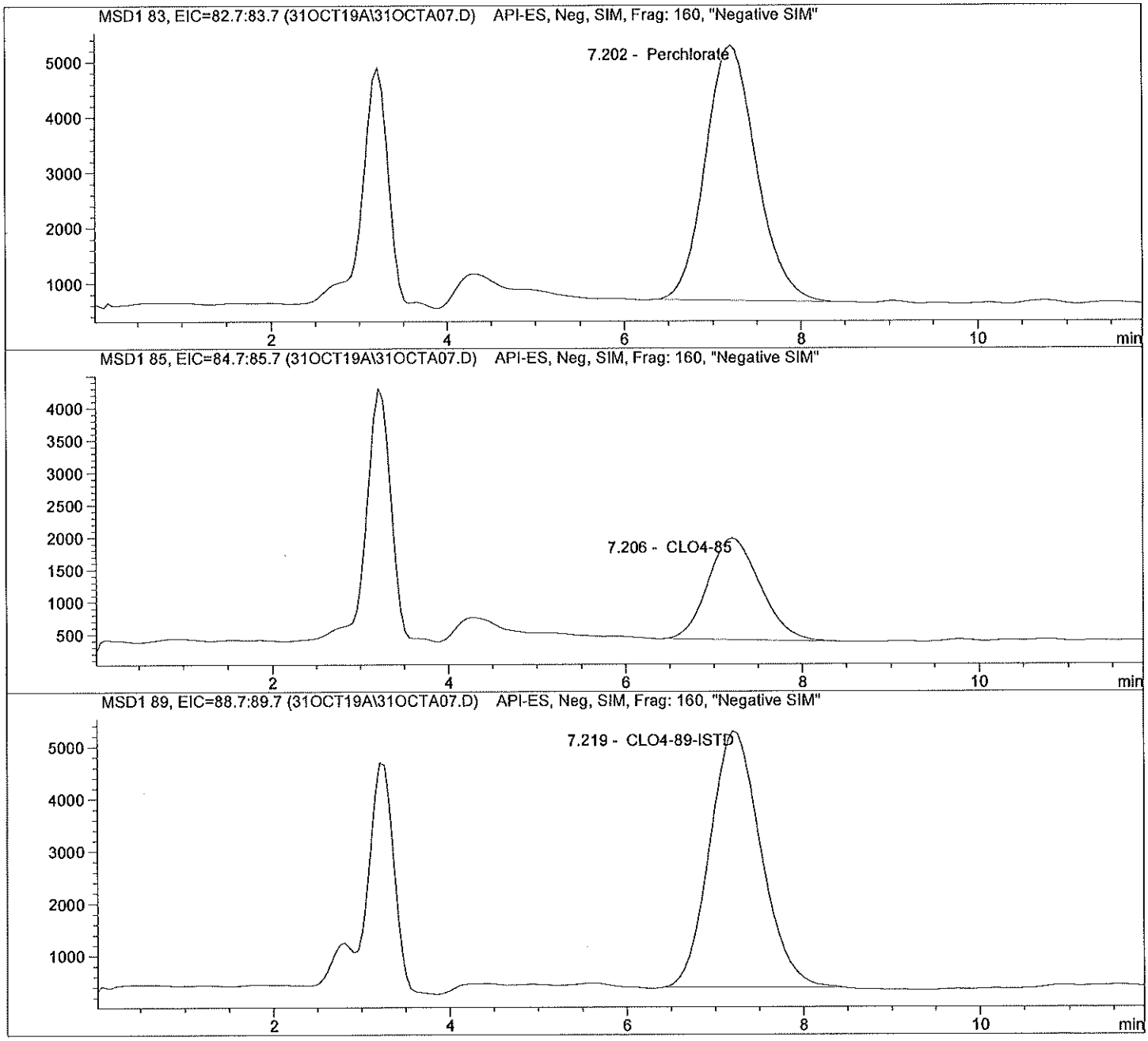
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA07.D Sample Name: 681876 309211D

Injection Date:	10/31/2019 15:56:52	Seq Line:	7
Sample Name:	681876 309211D	Location:	Vial 77
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA07.D Sample Name: 681876 309211D

Injection Date:	10/31/2019 15:56:52	Seq Line:	7
Sample Name:	681876 309211D	Location:	Vial 77
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.202	PBA	184003.9	3.4419	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.206	PBA	64024.6	3.8375	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.219	PBA	196988.7	5.0000	CLO4-89-ISTD

*** End of Report ***

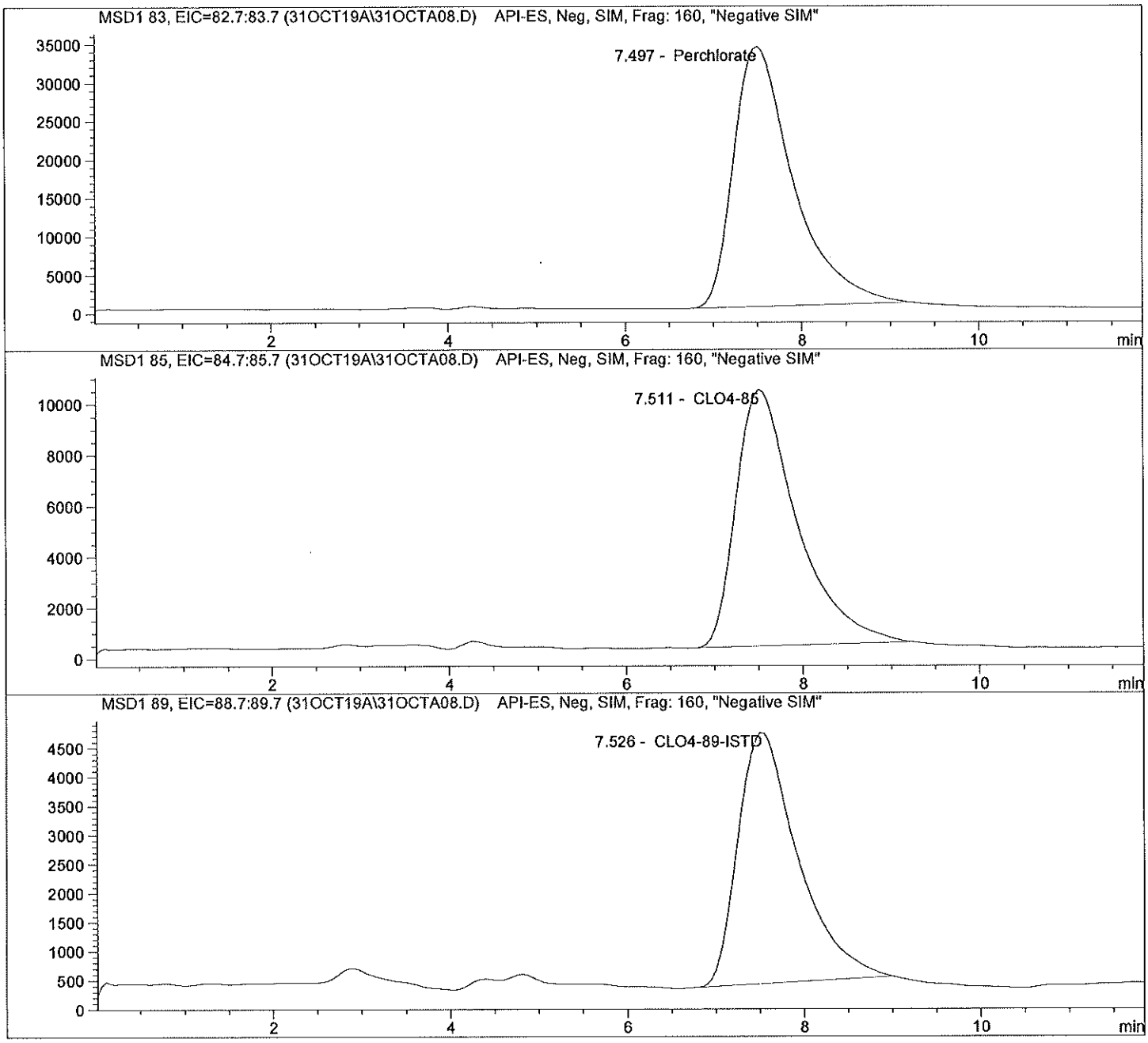
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA08.D Sample Name: 681878 CCV@25

Injection Date:	10/31/2019 16:10:50	Seq Line:	8
Sample Name:	681878 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\31OCT19A\31OCTA08.D Sample Name: 681878 CCV@25

Injection Date:	10/31/2019 16:10:50	Seq Line:	8
Sample Name:	681878 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	35 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 10/2/2019 12:27:01

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.497	PBA	1575680.4	26.3666	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.511	PBA	479130.0	26.3119	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.526	PBA	203050.2	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

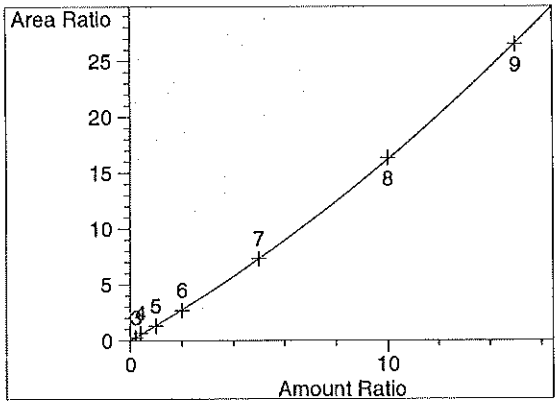
Peak Sum Table

No Entries in table

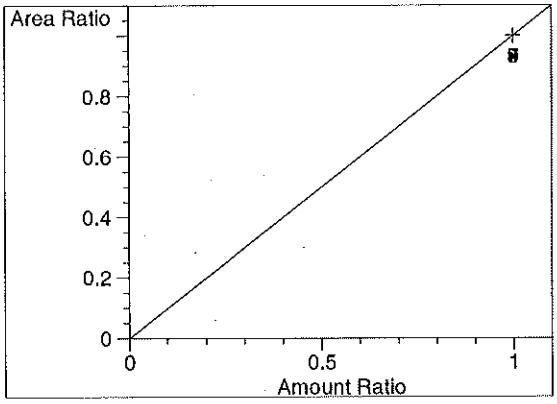
RIGHT SOLUTIONS | RIGHT PARTNER

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

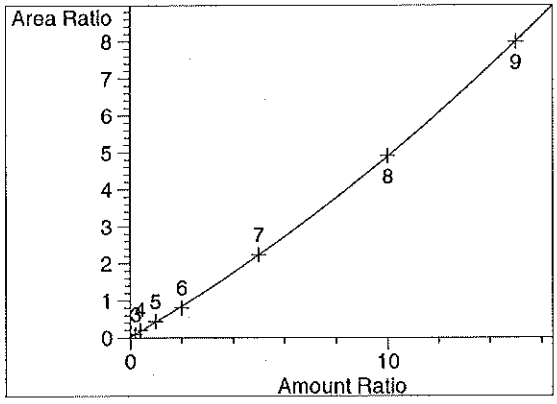
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

RIGHT SOLUTIONS | RIGHT PARTNER

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

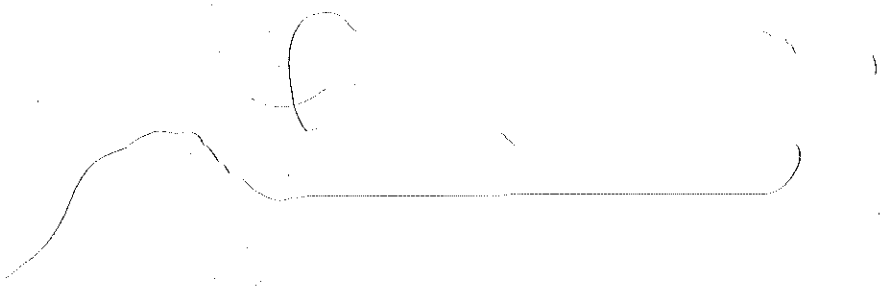
RIGHT SOLUTIONS | RIGHT PARTNER

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		



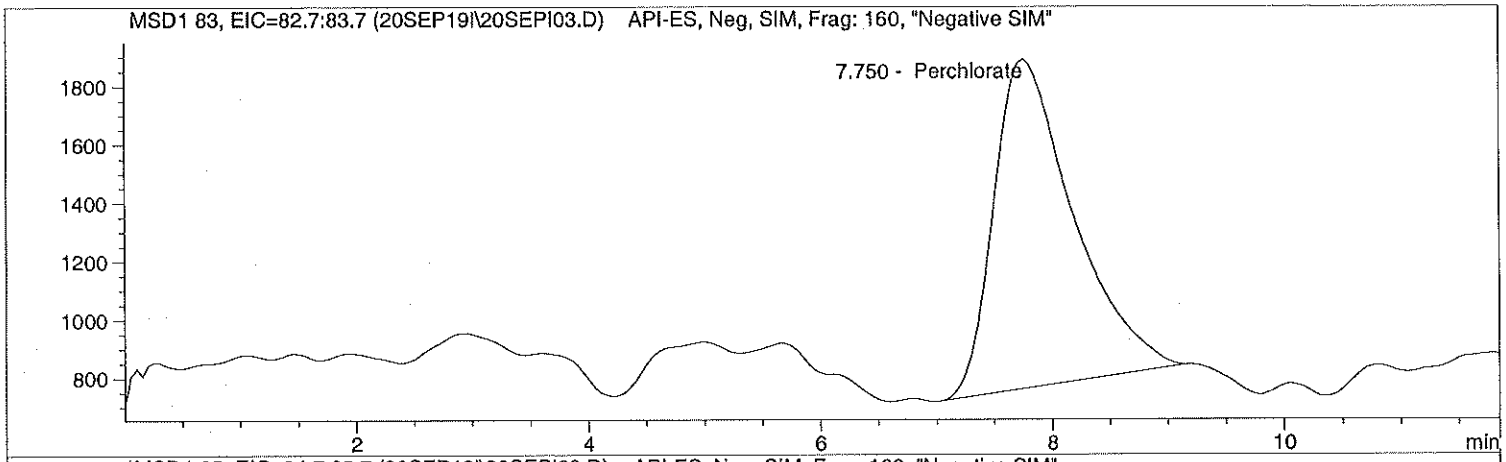
RIGHT SOLUTIONS | RIGHT PARTNER

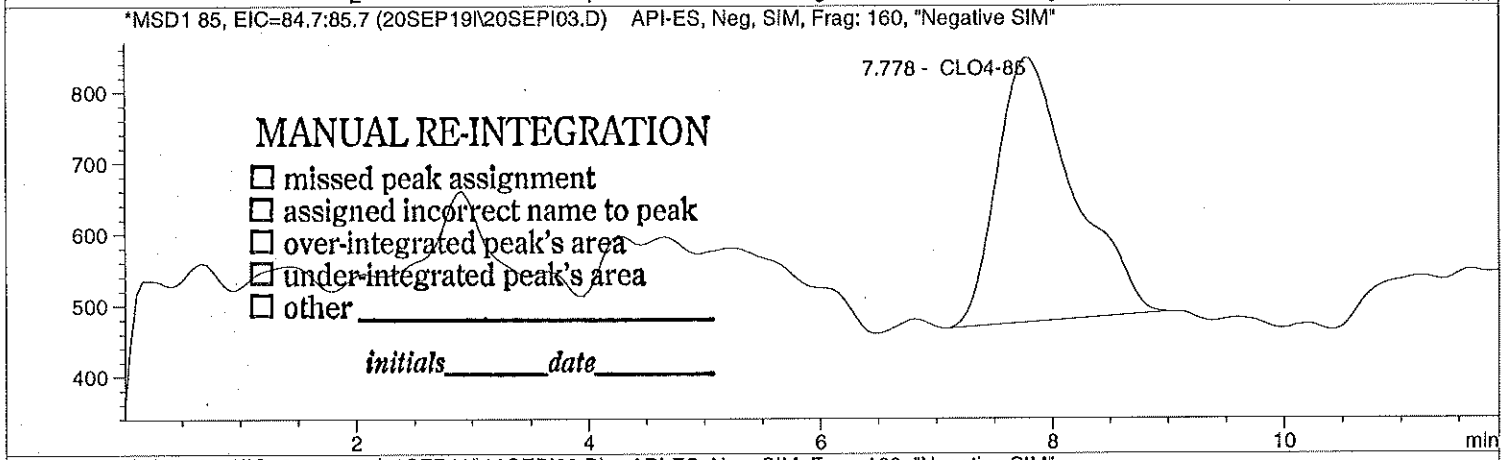
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

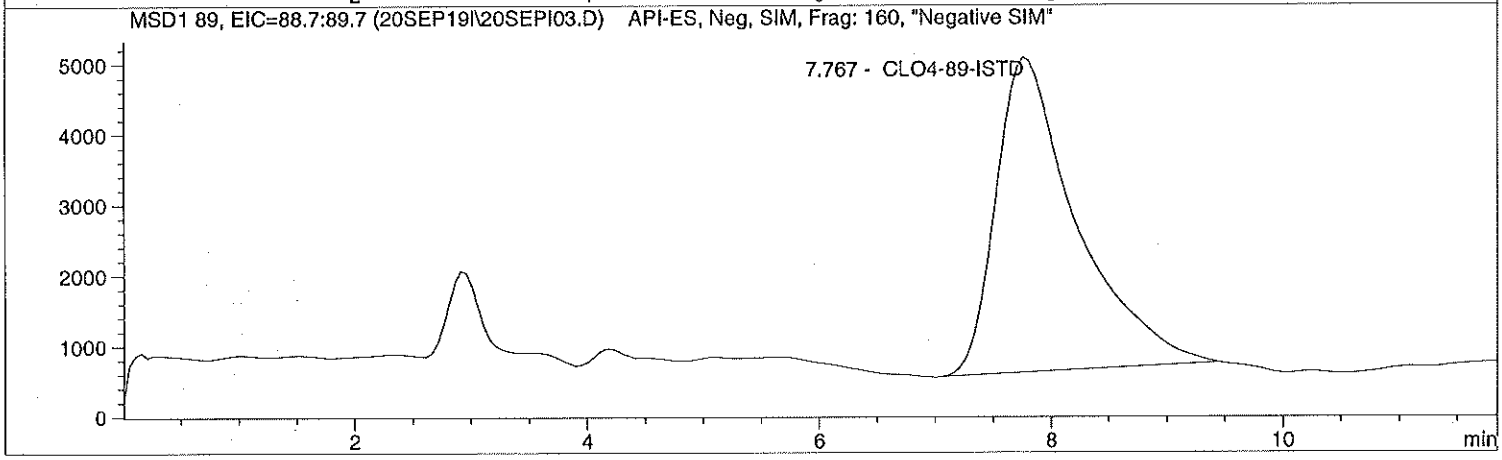
Perchlorate analysis





MANUAL RE-INTEGRATION
☐ missed peak assignment
☐ assigned incorrect name to peak
☐ over-integrated peak's area
☑ under-integrated peak's area
☐ other _____

*initials*_____ *date*_____



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

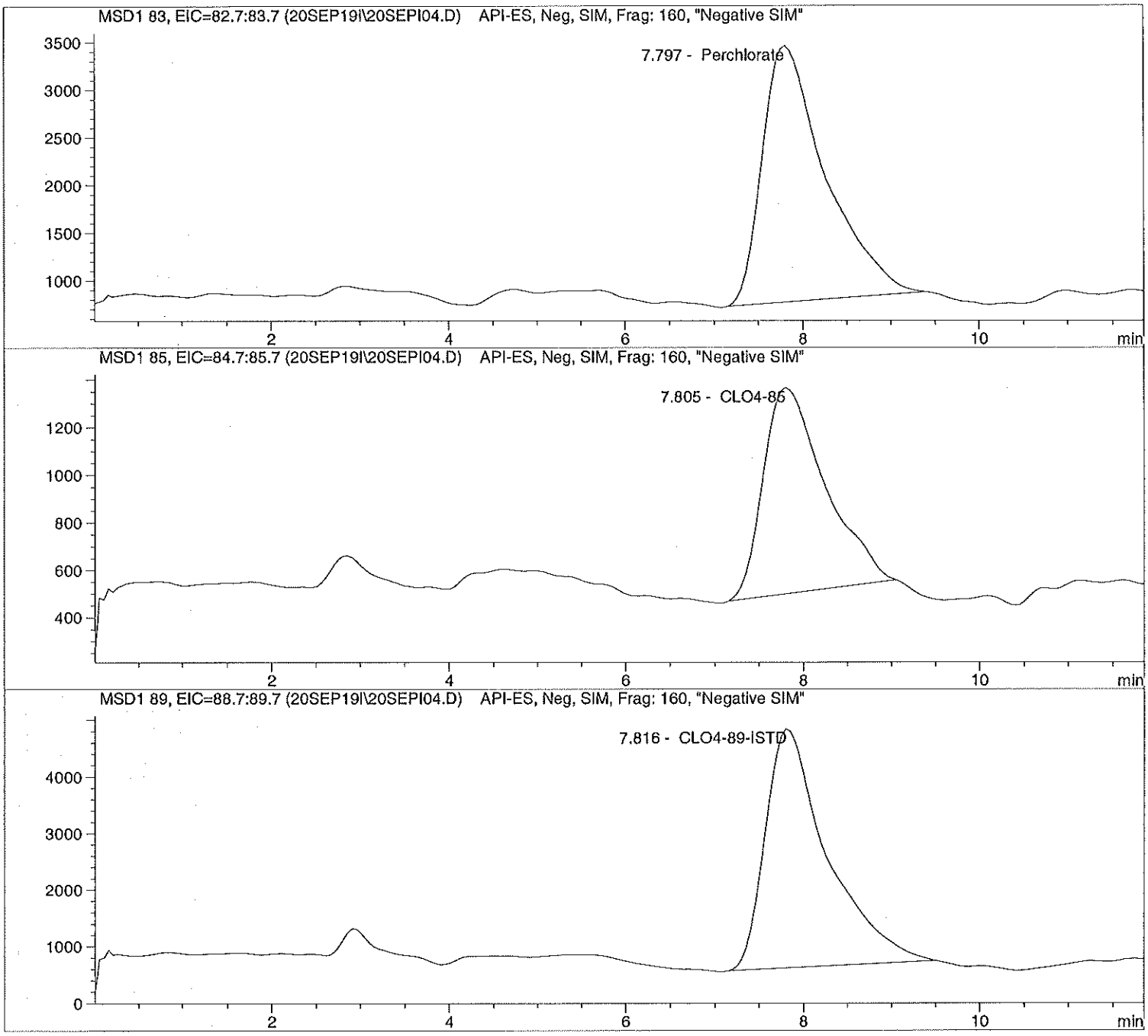
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

