LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 44

2018

Bate Stamp Numbers
00903263 – 00905141

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2018

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

VOLUME 44

2018

A. Title: Report (cont'd) – Draft Quarterly Evaluation Report, 2nd Quarter (April–June) 2018, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Bhate Environmental Associates, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: October 8, 2018
Bate Stamp: 00903263 – 00905141

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND13.D Sample Name: 605276 QC@5.0

Injection Date:	6/14/2018 12:42:40	Seq Line:	13
Sample Name:	605276 QC@5.0	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.234	BBA	155938.1	5.2571	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.252	BBA	54056.7	5.1237	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.260	BBA	154533.9	5.0000	CLO4-89-ISTD

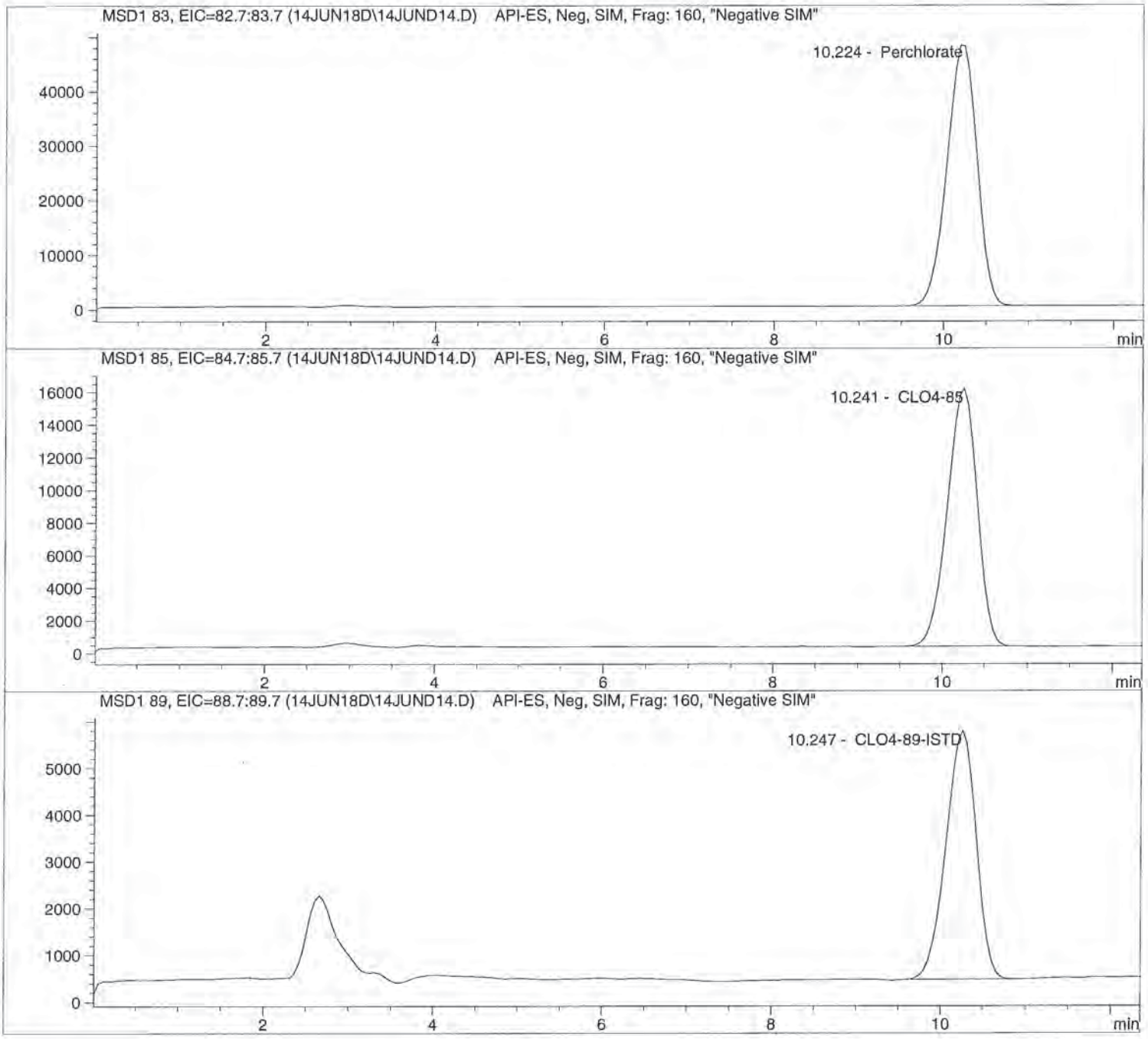
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND14.D Sample Name: 1815740001 1K

Injection Date:	6/14/2018 12:56:56	Seq Line:	14
Sample Name:	1815740001 1K	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND14.D Sample Name: 1815740001 1K

Injection Date:	6/14/2018 12:56:56	Seq Line:	14
Sample Name:	1815740001 1K	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.224	BBA	1181708.4	40992.8461	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.241	BBA	387841.8	39345.3921	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.247	BBA	132839.1	5000.0000	CLO4-89-ISTD

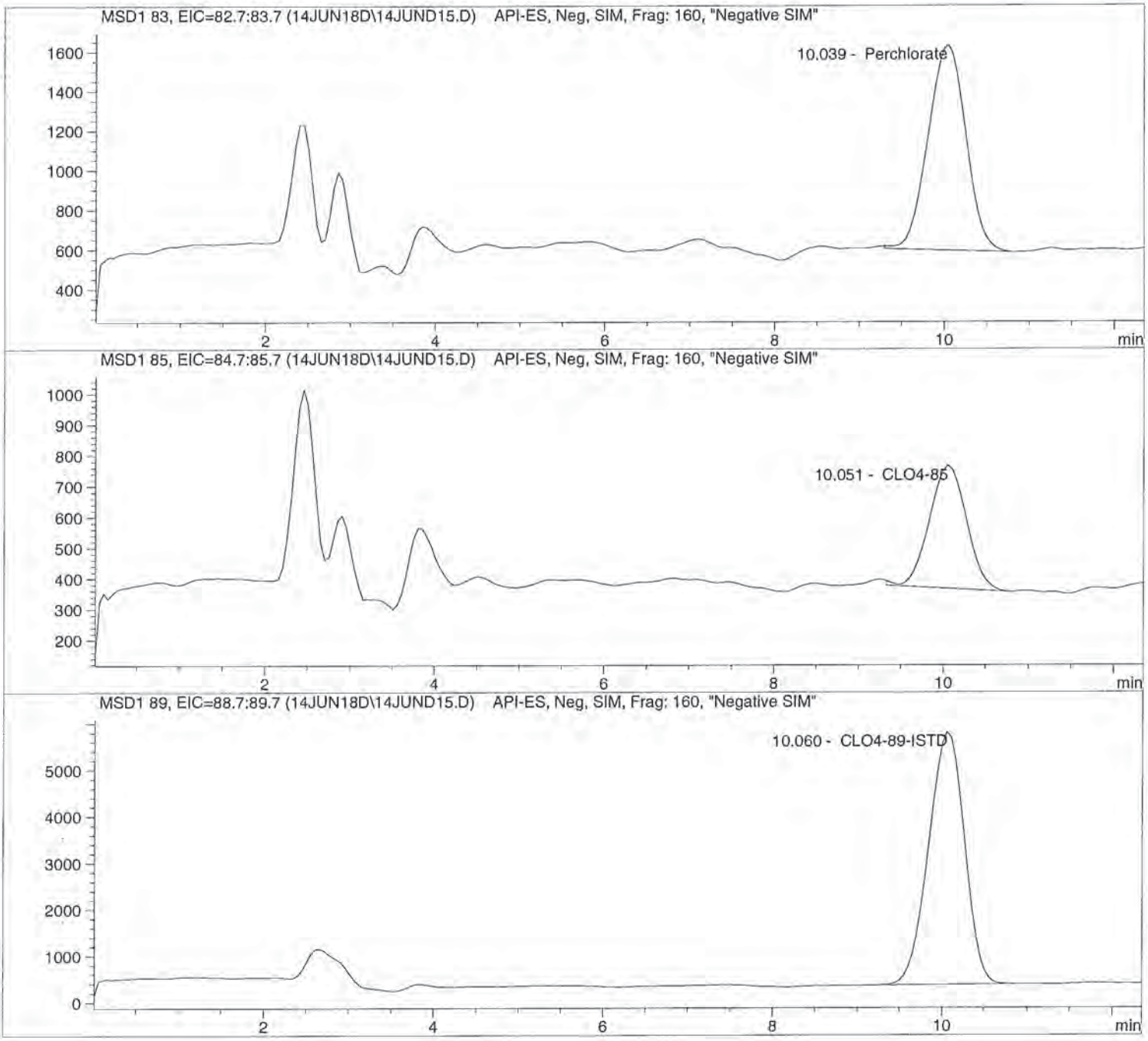
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND15.D Sample Name: 605274 ICS@1.0

Injection Date:	6/14/2018 13:13:17	Seq Line:	15
Sample Name:	605274 ICS@1.0	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND15.D Sample Name: 605274 ICS@1.0

Injection Date:	6/14/2018 13:13:17	Seq Line:	15
Sample Name:	605274 ICS@1.0	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.039	BBA	31874.1	1.0884	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.051	BBA	12118.8	0.9735	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.060	BBA	159160.7	5.0000	CLO4-89-ISTD

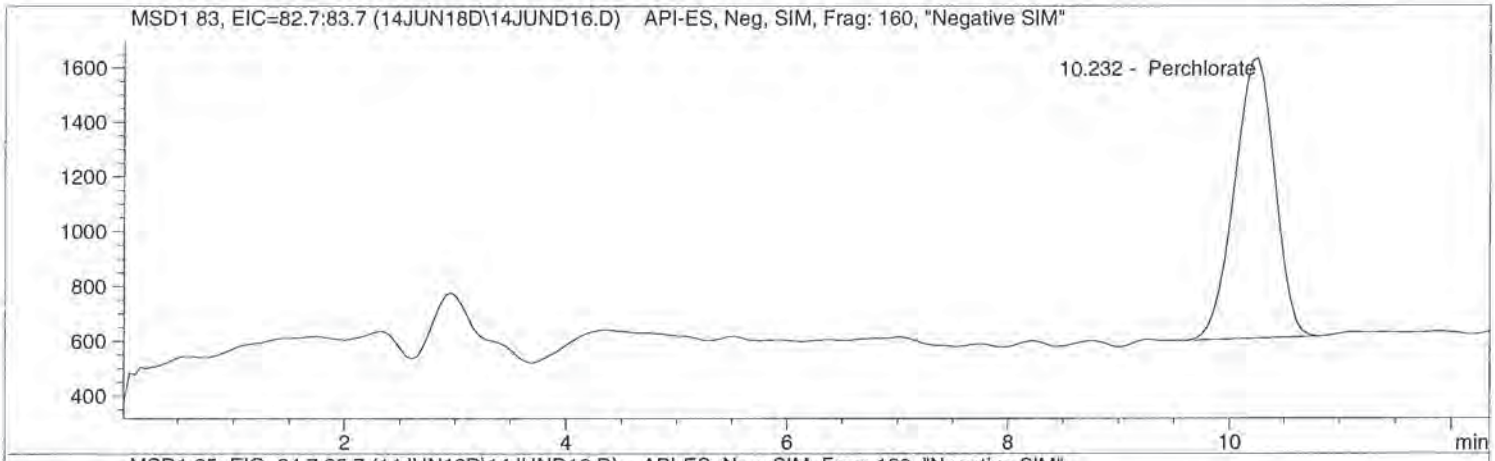
*** End of Report ***

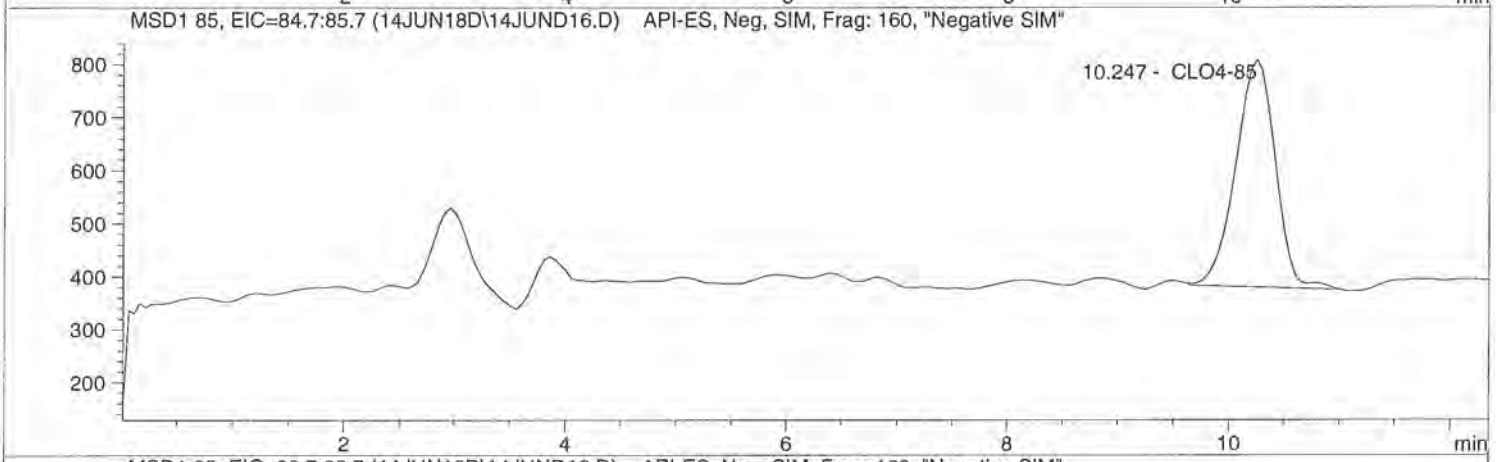
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND16.D Sample Name: 1815740002 1K

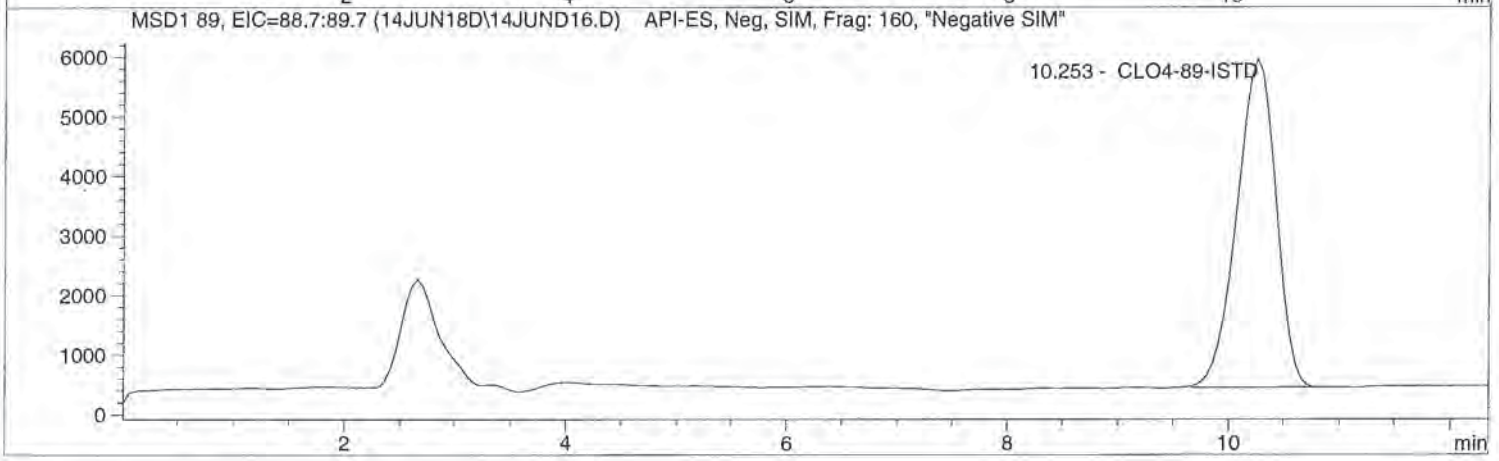
Injection Date:	6/14/2018 13:27:31	Seq Line:	16
Sample Name:	1815740002 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND16.D Sample Name: 1815740002 1K

Injection Date:	6/14/2018 13:27:31	Seq Line:	16
Sample Name:	1815740002 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.232	BBA	26025.5	1043.1332	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.247	BBA	10718.1	1016.1430	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.253	BBA	135828.4	5000.0000	CLO4-89-ISTD

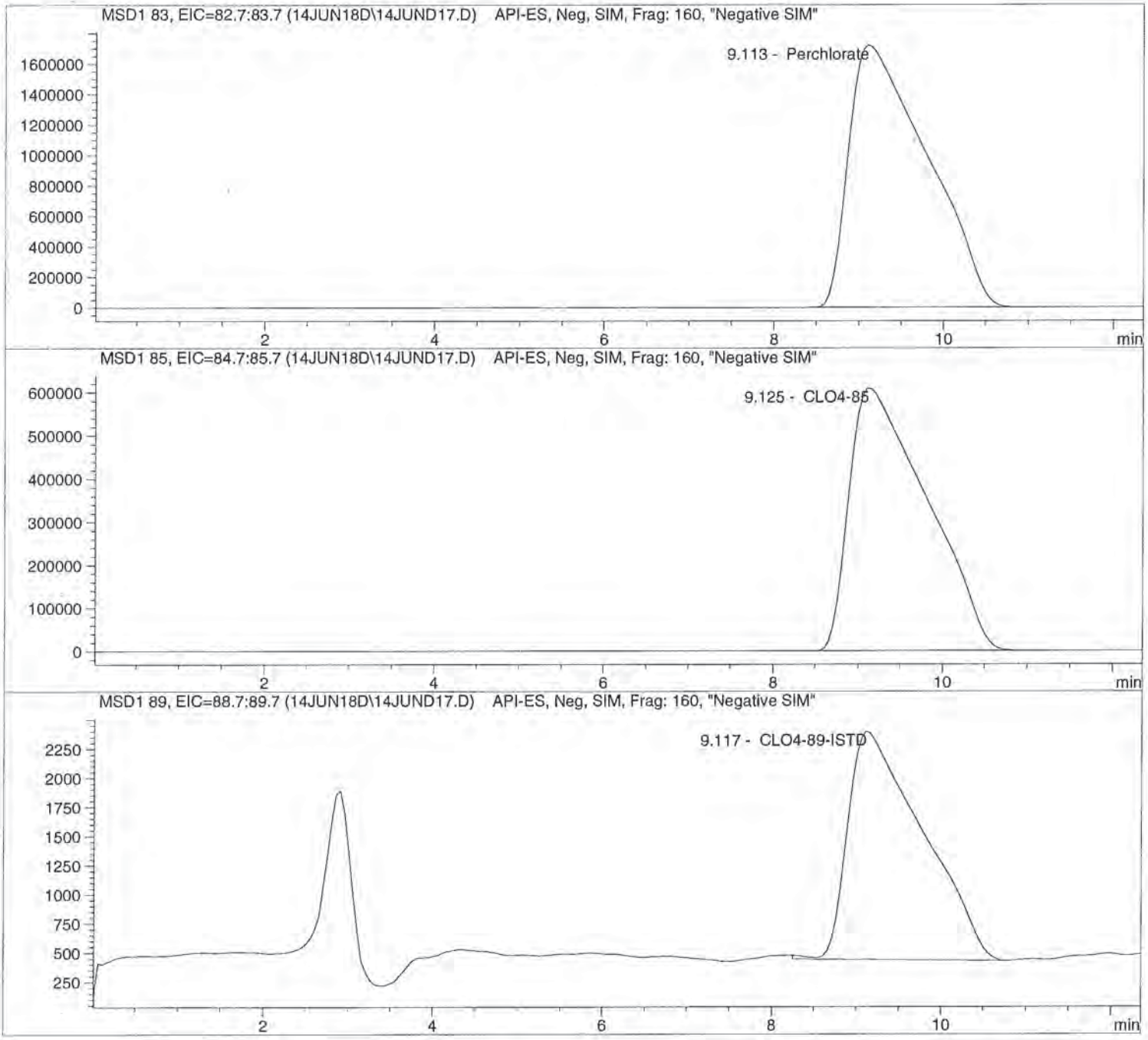
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND17.D Sample Name: 1815740003 10

Injection Date:	6/14/2018 13:41:49	Seq Line:	17
Sample Name:	1815740003 10	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND17.D Sample Name: 1815740003 10

Injection Date:	6/14/2018 13:41:49	Seq Line:	17
Sample Name:	1815740003 10	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.113	PBA	110285632.0	10392.5710	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.125	PBA	38727980.0	10358.5365	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.117	BBA	119984.9	50.0000	CLO4-89-ISTD

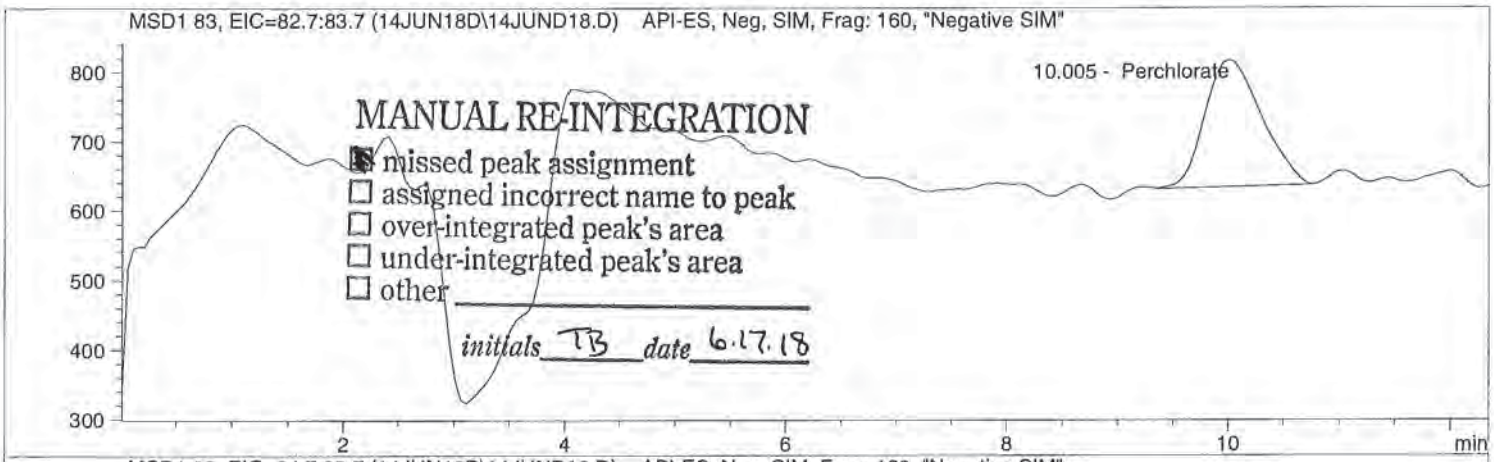
*** End of Report ***

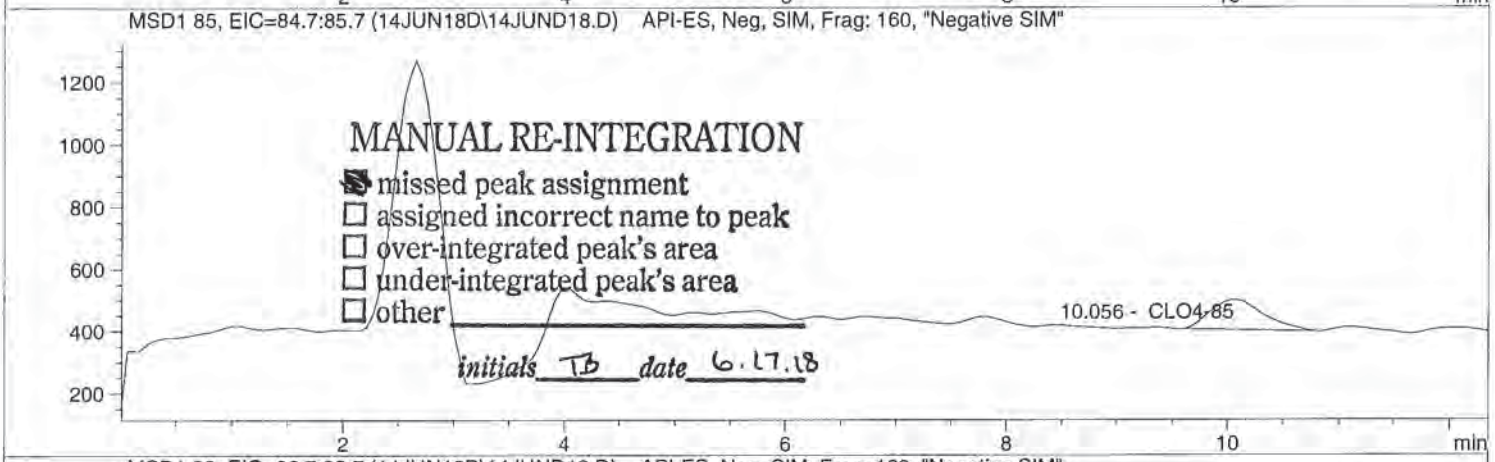
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

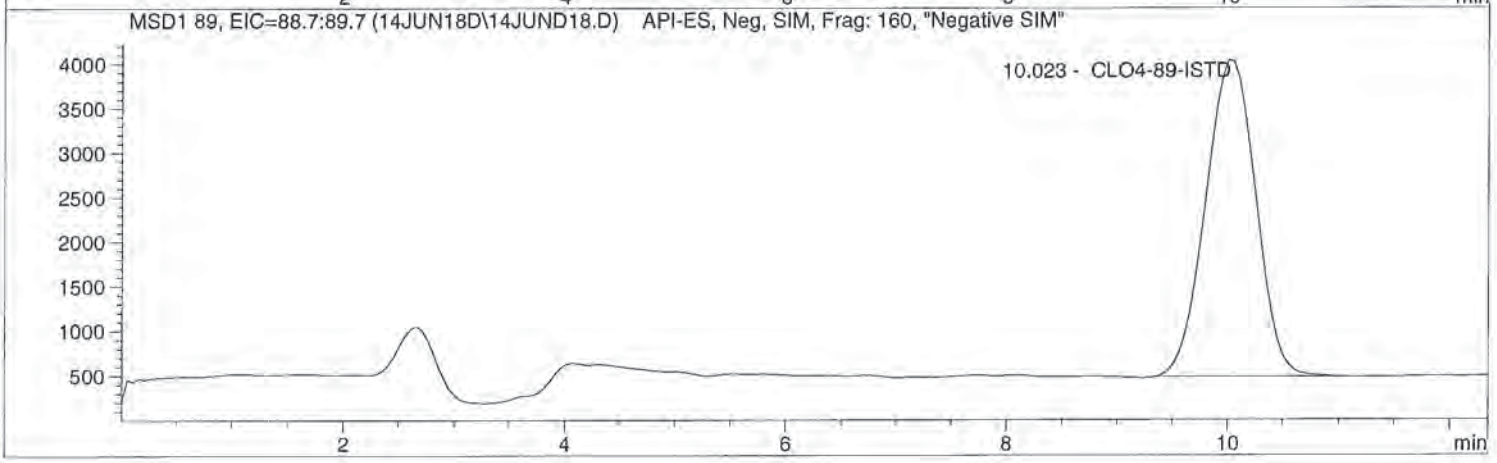
Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.005	MM	6529.8	0.3419	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.056	MM	3253.0	0.2432	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.023	BBA	112834.3	5.0000	CLO4-89-ISTD

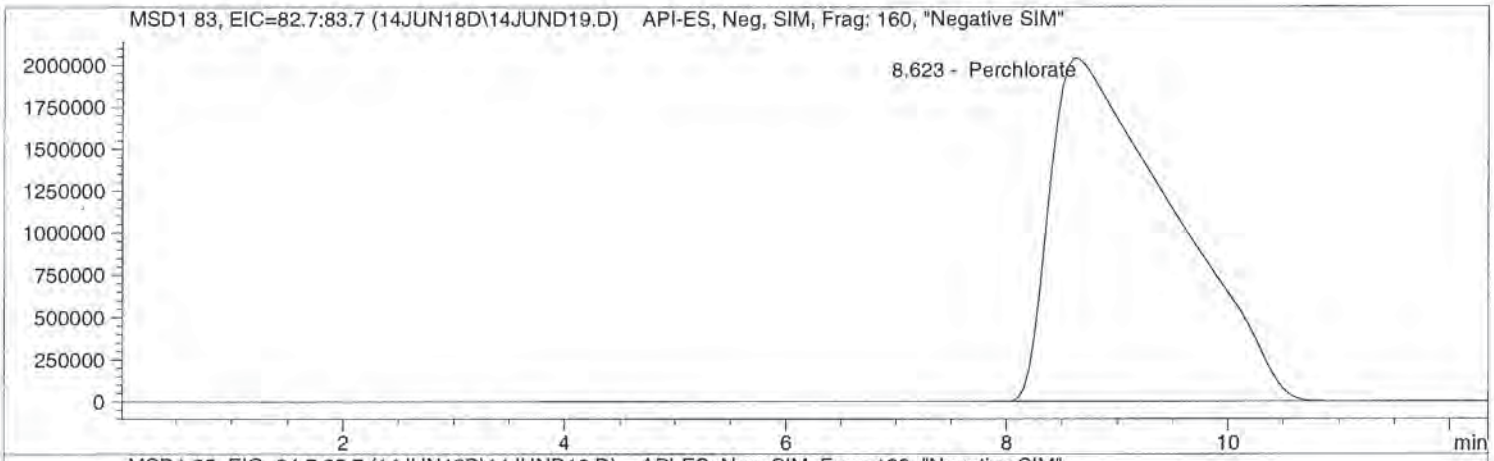
*** End of Report ***

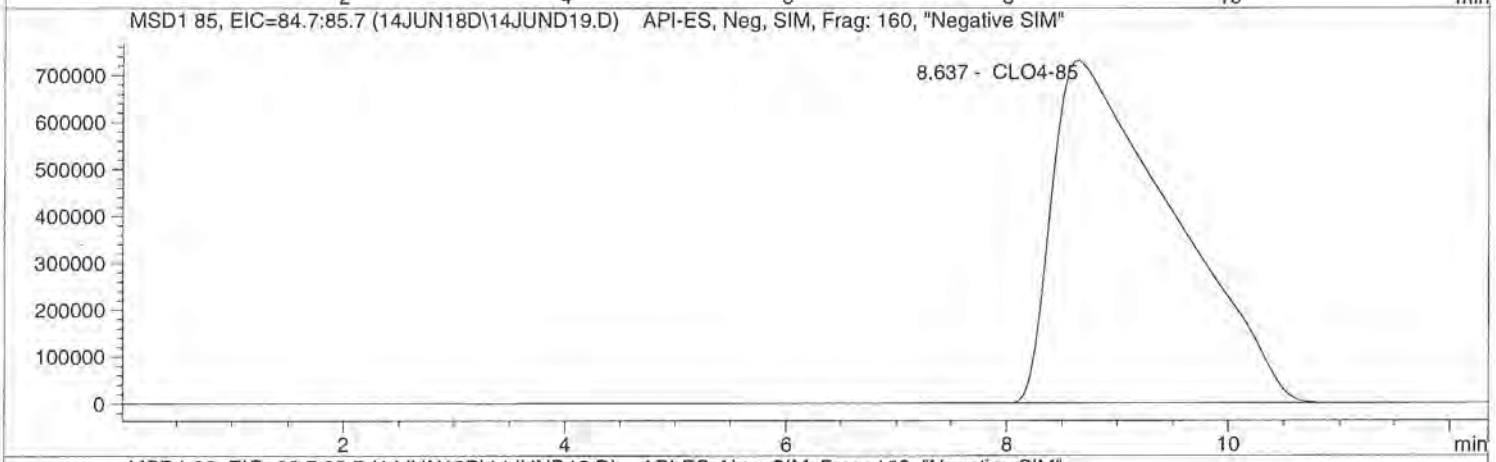
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

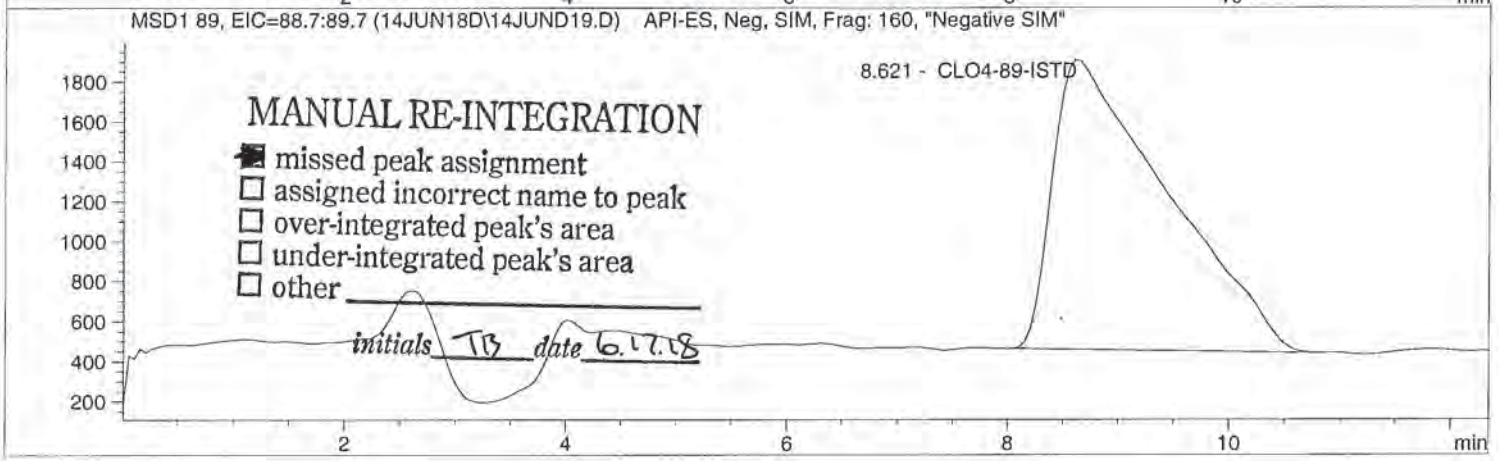
Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.623	PBA	156101936.0	1362.6021	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.637	PBA	55016480.0	1359.4368	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.621	MM	104092.4	5.0000	CLO4-89-ISTD

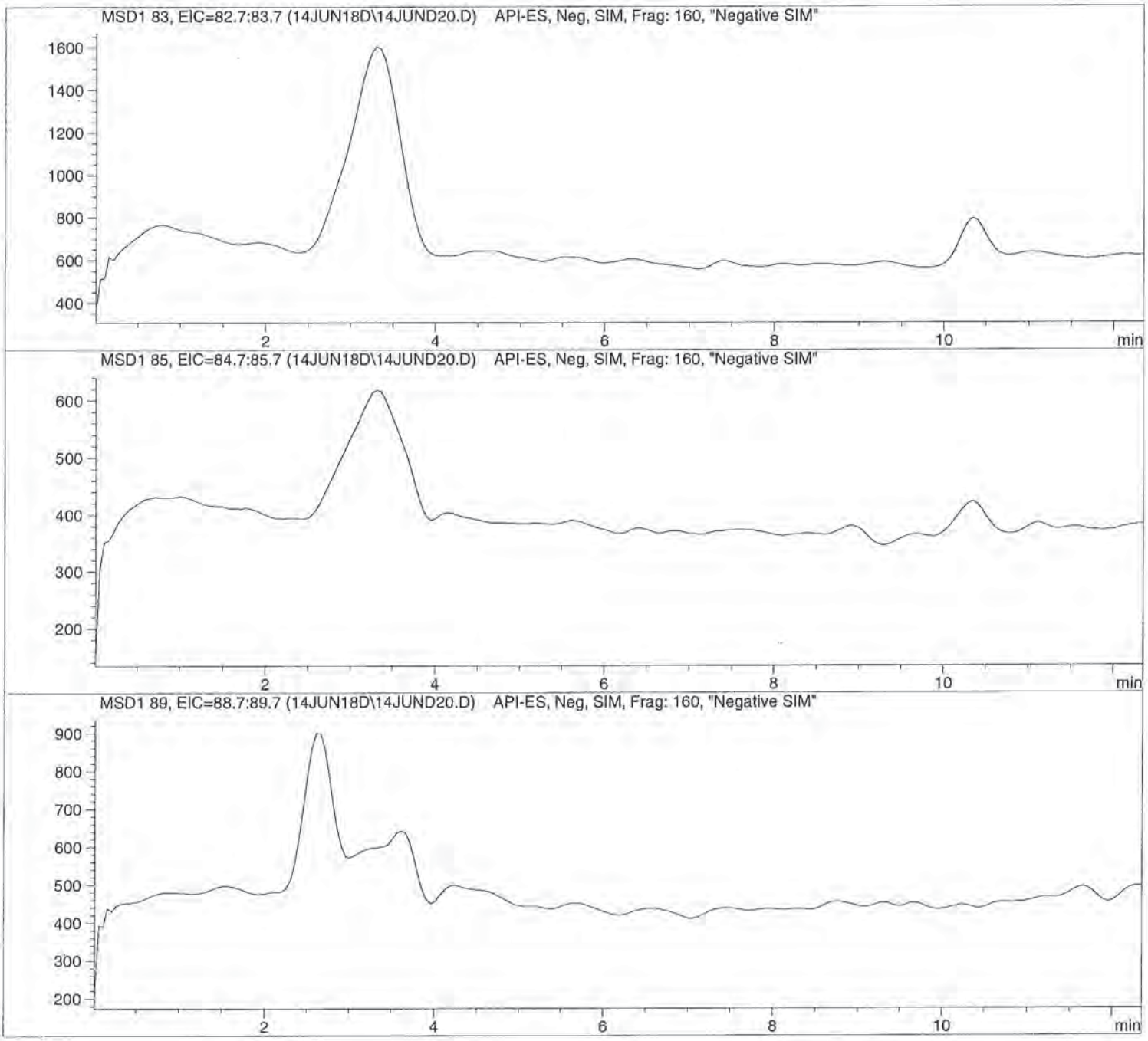
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND20.D Sample Name: Rinse

Injection Date:	6/14/2018 14:24:51	Seq Line:	20
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND20.D Sample Name: Rinse

Injection Date:	6/14/2018 14:24:51	Seq Line:	20
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
0.000		0.0	0.0000	CLO4-89-ISTD

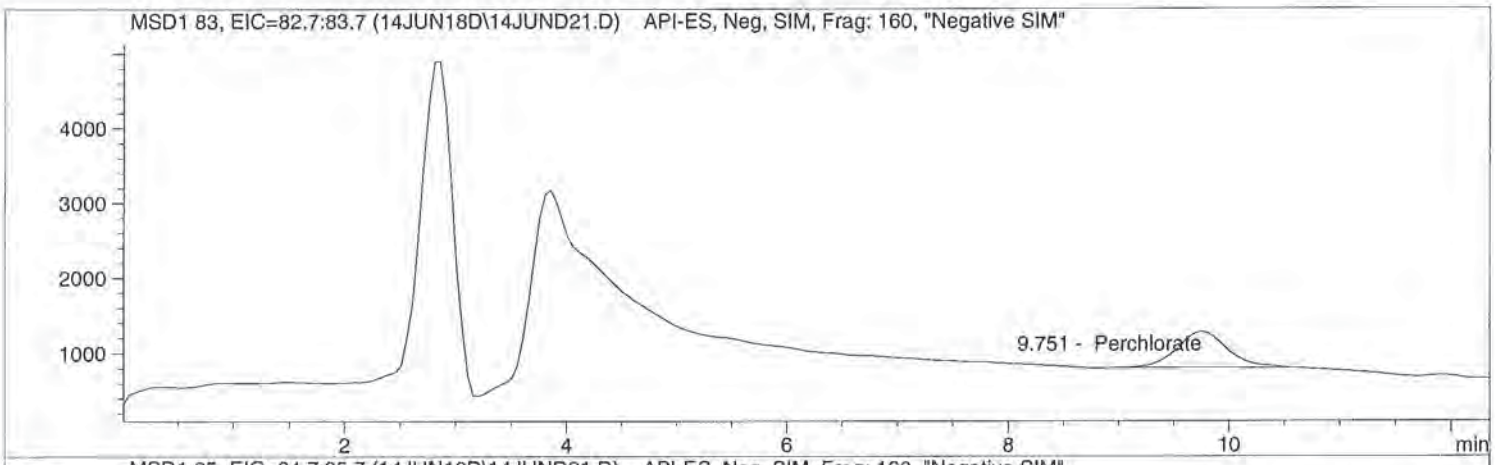
*** End of Report ***

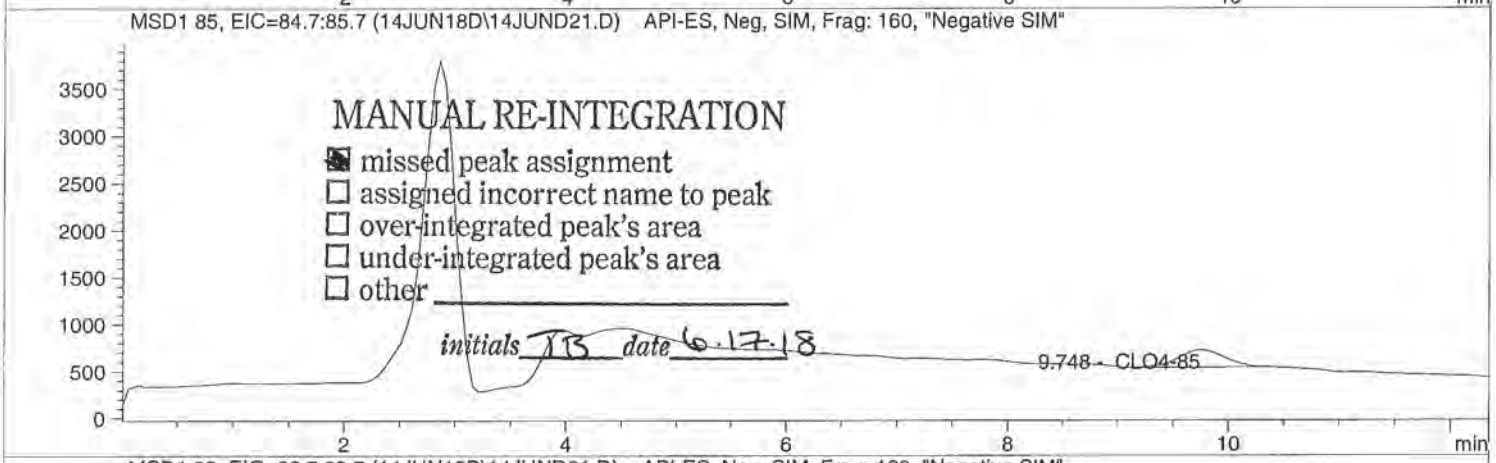
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

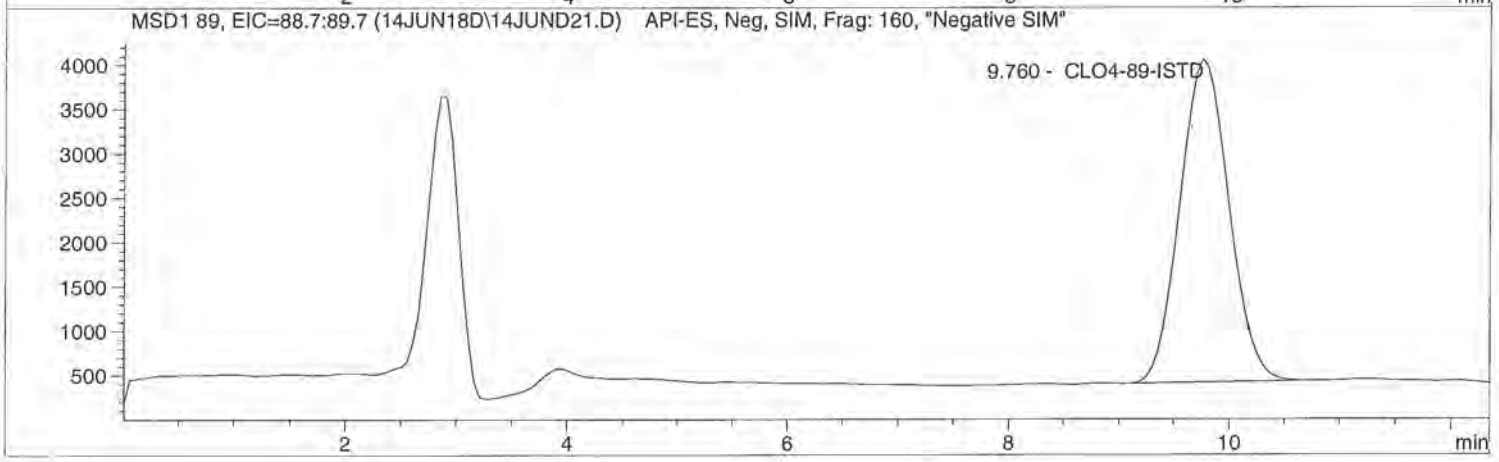
Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.751	PBA	14951.0	0.7364	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.748	MM	5399.5	0.5403	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.760	PBA	112386.4	5.0000	CLO4-89-ISTD

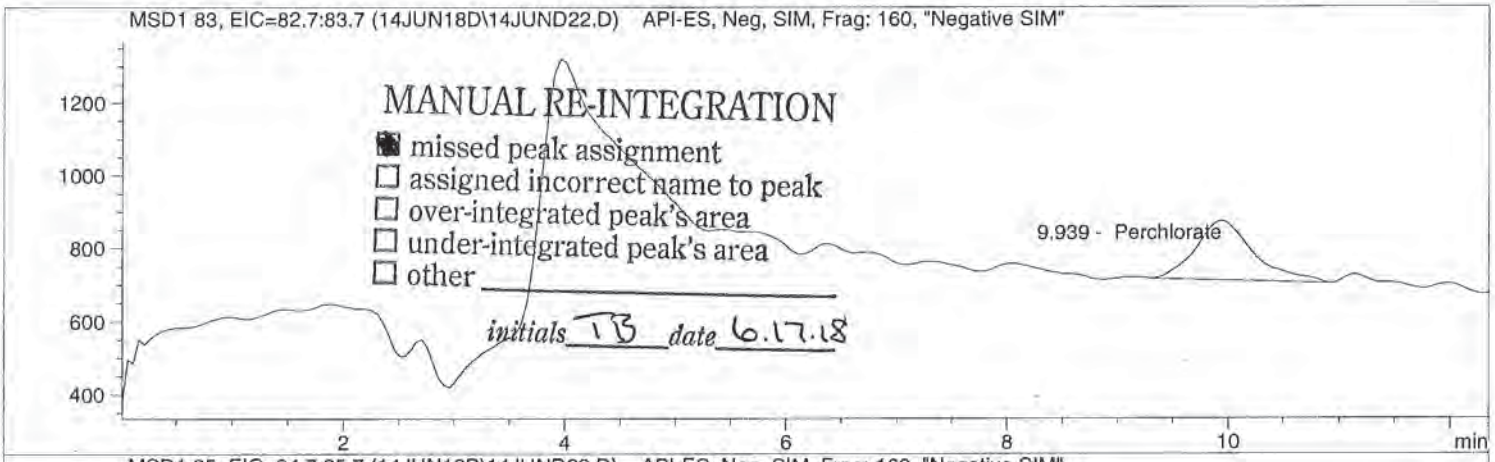
*** End of Report ***

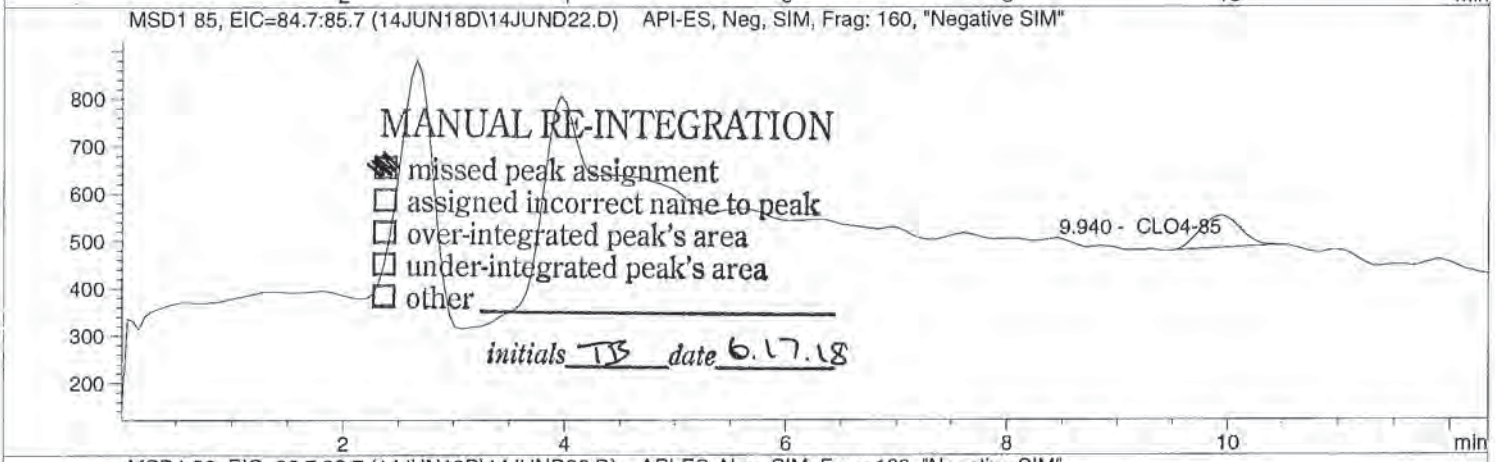
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

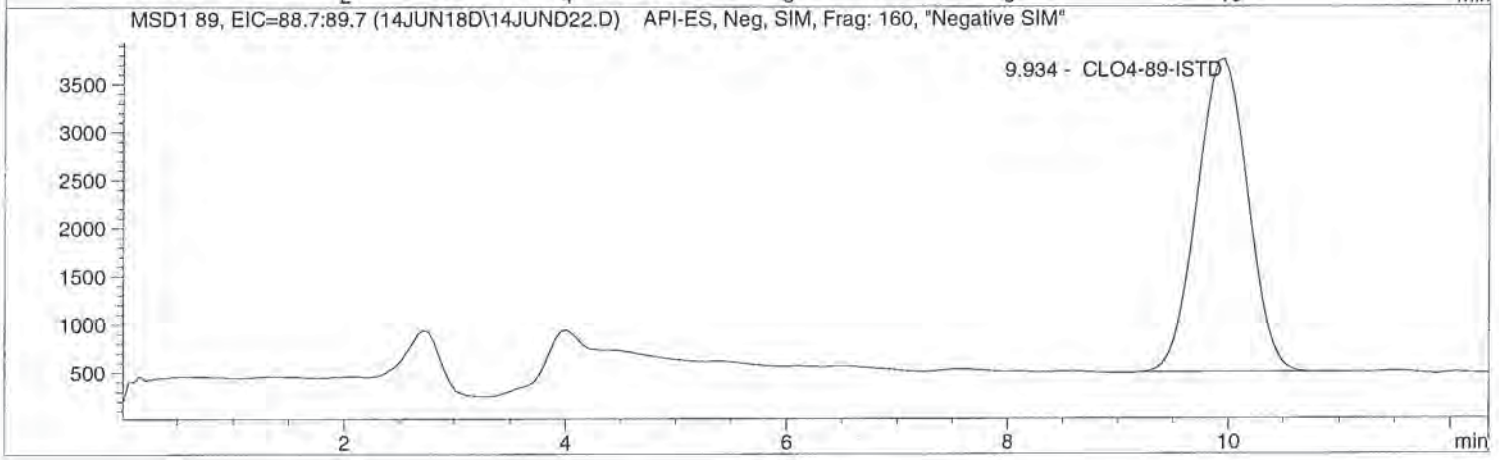
Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.939	MM	5925.8	0.3373	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	MM	1718.9	0.0527	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.934	PBA	103960.3	5.0000	CLO4-89-ISTD

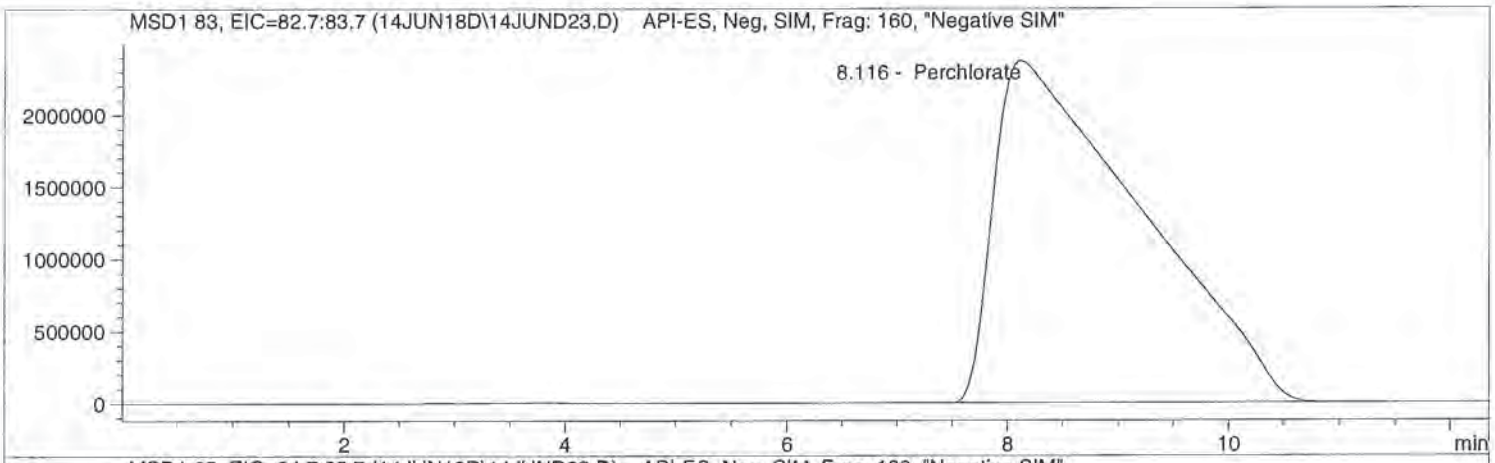
*** End of Report ***

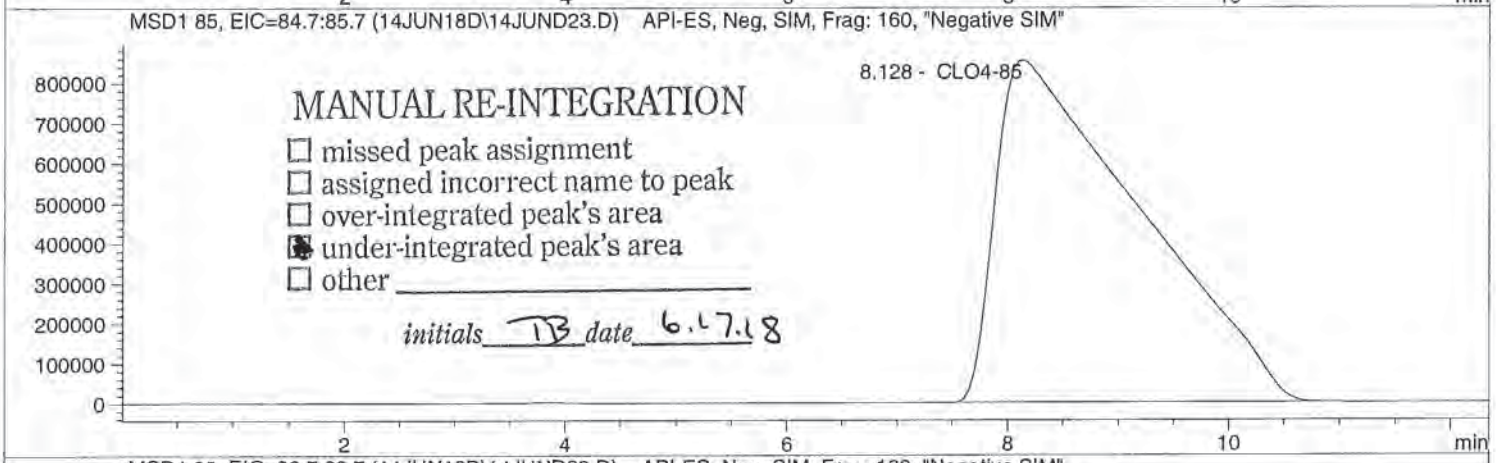
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

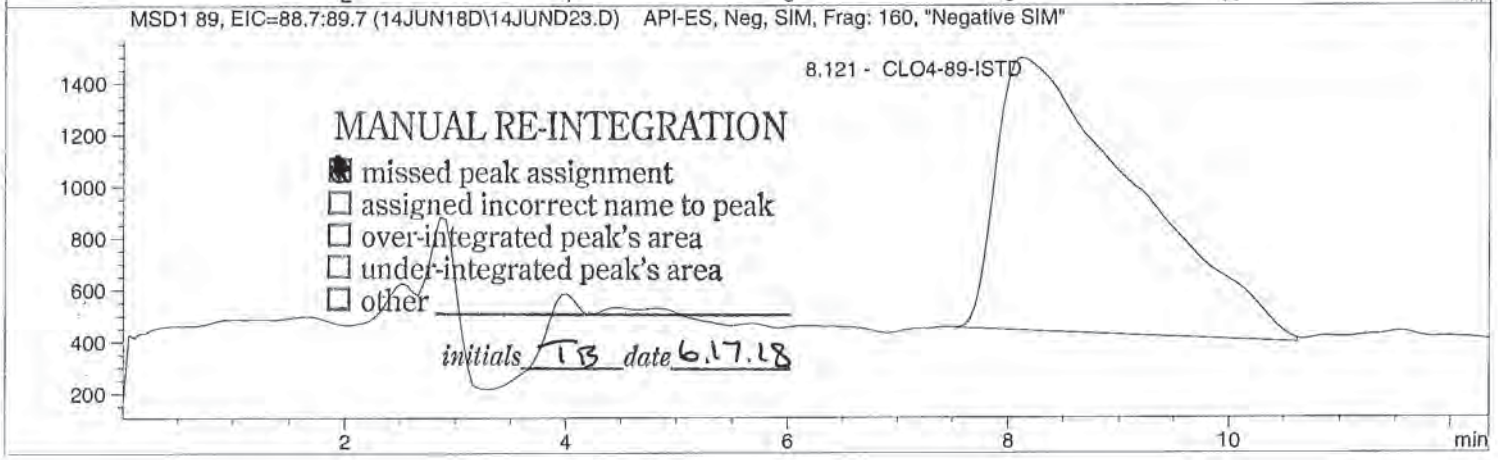
Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.116	PBA	218628112.0	1751.6892	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.128	MM	77523296.0	1751.9121	CLO4-85
8.841	Rsho	0.0	0.0000	
9.453	Rsho	0.0	0.0000	
9.620	Rsho	0.0	0.0000	
10.307	Rsho	0.0	0.0000	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.121	MM	91727.9	5.0000	CLO4-89-ISTD

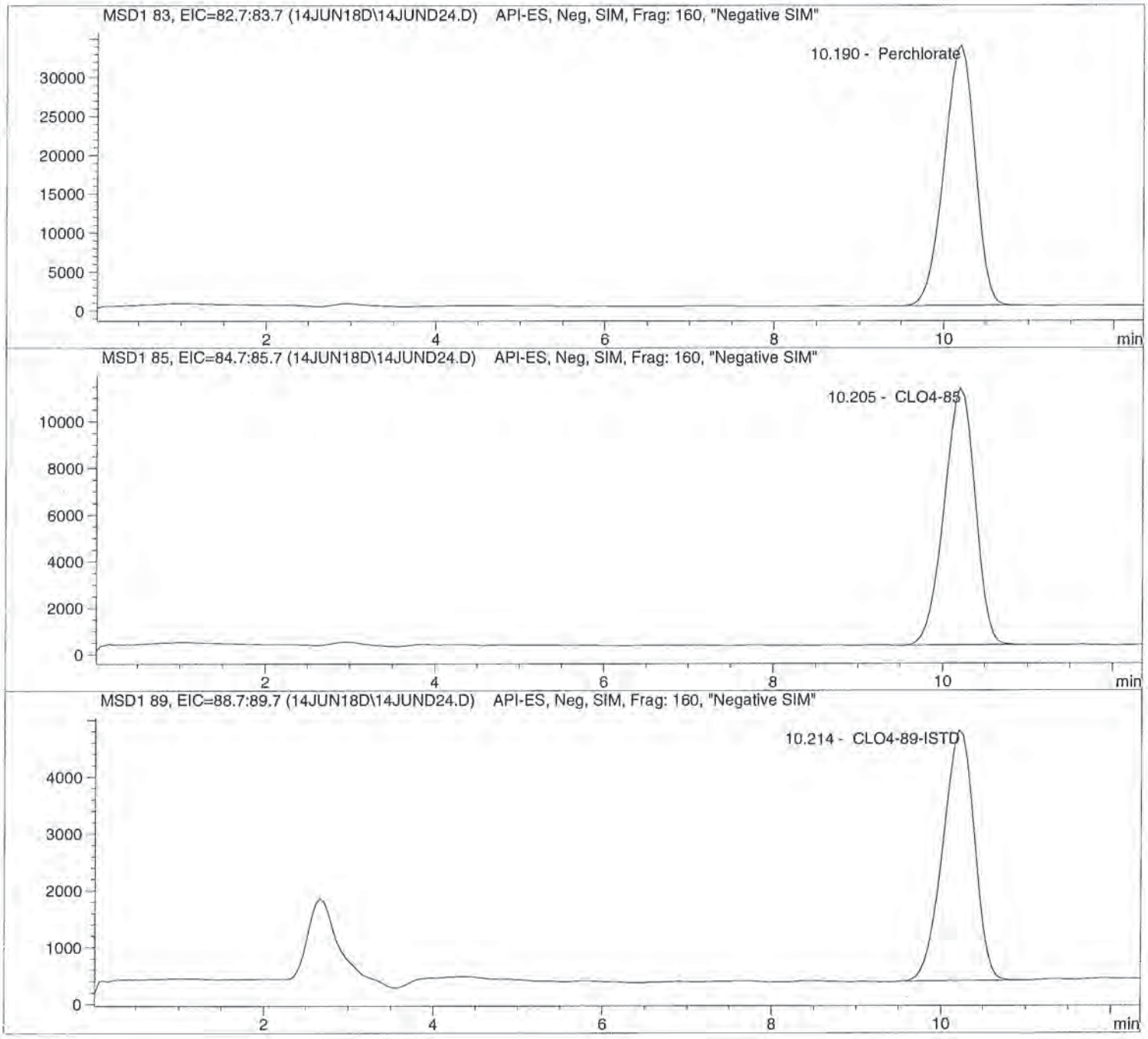
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND24.D Sample Name: 1815988002 1K

Injection Date:	6/14/2018 15:22:13	Seq Line:	24
Sample Name:	1815988002 1K	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND24.D Sample Name: 1815988002 1K

Injection Date:	6/14/2018 15:22:13	Seq Line:	24
Sample Name:	1815988002 1K	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.190	BBA	850046.4	34774.4113	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.205	PBA	282340.0	33711.2235	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.214	PBA	114860.0	5000.0000	CLO4-89-ISTD