*** End of Report ***

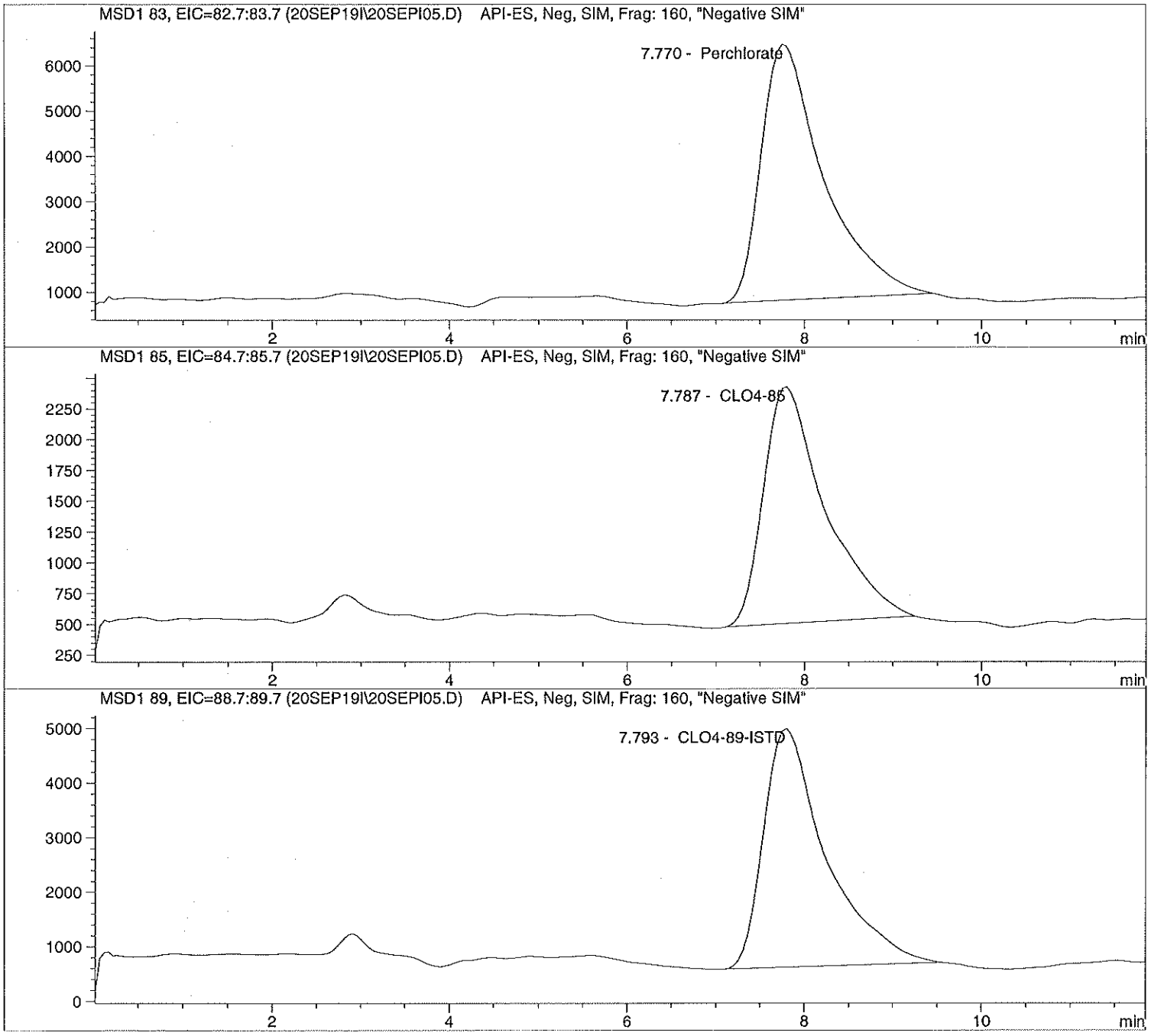
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

*** End of Report ***

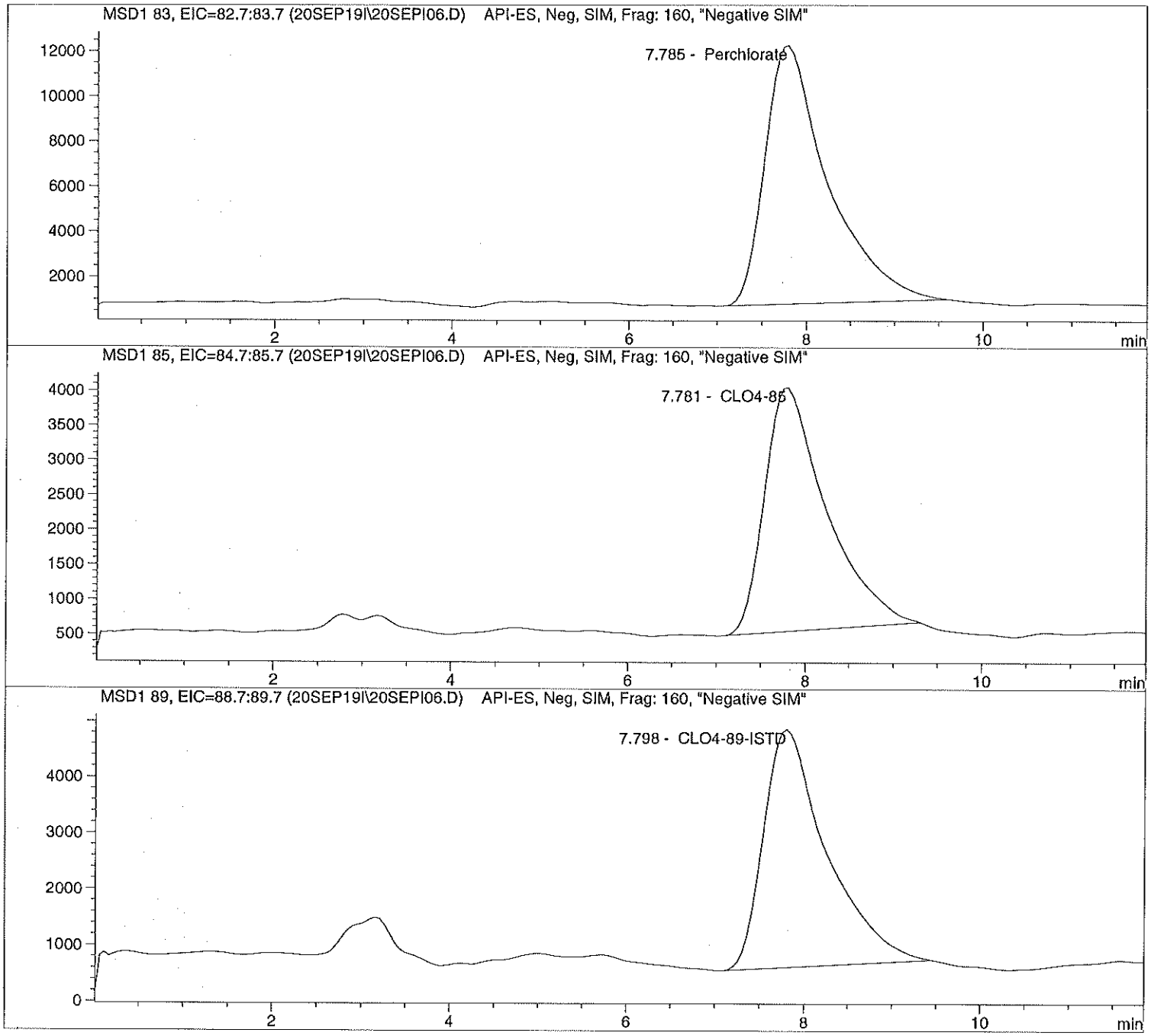
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

*** End of Report ***

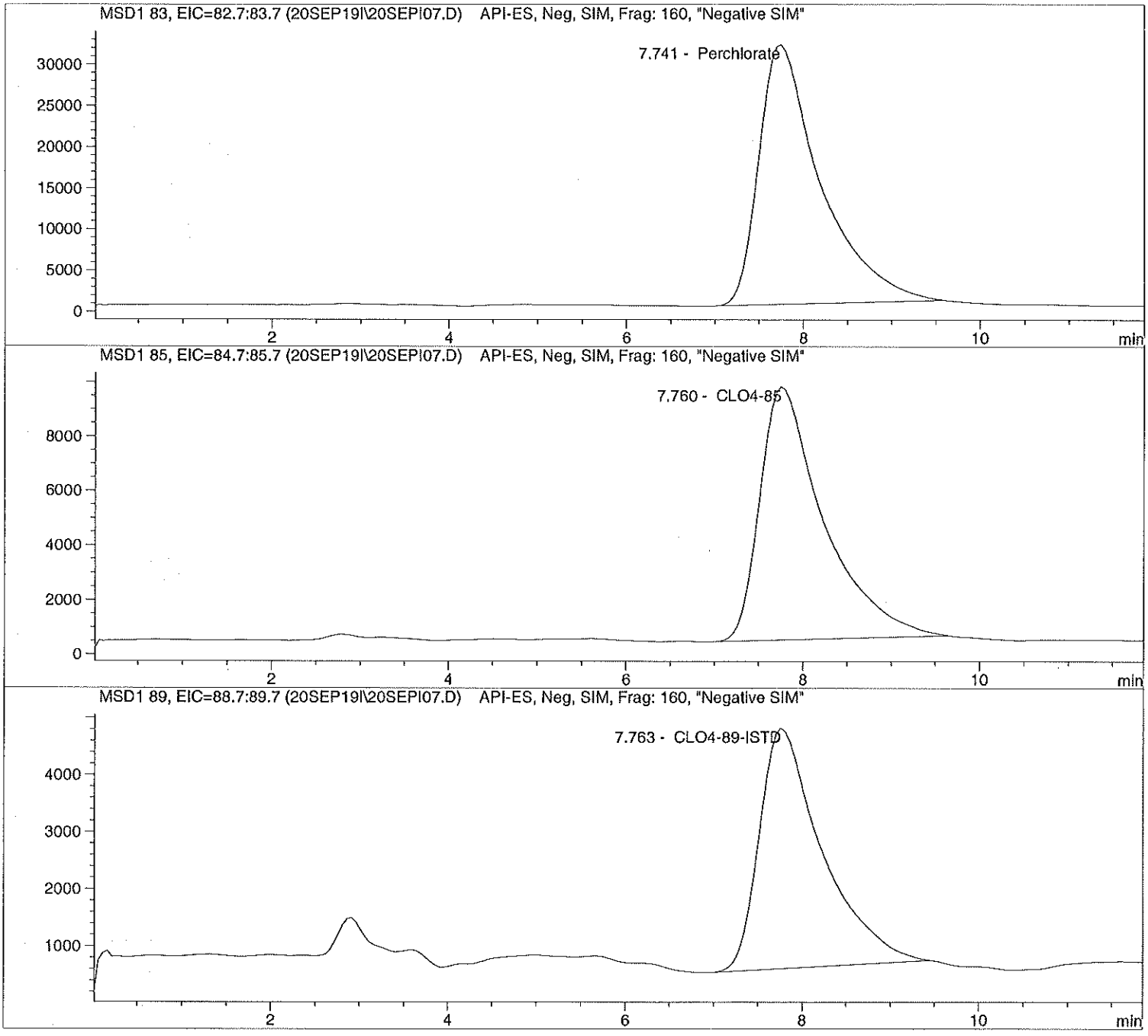
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

*** End of Report ***

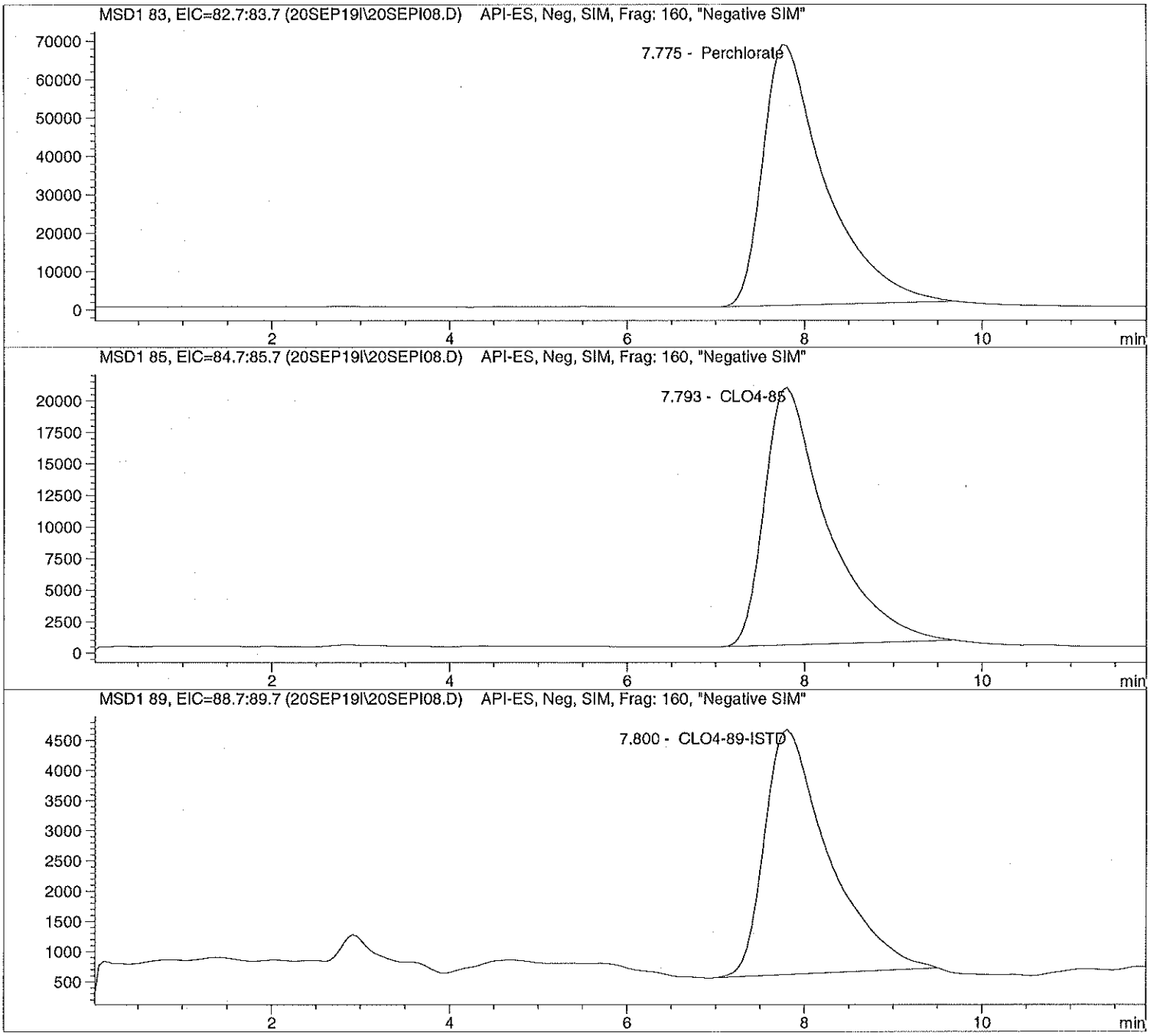
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

*** End of Report ***

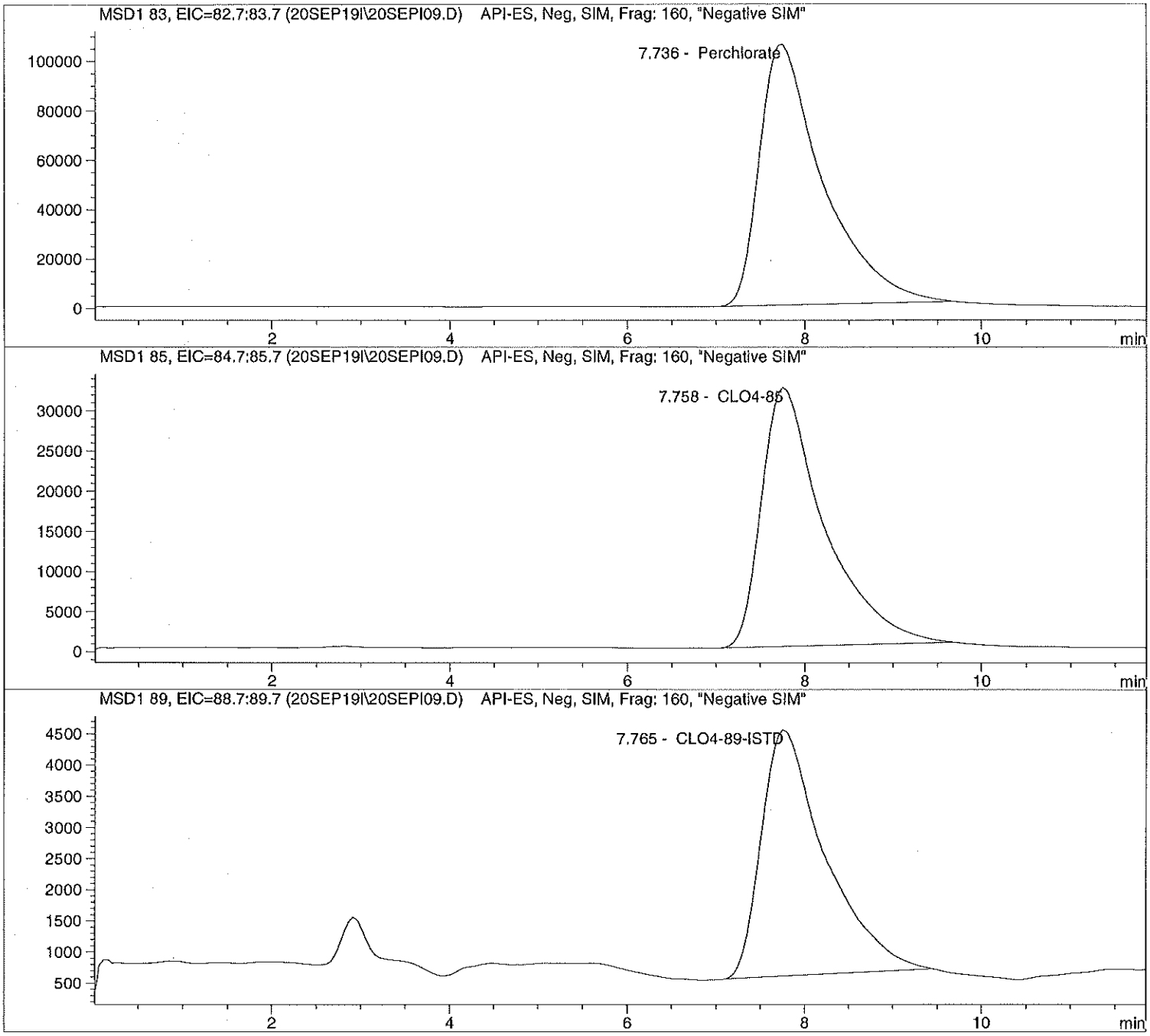
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

*** End of Report ***

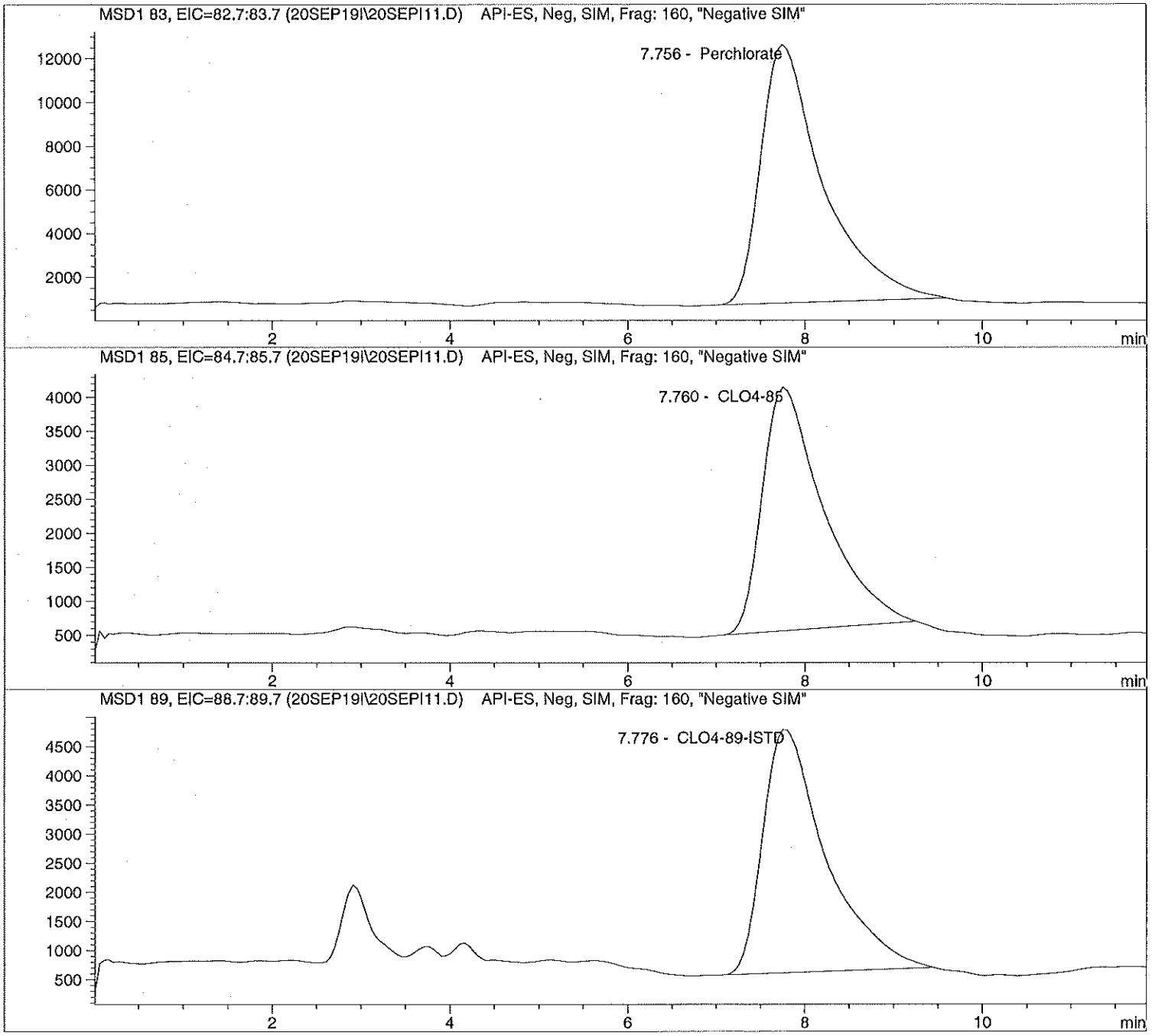
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Unmodified

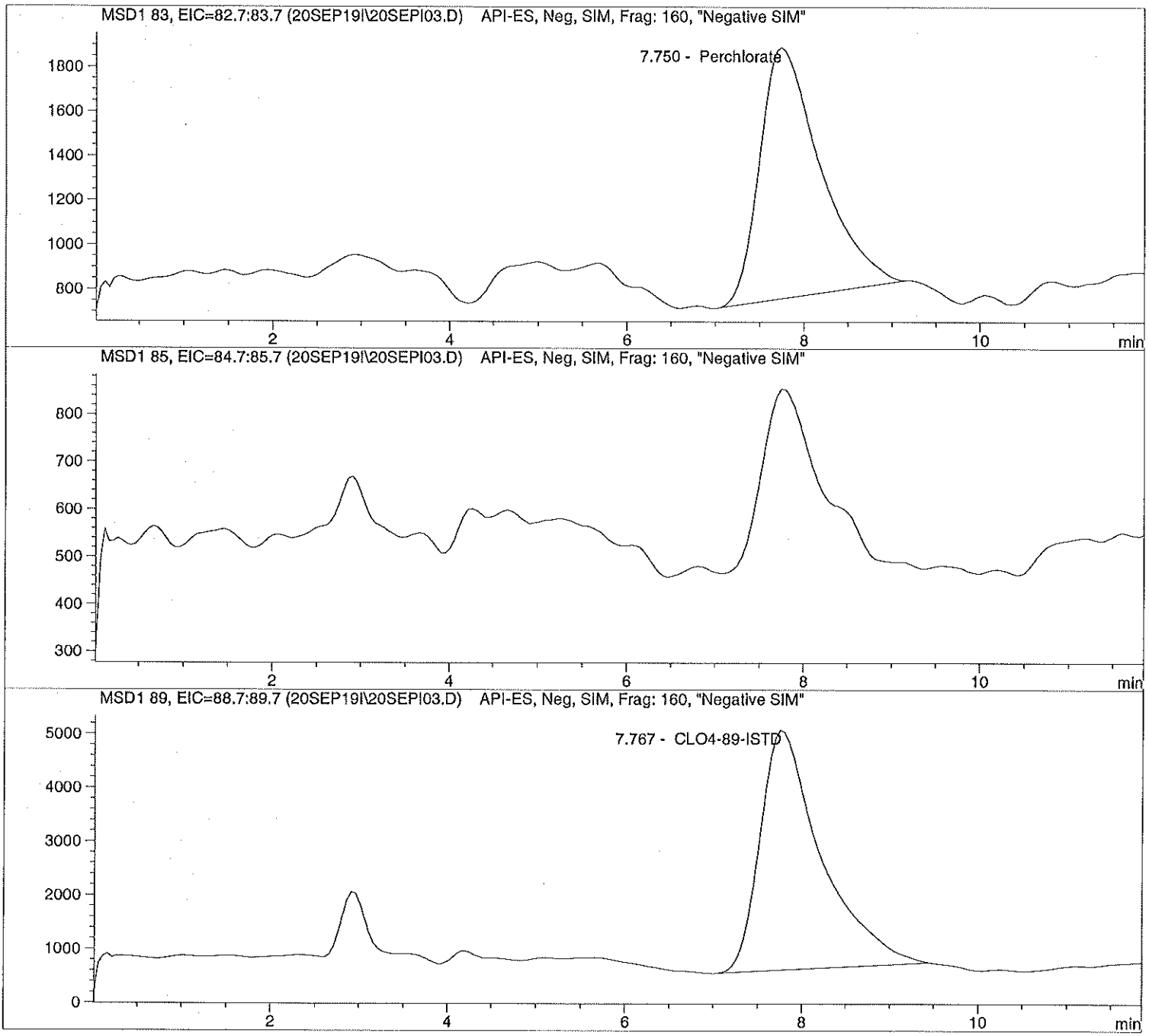
RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



RIGHT SOLUTIONS | RIGHT PARTNER

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

*** End of Report ***

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 13, 2019

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19101774**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 2 sample(s) on Oct 30, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: RJ.MODASHIA

RJ Modashia
Project Manager

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101774

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19101774-01	LH18/24-SP650_102919	Water		29-Oct-2019 14:00	30-Oct-2019 09:30	☐
HS19101774-02	Trip Blank	Water	C&G-080519-1026	29-Oct-2019 00:00	30-Oct-2019 09:30	☐

Revision:1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant
Work Order: HS19101774

Work Order Comments

- Revised to remove closing CCV comment.
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R349684

Sample ID: CCV

- 1,2,3_Trichlorobenzene and Naphthalene exceeded %D limits for CCV. Samples are ND for these compounds.

Sample ID: HS19101523-07MSD

- MSD is for an unrelated sample

Wet Chemistry by Method SW9056

Batch ID: R349710

Sample ID: HS19110026-01MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SW9056

Batch ID: R349710

Sample ID: HS19101353-01MS

- MS and MSD are for an unrelated sample

Sample ID: HS19101488-01MS

- MS and MSD are for an unrelated sample

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_102919
Collection Date: 29-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101774
Lab ID:HS19101774-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,2-Dichloroethane	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	01-Nov-2019 21:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	01-Nov-2019 21:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	01-Nov-2019 21:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	01-Nov-2019 21:10
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	01-Nov-2019 21:10
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	01-Nov-2019 21:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_102919
Collection Date: 29-Oct-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19101774
Lab ID:HS19101774-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
cis-1,2-Dichloroethene	**30**		**0.20**	**0.50**	**1.0**	**UG/L**	1	01-Nov-2019 21:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	01-Nov-2019 21:10
Methylene chloride	**14**		**0.40**	**1.0**	**2.0**	**UG/L**	1	01-Nov-2019 21:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 21:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Trichloroethene	**5.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	01-Nov-2019 21:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 21:10
Vinyl chloride	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	01-Nov-2019 21:10
Surr: 1,2-Dichloroethane-d4	*89.6*			**0**	*81-118*	*%REC*	*1*	*01-Nov-2019 21:10*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*01-Nov-2019 21:10*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*1*	*01-Nov-2019 21:10*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*01-Nov-2019 21:10*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**548**		**2.00**	**5.00**	**5.00**	**mg/L**	10	04-Nov-2019 19:22
Sulfate	**62.6**		**2.00**	**5.00**	**5.00**	**mg/L**	10	04-Nov-2019 19:22

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 29-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19101774
Lab ID:HS19101774-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	01-Nov-2019 20:46
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	01-Nov-2019 20:46
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	01-Nov-2019 20:46
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	01-Nov-2019 20:46
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	01-Nov-2019 20:46
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 29-Oct-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19101774
Lab ID:HS19101774-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	01-Nov-2019 20:46
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	01-Nov-2019 20:46
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	01-Nov-2019 20:46
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	01-Nov-2019 20:46
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*1*	*01-Nov-2019 20:46*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*85-114*	*%REC*	*1*	*01-Nov-2019 20:46*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*01-Nov-2019 20:46*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*01-Nov-2019 20:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R349684 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19101774-01	LH18/24-SP650_102919	29 Oct 2019 14:00			01 Nov 2019 21:10	1
HS19101774-02	Trip Blank	29 Oct 2019 00:00			01 Nov 2019 20:46	1
Batch ID: R349710 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Water	
HS19101774-01	LH18/24-SP650_102919	29 Oct 2019 14:00			04 Nov 2019 19:22	10

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-191101** Units: **UG/L** Analysis Date: **01-Nov-2019 13:09**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326938** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-191101** Units: **UG/L** Analysis Date: **01-Nov-2019 13:09**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326938** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.85*	*1.0*	*50*	*0*	*91.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.5*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*47.01*	*1.0*	*50*	*0*	*94.0*	*80 - 119*				
Surr: Toluene-d8	*50.27*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191101** Units: **UG/L** Analysis Date: **01-Nov-2019 12:21**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326937** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.12	1.0	20	0	95.6	78 - 124				
1,1,1-Trichloroethane	19.74	1.0	20	0	98.7	74 - 131				
1,1,2,2-Tetrachloroethane	19.99	1.0	20	0	100.0	71 - 121				
1,1,2-Trichloroethane	20.16	1.0	20	0	101	80 - 119				
1,1-Dichloroethane	19.62	1.0	20	0	98.1	77 - 125				
1,1-Dichloroethene	18.77	1.0	20	0	93.8	71 - 131				
1,1-Dichloropropene	19.18	1.0	20	0	95.9	78 - 125				
1,2,3-Trichlorobenzene	24.92	1.0	20	0	125	69 - 129				
1,2,3-Trichloropropane	20.84	1.0	20	0	104	73 - 122				
1,2,4-Trichlorobenzene	19.31	1.0	20	0	96.5	69 - 130				
1,2,4-Trimethylbenzene	19.05	1.0	20	0	95.2	76 - 124				
1,2-Dibromo-3-chloropropane	21.78	1.0	20	0	109	62 - 128				
1,2-Dibromoethane	20.63	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	18.9	1.0	20	0	94.5	80 - 119				
1,2-Dichloroethane	20.19	1.0	20	0	101	73 - 128				
1,2-Dichloropropane	19.59	1.0	20	0	97.9	78 - 122				
1,3,5-Trimethylbenzene	19.14	1.0	20	0	95.7	75 - 124				
1,3-Dichlorobenzene	19.04	1.0	20	0	95.2	80 - 119				
1,3-Dichloropropane	20.21	1.0	20	0	101	80 - 119				
1,4-Dichlorobenzene	18.96	1.0	20	0	94.8	79 - 118				
2,2-Dichloropropane	19	1.0	20	0	95.0	60 - 139				
2-Butanone	39.22	2.0	40	0	98.0	56 - 143				
2-Chlorotoluene	19.34	1.0	20	0	96.7	79 - 122				
2-Hexanone	38.75	2.0	40	0	96.9	57 - 139				
4-Chlorotoluene	19.12	1.0	20	0	95.6	78 - 122				
4-Isopropyltoluene	18.61	1.0	20	0	93.1	77 - 127				
4-Methyl-2-pentanone	38.49	2.0	40	0	96.2	67 - 130				
Acetone	39.01	2.0	40	0	97.5	39 - 160				
Benzene	19.9	1.0	20	0	99.5	79 - 120				
Bromobenzene	19.37	1.0	20	0	96.8	80 - 120				
Bromochloromethane	19.81	1.0	20	0	99.1	78 - 123				
Bromodichloromethane	20.46	1.0	20	0	102	79 - 125				
Bromoform	20.4	1.0	20	0	102	66 - 130				
Bromomethane	21.38	1.0	20	0	107	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-191101** Units: **UG/L** Analysis Date: **01-Nov-2019 12:21**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326937** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	39.25	2.0	40	0	98.1	64 - 133				
Carbon tetrachloride	18.82	1.0	20	0	94.1	72 - 136				
Chlorobenzene	19.99	1.0	20	0	100.0	82 - 118				
Chloroethane	20	1.0	20	0	100.0	60 - 138				
Chloroform	20.48	1.0	20	0	102	79 - 124				
Chloromethane	20.06	1.0	20	0	100	50 - 139				
cis-1,2-Dichloroethene	20.6	1.0	20	0	103	78 - 123				
cis-1,3-Dichloropropene	20	1.0	20	0	100	75 - 124				
Dibromochloromethane	19.62	1.0	20	0	98.1	74 - 126				
Dibromomethane	20.68	1.0	20	0	103	79 - 123				
Dichlorodifluoromethane	19.51	1.0	20	0	97.6	32 - 152				
Ethylbenzene	19.24	1.0	20	0	96.2	79 - 121				
Hexachlorobutadiene	18.84	1.0	20	0	94.2	66 - 134				
Isopropylbenzene	19.18	1.0	20	0	95.9	72 - 131				
m,p-Xylene	38.85	2.0	40	0	97.1	80 - 121				
Methylene chloride	20.07	2.0	20	0	100	74 - 124				
Naphthalene	22.71	1.0	20	0	114	61 - 128				
n-Butylbenzene	18.91	1.0	20	0	94.5	75 - 128				
n-Propylbenzene	18.77	1.0	20	0	93.8	76 - 126				
o-Xylene	19.52	1.0	20	0	97.6	78 - 122				
sec-Butylbenzene	18.74	1.0	20	0	93.7	77 - 126				
Styrene	20.22	1.0	20	0	101	78 - 123				
tert-Butylbenzene	18.68	1.0	20	0	93.4	78 - 124				
Tetrachloroethene	19.44	1.0	20	0	97.2	74 - 129				
Toluene	19.79	1.0	20	0	99.0	80 - 121				
trans-1,2-Dichloroethene	20.43	1.0	20	0	102	75 - 124				
trans-1,3-Dichloropropene	20.1	1.0	20	0	101	73 - 127				
Trichloroethene	19.82	1.0	20	0	99.1	79 - 123				
Trichlorofluoromethane	18.76	1.0	20	0	93.8	65 - 141				
Vinyl chloride	19.77	1.0	20	0	98.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.48*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.34*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*51.14*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*49.4*	*1.0*	*50*	*0*	*98.8*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19101523-07MS** Units: **UG/L** Analysis Date: **01-Nov-2019 17:34**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326949** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	180.6	10	200	0	90.3	78 - 124				
1,1,1-Trichloroethane	179.8	10	200	0	89.9	74 - 131				
1,1,2,2-Tetrachloroethane	181.2	10	200	0	90.6	71 - 121				
1,1,2-Trichloroethane	192.3	10	200	6.665	92.8	80 - 119				
1,1-Dichloroethane	183	10	200	13.66	84.6	77 - 125				
1,1-Dichloroethene	824.3	10	200	638.2	93.1	71 - 131				
1,1-Dichloropropene	182.2	10	200	0	91.1	78 - 125				
1,2,3-Trichlorobenzene	188.6	10	200	0	94.3	69 - 129				
1,2,3-Trichloropropane	185	10	200	0	92.5	73 - 122				
1,2,4-Trichlorobenzene	166.1	10	200	0	83.0	69 - 130				
1,2,4-Trimethylbenzene	188.7	10	200	0	94.4	76 - 124				
1,2-Dibromo-3-chloropropane	176	10	200	0	88.0	62 - 128				
1,2-Dibromoethane	184.8	10	200	0	92.4	77 - 121				
1,2-Dichlorobenzene	176.2	10	200	0	88.1	80 - 119				
1,2-Dichloroethane	195.5	10	200	28.68	83.4	73 - 128				
1,2-Dichloropropane	171.5	10	200	0	85.7	78 - 122				
1,3,5-Trimethylbenzene	191.7	10	200	0	95.8	75 - 124				
1,3-Dichlorobenzene	180.8	10	200	0	90.4	80 - 119				
1,3-Dichloropropane	181.4	10	200	0	90.7	80 - 119				
1,4-Dichlorobenzene	175.3	10	200	0	87.6	79 - 118				
2,2-Dichloropropane	167.4	10	200	0	83.7	60 - 139				
2-Butanone	295.3	20	400	0	73.8	56 - 143				
2-Chlorotoluene	185.4	10	200	0	92.7	79 - 122				
2-Hexanone	347.9	20	400	0	87.0	57 - 139				
4-Chlorotoluene	185.3	10	200	0	92.7	78 - 122				
4-Isopropyltoluene	190	10	200	0	95.0	77 - 127				
4-Methyl-2-pentanone	342	20	400	0	85.5	67 - 130				
Acetone	251.7	20	400	0	62.9	39 - 160				
Benzene	173.5	10	200	0	86.8	79 - 120				
Bromobenzene	181.8	10	200	0	90.9	80 - 120				
Bromochloromethane	166.4	10	200	0	83.2	78 - 123				
Bromodichloromethane	177.1	10	200	0	88.6	79 - 125				
Bromoform	178.4	10	200	0	89.2	66 - 130				
Bromomethane	195.4	10	200	0	97.7	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19101523-07MS** Units: **UG/L** Analysis Date: **01-Nov-2019 17:34**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326949** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	336.4	20	400	0	84.1	64 - 133				
Carbon tetrachloride	184.6	10	200	0	92.3	72 - 136				
Chlorobenzene	186.2	10	200	0	93.1	82 - 118				
Chloroethane	173.6	10	200	0	86.8	60 - 138				
Chloroform	169.9	10	200	0	84.9	79 - 124				
Chloromethane	175.4	10	200	0	87.7	50 - 139				
cis-1,2-Dichloroethene	177.4	10	200	0	88.7	78 - 123				
cis-1,3-Dichloropropene	176.5	10	200	0	88.3	75 - 124				
Dibromochloromethane	177.9	10	200	0	88.9	74 - 126				
Dibromomethane	176.5	10	200	0	88.2	79 - 123				
Dichlorodifluoromethane	184.6	10	200	0	92.3	32 - 152				
Ethylbenzene	190.4	10	200	0	95.2	79 - 121				
Hexachlorobutadiene	180.3	10	200	0	90.2	66 - 134				
Isopropylbenzene	192.6	10	200	0	96.3	72 - 131				
m,p-Xylene	383.3	20	400	0	95.8	80 - 121				
Methylene chloride	169.6	20	200	0	84.8	74 - 124				
Naphthalene	185.5	10	200	0	92.8	61 - 128				
n-Butylbenzene	196	10	200	0	98.0	75 - 128				
n-Propylbenzene	188.9	10	200	0	94.5	76 - 126				
o-Xylene	187.2	10	200	0	93.6	78 - 122				
sec-Butylbenzene	195	10	200	0	97.5	77 - 126				
Styrene	188.8	10	200	0	94.4	78 - 123				
tert-Butylbenzene	192.3	10	200	0	96.1	78 - 124				
Tetrachloroethene	200.2	10	200	0	100	74 - 129				
Toluene	188.2	10	200	0	94.1	80 - 121				
trans-1,2-Dichloroethene	180.5	10	200	0	90.2	75 - 124				
trans-1,3-Dichloropropene	172.6	10	200	0	86.3	73 - 127				
Trichloroethene	185.7	10	200	0	92.9	79 - 123				
Trichlorofluoromethane	183.8	10	200	0	91.9	65 - 141				
Vinyl chloride	184.7	10	200	0	92.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*454.2*	*10*	*500*	*0*	*90.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*498.3*	*10*	*500*	*0*	*99.7*	*85 - 114*				
Surr: Dibromofluoromethane	*465.4*	*10*	*500*	*0*	*93.1*	*80 - 119*				
Surr: Toluene-d8	*511.7*	*10*	*500*	*0*	*102*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19101523-07MSD** Units: **UG/L** Analysis Date: **01-Nov-2019 17:58**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326950** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	179	10	200	0	89.5	78 - 124	180.6	0.907	20	
1,1,1-Trichloroethane	173.5	10	200	0	86.8	74 - 131	179.8	3.57	20	
1,1,2,2-Tetrachloroethane	187.6	10	200	0	93.8	71 - 121	181.2	3.46	20	
1,1,2-Trichloroethane	191.9	10	200	6.665	92.6	80 - 119	192.3	0.199	20	
1,1-Dichloroethane	176	10	200	13.66	81.2	77 - 125	183	3.88	20	
1,1-Dichloroethene	772.9	10	200	638.2	67.3	71 - 131	824.3	6.44	20	S
1,1-Dichloropropene	179.4	10	200	0	89.7	78 - 125	182.2	1.57	20	
1,2,3-Trichlorobenzene	228.2	10	200	0	114	69 - 129	188.6	19	20	
1,2,3-Trichloropropane	189.6	10	200	0	94.8	73 - 122	185	2.47	20	
1,2,4-Trichlorobenzene	189.8	10	200	0	94.9	69 - 130	166.1	13.3	20	
1,2,4-Trimethylbenzene	191.7	10	200	0	95.9	76 - 124	188.7	1.58	20	
1,2-Dibromo-3-chloropropane	190.2	10	200	0	95.1	62 - 128	176	7.74	20	
1,2-Dibromoethane	185	10	200	0	92.5	77 - 121	184.8	0.12	20	
1,2-Dichlorobenzene	181.4	10	200	0	90.7	80 - 119	176.2	2.92	20	
1,2-Dichloroethane	197	10	200	28.68	84.2	73 - 128	195.5	0.74	20	
1,2-Dichloropropane	166.2	10	200	0	83.1	78 - 122	171.5	3.11	20	
1,3,5-Trimethylbenzene	193.3	10	200	0	96.7	75 - 124	191.7	0.87	20	
1,3-Dichlorobenzene	181.7	10	200	0	90.9	80 - 119	180.8	0.483	20	
1,3-Dichloropropane	182.9	10	200	0	91.5	80 - 119	181.4	0.827	20	
1,4-Dichlorobenzene	182.5	10	200	0	91.2	79 - 118	175.3	4.03	20	
2,2-Dichloropropane	162.7	10	200	0	81.3	60 - 139	167.4	2.9	20	
2-Butanone	303.3	20	400	0	75.8	56 - 143	295.3	2.68	20	
2-Chlorotoluene	187.9	10	200	0	94.0	79 - 122	185.4	1.36	20	
2-Hexanone	337.4	20	400	0	84.3	57 - 139	347.9	3.06	20	
4-Chlorotoluene	187.1	10	200	0	93.6	78 - 122	185.3	0.966	20	
4-Isopropyltoluene	194.4	10	200	0	97.2	77 - 127	190	2.26	20	
4-Methyl-2-pentanone	339.9	20	400	0	85.0	67 - 130	342	0.608	20	
Acetone	256.6	20	400	0	64.1	39 - 160	251.7	1.91	20	
Benzene	173.1	10	200	0	86.6	79 - 120	173.5	0.238	20	
Bromobenzene	184.3	10	200	0	92.2	80 - 120	181.8	1.4	20	
Bromochloromethane	165.2	10	200	0	82.6	78 - 123	166.4	0.756	20	
Bromodichloromethane	176.7	10	200	0	88.3	79 - 125	177.1	0.248	20	
Bromoform	178.5	10	200	0	89.3	66 - 130	178.4	0.0392	20	
Bromomethane	180	10	200	0	90.0	53 - 141	195.4	8.22	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349684 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19101523-07MSD** Units: **UG/L** Analysis Date: **01-Nov-2019 17:58**
Client ID: Run ID: **VOA6_349684** SeqNo: **5326950** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	320.4	20	400	0	80.1	64 - 133	336.4	4.88	20	
Carbon tetrachloride	176.9	10	200	0	88.5	72 - 136	184.6	4.27	20	
Chlorobenzene	183.6	10	200	0	91.8	82 - 118	186.2	1.43	20	
Chloroethane	163.4	10	200	0	81.7	60 - 138	173.6	6.03	20	
Chloroform	165.2	10	200	0	82.6	79 - 124	169.9	2.78	20	
Chloromethane	166.4	10	200	0	83.2	50 - 139	175.4	5.24	20	
cis-1,2-Dichloroethene	175.4	10	200	0	87.7	78 - 123	177.4	1.08	20	
cis-1,3-Dichloropropene	174.4	10	200	0	87.2	75 - 124	176.5	1.22	20	
Dibromochloromethane	177.3	10	200	0	88.6	74 - 126	177.9	0.324	20	
Dibromomethane	180	10	200	0	90.0	79 - 123	176.5	1.97	20	
Dichlorodifluoromethane	178.8	10	200	0	89.4	32 - 152	184.6	3.18	20	
Ethylbenzene	186.3	10	200	0	93.2	79 - 121	190.4	2.2	20	
Hexachlorobutadiene	200.2	10	200	0	100	66 - 134	180.3	10.4	20	
Isopropylbenzene	188.5	10	200	0	94.3	72 - 131	192.6	2.13	20	
m,p-Xylene	371.9	20	400	0	93.0	80 - 121	383.3	3.01	20	
Methylene chloride	165.3	20	200	0	82.6	74 - 124	169.6	2.58	20	
Naphthalene	215.9	10	200	0	108	61 - 128	185.5	15.1	20	
n-Butylbenzene	198.2	10	200	0	99.1	75 - 128	196	1.12	20	
n-Propylbenzene	192.3	10	200	0	96.1	76 - 126	188.9	1.77	20	
o-Xylene	183.3	10	200	0	91.7	78 - 122	187.2	2.08	20	
sec-Butylbenzene	199.1	10	200	0	99.6	77 - 126	195	2.09	20	
Styrene	182.8	10	200	0	91.4	78 - 123	188.8	3.27	20	
tert-Butylbenzene	194.3	10	200	0	97.1	78 - 124	192.3	1.06	20	
Tetrachloroethene	193.4	10	200	0	96.7	74 - 129	200.2	3.45	20	
Toluene	184.5	10	200	0	92.3	80 - 121	188.2	2	20	
trans-1,2-Dichloroethene	177.8	10	200	0	88.9	75 - 124	180.5	1.51	20	
trans-1,3-Dichloropropene	174.2	10	200	0	87.1	73 - 127	172.6	0.898	20	
Trichloroethene	183	10	200	0	91.5	79 - 123	185.7	1.49	20	
Trichlorofluoromethane	174.6	10	200	0	87.3	65 - 141	183.8	5.13	20	
Vinyl chloride	174.8	10	200	0	87.4	58 - 137	184.7	5.55	20	
Surr: 1,2-Dichloroethane-d4	*444.7*	*10*	*500*	*0*	*88.9*	*81 - 118*	*454.2*	*2.11*	*20*	
Surr: 4-Bromofluorobenzene	*502.2*	*10*	*500*	*0*	*100*	*85 - 114*	*498.3*	*0.793*	*20*	
Surr: Dibromofluoromethane	*462.3*	*10*	*500*	*0*	*92.5*	*80 - 119*	*465.4*	*0.68*	*20*	
Surr: Toluene-d8	*509.4*	*10*	*500*	*0*	*102*	*89 - 112*	*511.7*	*0.452*	*20*	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant
WorkOrder:	HS19101774