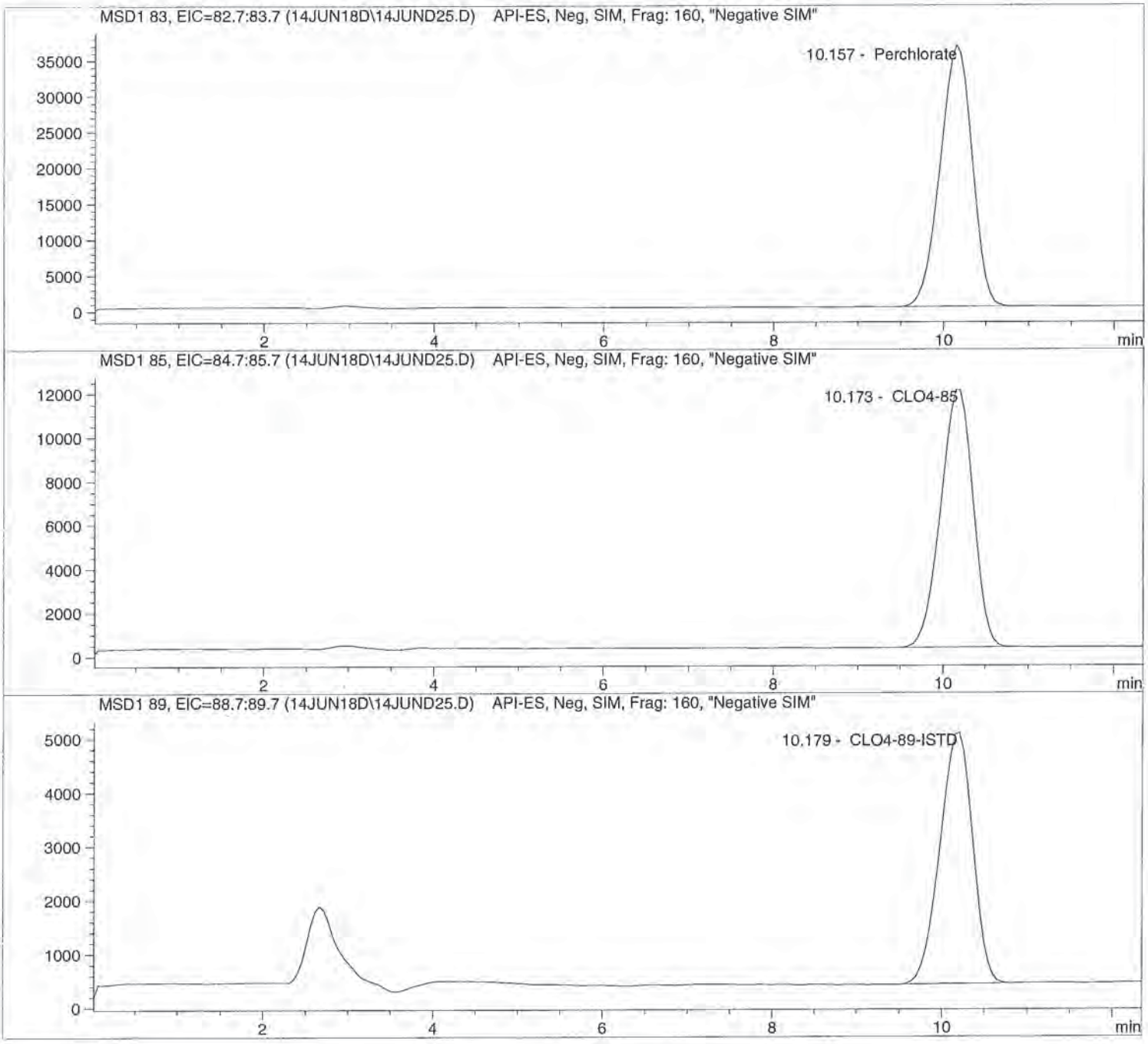
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND25.D Sample Name: 1815988003 1K

Injection Date:	6/14/2018 15:36:32	Seq Line:	25
Sample Name:	1815988003 1K	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND25.D Sample Name: 1815988003 1K

Injection Date:	6/14/2018 15:36:32	Seq Line:	25
Sample Name:	1815988003 1K	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.157	BBA	954515.7	35634.6466	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.173	PBA	313549.9	34205.4073	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.179	PBA	125520.5	5000.0000	CLO4-89-ISTD

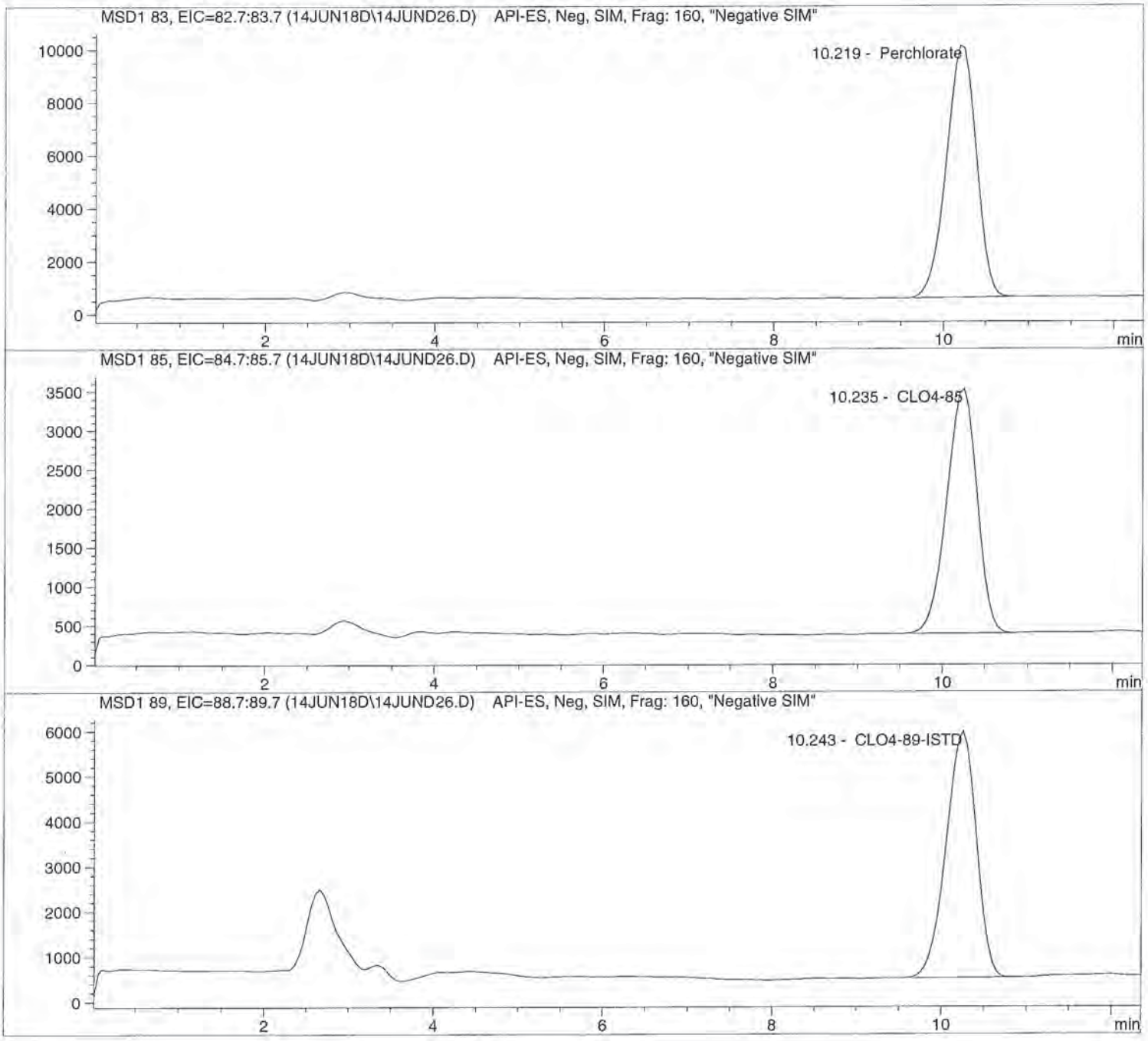
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND26.D Sample Name: 1815988001 1K

Injection Date:	6/14/2018 17:13:26	Seq Line:	26
Sample Name:	1815988001 1K	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND26.D Sample Name: 1815988001 1K

Injection Date:	6/14/2018 17:13:26	Seq Line:	26
Sample Name:	1815988001 1K	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.219	PBA	233270.7	8833.1877	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.235	BBA	78170.6	8476.1423	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.243	BBA	135509.6	5000.0000	CLO4-89-ISTD

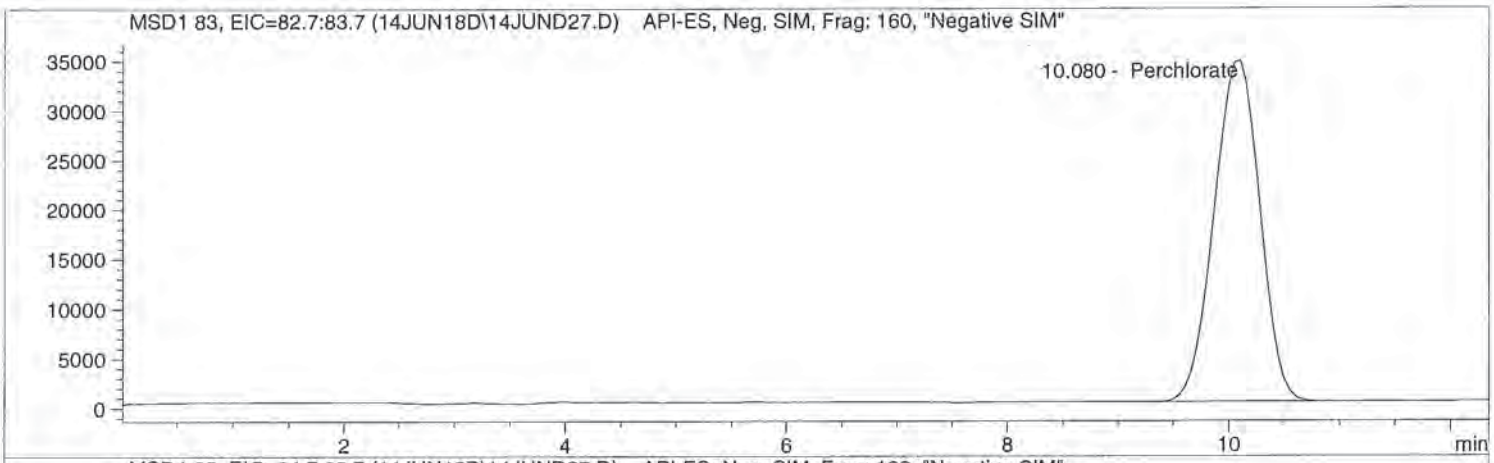
*** End of Report ***

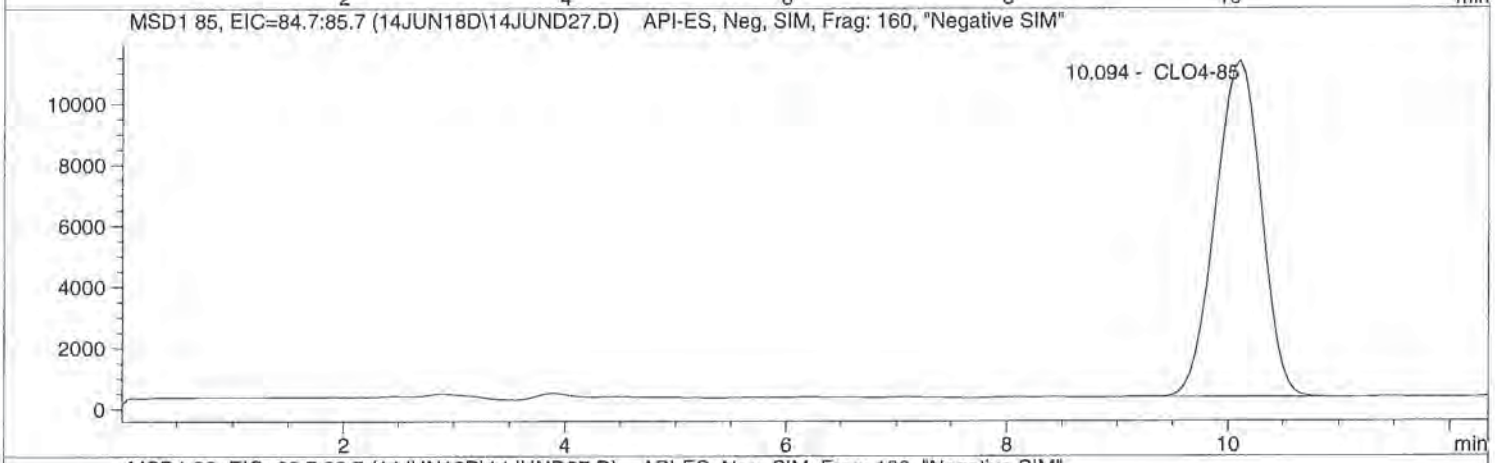
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND27.D Sample Name: 605277 CCV@25

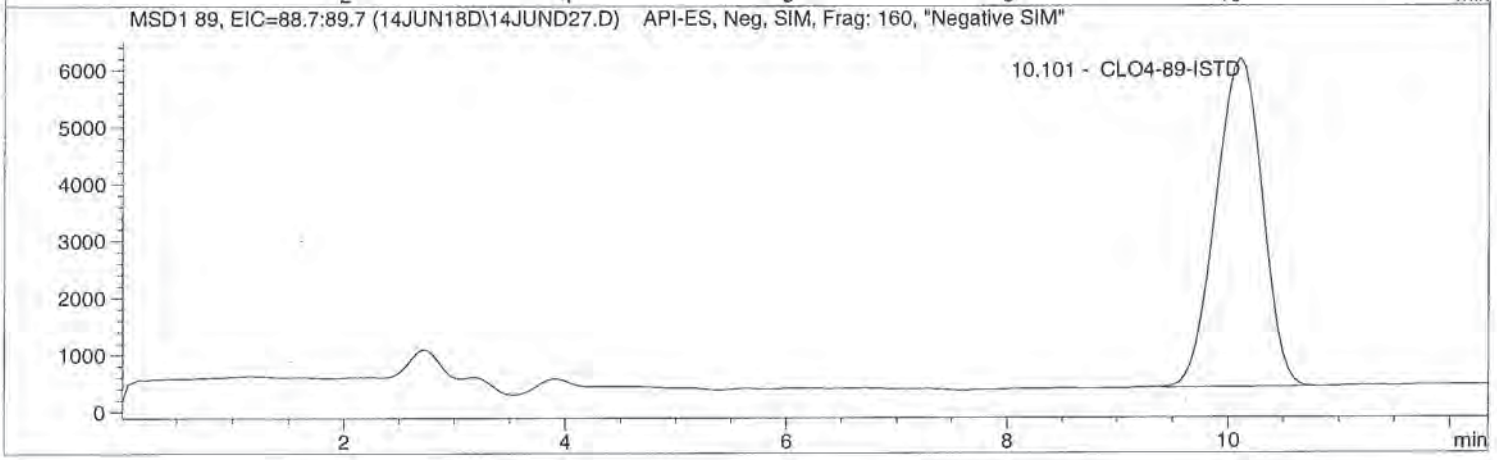
Injection Date:	6/14/2018 17:27:47	Seq Line:	27
Sample Name:	605277 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND27.D Sample Name: 605277 CCV@25

Injection Date:	6/14/2018 17:27:47	Seq Line:	27
Sample Name:	605277 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.080	PBA	992094.1	28.0471	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.094	BBA	319001.0	26.3544	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.101	BBA	169834.9	5.0000	CLO4-89-ISTD

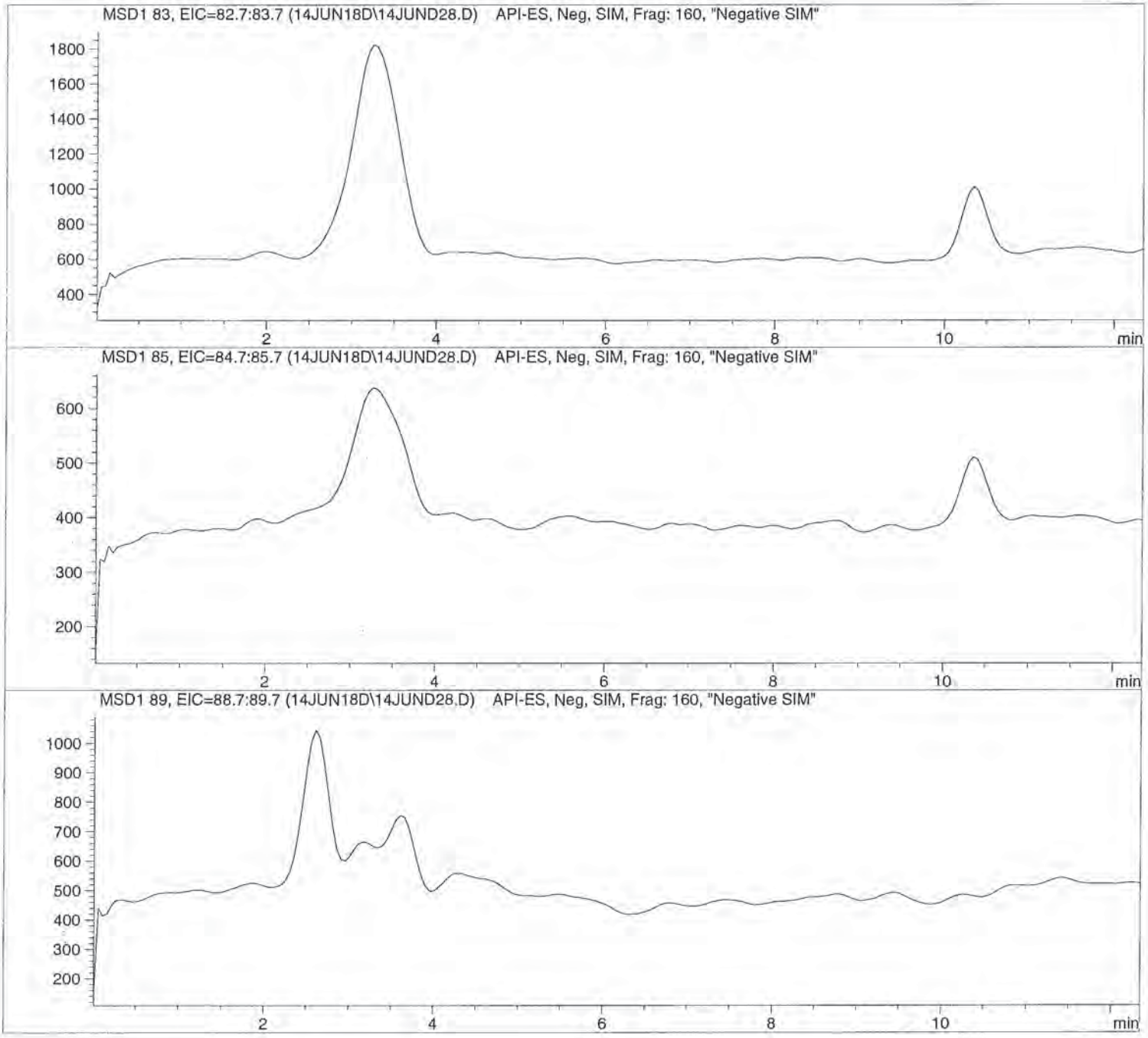
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND28.D Sample Name: Rinse

Injection Date:	6/14/2018 17:42:12	Seq Line:	28
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND28.D Sample Name: Rinse

Injection Date:	6/14/2018 17:42:12	Seq Line:	28
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
0.000		0.0	0.0000	CLO4-89-ISTD

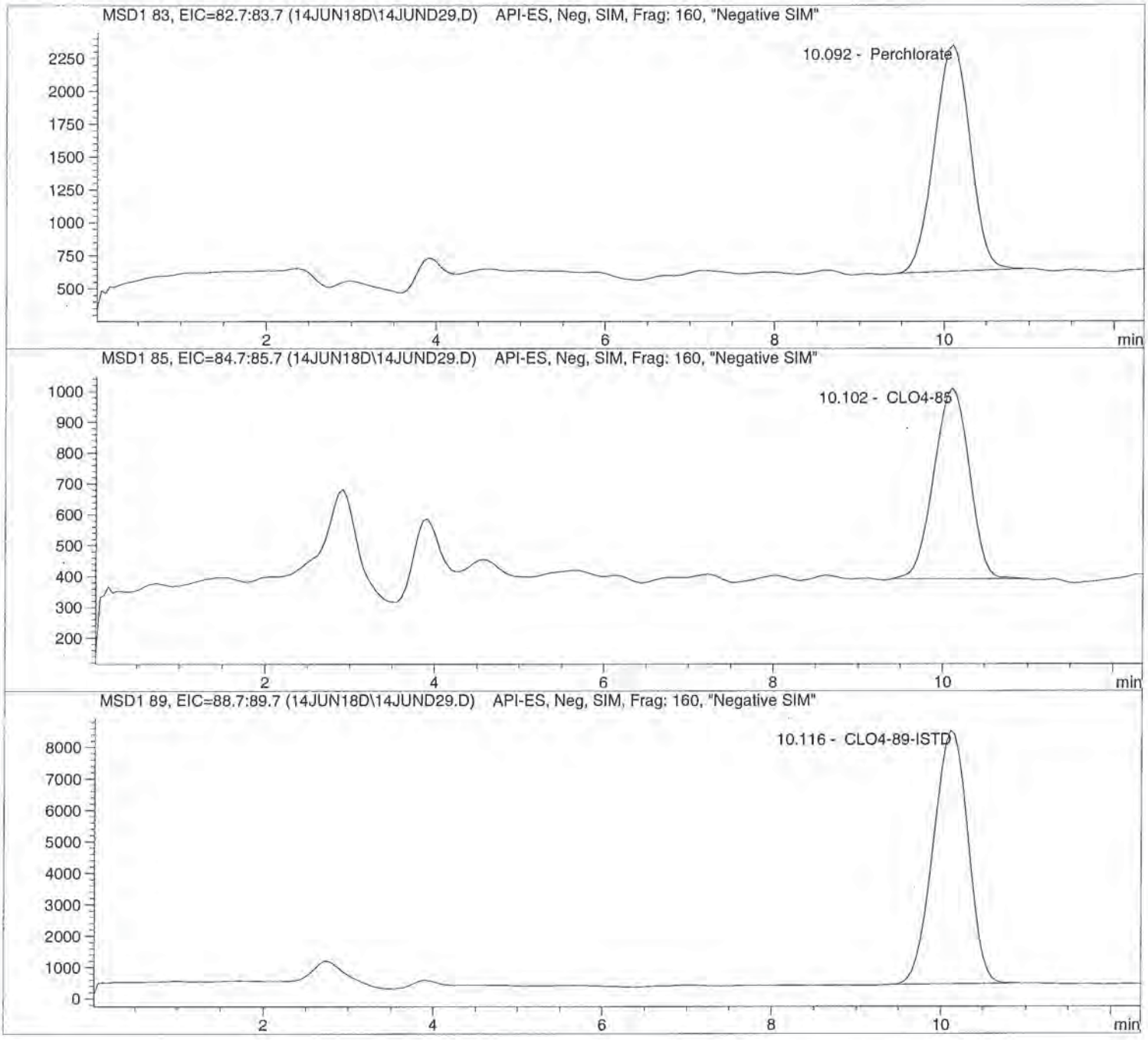
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND29.D Sample Name: 605278 LODV@1.

Injection Date:	6/14/2018 17:56:40	Seq Line:	29
Sample Name:	605278 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Injection Date:	6/14/2018 17:56:40	Seq Line:	29
Sample Name:	605278 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.092	PBA	50405.6	1.1828	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.102	BBA	17956.5	0.9987	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.116	BBA	230883.7	5.0000	CLO4-89-ISTD

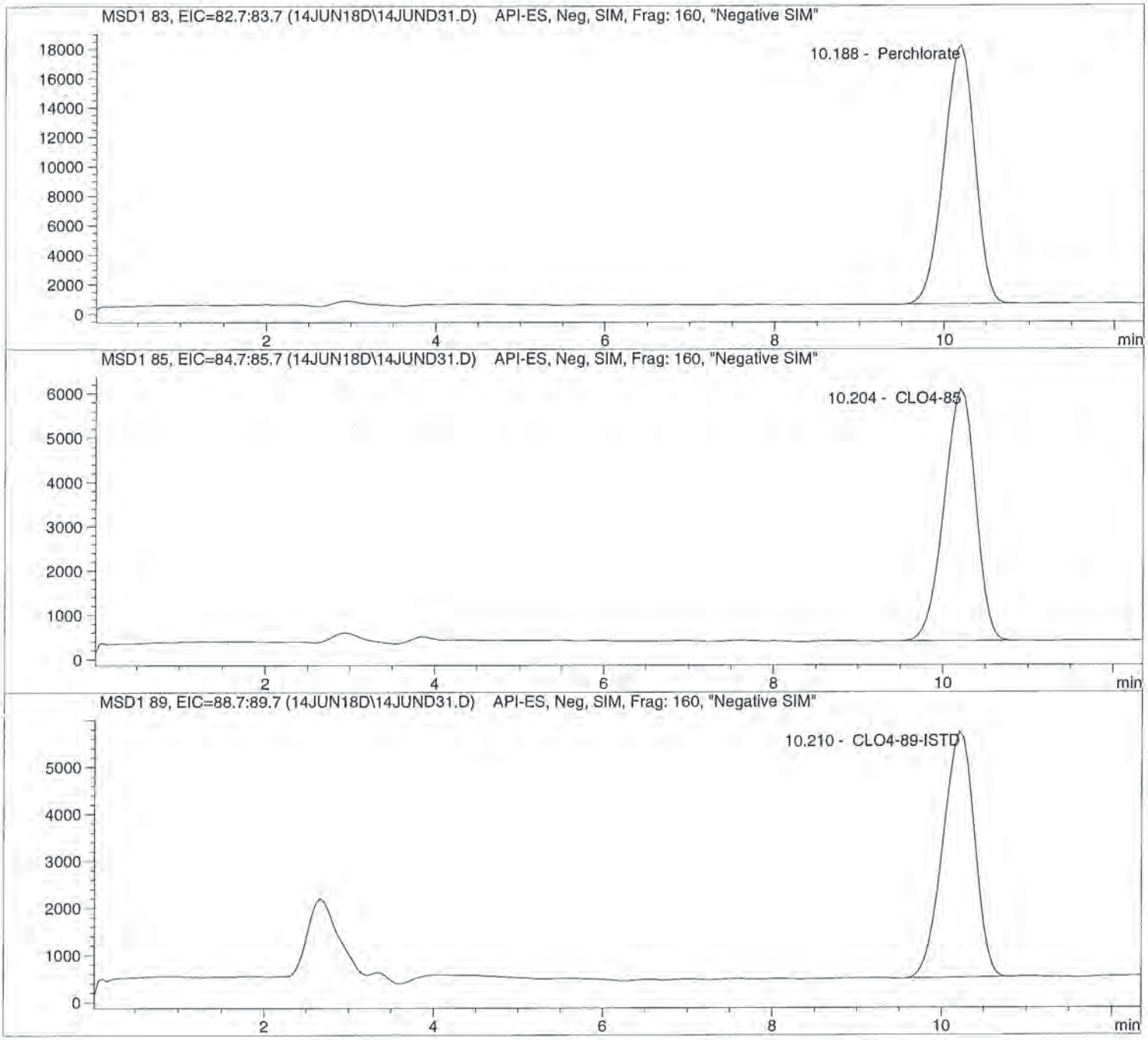
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND31.D Sample Name: 1815988004 MS

Injection Date:	6/14/2018 18:25:18	Seq Line:	31
Sample Name:	1815988004 MS	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND31.D Sample Name: 1815988004 MS

Injection Date:	6/14/2018 18:25:18	Seq Line:	31
Sample Name:	1815988004 MS	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.188	BBA	448410.1	16427.6491	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.204	BBA	146771.5	15600.1771	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.210	PBA	136255.7	5000.0000	CLO4-89-ISTD

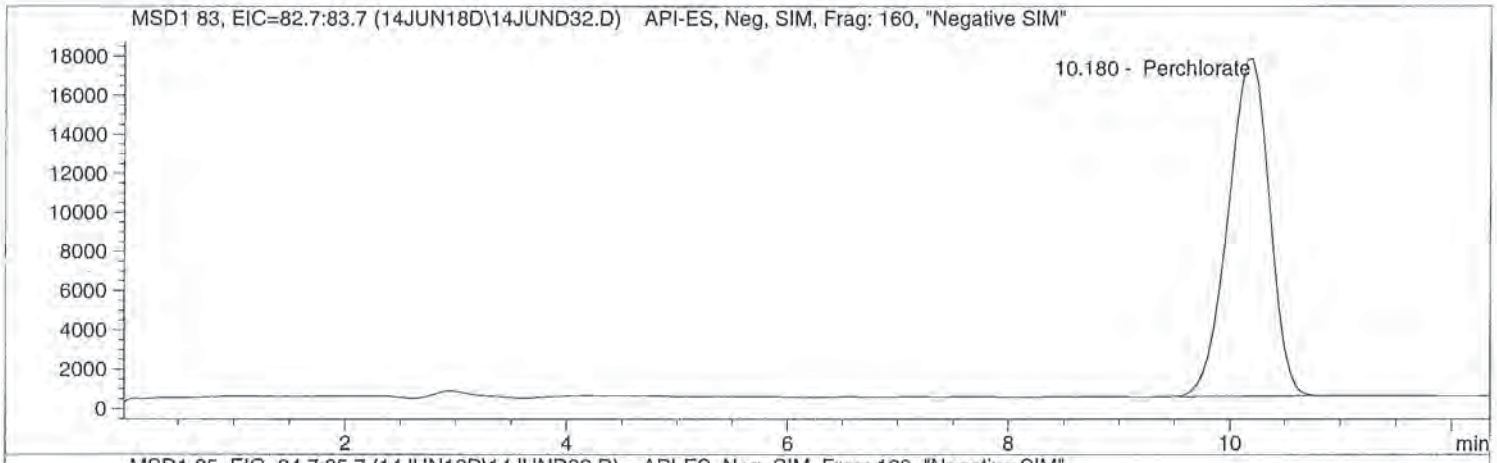
*** End of Report ***

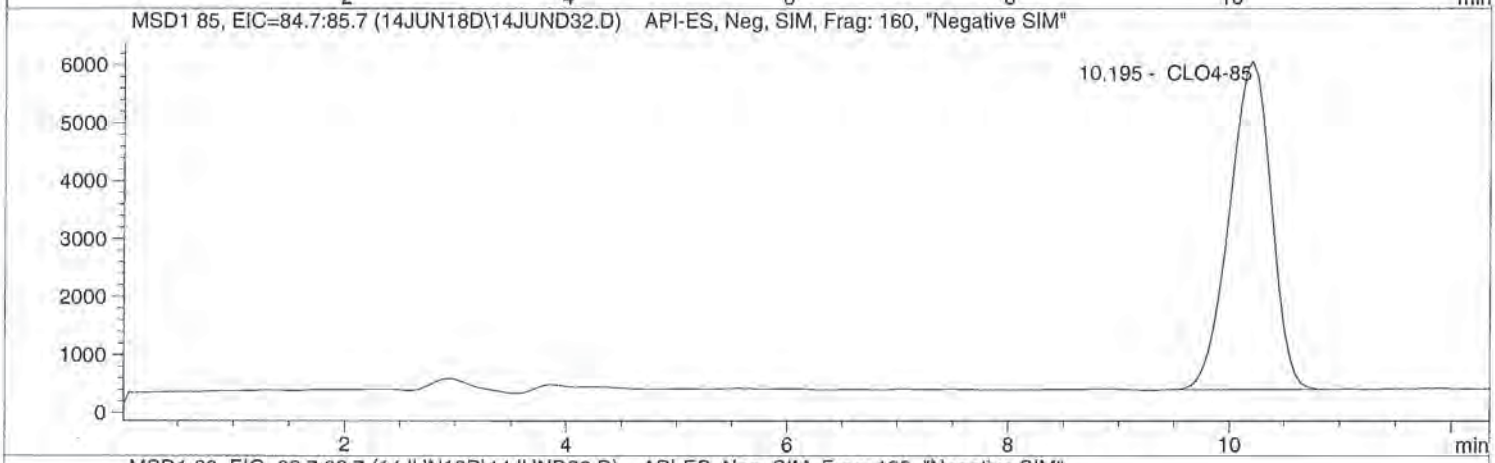
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND32.D Sample Name: 1815988005 MSD 00903298

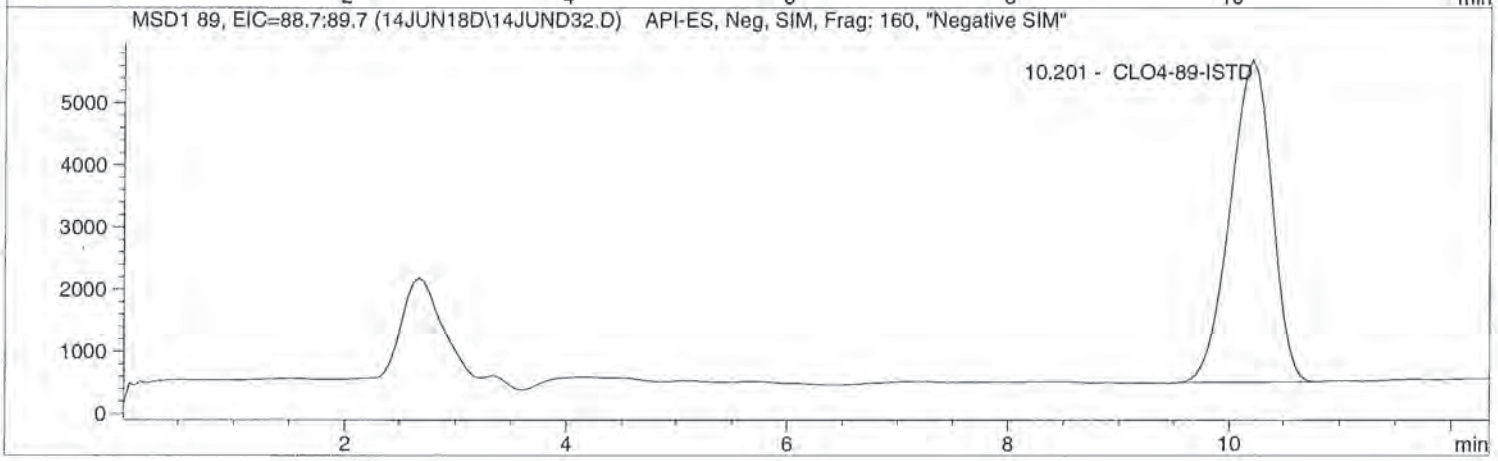
Injection Date:	6/14/2018 18:39:34	Seq Line:	32
Sample Name:	1815988005 MSD	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/14/2018 18:39:34	Seq Line:	32
Sample Name:	1815988005 MSD	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.180	BBA	450869.7	16431.0515	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.195	BBA	150109.8	15860.3426	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.201	BBA	136973.1	5000.0000	CLO4-89-ISTD

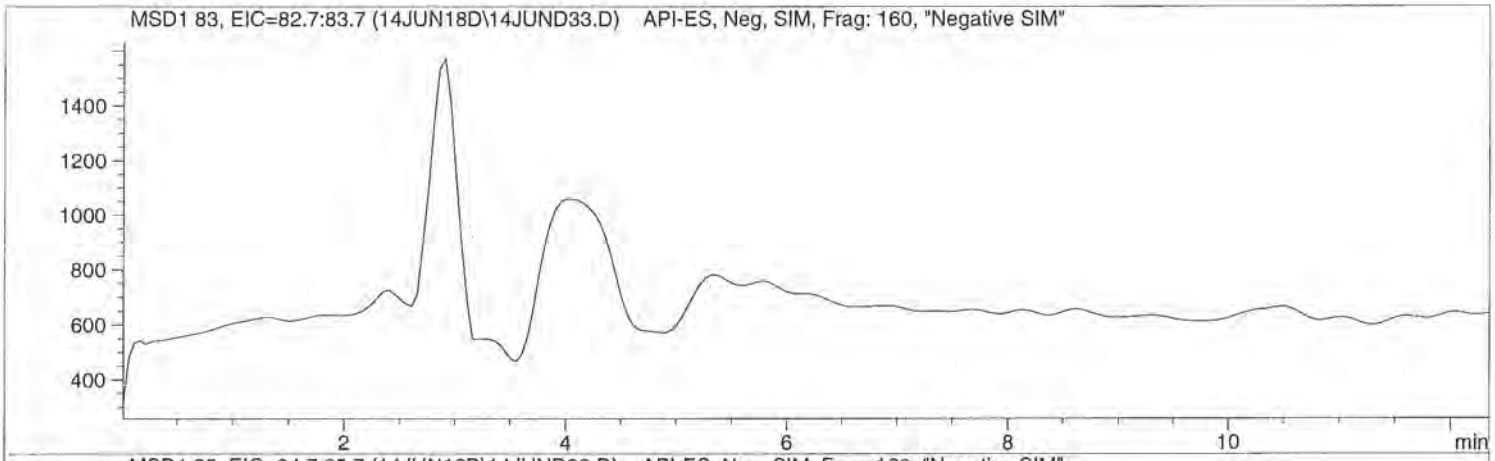
*** End of Report ***

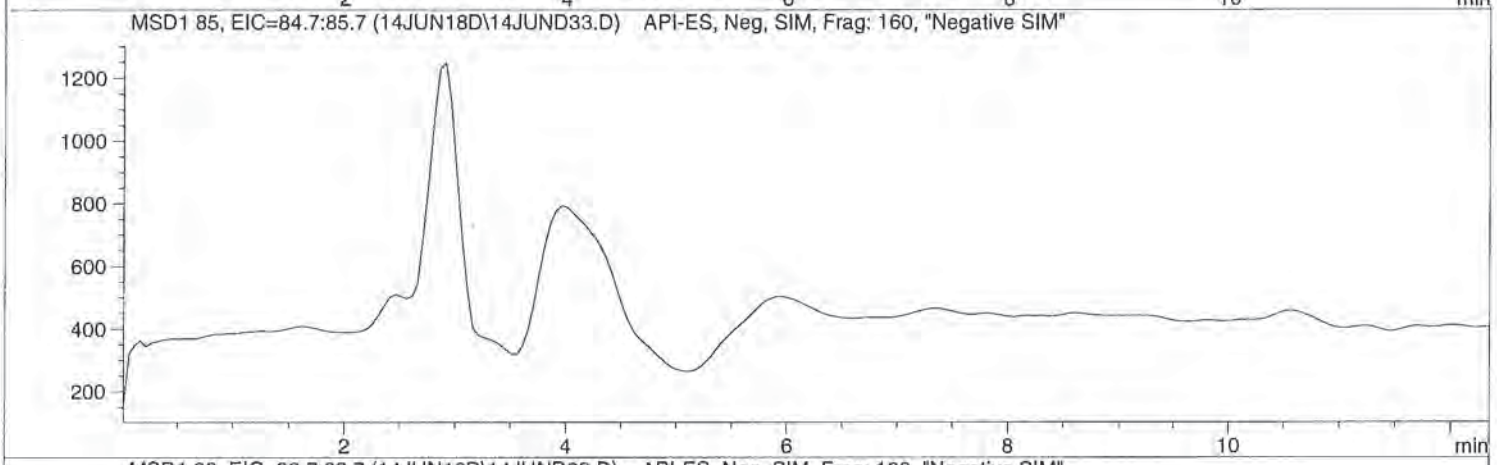
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND33.D Sample Name: 1815991001

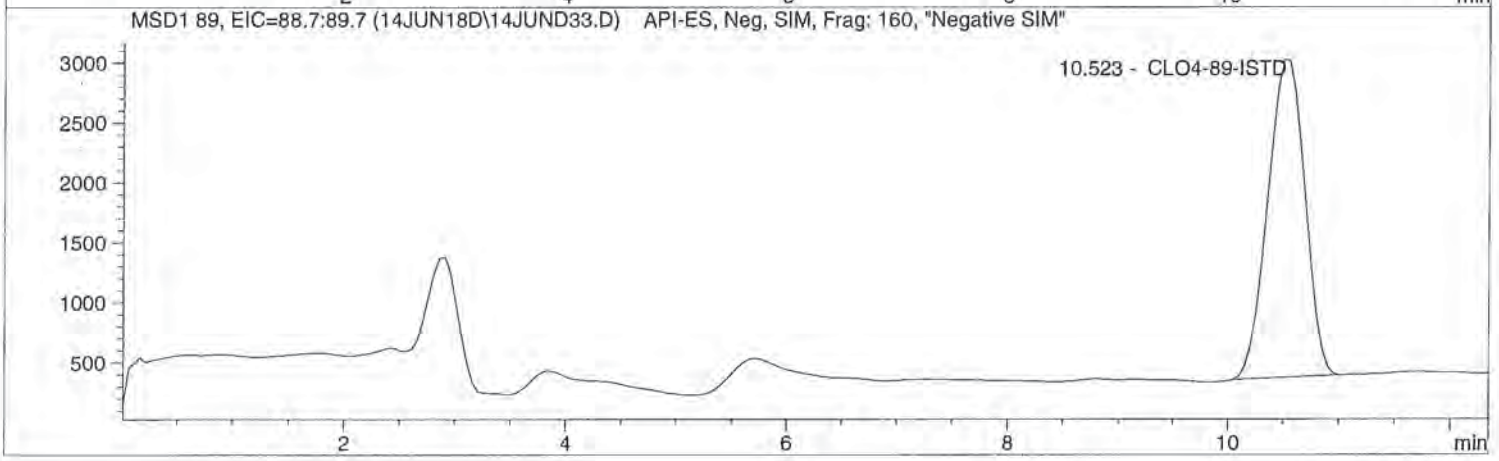
Injection Date:	6/14/2018 18:53:49	Seq Line:	33
Sample Name:	1815991001	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND33.D Sample Name: 1815991001

Injection Date:	6/14/2018 18:53:49	Seq Line:	33
Sample Name:	1815991001	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.523	PBA	61048.9	5.0000	CLO4-89-ISTD

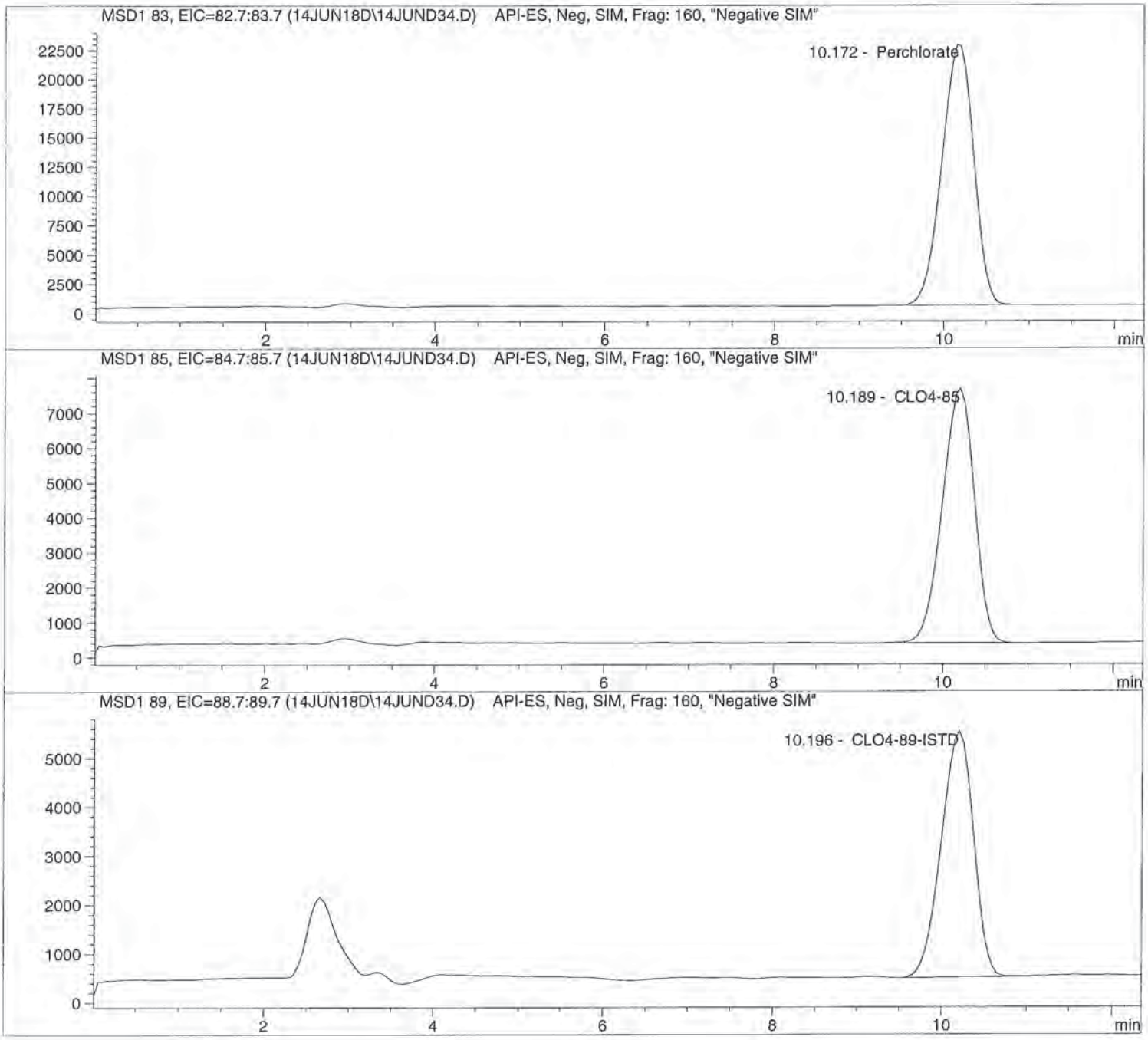
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND34.D Sample Name: 1815992001 1K

Injection Date:	6/14/2018 19:08:02	Seq Line:	34
Sample Name:	1815992001 1K	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND34.D Sample Name: 1815992001 1K

Injection Date:	6/14/2018 19:08:02	Seq Line:	34
Sample Name:	1815992001 1K	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.172	BBA	579000.9	21420.1932	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.189	BBA	191018.4	20562.3407	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.196	PBA	132654.2	5000.0000	CLO4-89-ISTD

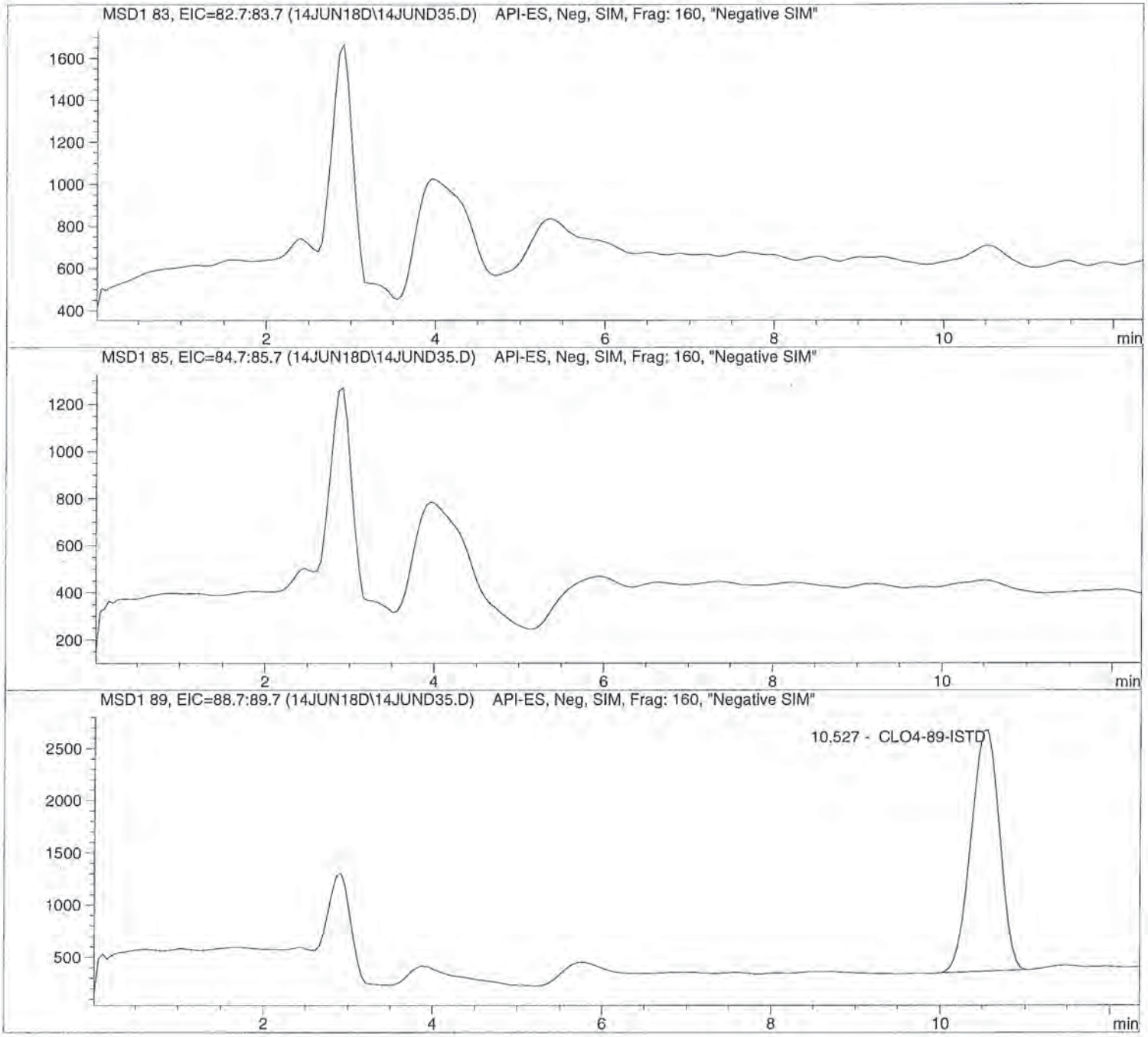
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND35.D Sample Name: 1815993001

Injection Date:	6/14/2018 19:22:16	Seq Line:	35
Sample Name:	1815993001	Location:	Vial 98
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND35.D Sample Name: 1815993001

Injection Date:	6/14/2018 19:22:16	Seq Line:	35
Sample Name:	1815993001	Location:	Vial 98
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.527	PBA	53821.9	5.0000	CLO4-89-ISTD

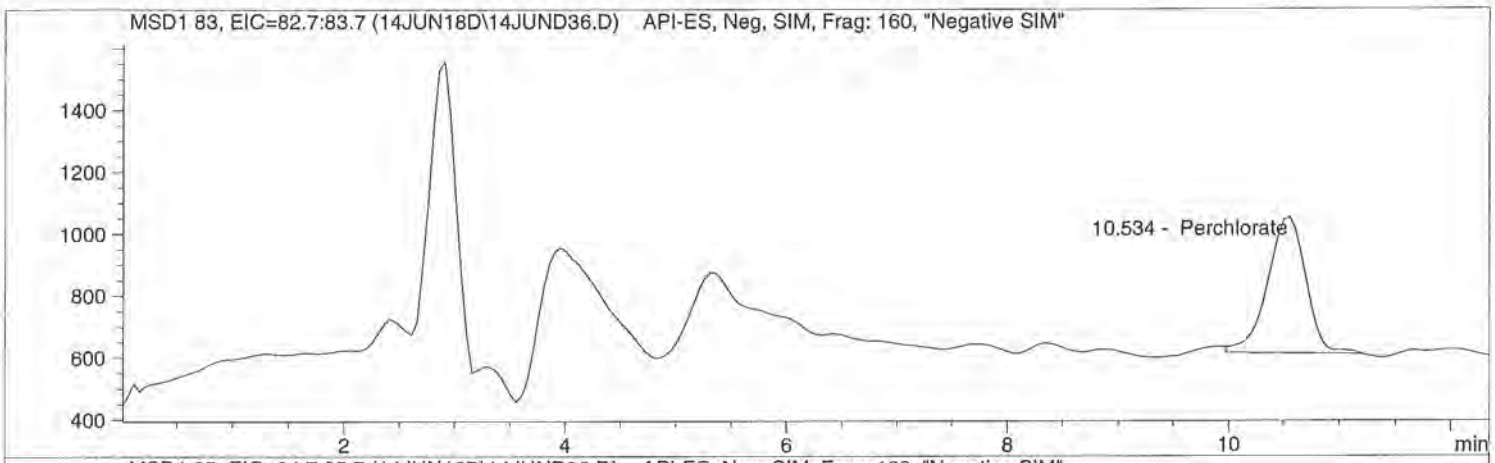
*** End of Report ***

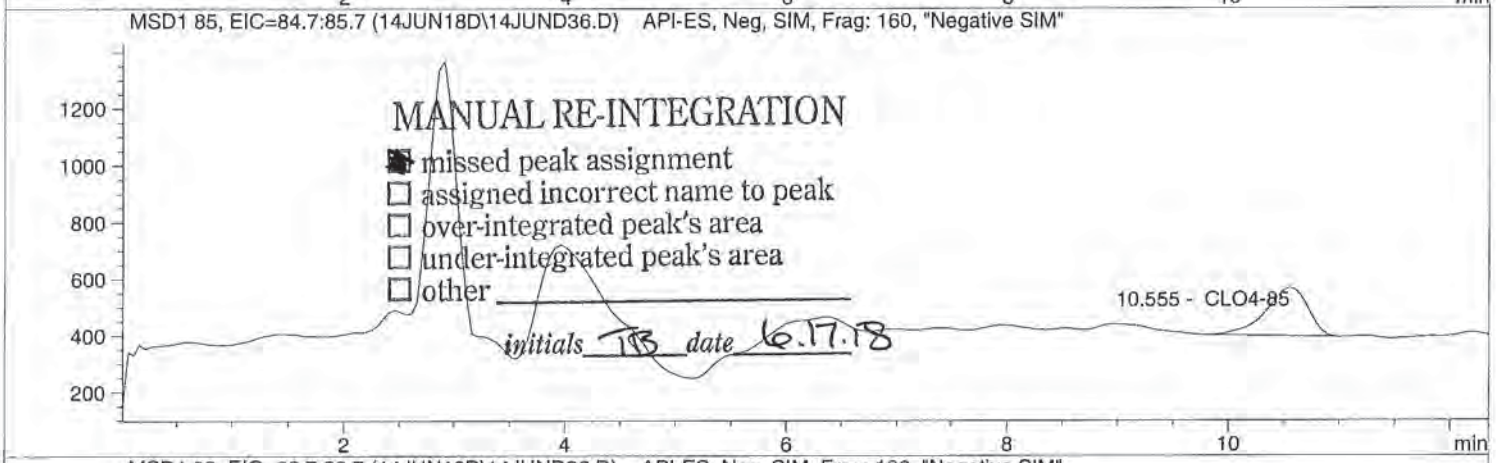
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

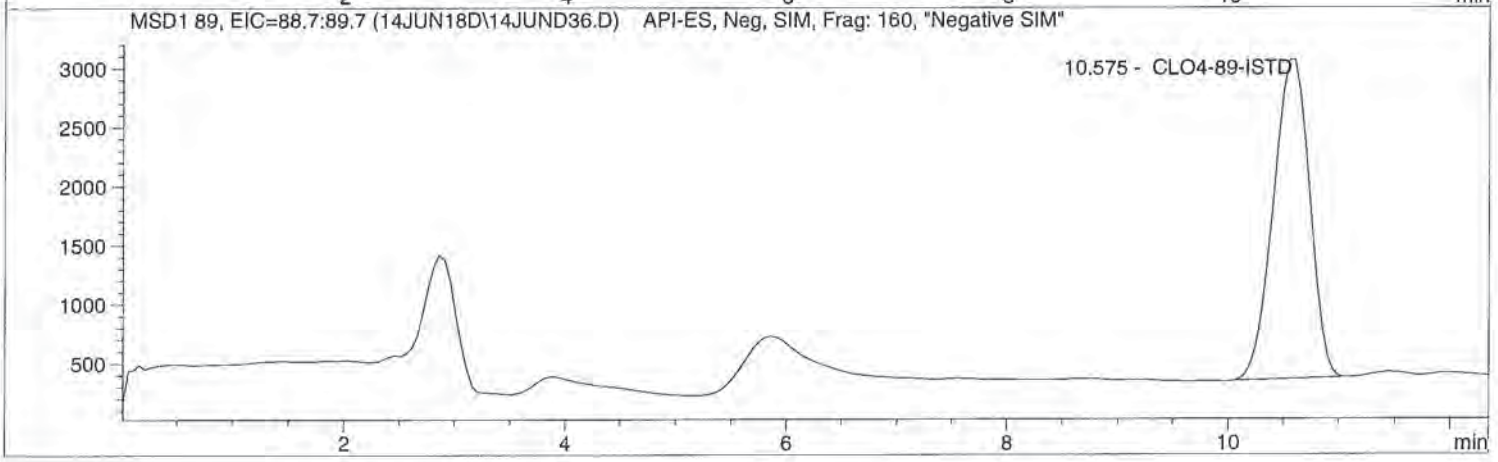
Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.534	BBA	10511.0	0.9336	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.555	MM	4480.6	0.9214	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.575	PBA	61582.9	5.0000	CLO4-89-ISTD

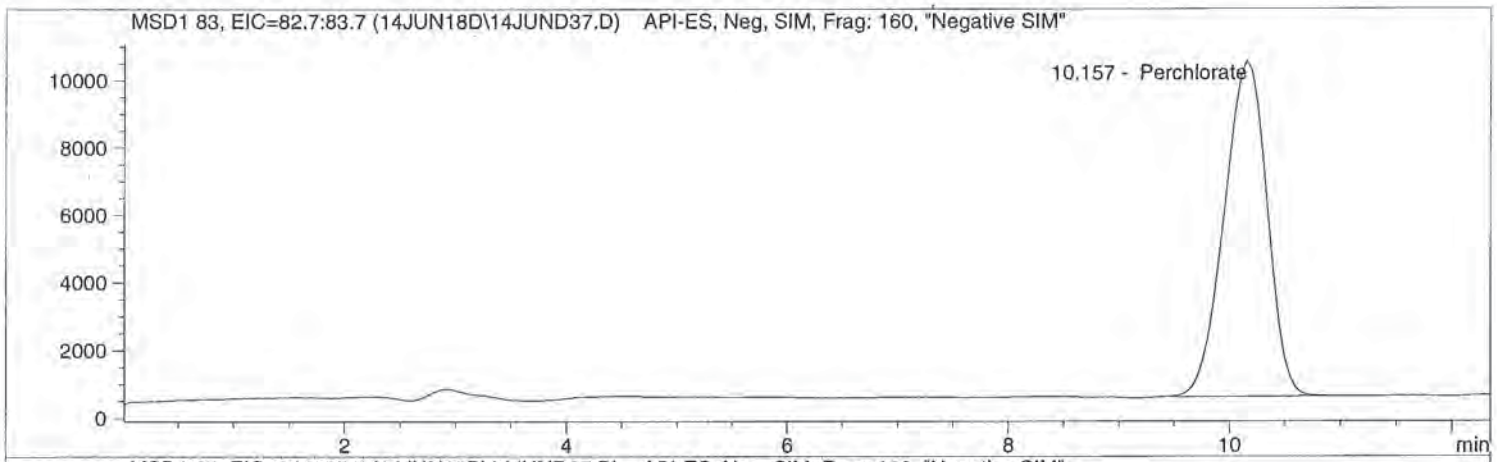
*** End of Report ***

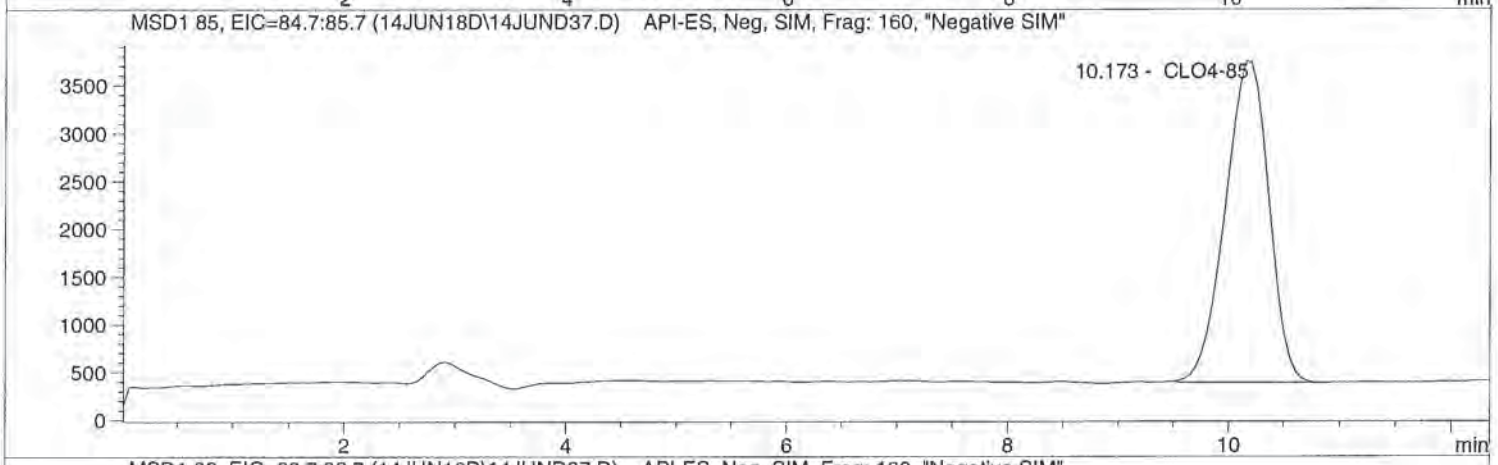
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND37.D Sample Name: 1815740002 100 00903308

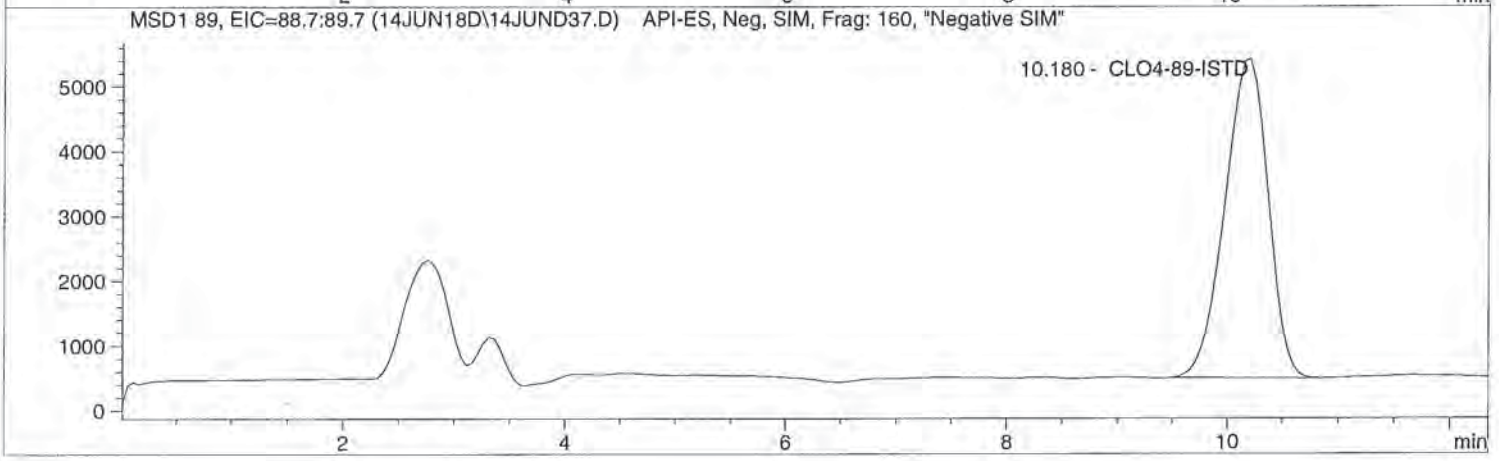
Injection Date:	6/14/2018 19:50:52	Seq Line:	37
Sample Name:	1815740002 100	Location:	Vial 51
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND37.D Sample Name: 1815740002 100

Injection Date:	6/14/2018 19:50:52	Seq Line:	37
Sample Name:	1815740002 100	Location:	Vial 51
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.157	BBA	267604.5	1017.2050	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.173	BBA	92279.9	1007.5799	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.180	BBA	134303.8	500.0000	CLO4-89-ISTD