QC BATCH REPORT

Batch ID:	**R349684 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS19101774-01 HS19101774-02

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349710 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-110419** Units: **mg/L** Analysis Date: **04-Nov-2019 11:38**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5328162** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-110419** Units: **mg/L** Analysis Date: **04-Nov-2019 11:54**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5328163** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.01	0.500	20	0	100	80 - 120				
Sulfate	19.68	0.500	20	0	98.4	80 - 120				

LCSD Sample ID: **WLCSDW1-110419** Units: **mg/L** Analysis Date: **04-Nov-2019 12:11**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5328164** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.99	0.500	20	0	99.9	80 - 120	20.01	0.135	20	
Sulfate	19.65	0.500	20	0	98.3	80 - 120	19.68	0.141	20	

MS Sample ID: **HS19101488-01MS** Units: **mg/L** Analysis Date: **04-Nov-2019 17:46**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5329293** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1235	5.00	100	1165	69.5	80 - 120				SEO
Sulfate	1867	5.00	100	1826	41.5	80 - 120				SEO

MS Sample ID: **HS19110026-01MS** Units: **mg/L** Analysis Date: **04-Nov-2019 12:44**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5328166** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	758.7	5.00	100	672.7	85.9	80 - 120				O
Sulfate	5014	5.00	100	5005	8.02	80 - 120				SEO

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349710 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MS Sample ID: **HS19101353-01MS** Units: **mg/L** Analysis Date: **04-Nov-2019 18:49**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5329296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	905.9	0.500	10	906.7	-8.05	80 - 120				SEO
Sulfate	434.1	0.500	10	422.9	112	80 - 120				EO

MS Sample ID: **HS19101353-01MS** Units: **mg/L** Analysis Date: **04-Nov-2019 14:27**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5329281** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	994.5	5.00	100	920.2	74.3	80 - 120				SO
Sulfate	518.2	5.00	100	437.2	81.0	80 - 120				O

MSD Sample ID: **HS19110026-01MSD** Units: **mg/L** Analysis Date: **04-Nov-2019 13:01**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5328167** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	763.4	5.00	100	672.7	90.6	80 - 120	758.7	0.62	20	O
Sulfate	5068	5.00	100	5005	62.8	80 - 120	5014	1.09	20	SEO

MSD Sample ID: **HS19101488-01MSD** Units: **mg/L** Analysis Date: **04-Nov-2019 18:03**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5329294** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1236	5.00	100	1165	70.8	80 - 120	1235	0.104	20	SEO
Sulfate	1866	5.00	100	1826	40.1	80 - 120	1867	0.0788	20	SEO

MSD Sample ID: **HS19101353-01MSD** Units: **mg/L** Analysis Date: **04-Nov-2019 19:06**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5329297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	904.3	0.500	10	906.7	-24.0	80 - 120	905.9	0.176	20	SEO
Sulfate	434.7	0.500	10	422.9	117	80 - 120	434.1	0.122	20	EO

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS19101774

QC BATCH REPORT

Batch ID: R349710 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS19101353-01MSD** Units: **mg/L** Analysis Date: **04-Nov-2019 14:43**
Client ID: Run ID: **ICS-Integrion_349710** SeqNo: **5329282** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	996.8	5.00	100	920.2	76.6	80 - 120	994.5	0.228	20	SO
Sulfate	519.1	5.00	100	437.2	81.9	80 - 120	518.2	0.173	20	O

The following samples were analyzed in this batch: HS19101774-01

Revision: 1

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ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS19101774**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

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ALS Houston, US Date: 13-Nov-19

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS19101774

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19101774-01	LH18/24-SP650_102919	Login	10/30/2019 12:24:54 PM	PMG	WET279
HS19101774-01	LH18/24-SP650_102919	Login	10/30/2019 12:24:54 PM	PMG	WET279
HS19101774-01	LH18/24-SP650_102919	Login	10/30/2019 12:24:54 PM	PMG	Sub

Revision:1

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ALS Houston, US Date: 13-Nov-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19101774
Date/Time Received: **30-Oct-2019 09:30**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature 30-Oct-2019 Date
Reviewed by: *RJ Modashia* eSignature 30-Oct-2019 Date

Matrices: **Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:none
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8c U/C	IR25	
Cooler(s)/Kit(s):	43599		
Date/Time sample(s) sent to storage:	10/30/19 12:35		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210, Houston, Tx. 77099 ATTN: R.J. Modashia

Page 1 of 1

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT BI-WEEKLY SAMPLES**	
Prepared By: Scott Beesinger	P.O Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC	Analyses: CHLORIDE, SULFATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_102919	Water	10/29/19 / 14:00		3	3		HCL	
LH18/24-SP650_102919	Water	10/29/19 / 14:00		1		1	NONE	
Trip Blank	Water	10/29/19		2	2		HCL	

HS19101774

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Additional Remarks: **STANDARD TAT ON ALL PARAMETERS.**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/29/19	14:30	Jm	10/30/19	09:30						

9For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks

ULC.

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

43599 0.80 #25 C/F 0.0°

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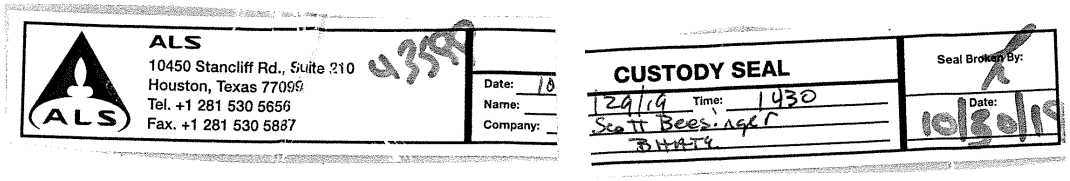

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date: 10
Name:
Company:

CUSTODY SEAL
10/29/18 Time: 1430
Scott Beesinger
BHATT

Seal Broken By:
Date: 10/30/18

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (903) 930-6193
ATT: SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRAST. INC
1203-B EAST GRAND AVE PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28NOV18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5666
REF: LHAAP-BO 62490-RJ

FedEx Express

FedEx
TRK# 0221 4380 9535 0854

WED - 30 OCT 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

#475872 10/29 567J3/2A3C/05A2

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

April 29, 2020

DAIM-ODB-LO

Mr. Bill Rhotenberry
U.S. Environmental Protection Agency
Federal Facilities Section R6
1201 Elm Street, Suite 500
Dallas, Texas 75270-2102

Re: Final Year 3 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01 Longhorn Army Ammunition Plant, Karnack Texas

Dear Mr. Rhotenberry,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your record: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email.

Due to stay home requirements, hard copies and compact disc (CD) copies of the document cannot be prepared at this time. As soon as the restrictions are lifted, one hard copy and one CD of the above referenced document will be transmitted to you.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (1 digital copy)
P. Bruckwicki, Caddo Lake NWR, TX (1 digital copy)
A. Williams, USACE, Fort Worth, TX District (1 digital copy)
R. Smith, USACE, Fort Worth, TX District (Transmittal Letter via email)
A. Maly, USAEC, San Antonio, TX (1 digital copy)
K. Nemmers, Bhate, Lakewood, CO (1 digital copy)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

April 29, 2020

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Year 3 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01 Longhorn Army Ammunition Plant, Karnack Texas

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your record: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email.

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The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
B. Rhotenberry, USEPA Region 6, Dallas, TX (1 digital copy)
P. Bruckwicki, Caddo Lake NWR, TX (1 digital copy)
A. Williams, USACE, Fort Worth, TX District (1 digital copy)
R. Smith, USACE, Fort Worth, TX District (Transmittal Letter-via email)
A. Maly, USAEC, San Antonio, TX (1 digital copy)
K. Nemmers, Bhate, Lakewood, CO (1 digital copy)

FINAL
YEAR 3 LONG-TERM MANAGEMENT REPORT FOR LHAAP-001-R-01 AND LHAAP-003-R-01 LONGHORN ARMY AMMUNITION PLANT

April 2020

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Performance Based Remediation (PBR)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

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TABLE OF CONTENTS

Acronyms and Abbreviations iii

1 Introduction 1-1

1.1 Facility Background 1-1
1.2 Munitions Response Sites LHAAP-001-R-01 and LHAAP-003-R-01 Site Descriptions 1-1
1.3 Land Use Controls 1-2
1.4 Land Use Control Remedial Action Objective 1-3
1.5 Land Use Control Selected Remedy 1-3

2 Land Use Control Monitoring 2-1

2.1 Maintenance of Existing MEC Warning Signs 2-1
2.2 Monitoring Activities 2-2

3 Conclusions 3-1

4 References 4-1

Figures

Figure 1-1 LHAAP Site Map
Figure 1-2 LHAAP-001-R-01 Site Location Map with LUC Boundaries
Figure 1-3 LHAAP-003-R-01 Site Location Map with LUC Boundaries

Appendices

Appendix A LTM Inspection and Maintenance Checklists and Land Use Control Compliance Certification Form
Appendix B Photograph Log

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ACRONYMS AND ABBREVIATIONS

§	Section
EODT	EOD Technology, Inc.
IRP	Installation Restoration Program
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-Term Management
LUC(s)	Land use control(s)
MEC	Munitions and explosives of concern
MMRP	Military Munitions Response Program
MPPEH	Material potentially presenting explosive hazard
MRS	Munitions response site
RAO	Remedial action objective
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
TAC	Texas Administrative Code
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WP	White phosphorus

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1 INTRODUCTION

This document presents the monitoring of land use controls (LUCs) associated with the remedy set forth in the Final Longhorn Army Ammunition Plant (LHAAP) Record of Decision (ROD) (Shaw Environmental & Infrastructure, Inc. [Shaw], August 2016) for Military Munitions Response Program (MMRP) sites LHAAP-001-R-01 (South Test Area/Bomb Test Area) and LHAAP-003-R-01 (Ground Signal Test Area). This Year 3 LUC Monitoring Report was prepared for the United States (U.S.) Army under the Worldwide Environmental Remediation Services Contract No. W9128F-13-D-0012 managed by the U.S. Army Corps of Engineers (USACE), Tulsa District.

1.1 Facility Background

The LHAAP is an inactive, government-owned, formerly contractor-operated and maintained industrial facility located in central-east Texas, in the northeastern corner of Harrison County. The facility occupies approximately 1,200 of its former 8,416 acres located between State Highway 43 in Karnack, Texas, and the southwestern shore of Caddo Lake, as shown on **Figure 1-1**. The LHAAP was listed as a National Priorities List site on August 9, 1990, due to threatened releases of hazardous substances, pollutants, or contaminants. The U.S. Environmental Protection Agency (USEPA), the Texas Water Commission (now the Texas Commission on Environmental Quality), and the U.S. Army signed a Federal Facility Agreement on December 30, 1991, to address the contamination at LHAAP.

1.2 Munitions Response Sites LHAAP-001-R-01 and LHAAP-003-R-01 Site Descriptions

Munitions response site (MRS) LHAAP-001-R-01 (South Test Area/Bomb Test Area) is co-located with Installation Restoration Program (IRP) site LHAAP-27 and is situated in the southern portion of LHAAP and covers an area of approximately 79 acres (**Figure 1-2**). Site LHAAP-001-R-01 was constructed in 1954 and used for testing photoflash bombs produced at the facility until approximately 1956. During the late 1950s, illuminating signal devices were also demilitarized within pits excavated in the vicinity of the test pad. During the 1960s, leaking production items may have been demilitarized by detonation. Leaking white phosphorus (WP) munitions were supposedly disposed of, although no primary source documentation concerning this effort has been located. In 1984, a LHAAP Contamination Survey indicated that the area had been relatively inactive since the early 1960s and no disposal or testing activities have been carried out in this area since that time. LHAAP-001-R-01 was identified as a munitions and explosives of concern (MEC) area based on the visual confirmation of MEC.

Site LHAAP-003-R-01 (Ground Signal Test Area), is co-located with IRP site LHAAP-54 and is situated in the southeastern portion of LHAAP and covers an area of approximately 80 acres (**Figure 1-3**). Site LHAAP-003-R-01 was used intermittently in April 1963 for aerial and on-ground

testing and destruction of a variety of devices, including pyrotechnic signal devices, red phosphorus smoke wedges, infrared flares, illuminating mortar shells and cartridges, button bombs, and various types of explosive simulators. The site was also used intermittently over a 20-year period for testing and burn-out of rocket motors. From late 1988 through 1991, the site was also used for the burn-out of Pershing missile rocket motors. Occasionally, leaking WP munitions were burned at the site as a demilitarization activity. LHAAP-003-R-01 was identified as a MEC area based on the reported presence of MEC.

1.3 Land Use Controls

Following the 2008 non-time critical removal action surface clearance activities, LUCs were prepared and constructed for both sites (EOD Technology, Inc. [EODT], September 2009). LUCs were designed and constructed to promote ongoing protection of human safety against potential explosive hazards that may remain at the MMRP sites. The LUCs' performance objectives are to prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds; and to prohibit intrusive activities such as digging or any other activity which could result in explosive safety risks. The boundary of the LUCs encloses the site boundaries shown on **Figures 1-2 and 1-3**.

The 2008 LUCs included:

- Restriction against intrusive activities, including digging. A legal description survey and plat of the LUC boundaries and locations of MEC warning signs was prepared in accordance with 30 Texas Administrative Code (TAC) Section (§) 335.569, Appendix III, for recordation in the Harrison County Clerk's Office.
- Placement of MEC warning signage along the perimeter of LHAAP-001-R-01 and LHAAP-003-R-01 to serve as the physical demarcation of the controlled areas. The signs have visibility from one sign to the next, with a maximum spacing of 100 feet. The signs include warning of the potential presence of MEC, state the restriction against intrusive activities, and provide a contact number.
- Education program for future refuge visitors, staff, and volunteers. The program includes informational pamphlets and a safety video warning of the potential presence of MEC and presenting examples of MEC that were or may be found at the sites.