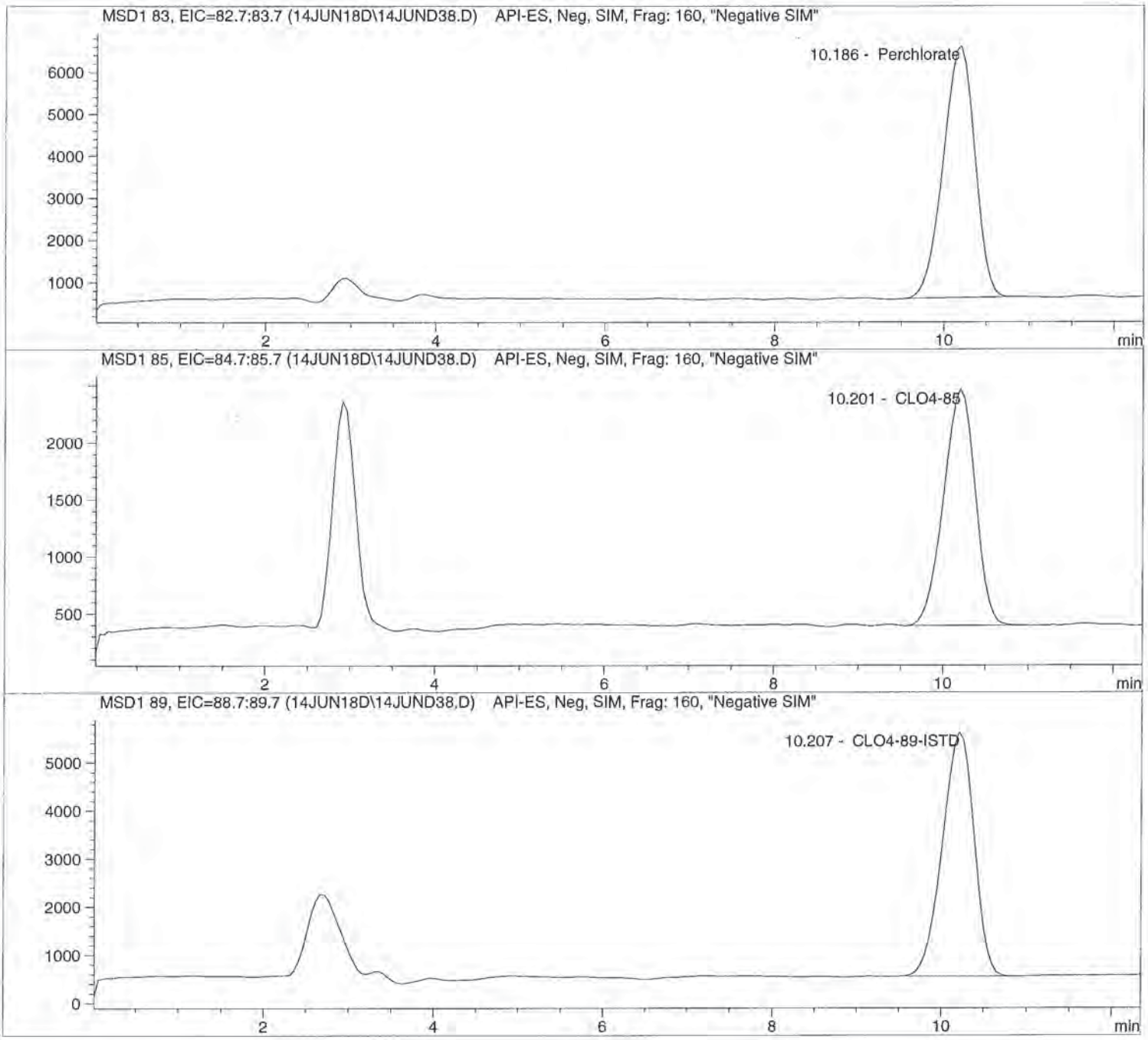
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND38.D Sample Name: 1815740003 10K 00903310

Injection Date:	6/14/2018 20:05:08	Seq Line:	38
Sample Name:	1815740003 10K	Location:	Vial 52
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Injection Date:	6/14/2018 20:05:08	Seq Line:	38
Sample Name:	1815740003 10K	Location:	Vial 52
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.186	PBA	154877.4	60914.4333	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.201	PBA	53800.4	59865.4344	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.207	BBA	131950.8	50000.0000	CLO4-89-ISTD

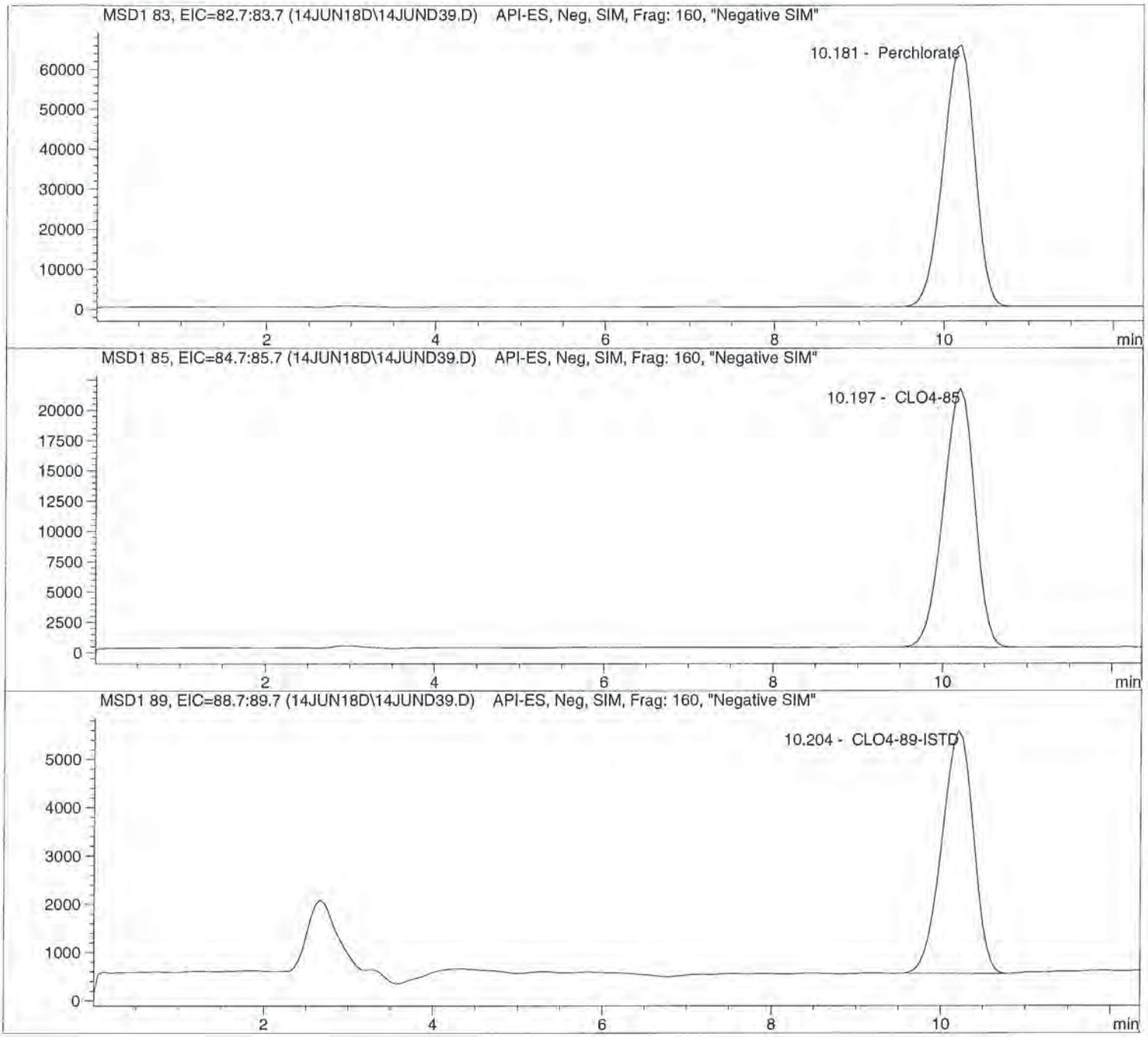
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND39.D Sample Name: 1815740005 100 00903312

Injection Date:	6/14/2018 20:19:28	Seq Line:	39
Sample Name:	1815740005 100	Location:	Vial 53
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND39.D Sample Name: 1815740005 100

Injection Date:	6/14/2018 20:19:28	Seq Line:	39
Sample Name:	1815740005 100	Location:	Vial 53
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.181	BBA	1698492.9	5684.0471	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.197	BBA	552736.8	5422.1146	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.204	BBA	131262.1	500.0000	CLO4-89-ISTD

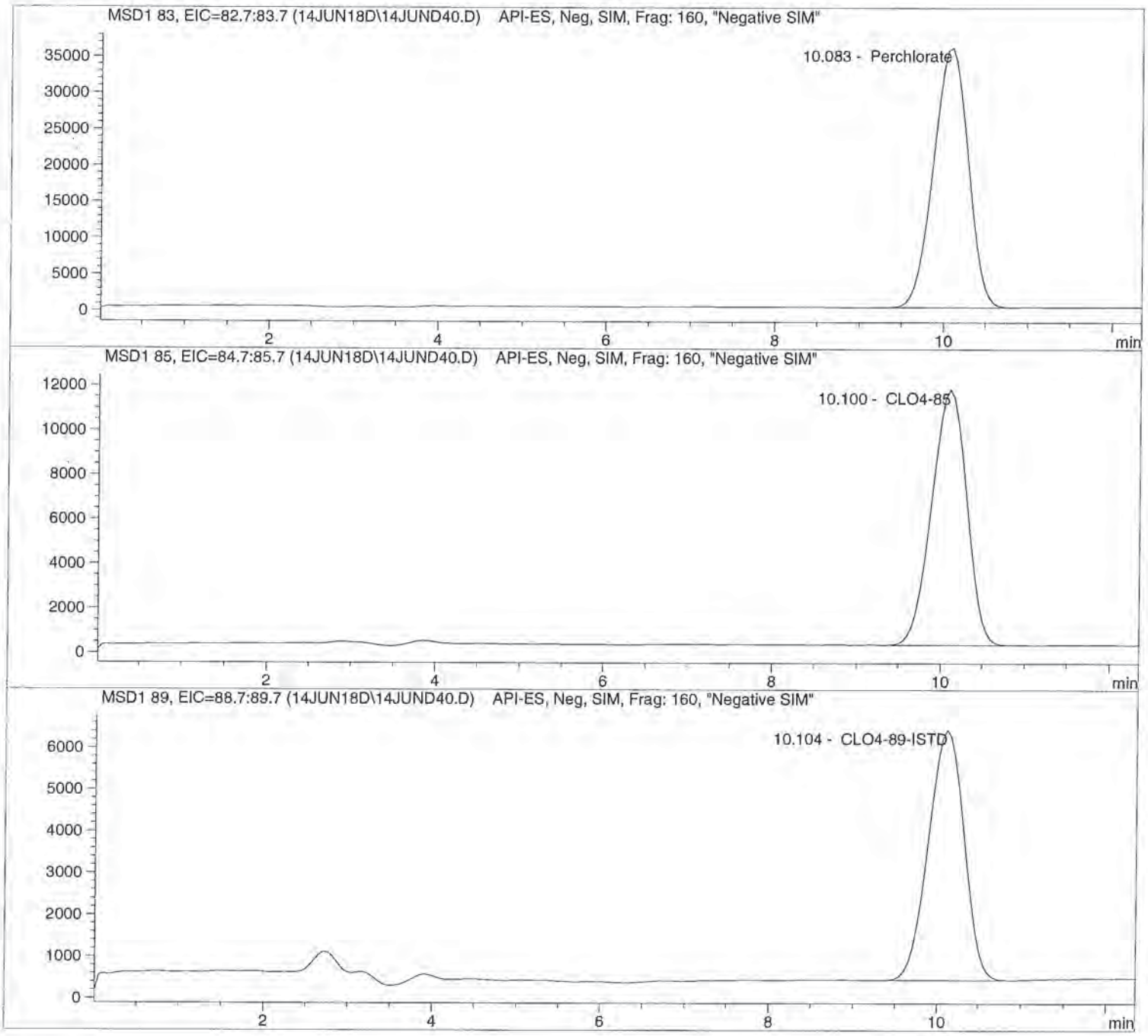
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND40.D Sample Name: 605342 CCV@25

Injection Date:	6/14/2018 20:33:44	Seq Line:	40
Sample Name:	605342 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND40.D Sample Name: 605342 CCV@25

Injection Date:	6/14/2018 20:33:44	Seq Line:	40
Sample Name:	605342 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.083	BBA	1025812.5	27.8946	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.100	PBA	332463.3	26.4023	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.104	BBA	176654.7	5.0000	CLO4-89-ISTD

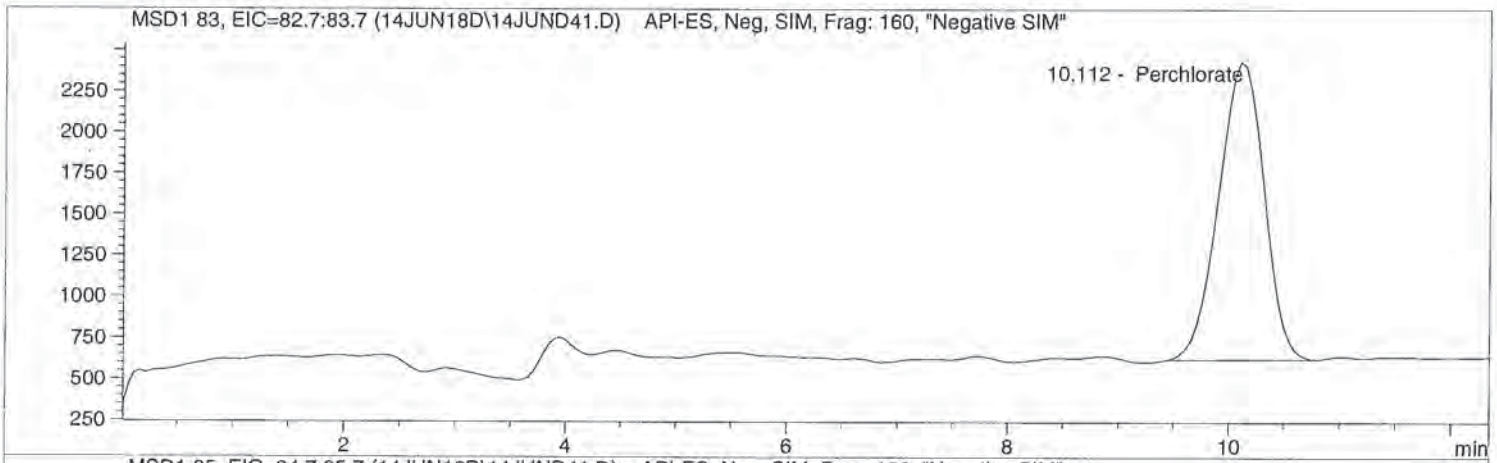
*** End of Report ***

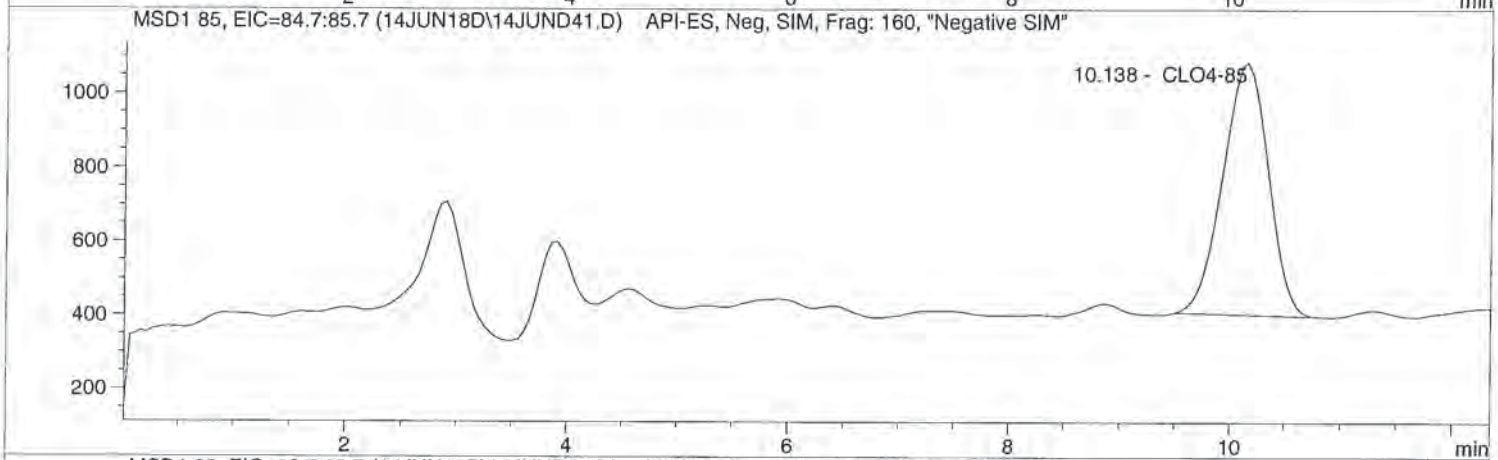
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND41.D Sample Name: 605343 LODV@1.

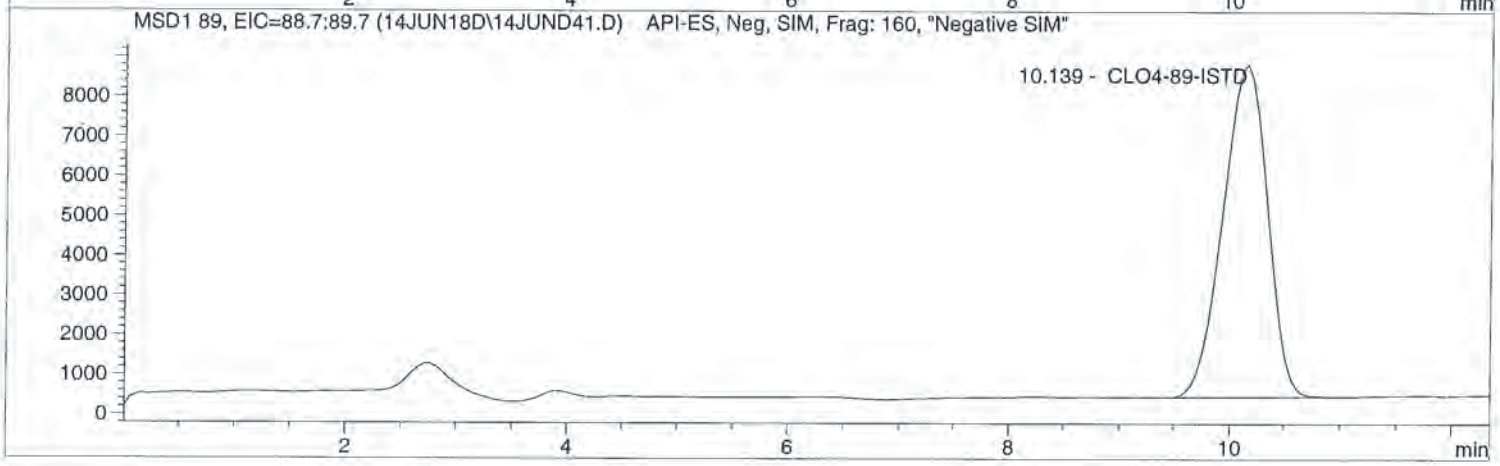
Injection Date:	6/14/2018 20:48:03	Seq Line:	41
Sample Name:	605343 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/14/2018 20:48:03	Seq Line:	41
Sample Name:	605343 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.112	PBA	52151.5	1.1970	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.138	PBA	19729.0	1.0886	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.139	PBA	235935.5	5.0000	CLO4-89-ISTD

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

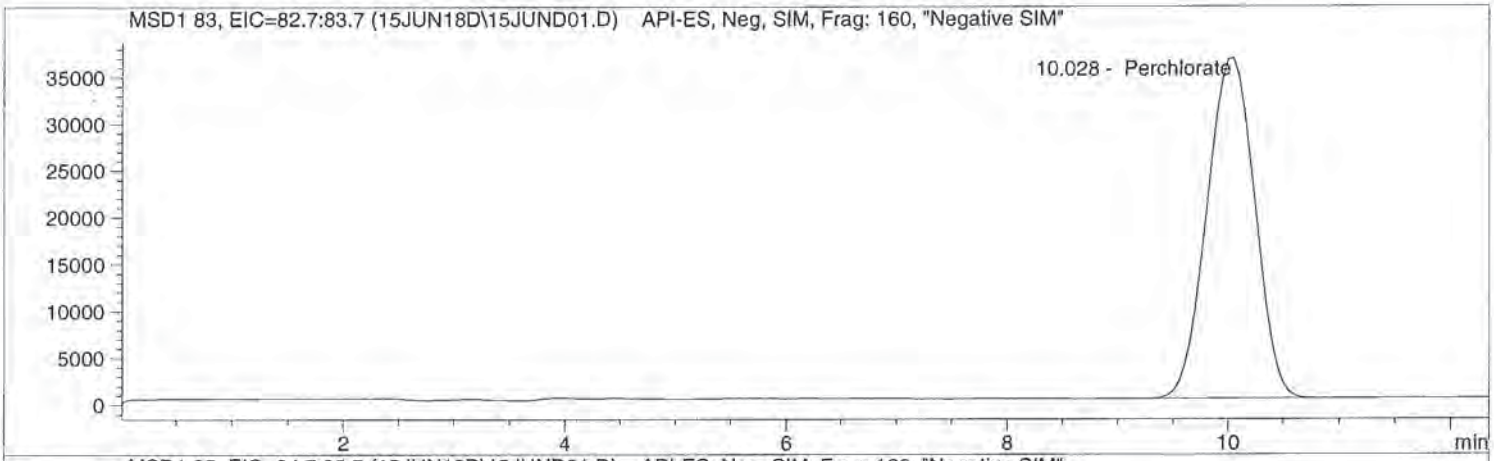
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 41	605457 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 42	605458 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 43	1815991001 5X	CLO4-DOD	1	Sample		
4	Vial 44	1815993001 5X	CLO4-DOD	1	Sample		
5	Vial 45	1816534001 5X	CLO4-DOD	1	Sample		
6	Vial 41	605459 CCV@25	CLO4-DOD	1	Ctrl Samp		
7	Vial 42	605460 LODV@1.	CLO4-DOD	1	Ctrl Samp		

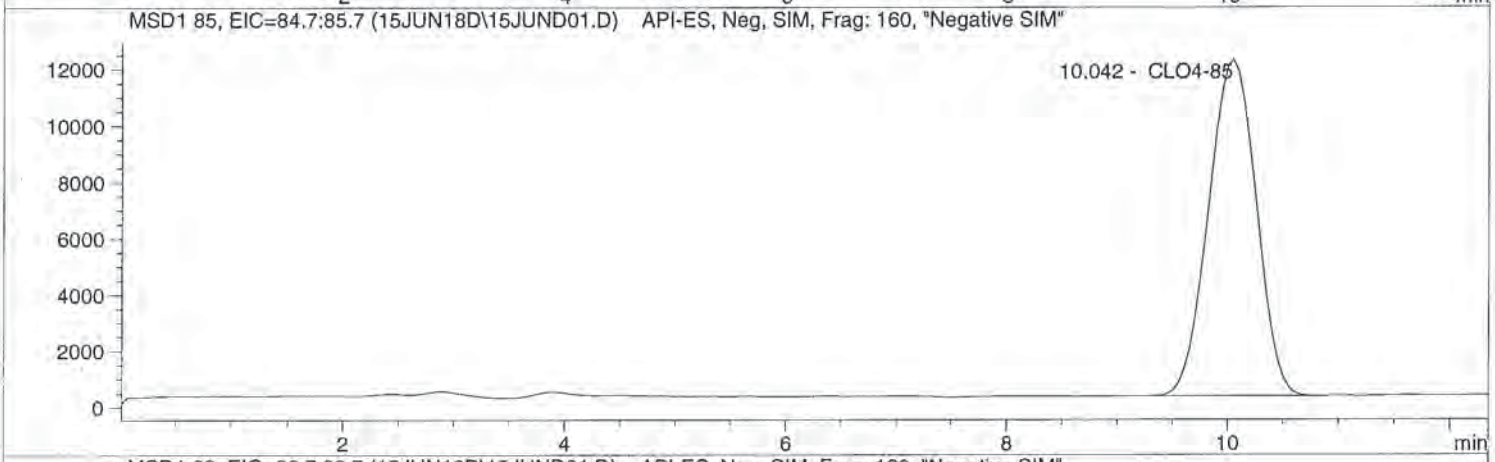
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND01.D Sample Name: 605457 CCV@25

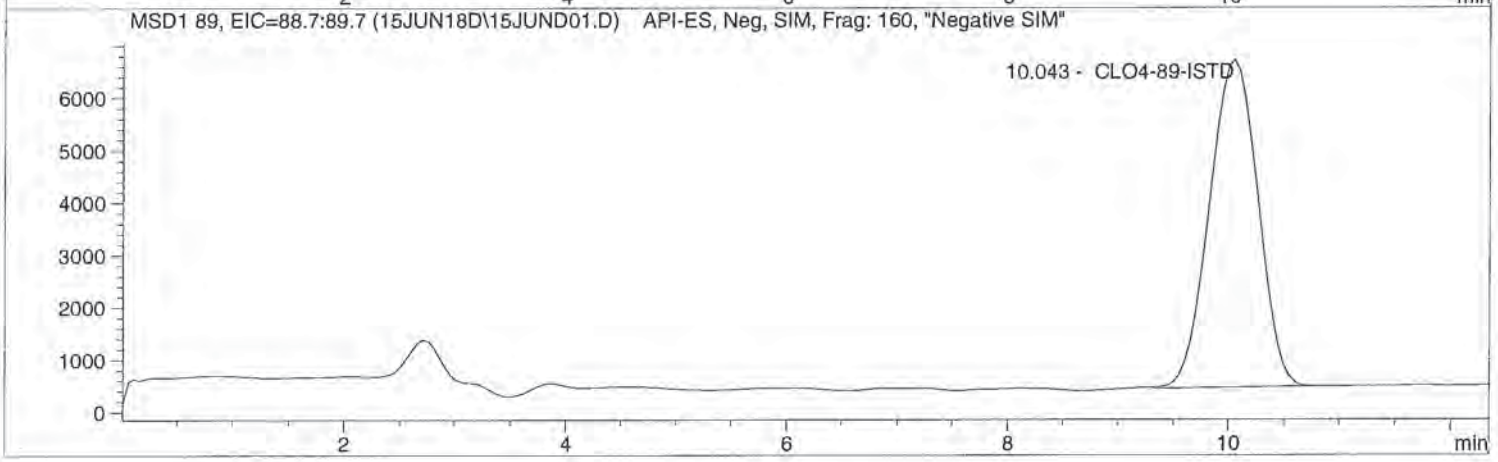
Injection Date:	6/15/2018 10:37:21	Seq Line:	1
Sample Name:	605457 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND01.D Sample Name: 605457 CCV@25

Injection Date:	6/15/2018 10:37:21	Seq Line:	1
Sample Name:	605457 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.028	BBA	1092364.1	27.5642	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.042	BBA	357588.0	26.3292	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.043	BBA	190575.5	5.0000	CLO4-89-ISTD

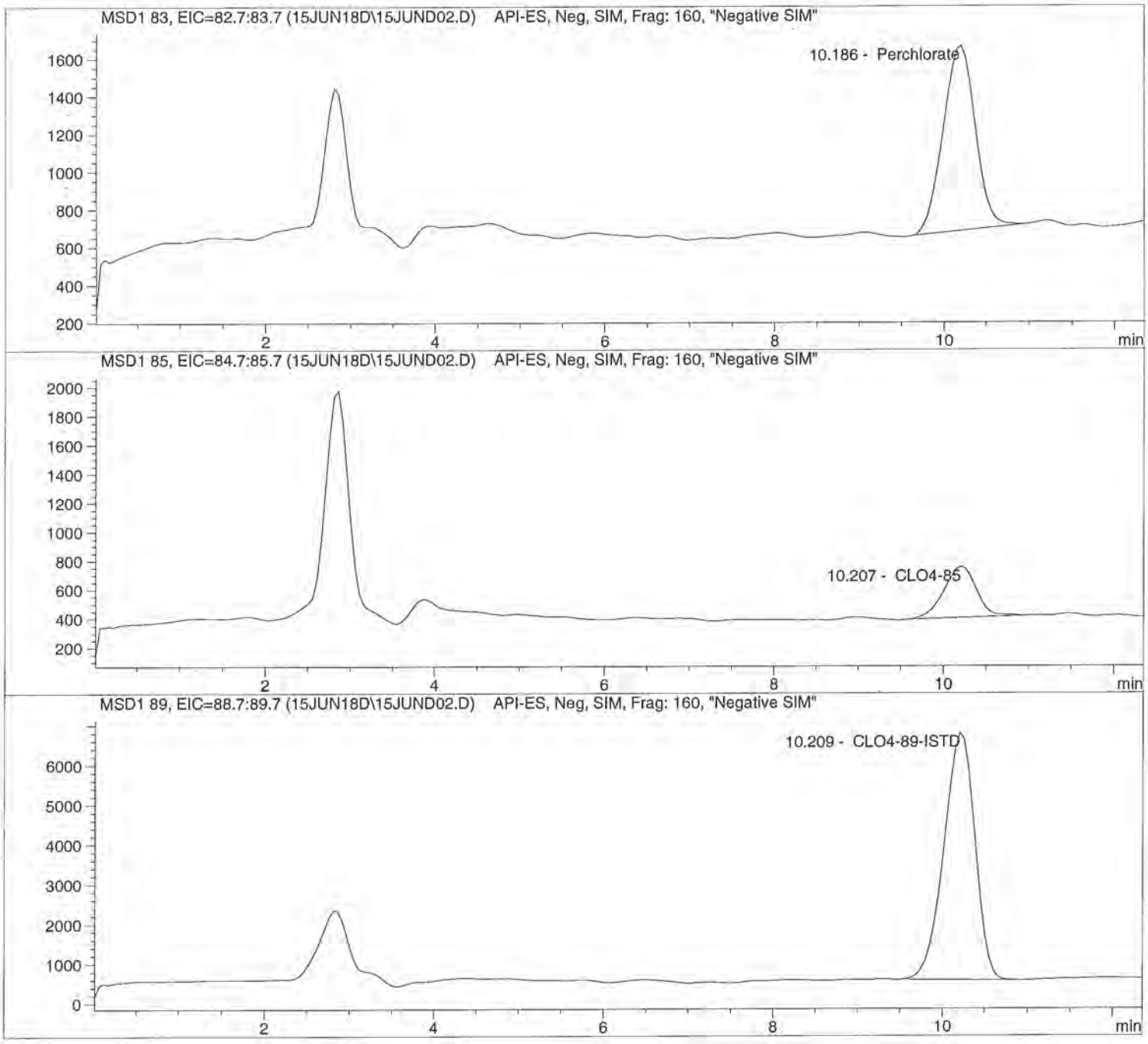
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND02.D Sample Name: 605458 LODV@1.

Injection Date:	6/15/2018 10:51:37	Seq Line:	2
Sample Name:	605458 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND02.D Sample Name: 605458 LODV@1.

Injection Date:	6/15/2018 10:51:37	Seq Line:	2
Sample Name:	605458 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.186	PBA	25754.6	0.8947	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.207	PBA	9290.9	0.7077	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.209	BBA	157760.7	5.0000	CLO4-89-ISTD

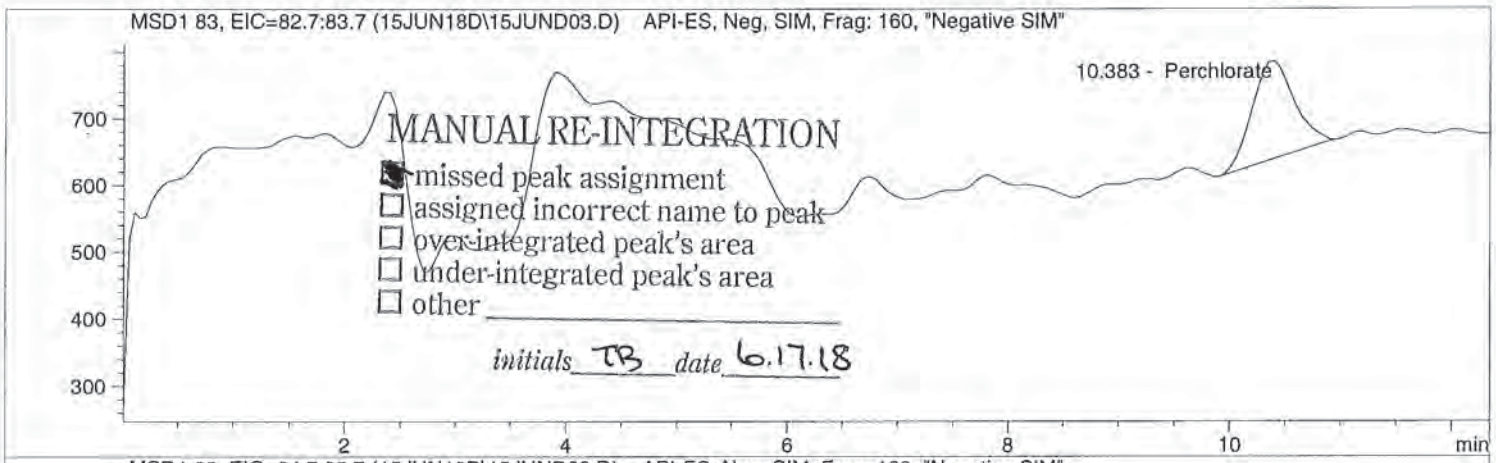
*** End of Report ***

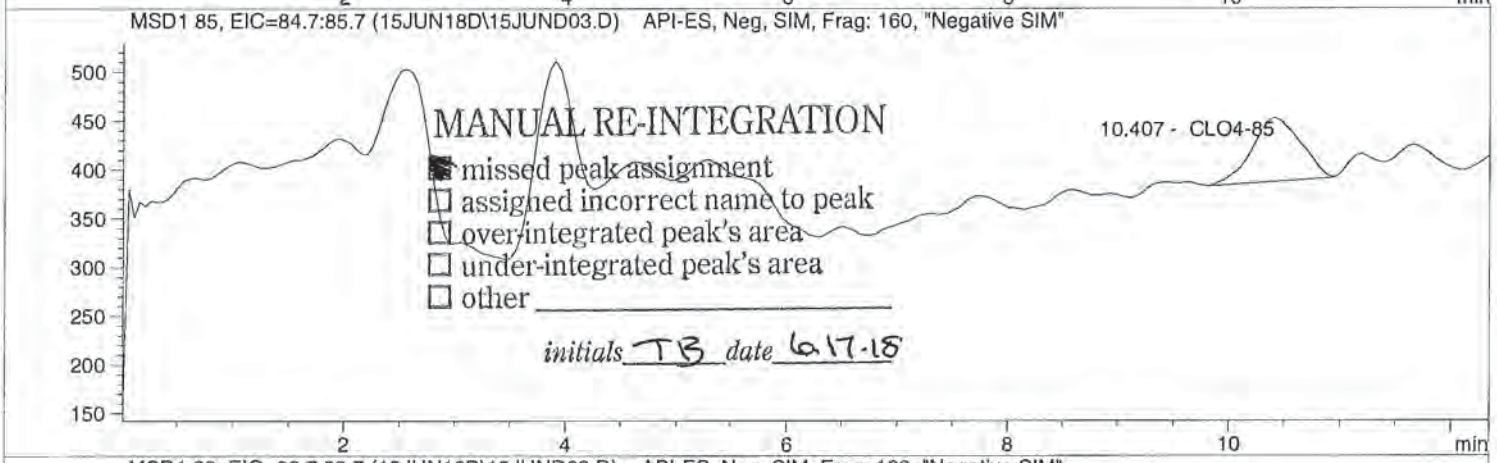
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

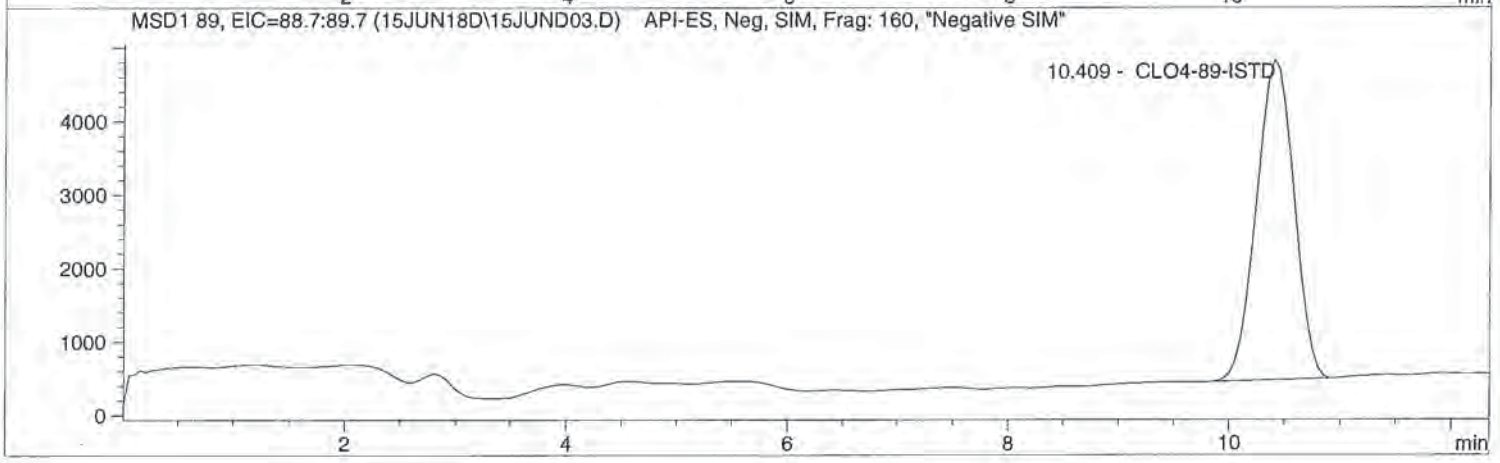
Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.383	MM	3890.4	1.1826	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.407	MM	1978.1	0.4730	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.409	PBA	102814.8	25.0000	CLO4-89-ISTD

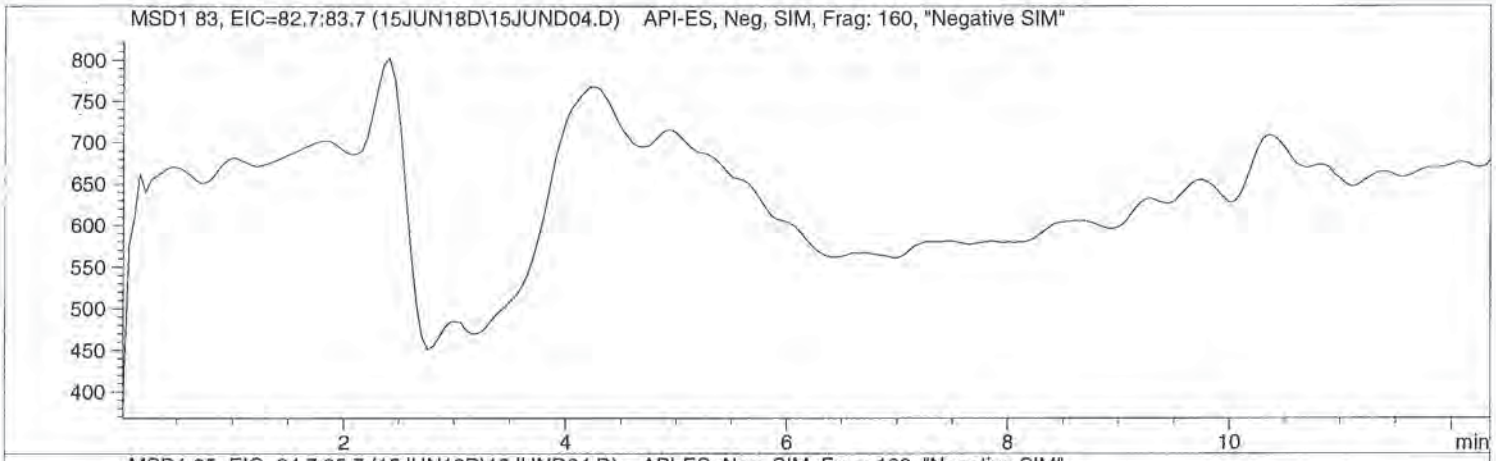
*** End of Report ***

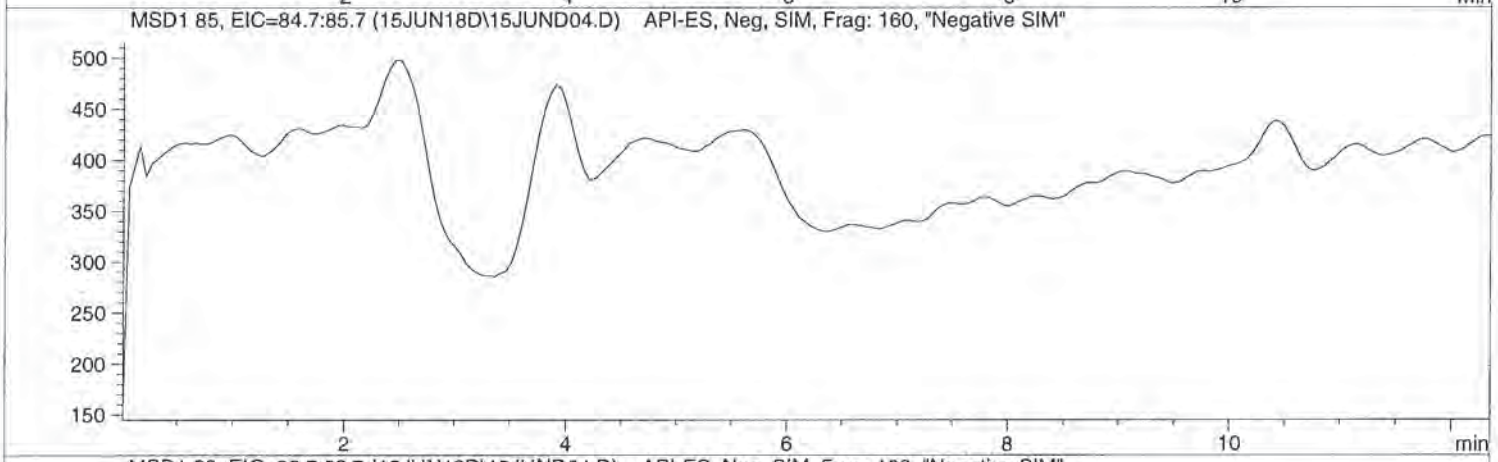
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND04.D Sample Name: 1815993001 5X

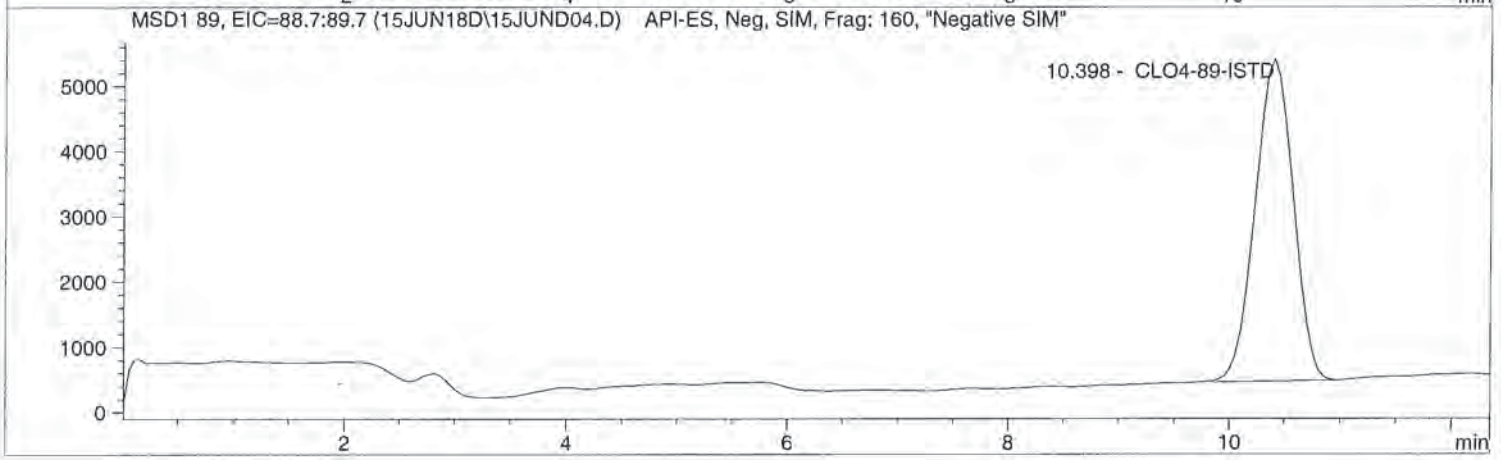
Injection Date:	6/15/2018 11:32:13	Seq Line:	4
Sample Name:	1815993001 5X	Location:	Vial 44
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/15/2018 11:32:13	Seq Line:	4
Sample Name:	1815993001 5X	Location:	Vial 44
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
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
10.398	BBA	118350.6	25.0000	CLO4-89-ISTD

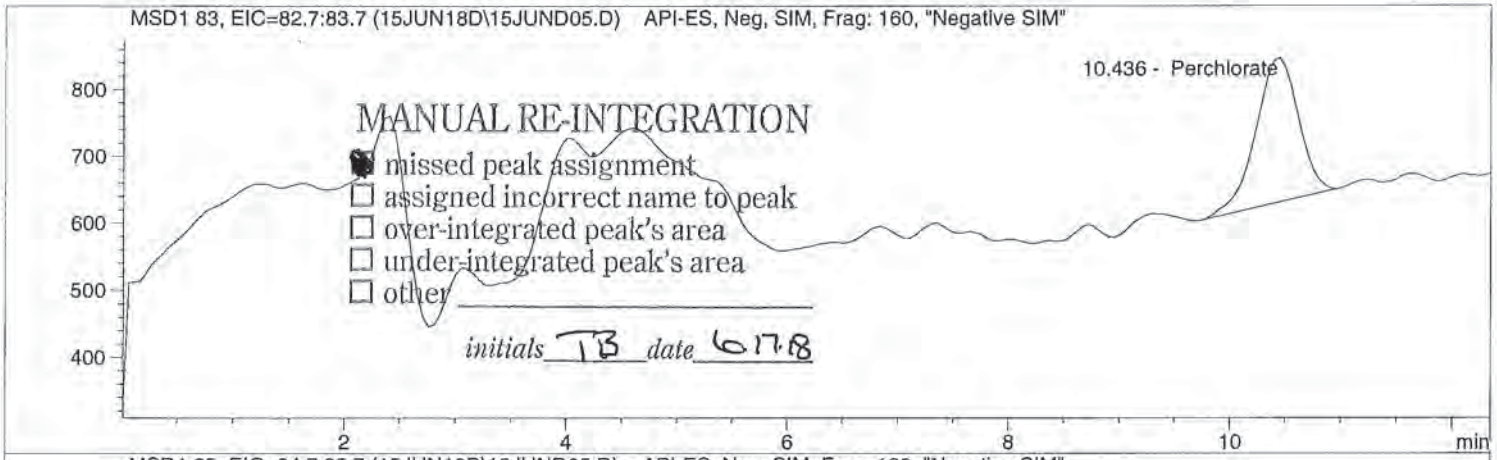
*** End of Report ***

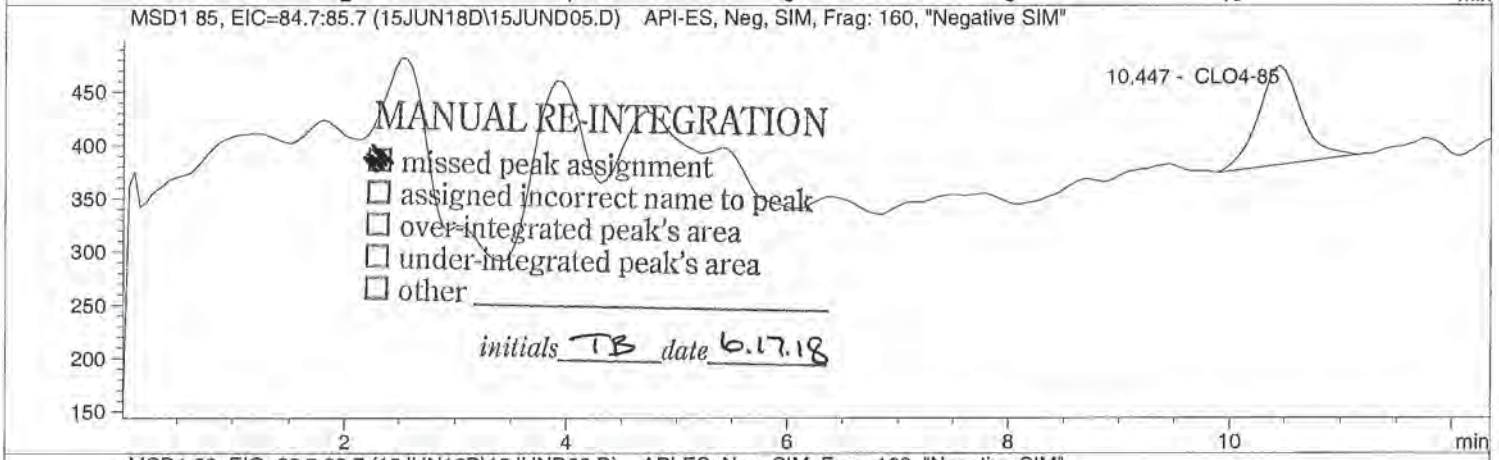
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

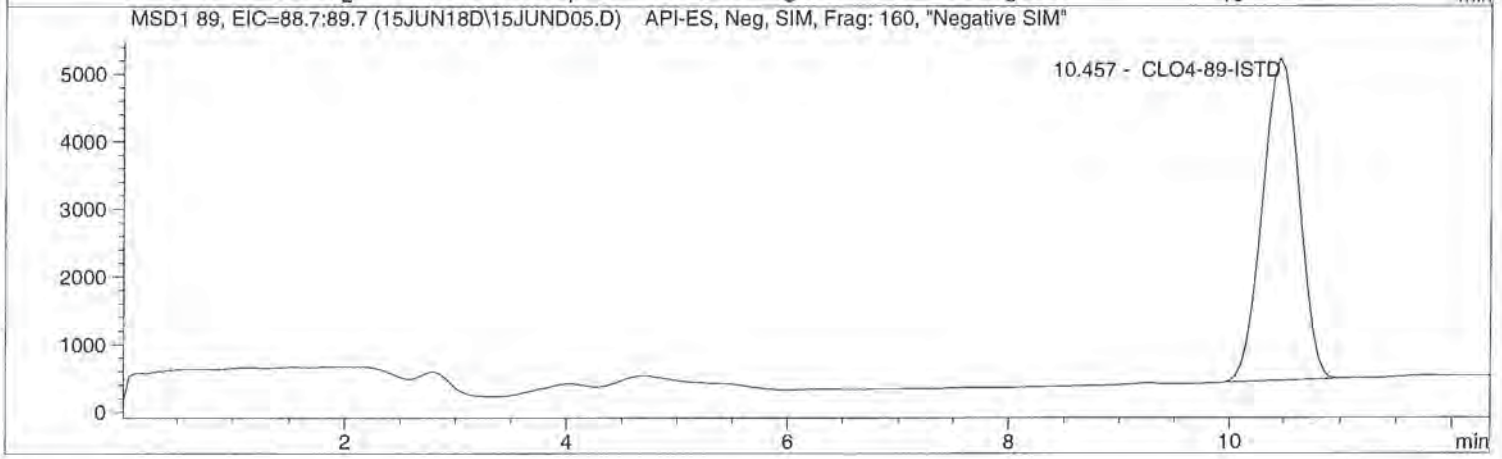
Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.436	MM	5786.6	1.5782	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.447	MM	2493.5	0.7479	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.457	PBA	109428.6	25.0000	CLO4-89-ISTD

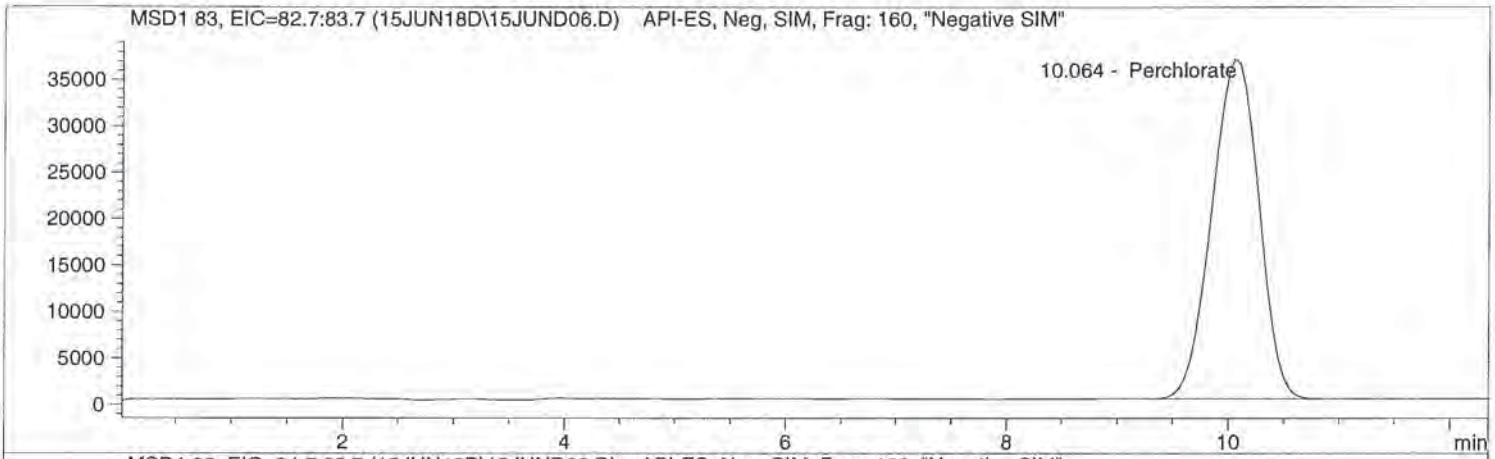
*** End of Report ***

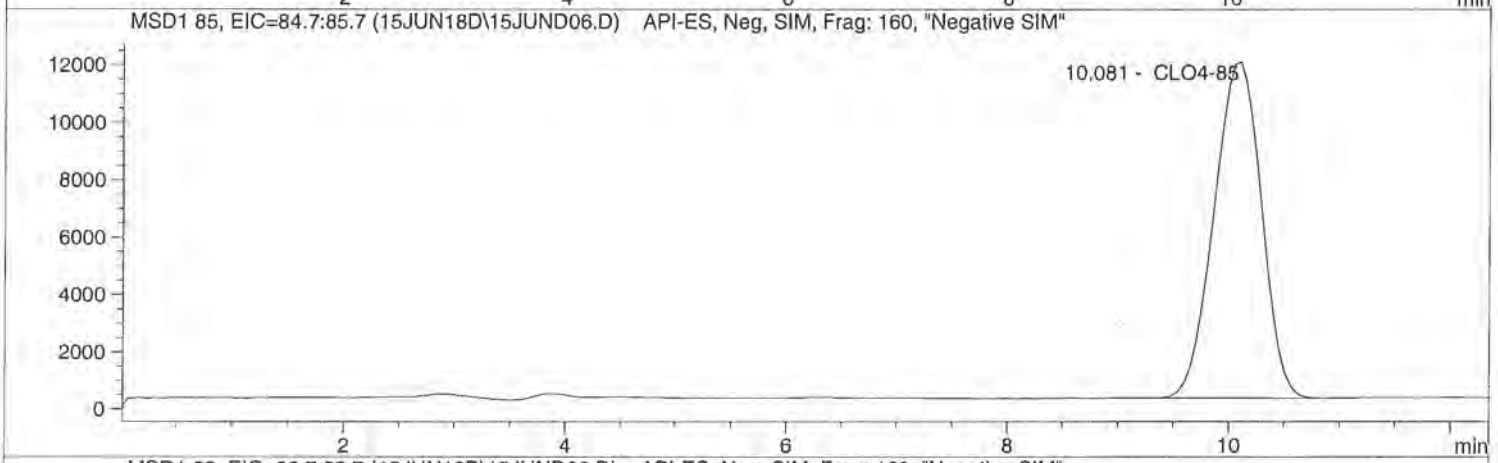
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND06.D Sample Name: 605459 CCV@25

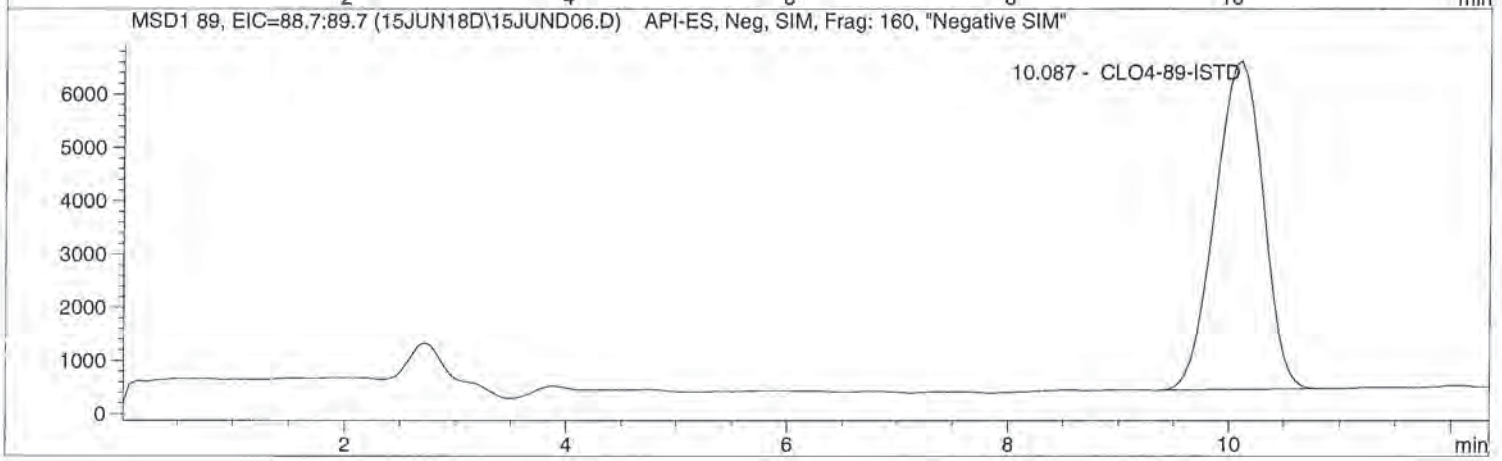
Injection Date:	6/15/2018 12:03:05	Seq Line:	6
Sample Name:	605459 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND06.D Sample Name: 605459 CCV@25

Injection Date:	6/15/2018 12:03:05	Seq Line:	6
Sample Name:	605459 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.064	BBA	1079758.9	27.9158	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.081	BBA	349017.1	26.3576	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.087	PBA	185790.9	5.0000	CLO4-89-ISTD

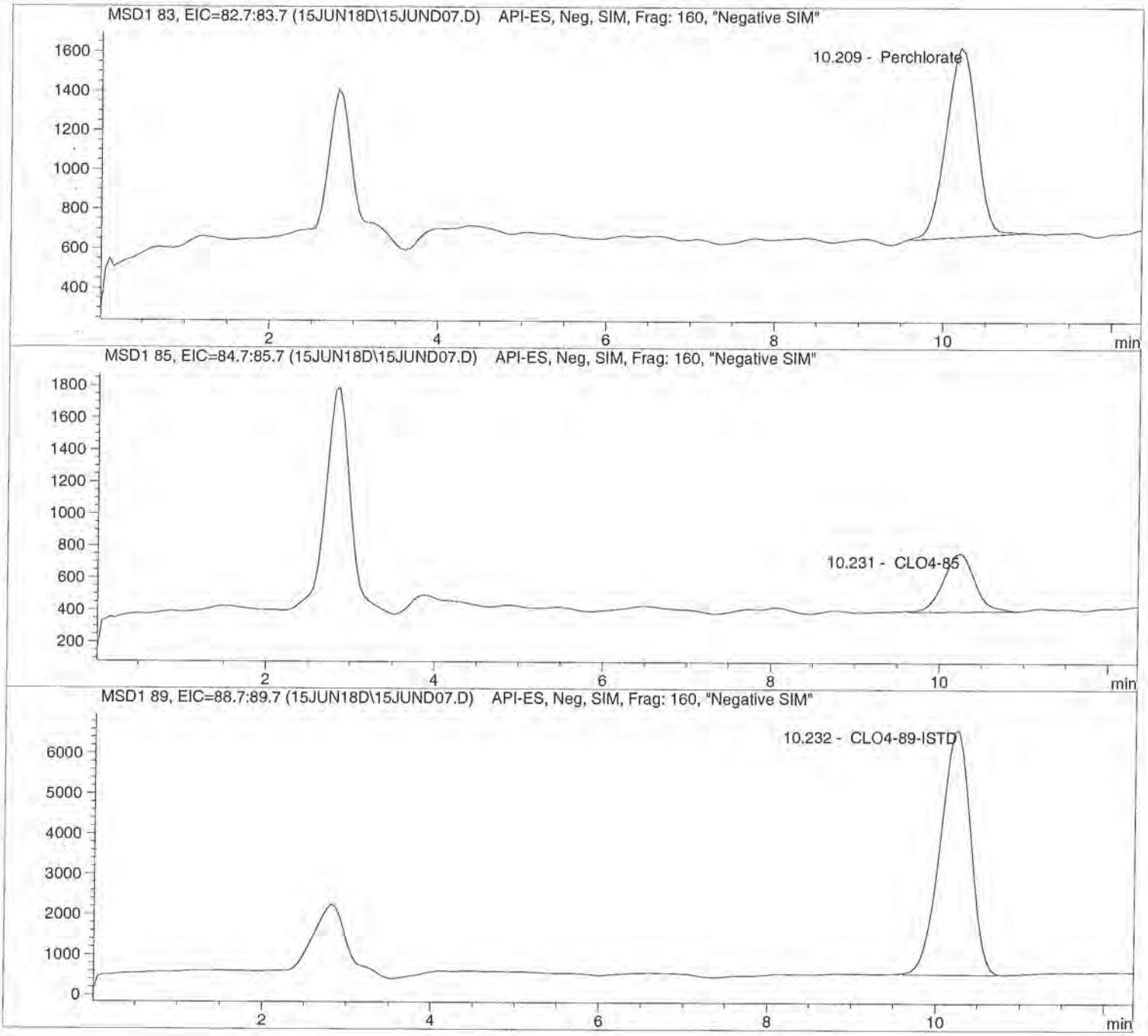
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND07.D Sample Name: 605460 LODV@1.

Injection Date:	6/15/2018 12:17:20	Seq Line:	7
Sample Name:	605460 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND07.D Sample Name: 605460 LODV@1.

Injection Date:	6/15/2018 12:17:20	Seq Line:	7
Sample Name:	605460 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.209	BBA	24091.2	0.8675	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.231	BBA	9372.8	0.7478	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.232	BBA	152424.6	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Calibration Table

Perchlorate

Calib. Data Modified : Thursday, June 14, 2018 1:02:33 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
10.151	1	1	1.00000	3.93380e4	2.54207e-5		1	Perchlorate
		2	2.00000	7.00576e4	2.85479e-5			
		3	5.00000	1.44153e5	3.46853e-5			
		4	10.00000	3.31118e5	3.02007e-5			
		5	25.00000	8.76318e5	2.85284e-5			
		6	50.00000	1.69767e6	2.94521e-5			
		7	75.00000	2.68817e6	2.79000e-5			
10.161	2	1	1.00000	1.61954e4	6.17458e-5		1	CLO4-85
		2	2.00000	2.74079e4	7.29716e-5			
		3	5.00000	5.16950e4	9.67211e-5			
		4	10.00000	1.15839e5	8.63264e-5			
		5	25.00000	3.00355e5	8.32349e-5			
		6	50.00000	5.83140e5	8.57427e-5			
		7	75.00000	9.25902e5	8.10021e-5			
10.170	3	1	5.00000	2.16479e5	2.30970e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.81269e5	2.75832e-5			
		3	5.00000	1.53680e5	3.25352e-5			
		4	5.00000	1.70890e5	2.92586e-5			
		5	5.00000	1.67256e5	2.98944e-5			
		6	5.00000	1.53418e5	3.25908e-5			

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	5.00000	1.49175e5	3.35177e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 8.061 min To 12.061 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

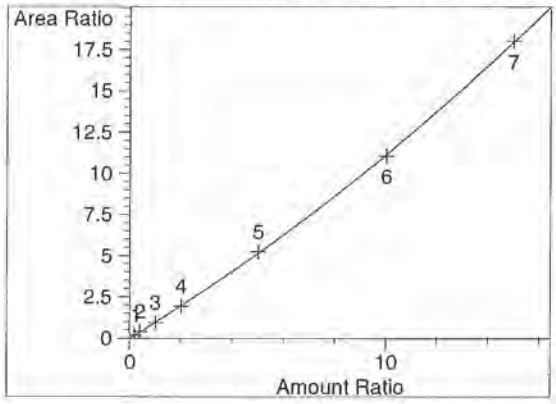
Compound: CLO4-85
- Time Window : From 8.055 min To 12.055 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 8.063 min To 12.049 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

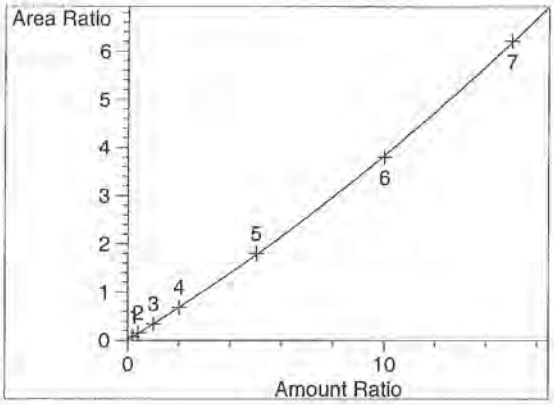
Peak Sum Table

No Entries in table

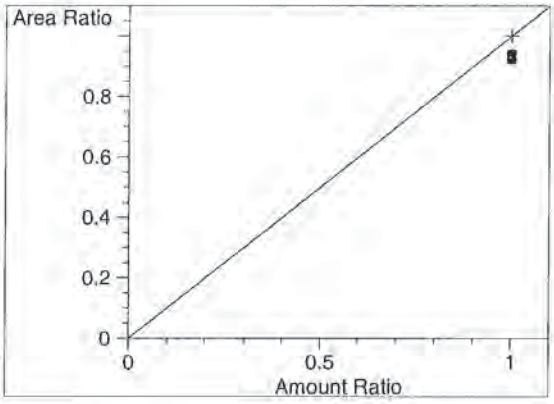
Calibration Curves



Perchlorate at exp. RT: 10.151
MSD1 83, EIC=82.7:83.7
Correlation: 0.99996
Residual Std. Dev.: 0.05799
Formula: $y = ax^2 + bx + c$
a: 1.67107e-2
b: 9.48902e-1
c: -7.08771e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-85 at exp. RT: 10.161
MSD1 85, EIC=84.7:85.7
Correlation: 0.99995
Residual Std. Dev.: 0.01944
Formula: $y = ax^2 + bx + c$
a: 5.96376e-3
b: 3.22428e-1
c: 1.31363e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 10.170
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1

Sequence Table:

Method and Injection Info Part:

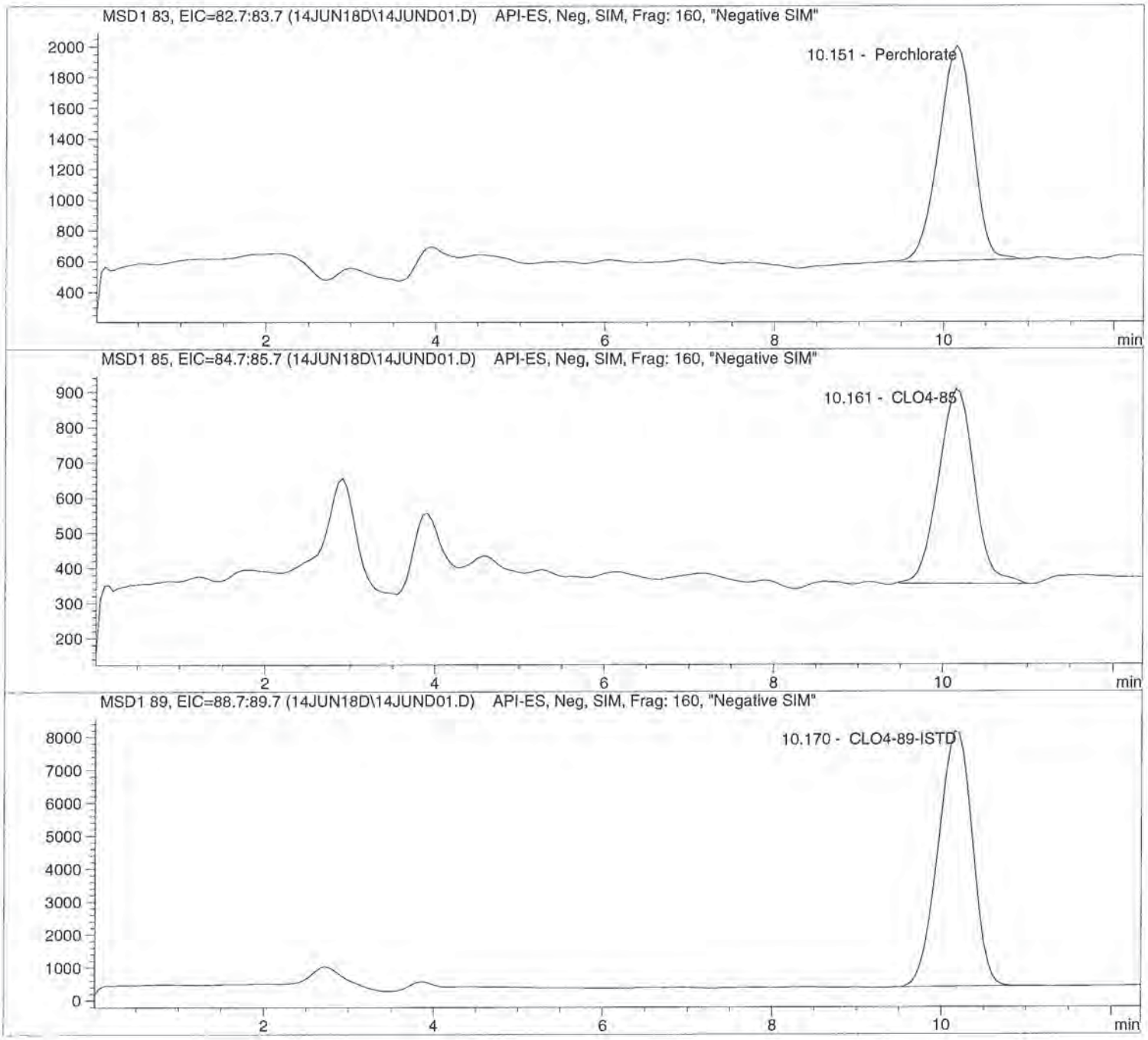
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605272 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605273 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605274 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605275 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605276 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815740001 1K	CLO4-DOD	1	Sample		
15	Vial 81	605274 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
16	Vial 85	1815740002 1K	CLO4-DOD	1	Sample		
17	Vial 86	1815740003 10	CLO4-DOD	1	Sample		
18	Vial 87	1815740004	CLO4-DOD	1	Sample		
19	Vial 88	1815740005	CLO4-DOD	1	Sample		
20	Vial 61	Rinse	CLO4-DOD	1	Sample	50	
21	Vial 89	1815740006	CLO4-DOD	1	Sample		
22	Vial 90	1815740007	CLO4-DOD	1	Sample		
23	Vial 91	1815988001	CLO4-DOD	1	Sample		
24	Vial 92	1815988002 1K	CLO4-DOD	1	Sample		
25	Vial 93	1815988003 1K	CLO4-DOD	1	Sample		
26	Vial 91	1815988001 1K	CLO4-DOD	1	Sample		
27	Vial 75	605277 CCV@25	CLO4-DOD	1	Ctrl Samp		
28	Vial 61	Rinse	CLO4-DOD	1	Sample	50	
29	Vial 71	605278 LODV@1.	CLO4-DOD	1	Ctrl Samp		
30	Vial 62	605278 LODV@1.	CLO4-DOD	1	Ctrl Samp		
31	Vial 94	1815988004 MS	CLO4-DOD	1	Sample		
32	Vial 95	1815988005 MSD	CLO4-DOD	1	Sample		
33	Vial 96	1815991001	CLO4-DOD	1	Sample		
34	Vial 97	1815992001 1K	CLO4-DOD	1	Sample		
35	Vial 98	1815993001	CLO4-DOD	1	Sample		
36	Vial 99	1816534001	CLO4-DOD	1	Sample		
37	Vial 51	1815740002 100	CLO4-DOD	1	Sample		
38	Vial 52	1815740003 10K	CLO4-DOD	1	Sample		
39	Vial 53	1815740005 100	CLO4-DOD	1	Sample		
40	Vial 75	605342 CCV@25	CLO4-DOD	1	Ctrl Samp		
41	Vial 71	605343 LODV@1.	CLO4-DOD	1	Ctrl Samp		
42	Vial 62	605343 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/14/2018 09:51:06	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/14/2018 09:51:06	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.151	BBA	39338.0	0.9914	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.161	BBA	16195.4	0.9531	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.170	PBA	216478.8	5.0000	CLO4-89-ISTD

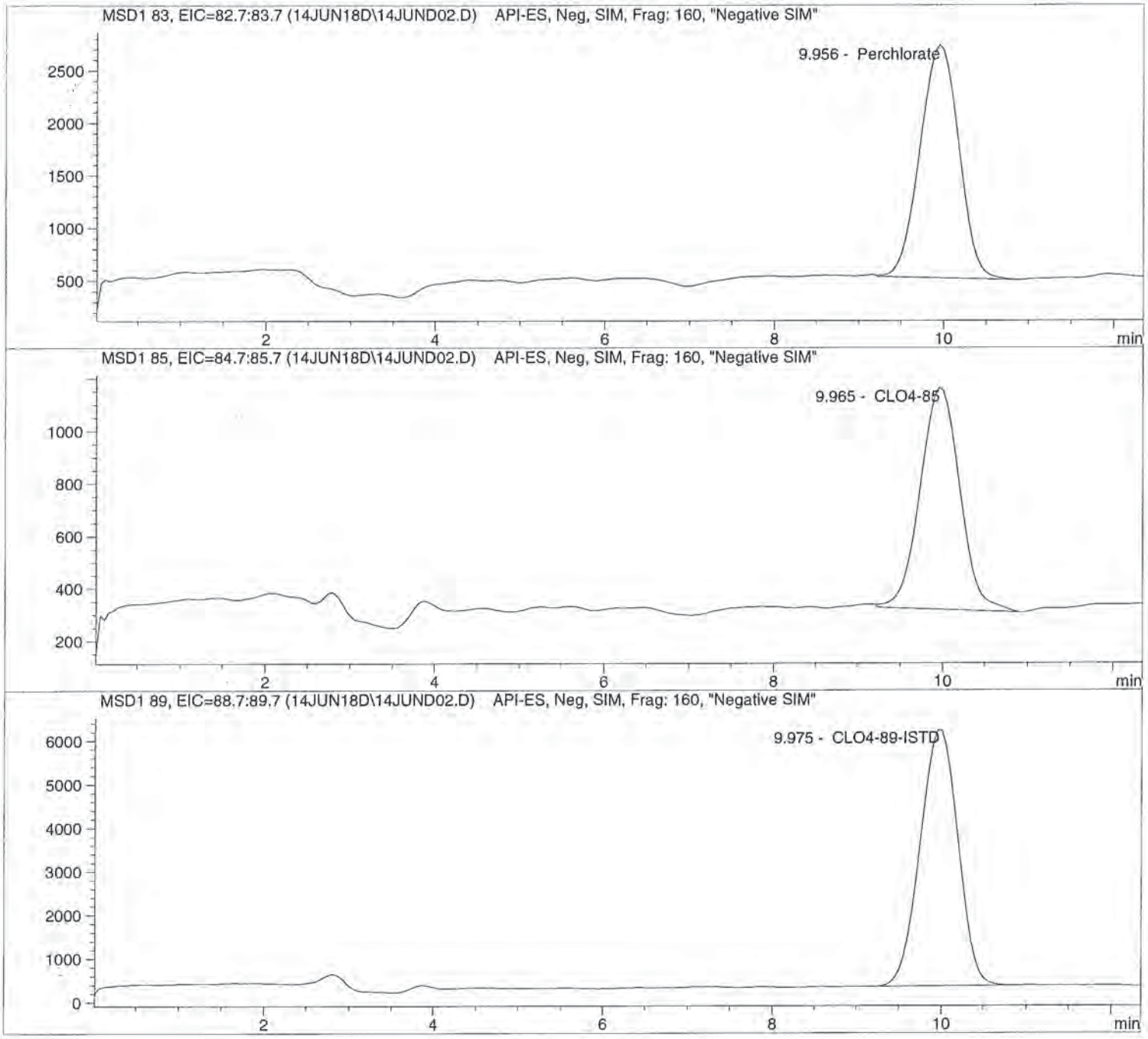
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/14/2018 10:05:22	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/14/2018 10:05:22	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.956	BBA	70057.6	2.0589	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.965	BBA	27407.9	2.1243	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.975	PBA	181269.5	5.0000	CLO4-89-ISTD

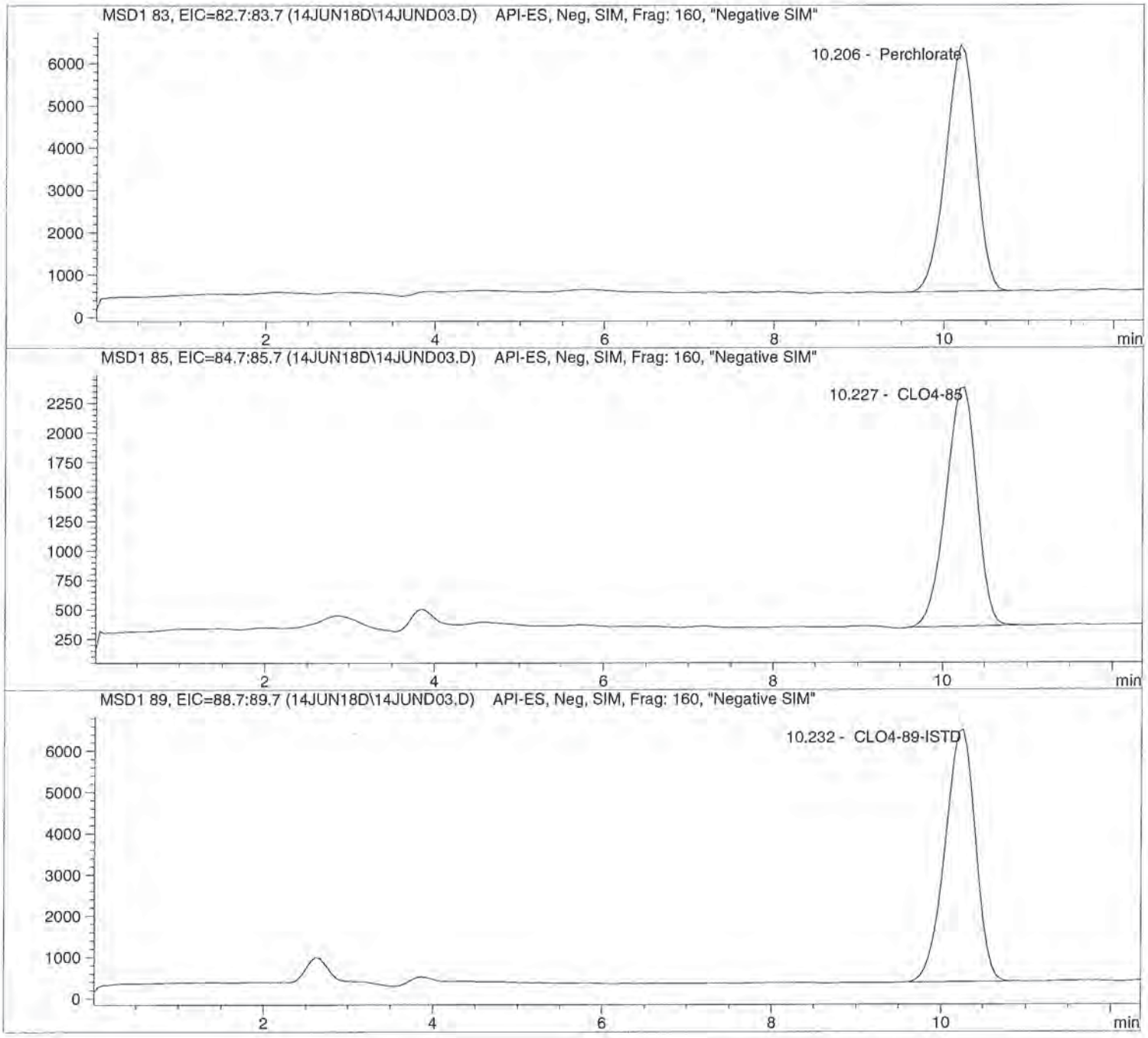
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/14/2018 10:19:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/14/2018 10:19:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.206	PBA	144153.2	4.8955	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.227	PBA	51695.0	4.9230	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.232	BBA	153679.7	5.0000	CLO4-89-ISTD

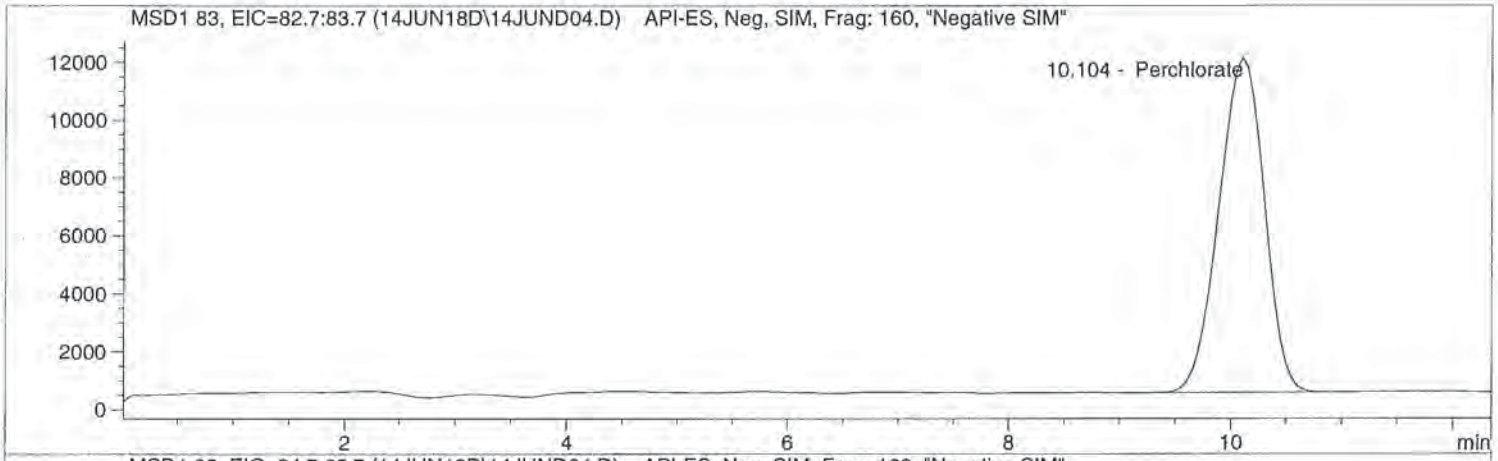
*** End of Report ***

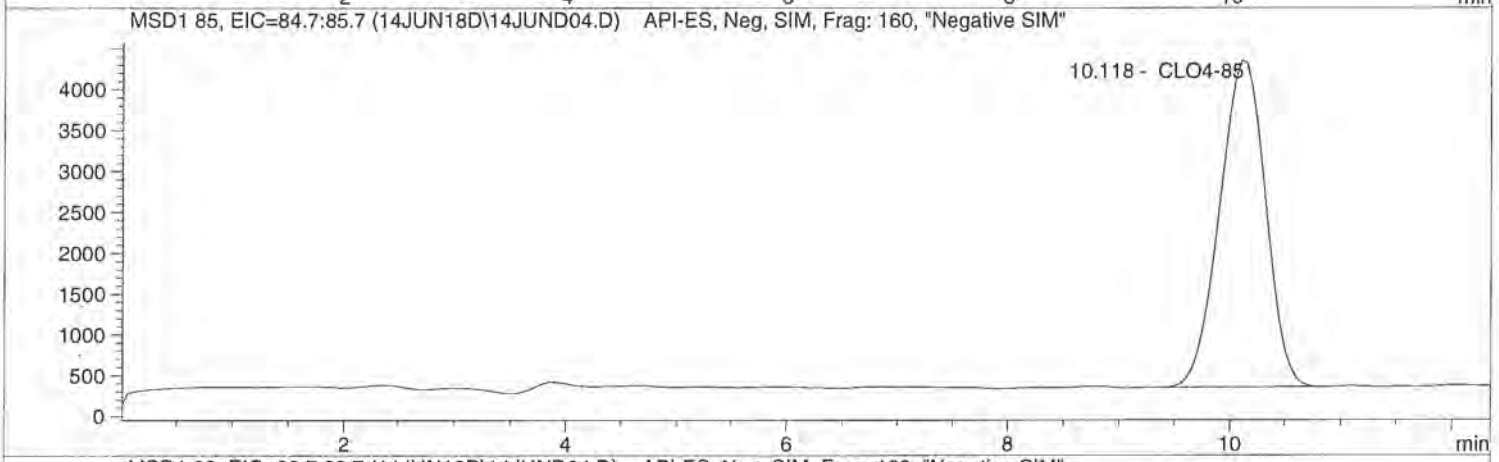
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND04.D Sample Name: ICAL4@ 10.ug/L

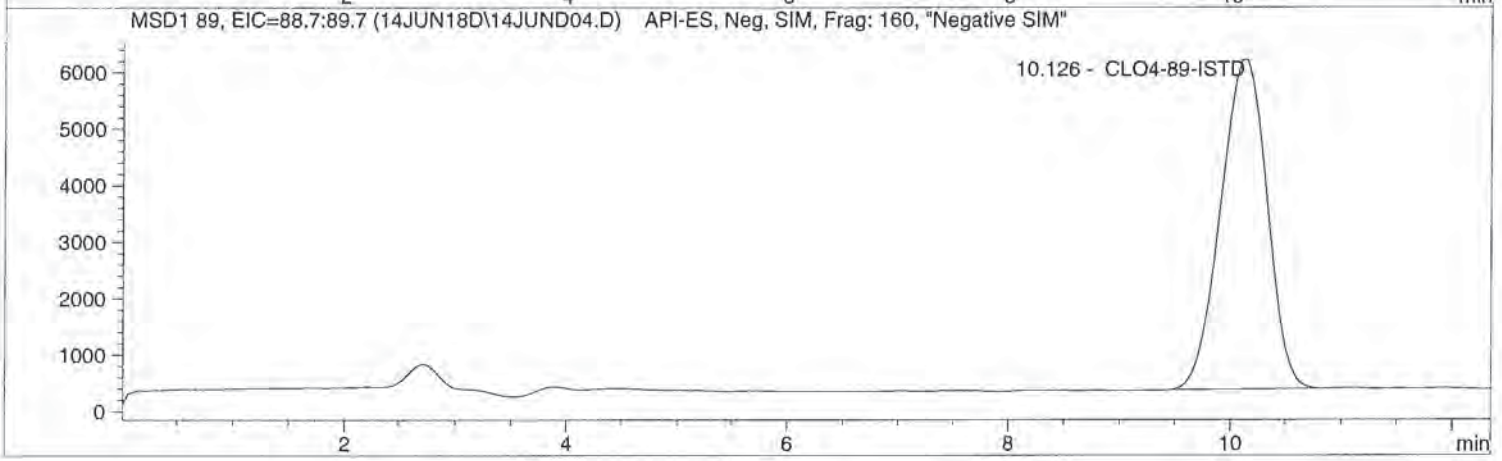
Injection Date:	6/14/2018 10:33:59	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/14/2018 10:33:59	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.104	BBA	331117.7	9.9018	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.118	PBA	115839.4	9.9424	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.126	PBA	170890.1	5.0000	CLO4-89-ISTD

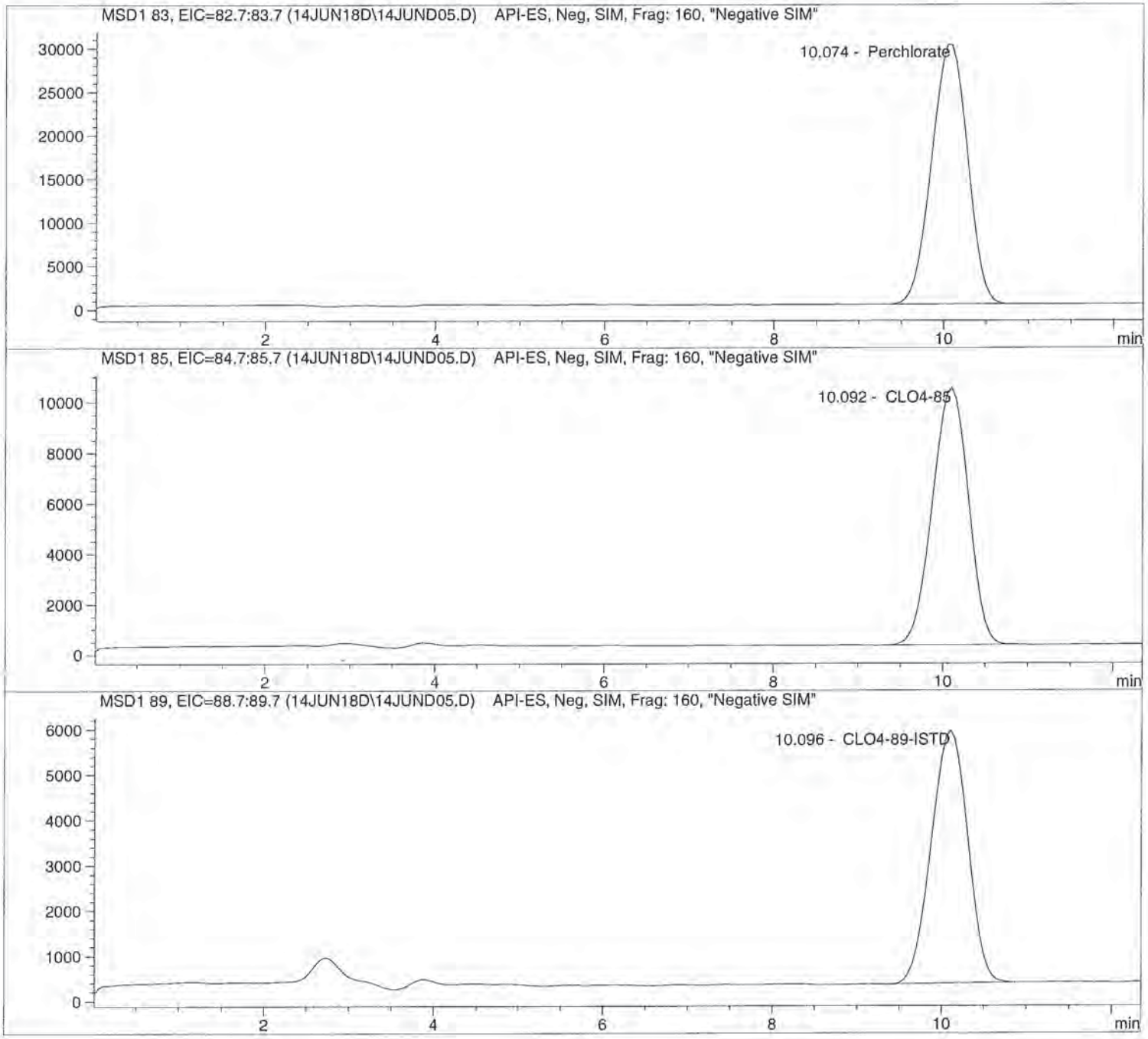
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/14/2018 10:48:17	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/14/2018 10:48:17	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.074	PBA	876318.4	25.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.092	PBA	300354.8	25.2800	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.096	PBA	167255.6	5.0000	CLO4-89-ISTD

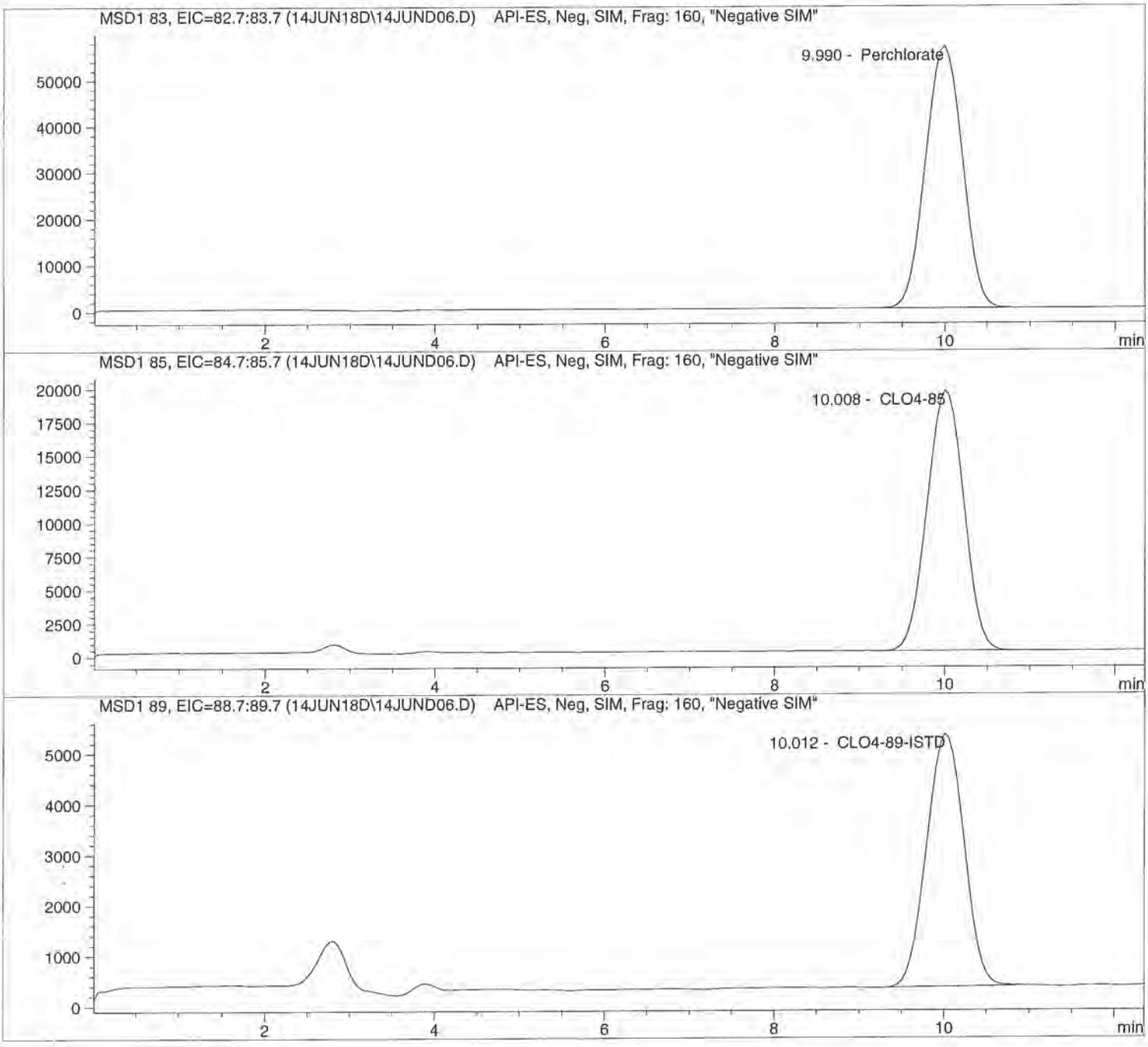
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/14/2018 11:02:36	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/14/2018 11:02:36	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.990	BBA	1697669.4	49.6594	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.008	PBA	583139.8	49.6284	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.012	PBA	153417.6	5.0000	CLO4-89-ISTD

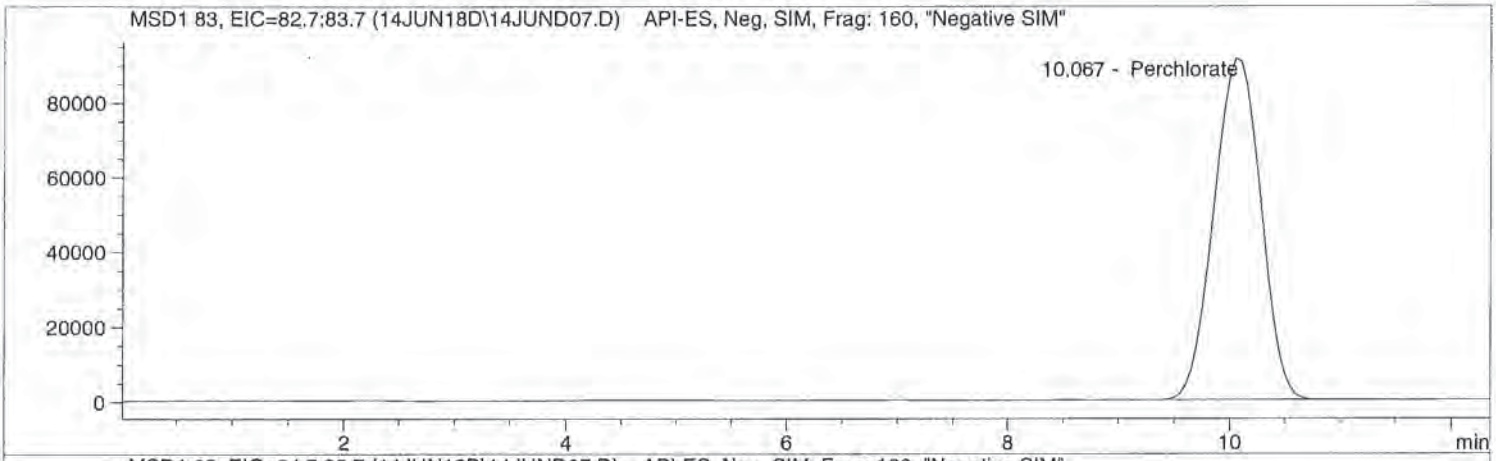
*** End of Report ***

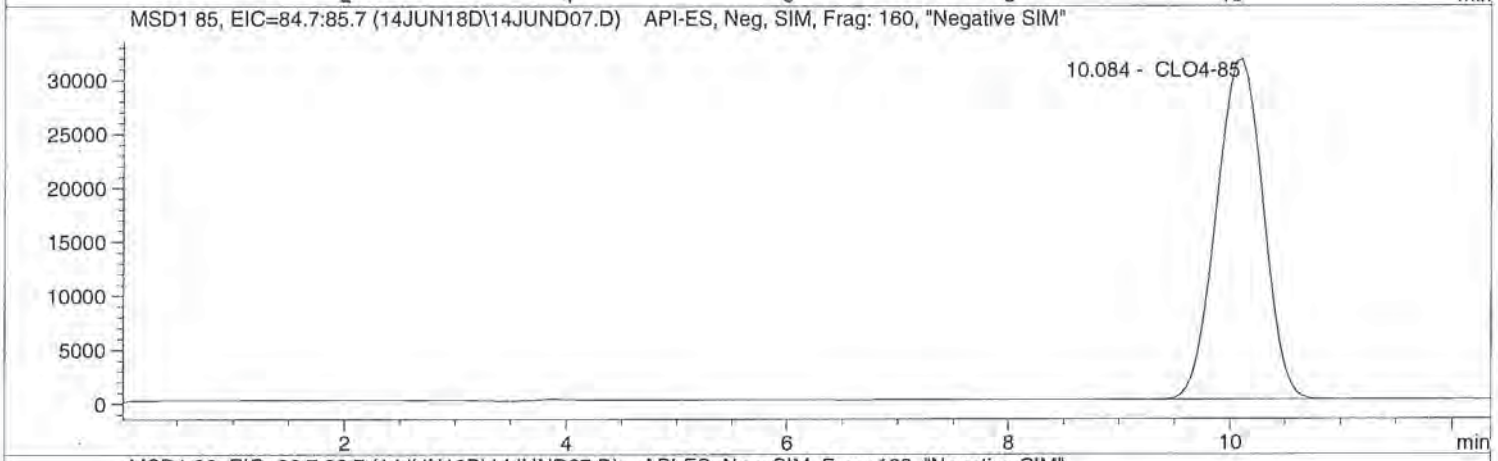
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND07.D Sample Name: ICAL7@ 75.ug/L

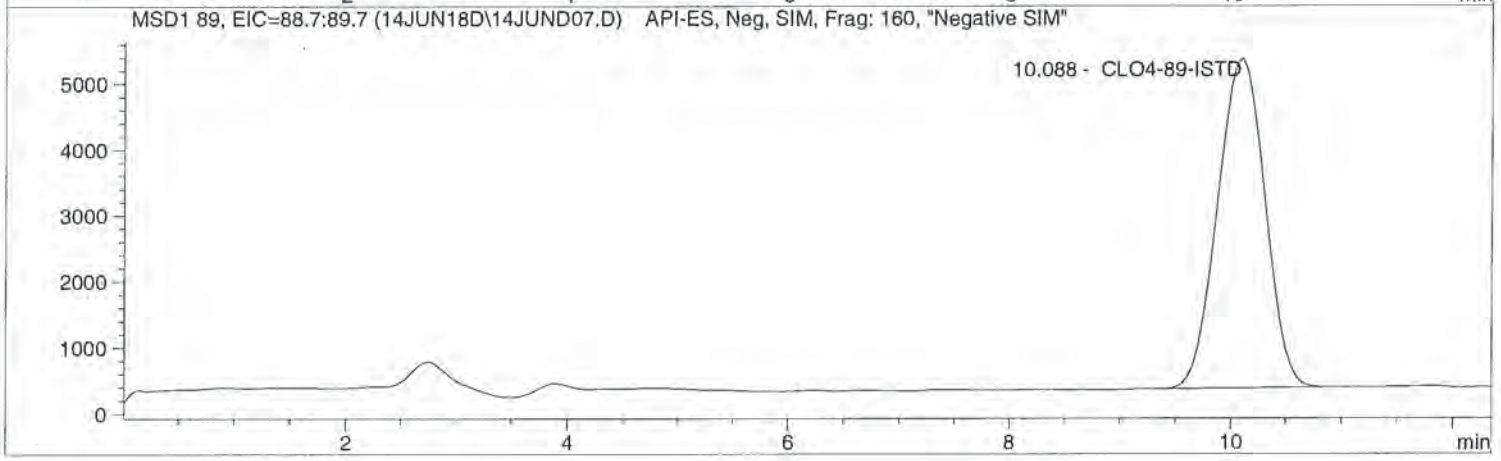
Injection Date:	6/14/2018 11:16:57	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/14/2018 11:16:57	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.067	BBA	2688168.5	75.1168	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.084	PBA	925902.0	75.1538	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.088	BBA	149174.9	5.0000	CLO4-89-ISTD

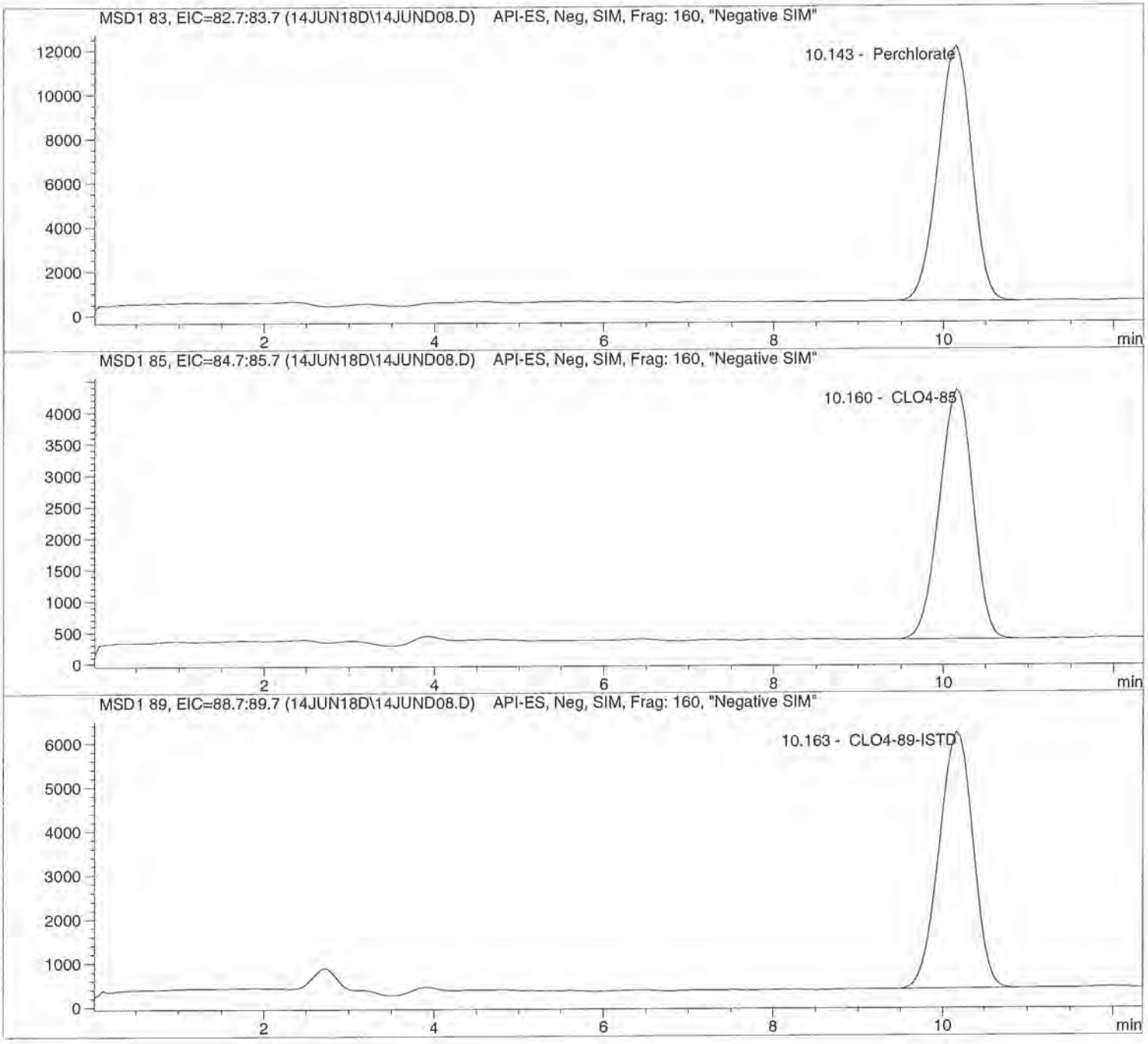
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/14/2018 11:31:15	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/14/2018 11:31:15	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.143	BBA	319377.5	9.9871	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.160	BBA	110126.9	9.8881	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.163	PBA	163369.0	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

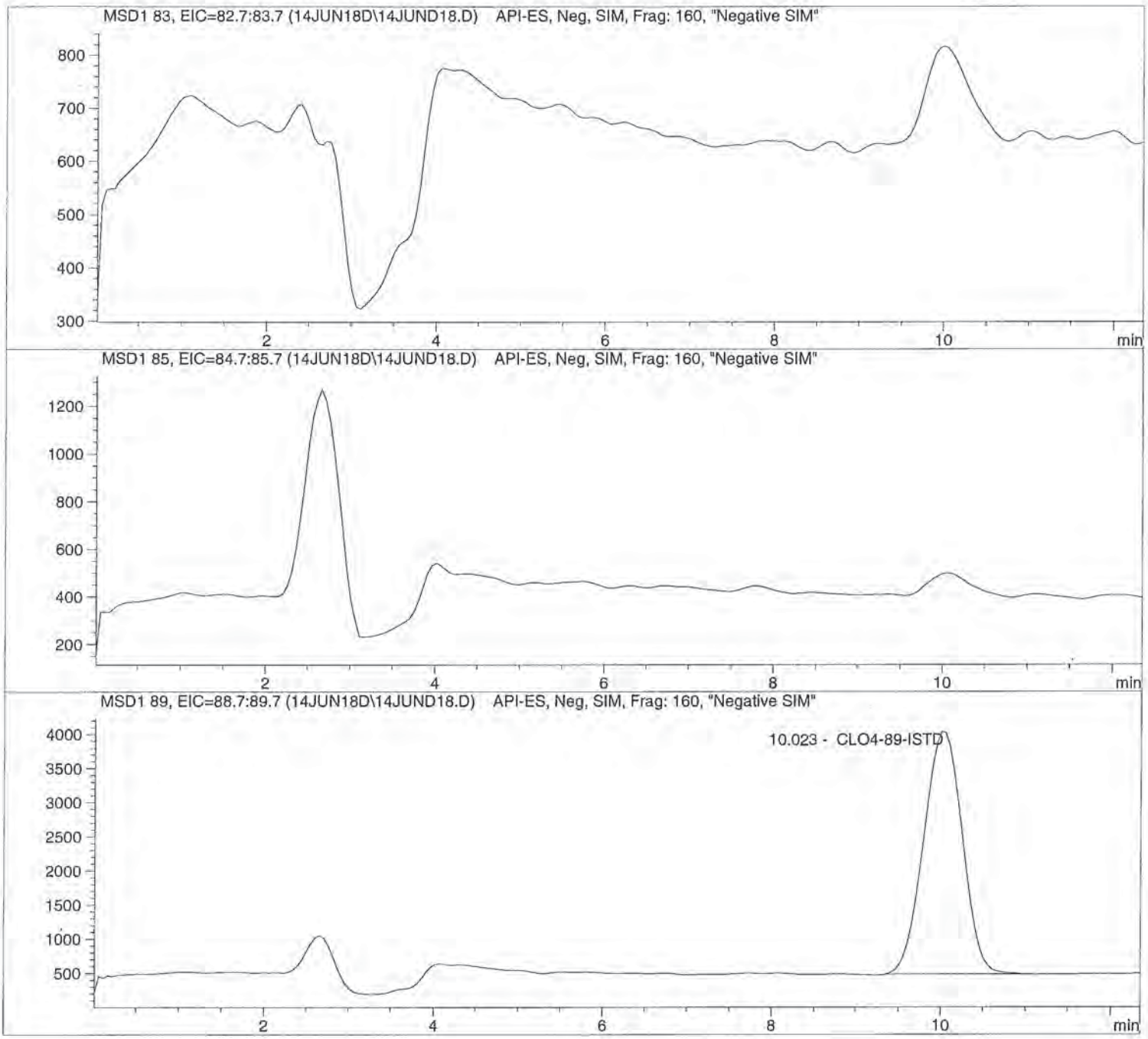
Unmodified

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.023	BBA	112834.3	5.0000	CLO4-89-ISTD

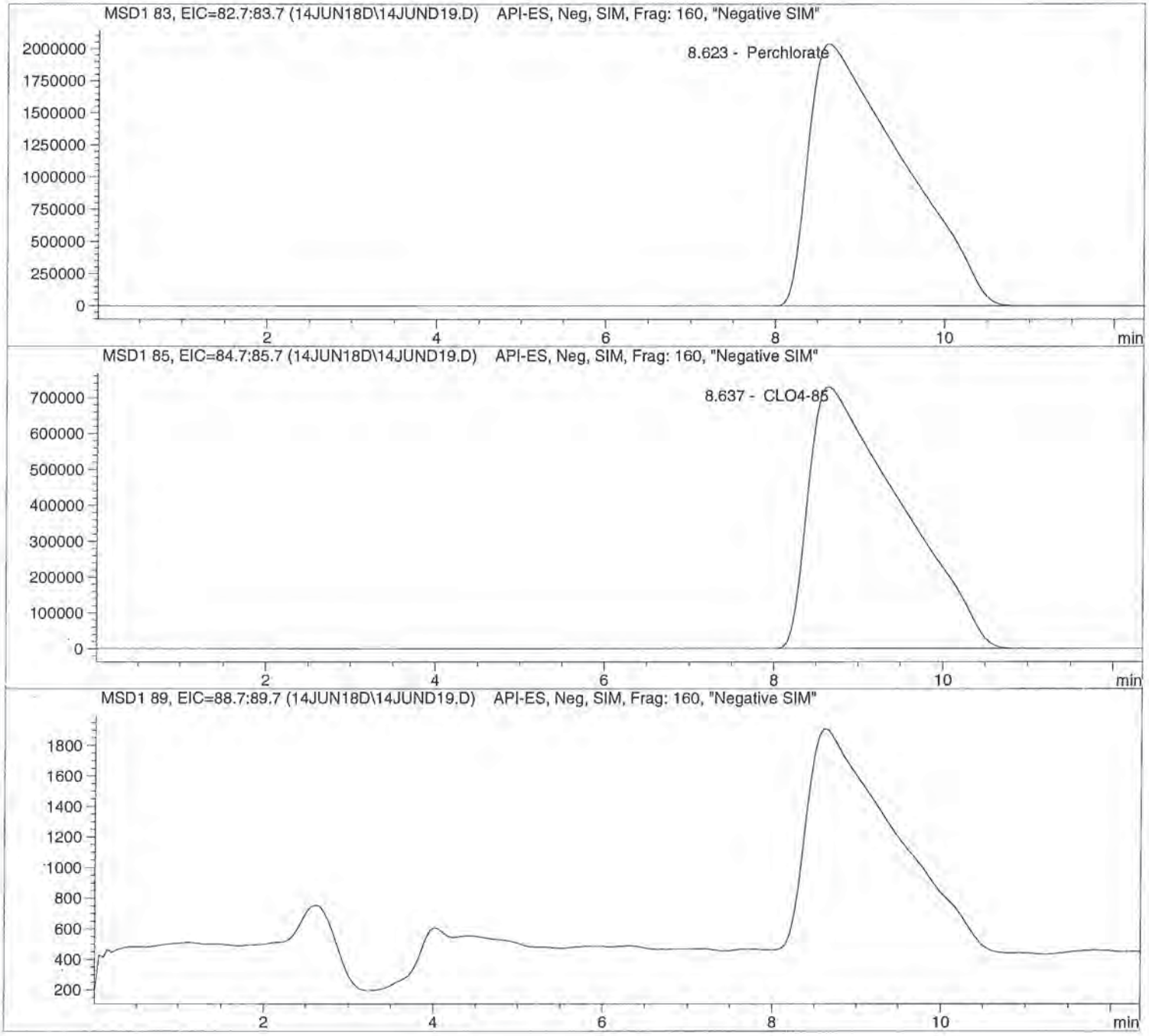
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.623	PBA	156101936.0	0.0373	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.637	PBA	55016480.0	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

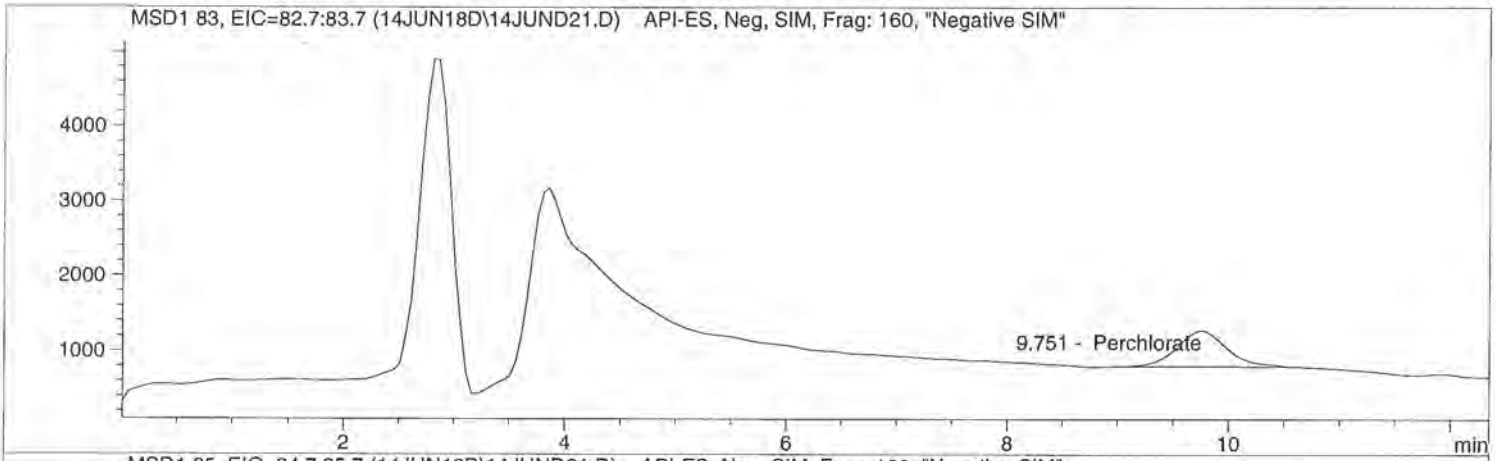
*** End of Report ***

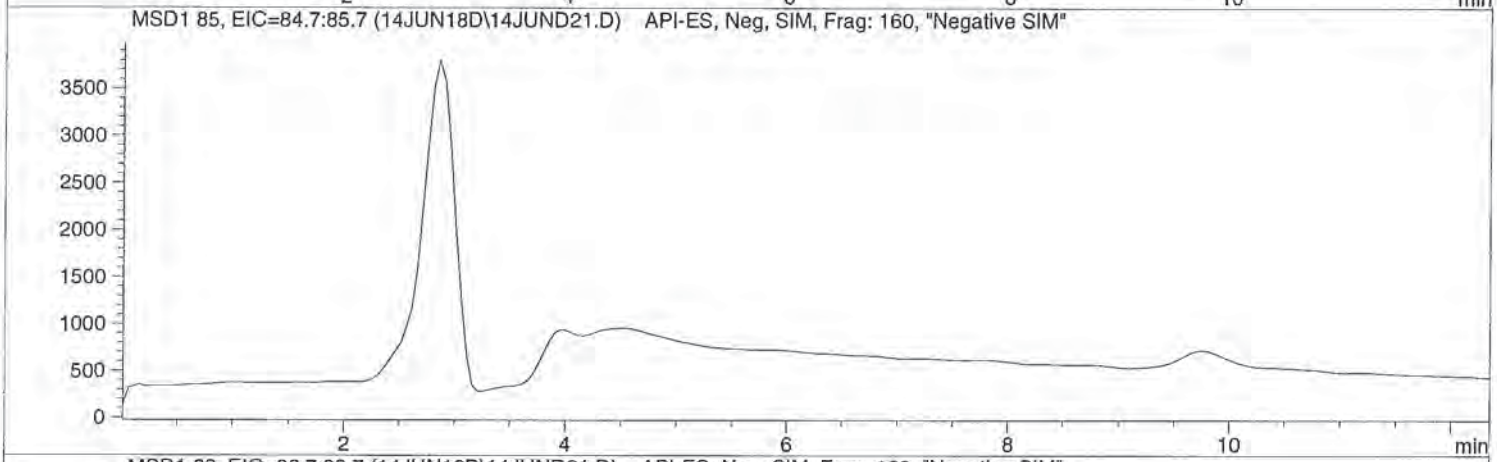
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

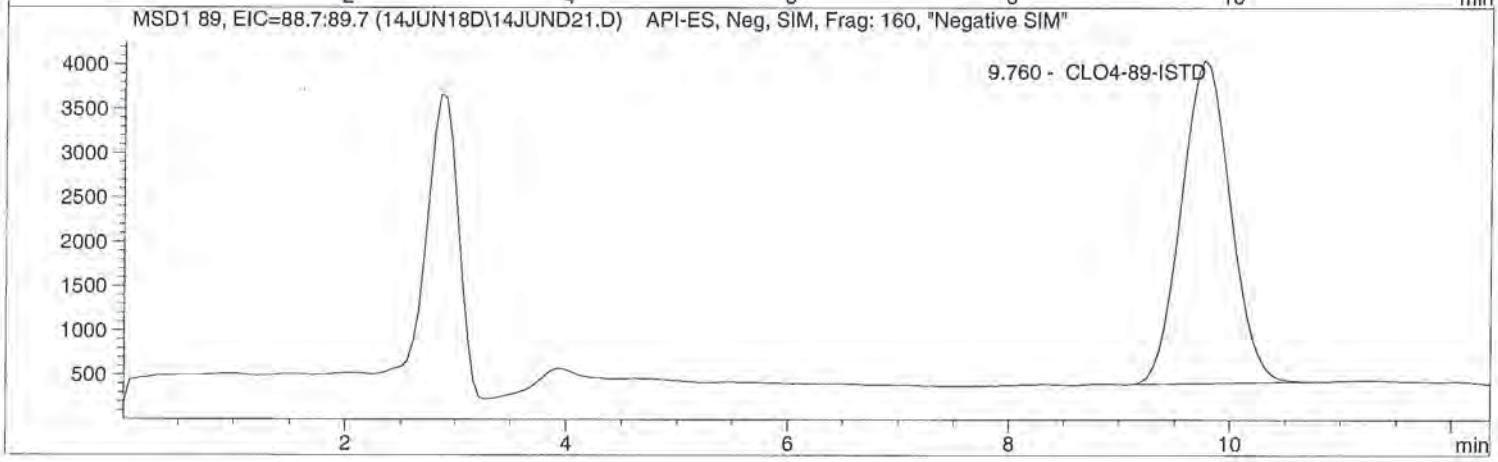
Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.751	PBA	14951.0	0.7364	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
9.760	PBA	112386.4	5.0000	CLO4-89-ISTD

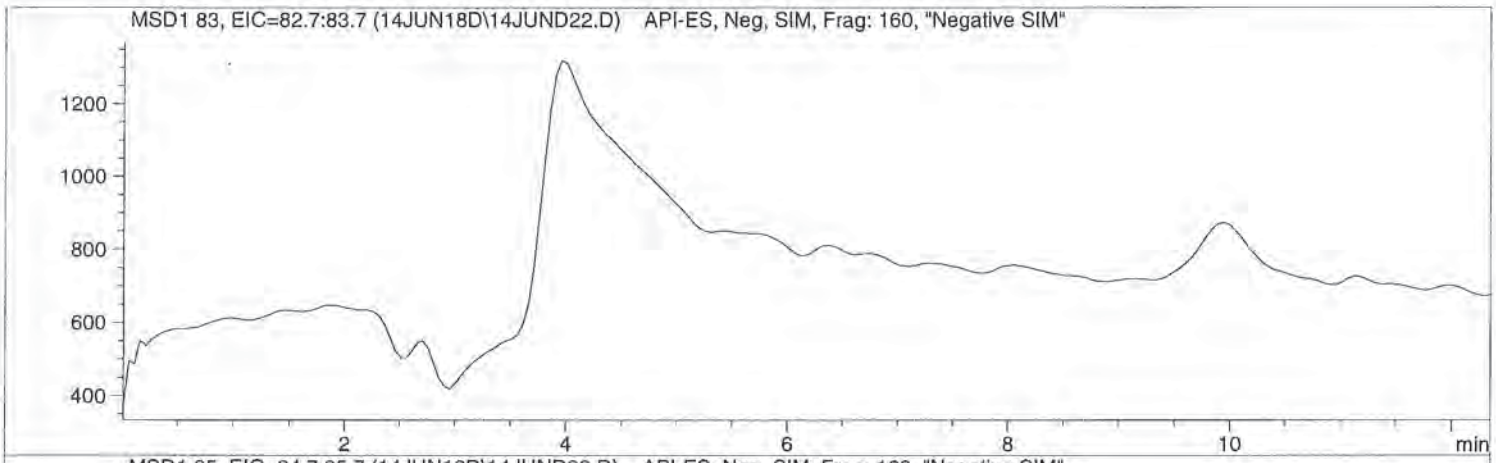
*** End of Report ***

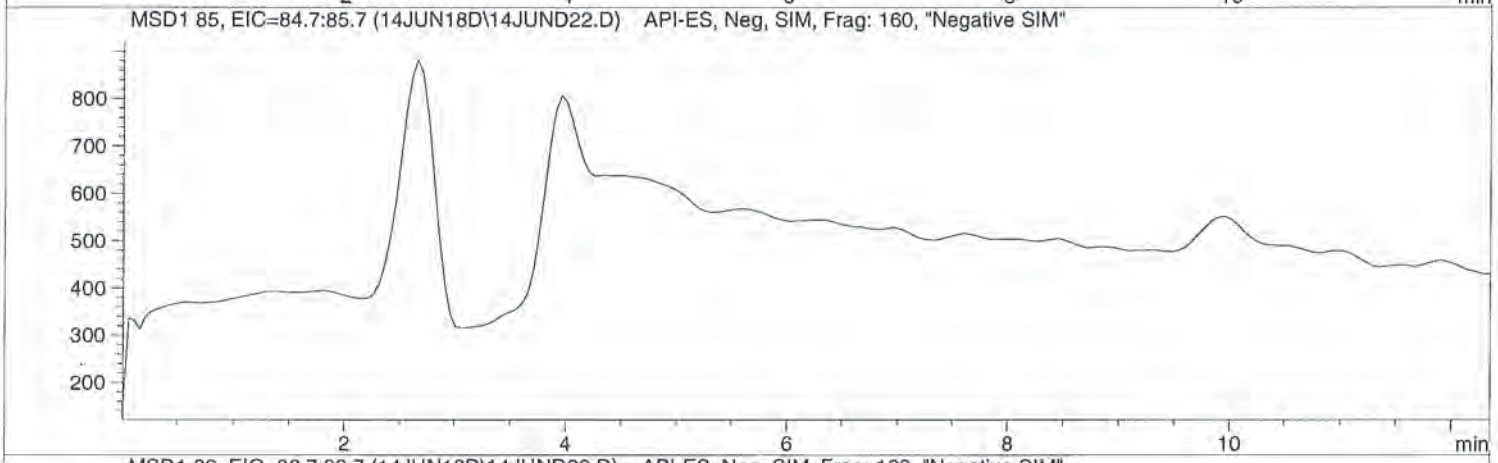
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