The LUC to prohibit residential land use will remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. A LUC to prohibit intrusive subsurface activities, including digging, will remain in place until it is demonstrated that the MEC no longer presents an explosive hazard. However, intrusive subsurface activities may occur provided that the Army and the USEPA approve such intrusive subsurface activities before they are commenced and provided that they are undertaken by qualified personnel who are trained in explosives safety measures.

The Final ROD for LHAAP-001-R-01 and LHAAP-003-R-01 was issued in August 2016 and documents the final selected remedy for the sites (Shaw, August 2016). The ROD found that although the removal actions provided an effective solution for reducing risk of exposure by reducing the potential for any direct contact with MEC or material potentially presenting explosive hazard (MPPEH), there is the potential that some MEC remains. A summary of the LUC remedial action objective (RAO) and the selected remedy for LHAAP-001-R-01 and LHAAP-003-R-01, identified in the Final ROD, is presented in the following sections.

1.4 Land Use Control Remedial Action Objective

The LUC RAO developed for LHAAP-001-R-01 and LHAAP-003-R-01, as outlined in the ROD (Shaw, August 2016) is:

- Protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action.

1.5 Land Use Control Selected Remedy

The LUC selected remedy for MEC at LHAAP-001-R-01 and LHAAP-003-R-01 is comprised of the following elements:

- LUC to prohibit residential use
- LUC to restrict land use to non-residential
- LUC to restrict intrusive activities (e.g., digging)
- Signage to convey MEC warning
- Education Program

The Educational Program materials, including pamphlets and video, were delivered to the U.S. Fish and Wildlife Service (USFWS) in hard copy and electronic form as part of the Site Specific Final Report for the MEC Removal Action (EODT, September 2009). There is no recurring requirement associated with this LUC and it will not be discussed further in this document.

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2 LAND USE CONTROL MONITORING

The RAO for LHAAP-001-R-01 and LHAAP-003-R-01 is protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action. The duration for the LUCs specified in the MEC ROD for this purpose must remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. Per the Final ROD, the LUCs' performance objectives are to:

- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Restrict land use to non-residential.
- Prohibit intrusive activities such as digging or any other activity which could result in explosive safety risk.
- Maintain existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas.

For portions of LHAAP-001-R-01 and LHAAP-003-R-01 subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsible for ensuring that the remedy remains protective of human health and safety. This section presents the maintenance and monitoring of the LUCs at both sites in accordance with the final LUC Remedial Design/Remedial Action Construction Report (U.S. Army, May 2018).

2.1 Maintenance of Existing MEC Warning Signs

MEC warning signs have been installed at the perimeter of LHAAP-001-R-01 and LHAAP-003-R-01 (64 signs at each site), that serve as a physical demarcation of the controlled areas. The signs have visibility from one sign to the next with a maximum spacing of 100 feet. The signs include warning of potential presence of MEC and state the restriction against intrusive activities. **Figures 1-2 and 1-3** present the location of the MEC warning signs. These signs are required to be visually inspected annually, or as needed, to ensure they remain intact, undamaged, and visible from one sign to the next. Maintenance is conducted, as needed, and may include the following activities:

- Mowing and brush clearing around MEC warning signs to ensure that they are visible from one sign location to the next sign location.
- Rehanging/affixing MEC warning sign(s) or replacing MEC warning sign(s), if they become damaged or illegible.
- Repairing existing MEC warning sign posts, which may require the reestablishment of the concrete base or post replacement.

2.2 Monitoring Activities

The [Long-Term Management] LTM Inspection and Maintenance Checklists for both LHAAP-001-R-01 and LHAAP-003-R-01, completed in 2020, are provided in **Appendix A**. No repairs were required. The checklists are the same as included in the LUC Remedial Design/Remedial Action Construction Report (U.S. Army, May 2018).

Appendix A also contains the annual certification from the remedial design to document that no LUC-restricted activities have been authorized and that LHAAP-001-R-01 and LHAAP-003-R-01 conditions and use are consistent with the LUCs. **Appendix B** contains a photograph log of the LUCs at each site.

3 CONCLUSIONS

The LUCs are being maintained and managed in accordance with the ROD and the LUC Remedial Design/Remedial Action Construction Report as follows:

- Neither site is being developed or used for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Land use is non-residential.
- No digging or any other activity which could result in explosive safety risk was noted during the LUC inspections completed.
- Existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas are being maintained per the ROD.

Mowing and brush clearing around MEC warning signs was completed on January 30, 2020, to ensure that they are visible from one sign location to the next sign location. No repairs to signage were needed for either site during the LUC inspections.

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4 REFERENCES

EODT. September 2009. *Final Site Specific Final Report for the MEC Removal Action at the Former Longhorn Army Ammunition Plant LHAAP-001-R (Site 27) and LHAAP-003-R (Site 54) Karnack, Texas*.

Shaw. August 2016. *Final Record of Decision LHAAP-001-R (South Test Area/Bomb Test Area) and LHAAP-003-R (Ground Signal Test Area) Longhorn Army Ammunition Plant, Karnack, Texas*.

U.S. Army. April 2004. *Memorandum of Agreement Between the Department of the Army and the Department of the Interior for the Interagency Transfer of Lands at the Longhorn Army Ammunition Plant for the Caddo Lake National Wildlife Refuge, Harrison County, Texas.*

U.S. Army. May 2018. *Final Land Use Control Remedial Design/Remedial Action Construction Report LHAAP-001-R-01 and LHAAP-003-R-01, Longhorn Army Ammunition Plant.*

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FIGURES

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Figures

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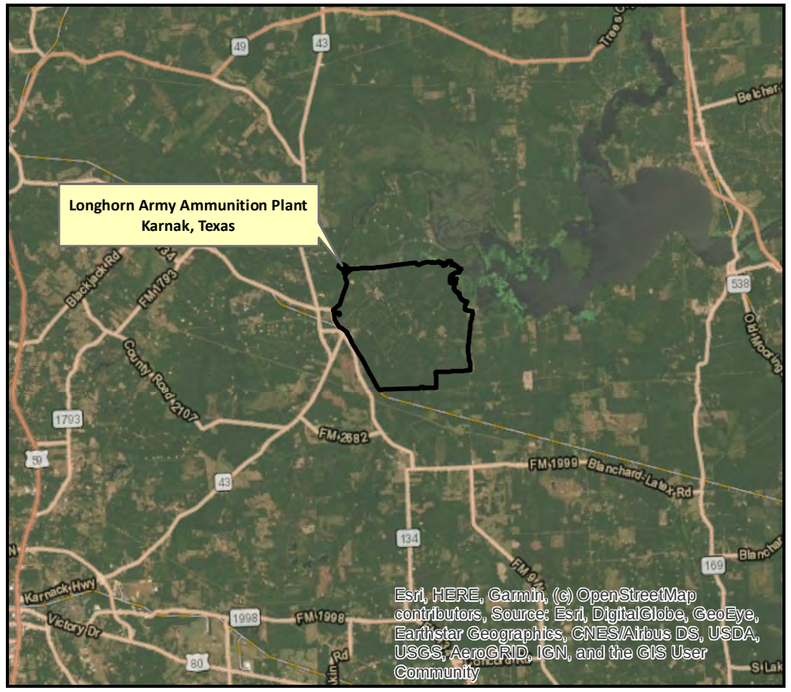
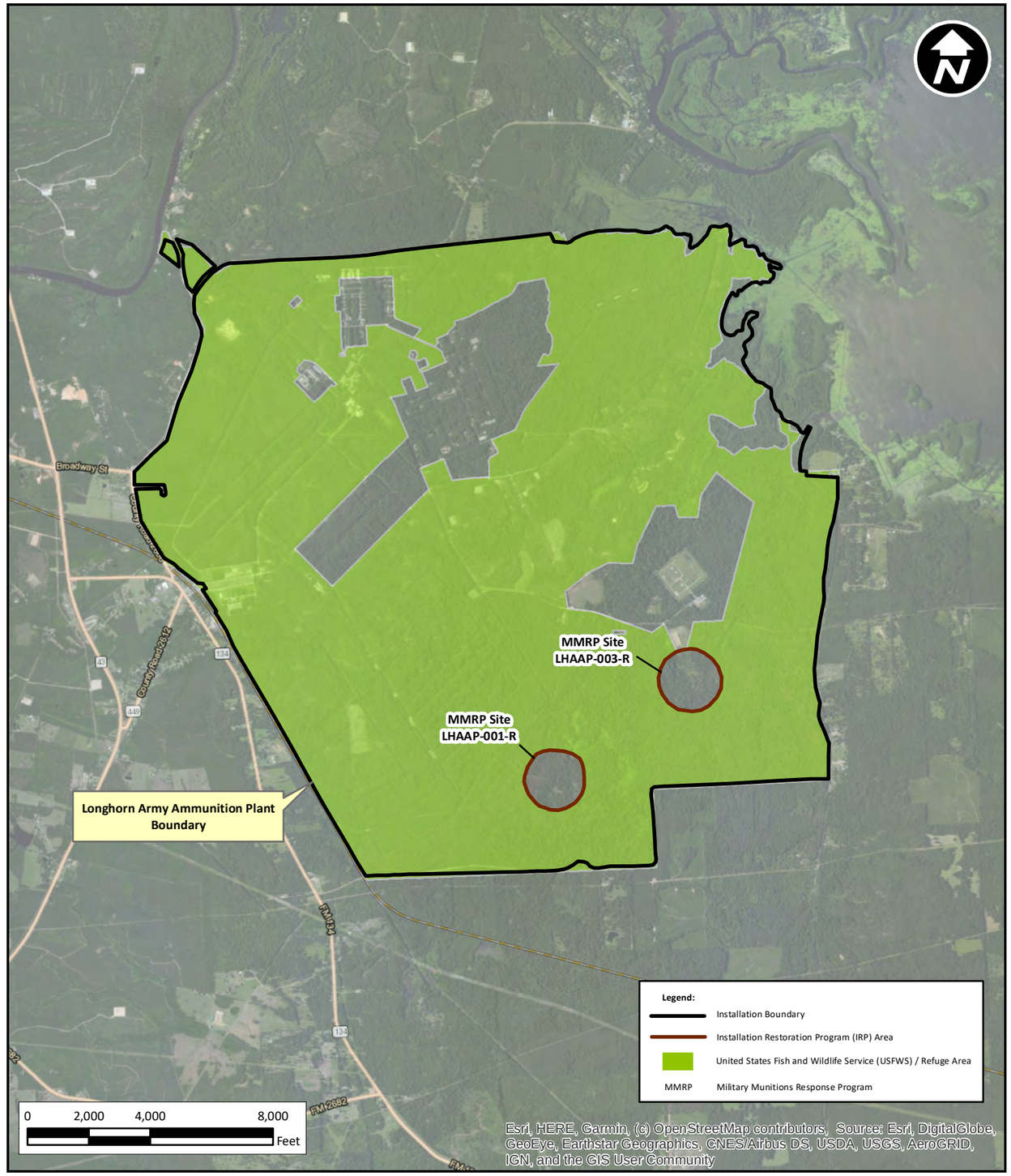




LHAAP Site Map

Figure 1-1

Year 3 Land Use Control Monitoring Report for
LHAAP-001-R-01 AND LHAAP-003-R-01
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 4/10/2020

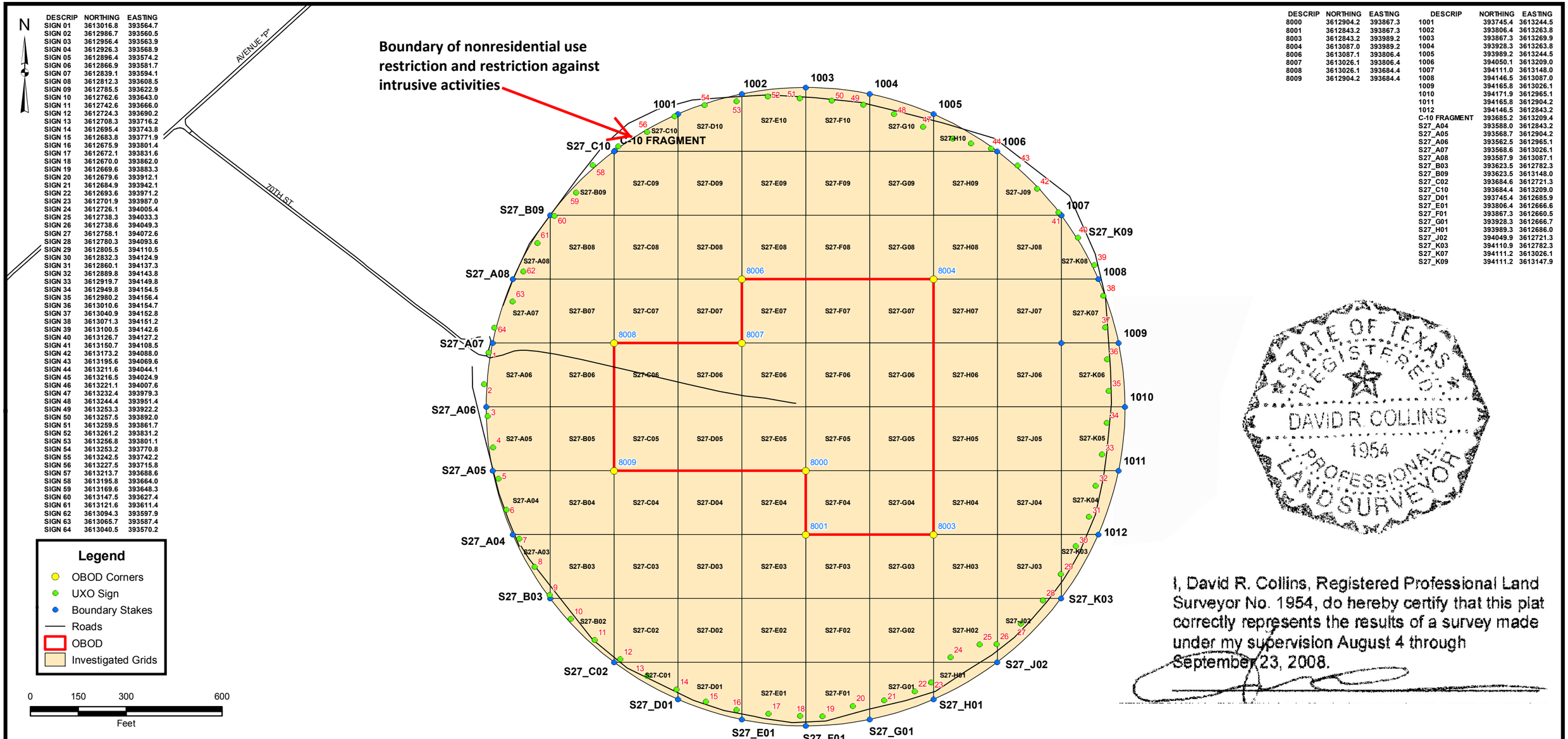
SCALE: As Shown

PROJECT NO: NWO3132.0150.014.0001.04

bhate

www.bhate.com

Figure 1-2. LHAAP-001-R-01 Site Location Map with LUC Boundaries
Longhorn Army Ammunition Plant, Karnack, Texas



DESCRIP	NORTHING	EASTING
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SIGN 02	3612986.7	393560.5
SIGN 03	3612956.4	393563.9
SIGN 04	3612926.3	393568.9
SIGN 05	3612896.4	393574.2
SIGN 06	3612866.9	393581.7
SIGN 07	3612839.1	393594.1
SIGN 08	3612812.3	393608.5
SIGN 09	3612785.5	393622.9
SIGN 10	3612762.6	393643.0
SIGN 11	3612742.6	393666.0
SIGN 12	3612724.3	393690.2
SIGN 13	3612708.3	393716.2
SIGN 14	3612695.4	393743.8
SIGN 15	3612683.8	393771.9
SIGN 16	3612675.9	393801.4
SIGN 17	3612672.1	393831.6
SIGN 18	3612670.0	393862.0
SIGN 19	3612669.6	393883.3
SIGN 20	3612679.6	393912.1
SIGN 21	3612684.9	393942.1
SIGN 22	3612693.6	393971.2
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SIGN 24	3612726.1	394005.4
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SIGN 33	3612919.7	394149.8
SIGN 34	3612949.8	394154.5
SIGN 35	3612980.2	394156.4
SIGN 36	3613010.6	394154.7
SIGN 37	3613040.9	394152.8
SIGN 38	3613071.3	394151.2
SIGN 39	3613100.5	394142.6
SIGN 40	3613126.7	394127.2
SIGN 41	3613150.7	394108.5
SIGN 42	3613173.2	394088.0
SIGN 43	3613195.6	394069.6
SIGN 44	3613211.6	394044.1
SIGN 45	3613216.5	394024.9
SIGN 46	3613221.1	394007.6
SIGN 47	3613232.4	393979.3
SIGN 48	3613244.4	393951.4
SIGN 49	3613253.3	393922.2
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SIGN 60	3613147.5	393627.4
SIGN 61	3613121.6	393611.4
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SIGN 63	3613065.7	393587.4
SIGN 64	3613040.5	393570.2

DESCRIP	NORTHING	EASTING
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8001	3612843.2	393867.3
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8007	3613026.1	393806.4
8008	3613026.1	393684.4
8009	3612904.2	393684.4

DESCRIP	NORTHING	EASTING
1001	393745.4	3613244.5
1002	393806.4	3613263.8
1003	393867.3	3613269.9
1004	393928.3	3613263.8
1005	393989.2	3613244.5
1006	394050.1	3613209.0
1007	394111.0	3613148.0
1008	394146.5	3613087.0
1009	394165.8	3613026.1
1010	394171.9	3612965.1
1011	394165.8	3612904.2
1012	394146.5	3612843.2
C-10 FRAGMENT	393685.2	3613209.4
S27_A04	393588.0	3612843.2
S27_A05	393568.7	3612904.2
S27_A06	393562.5	3612965.1
S27_A07	393568.6	3613026.1
S27_A08	393587.9	3613087.1
S27_B03	393623.5	3612782.3
S27_B09	393623.5	3613148.0
S27_C02	393684.6	3612721.3
S27_C10	393684.4	3613209.0
S27_D01	393745.4	3612685.9
S27_E01	393806.4	3612666.6
S27_F01	393867.3	3612660.5
S27_G01	393928.3	3612666.7
S27_H01	393989.3	3612686.0
S27_J02	394049.9	3612721.3
S27_K03	394110.9	3612782.3
S27_K07	394111.2	3613026.1
S27_K09	394111.2	3613147.9

Legend
- OBOD Corners
- UXO Sign
- Boundary Stakes
- Roads
- OBOD
- Investigated Grids

0 150 300 600
Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant Monument BG-1 with coordinates NORTHING-3614801.46, EASTING-395385.09

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 23, 2008.