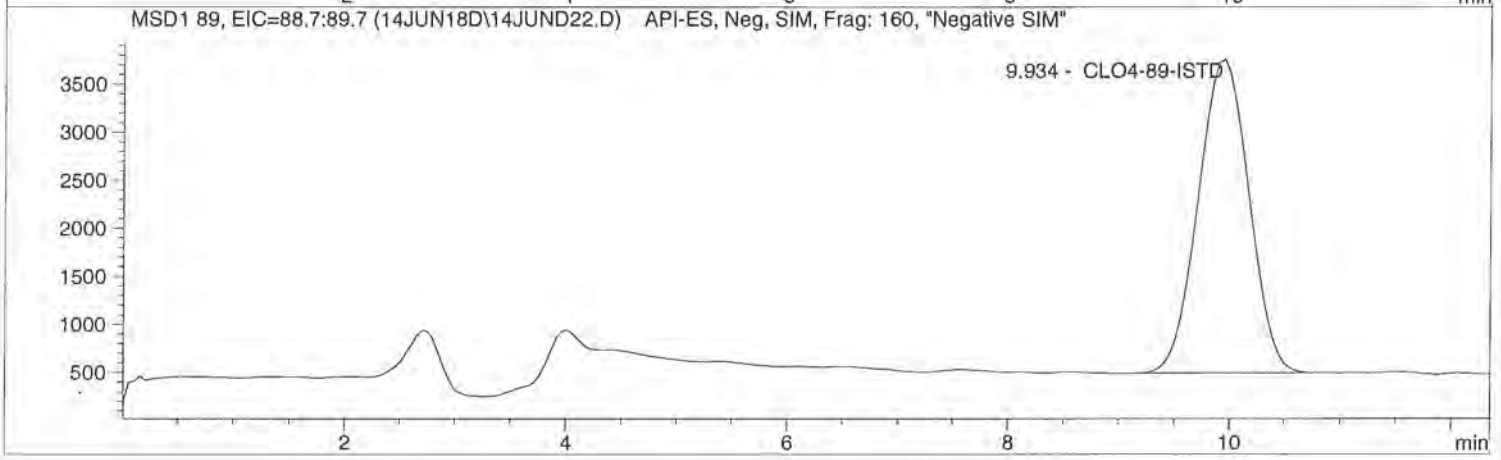
Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.934	PBA	103960.3	5.0000	CLO4-89-ISTD

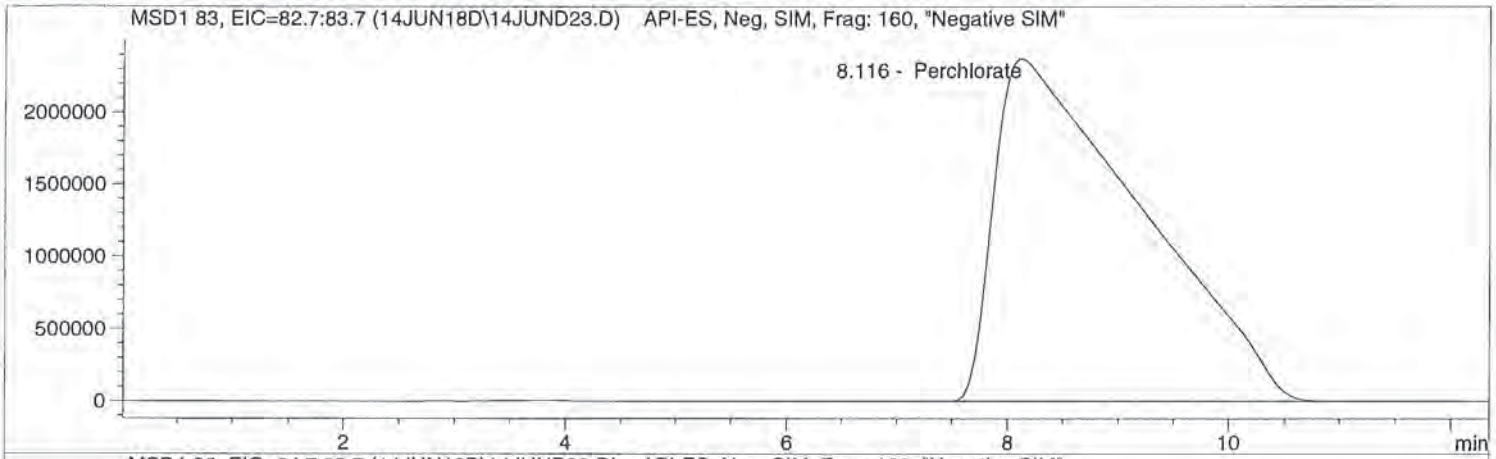
*** End of Report ***

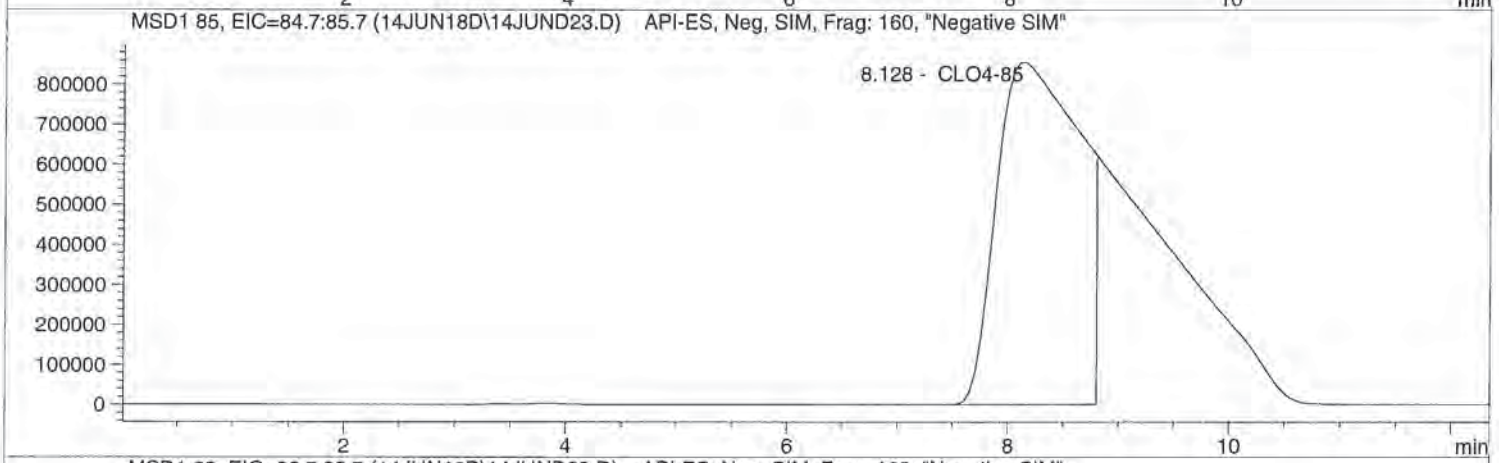
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

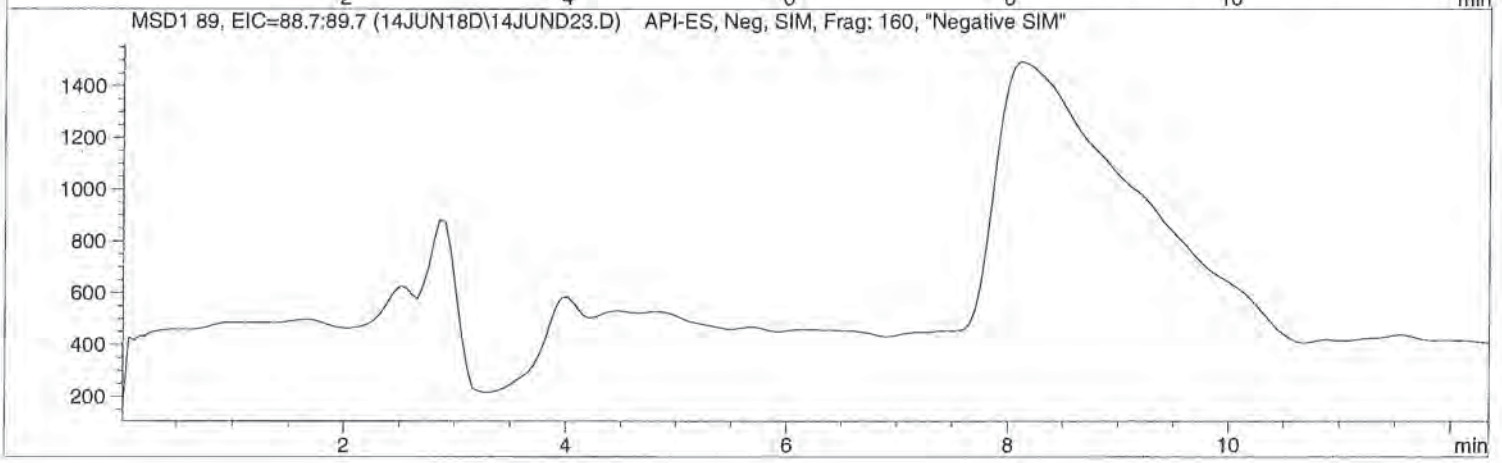
Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.116	PBA	218628112.0	0.0373	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.128	PBA	44399768.0	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

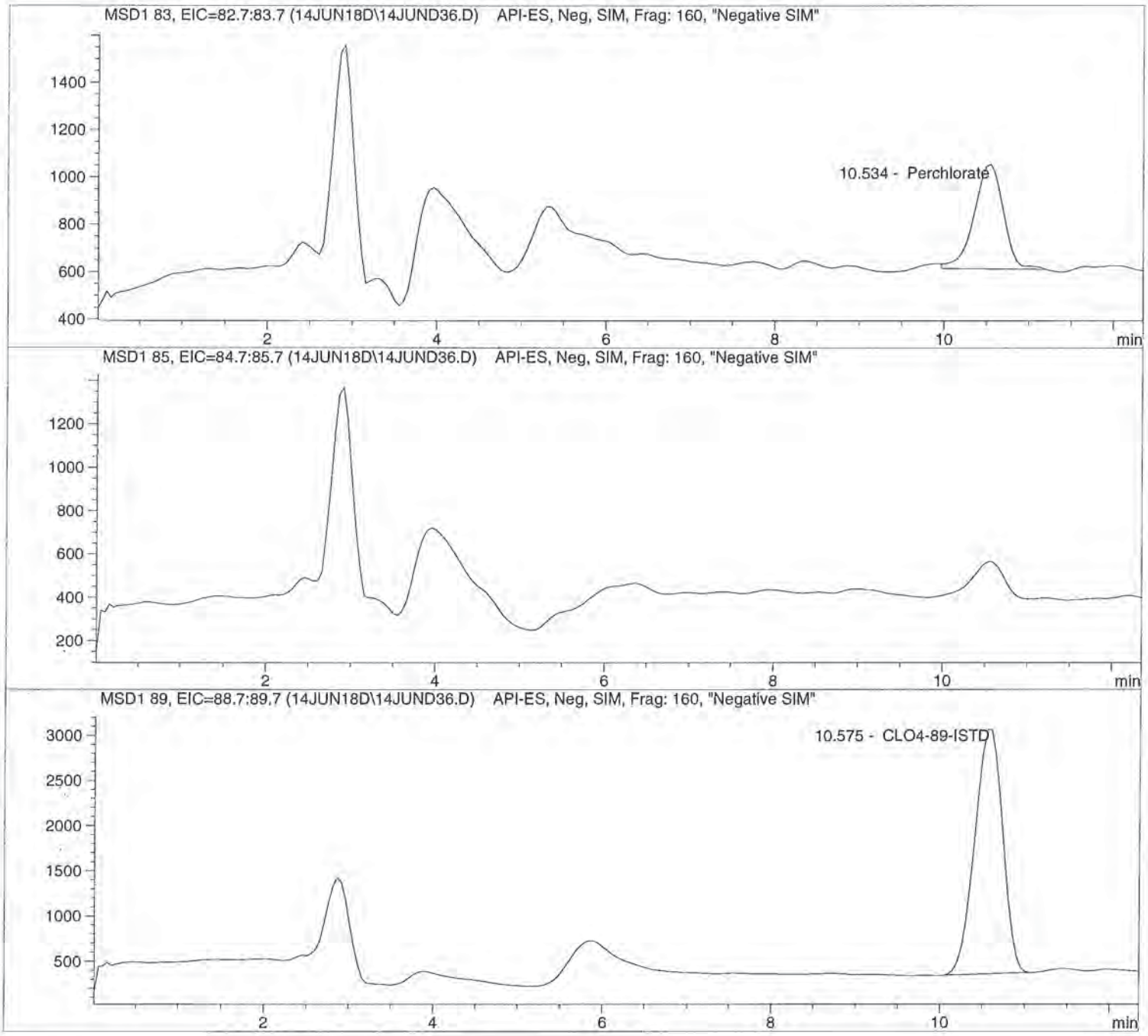
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.534	BBA	10511.0	0.9336	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
10.575	PBA	61582.9	5.0000	CLO4-89-ISTD

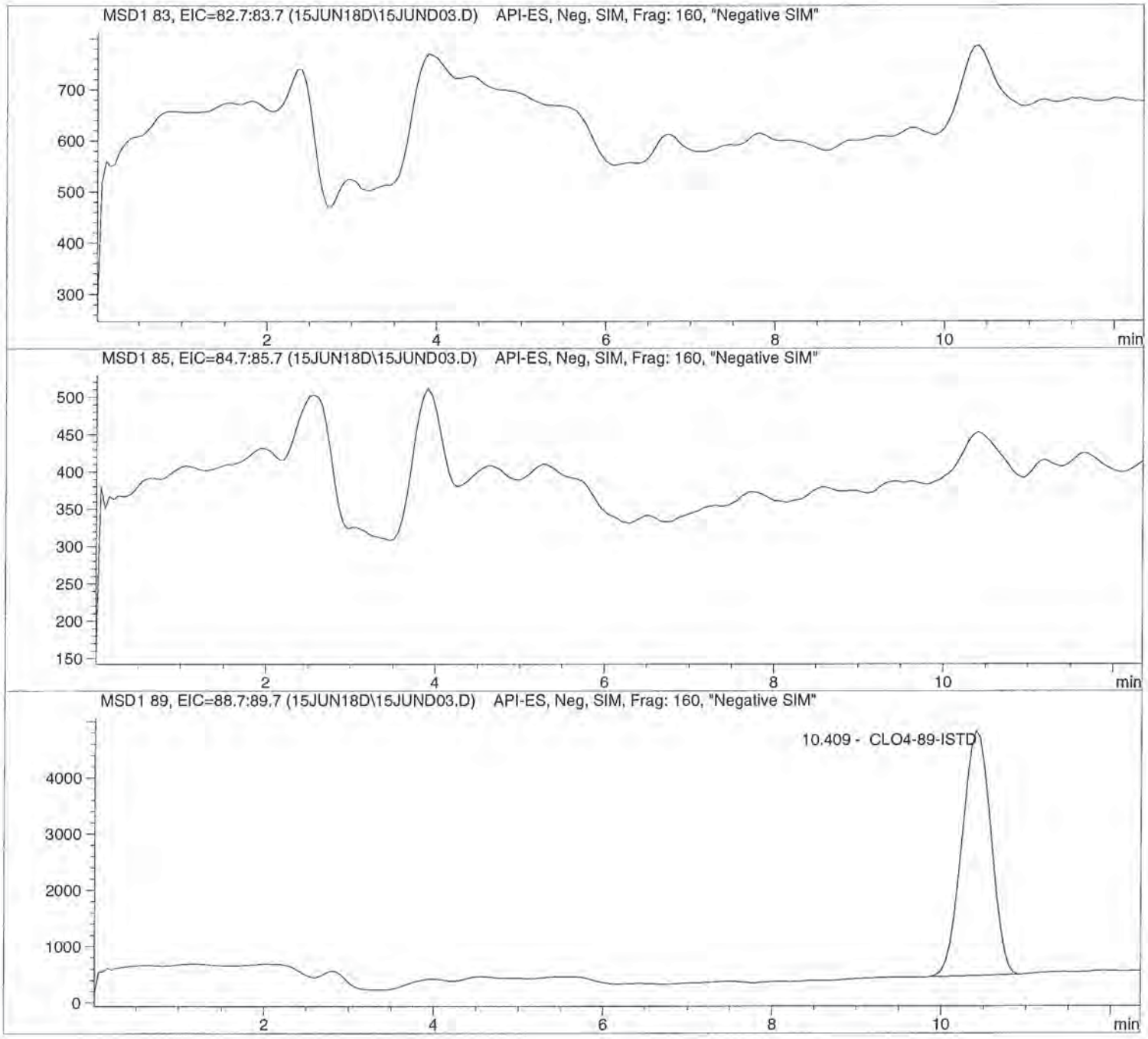
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
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
10.409	PBA	102814.8	25.0000	CLO4-89-ISTD

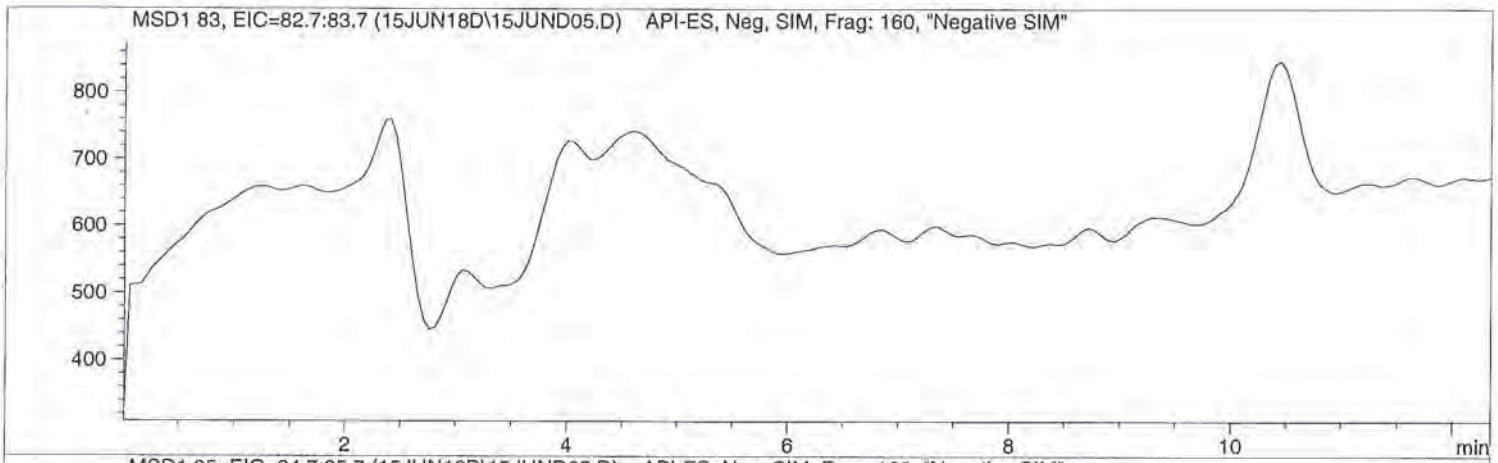
*** End of Report ***

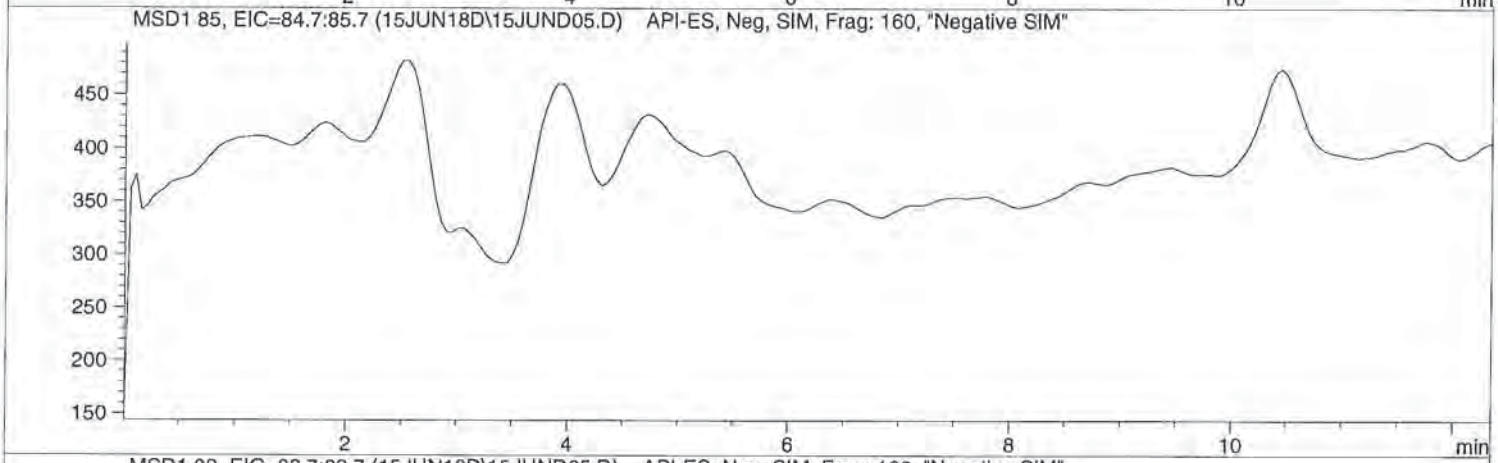
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

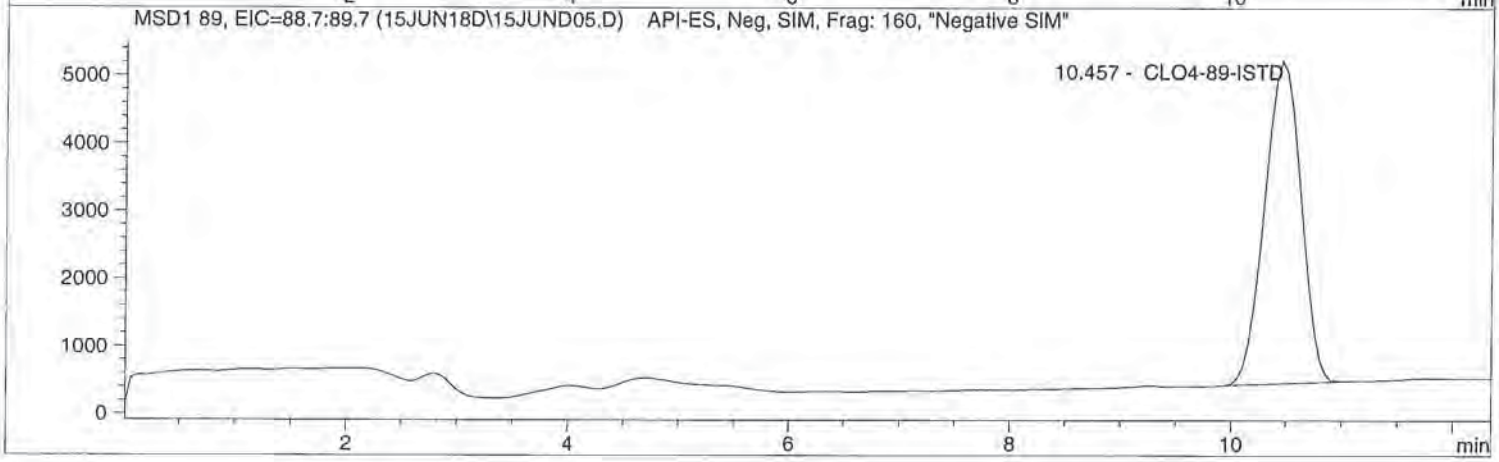
Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
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
10.457	PBA	109428.6	25.0000	CLO4-89-ISTD

*** End of Report ***

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www.alsglobal.com

WorkOrder: HS18060609

LHAAP GWTP

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

19-Jun-2018

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

June 19, 2018

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

Work Order: **HS18060609**

Laboratory Results for: **LHAAP GWTP**

Dear Marcia,

ALS Environmental received 1 sample(s) on Jun 13, 2018 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 Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP GWTP
Work Order: HS18060609

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060609-01	LH18/24-SP650_061218	Water		12-Jun-2018 13:00	13-Jun-2018 08:35	☐

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP GWTP
Work Order: HS18060609

CASE NARRATIVE

Work Order Comments

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

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP GWTP
Sample ID: LH18/24-SP650_061218
Collection Date: 12-Jun-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18060609
Lab ID:HS18060609-01
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		NA	1	19-Jun-2018 10:45

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

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP GWTP
WorkOrder: HS18060609

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318211	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	**Matrix:** Water				
HS18060609-01	LH18/24-SP650_061218	12 Jun 2018 13:00			19 Jun 2018 10:45	1

ALS Group Houston, Corp Date: 19-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP GWTP
WorkOrder: **HS18060609**

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 Group Houston, Corp Date: 19-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 19-Jun-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18060609
Date/Time Received: **13-Jun-2018 08:35**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature — 13-Jun-2018 Date
Reviewed by: *RJ Modashia* eSignature — 14-Jun-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	1.2c/0.7c U/c	IR11	
Cooler(s)/Kit(s):	24146		
Date/Time sample(s) sent to storage:	6/13/18 16:25		
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:

bhate ENVIRONMENTAL CONSTRUCTION GROUP

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / [redacted] GWTP

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) / Quality Assurance Samples (6)

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	Perchlorate	Total Metals	1, 4 - Dioxane							Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LH18/24-SP650_061218		6/12/18	1300	-	N		W	1		X												
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		

HS18060609
Bhate Environmental Associates, Inc.
LHAAP GWTP

COMMENTS: 48 HOUR TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	N/C	Received by (signed)	Date	Time
1. Scott Beesinger	6/12/18	1330	1.	[signature]	6/13/18	08:35
2.			2.			
3.			3.			

1.20. VIC. +11 CIF-03 .24146.

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

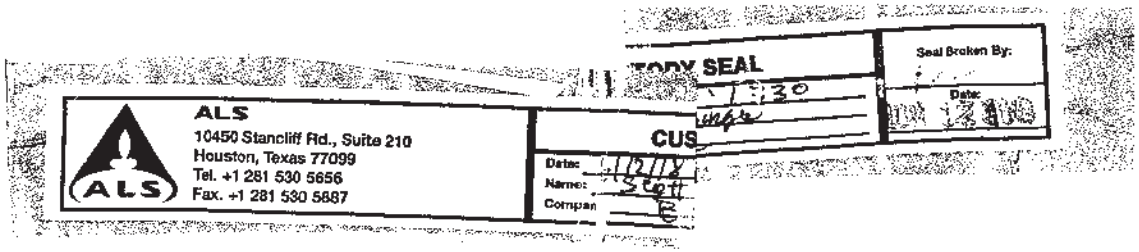
Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

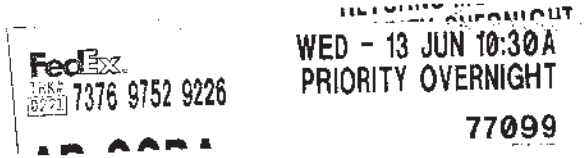
ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

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

TODY SEAL
1:30
CUS
Date: 1/12/18
Name: Scott
Compan





Seal Broken By:
Date:

FedEx
7376 9752 9226

WED - 13 JUN 10:30A
PRIORITY OVERNIGHT
77099

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1815740; 1815988; 1815991; 1815992; 1815993; 1816534

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2101 (216711)

General Set Information: There were fourteen 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: The following samples were analyzed and reported at various dilutions. 1815740001/1815988001-05/1815992001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. Samples 1815991001/1815993001/1816534001 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605275) was less than 1/2 the CRDL. The recovery for the LCS (605276) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1815988004/05 (Client ID: MW8-060518). The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L. The Matrix Spike and duplicate (MS/MSD) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected. The MS/MSD relative percent difference (RPD) was 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. Manual Integrations was performed for datafiles 14JUND18/19/21-23/33/35/36 and 15JUND03/05.

Thomas Bosch June 18, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 18, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816534**
Project ID: HS18060609 061218
Purchase Order: HS18060609
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_061218	1816534001	06/12/18	06/14/18	

ANALYTICAL REPORT

Workorder: 34-1816534
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_061218**	Sampling Site: NA	Collected: 06/12/2018
Lab ID: 1816534001	Media: 125 mL Nalgene	Received: 06/14/2018
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/2101 (HBN: 216711)	**Percent Solid:** NA
	Analyzed: 06/15/2018 11:46	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Comments

Workorder: 1816534

Sample 1816534001 failed the 50-150% method requirement for ISTD recovery. The sample was re-analyzed and reported from a 1:5 dilution. The reporting limit has been adjusted accordingly.

Quality Control: EPA 6850, DoD QSM - (HBN: 216711)

The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

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 06/17/2018 13:08	/S/ Stephen Brose 06/18/2018 15:12

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: 34-1816534
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1816534

Limits: Client SOW/Contract Specified
Basis: DoD QSM
Preparation: NA
Batch: NA
Prepared By: NA
Analysis: EPA 6850
Batch: ELMS/2101 (HBN: 216711)
Analyzed By: Thomas Bosch

Blank

LMB: 605275
Analyzed: 06/14/2018 12:28
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605276
Analyzed: 06/14/2018 12:42
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.26	5.00	105	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1815988001
Analyzed: 06/14/2018 17:13
Dilution: 1000
Units: ug/L

MS: 1815988004
Analyzed: 06/14/2018 18:25
Dilution: 1000
Units: ug/L

MSD: 1815988005
Analyzed: 06/14/2018 18:39
Dilution: 1000
Units: ug/L

Analyte	Result	Result	Target	% Rec		QC Limits		Result	% Rec		RPD	QC Limits	
Perchlorate	8800	16400	5000	#	152	78.8	123.8	16400	#	152	0.018	0.0	20.0

Continuing Calibration Verification

CCV: 605272
Analyzed: 06/14/2018 11:45
Units: ug/L
Criteria: ± 15%

CCV: 605277
Analyzed: 06/14/2018 17:27
Units: ug/L
Criteria: ± 15%

CCV: 605342
Analyzed: 06/14/2018 20:33
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.7	25.0	103	28.0	25.0	112	27.9	25.0	112

CCV: 605457
Analyzed: 06/15/2018 10:37
Units: ug/L
Criteria: ± 15%

CCV: 605459
Analyzed: 06/15/2018 12:03
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	27.6	25.0	110	27.9	25.0	112

Interference Check Sample

ICSA: 605274
Analyzed: 06/14/2018 13:13
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.09	1.00	109

Quality Control Sample Batch Report

Analysis Information

Workorder: 1816534

Limits:	Client SOW/Contract Specified	**Preparation:**	NA
Basis:	DoD QSM	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850		
Batch:	ELMS/2101 (HBN: 216711)		
Analyzed By:	Thomas Bosch		

Limit of Detection Verification

LODV: 605273 **Analyzed:** 06/14/2018 11:59 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 605278 **Analyzed:** 06/14/2018 17:56 **Units:** ug/L **Criteria:** ± 50%			**LODV:** 605343 **Analyzed:** 06/14/2018 20:48 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.18	1.00	118	1.20	1.00	120

LODV: 605458 **Analyzed:** 06/15/2018 10:51 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 605460 **Analyzed:** 06/15/2018 12:17 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.895	1.00	89.5	0.868	1.00	86.8

Comments

The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

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

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/17/2018 13:08	06/18/2018 15:12

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



18698/# 4

RUSH

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

COC ID: 9284

1816534

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:	HS18060609
TSR:	Danielle Winnings

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	**HS18060609-01**	**LH18/24-SP650_061218**	**Water**	**12 Jun 2018 13:00**
	SUB_Perch-6850			15 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
RUSH 24Hr.TAT
Results Due 6/15/2018

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 6/13/18 1800.

Received By: Jennifer Gessler Date/Time: 06-14-18 10:40

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: 1816534

Date/Time of Receipt: 061418 10:40 — 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:	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	C18 8081	3 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tanu Van Tassell (Signature) — Tanu Van Tassell (Printed Name) — 061418 (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: _____

CRIR.doc — Revised 01/01/2018



Part # 159169-434 RIT2 EXP 03/19

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

SHIP DATE: 13JUN18
ACTWGT: 10.40 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060609/613-RJ

546C2/93BF/53C1

FedEx Express

J17101610200101

THU - 14 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 0404

AX BTFA

84123
UT-US SLC

ALS
10450 Stancliff Rd
Houston, Texas 77
Tel. +1 281 530 56
Fax. +1 281 530 5

ALS
Houston, Texas 77
Tel. +1 281 530 56
Fax. +1 281 530 5

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060609	Split:	Workorder ID: 1816534	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	06/12/2018 13:00	LH18/24-SP650_061218	1816534001		Water	A	1		A
2									
3									
4									
5									
6									
7									
8									
9									
10									

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ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/14/2018 10:40	ALS Sample Receiving	Sample Login
Julie Warath	6/14/18 1200	13B	storage
R.33.1	6.14.18/12:50	R T. Bush	6850

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

Batch Worklist

Batch: ELMS/ 2101
Rule: EPA 6850, DoD QSM Water
Created: 6/14/2018 08:55
Analyst: T. Bosch
Instrument: LCMS04
Status: WP
HBN: 216711

Workorder: 1815740 [ENV_LVL4]
Workorder: 1815988 [ENV_LVL4]
Workorder: 1815991 [ENV_LVL4]
Workorder: 1815992 [ENV_LVL4]
Workorder: 1815993 [ENV_LVL4]
Workorder: 1816534 [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	605272	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
2	605273	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
3	605275	LMB for HBN 216711 [ELMS/2101]				LMB	3		E6850Q413Q	5311		6/19/2018	6/14/2018
4	605276	LCS for HBN 216711 [ELMS/2101]				LCS	3		E6850Q413Q	5311		6/19/2018	6/14/2018
5	1815740001	MW5_060418				SAMPLE	3	1815740001-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
6	605274	ICS for HBN 216711 [ELMS/2101]				ICS	3		E6850..D3Q	5311		6/19/2018	6/14/2018
7	1815740004	18CPTMW23SW-060418				SAMPLE	3	1815740004-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
8	1815740006	18WW24_060418				SAMPLE	3	1815740006-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
9	1815740007	18WW25_060418				SAMPLE	3	1815740007-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
10	1815988002	MW21_060518				SAMPLE	3	1815988002-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
11	1815988003	MW21_060518-a				SAMPLE	3	1815988003-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
12	1815988001	MW8_060518				SAMPLE	3	1815988001-A	E6850Q41.3	5480	7/3/2018	6/21/2018	6/14/2018
13	605277	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
14	605278	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
15	1815988004	MW8_060518MS				MS	3	1815988004-A	E6850Q413Q	5480		6/19/2018	6/14/2018
16	1815988005	MW8_060518MSD				MSD	3	1815988005-A	E6850Q413Q	5480		6/19/2018	6/14/2018
17	1815992001	LH18/24-SP140_060618				SAMPLE	3	1815992001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/14/2018
18	1815740002	18CPTMW08DW-060418				SAMPLE	3	1815740002-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
19	1815740003	18CPTMW08SW-060418				SAMPLE	3	1815740003-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
20	1815740005	18CPTMW23-060418				SAMPLE	3	1815740005-A	E6850Q41.3	5480	7/2/2018	6/19/2018	6/14/2018
21	605342	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/14/2018
22	605343	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/14/2018
23	605457	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/15/2018
24	605458	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/15/2018

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
25	1815991001	LH18/24-SP650_060618				SAMPLE	3	1815991001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/15/2018
26	1815993001	LH18/24-SP650_060618				SAMPLE	3	1815993001-A	E6850Q41.3	5480	7/4/2018	6/21/2018	6/15/2018
27	1816534001	LH18/24-SP650_061218				SAMPLE	3	1816534001-A	E6850Q41.3	5480	7/10/2018	6/15/2018	6/15/2018
28	605459	CCV for HBN 216711 [ELMS/2101]				CCV	3		E685041C3Q	5311		6/19/2018	6/15/2018
29	605460	LODV for HBN 216711 [ELMS/2101				LODV	3		E6850..D3Q	5311		6/19/2018	6/15/2018



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1815740 (001-07); 1815988 (001-05); 1815991 (001); 1815992 (001); 1815993 (001); 1816534 (001) ELMS Batch/HBN ID: 2101 (216711)
Prep Date: 06/14/2018 Analysis Date: 06/14,15/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\14JUN18D.s & 15JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/14/2018, sequence 14JU18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605276; Target = 5.0µg/L. ASTM type II water was used for LMB 605275.

MS/MSD: MS/MSD was performed on samples 1815988004/05 (Client ID: MW8_060518). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:1,000 dilutions. The effective spike target was 5,000.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815740001/1815988001-05/1815992001 - 1:1,000. 1815740002/05 – 1:100. 1815740003 – 10,000. Samples 1815991001/1815993001/1816534001 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815988004/05) failed QC acceptance criteria for percent recoveries, biased high. 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\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 14JUND18/19/21-23/33/35/36 and 15JUND03/05.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216711-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK	Description - 6850 QC WKG STD 100ug/L

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Signal Word: Warning

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

50 Frontage Road, Andover, MA 01810-5413, USA • 1.800.322.1174 (North America) • 1.978.749.8000 (International) • isotope.com



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

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

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

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	605272 CCV@25	Vial 75	1	Control	9	8.55224e5	10.105	25.69705
*	605273 LODV@1.	Vial 71	1	Control	10	4.09897e4	10.131	1.03151
*	605275 LMB	Vial 82	1	Control	12	0.00000	0.000	0.00000
*	605276 QC@5.0	Vial 83	1	Control	13	1.55938e5	10.234	5.25713
*	1815740001 1K	Vial 84	1	Sample	14	1.18171e6	10.224	4.09928e4
*	605274 ICS@1.0	Vial 81	1	Control	15	3.18741e4	10.039	1.08841
*	1815740002 1K	Vial 85	1	Sample	16	2.60255e4	10.232	1043.13319 RE
*	1815740003 10	Vial 86	1	Sample	17	1.10286e8	9.113	1.03926e4 RE
*	1815740004	Vial 87	1	Sample	18	6529.78760	10.005	3.41870e-1
*	1815740005	Vial 88	1	Sample	19	1.56102e8	8.623	1362.60207
*	Rinse	Vial 61	1	Sample	20	0.00000	0.000	0.00000
*	1815740006	Vial 89	1	Sample	21	1.49510e4	9.751	7.36417e-1
*	1815740007	Vial 90	1	Sample	22	5925.78320	9.939	3.37296e-1
*	1815988001	Vial 91	1	Sample	23	2.18628e8	8.116	1751.68923 D.F.
*	1815988002 1K	Vial 92	1	Sample	24	8.50046e5	10.190	3.47744e4
*	1815988003 1K	Vial 93	1	Sample	25	9.54516e5	10.157	3.56346e4
*	1815988001 1K	Vial 91	1	Sample	26	2.33271e5	10.219	8833.18769
*	605277 CCV@25	Vial 75	1	Control	27	9.92094e5	10.080	28.04713
*	Rinse	Vial 61	1	Sample	28	0.00000	0.000	0.00000
*	605278 LODV@1.	Vial 71	1	Control	29	5.04056e4	10.092	1.18278
*	1815988004 MS	Vial 94	1	Sample	31	4.48410e5	10.188	1.64276e4
*	1815988005 MSD	Vial 95	1	Sample	32	4.50870e5	10.180	1.64311e4
*	ISTD 1815991001	Vial 96	1	Sample	33	0.00000	0.000	0.00000
*	1815992001 1K	Vial 97	1	Sample	34	5.79001e5	10.172	2.14202e4
	ISTD 1815993001	Vial 98	1	Sample	35	0.00000	0.000	0.00000
	ISTD 1816534001	Vial 99	1	Sample	36	1.05110e4	10.534	9.33633e-1
*	1815740002 100	Vial 51	1	Sample	37	2.67605e5	10.157	1017.20503
*	1815740003 10K	Vial 52	1	Sample	38	1.54877e5	10.186	6.09144e4
*	1815740005 100	Vial 53	1	Sample	39	1.69849e6	10.181	5684.04705
*	605342 CCV@25	Vial 75	1	Control	40	1.02581e6	10.083	27.89464
*	605343 LODV@1.	Vial 71	1	Control	41	5.21515e4	10.112	1.19702

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	605272 CCV@25	Vial 75	1	Control	9	2.90705e5	10.120	25.40469
*	605273 LODV@1.	Vial 71	1	Control	10	1.53637e4	10.143	8.94117e-1
*	605275 LMB	Vial 82	1	Control	12	0.00000	0.000	0.00000
*	605276 QC@5.0	Vial 83	1	Control	13	5.40567e4	10.252	5.12372
*	1815740001 1K	Vial 84	1	Sample	14	3.87842e5	10.241	3.93454e4
*	605274 ICS@1.0	Vial 81	1	Control	15	1.21188e4	10.051	9.73548e-1
*	1815740002 1K	Vial 85	1	Sample	16	1.07181e4	10.247	1016.14295
*	1815740003 10	Vial 86	1	Sample	17	3.87280e7	9.125	1.03585e4
*	1815740004	Vial 87	1	Sample	18	3253.03320	10.056	2.43152e-1
*	1815740005	Vial 88	1	Sample	19	5.50165e7	8.637	1359.43683
*	Rinse	Vial 61	1	Sample	20	0.00000	0.000	0.00000
*	1815740006	Vial 89	1	Sample	21	5399.54053	9.748	5.40253e-1
*	1815740007	Vial 90	1	Sample	22	1718.94263	9.940	5.26885e-2
*	1815988001	Vial 91	1	Sample	23	7.75233e7	8.128	1751.91213
*	1815988002 1K	Vial 92	1	Sample	24	2.82340e5	10.205	3.37112e4
*	1815988003 1K	Vial 93	1	Sample	25	3.13550e5	10.173	3.42054e4
*	1815988001 1K	Vial 91	1	Sample	26	7.81706e4	10.235	8476.14226
*	605277 CCV@25	Vial 75	1	Control	27	3.19001e5	10.094	26.35441
*	Rinse	Vial 61	1	Sample	28	0.00000	0.000	0.00000
*	605278 LODV@1.	Vial 71	1	Control	29	1.79565e4	10.102	9.98650e-1
*	1815988004 MS	Vial 94	1	Sample	31	1.46772e5	10.204	1.56002e4
*	1815988005 MSD	Vial 95	1	Sample	32	1.50110e5	10.195	1.58603e4
*	1815991001	Vial 96	1	Sample	33	0.00000	0.000	0.00000
*	1815992001 1K	Vial 97	1	Sample	34	1.91018e5	10.189	2.05623e4
*	1815993001	Vial 98	1	Sample	35	0.00000	0.000	0.00000
*	1816534001	Vial 99	1	Sample	36	4480.61572	10.555	9.21425e-1

00903413

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	1815740002 100	Vial 51	1	Sample	37	9.22799e4	10.173	1007.57992
*	1815740003 10K	Vial 52	1	Sample	38	5.38004e4	10.201	5.98654e4
*	1815740005 100	Vial 53	1	Sample	39	5.52737e5	10.197	5422.11462
*	605342 CCV@25	Vial 75	1	Control	40	3.32463e5	10.100	26.40234
*	605343 LODV@1.	Vial 71	1	Control	41	1.97290e4	10.138	1.08864

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	605272 CCV@25	Vial 75	1	Control	9	1.61026e5	10.125	5.00000
*	605273 LODV@1.	Vial 71	1	Control	10	2.16437e5	10.152	5.00000
*	605275 LMB	Vial 82	1	Control	12	1.36891e5	10.195	5.00000
*	605276 QC@5.0	Vial 83	1	Control	13	1.54534e5	10.260	5.00000
*	1815740001 1K	Vial 84	1	Sample	14	1.32839e5	10.247	5000.00000
*	605274 ICS@1.0	Vial 81	1	Control	15	1.59161e5	10.060	5.00000
*	1815740002 1K	Vial 85	1	Sample	16	1.35828e5	10.253	5000.00000
*	1815740003 10	Vial 86	1	Sample	17	1.19985e5	9.117	50.00000
*	1815740004	Vial 87	1	Sample	18	1.12834e5	10.023	5.00000
*	1815740005	Vial 88	1	Sample	19	1.04092e5	8.621	5.00000
*	Rinse	Vial 61	1	Sample	20	0.00000	0.000	0.00000
*	1815740006	Vial 89	1	Sample	21	1.12386e5	9.760	5.00000
*	1815740007	Vial 90	1	Sample	22	1.03960e5	9.934	5.00000
*	1815988001	Vial 91	1	Sample	23	9.17279e4	8.121	5.00000
*	1815988002 1K	Vial 92	1	Sample	24	1.14860e5	10.214	5000.00000
*	1815988003 1K	Vial 93	1	Sample	25	1.25521e5	10.179	5000.00000
*	1815988001 1K	Vial 91	1	Sample	26	1.35510e5	10.243	5000.00000
*	605277 CCV@25	Vial 75	1	Control	27	1.69835e5	10.101	5.00000
*	Rinse	Vial 61	1	Sample	28	0.00000	0.000	0.00000
*	605278 LODV@1.	Vial 71	1	Control	29	2.30884e5	10.116	5.00000
*	1815988004 MS	Vial 94	1	Sample	31	1.36256e5	10.210	5000.00000
*	1815988005 MSD	Vial 95	1	Sample	32	1.36973e5	10.201	5000.00000
*	1815991001	Vial 96	1	Sample	33	6.10489e4 LOW RE	10.523	5.00000
*	1815992001 1K	Vial 97	1	Sample	34	1.32654e5	10.196	5000.00000
*	1815993001	Vial 98	1	Sample	35	5.38219e4 LOW RE	10.527	5.00000
*	1816534001	Vial 99	1	Sample	36	6.15829e4 LOW RE	10.575	5.00000
*	1815740002 100	Vial 51	1	Sample	37	1.34304e5	10.180	500.00000
*	1815740003 10K	Vial 52	1	Sample	38	1.31951e5	10.207	5.00000e4
*	1815740005 100	Vial 53	1	Sample	39	1.31262e5	10.204	500.00000
*	605342 CCV@25	Vial 75	1	Control	40	1.76655e5	10.104	5.00000
*	605343 LODV@1.	Vial 71	1	Control	41	2.35935e5	10.139	5.00000

*** End of Report ***

Batch Report: C:\HPCHEM\1\DATA\15JUN18D\15JUN18D.B

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

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

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	605457	CCV@25	Vial 41	1	Control	1	1.09236e6	10.028	27.56422
*	605458	LODV@1.	Vial 42	1	Control	2	2.57546e4	10.186	8.94736e-1
*	1815991001	5X	Vial 43	1	Sample	3	3890.35474	10.383	1.18265
*	1815993001	5X	Vial 44	1	Sample	4	0.00000	0.000	0.00000
*	1816534001	5X	Vial 45	1	Sample	5	5786.55127	10.436	1.57816
*	605459	CCV@25	Vial 41	1	Control	6	1.07976e6	10.064	27.91581
*	605460	LODV@1.	Vial 42	1	Control	7	2.40912e4	10.209	8.67516e-1

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	605457	CCV@25	Vial 41	1	Control	1	3.57588e5	10.042	26.32920
*	605458	LODV@1.	Vial 42	1	Control	2	9290.92578	10.207	7.07705e-1
*	1815991001	5X	Vial 43	1	Sample	3	1978.09058	10.407	4.73045e-1
*	1815993001	5X	Vial 44	1	Sample	4	0.00000	0.000	0.00000
*	1816534001	5X	Vial 45	1	Sample	5	2493.53687	10.447	7.47861e-1
*	605459	CCV@25	Vial 41	1	Control	6	3.49017e5	10.081	26.35761
*	605460	LODV@1.	Vial 42	1	Control	7	9372.82715	10.231	7.47793e-1

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	605457	CCV@25	Vial 41	1	Control	1	1.90575e5	10.043	5.00000
*	605458	LODV@1.	Vial 42	1	Control	2	1.57761e5	10.209	5.00000
*	1815991001	5X	Vial 43	1	Sample	3	1.02815e5	10.409	25.00000
*	1815993001	5X	Vial 44	1	Sample	4	1.18351e5	10.398	25.00000
*	1816534001	5X	Vial 45	1	Sample	5	1.09429e5	10.457	25.00000
*	605459	CCV@25	Vial 41	1	Control	6	1.85791e5	10.087	5.00000
*	605460	LODV@1.	Vial 42	1	Control	7	1.52425e5	10.232	5.00000

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

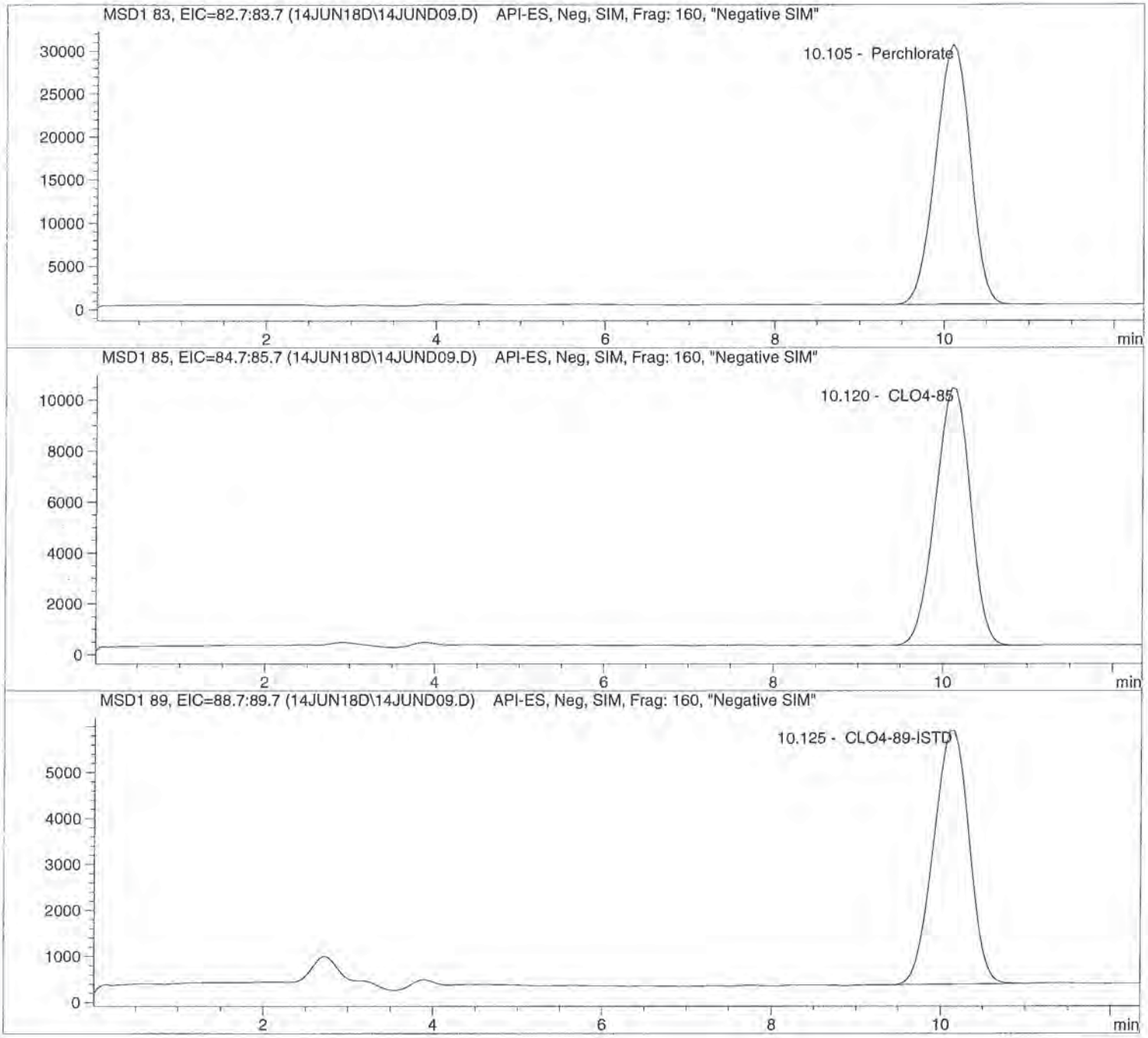
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605272 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605273 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605274 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605275 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605276 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815740001 1K	CLO4-DOD	1	Sample		
15	Vial 81	605274 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
16	Vial 85	1815740002 1K	CLO4-DOD	1	Sample		
17	Vial 86	1815740003 10	CLO4-DOD	1	Sample		
18	Vial 87	1815740004	CLO4-DOD	1	Sample		
19	Vial 88	1815740005	CLO4-DOD	1	Sample		
20	Vial 61	Rinse	CLO4-DOD	1	Sample	50	
21	Vial 89	1815740006	CLO4-DOD	1	Sample		
22	Vial 90	1815740007	CLO4-DOD	1	Sample		
23	Vial 91	1815988001	CLO4-DOD	1	Sample		
24	Vial 92	1815988002 1K	CLO4-DOD	1	Sample		
25	Vial 93	1815988003 1K	CLO4-DOD	1	Sample		
26	Vial 91	1815988001 1K	CLO4-DOD	1	Sample		
27	Vial 75	605277 CCV@25	CLO4-DOD	1	Ctrl Samp		
28	Vial 61	Rinse	CLO4-DOD	1	Sample	50	
29	Vial 71	605278 LODV@1.	CLO4-DOD	1	Ctrl Samp		
30	Vial 62	605278 LODV@1.	CLO4-DOD	1	Ctrl Samp		
31	Vial 94	1815988004 MS	CLO4-DOD	1	Sample		
32	Vial 95	1815988005 MSD	CLO4-DOD	1	Sample		
33	Vial 96	1815991001	CLO4-DOD	1	Sample		
34	Vial 97	1815992001 1K	CLO4-DOD	1	Sample		
35	Vial 98	1815993001	CLO4-DOD	1	Sample		
36	Vial 99	1816534001	CLO4-DOD	1	Sample		
37	Vial 51	1815740002 100	CLO4-DOD	1	Sample		
38	Vial 52	1815740003 10K	CLO4-DOD	1	Sample		
39	Vial 53	1815740005 100	CLO4-DOD	1	Sample		
40	Vial 75	605342 CCV@25	CLO4-DOD	1	Ctrl Samp		
41	Vial 71	605343 LODV@1.	CLO4-DOD	1	Ctrl Samp		
42	Vial 62	605343 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND09.D Sample Name: 605272 CCV@25

Injection Date:	6/14/2018 11:45:33	Seq Line:	9
Sample Name:	605272 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND09.D Sample Name: 605272 CCV@25

Injection Date:	6/14/2018 11:45:33	Seq Line:	9
Sample Name:	605272 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.105	PBA	855223.9	25.6971	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.120	BBA	290705.0	25.4047	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.125	PBA	161025.8	5.0000	CLO4-89-ISTD

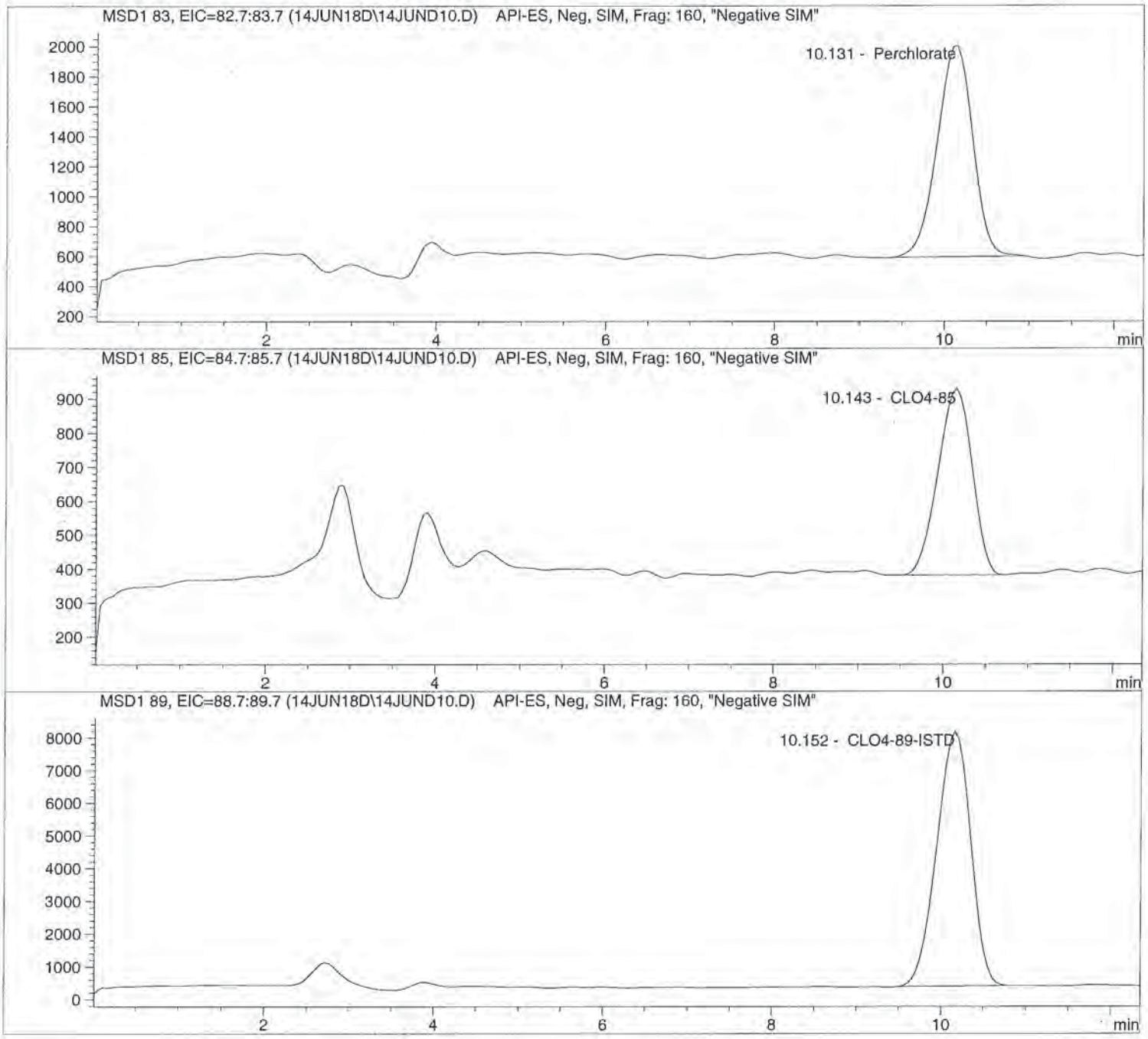
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND10.D Sample Name: 605273 LODV@1.

Injection Date:	6/14/2018 11:59:51	Seq Line:	10
Sample Name:	605273 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Injection Date:	6/14/2018 11:59:51	Seq Line:	10
Sample Name:	605273 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.131	PBA	40989.7	1.0315	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.143	PBA	15363.7	0.8941	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.152	BBA	216437.1	5.0000	CLO4-89-ISTD

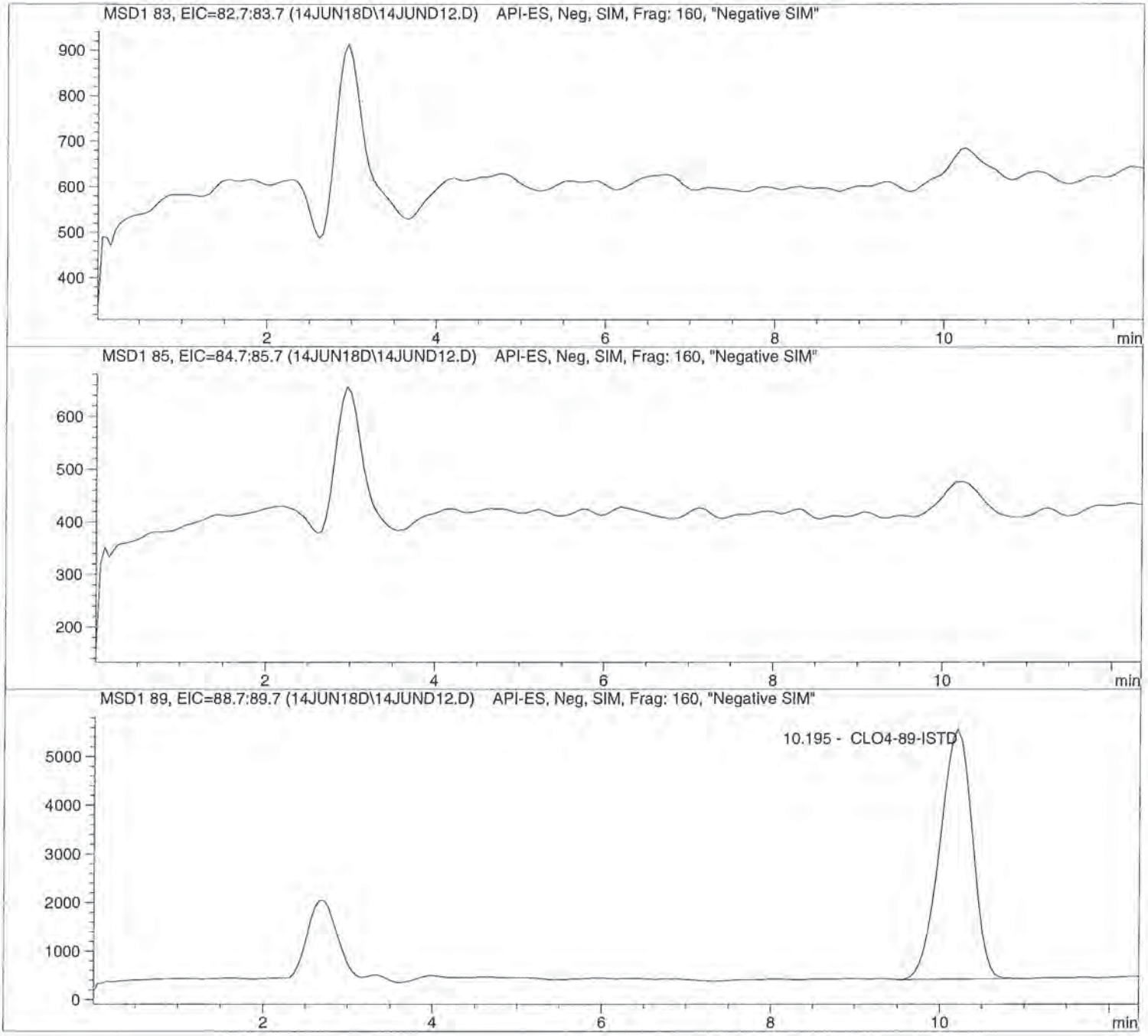
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND12.D Sample Name: 605275 LMB

Injection Date:	6/14/2018 12:28:22	Seq Line:	12
Sample Name:	605275 LMB	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND12.D Sample Name: 605275 LMB

Injection Date:	6/14/2018 12:28:22	Seq Line:	12
Sample Name:	605275 LMB	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.195	PBA	136891.5	5.0000	CLO4-89-ISTD

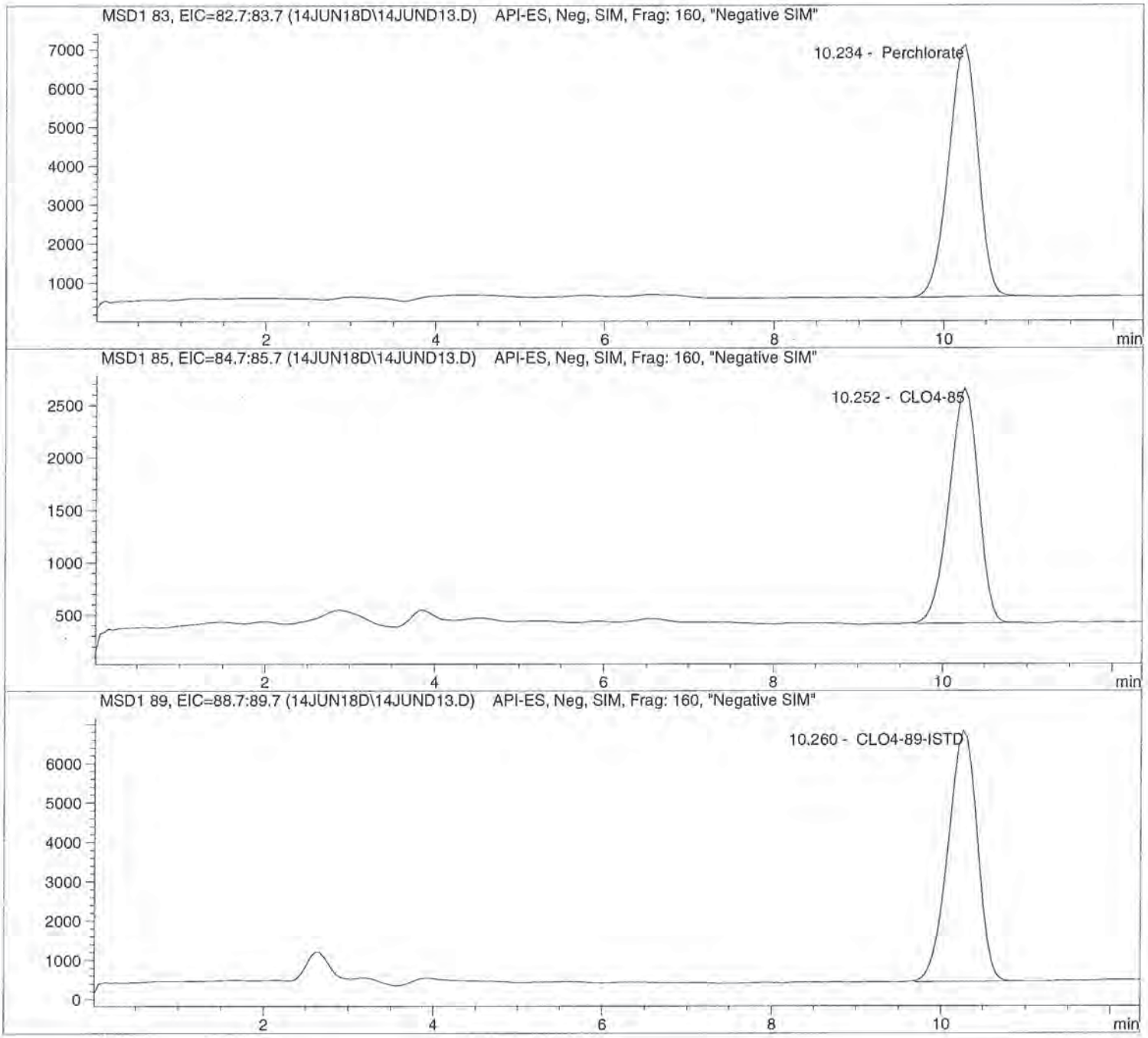
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND13.D Sample Name: 605276 QC@5.0

Injection Date:	6/14/2018 12:42:40	Seq Line:	13
Sample Name:	605276 QC@5.0	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND13.D Sample Name: 605276 QC@5.0

Injection Date:	6/14/2018 12:42:40	Seq Line:	13
Sample Name:	605276 QC@5.0	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.234	BBA	155938.1	5.2571	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.252	BBA	54056.7	5.1237	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.260	BBA	154533.9	5.0000	CLO4-89-ISTD

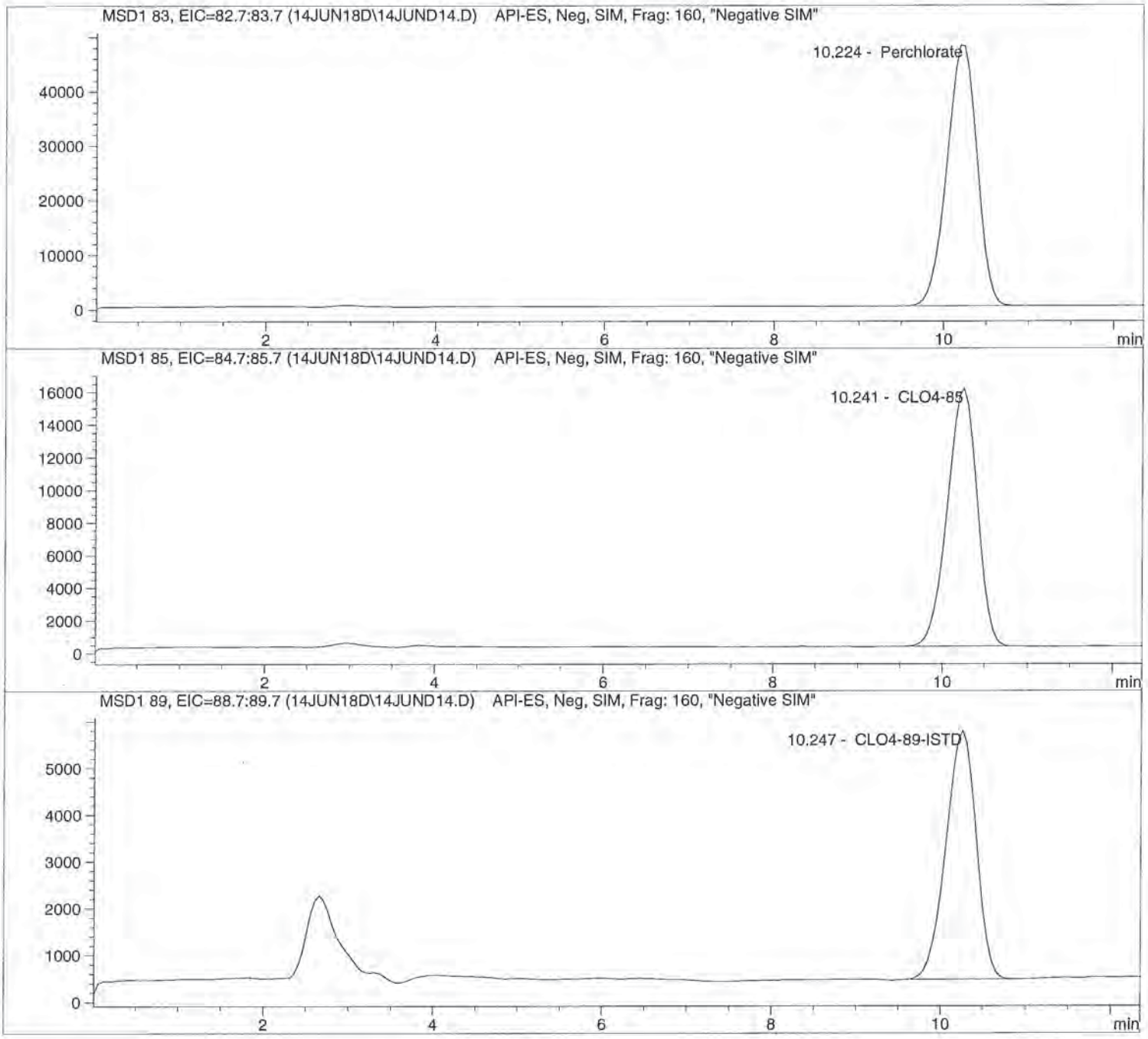
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND14.D Sample Name: 1815740001 1K

Injection Date:	6/14/2018 12:56:56	Seq Line:	14
Sample Name:	1815740001 1K	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND14.D Sample Name: 1815740001 1K

Injection Date:	6/14/2018 12:56:56	Seq Line:	14
Sample Name:	1815740001 1K	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.224	BBA	1181708.4	40992.8461	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.241	BBA	387841.8	39345.3921	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.247	BBA	132839.1	5000.0000	CLO4-89-ISTD

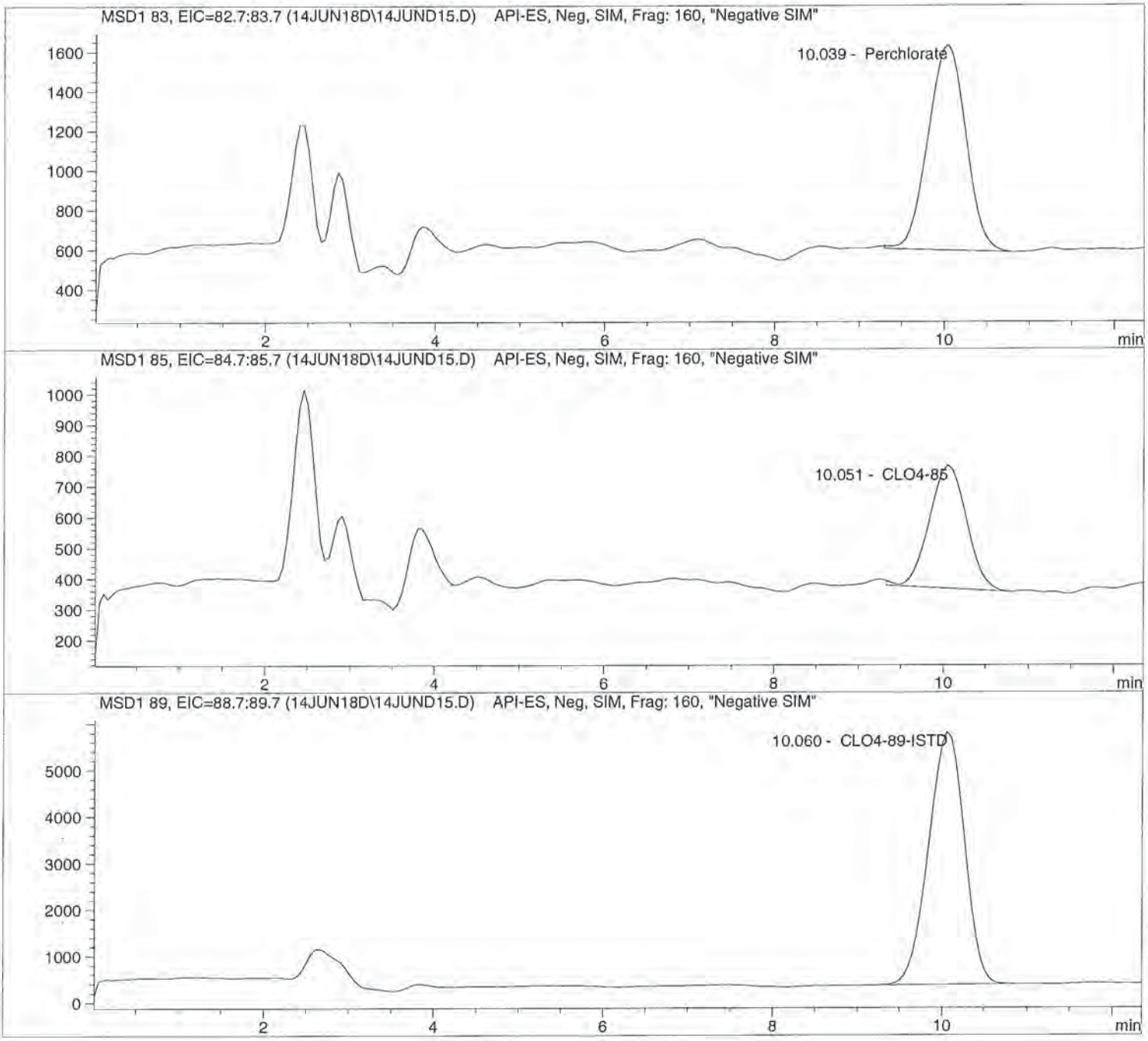
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND15.D Sample Name: 605274 ICS@1.0

Injection Date:	6/14/2018 13:13:17	Seq Line:	15
Sample Name:	605274 ICS@1.0	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND15.D Sample Name: 605274 ICS@1.0

Injection Date:	6/14/2018 13:13:17	Seq Line:	15
Sample Name:	605274 ICS@1.0	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.039	BBA	31874.1	1.0884	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.051	BBA	12118.8	0.9735	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.060	BBA	159160.7	5.0000	CLO4-89-ISTD

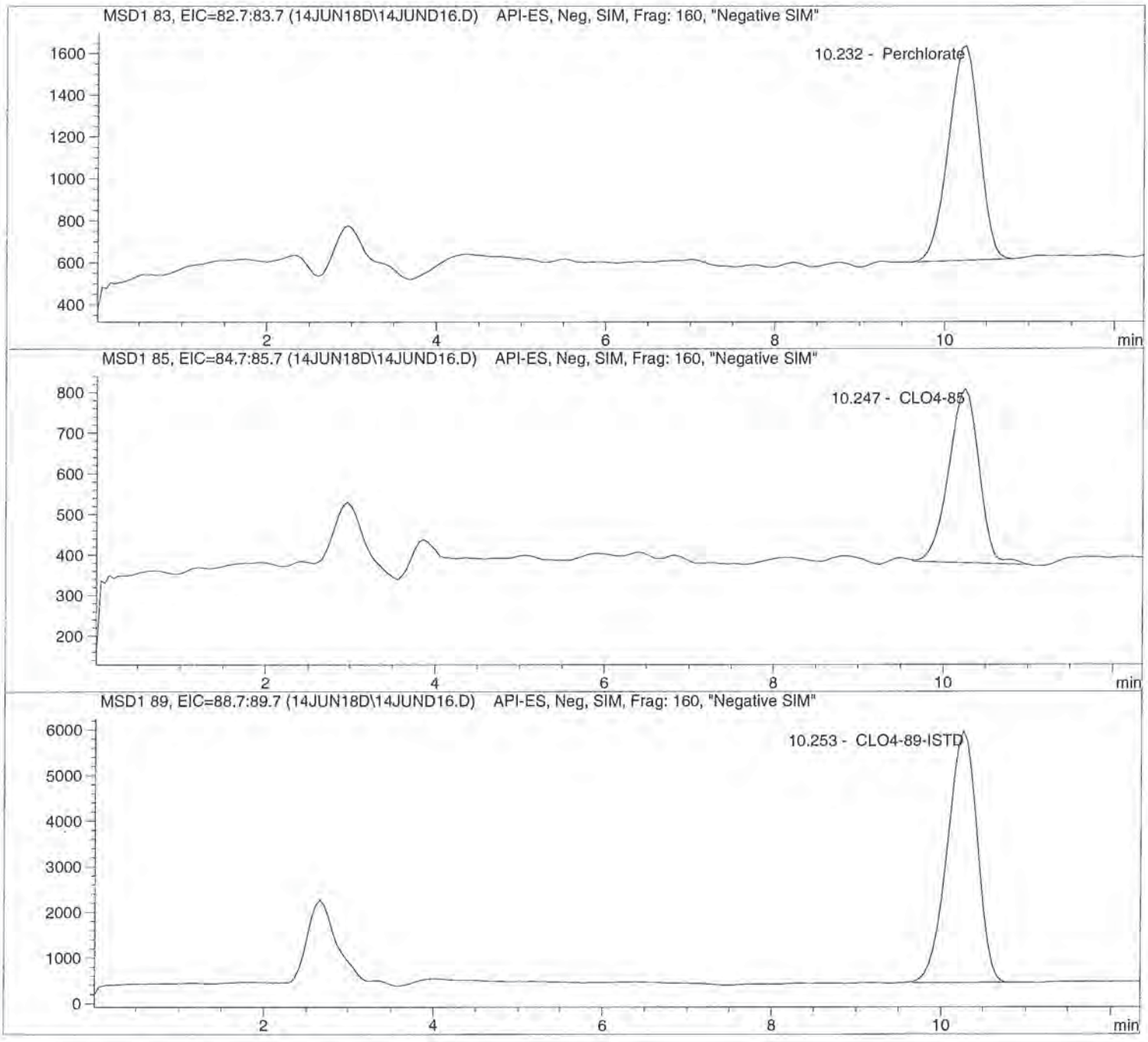
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND16.D Sample Name: 1815740002 1K

Injection Date:	6/14/2018 13:27:31	Seq Line:	16
Sample Name:	1815740002 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND16.D Sample Name: 1815740002 1K

Injection Date:	6/14/2018 13:27:31	Seq Line:	16
Sample Name:	1815740002 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.232	BBA	26025.5	1043.1332	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.247	BBA	10718.1	1016.1430	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.253	BBA	135828.4	5000.0000	CLO4-89-ISTD

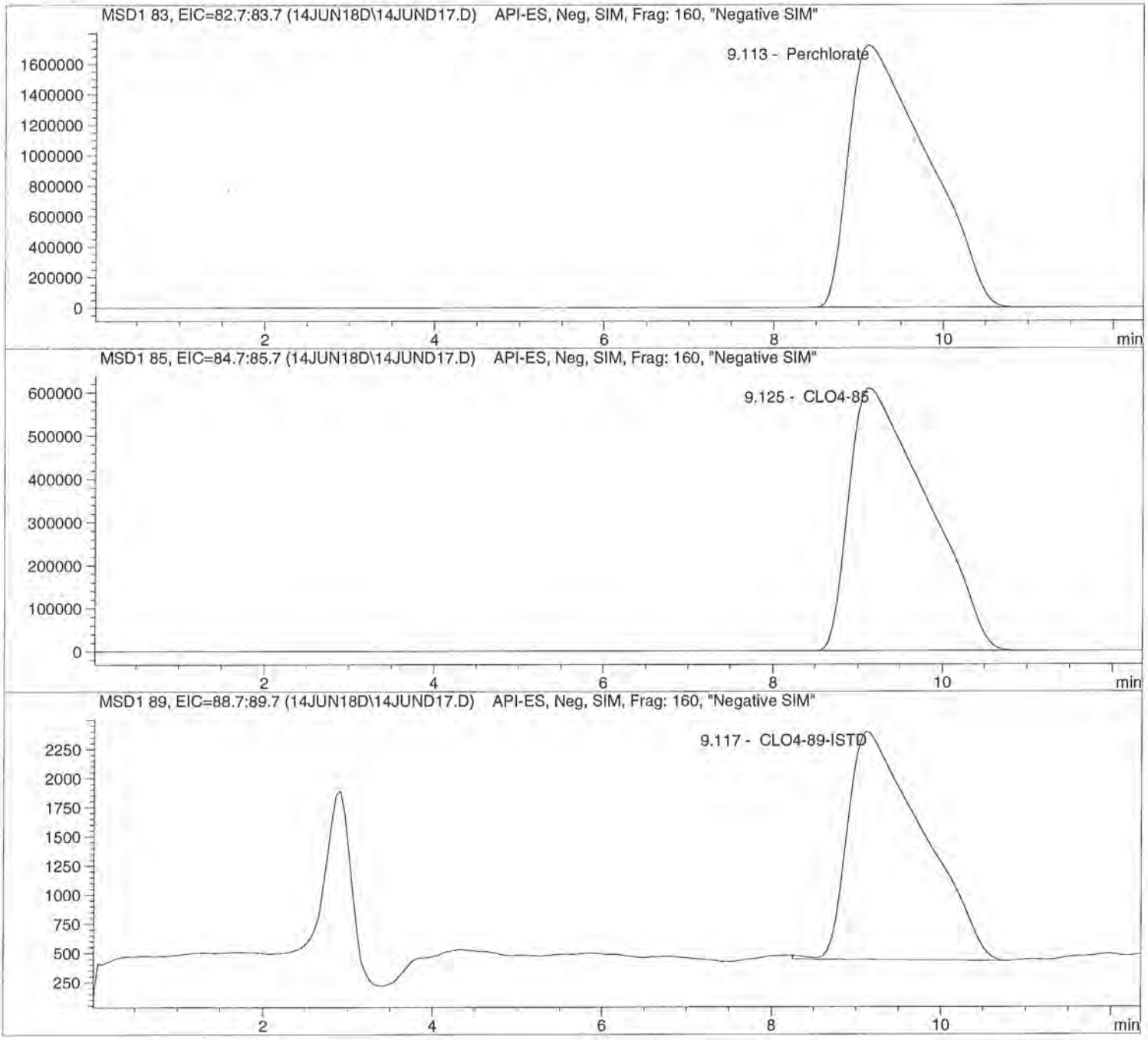
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND17.D Sample Name: 1815740003 10

Injection Date:	6/14/2018 13:41:49	Seq Line:	17
Sample Name:	1815740003 10	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND17.D Sample Name: 1815740003 10

Injection Date:	6/14/2018 13:41:49	Seq Line:	17
Sample Name:	1815740003 10	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.113	PBA	110285632.0	10392.5710	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.125	PBA	38727980.0	10358.5365	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.117	BBA	119984.9	50.0000	CLO4-89-ISTD

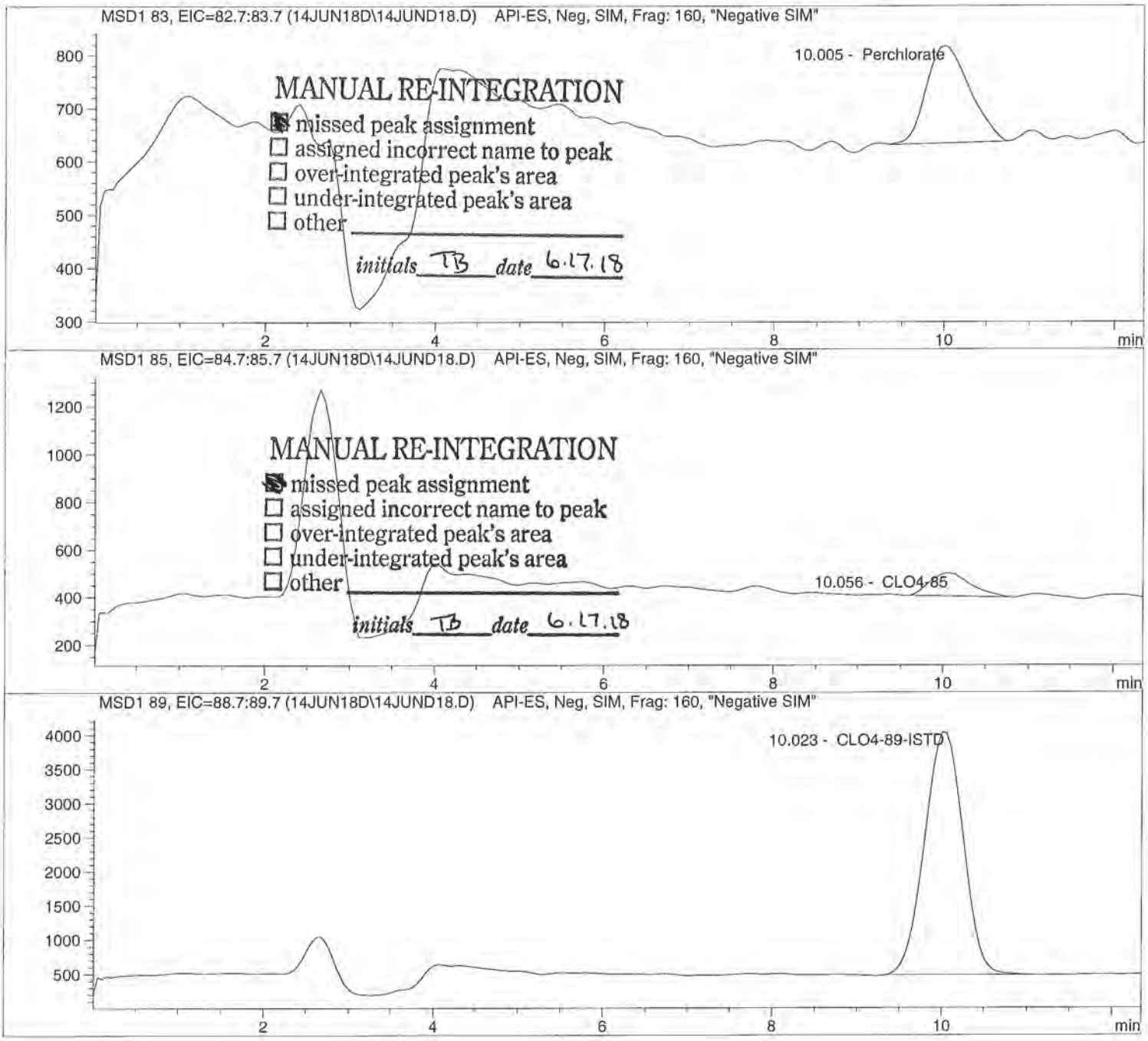
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.005	MM	6529.8	0.3419	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.056	MM	3253.0	0.2432	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.023	BBA	112834.3	5.0000	CLO4-89-ISTD

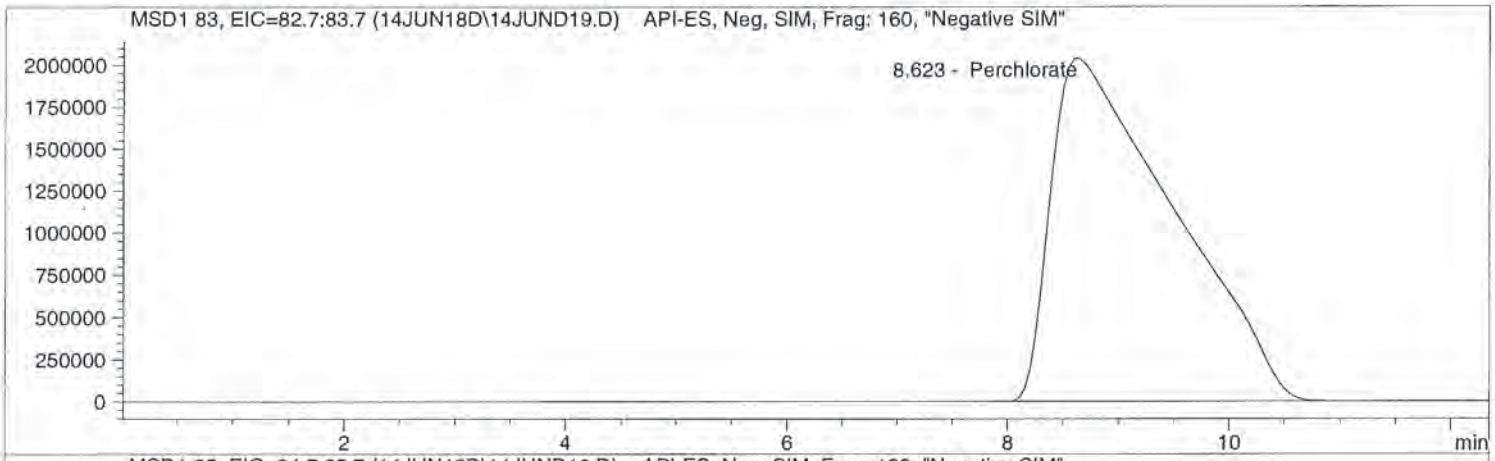
*** End of Report ***

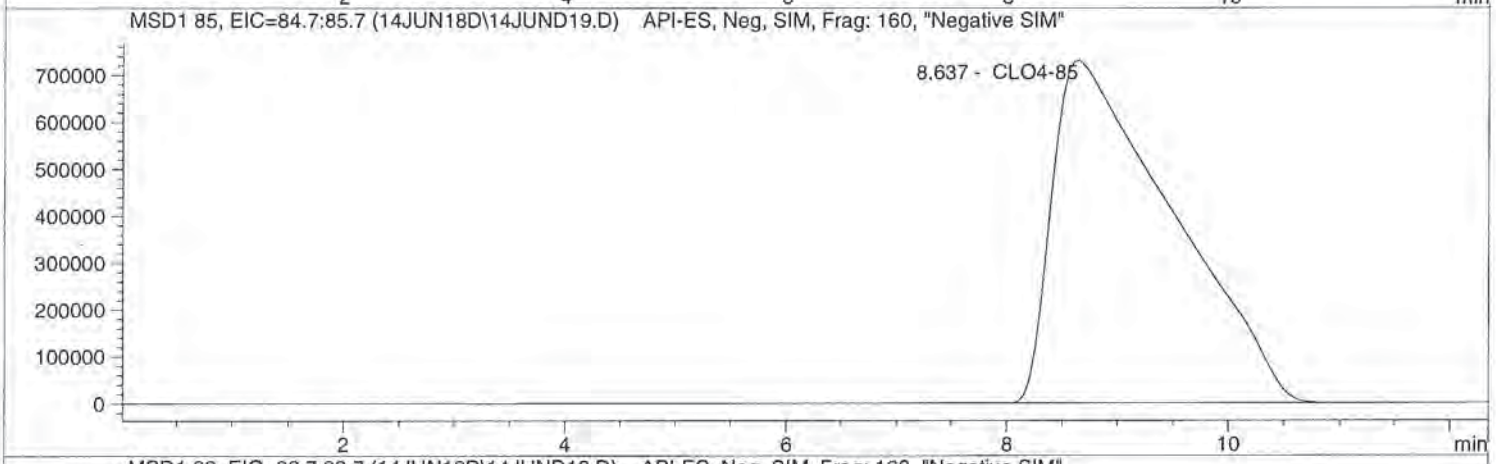
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

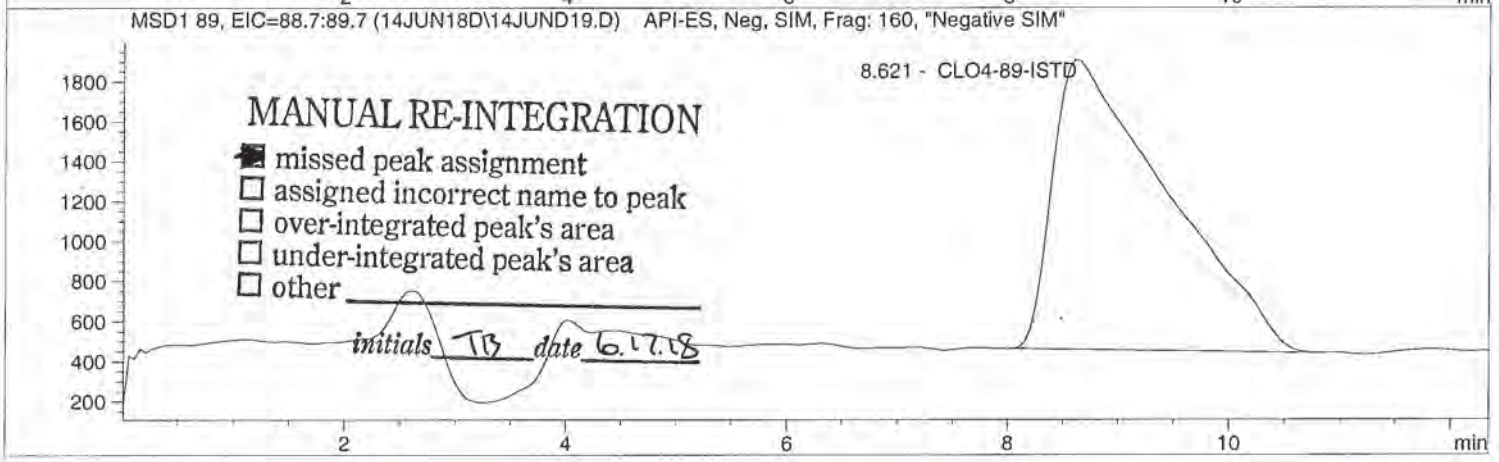
Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.623	PBA	156101936.0	1362.6021	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.637	PBA	55016480.0	1359.4368	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.621	MM	104092.4	5.0000	CLO4-89-ISTD

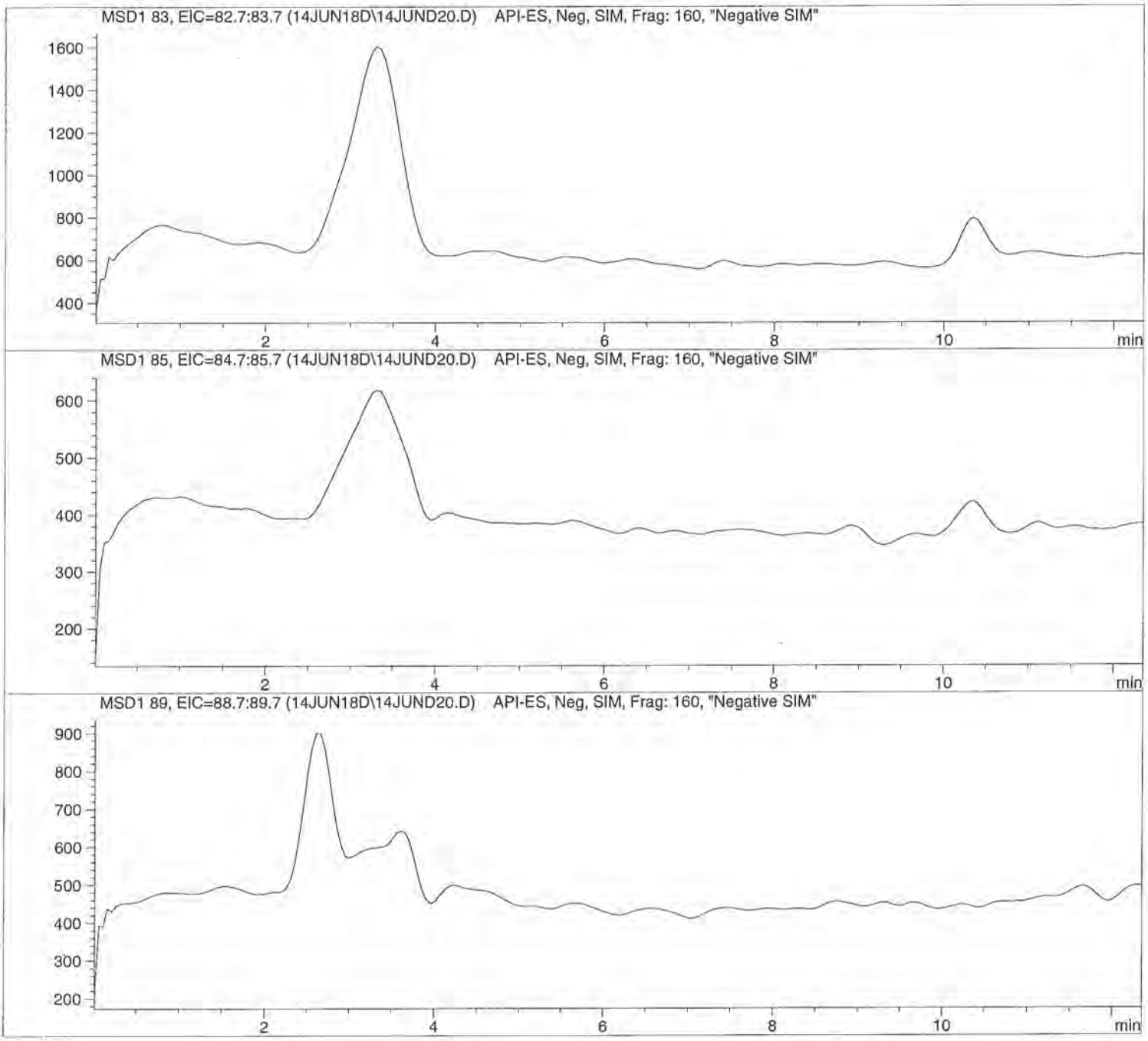
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND20.D Sample Name: Rinse

Injection Date:	6/14/2018 14:24:51	Seq Line:	20
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND20.D Sample Name: Rinse

Injection Date:	6/14/2018 14:24:51	Seq Line:	20
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
0.000		0.0	0.0000	CLO4-89-ISTD

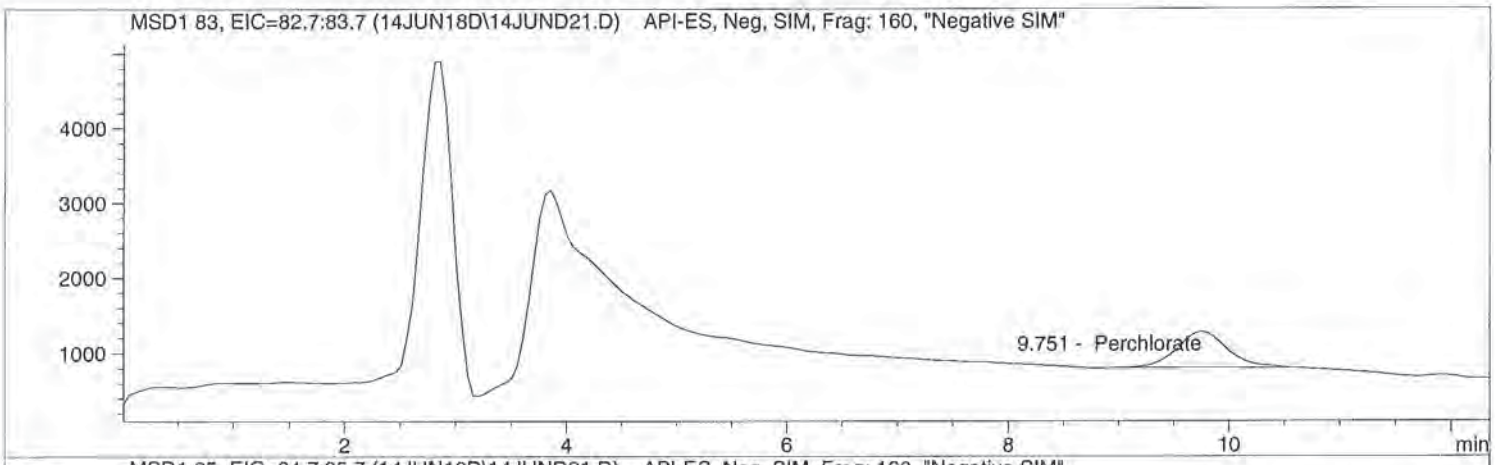
*** End of Report ***

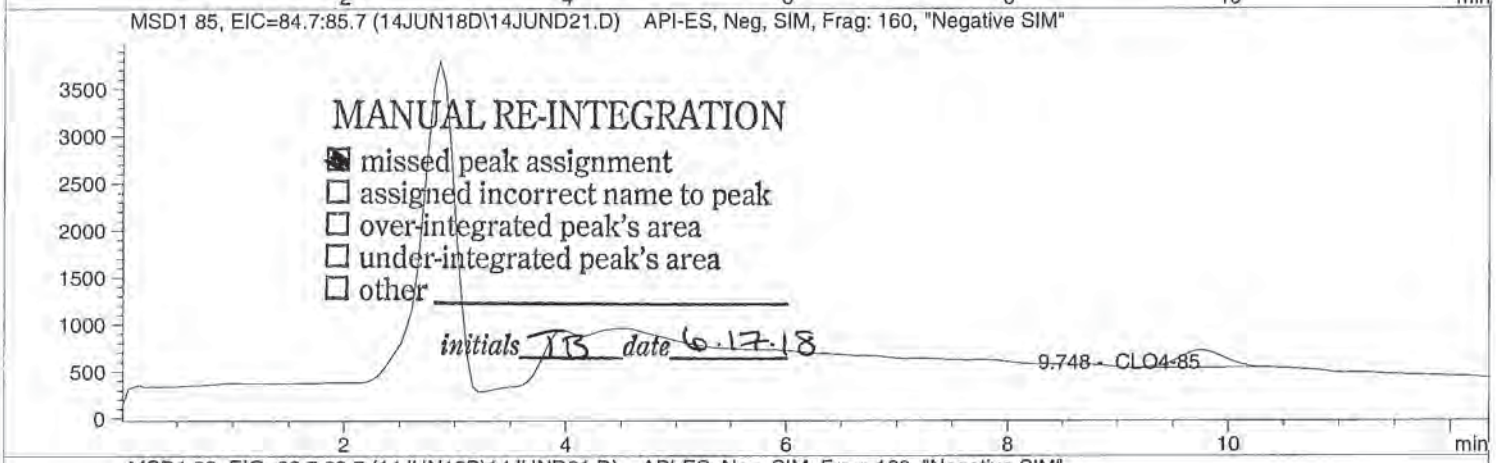
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

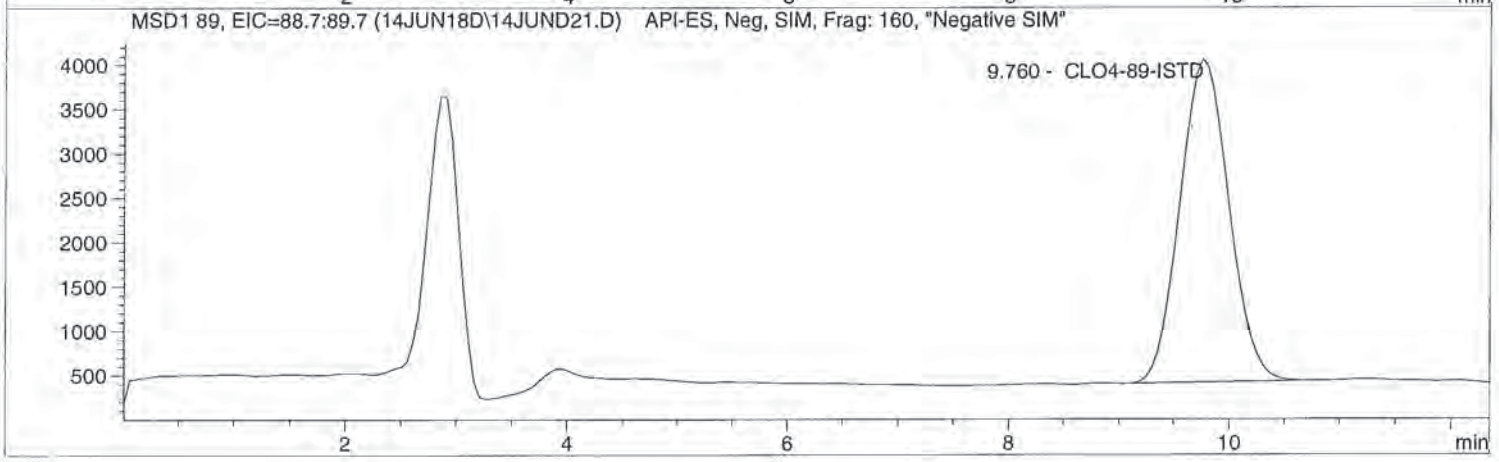
Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.751	PBA	14951.0	0.7364	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.748	MM	5399.5	0.5403	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.760	PBA	112386.4	5.0000	CLO4-89-ISTD

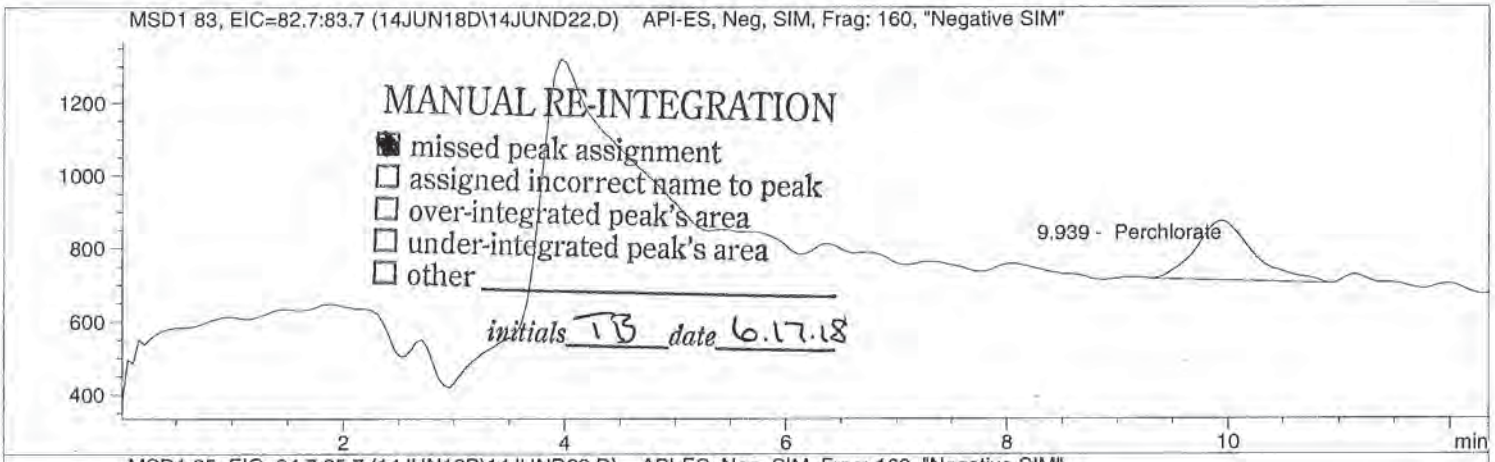
*** End of Report ***

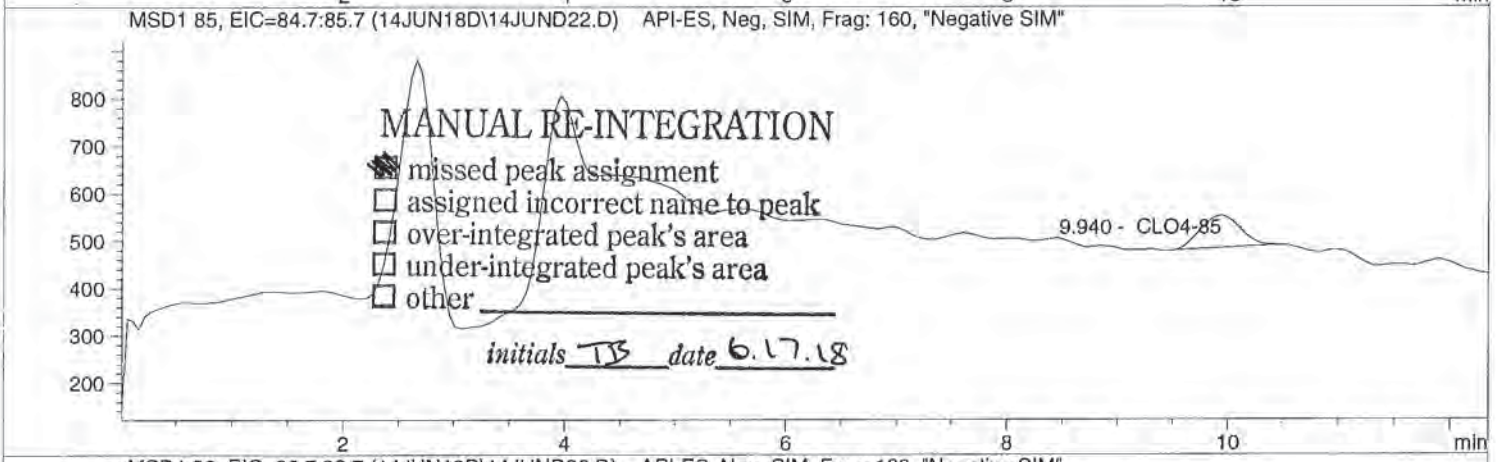
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

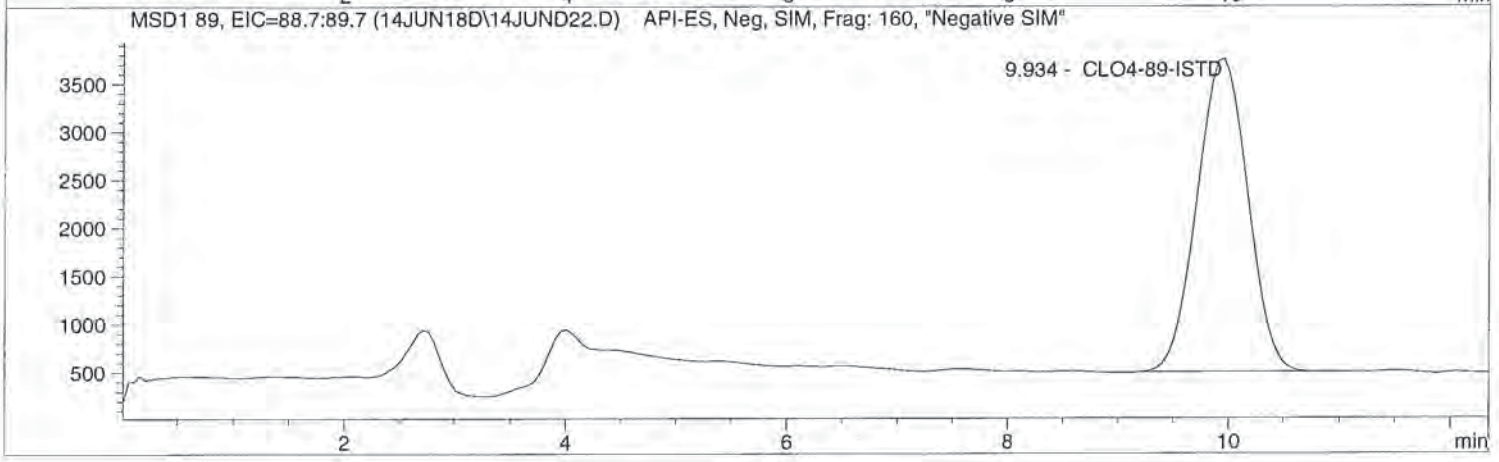
Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.939	MM	5925.8	0.3373	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	MM	1718.9	0.0527	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.934	PBA	103960.3	5.0000	CLO4-89-ISTD

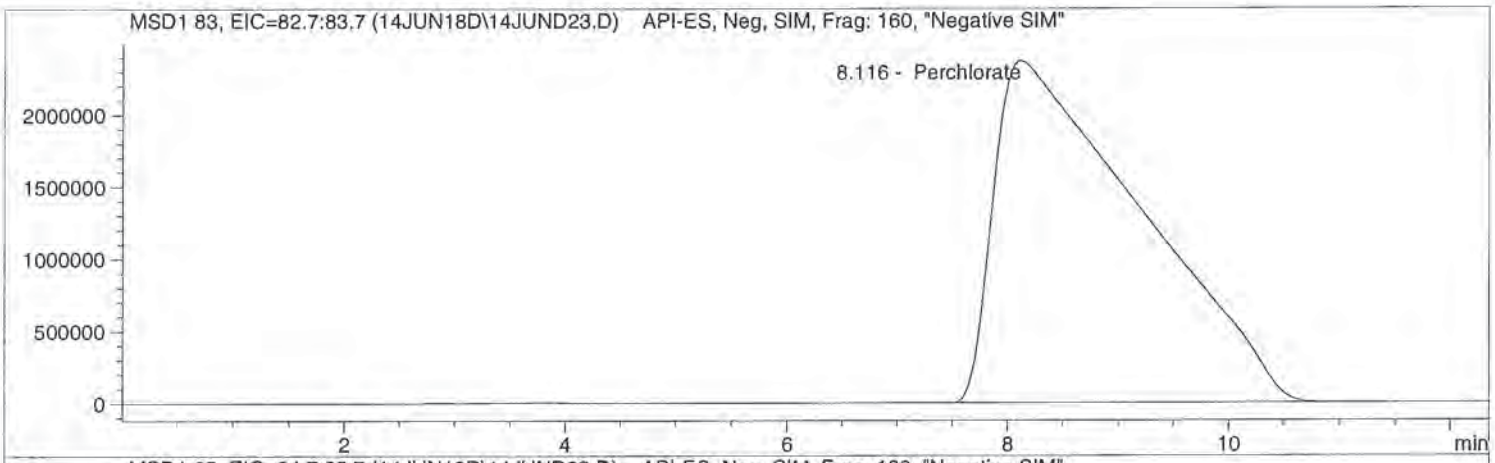
*** End of Report ***

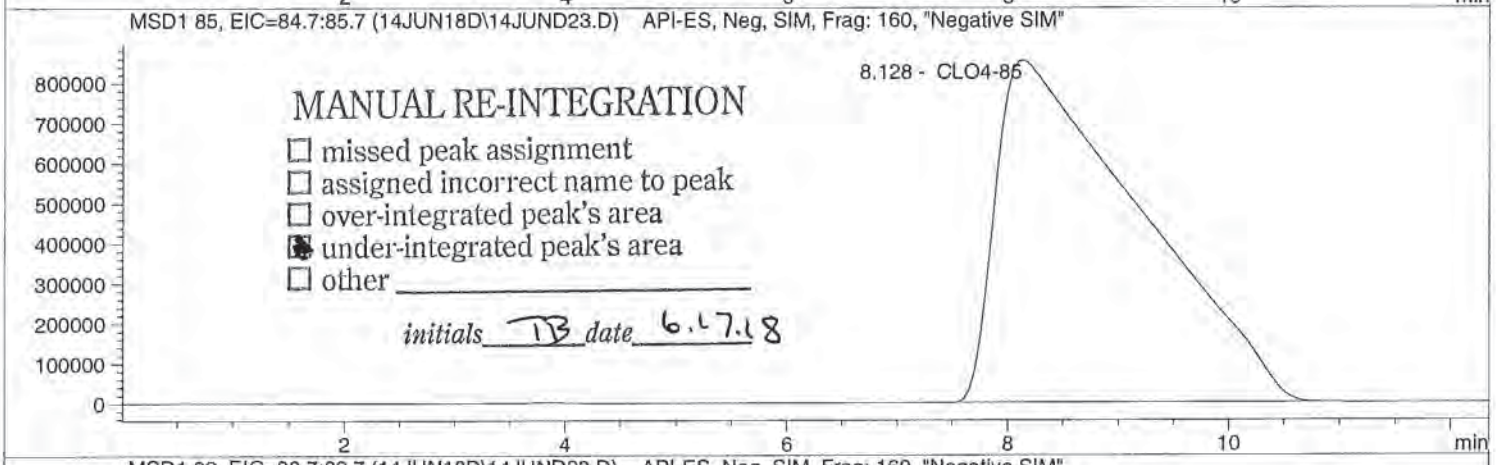
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

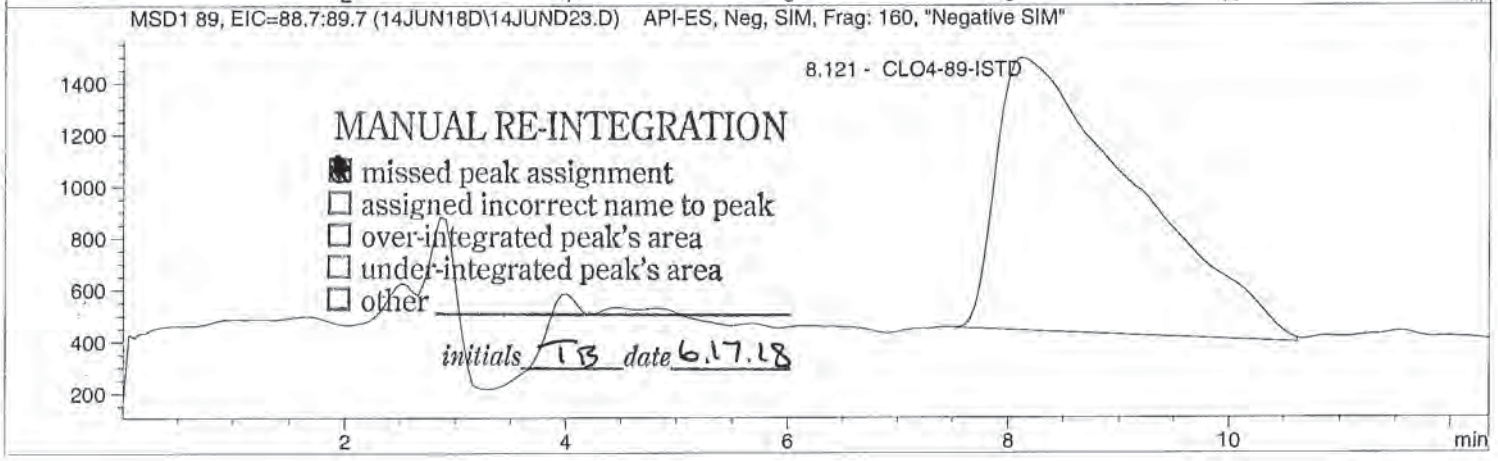
Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.116	PBA	218628112.0	1751.6892	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.128	MM	77523296.0	1751.9121	CLO4-85
8.841	Rsho	0.0	0.0000	
9.453	Rsho	0.0	0.0000	
9.620	Rsho	0.0	0.0000	
10.307	Rsho	0.0	0.0000	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.121	MM	91727.9	5.0000	CLO4-89-ISTD

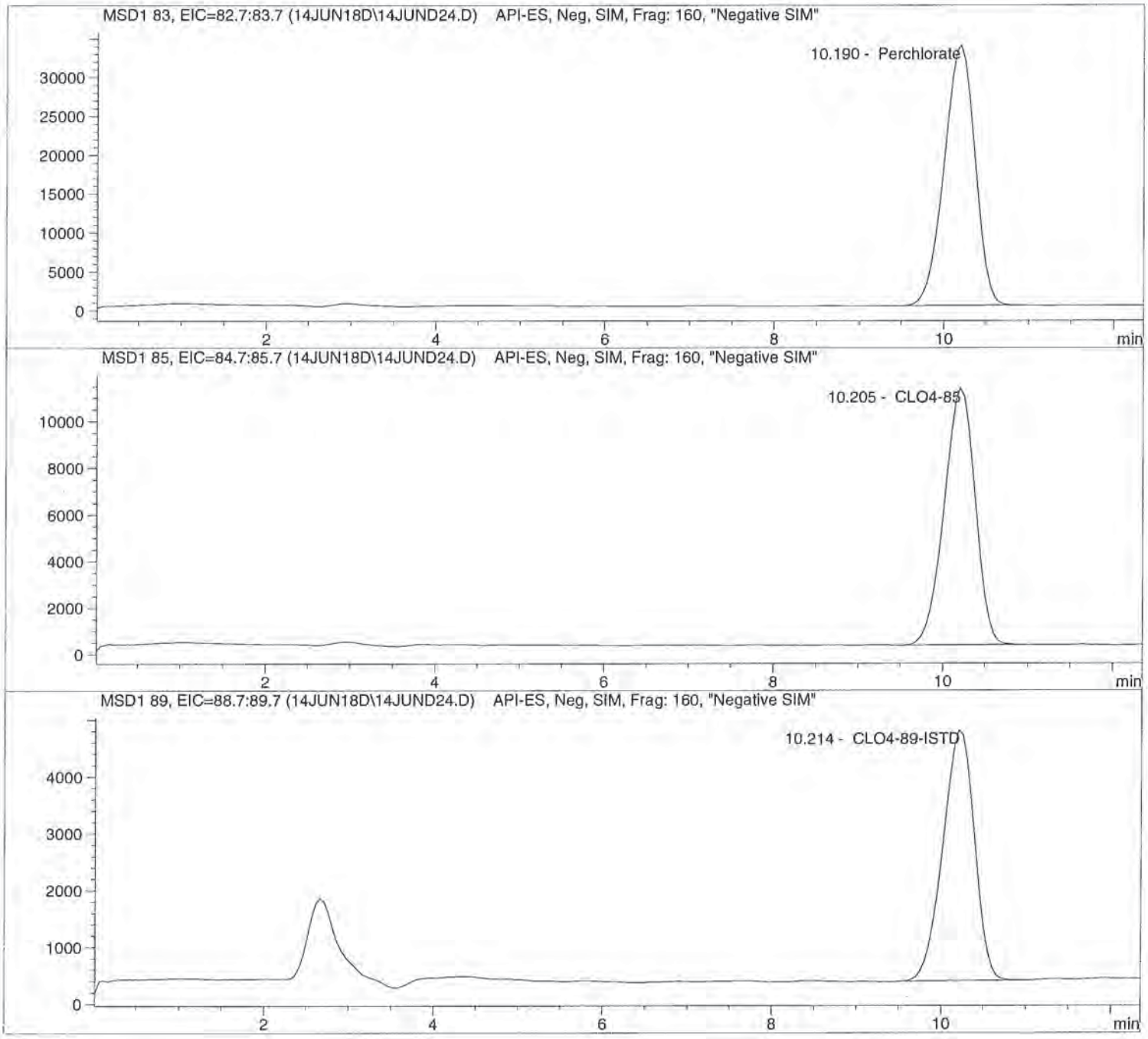
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND24.D Sample Name: 1815988002 1K

Injection Date:	6/14/2018 15:22:13	Seq Line:	24
Sample Name:	1815988002 1K	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND24.D Sample Name: 1815988002 1K

Injection Date:	6/14/2018 15:22:13	Seq Line:	24
Sample Name:	1815988002 1K	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.190	BBA	850046.4	34774.4113	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.205	PBA	282340.0	33711.2235	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.214	PBA	114860.0	5000.0000	CLO4-89-ISTD

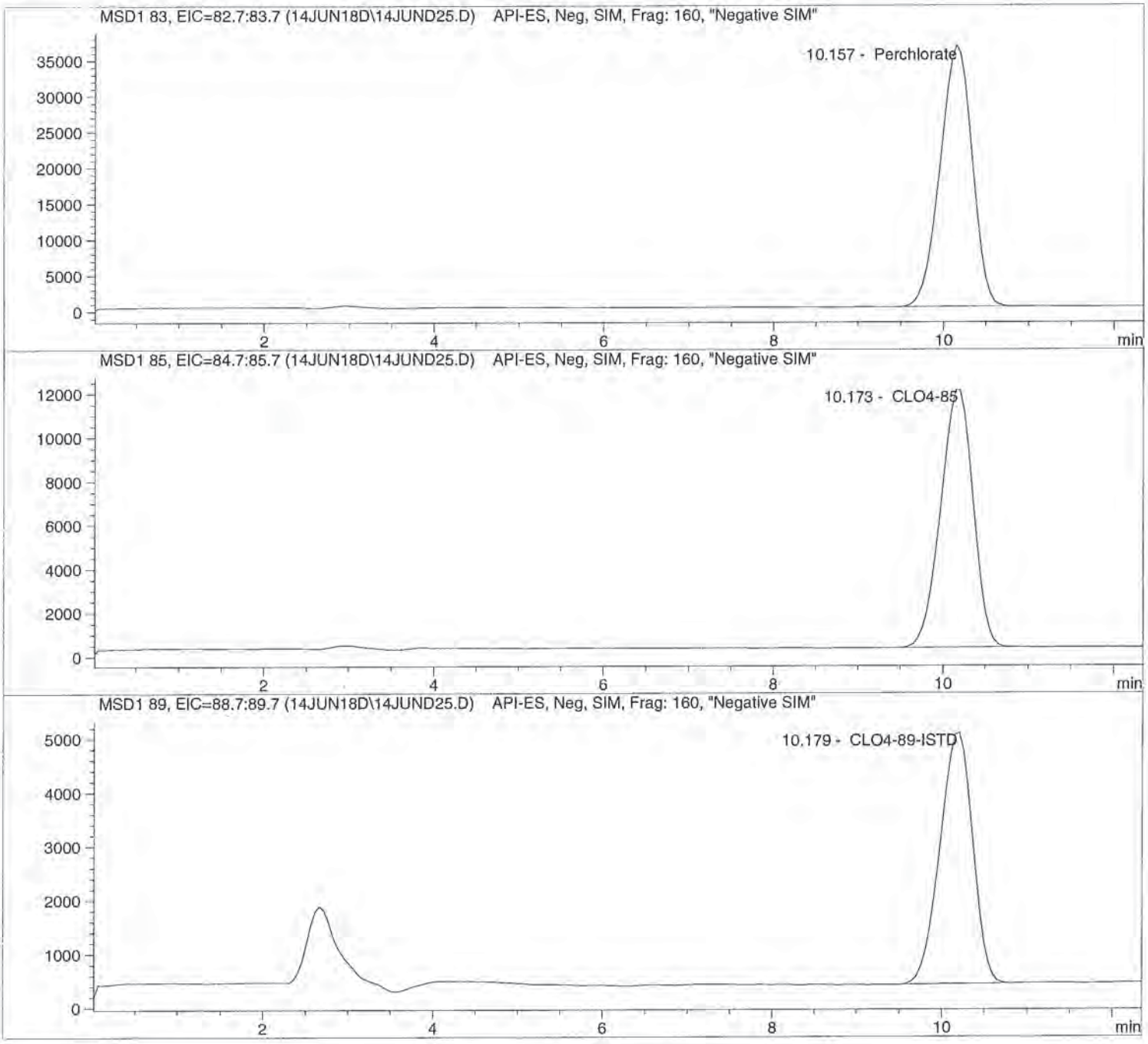
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND25.D Sample Name: 1815988003 1K

Injection Date:	6/14/2018 15:36:32	Seq Line:	25
Sample Name:	1815988003 1K	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND25.D Sample Name: 1815988003 1K

Injection Date:	6/14/2018 15:36:32	Seq Line:	25
Sample Name:	1815988003 1K	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.157	BBA	954515.7	35634.6466	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.173	PBA	313549.9	34205.4073	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.179	PBA	125520.5	5000.0000	CLO4-89-ISTD