Principal of the firm: _____

SUXOS: _____

Figure 1-3. LHAAP-003-R-01 Site Location Map with LUC Boundaries
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTH	EAST	DESCRIP	NORTHIN	EASTING
SIGN 1	3614179.4	395143.2	1013	395068.6	3613625.2
SIGN 10	3613984.2	394959.8	1014	395005.1	3613686.2
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SIGN 13	3613894.1	394947	1017	395180.3	3614195.0
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SIGN 15	3613833.8	394955.1	1019	395302.2	3614200.9
SIGN 16	3613803.8	394959.8	1020	395363.2	3614185.9
SIGN 17	3613774.4	394967.8	1021	395392.4	3614173.9
SIGN 18	3613745.2	394976.7	1022	395424.1	3614156.7
SIGN 19	3613718.3	394991.2	1023	395480.2	3614112.9
SIGN 2	3614163.4	395117.3	1024	395485.1	3614108.0
SIGN 20	3613694.6	395010.3	1025	395528.9	3614051.9
SIGN 21	3613672.4	395031.1	1026	395546.1	3614020.2
SIGN 22	3613651.1	395052.8	1027	395558.0	3613991.0
SIGN 23	3613632.6	395077	1028	395573.1	3613930.0
SIGN 24	3613616.8	395103.1	1029	395576.0	3613869.1
SIGN 25	3613602.8	395130	1030	395567.2	3613808.1
SIGN 26	3613591	395158.1	1031	395507.7	3613686.2
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SIGN 35	3613626.8	395419.8	S54_B06	394997.4	3613869.1
SIGN 36	3613644.2	395444.8	S54_B07	394997.4	3613930.0
SIGN 37	3613663.6	395468.2	S54_B08	394997.4	3613991.0
SIGN 38	3613686.5	395488.2	S54_B09	394997.4	3614051.9
SIGN 39	3613710.2	395507.5	S54_B10	395032.6	3614112.9
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SIGN 42	3613791.2	395548.8	S54_D11	395119.4	3614173.3
SIGN 43	3613820.6	395556.7	S54_E01	395180.3	3613573.5
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SIGN 5	3614110.1	395043.4	S54_K02	395485.1	3613660.5
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SIGN 51	3614053.7	395512.2	S54_LO4	395545.5	3613747.1
SIGN 52	3614078.9	395495.2			
SIGN 53	3614102.3	395475.8			
SIGN 54	3614122	395452.6			
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SIGN 63	3614185.9	395195.4			
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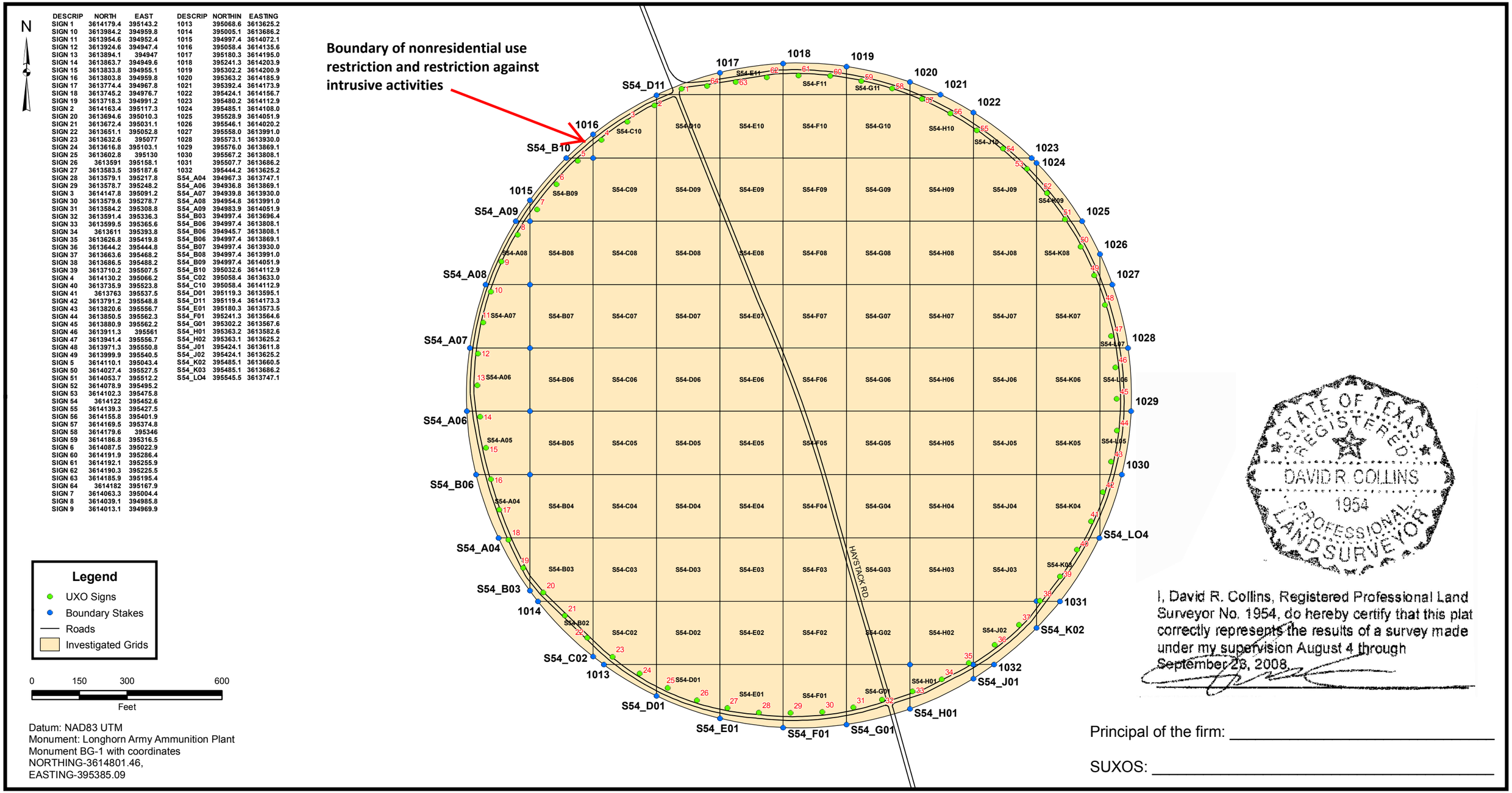
SIGN 9	3614013.1	394969.9			



Legend
- UXO Signs
- Boundary Stakes
- Roads
- Investigated Grids

0 150 300 600
Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

STATE OF TEXAS
REGISTERED
DAVID R. COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 28, 2008.

Principal of the firm: _____

SUXOS: _____

APPENDIX A

LTM INSPECTION AND MAINTENANCE CHECKLISTS AND LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

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LTM Inspection and Maintenance Checklist

General Information	
Project Name	LTM Inspection and Maintenance, LHAAP-001-R and LHAAP-003-R MMRP, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	BHATE ENVIRONMENTAL
Inspector's Name	SCOTT BEESINGER
Inspector's Title	SENIOR FIELD TECHNICIAN
Inspector's Signature	Scott Beesinger
Inspector's Contact Number	903-930-6193
Inspection Date	JANUARY 30, 2020
Type of Inspection	☐ Quarterly ☐ Semiannual ☒ Annual ☐ Prior to forecast rain ☐ After rain event ☐ Other_____

	Description	Yes	No	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A. Perimeter Signage						
A.1	Are there any damaged signs?		X			
A.2	Are there any missing signs?		X			
A.3	Are all signs legible?	X				
A.4	Is perimeter boundary mowed?	✓				

A.5	Are signs visible from one sign to the next sign?	X				
B. LUC Boundary						
B.1	Is the LUC Boundary identifiable?	X				
C. Dig and Intrusive Activities restriction						
C.1	Any observed digging activities or similar intrusive activities within the site boundaries?		X			

Note: Annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed onsite.

LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

In accordance with the LUC Plan dated July 2008 for LHAAP-001-R and LHAAP-003-R, an inspection of the sites was conducted by BHATE Environmental on 1/30/20

A summary of land use control mechanisms is as follows:

- Land use restrictions - restrict land use to non-residential.
- Integrity of LUC signage by ensuring signs are present, legible and have visibility from one sign to the next.

A summary of compliance with land use and restriction covenants is as follows:

- The posted signs are properly maintained at LHAAP-001-R and LHAAP-003-R.
- No digging or intrusive activities have taken place within the boundaries identified for LHAAP-001-R and LHAAP-003-R.
- No land use other than non-residential.
- Pamphlets and safety awareness video are being used to educate visitors.

I, the undersigned, do document that the inspections were performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: JANUARY 30, 2020

Name: Scott Beesinger

Signature: Scott Beesinger

Completed annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed on site.

APPENDIX B

PHOTOGRAPH LOG

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Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log January 2020

Photo 1: LHAAP-001-R-01 Signage in place and readable

Photo 2: LHAAP-001-R-01 Pathway around the site

Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log January 2020

Photo 3: LHAAP-003-R-01 Signage in place and readable

Photo 4: LHAAP-003-R-01 Pathway around the site

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

May 6, 2020

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Post Screening Investigation Addendum No. 2 Work Plan Addendum, LHAAP-47 Building 46A, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant Karnack, Texas, May 2020

Dear Ms. Palmie,

An electronic copy of the above-referenced document is being transmitted to you for your records. Due to COVID-19 stay home requirements, hard copies and compact disc (CD) copies of the document cannot be prepared at this time. As soon as the restrictions are lifted, one hard copy and one CD of the above referenced document will be transmitted to you.

The document was prepared by HDR Environmental, Operations and Construction, Inc. (HDR) on behalf of the Army as part of HDR's contract for the facility. I ask that Phil Werner, HDR's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
B. Rhotenberry, USEPA Region 6, Dallas, TX (2 hard copies, 2 CDs)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy, 1 CD)
A. Williams, USACE, Tulsa District, OK (1 CD)
R. Smith, USACE, Tulsa District, OK
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

May 6, 2020

DAIM-ODB-LO

Mr. William Rhotenberry
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Final Post Screening Investigation Addendum No. 2 Work Plan Addendum, LHAAP-47 Building 46A, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant Karnack, Texas, May 2020

Dear Mr. Rhotenberry,

An electronic copy of the above-referenced document is being transmitted to you for your records. Due to COVID-19 stay home requirements, hard copies and compact disc (CD) copies of the document cannot be prepared at this time. As soon as the restrictions are lifted, one hard copy and one CD of the above referenced document will be transmitted to you.

The document was prepared by HDR Environmental, Operations and Construction, Inc. (HDR) on behalf of the Army as part of HDR's contract for the facility. I ask that Phil Werner, HDR's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (1 hard copy, 1 CD)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy, 1 CD)
A. Williams, USACE, Tulsa District, OK (1 CD)
R. Smith, USACE, Tulsa District, OK
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate

00962476

Final
Post Screening Investigation Addendum No. 2 Work Plan Addendum

LHAAP-47 Building 46A, Plant 3 Area,
Solid Rocket Motor Fuel Production
Longhorn Army Ammunition Plant
Karnack, Texas

May 2020

Prepared For:

U.S. Army Corps of Engineers – Tulsa District

Prepared By:

HDR
2650 Park Tower Drive, Suite 400
Vienna, VA 22180

Contract No. W912BV 15 D 0014
Task Order No. W912BV18F0023 P00003

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Final
Post Screening Investigation
Addendum No. 2 Work Plan Addendum
FOR
LHAAP-47 BUILDING 46A, PLANT 3 AREA,
SOLID ROCKET MOTOR FUEL PRODUCTION
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corp of Engineers, Tulsa District

Prepared By:

HDR, Inc.
2650 Park Tower Drive, Suite 400
Vienna, VA 22180

Contract No. W912BV 15 D 0014
Task Order No. W912BV18F0023 P00003

May 2020

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Table of Contents

Acronyms and Abbreviations ..... **ii**

1 Introduction **1-1**

1.1 Background 1-1
1.2 Objective 1-2
1.3 Scope 1-2

2 Field Investigation Activities and Methods **2-1**

2.1 DPT Advancement: Soil and Groundwater Sampling and Analyses 2-1
2.2 Temporary Well Installation: Groundwater Sampling and Analysis 2-2
2.3 Well Installation, Development, and Groundwater Sampling and Analysis 2-3
2.4 Surveying 2-5
2.5 Well Abandonment 2-5
2.6 Investigative Derived Waste Handling and Disposal 2-5
2.7 Quality Assurance/Quality Control and Data Validation 2-6
2.8 Reporting 2-6

3 References **3-1**

Figures

Figure 1. Proposed DPT Soil and Groundwater Sample Locations at Building 46A Area 2-8
Figure 2. Proposed Boundary Shallow and Upper Intermediate Groundwater Sample Locations ... 2-9

Tables

Table 1. Soil and Groundwater Analytical Sample Summary 2-10

Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
bgs	below ground surface
CLP	Contract Laboratory Program
DOT	Department of Transportation
DPT	direct push technology
ft	feet
FS	Feasibility Study
GWP-Ind	industrial groundwater protection MSC
GWTP	groundwater treatment plant
IWWP	Installation Wide Work Plan
IDW	investigative derived waste
LHAAP	Longhorn Army Ammunition Plant
MCL	Maximum Contaminant Level
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MSCs	medium-specific concentrations
MS/MSD	Matrix spike/matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
PID	photo-ionization detector
PP	Proposed Plan
PSI	Post Screening Investigation
QA	Quality Assurance
QC	Quality Control
ROD	Record of Decision
SDWA	Safe Drinking Water Act
SVOC	semi-volatile organic compounds
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TCLP	toxicity characteristic leaching procedure
µg/L	micrograms per liter
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WP	Work Plan

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1 Introduction

HDR Environmental, Operations and Construction, Inc. (HDR) has prepared Post Screening Investigation (PSI) Addendum No. 2 Work Plan Addendum to meet the objectives for additional investigation at the former Longhorn Army Ammunition Plant (LHAAP) site LHAAP-47 (Building 46A Area, Plant 3 Area), located in Karnack, Texas; specifically for the Building 46A area. The purpose of this PSI Addendum No. 2 Work Plan Addendum is to complete the investigation of the high trichloroethene (TCE) concentrations in both soil and groundwater identified in the PSI Addendum No. 2 investigation conducted in November 2019 and previous investigations (HDR, 2020). This document has been prepared under the U. S. Army Corps of Engineers Tulsa District Contract Number W912BV-15-D-0014, Task Order No. W912BV18F0023, P00003.

This document describes the additional PSI activities to be completed at the Building 46A area. The PSI Addendum field effort will be conducted in accordance with procedures outlined in relevant sections of the Installation Wide Work Plan (IWWP) (AECOM, 2014); specifically those procedures for conducting direct push technology drilling (DPT), groundwater sample collection, soil sample collection, well installation and construction, well abandonment, sample handling and laboratory analyses, decontamination, handling and disposal of investigation derived waste (IDW), and surveying. The IWWP was reviewed by and concurrence was obtained from the Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (USEPA). The results of this investigation will be presented in a Draft PSI Addendum 2 Report, which will include the results presented in the December 2019 Draft Interim PSI Addendum 2 Report.

1.1 Background

The Army completed groundwater investigations in 2009 and 2010 that included the collection of groundwater samples around Building 46A. The results showed TCE concentrations of 13,900 micrograms per liter (µg/L) at DPT boring 47DPT14, 13,300 µg/L at Shallow Zone well 47WW25, and 29.4 µg/L at Intermediate Zone well 47WW37. During the PSI field work conducted between April and September 2018, TCE was detected in Upper Intermediate Zone replacement well 47WW25R, a replacement well for dry Shallow Zone well 47WW25, at a concentration of 120,000 µg/L (HDR, 2019). Because of the high TCE concentration found in this well, a second investigation (PSI Addendum No. 2) was conducted to confirm the TCE result in the Upper Intermediate Zone, identify a source (if present), and identify the extent of TCE contamination in groundwater and soil adjacent to Building 46A. The PSI Addendum No. 2 field work was completed in November 2019 and the results were presented as a Draft Interim PSI Addendum 2 dated December 2019. The findings revealed both soil and groundwater TCE concentrations in excess of screening levels at multiple locations. In soil, six boring locations had elevated soil concentrations that exceeded the TCEQ soil medium-specific concentrations (MSCs) for industrial use based on groundwater protection (GWP-Ind). The elevated detections ranged in depth between 23 and 33 feet below ground surface (ft bgs). Although most of the samples were in the saturated zone, the MSC was used as a screening tool to indicate magnitude of impact.

In groundwater, all 11 boring locations had elevated groundwater concentrations that exceeded the TCE screening level (i.e., maximum contaminant level [MCL]). Five of these had detections of TCE in groundwater exceeding 10,000 ug/L, or 1% of TCE solubility, indicating the presence of residual DNAPL. Both the extent of soil and groundwater contamination remains undefined. The existing and current round of data will be used to define extent of contamination, re-evaluate remedial

alternatives presented in the Feasibility Study (FS) (Shaw, 2011) and revise/update, accordingly, the Proposed Plan (PP) and the Record of Decision (ROD) prior to finalization.

1.2 Objective

The primary objectives of this PSI Addendum field effort are as follows:

- Determine whether or not groundwater is present in the Shallow Zone aquifer near Building 46A;
- Determine if groundwater in the Shallow Zone, if present, is impacted by VOCs and to what extent;
- Determine if unsaturated soil overlying historical high groundwater levels in the Shallow Zone has been impacted by VOCs at Building 46A and to what extent;
- Define the extent of residual TCE dense non-aqueous phase liquid (DNAPL); and,
- Eliminate data gaps by defining the spatial boundary of VOC (TCE) contamination in the Upper Intermediate Zone groundwater.

1.3 Scope

The scope of the field work will include the following activities:

- Advancement of 24 DPT boreholes;
- Collection of up to 4 soil samples per boring and analysis for VOCs in an onsite mobile laboratory to provide real time data to guide placement of subsequent boreholes;
- Installation of 1-inch temporary wells at each DPT location for collection and analysis of groundwater samples;
- Collection of 1 Upper Intermediate groundwater sample from 12 DPT locations for VOC analysis at the onsite mobile laboratory;
- Collection of 2 groundwater samples (1 each from the Shallow Zone and Upper Intermediate Zone) from 12 DPT locations for VOC analysis at the onsite mobile laboratory;
- Collection and analysis of groundwater samples, if water is present, from Shallow Zone wells 47WW13, 47WW24, 47WW25, and LHSMW50, Upper Intermediate Zone well 47WW25R, and Intermediate Zone wells 47WW14 and 47WW37;
- Collection of soil and groundwater split samples at a rate of 10 percent for VOC analysis at a stationary laboratory;
- Installation and development of 6 Upper Intermediate Zone wells to a maximum depth of 50 ft bgs (A minimum of one, but up to 3 of these wells will be installed as Shallow Zone wells depending on data results);
- Installation and development of 1 lower Intermediate Zone well to a maximum depth of 60 ft bgs;
- Installation and development of 1 Deep Zone well to a maximum depth of 120 ft bgs;
- Purge and collection of 1 groundwater sample for VOC analysis at a stationary laboratory from each newly installed well;
- Surveying of all newly installed well locations by a licensed Texas land surveyor;
- Abandonment of well 47WW25R; and
- Handling and disposal of IDW development/purge water and soil cuttings.

2 Field Investigation Activities and Methods

This section provides the activities and methods to be used to perform groundwater and soil sampling and analyses, well installation and development, well surveying, well abandonment, IDW handling and disposal, and quality control/quality assurance procedures and data validation.

Field efforts will focus on delineating the spatial extents of contamination in unsaturated soil and in groundwater around Building 46A. Soils will be compared to the TCEQ MSC GWP-Ind for TCE (0.5 milligrams per kilogram [mg/kg]) and the groundwater plume extent will be defined by exceedance of the MCL of 5 ug/L. The extent of TCE residual DNAPL will be based on the 1% solubility rule, that is, groundwater concentrations above 10,000 ug/L.

In total, soil borings will be advanced at 24 locations using a GeoProbe 7730 DT rig outfitted with dual sampling tubes. Initially, 8 DPT borings will be advanced to fill soil and groundwater data gaps. Soil and groundwater samples collected will be analyzed onsite in a mobile laboratory to provide real time data. The remaining boring locations will be selected in the field based on the real-time results of the samples collected from the pre-selected borings.

2.1 DPT Advancement: Soil and Groundwater Sampling and Analyses

The dual tube method uses two sets of probe rods to collect continuous soil cores, where the larger diameter set of rods is driven into the ground as an outer casing. These outer rods receive the driving force from the hammer and provide a sealed hole from which soil samples may be recovered without the threat of cross contamination. The second, smaller set of rods are placed inside the outer casing. The smaller rods hold the macro sample liner in place as the outer casing is driven one sampling interval (~5 ft bgs) at a time. The small rods are then retracted to retrieve the macro core sample liner. After retrieval, the acetate sleeve containing the soil core will be removed from the sample barrel and screened using a calibrated photo-ionization detector (PID) and logged using the Unified Soil Classification System Standard Practice for Classification of Soils. Soil samples will be collected using Terra Core™ kits.

Eight DPT soil boring locations have been selected to fill data gaps where insufficient data exists to determine boundaries of the spatial extent of VOC contamination (**Figure 1**). Additional boring locations will be determined in the field based on real time analytical results provided by the onsite mobile laboratory. Historic high water table levels will be considered when determining the depth of unsaturated soils; in general, this is approximately 182 ft ground elevation or 23 feet bgs, based on 2007 data (Shaw, 2011).

The first eight DPTs will be located near Building 46A as shown in **Figure 1** and described in this section. Five of these borings will be advanced to approximately 50 ft bgs and terminate no more than ten (10) feet into the Upper Intermediate Zone sand. The remaining three borings will be advanced to approximately 30 ft bgs and terminate in the clay separating the Shallow Zone sand about two feet above the Upper Intermediate sand. Depth control for the 30-foot DPTs will be based on contacts derived from the November 2019 PSI Addendum No. 2 field boring logs for DPT-001, DPT-003, DPT-007, DPT-10 and DPT-011. Soil samples will be collected from the unsaturated interval in each of the 8 borings to approximately 23 feet bgs. Groundwater samples will be

collected from the Shallow Zone groundwater, if present, in all 8 of the borings and from the Upper Intermediate Zone in five of the borings. The remaining 16 boring locations will be selected in the field based on the real-time results of the samples collected from the pre-selected borings.

Four soil samples will be collected from the 8 borings at varying depths and analyzed for VOCs. The sample depths will be based on visual signs of contamination, presence of an odor, and/or PID readings. A mobile laboratory will be located onsite to analyze soil samples, while ten (10) percent will be split and sent to a stationary lab (MicroBac Laboratories) for correlation/regression analysis to confirm the on-site results. Soil samples will be analyzed using USEPA Method SW8260B and have a reporting limit of 25 micrograms per kilogram (µg/kg). Once samples have been selected from the macro core and collected, they will be immediately delivered to the onsite lab for sample preparation and analysis. It is estimated that a maximum of 16 samples will be collected and analyzed on any given work day. Sample results will be provided at the beginning of each work day to support the selection of additional boring locations. The onsite mobile laboratory services will be provided by Pace Analytical Services, LLC (Pace). Pace is accredited under the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) and TCEQ National Environmental Laboratory Accreditation Program (NELAP) programs. The list of analytes, minimum number of samples, and method are provided in **Table 1**.

The DPT sampling equipment will be decontaminated after each interval to prevent cross contamination. Decontamination water will be containerized and disposed at the groundwater treatment plant (GWTP). Excess soil cuttings not collected for a sample will be containerized in Department of Transportation (DOT) approved 55-gallon open-top drums and left adjacent to the borehole until categorized as either hazardous or non-hazardous. A sample from the excess soils will be sent to a stationary lab and analyzed using the toxicity characteristic leaching procedure (TCLP) for the full suite of toxicity characteristics (i.e, VOCs, semi-volatile organic compounds [SVOCs], herbicides, pesticides, and metals/mercury), ignitability, corrosivity, and reactivity to determine hazardous waste characteristics. If the excess soil is determined to be non-hazardous it will be removed from the drums and spread on the ground adjacent to the borehole. The field work will follow methodologies and procedures described in the AECOM 2014 IWWP.