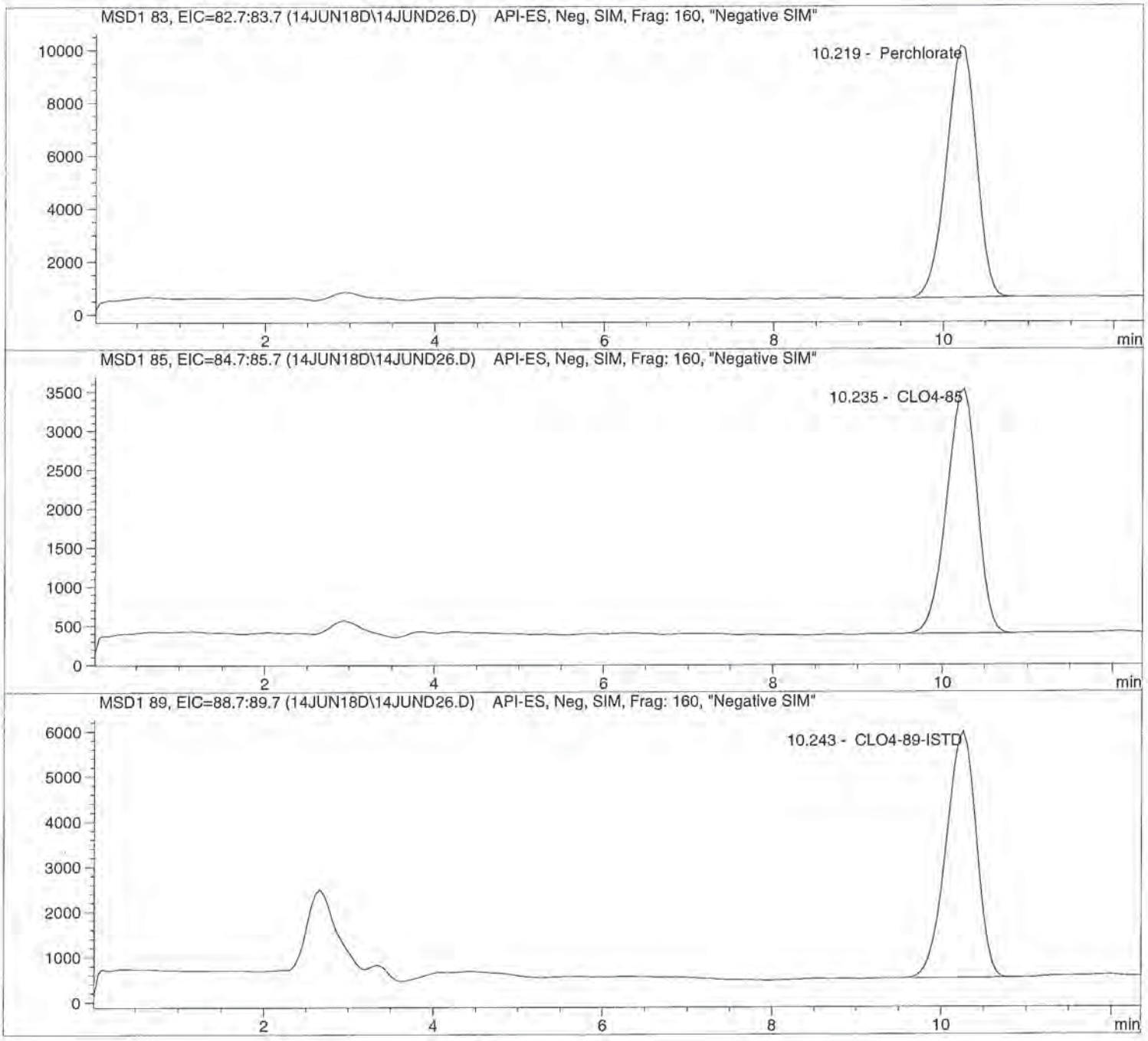
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND26.D Sample Name: 1815988001 1K

Injection Date:	6/14/2018 17:13:26	Seq Line:	26
Sample Name:	1815988001 1K	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND26.D Sample Name: 1815988001 1K

Injection Date:	6/14/2018 17:13:26	Seq Line:	26
Sample Name:	1815988001 1K	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.219	PBA	233270.7	8833.1877	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.235	BBA	78170.6	8476.1423	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.243	BBA	135509.6	5000.0000	CLO4-89-ISTD

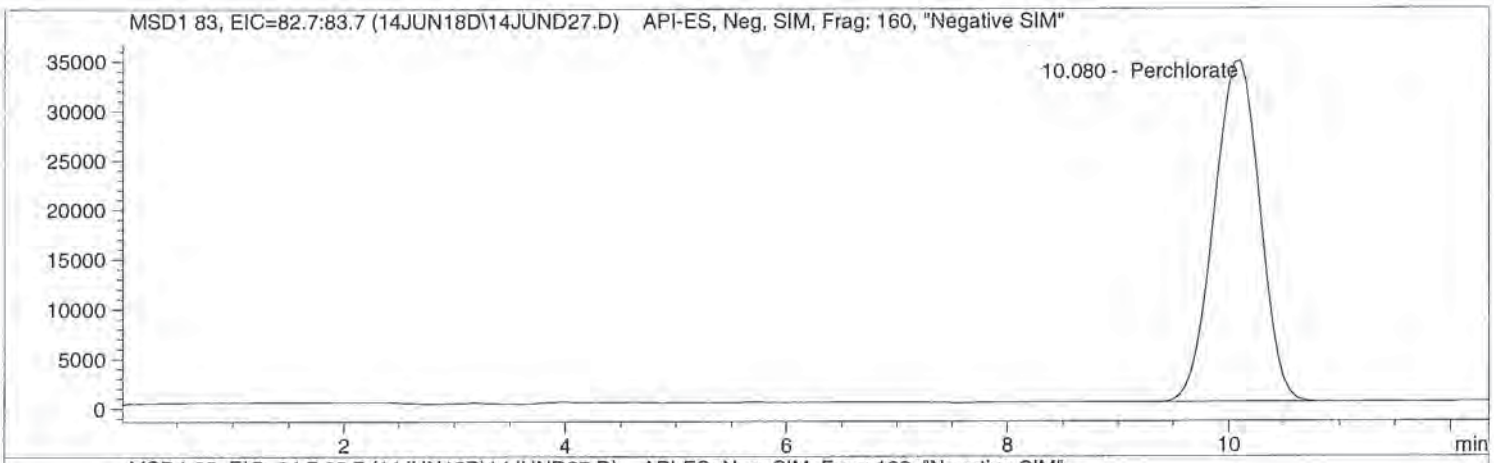
*** End of Report ***

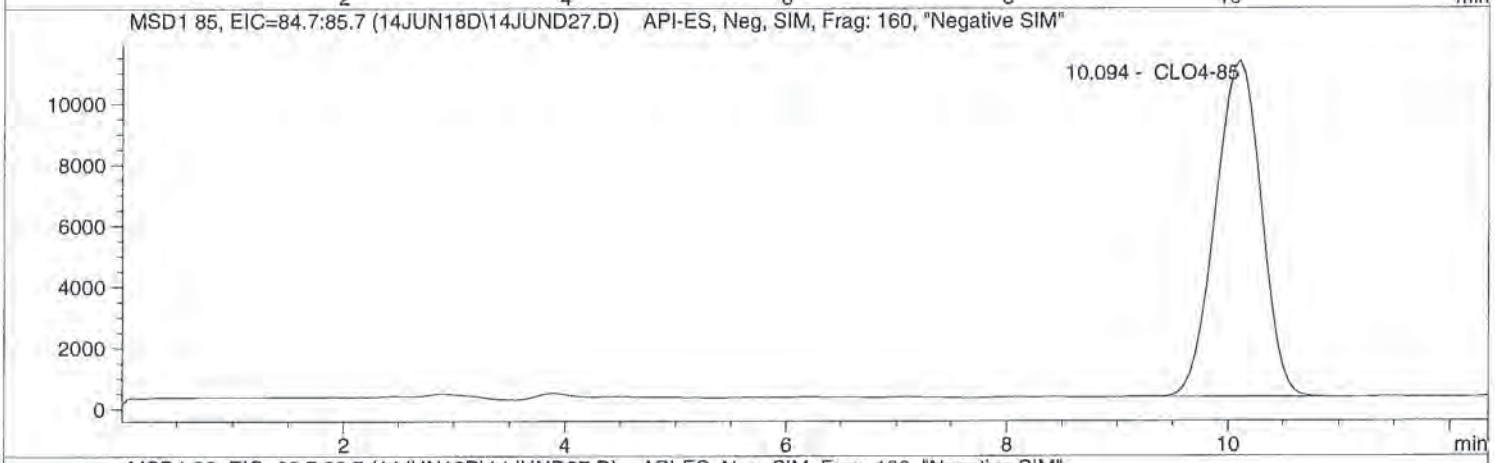
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND27.D Sample Name: 605277 CCV@25

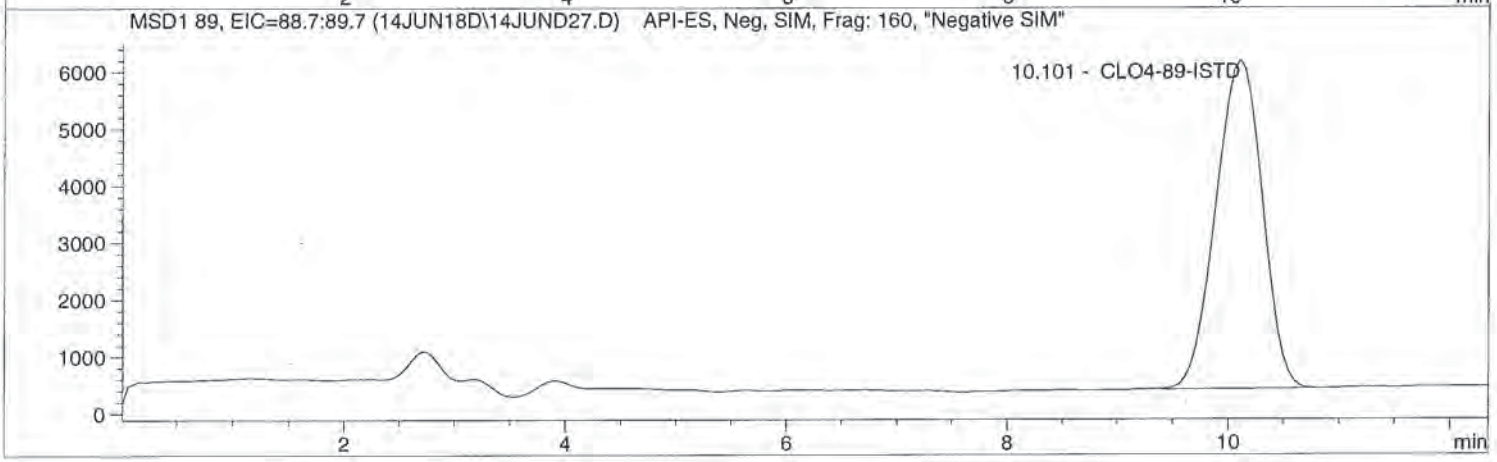
Injection Date:	6/14/2018 17:27:47	Seq Line:	27
Sample Name:	605277 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND27.D Sample Name: 605277 CCV@25

Injection Date:	6/14/2018 17:27:47	Seq Line:	27
Sample Name:	605277 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.080	PBA	992094.1	28.0471	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.094	BBA	319001.0	26.3544	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.101	BBA	169834.9	5.0000	CLO4-89-ISTD

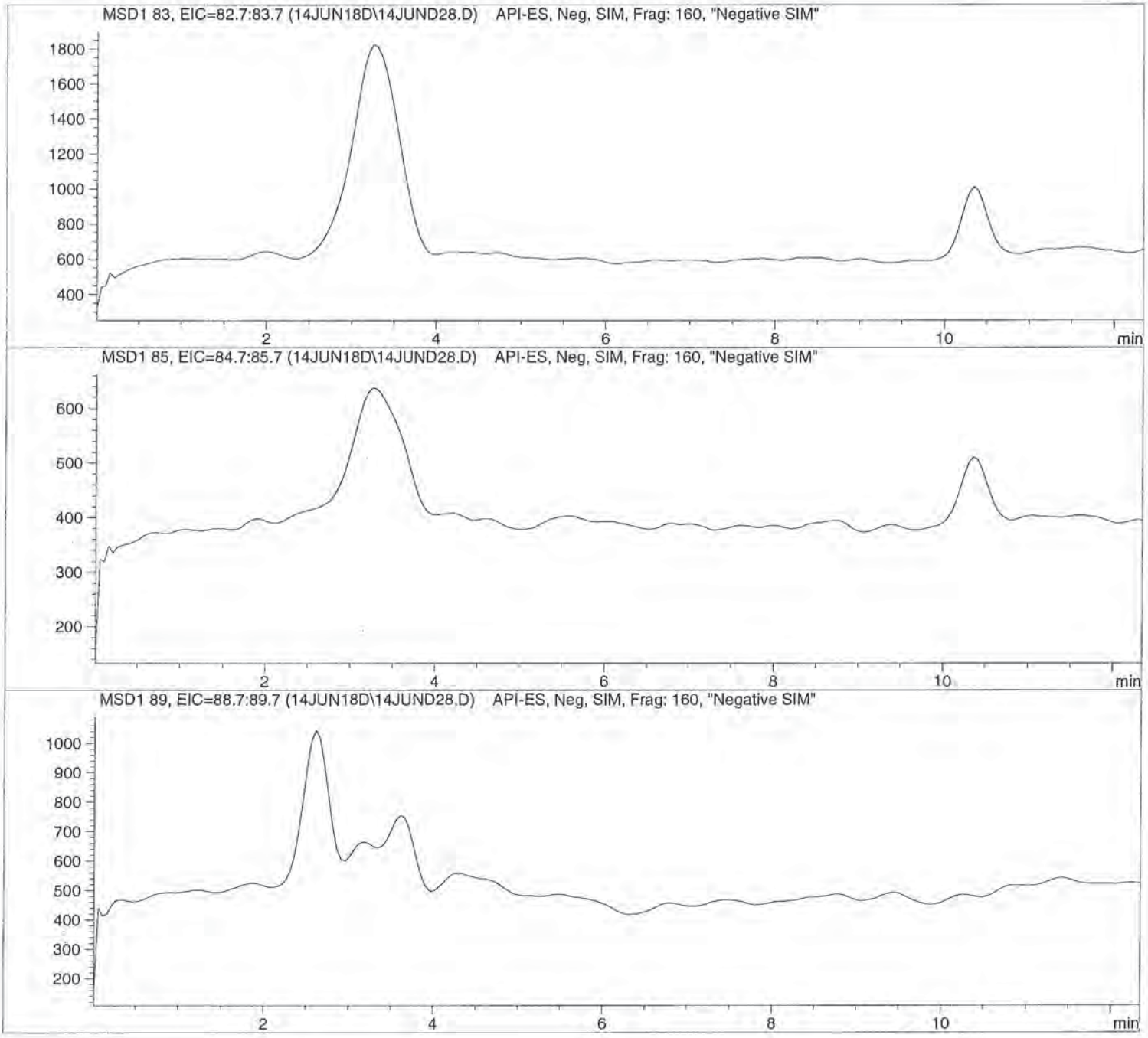
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND28.D Sample Name: Rinse

Injection Date:	6/14/2018 17:42:12	Seq Line:	28
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND28.D Sample Name: Rinse

Injection Date:	6/14/2018 17:42:12	Seq Line:	28
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
0.000		0.0	0.0000	CLO4-89-ISTD

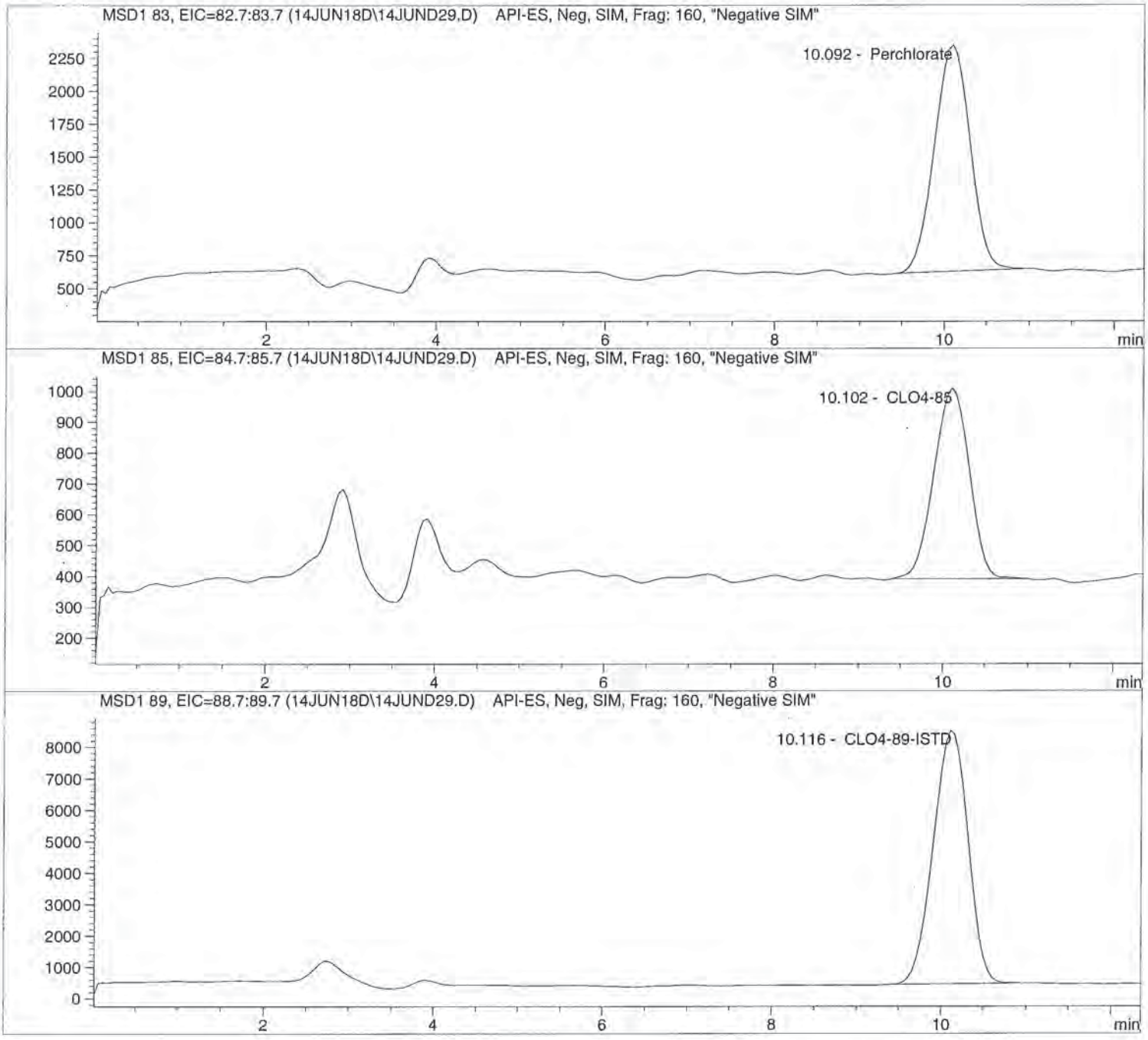
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND29.D Sample Name: 605278 LODV@1.

Injection Date:	6/14/2018 17:56:40	Seq Line:	29
Sample Name:	605278 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Injection Date:	6/14/2018 17:56:40	Seq Line:	29
Sample Name:	605278 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.092	PBA	50405.6	1.1828	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.102	BBA	17956.5	0.9987	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.116	BBA	230883.7	5.0000	CLO4-89-ISTD

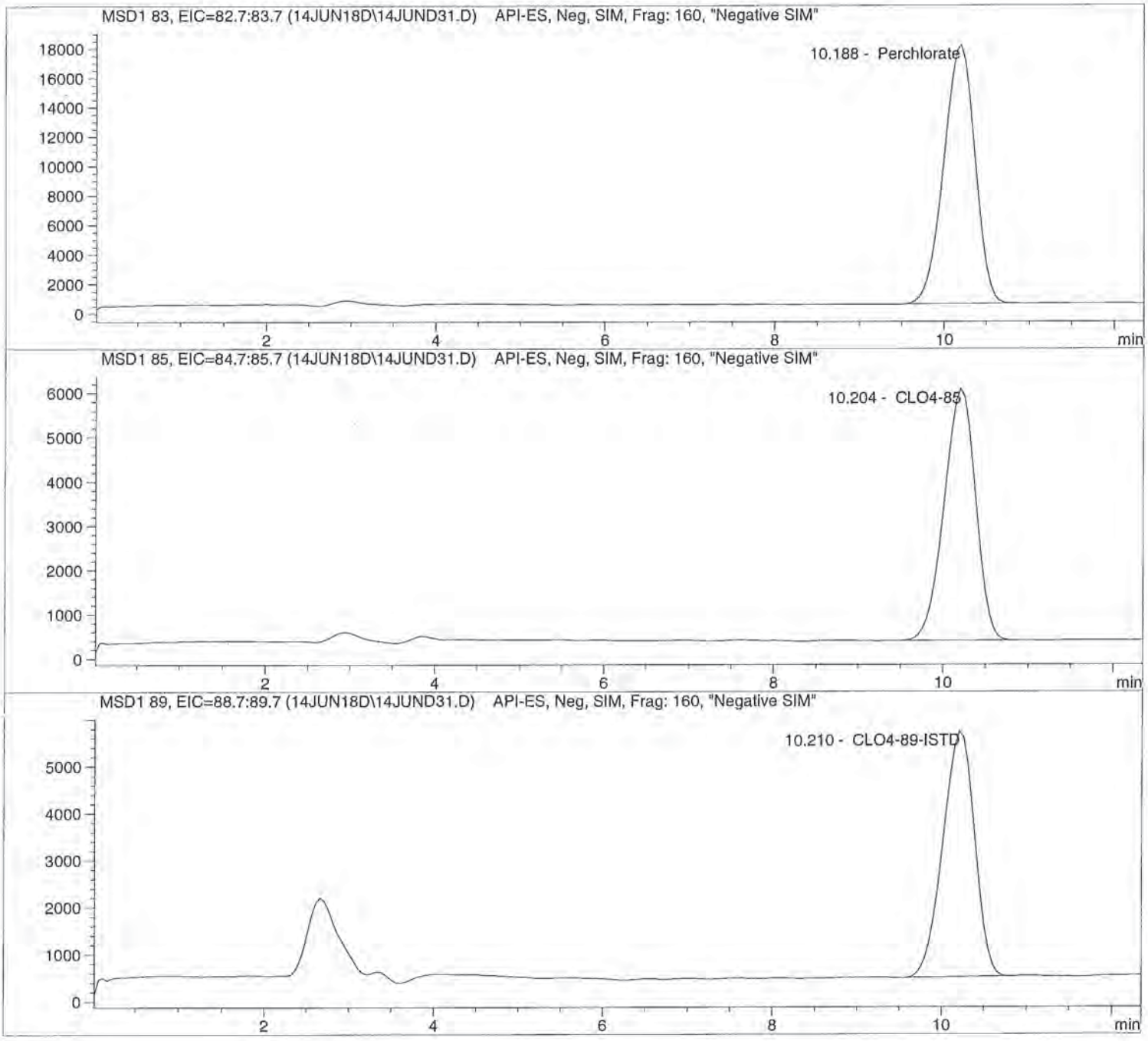
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND31.D Sample Name: 1815988004 MS

Injection Date:	6/14/2018 18:25:18	Seq Line:	31
Sample Name:	1815988004 MS	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND31.D Sample Name: 1815988004 MS

Injection Date:	6/14/2018 18:25:18	Seq Line:	31
Sample Name:	1815988004 MS	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.188	BBA	448410.1	16427.6491	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.204	BBA	146771.5	15600.1771	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.210	PBA	136255.7	5000.0000	CLO4-89-ISTD

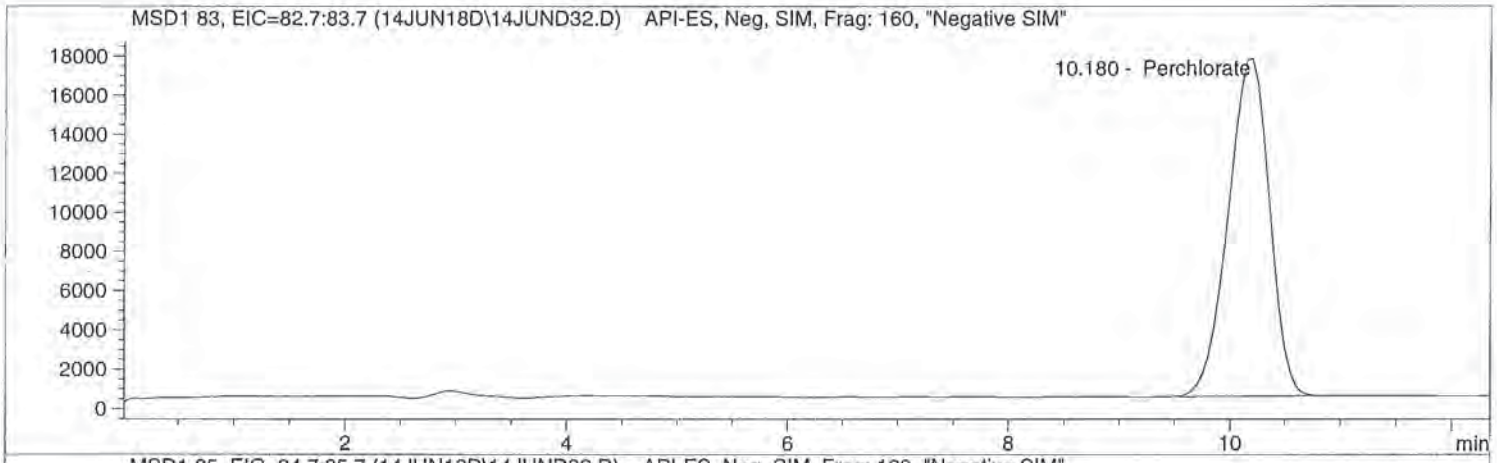
*** End of Report ***

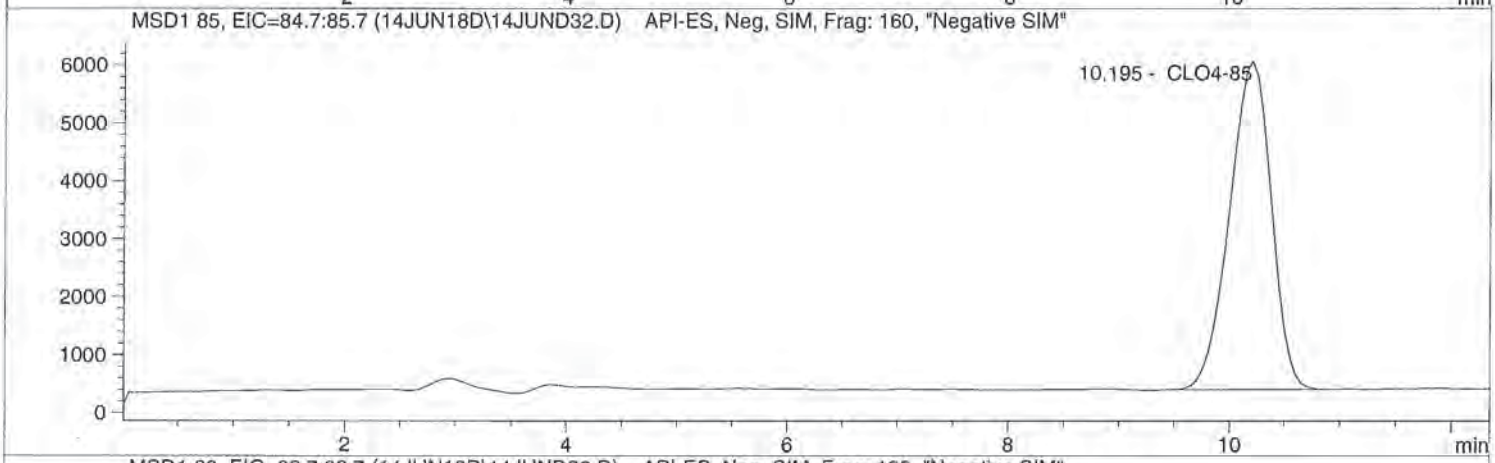
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND32.D Sample Name: 1815988005 MSD 00903458

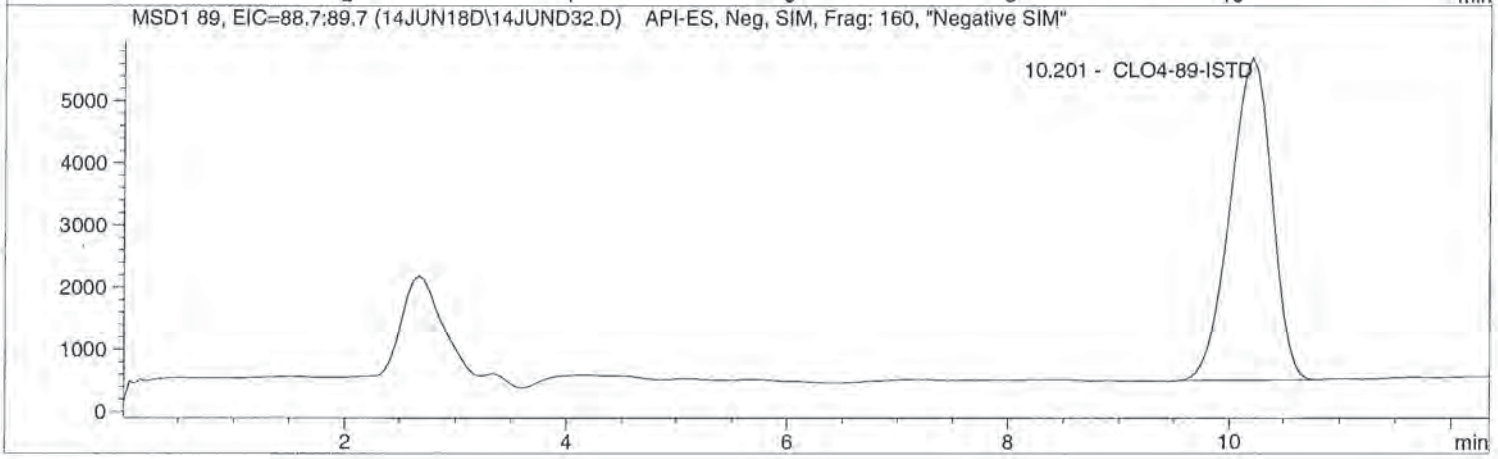
Injection Date:	6/14/2018 18:39:34	Seq Line:	32
Sample Name:	1815988005 MSD	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/14/2018 18:39:34	Seq Line:	32
Sample Name:	1815988005 MSD	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.180	BBA	450869.7	16431.0515	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.195	BBA	150109.8	15860.3426	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.201	BBA	136973.1	5000.0000	CLO4-89-ISTD

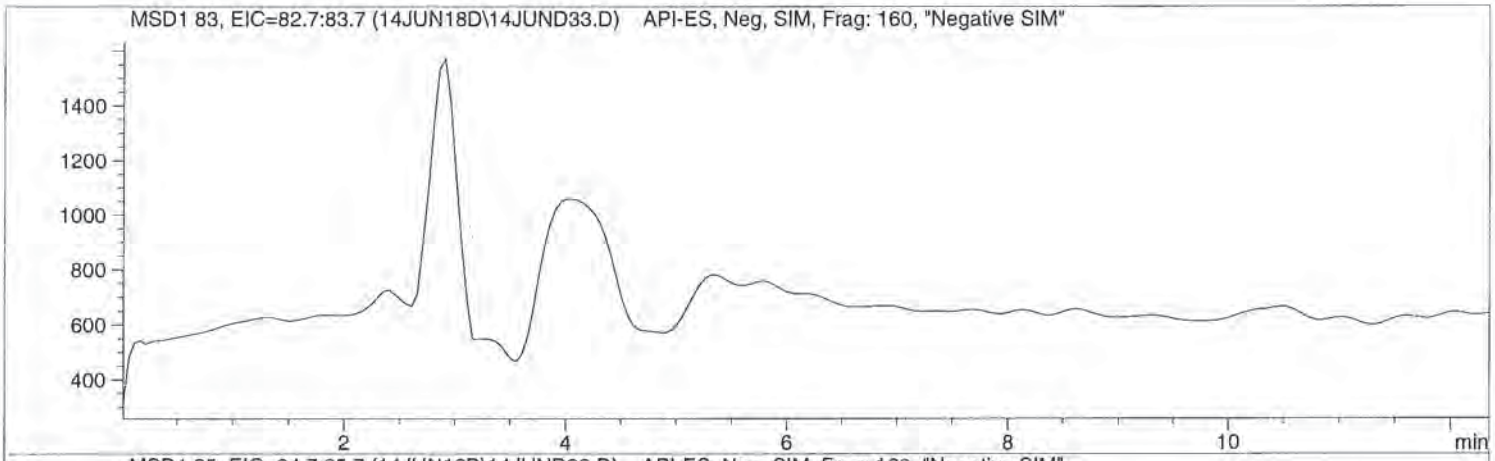
*** End of Report ***

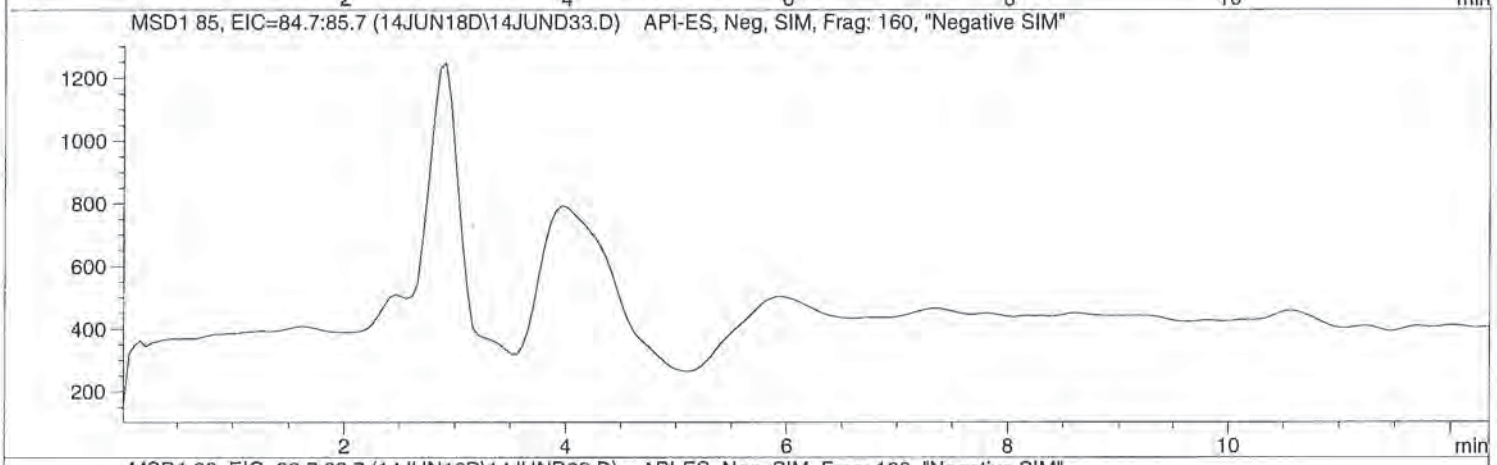
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND33.D Sample Name: 1815991001

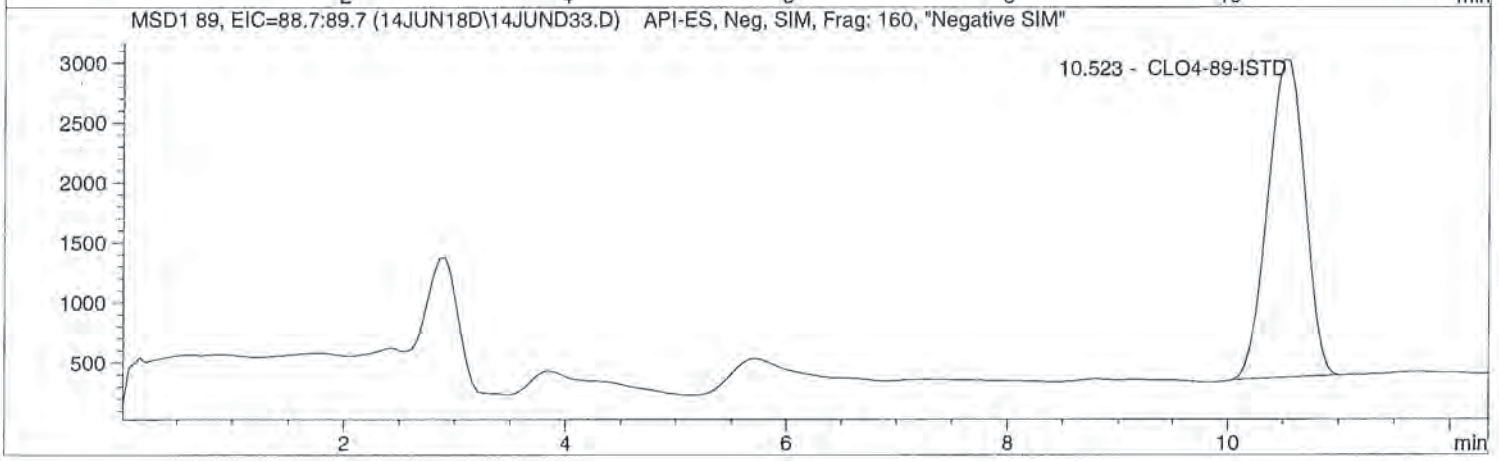
Injection Date:	6/14/2018 18:53:49	Seq Line:	33
Sample Name:	1815991001	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND33.D Sample Name: 1815991001

Injection Date:	6/14/2018 18:53:49	Seq Line:	33
Sample Name:	1815991001	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.523	PBA	61048.9	5.0000	CLO4-89-ISTD

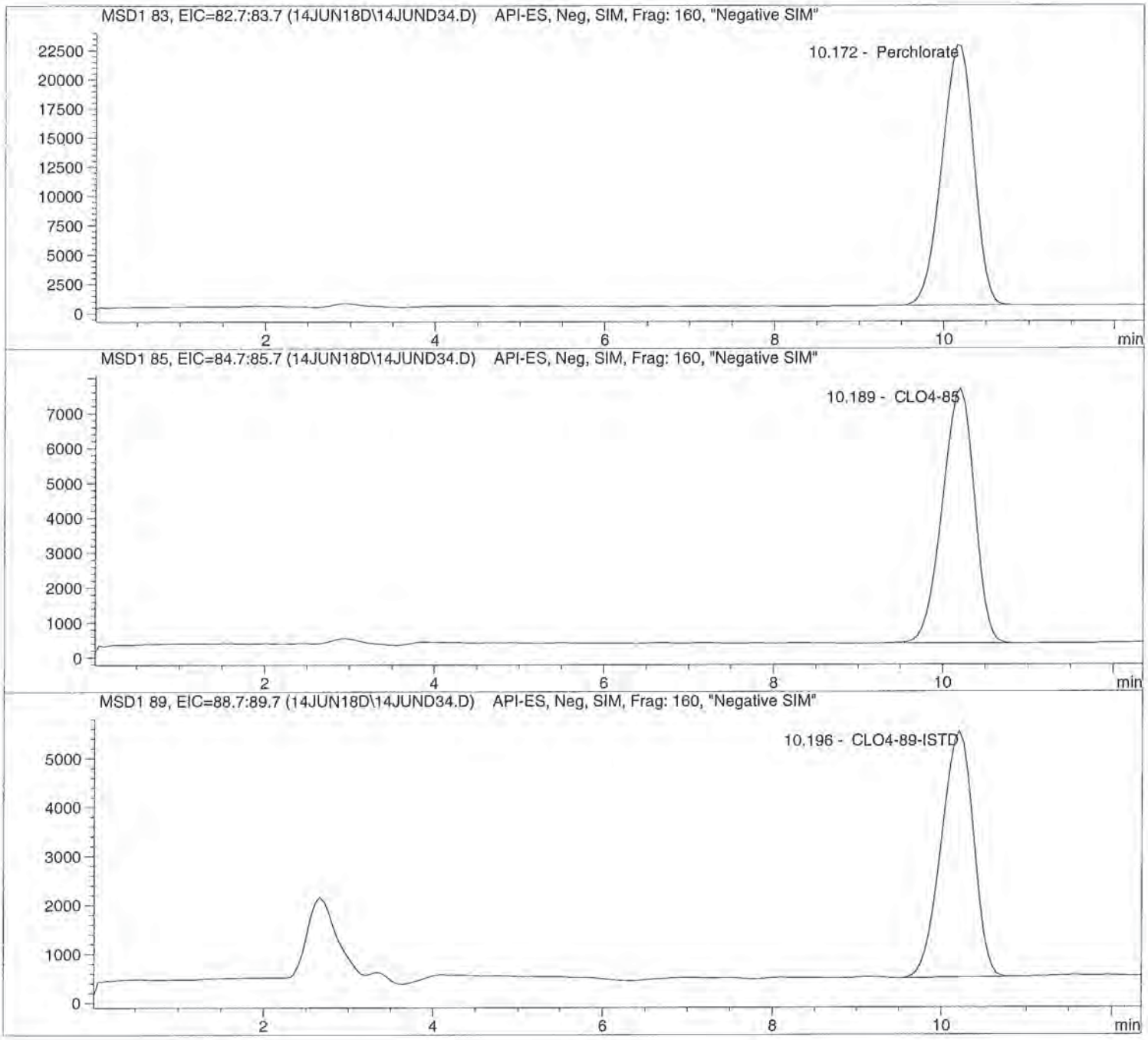
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND34.D Sample Name: 1815992001 1K

Injection Date:	6/14/2018 19:08:02	Seq Line:	34
Sample Name:	1815992001 1K	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND34.D Sample Name: 1815992001 1K

Injection Date:	6/14/2018 19:08:02	Seq Line:	34
Sample Name:	1815992001 1K	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.172	BBA	579000.9	21420.1932	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.189	BBA	191018.4	20562.3407	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.196	PBA	132654.2	5000.0000	CLO4-89-ISTD

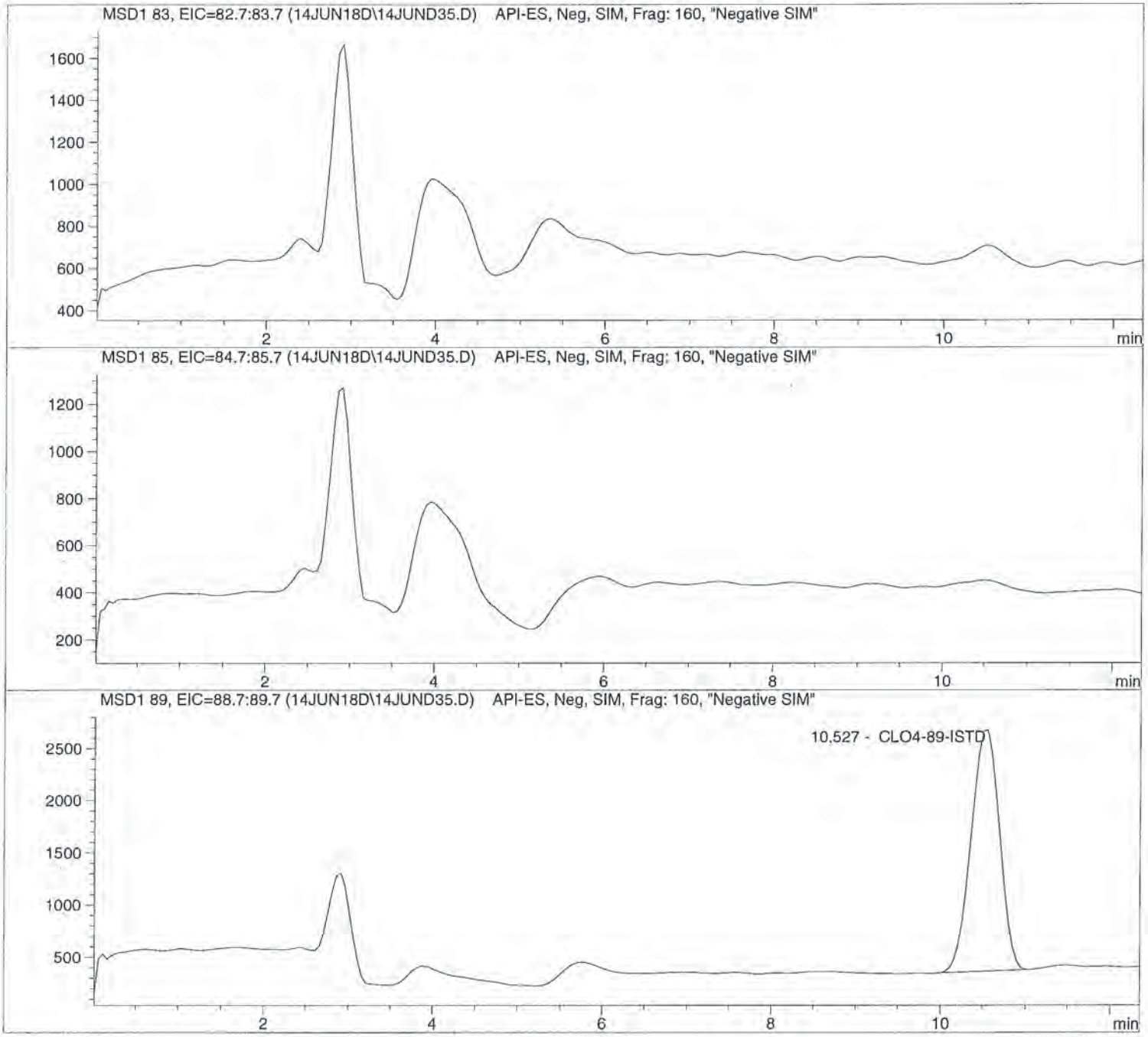
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND35.D Sample Name: 1815993001

Injection Date:	6/14/2018 19:22:16	Seq Line:	35
Sample Name:	1815993001	Location:	Vial 98
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND35.D Sample Name: 1815993001

Injection Date:	6/14/2018 19:22:16	Seq Line:	35
Sample Name:	1815993001	Location:	Vial 98
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.527	PBA	53821.9	5.0000	CLO4-89-ISTD

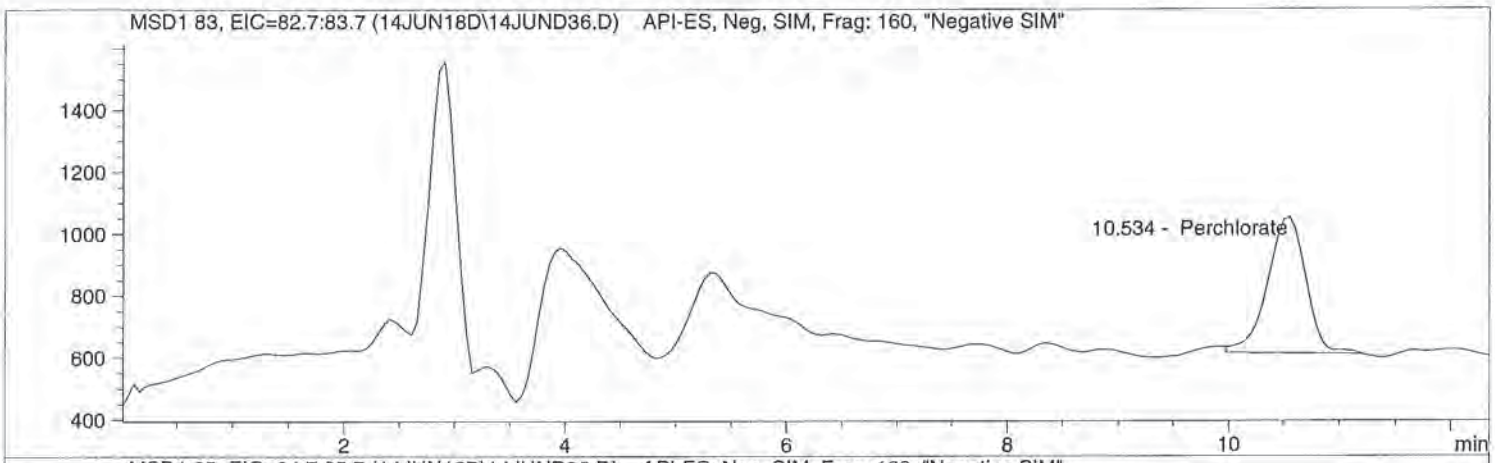
*** End of Report ***

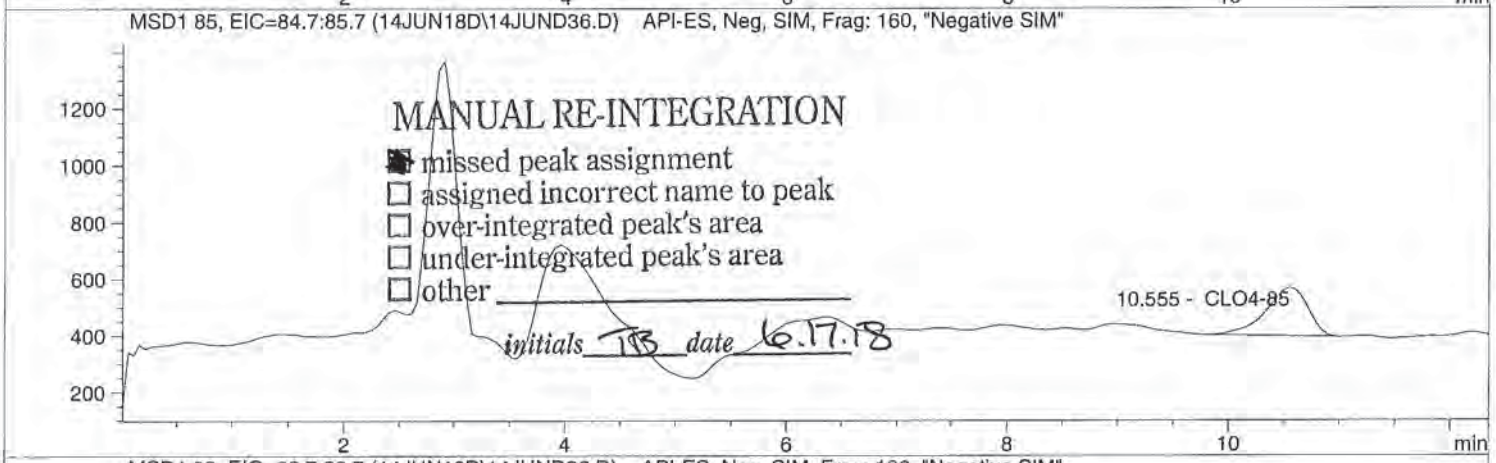
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

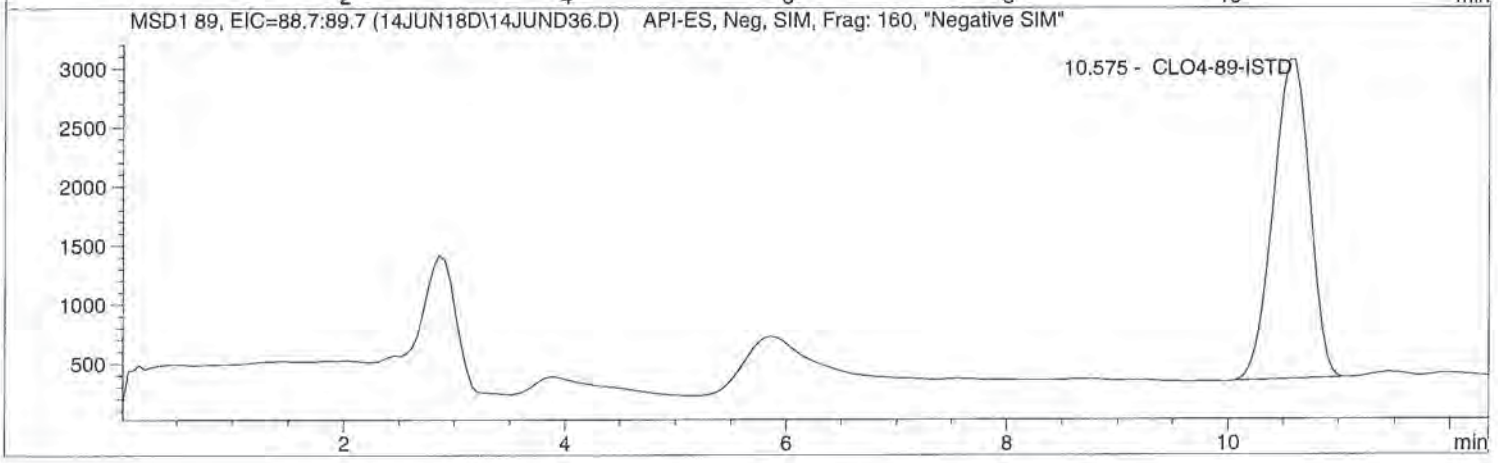
Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.534	BBA	10511.0	0.9336	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.555	MM	4480.6	0.9214	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.575	PBA	61582.9	5.0000	CLO4-89-ISTD

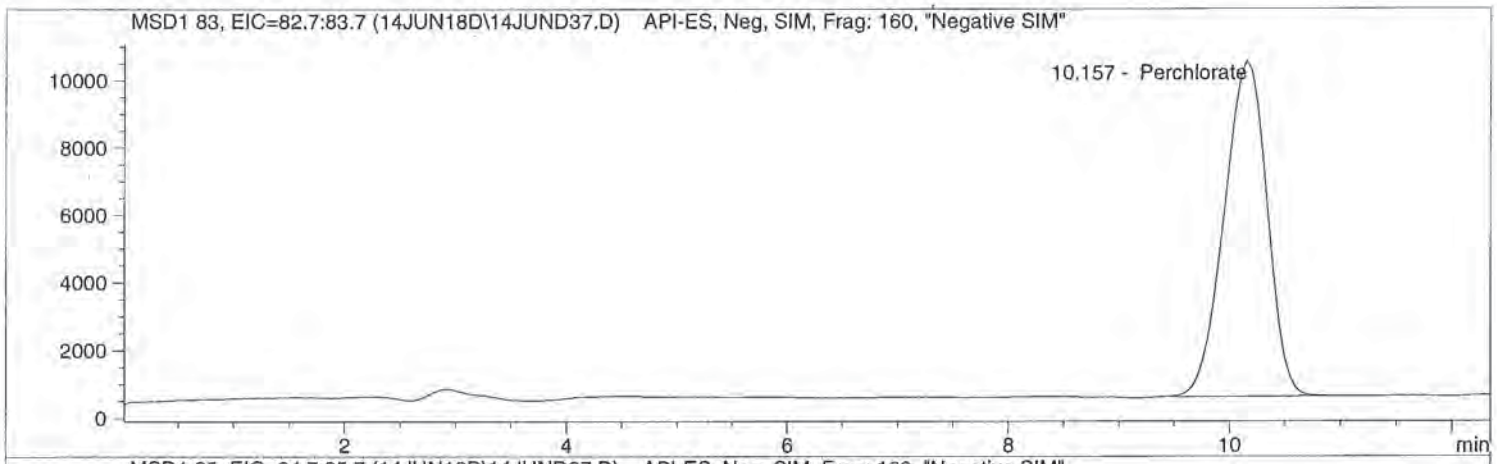
*** End of Report ***

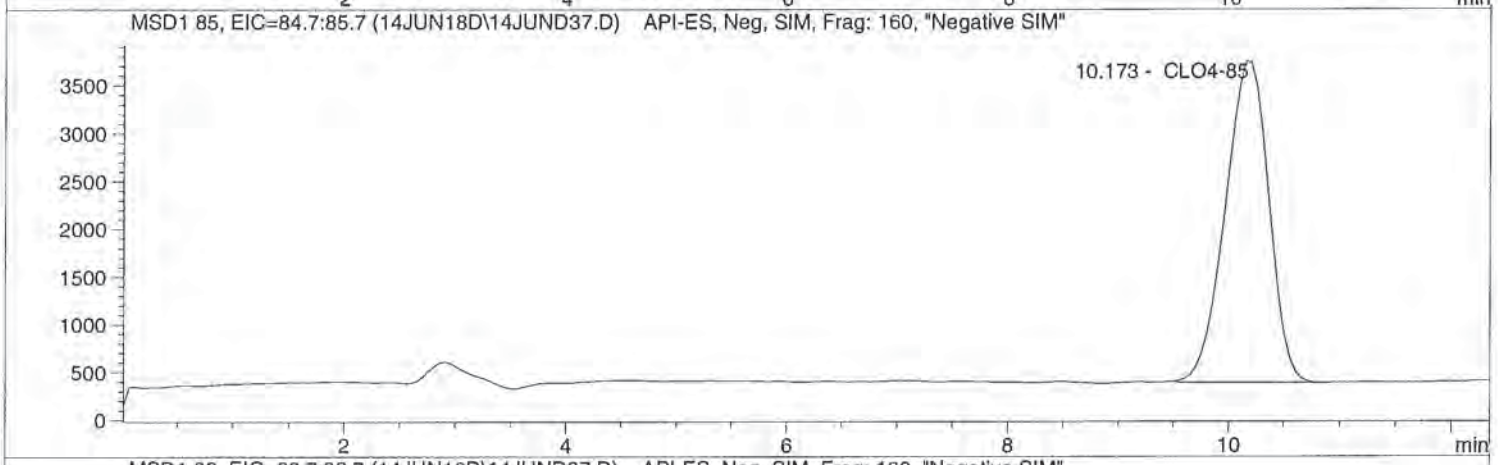
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND37.D Sample Name: 1815740002 100 00903468

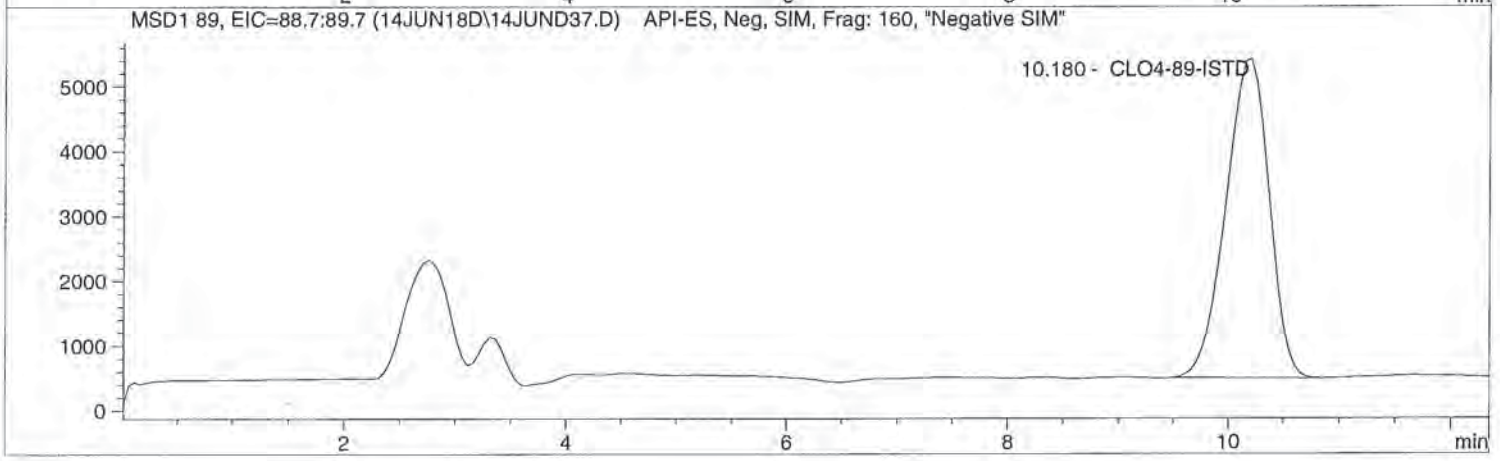
Injection Date:	6/14/2018 19:50:52	Seq Line:	37
Sample Name:	1815740002 100	Location:	Vial 51
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/14/2018 19:50:52	Seq Line:	37
Sample Name:	1815740002 100	Location:	Vial 51
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.157	BBA	267604.5	1017.2050	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.173	BBA	92279.9	1007.5799	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.180	BBA	134303.8	500.0000	CLO4-89-ISTD

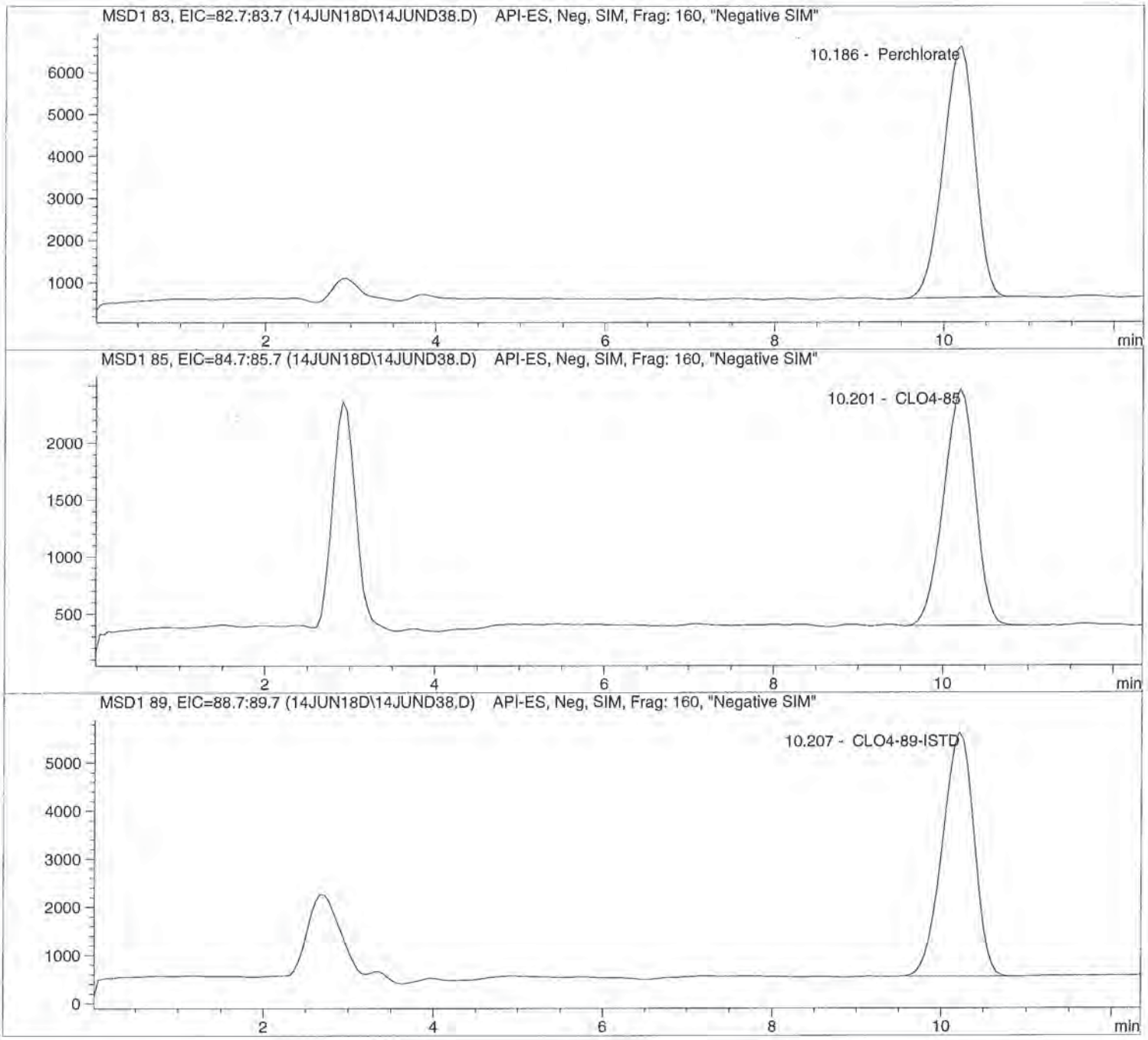
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND38.D Sample Name: 1815740003 10K 00903470

Injection Date:	6/14/2018 20:05:08	Seq Line:	38
Sample Name:	1815740003 10K	Location:	Vial 52
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Injection Date:	6/14/2018 20:05:08	Seq Line:	38
Sample Name:	1815740003 10K	Location:	Vial 52
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.186	PBA	154877.4	60914.4333	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.201	PBA	53800.4	59865.4344	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.207	BBA	131950.8	50000.0000	CLO4-89-ISTD