2.2 Temporary Well Installation: Groundwater Sampling and Analysis

All 8 DPTs will be used to sample the Shallow Zone groundwater, if present, and 5 of the 8 DPTs will be used to sample Upper Intermediate Zone groundwater. In addition, if groundwater is present, samples will be collected from Shallow Zone wells 47WW13, 47WW24, 47WW25, and LHSMW50, Upper Intermediate well 47WW25R and Intermediate wells 47WW14 and 47WW37 (**Figure 2**).

The dual tube method will be used to isolate Shallow Zone groundwater from the Upper Intermediate Zone. Where Shallow Zone groundwater is present, the larger diameter set of rods will be driven into the saturated zone and terminate above the clay confining unit separating the Shallow Zone from the Upper Intermediate Zone. Shallow Zone temporary wells will be completed to represent both the Shallow Zone sand and the underlying clay terminating no deeper than two feet above the Upper Intermediate Zone clay. This requires that the temporary Shallow Zone wells be completed in an area where there is existing information for the depth at which the Intermediate Zone sand begins. For the Intermediate Zone wells, the larger diameter set of rods will be driven through the confining

clay unit no less than one full foot into the Upper Intermediate Zone sand and serve as an outer casing. Temporary 1-inch PVC wells with 10 foot screens and 0.01-inch slot size will then be installed. Where Shallow Zone groundwater is present, 2 samples will be collected: one from the Shallow Zone groundwater and one from the Upper Intermediate Zone groundwater. Using this approach, all 8 DPT boring locations will evaluate the Shallow Zone, if present, and 5 of the 8 will evaluate the Upper Intermediate Zone groundwater. One sample will be collected for VOC analysis from each of these temporary wells.

After adequate time has been allowed for the well to equilibrate, water level measurements will be recorded. If adequate water is not available, the following steps will be taken to allow for accumulation of a sufficient volume of groundwater in the borehole for VOC analysis:

- Review water levels from adjacent wells;
- Review lithology from acetate liner and from the nearest available boring logs;
- If there is potential for smearing, allow 3 to 4 hours for adequate breakthrough prior to sampling; and
- If after 3 to 4 hours water is still not observed, evaluate whether the borehole should remain open for 24 hours before abandoning.

If the temporary well does not produce water, the casing will be pulled and the borehole abandoned in accordance with the District Rules, Pineywoods Groundwater Conservation District and pertinent requirements of 30 TAC 76.1004 and 30 TAC 76.1005. Once the temporary well has reached equilibrium and sufficient water is present to pull a VOC sample, water level measurements will be recorded and the sample collected.

Discrete grab groundwater samples will be collected from each DPT boring using low flow techniques. This will be accomplished with a bailer by gently lowering and raising the bailer in the water column until the bailer is full. Once full, the bailer will be removed from well and the sample collected. If needed, the process will be repeated until a sufficient volume of water has been collected from the well. All samples collected from the temporary wells will be analyzed for VOCs in the onsite mobile lab. **Table 1** provides the list of analytes, minimum number of samples, and method to be used.

2.3 Well Installation, Development, and Groundwater Sampling and Analysis

A total of 8 new monitoring wells are planned for installation: one Shallow Zone well will be installed to replace 47WW25R and completed several feet into the underlying clay no deeper than two feet above the Upper Intermediate Zone sand; five Upper Intermediate Zone wells will be installed to a maximum depth of 50 ft bgs (a minimum of one, but up to two of these Upper Intermediate Zone wells will be installed as Shallow Zone wells depending on data results); one intermediate well will be installed to approximately 60 ft bgs; and one deep well will be installed to 120 ft bgs. New well locations will be determined based on the findings of the DPT soil and groundwater sample results. Monitoring wells will be installed using hollow-stem auger (HSA) and sonic drilling techniques. The monitoring wells will be installed in the annulus of the HSA augers and/or inside the telescoping drill stem of the sonic rig. Well installation and development will follow the procedures specified in the IWWP (AECOM, 2014).

Each well will be constructed with flush-joint threaded, schedule 40 PVC. The PVC well screen will be constructed with 0.01 inch slots and be 10 feet in length. A threaded PVC bottom cap will be secured to the bottom of the screen interval. Solid PVC casing will be installed from the top of the screen interval to approximately three feet above surface grade. A filter pack consisting of clean silica sand (20 to 40 size) will be placed in the auger or drill stem annulus from the well bottom to approximately two feet above the screen interval. For Shallow Zone wells, if installed, the bottom of the well (the blank pipe, end cap or sump) will be in the underlying clay no deeper than two feet above the Intermediate Zone sand. For Upper Intermediate Zone wells, the filter pack will begin no less than one full foot below the clay separating the Intermediate Zone sand from the Shallow Zone sand so that the filter pack would not have contact with the overlying clay. A three foot thick bentonite seal (pellets or chips) will be placed above the sand filter pack and hydrated with potable water. The annular space from the top of the bentonite seal to the surface will be filled with a bentonite-cement grout.

For the intermediate and deep wells, the Shallow Zone groundwater will be isolated using a suitable diameter schedule 40 PVC casing. The casing will be installed from the surface grade to the base of the clay unit separating the Shallow Zone sand and Upper Intermediate Zone sand. The depth is expected to be between 30 and 37 ft bgs. Upon grouting and setting of the surface casing, drilling will proceed into the intermediate and deeper zones.

The drilling equipment will be decontaminated prior to the arrival at the site and between wells. Upon completion of drilling activities the drilling equipment will be decontaminated prior to demobilizing and leaving the installation. Core samplers will be decontaminated between sampling intervals with a detergent/water solution and multiple rinse stages in clean buckets. Decontamination water will be containerized and disposed at the GWTP. Excess soil cuttings not collected for a sample will be containerized in DOT approved 55-gallon open top drums and left adjacent to the borehole until categorized as either hazardous or non-hazardous.

Well surface completions will be constructed for each monitoring well installed. Surface completion will consist of an above-ground protective steel casing (approximately 4 ft), with a hinged, lockable lid set in a concrete pad. Concrete-filled steel bollards will be installed at the corners of the concrete pad. The monitoring wells and surface completions will be installed in general accordance with State of Texas requirements by a drilling subcontractor (Walker-Hill) licensed in the State of Texas. Monitoring wells will comply with applicable technical requirements of 30 Texas Administrative Code (TAC) Chapter 76. State of Texas Well Reports will be submitted to the Texas Department of Licensing and Regulation for each well installed.

Well development will be performed by pumping and gentle surging of the screened interval using a surge block. For low yielding wells, a bottom-filling bailer may be used to remove groundwater. A minimum of three well borehole volumes of water will be removed. The volume of groundwater removed from each well will be calculated from the static water level measurement referenced from the top-of-casing. An electronic interface probe will be used to measure the water levels.

Water quality parameters (temperature, pH, electrical conductivity, and turbidity) will be monitored during development. Development will continue until the water quality parameters have stabilized and the water is visually clear. Development water will be containerized and disposed at the GWTP.

One groundwater sample will be collected from each newly installed well and sent to a stationary laboratory for analysis. The wells will be purged using low flow techniques. Prior to purging the monitoring wells, water level measurements will be collected and recorded. Purging will be

considered complete when measurements of temperature, pH, electrical conductivity, and turbidity have stabilized. Stabilization will be defined as follows: 1) temperature ±10% °C; 2) pH ±0.1 units; 3) electrical conductivity ±3% µS/cm; and 4) turbidity ±10%. With the exception of turbidity, measurements will be collected using an inline flow cell. Turbidity will be collected separately using a turbidity meter. Purge volumes from each well will be recorded. Again, purge water will be collected in DOT approved open top drums, or similar container, and disposed at the GWTP.

Once the groundwater samples have been collected they will be sent to the analytical laboratory (Microbac Laboratories, Inc.) for analysis of VOCs utilizing USEPA Method SW8260B. Sample collection and handling will be conducted in accordance with the IWWP (AECOM, 2014).

2.4 Surveying

A professional land surveyor licensed in the State of Texas will survey the locations and elevations of the newly installed monitoring wells. The horizontal coordinates (northing and easing) of the wells will be surveyed to the nearest foot and will be based on the North American Datum of 1983. The vertical elevations of the top of the wells (top-of-casing) will be based on the North American Vertical Datum of 1988 and will be surveyed to the nearest 0.01 feet at a reference point (i.e., groove or marking on the north side of the well casing) used to collect water level measurements. The ground surface elevation at each well location will be surveyed to the nearest 0.1 feet.

HDR will collect the horizontal coordinates (northing and easting) at each borehole location using a Trimble Global Positioning Unit. The Trimble will have the capability of collecting horizontal coordinates with sub-meter accuracy. The data will be based on the North American Datum of 1983 and used to develop geospatially referenced site maps, figures, and to update existing cross-sections.

2.5 Well Abandonment

After sampling, well 47WW25R will be plugged and abandoned in accordance with the District Rules, Pineywoods Groundwater Conservation District and pertinent requirements of 30 TAC 76.1004 and 30 TAC 76.1005. The well is open a few feet into the overlying clay confining unit, which is believed to contain residual TCE DNAPL. Therefore, concentrations of TCE observed at 47WW25R may not be representative of groundwater in the Upper Intermediate Zone and the potential for cross contamination should be eliminated. In general, the well will be abandoned in place by grouting from bottom to top with a cement-bentonite grout. When completed, a well abandonment report and notice required by the Texas Water Development Board and Texas Department of Licensing and Regulation will be submitted. Note: Shallow Zone well 47WW25R will be replaced with a well completed several feet into the underlying clay no deeper than two feet above the Upper Intermediate Zone sand.

2.6 Investigative Derived Waste Handling and Disposal

IDW generated during the investigation will include soil cuttings, disposable sampling equipment, development and purge water, equipment decontamination fluids, and personal protection equipment (PPE). IDW (except PPE, disposable sampling equipment, and decontamination fluids/development/purge water) will be containerized pending analytical results and waste profiling.

The IDW management storage and disposal will be performed in accordance with the IWWP (AECOM, 2014).

2.7 Quality Assurance/Quality Control and Data Validation

To ensure defensible data, HDR will meet the project-specific Data Quality Objectives (DQOs) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC) by collecting the proper quantities and types of samples, using the correct analytical methodologies, implementing field and laboratory QA/QC procedures, and using various data validation and evaluation processes. QC samples will be submitted to the onsite mobile lab, as well as the stationary lab. Confirmation soil and groundwater samples, collected at a rate of 10 percent, will be split and sent to a stationary laboratory to correlate the onsite mobile laboratory results.

Field QC will be performed during sample collection, shipping, and handling. Sample QC for the analytical samples will be assessed through the use of duplicate samples. Duplicate samples, which are used to evaluate field and laboratory precision, will be collected at a rate of 10%.

A matrix spike/matrix spike duplicate (MS/MSD) sample pair, which is used by the laboratory to measure matrix interference, will be collected at a rate of 5% for each analysis. Since the observed lithology is relatively heterogeneous across the site, the MS/MSD and QC sample locations will be selected in the field to achieve a distribution.

Trip blanks are analyte-free water (typically deionized water) shipped from the lab with the sample jars and subsequently submitted with the samples collected for VOC analyses. Trip blanks are used to document contamination attributable to shipping and field-handling procedures, as well as contamination associated with the containers. For this effort, trip blanks will be placed in all coolers that contain samples to be analyzed for VOC.

A temperature blank provided by the laboratory will be included in each sample cooler. A temperature blank is a sample of laboratory-grade distilled water that travels with the project cooler from the laboratory to the sampling site and back to the laboratory without being opened. The temperature of the blank is obtained by the laboratory when samples are received to verify that the temperature of the samples during transportation did not exceed 4°C.

The HDR project chemist will complete a data quality review of all analytical results IAW the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2017).

Review of the analytical data will be completed as a Stage 2AVM Validation as described in the USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA, 2009), while 10% will be completed as a Stage 3VM Validation. Upon completion of the data validation, a validated data package will be submitted prior to submittal of the Army Draft PSI Addendum Report.

2.8 Reporting

At the completion of the PSI Addendum field investigation, the HDR Project Chemist will review and validate the analytical results and prepare the data validation report. HDR will then prepare the PSI Addendum No. 2 report, which will be an expansion of the Draft Interim PSI Addendum 2 Report prepared in December 2019. The addendum will contain an introduction, sampling approach,

sample results and evaluation, and a conclusions section. Figures will be prepared presenting iso-concentration maps of the Shallow Zone groundwater plume (if present), the Upper Intermediate Zone groundwater plume, and the extent of the exeedance of the TCEQ MSC GWP-Ind screening level in unsaturated soil. The groundwater maps will display the extent of residual DNAPL (>1% of solubility) present. The cross sections will present soil and groundwater sample results, water levels, and lithology, and include data collected during the November 2019 investigation. Results and conclusions from the report will be used to supplement historical data, as necessary, re-evaluate remedial alternatives presented in the FS and revise/update, accordingly, the PP, and inform the ROD prior to its finalization.

Figure 1. Proposed DPT Soil and Groundwater Sample Locations at Building 46A Area

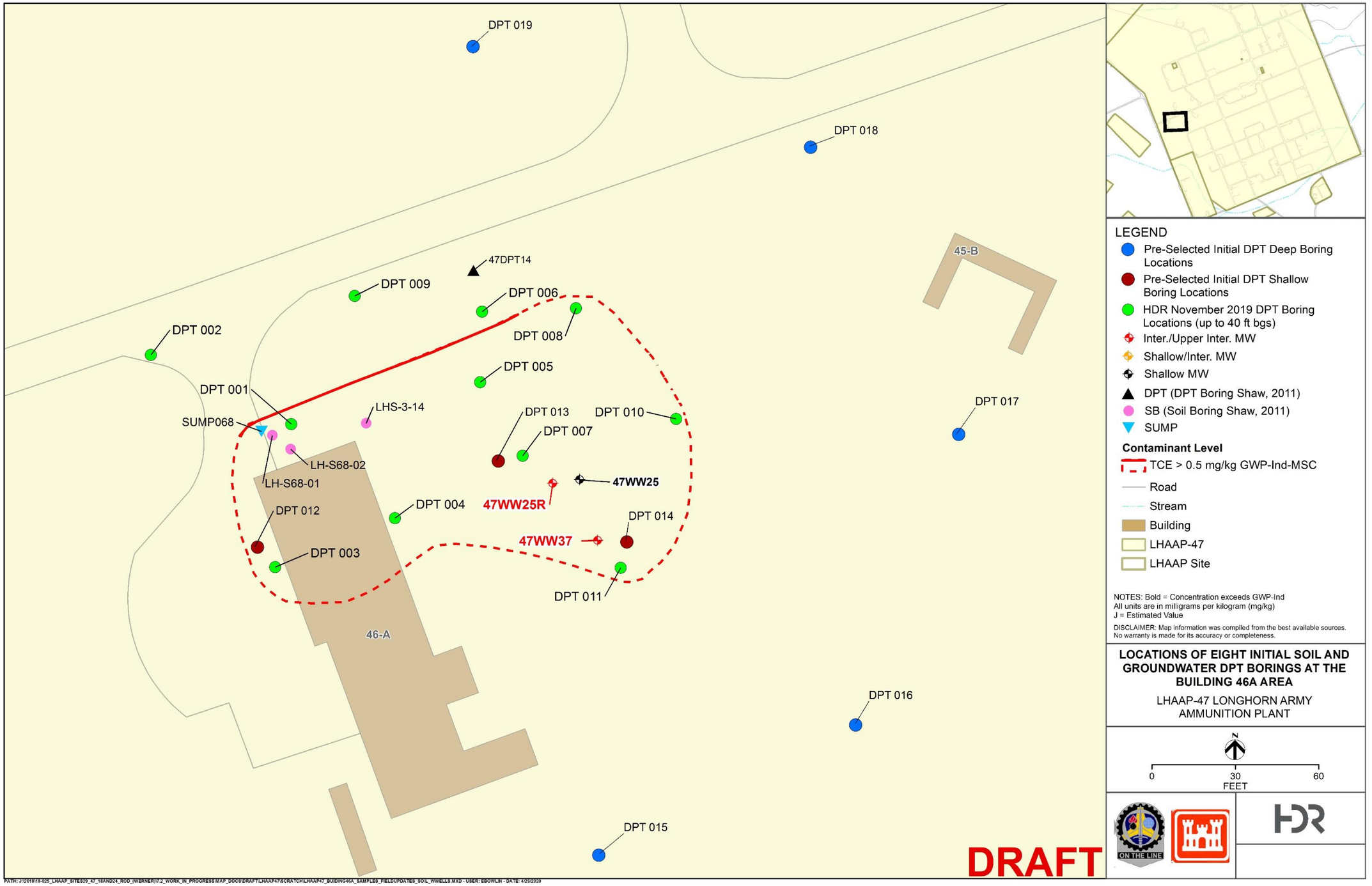

Figure 2. Proposed Shallow and Upper Intermediate Groundwater Sample Locations

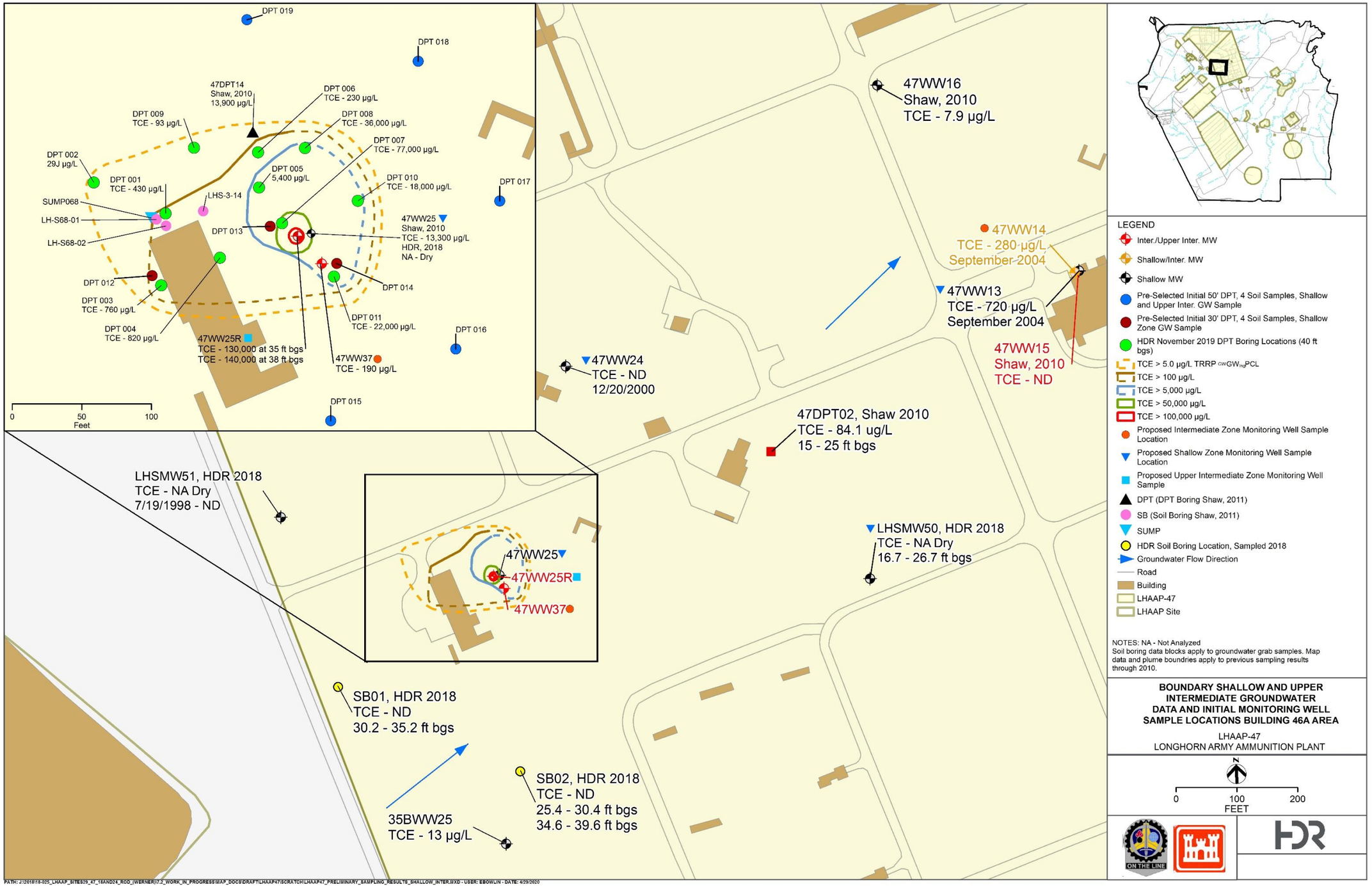

Table 1. Soil and Groundwater Analytical Sample Summary

Parameter/Method	Matrix	Field Samples	No. of Dups	No. of MS	No. of MSD	Equipment Blanks	Trip Blanks	Total No. of Samples
Onsite Mobile Laboratory Samples								
VOCs SW 8260B	Soil	96	10	5	2	2	0	115
VOCs SW 8260B	Water	43	4	2	2	2	0	53
Stationary Laboratory Samples								
VOCs SW 8260B	Soil	10	1	1	1	0	1	14
VOCs SW 8260B	Water	12	1	1	1	0	1	16
TCLP VOCs 1311/8260B	Soil	1	0	0	0	0	0	1
TCLP SVOCs 1311/8270C	Soil	1	0	0	0	0	0	1
TCLP Metals/Mercury 1311/6010C/7470A	Soil	1	0	0	0	0	0	1
TCLP Herbicides 1311/8151	Soil	1	0	0	0	0	0	1
TCLP Pesticides 1311/8081A/B	Soil	1	0	0	0	0	0	1
Ignitability (flash point)	Soil	1	0	0	0	0	0	1
Corrosivity	Soil	1	0	0	0	0	0	1
Reactivity	Soil	1	0	0	0	0	0	1

3 References

AECOM, 2014. Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant, Karnack, Texas. July, 2014.

AECOM, 2016. Draft Final Post-Screening Investigation Work Plan, LHAAP-47, Plant Area 3, Longhorn Army Ammunition Plant, Karnack, Texas. December, 2016.

HDR, 2019. Final Post Screening Investigation Report, LHAAP-47, Longhorn Army Ammunition Plant, Karnack, Texas. March, 2019.

HDR, 2020. Draft Technical Memorandum: LHAAP-47 Interim Post-Screening Investigation Addendum 2 Report for LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production Longhorn Army Ammunition Plant Karnack, Texas. December, 2020.

Shaw, 2011. Final Feasibility Study LHAAP-47, Plant 3 Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas. July, 2011.

USEPA, 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. OSWER No. 9200.1-85. January.

USEPA, 2017. National Functional Guidelines for Superfund Organic Methods Data Review. OLEM 9355.0-136. January

Subject:	**Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**Teleconference**
Date of Meeting:	**22 April 2020– 10:30 Central Daylight Time (CDT)**

Attendees:

Army BRAC:	Rose M. Zeiler (RMZ)
USEPA:	Bill Rhotenberry (BR) and Kent Becher (KB)-USGS Liaison
AEC:	Andrew Maly (AM)
TCEQ:	April Palmie (AP)
USACE:	Aaron Williams (AW)
Bhate:	Kim Nemmers (KN)
APTIM:	Bill Foss (BF) and Praveen Srivastav (PS)
USFWS:	Paul Bruckwicki (PB)

Defense Environmental Restoration Program (DERP) Performance-Based Remediation (PBR) Update

Army – RMZ said that she has reconsidered preparing a letter regarding submittal of electronic copy to the Regulators until Bhate/APTIM are able to produce hard copies and CDs. After reviewing the language in the cover letter for Year 5 RA-O for LHAAP-50, she thought that Bhate/APTIM did a good job explaining the process, and suggested this issue can be handled with this same approach for future documents until restrictions relax. The letter for LHAAP-50 had not yet been released but if Regulators concur then this will be the approach. AP and BR concurred that the approach to include language in the cover letters about providing hard copies in the future was acceptable when transmitting each document. AP pointed out that draft letters are not included in the administrative record (AR). RMZ said that letters for draft documents were supposed to be included in the AR and certainly should be going forward. While still on the call, BF sent out the submittal email for LHAAP-37 Final Second Annual RA-O Report and April said that the explanation in the letter of that report was acceptable.

COVID-19 Updates: BR said that he appreciates the release of the H&S documentation regarding COVID-19. PB said that the vegetation is growing up along the roads because they haven't been able to have anyone onsite.

Groundwater Treatment Plant (GWTP) –.KN explained that the air stripper had a second acid wash to increase the efficiency of the media. KN stated that the granular activated carbon (GAC) vessel was also brought online. While the detected trichloroethene (TCE) has reduced below the maximum contaminant level (MCL) of 5 micrograms per liter (µg/L), consistency in having lower TCE results is still needed. KN said that it was still being determined whether the GAC vessel was providing treatment and that it would be backwashed further the following week. KN said that the acid wash did remove additional material from the media. RMZ clarified that the treated effluent was still being discharged to the bayou, which KN confirmed. KN then mentioned the loss of power due to storms two weekends prior but stated that there had been no other issues at the GWTP.

May 2020 Groundwater Sampling – PS stated that the 2nd LHAAP-37 semiannual sampling event and LHAAP-04 performance sampling was planned for May.

Additional Well Installation at LHAAP-46- BF discussed the additional well installation planned for LHAAP-46, and referenced a figure provided via electronic mail (email) ahead of the call. BF explained that groundwater flow direction is to the east but may have some northeasterly component.

BF also explained that the purpose of the well is to delineate the plume in that northeasterly location. AP asked about the detection in LHSMW21. PS indicated that the data is included with the validated data for the meeting and that the detection of cis-1,2-dichloroethene was 170 µg/L. BF said that the chlorinated compounds had been increasing over time in LHSMW21. KB indicated that the well is offset to the east and asked why it wasn't being placed to the northeast, more in line with the plume configuration. RMZ said that the topography (rule of thumb in humid climates) were considered, due to limited groundwater flow data, such that the groundwater flow is expected to mimic a flow line based upon the topography. KB agreed with the approach. AP also agreed with the approach but said that monitoring of LHSMW21 should be continued, since it is close to the land use control (LUC) boundary. RMZ said that the intermediate groundwater has a northerly flow, but the shallow groundwater has an easterly flow. BF said that no surface water sampling has been required due to groundwater depth. AP asked for confirmation that the plume is still not discharging to the creek to which BF and RMZ concurred. BF confirmed that the bottom of the creek is 197 feet above mean sea level (amsl) and groundwater is at 187 feet amsl, which is about 10 feet of difference between the bottom of the creek and the groundwater. Therefore, the groundwater and surface water are not connected. AP asked when the well is planned to be installed. BF said that they are considering installing the well in May 2020 pending driller availability. PS stated that the plan is to ideally install the well when onsite to complete the well abandonments in late May or early June 2020. BR and AP said they would send an email confirming their approval for the well installation.

KN asked everyone to refer to the Document and Issues Tracking Table dated 22 April 2020.

- **Task 1** (Project Management) – KN stated that minutes from the March 2020 MMM had been finalized and that the Restoration Advisory Board (RAB) is planned for 15 July 2020 at this time. PS said that the LHAAP website is updated showing the cancellation of the RAB in April and the new July 2020 meeting date.
- **Task 3** (LHAAP-03) – PS said that no documents are in process. Field work is still on hold due to wet weather to complete the excavation.
- **Task 4** (LHAAP-04) – PS said that the Remedial Action Completion Report (RACR) is under review by the Army and will be provided next month (May).
- **Task 5** (LHAAP-12) – PS said that the Remedial Action Operation (RA-O) Report is in preparation.
- **Task 6** (LHAAP-16) – PS said that an additional round of design effectiveness sampling was completed early in March 2020 and that data is in the MMM data package. PS said that this additional round of data was collected based upon prior discussions. BF said the data will be discussed in the RACR and that the data does not suggest any significant differences from the first round of design effectiveness sampling. The validated data from the first quarterly sampling event in March 2020 will be provided for the May 2020 MMM. PS stated that the RACR is in progress and will be provided in June following Army review.
- **Task 7** (LHAAP-17) – PS explained that no documents are in progress but the backfilling of the clean excavations will occur when the site is drier.
- **Task 9** (LHAAP-37) – PS stated that the Year 3, 2nd semiannual sampling is scheduled for May and that the data will be provided in July 2020. PS stated that the Year 2 Annual RA-O Report is going final. PS said that AP provided a comment requesting addition of a note regarding corrections of the sample collection logs. PS stated that the note was added to the cover sheet of the appendix. BF sent an email with the document and the transmittal letter previously discussed, with the language for the electronic submittal included. AP said the letter looked good to her.

- **Task 10** (LHAAP-46) –PS stated that the Year 5 Annual RA-O data report was in internal review and should be submitted for regulatory review in May 2020. PS stated that the Year 6 sampling was completed in February 2020 and that the validated data is included for the meeting.
- **Task 11** (LHAAP-50) –PS stated that the RACR is in progress for submittal for regulatory review in June 2020. PS stated that the Year 5 RA-O Report is in internal review and should be submitted for regulatory review in April 2020.
- **Task 12** (LHAAP-58) – KN stated the March 2020 validated data for the western plume would be provided at the May 2020 MMM. KN stated that OPS Report was being prepared and that the Year 6 RA-O Report will be prepared following receipt of the June 2020 validated results. KN explained that the groundwater monitoring will move to semiannual starting in June 2020 for both the eastern and western plumes.
- **Task 13** (LHAAP-67) –PS stated that the Year 6 Report was being prepared with an estimated date of June 2020 to the Regulators.
- **Task 14** (LHAAP-001-R and –003-R) - KN stated that Annual LUC Report had been submitted for regulatory review on 15 April 2020.
- **Task 16** (GWTP) **–** KN indicated that the 4th Quarter 2019 GWTP Report was submitted the day before (21 April 2020) for regulatory review. KN stated that the data needed to prepare the 1st Quarter 2020 report had just been received and so that report was in preparation.
- **Task 17** (LHAAP-18/24) – KN stated that the validated data from the LHAAP-18/24 sampling completed in December 2019 will be included in the 4th Quarter 2019 GWTP Report.
- **Task 18** (Surface Water) – KN stated that 2nd Quarter 2020 surface water samples were collected on 20 April 2020 and that the validated data will be provided for the May 2020 MMM.
- **Task 19** (LUC Management Plan) – Not discussed.
- **Task 20** (Well Plugging and Abandonment) – PS confirmed that late May/early June is planned for the well plugging and abandonment. PS said that the additional well at LHAAP-46 would ideally be installed at the same time.
- **Administrative Record (AR) –**PS said that the June 2019 cutoff is done with the exception of the binders and compact discs (CDs). The binders and CDs have to undergone a quality control (QC) review, but that work was delayed due to the Stay Home order in Houston. The final QC will be completed and then the binders will be sent off once the Stay Home order is lifted. However, PS explained that the information is uploaded onto the website (completed yesterday). If anything comes up during the final QC review, then adjustment can be made and the file reloaded. PS said that the September 2019 cutoff has been Bate stamped and now just needs to be copied. PS said that the December 2019 is being compiled now.

Update on other DERP Sites:

- **LHAAP 18/24** and LHAAP-29 –AW stated that the final Record of Decisions (RODs) are being placed into AR.
- **LHAAP-47** – AW explained that the Post-Screening Investigation (PSI) Work Plan Addendum Number 2 was submitted on 13 April 2020 and that TCEQ comments were received on 15 April 2020. BR said that he will get his comments in as soon as possible. AW stated that drillers can be onsite in late May if PSI Work Plan can be approved.

Contract update – **LHAAP-18/24:** AW indicated that the scope of work is ready but the Architect-Engineer (A-E) firms had to be evaluated based upon risks to the Government. Once the review is

approved, the Request for Proposal (RFP) can be issued. AW stated that he is hoping for the RFP to be release in May with a June award date.

LHAAP-17: AW said the scope of work is drafted and is going through Army review. AW is hoping that an RFP will be out at the end of June. A mid-July site walk depends upon the COVID-19 status. Then award would be completed in this fiscal year.

USFWS Update: PB discussed the storms that came through the prior weekend. PB stated that lots of trees came down and that someone was out to remove the trees.

Schedule Next Managers' Meeting
The next MMM will be held on Wednesday 20 May 2020 at 10:30 am CDT via conference call.

Meeting concluded at approximately 11:20 am CDT.

ACRONYM LIST

µg/L	micrograms per liter
A-E	Architect-Engineer
AM	Andrew Maly
amsl	above mean sea level
AP	April Palmie
APTIM	APTIM Federal Services, LLC
AR	Administrative Record
AW	Aaron Williams
BF	Bill Foss
Bhate	Bhate Environmental Associates, Inc.
BR	Bill Rhotenberry
BRAC	Base Realignment and Closure
CD	Compact Disc
CDT	Central Daylight Time
DERP	Defense Environmental Restoration Program
Email	Electronic Mail
GAC	Granular Activated Carbon
GWTP	Groundwater Treatment Plant
KB	Kent Becher
KN	Kim Nemmers
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MMM	Monthly Managers' Meeting
PB	Paul Bruckwicki
PBR	Performance-Based Remediation
PS	Praveen Srivastav
PSI	Post-Screening Investigation
QC	Quality Control
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RA-O	Remedial Action – Operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
RFP	Request for Proposal
RMZ	Rose M. Zeiler

ROD	Record of Decision
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

LHAAP Validated Data Packages for
April 2020 Monthly Manager's Meeting

LHAAP Area	Analytic Method
LHAAP-16	***March 2020 Design Effectiveness Sampling Event #2***
	Bromide (SW9056A)
	Total Organic Carbon (SM5310B)
	Field Measurements (Dissolved Oxygen and Oxidation Reduction Potential)
LHAAP-46	***February 2020 Year 6 Annual RA-O Sampling***
	Volatile Organic Compounds (SW8260C)

LHAAP-16 Design Effectiveness Sampling Event #2 for Mid-Plume Shallow, Biobarrier #1, Biobarrier #2, Biobarrier #3, and Bayou Biobarrier Injection Areas
March 2020

		Injection Area	Mid-Plume Shallow					
		Location Code	16EW01		16EW02		16EW04	
		Sample ID	16EW01-200309		16EW02-200309		16EW04-200309	
		Sample Date	3/9/2020		3/9/2020		3/9/2020	
		Location Description:	Shallow; Inside Mid-Plume ISB Area		Shallow; Inside Mid-Plume ISB Area		Shallow; Inside Mid-Plume ISB Area	
Parameter	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual
Field Measurements								
Dissolved Oxygen	mg/L	NV	4.68		3.77		2.78	
ORP	mV	NV	-79		55		65	
General Chemistry (Methods SW9056A / SM5310B)								
Bromide	mg/L	NV	3.39		2.06		0.637	
Total organic carbon	mg/L	NV	13.4		6.48		3.4	

Notes:

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

mg/L - milligrams per liter

ID - Identification

Val Qual - Validation Qualifier

NV - No value MCL or PCL established

FD - field duplicate

ISB - in situ bioremediation

ORP - Oxidation-Reduction Potential

LHAAP-16 Design Effectiveness Sampling Event #2 for Mid-Plume Shallow, Biobarrier #1, Biobarrier #2, Biobarrier #3, and Bayou Biobarrier Injection Areas
March 2020

		Injection Area	Landfill Biobarrier #1									
		Location Code	16RW03		16RW04		16WW26		16WW42			
		Sample ID	16RW03-200309		16RW04-200309		16WW26-200309		16WW42-200310		16WW42-200310-FD	
		Sample Date	3/9/2020		3/9/2020		3/9/2020		3/10/2020		3/10/2020	
		Location Description:	Shallow; Within Landfill Biobarrier #1		Shallow; Downgradient of Landfill Biobarrier #1		Shallow; Downgradient of Landfill Biobarrier #1		Shallow; Downgradient of Landfill Biobarrier #3			
Parameter	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Field Measurements												
Dissolved Oxygen	mg/L	NV	0.32		0.2		0.07		1.52		1.52	
ORP	mV	NV	199		250		266		241		241	
General Chemistry (Methods SW9056A / SM5310B)												
Bromide	mg/L	NV	0.792		0.43		0.258		1.36		1.35	
Total organic carbon	mg/L	NV	1.04		3.17		2.27		1.73		1.68	

Notes:

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mg/L - milligrams per liter

ID - Identification

Val Qual - Validation Qualifier

NV - No value MCL or PCL established

FD - field duplicate

ISB - in situ bioremediation

ORP - Oxidation-Reduction Potential

LHAAP-16 Design Effectiveness Sampling Event #2 for Mid-Plume Shallow, Biobarrier #1, Biobarrier #2, Biobarrier #3, and Bayou Biobarrier Injection Areas
March 2020

		Injection Area	Landfill Biobarrier #2							
		Location Code	16IW04		16PM06		16PM09		16PM14	
		Sample ID	16IW04-200310		16PM06-200310		16PM09-200310		16PM14-200310	
		Sample Date	3/10/2020		3/10/2020		3/10/2020		3/10/2020	
		Location Description:	Shallow; Inside Mid-Plume ISB Area		Shallow, Performance Well, Downgradient of Barrier		Shallow, Performance Well, Downgradient of Barrier		Shallow, Performance Well, Downgradient of Barrier	
Parameter	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Field Measurements										
Dissolved Oxygen	mg/L	NV	0.06		0.09		0.64		0.08	
ORP	mV	NV	-79		-53		75		88	
General Chemistry (Methods SW9056A / SM5310B)										
Bromide	mg/L	NV	4.82		2.26		0.266		2.65	
Total organic carbon	mg/L	NV	7.68		8		3.33		10.5	

Notes:

MCL - Maximum Contaminant Limit

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mg/L - milligrams per liter

ID - Identification

Val Qual - Validation Qualifier

NV - No value MCL or PCL established

FD - field duplicate

ISB - in situ bioremediation

ORP - Oxidation-Reduction Potential

LHAAP-16 Design Effectiveness Sampling Event #2 for Mid-Plume Shallow, Biobarrier #1, Biobarrier #2, Biobarrier #3, and Bayou Biobarrier Injection Areas
March 2020

		Injection Area	Landfill Biobarrier #3						Bayou Biobarrier					
		Location Code	16RW08		16RW09		16RW10		16IW20		16RW12		16WW40	
		Sample ID	16RW08-200311		16RW09-200311		16RW10-200311		16IW20-200309		16RW12-200310		16WW40-200310	
		Sample Date	3/11/2020		3/11/2020		3/11/2020		3/9/2020		3/10/2020		3/10/2020	
		Location Description:	Shallow; Within Landfill Biobarrier #3		Shallow; Downgradient of Landfill Biobarrier #3		Shallow; Downgradient of Landfill Biobarrier #3		Shallow; Bayou Biobarrier Area		Shallow; Downgradient of Bayou Biobarrier		Shallow; Downgradient of Bayou Biobarrier	
Parameter	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Field Measurements														
Dissolved Oxygen	mg/L	NV	0.67		0.04		0.86		2.60		1.34		0.06	
ORP	mV	NV	28		53		50		-230		7		78	
General Chemistry (Methods SW9056A / SM5310B)														
Bromide	mg/L	NV	5.1		4.86		3.33		13.4		4.3		4.2	
Total organic carbon	mg/L	NV	2.6		2.56		4.08		10.7		2.56		9.79	

Notes:

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

mg/L - milligrams per liter

ID - Identification

Val Qual - Validation Qualifier

NV - No value MCL or PCL established

FD - field duplicate

ISB - in situ bioremediation

ORP - Oxidation-Reduction Potential

LHAAP-46 Year 6 Annual Remedial Action Operation Sampling
February 2020

Location Code			46WW02		46WW03				46WW05		46WW06		46WW07				46WW08	
Sample ID			46WW02-200213		46WW03-200219		46WW03-200219-FD		46WW05-200213		46WW06-200219		46WW07-200218		46WW07-200218-FD		46WW08-200218	
Sample Date			2/13/2020		2/19/2020		2/19/2020		2/13/2020		2/19/2020		2/18/2020		2/18/2020		2/18/2020	
Location Description:			Site 46 - Central, within site boundary, Intermediate Zone		Site 46 - Central, within site boundary, Deep Zone				Site 46 - North, within site boundary, Intermediate Zone		Site 46 - West, within site boundary, Intermediate Zone		Site 46 - North, within site boundary, Intermediate Zone				Site 46 - North-Northwest, within site boundary, Intermediate Zone	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Volatile Organic Compounds (Method SW8260C)																		
cis-1,2-Dichloroethene	µg/L	70	1.6		< 0.5	U	< 0.5	U	1.6		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	15		< 0.5	U	< 0.5	U	19		0.65	J	< 0.5	U	< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	0.65	J	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue highlighting indicates concentrations above the MCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

ug/L - micrograms per liter

< - less than

Val Qual - Validation Qualifier

ID - identification

FD - field duplicate

LHAAP-46 Year 6 Annual Remedial Action Operation Sampling
February 2020

Location Code			46WW09		46WW11				46WW16		LHSMW19		LHSMW21		LHSMW23R		LHSMW25	
Sample ID			46WW09-200213		46WW11-200213		46WW11-200213-FD		46WW16-200213		LHSMW19-200219		LHSMW21-200213		LHSMW23R-200219		LHSMW25-200219	
Sample Date			2/13/2020		2/13/2020		2/13/2020		2/13/2020		2/19/2020		2/13/2020		2/19/2020		2/19/2020	
Location Description:			Site 46 - Central, within site boundary, Intermediate Zone		Site 46 - Central, within site boundary, Shallow Zone				Site 46 - North, within site boundary, Intermediate Zone		Site 46 - Central, within site boundary, Shallow Zone		Site 46 - North, within site boundary, Shallow Zone		Site 46 - South, within site boundary, Intermediate Zone		Site 46 - East, within site boundary, Intermediate Zone	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Volatile Organic Compounds (Method SW8260C)																		
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	5.6		170		0.71	J	< 0.5	U
Trichloroethene	µg/L	5	< 0.5	U	14		14		< 0.5	U	19		36		0.65	J	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	2.4		< 0.5	U	< 0.5	U

Notes:

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