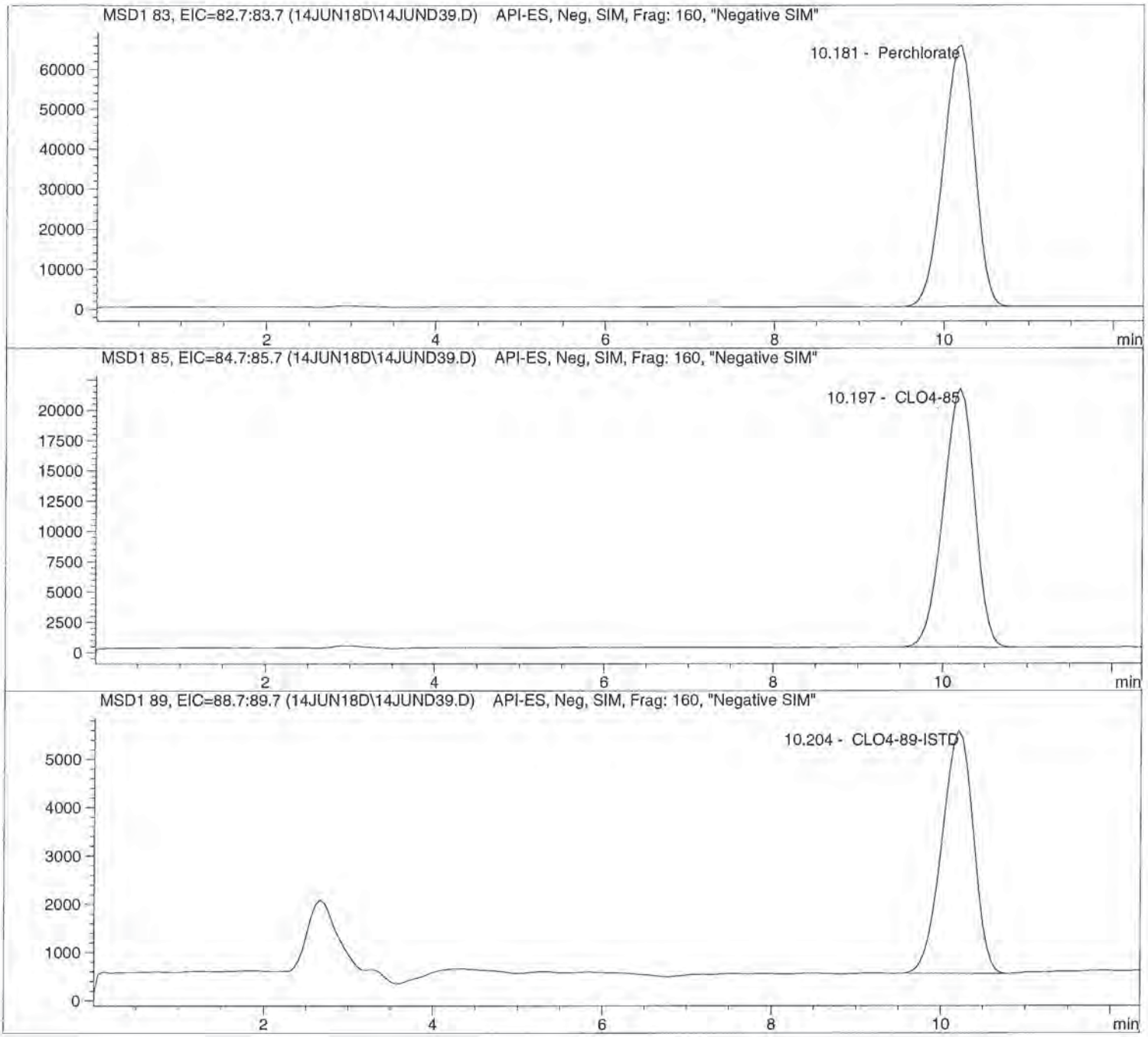
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND39.D Sample Name: 1815740005 100 00903472

Injection Date:	6/14/2018 20:19:28	Seq Line:	39
Sample Name:	1815740005 100	Location:	Vial 53
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND39.D Sample Name: 1815740005 100

Injection Date:	6/14/2018 20:19:28	Seq Line:	39
Sample Name:	1815740005 100	Location:	Vial 53
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.181	BBA	1698492.9	5684.0471	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.197	BBA	552736.8	5422.1146	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.204	BBA	131262.1	500.0000	CLO4-89-ISTD

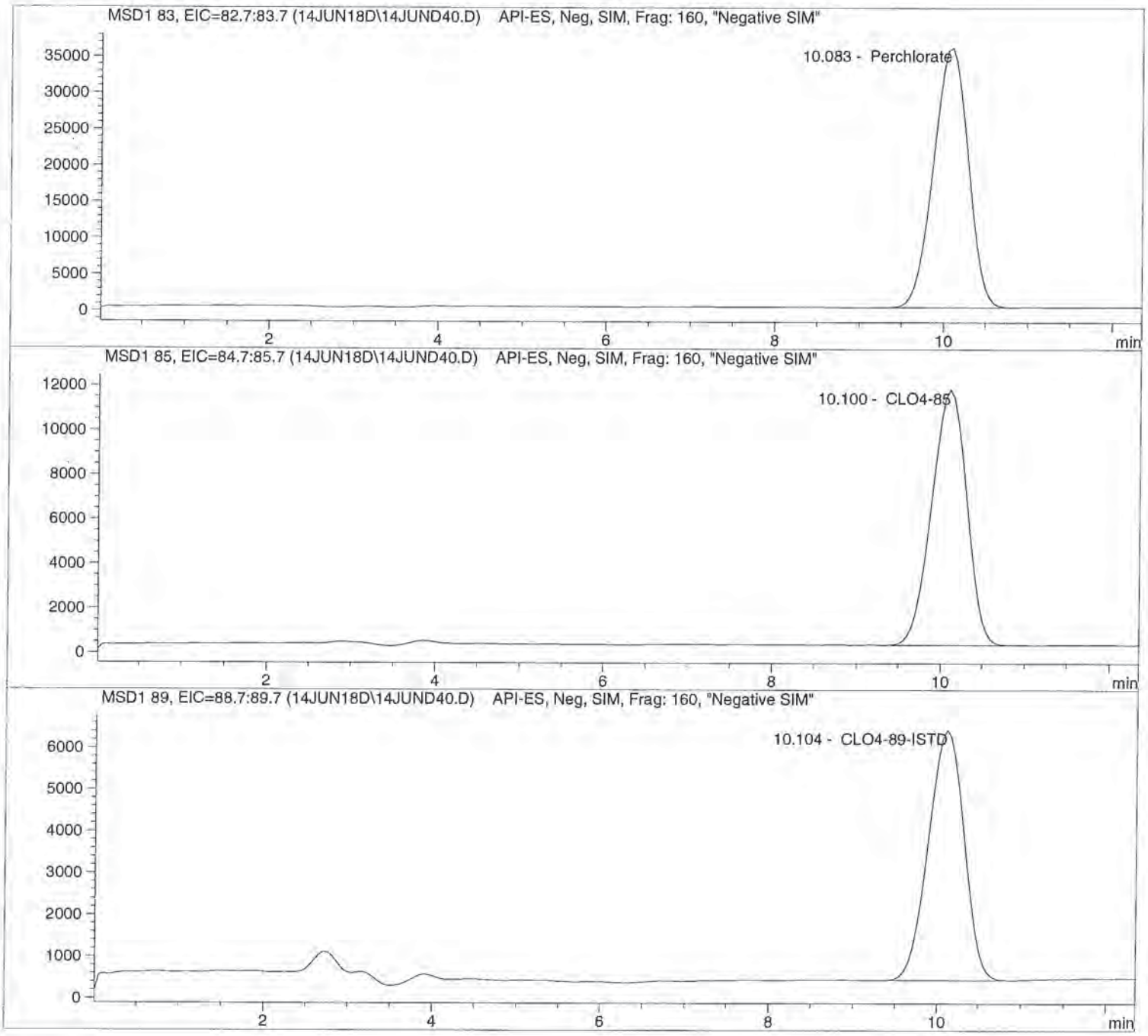
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND40.D Sample Name: 605342 CCV@25

Injection Date:	6/14/2018 20:33:44	Seq Line:	40
Sample Name:	605342 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND40.D Sample Name: 605342 CCV@25

Injection Date:	6/14/2018 20:33:44	Seq Line:	40
Sample Name:	605342 CCV@25	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.083	BBA	1025812.5	27.8946	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.100	PBA	332463.3	26.4023	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.104	BBA	176654.7	5.0000	CLO4-89-ISTD

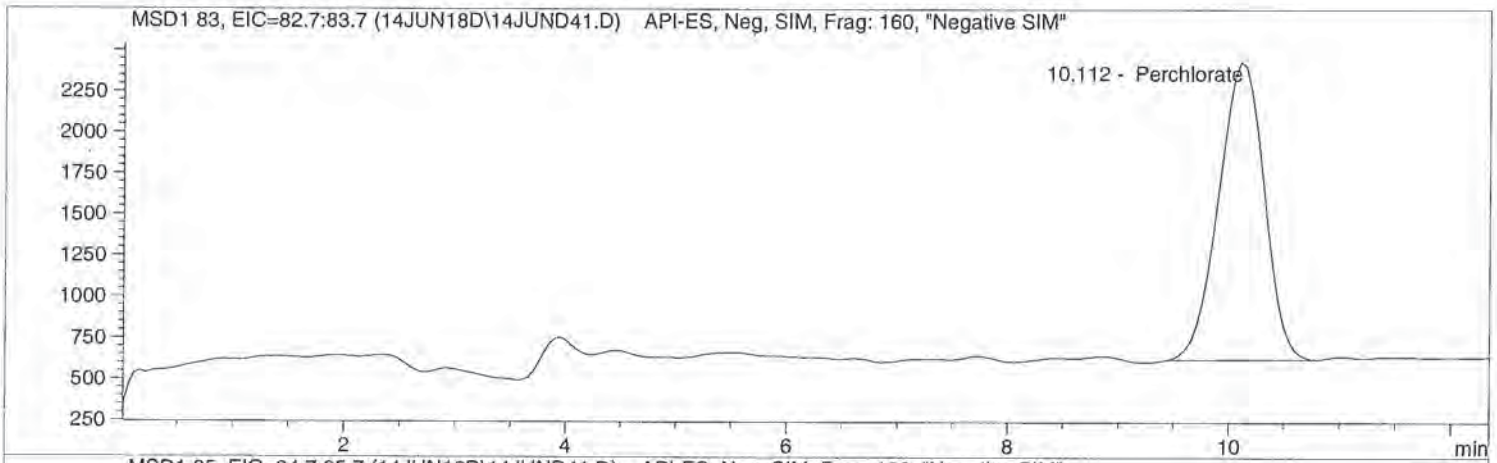
*** End of Report ***

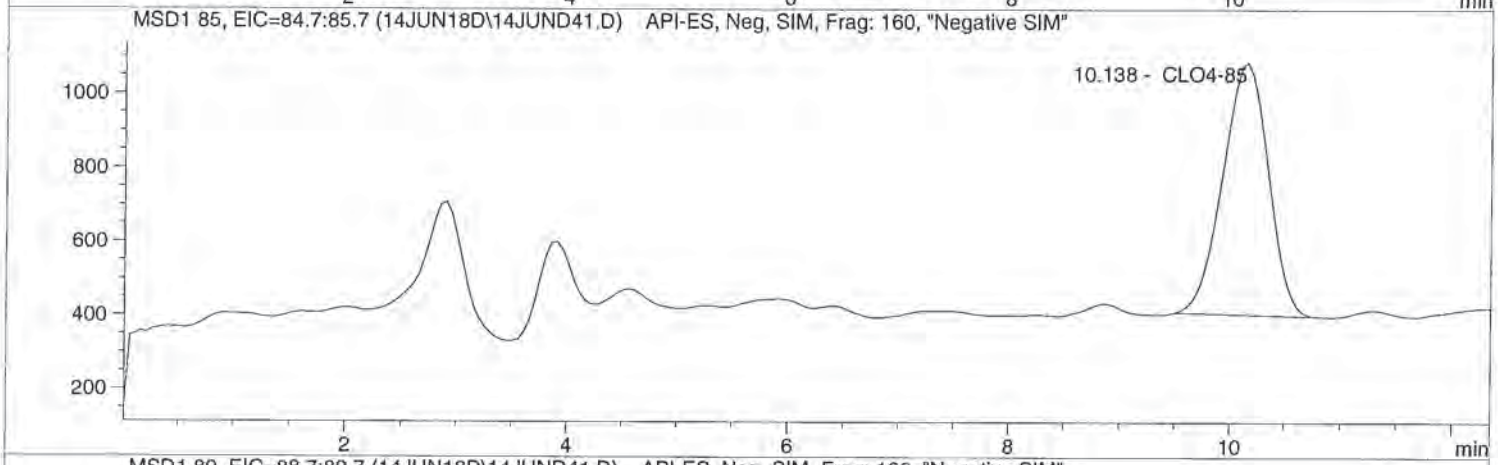
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND41.D Sample Name: 605343 LODV@1.

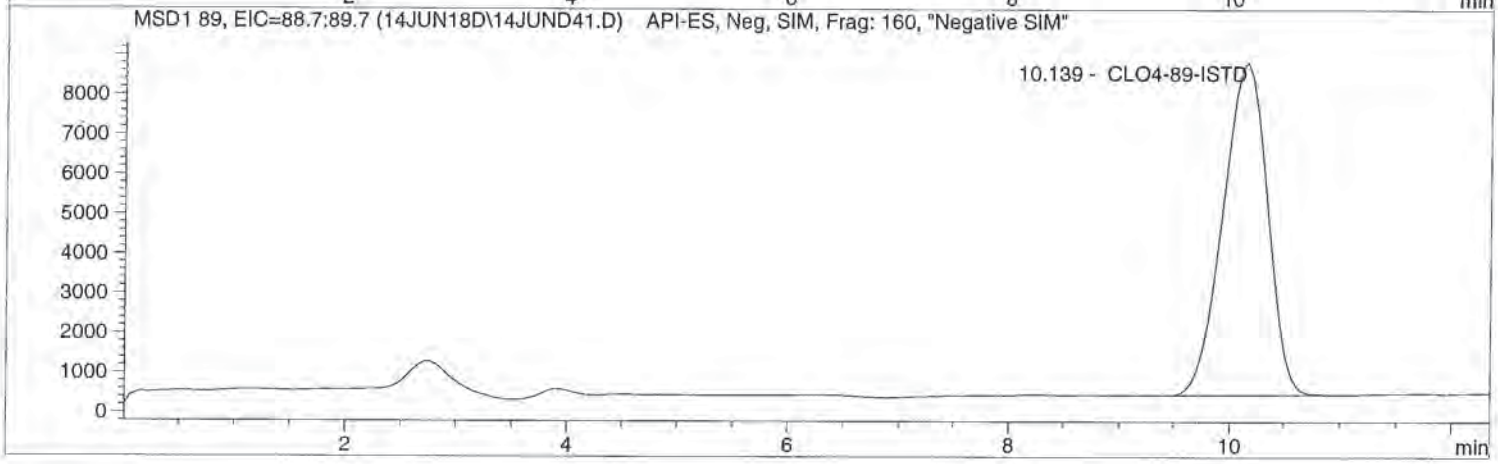
Injection Date:	6/14/2018 20:48:03	Seq Line:	41
Sample Name:	605343 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND41.D Sample Name: 605343 LODV@1.

Injection Date:	6/14/2018 20:48:03	Seq Line:	41
Sample Name:	605343 LODV@1.	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.112	PBA	52151.5	1.1970	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.138	PBA	19729.0	1.0886	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.139	PBA	235935.5	5.0000	CLO4-89-ISTD

*** End of Report ***

Sequence Table:

Method and Injection Info Part:

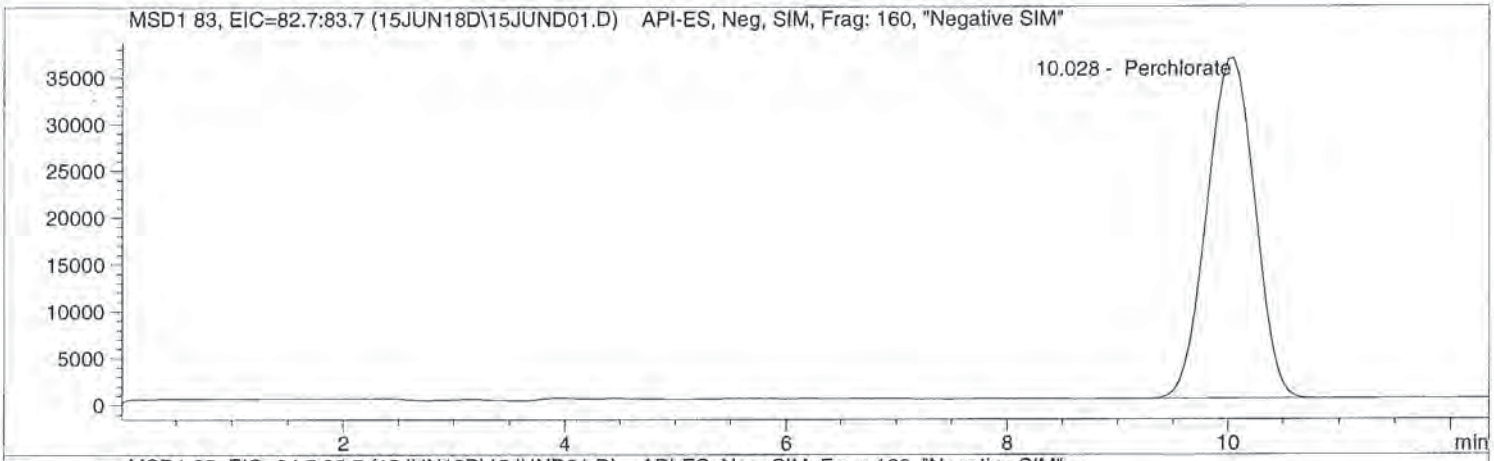
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 41	605457 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 42	605458 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 43	1815991001 5X	CLO4-DOD	1	Sample		
4	Vial 44	1815993001 5X	CLO4-DOD	1	Sample		
5	Vial 45	1816534001 5X	CLO4-DOD	1	Sample		
6	Vial 41	605459 CCV@25	CLO4-DOD	1	Ctrl Samp		
7	Vial 42	605460 LODV@1.	CLO4-DOD	1	Ctrl Samp		

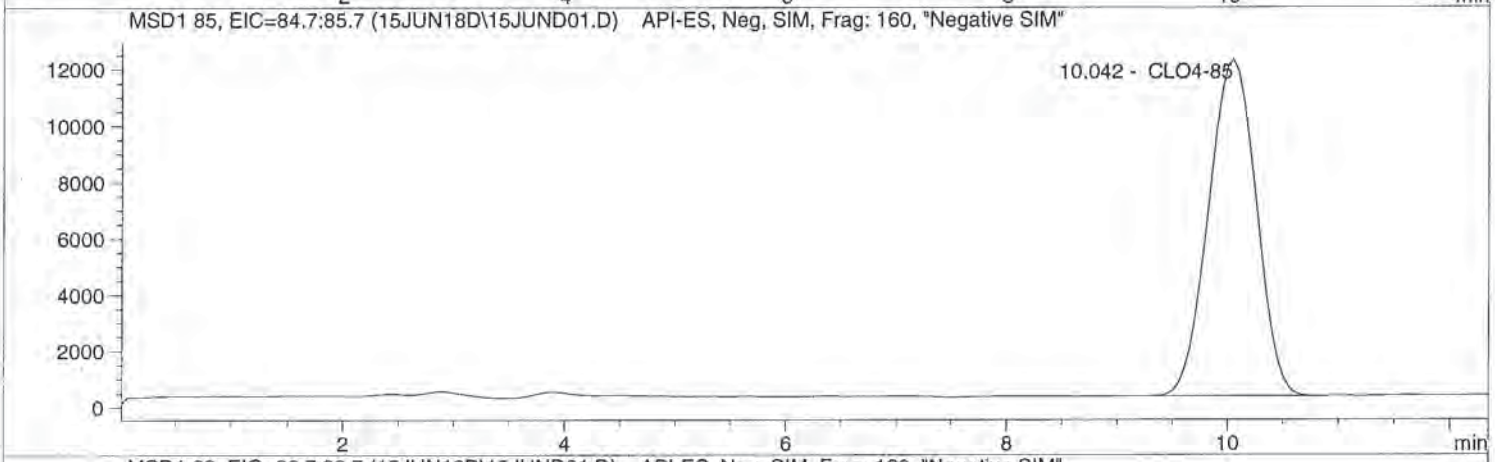
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND01.D Sample Name: 605457 CCV@25

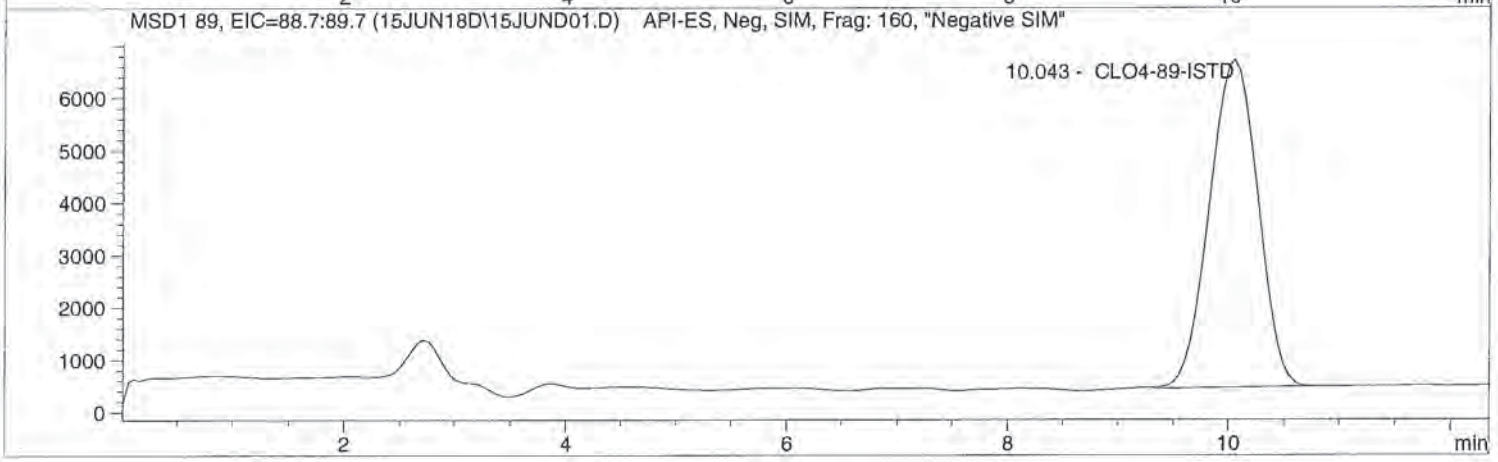
Injection Date:	6/15/2018 10:37:21	Seq Line:	1
Sample Name:	605457 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND01.D Sample Name: 605457 CCV@25

Injection Date:	6/15/2018 10:37:21	Seq Line:	1
Sample Name:	605457 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.028	BBA	1092364.1	27.5642	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.042	BBA	357588.0	26.3292	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.043	BBA	190575.5	5.0000	CLO4-89-ISTD

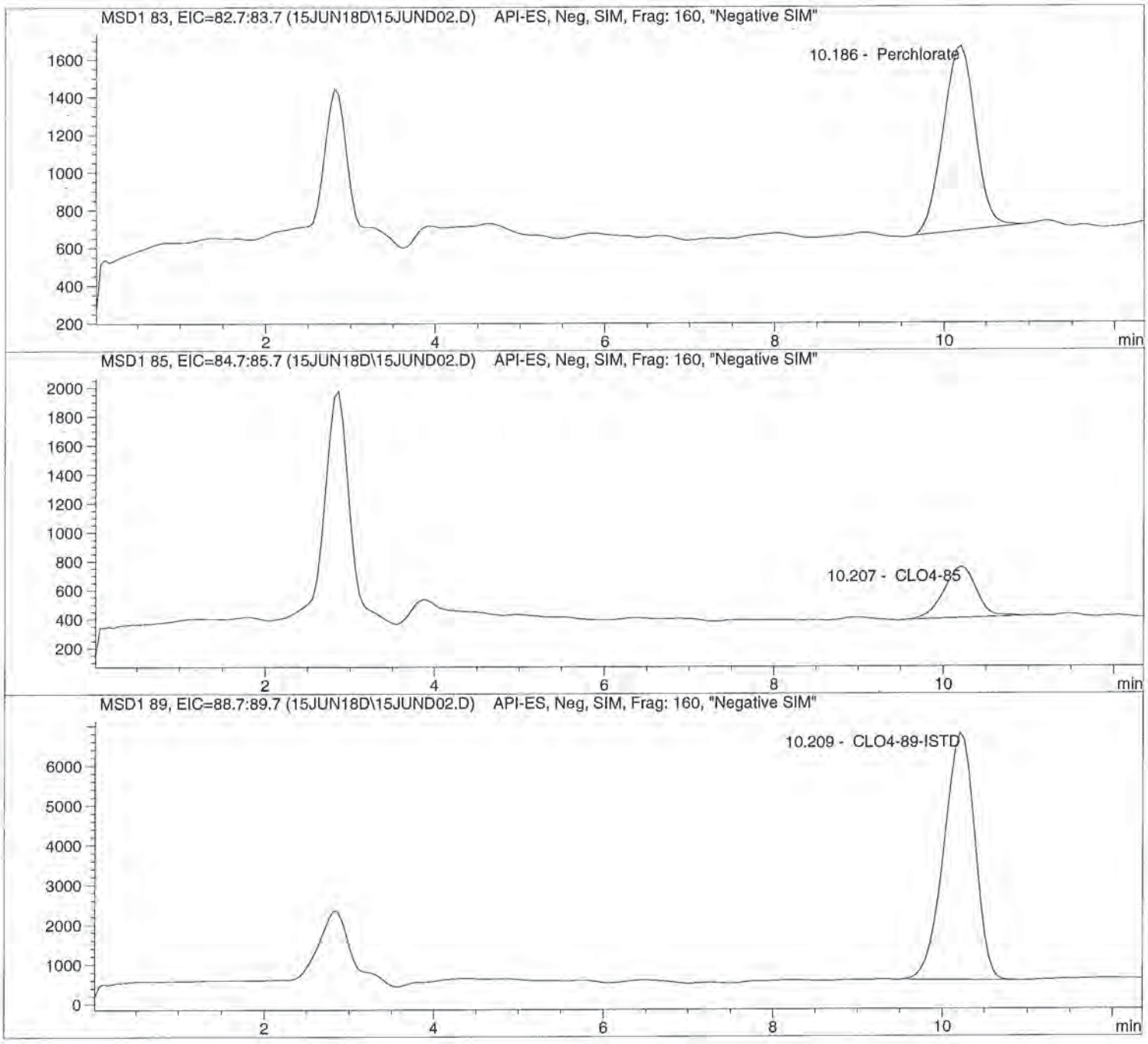
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND02.D Sample Name: 605458 LODV@1.

Injection Date:	6/15/2018 10:51:37	Seq Line:	2
Sample Name:	605458 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND02.D Sample Name: 605458 LODV@1.

Injection Date:	6/15/2018 10:51:37	Seq Line:	2
Sample Name:	605458 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.186	PBA	25754.6	0.8947	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.207	PBA	9290.9	0.7077	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.209	BBA	157760.7	5.0000	CLO4-89-ISTD

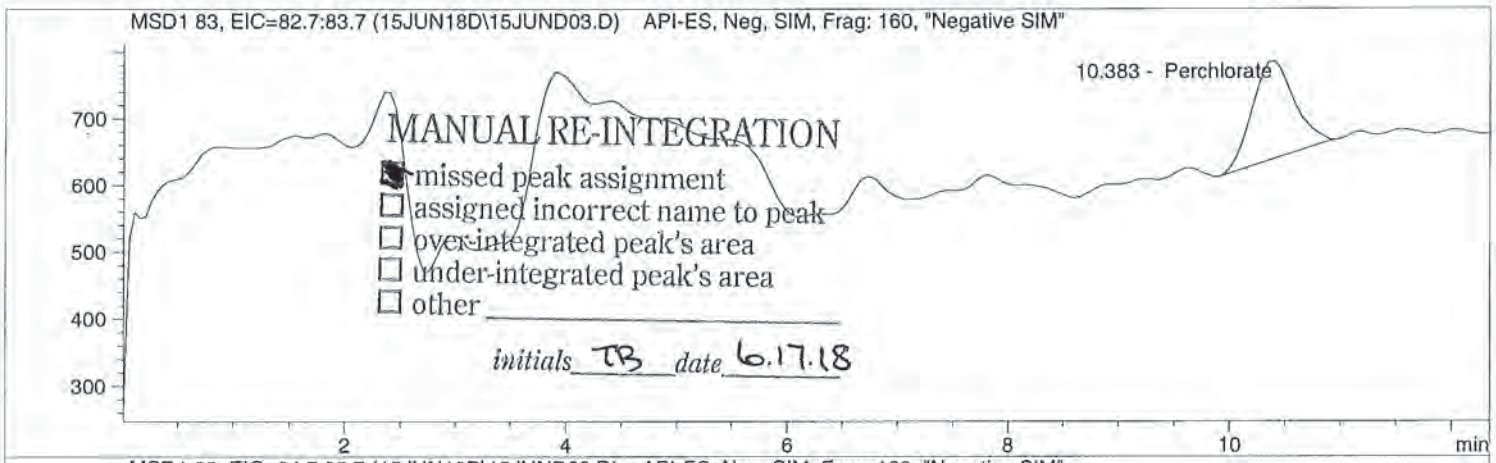
*** End of Report ***

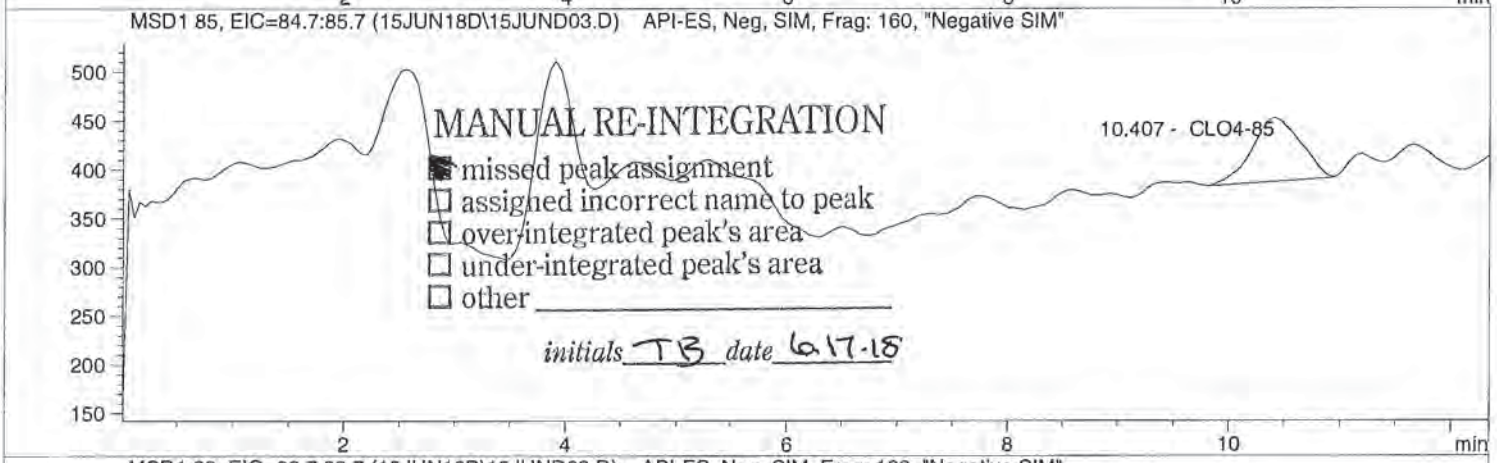
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

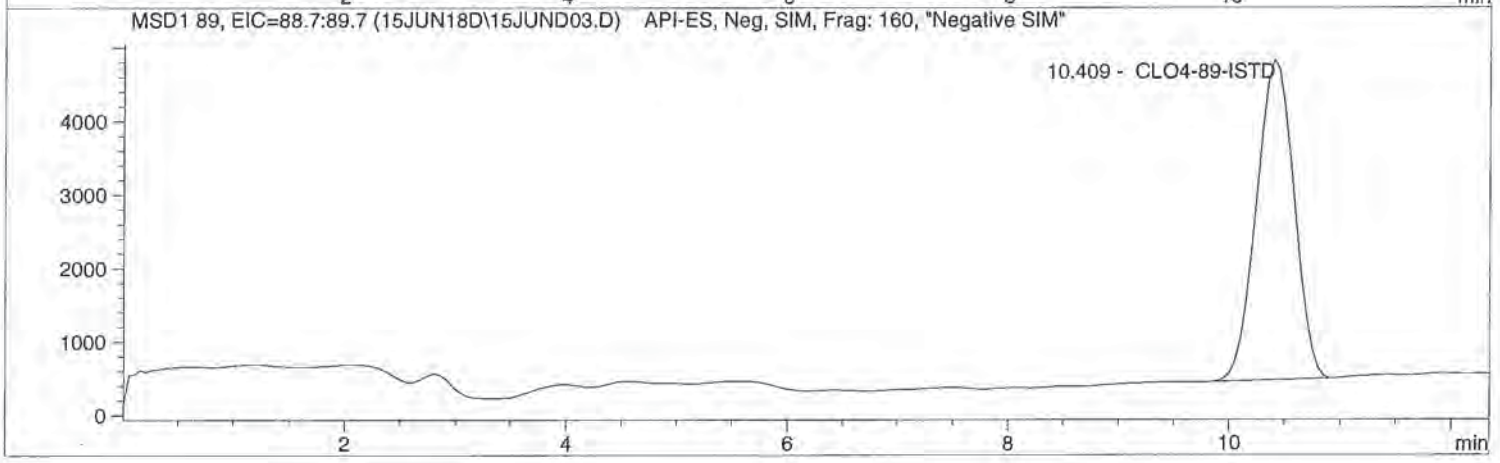
Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.383	MM	3890.4	1.1826	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.407	MM	1978.1	0.4730	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.409	PBA	102814.8	25.0000	CLO4-89-ISTD

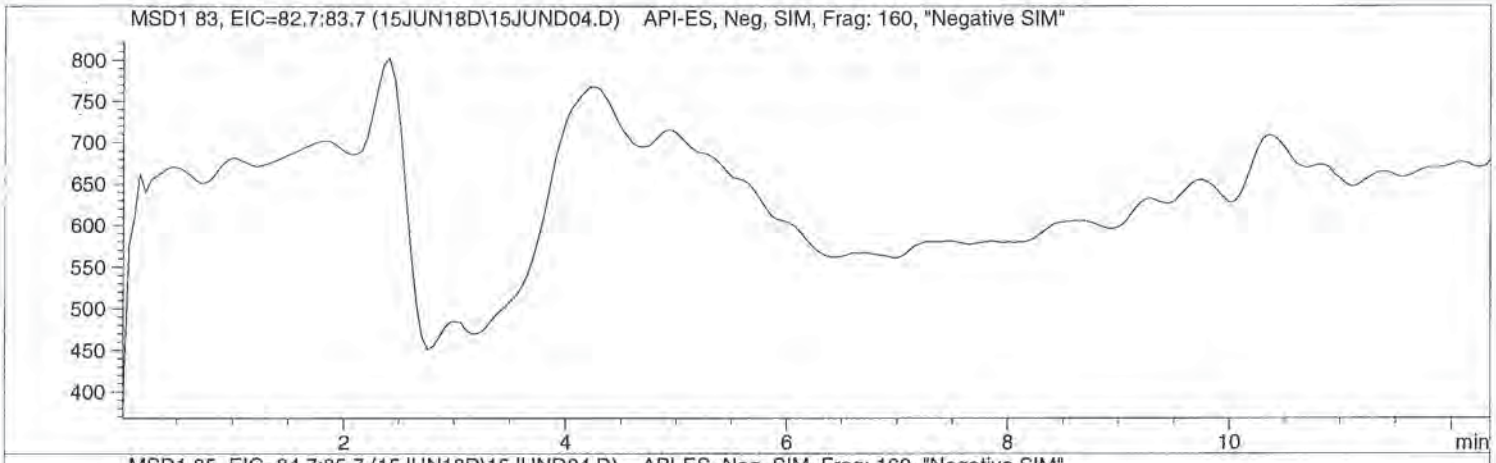
*** End of Report ***

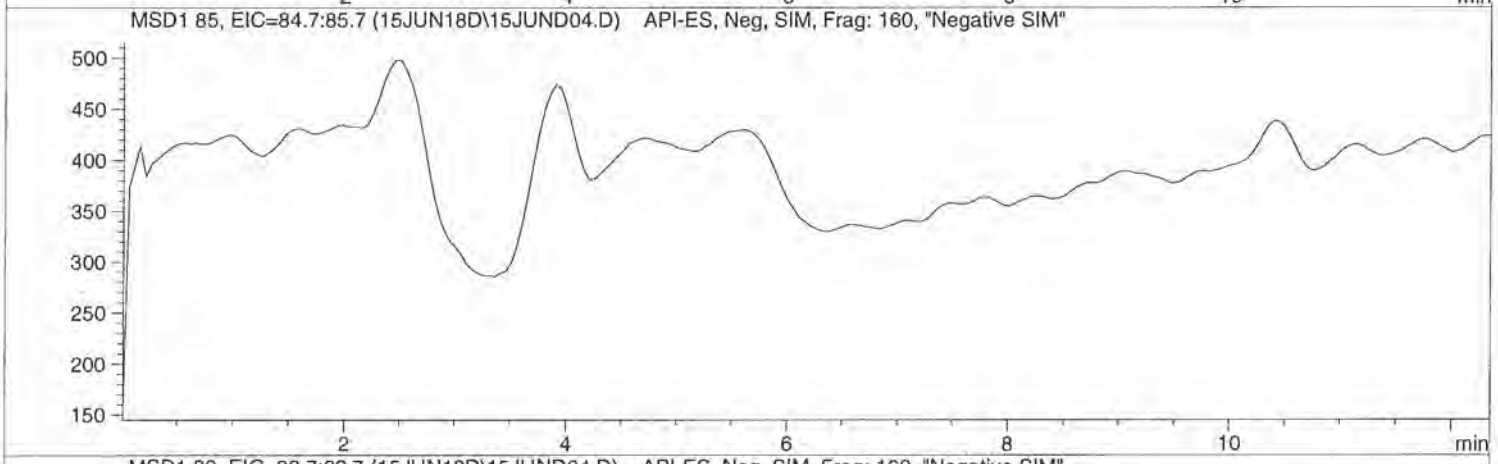
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND04.D Sample Name: 1815993001 5X

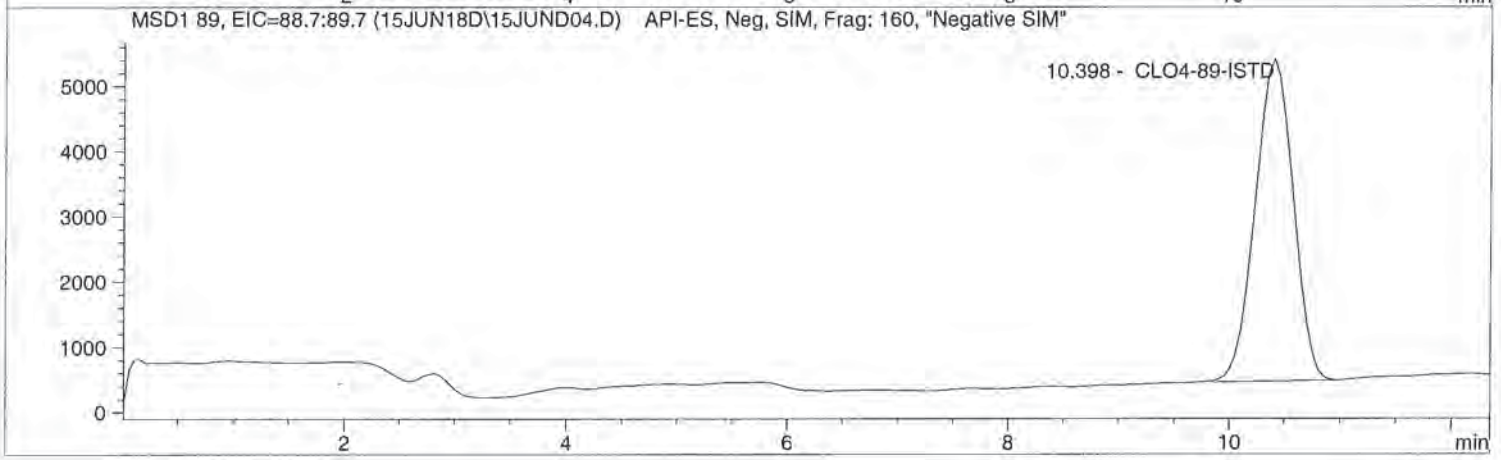
Injection Date:	6/15/2018 11:32:13	Seq Line:	4
Sample Name:	1815993001 5X	Location:	Vial 44
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/15/2018 11:32:13	Seq Line:	4
Sample Name:	1815993001 5X	Location:	Vial 44
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
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
10.398	BBA	118350.6	25.0000	CLO4-89-ISTD

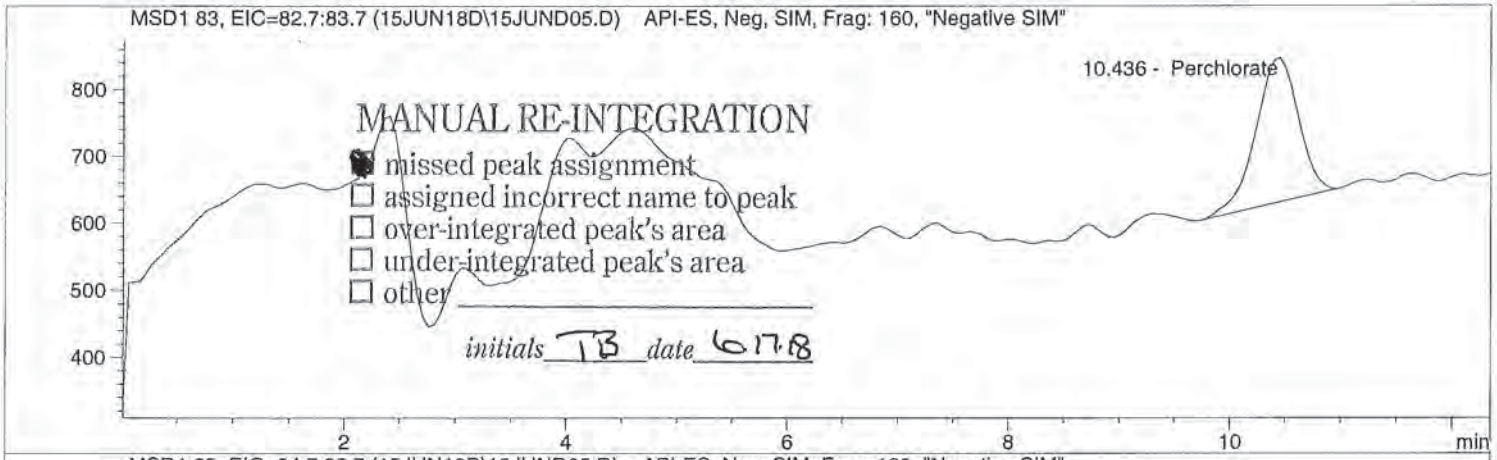
*** End of Report ***

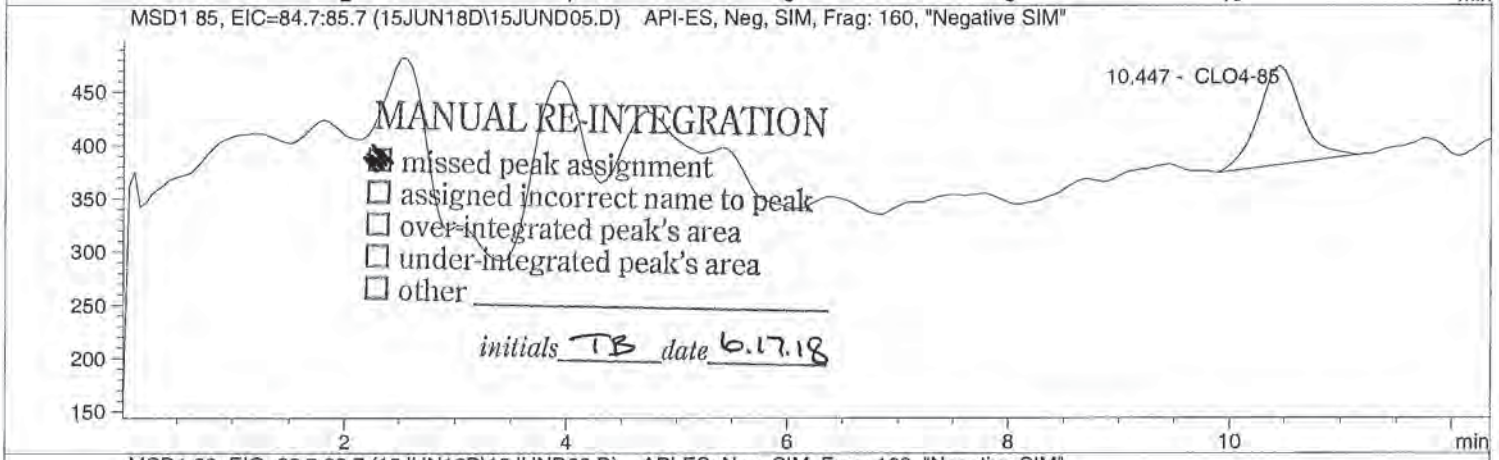
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

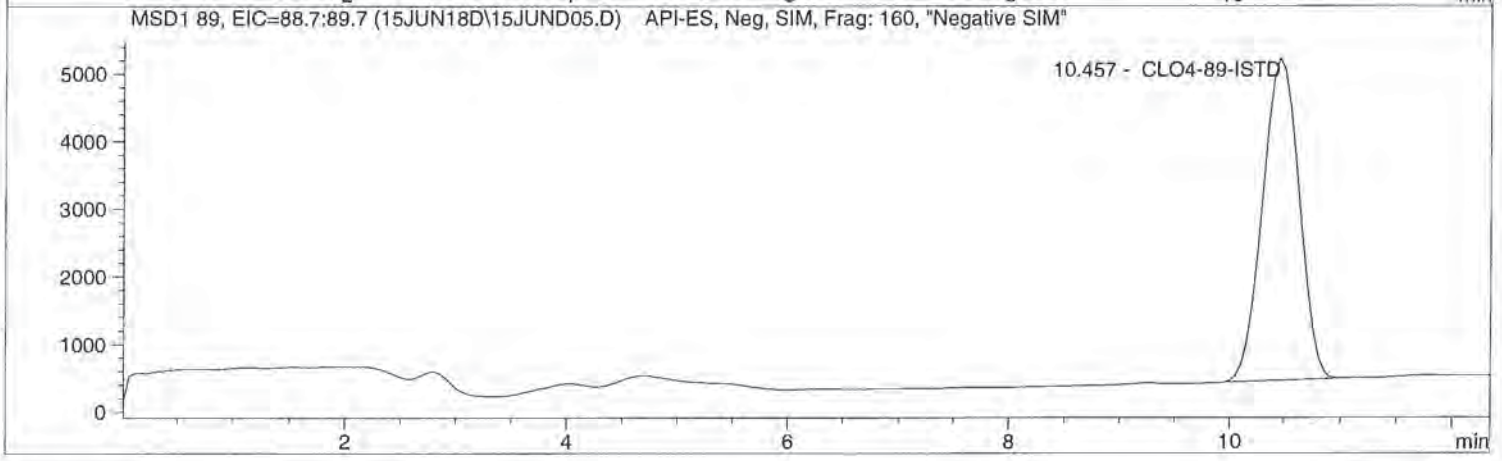
Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.436	MM	5786.6	1.5782	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.447	MM	2493.5	0.7479	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.457	PBA	109428.6	25.0000	CLO4-89-ISTD

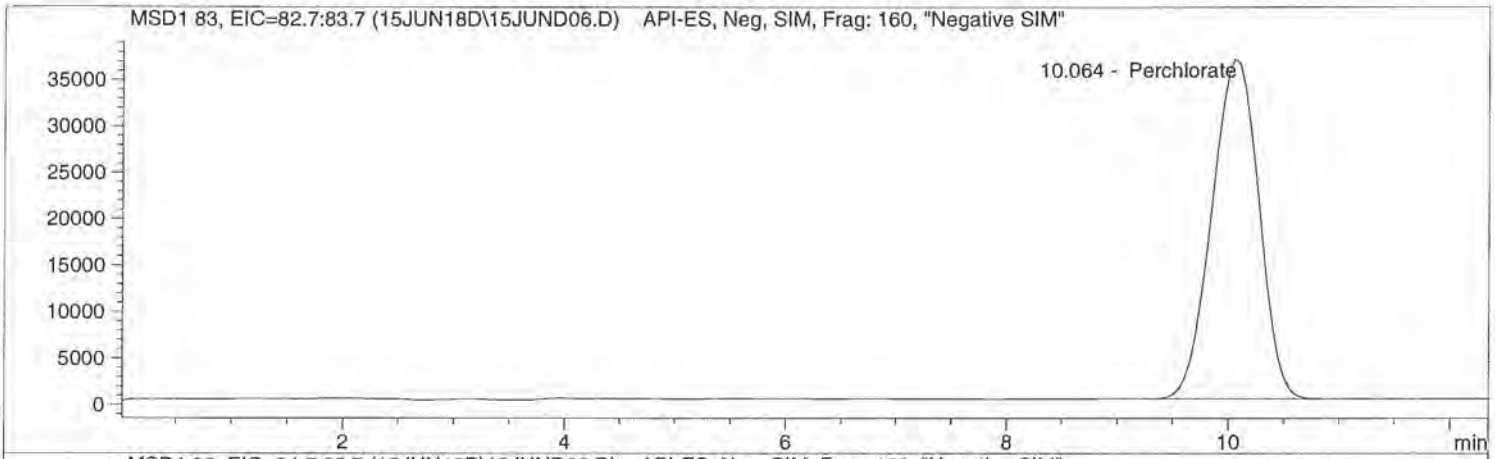
*** End of Report ***

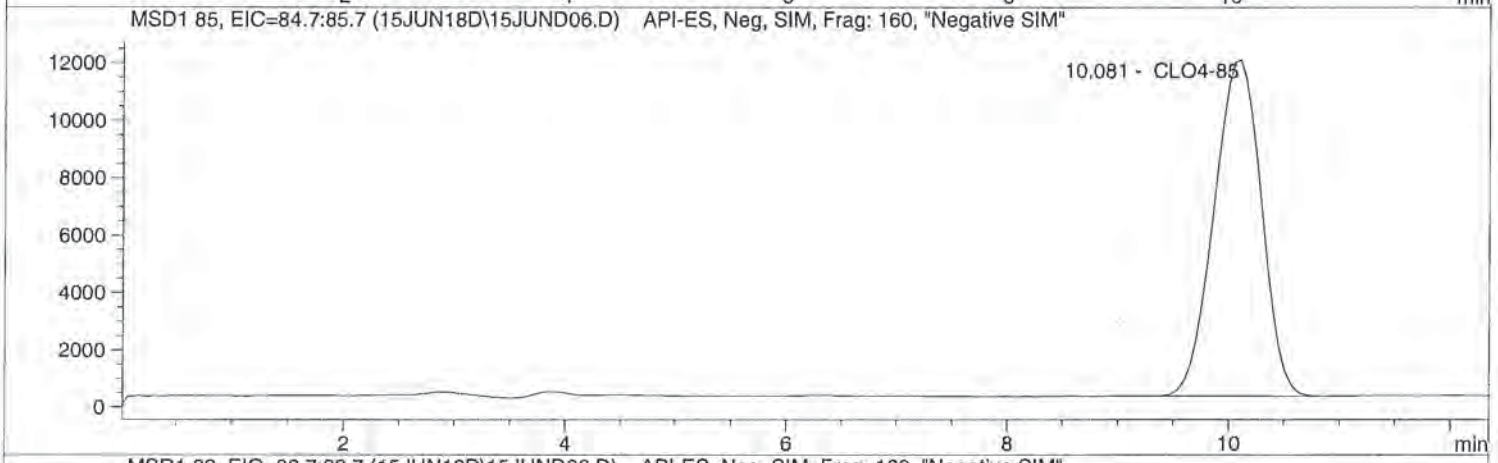
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND06.D Sample Name: 605459 CCV@25

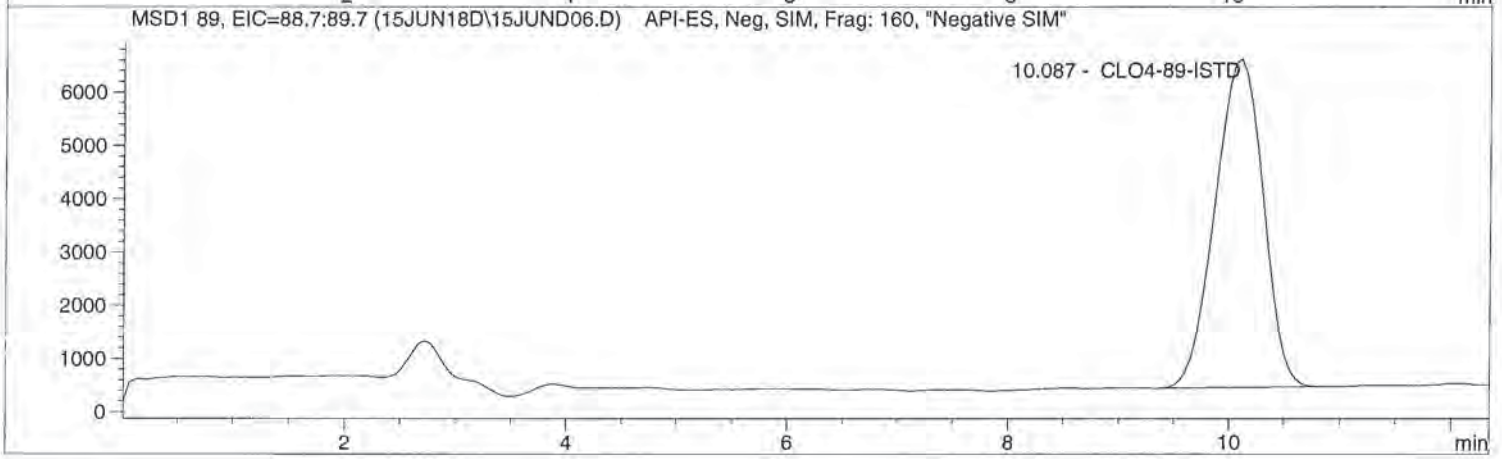
Injection Date:	6/15/2018 12:03:05	Seq Line:	6
Sample Name:	605459 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND06.D Sample Name: 605459 CCV@25

Injection Date:	6/15/2018 12:03:05	Seq Line:	6
Sample Name:	605459 CCV@25	Location:	Vial 41
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.064	BBA	1079758.9	27.9158	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.081	BBA	349017.1	26.3576	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.087	PBA	185790.9	5.0000	CLO4-89-ISTD

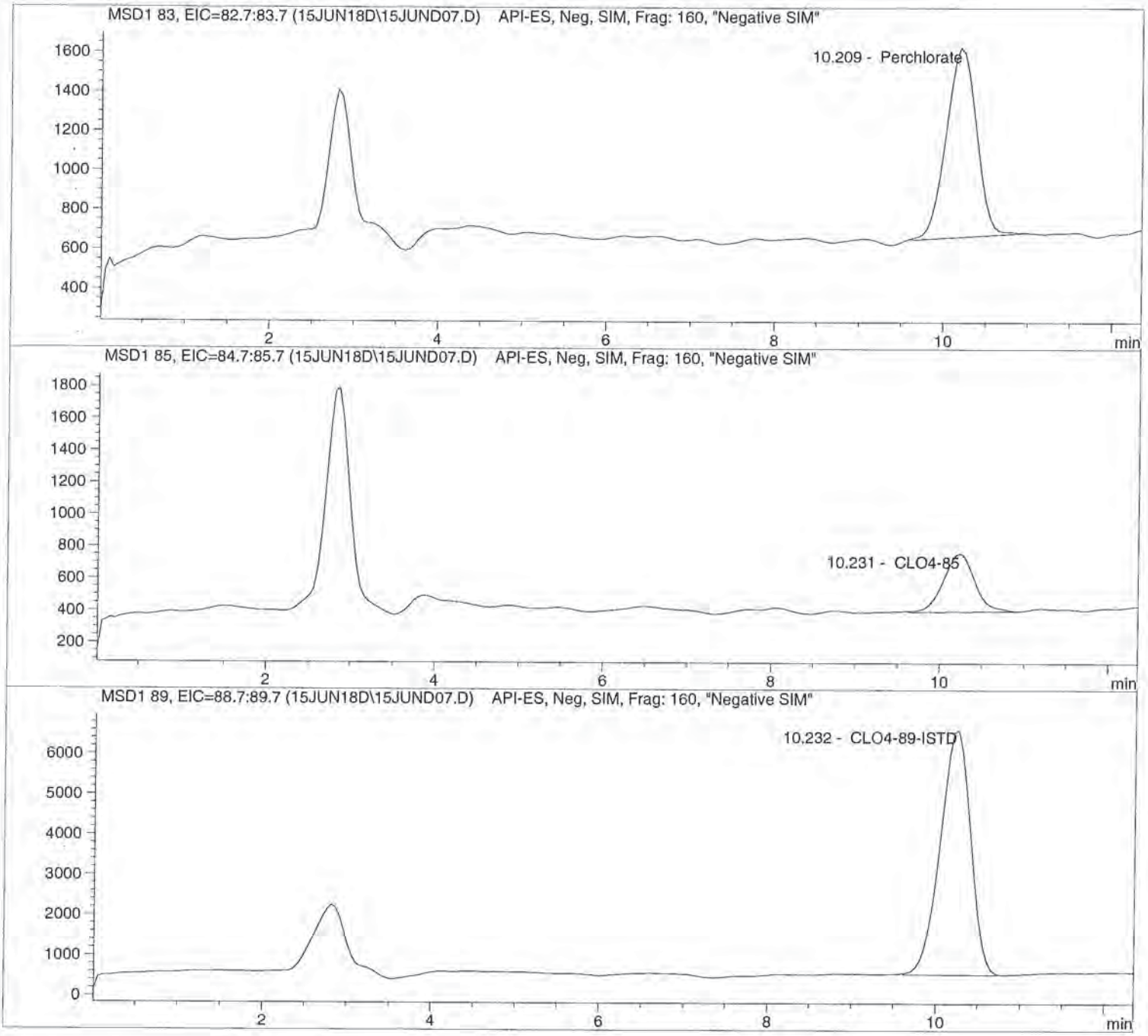
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND07.D Sample Name: 605460 LODV@1.

Injection Date:	6/15/2018 12:17:20	Seq Line:	7
Sample Name:	605460 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND07.D Sample Name: 605460 LODV@1.

Injection Date:	6/15/2018 12:17:20	Seq Line:	7
Sample Name:	605460 LODV@1.	Location:	Vial 42
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.209	BBA	24091.2	0.8675	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.231	BBA	9372.8	0.7478	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.232	BBA	152424.6	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Calibration Table

Perchlorate

Calib. Data Modified : Thursday, June 14, 2018 1:02:33 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
10.151	1	1	1.00000	3.93380e4	2.54207e-5		1	Perchlorate
		2	2.00000	7.00576e4	2.85479e-5			
		3	5.00000	1.44153e5	3.46853e-5			
		4	10.00000	3.31118e5	3.02007e-5			
		5	25.00000	8.76318e5	2.85284e-5			
		6	50.00000	1.69767e6	2.94521e-5			
		7	75.00000	2.68817e6	2.79000e-5			
10.161	2	1	1.00000	1.61954e4	6.17458e-5		1	CLO4-85
		2	2.00000	2.74079e4	7.29716e-5			
		3	5.00000	5.16950e4	9.67211e-5			
		4	10.00000	1.15839e5	8.63264e-5			
		5	25.00000	3.00355e5	8.32349e-5			
		6	50.00000	5.83140e5	8.57427e-5			
		7	75.00000	9.25902e5	8.10021e-5			
10.170	3	1	5.00000	2.16479e5	2.30970e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.81269e5	2.75832e-5			
		3	5.00000	1.53680e5	3.25352e-5			
		4	5.00000	1.70890e5	2.92586e-5			
		5	5.00000	1.67256e5	2.98944e-5			
		6	5.00000	1.53418e5	3.25908e-5			

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	5.00000	1.49175e5	3.35177e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 8.061 min To 12.061 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

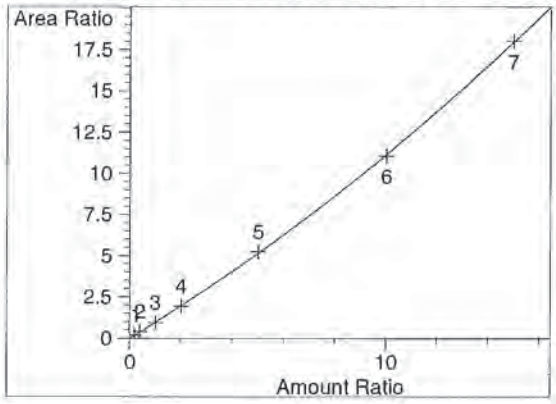
Compound: CLO4-85
- Time Window : From 8.055 min To 12.055 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 8.063 min To 12.049 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

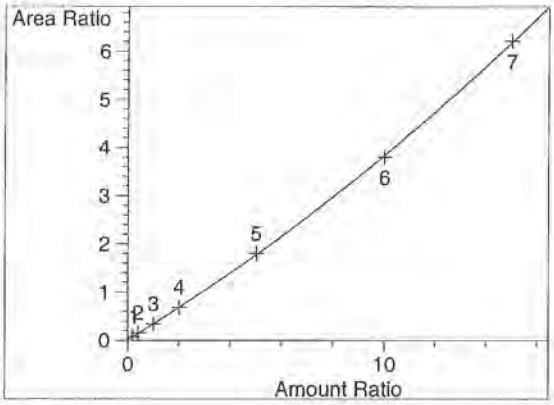
Peak Sum Table

No Entries in table

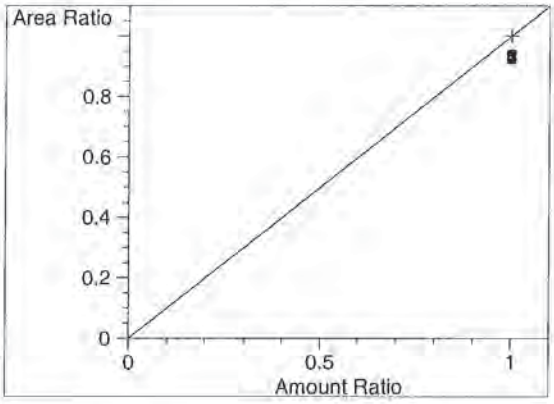
Calibration Curves



Perchlorate at exp. RT: 10.151
MSD1 83, EIC=82.7:83.7
Correlation: 0.99996
Residual Std. Dev.: 0.05799
Formula: $y = ax^2 + bx + c$
a: 1.67107e-2
b: 9.48902e-1
c: -7.08771e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-85 at exp. RT: 10.161
MSD1 85, EIC=84.7:85.7
Correlation: 0.99995
Residual Std. Dev.: 0.01944
Formula: $y = ax^2 + bx + c$
a: 5.96376e-3
b: 3.22428e-1
c: 1.31363e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 10.170
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1

Sequence Table:

Method and Injection Info Part:

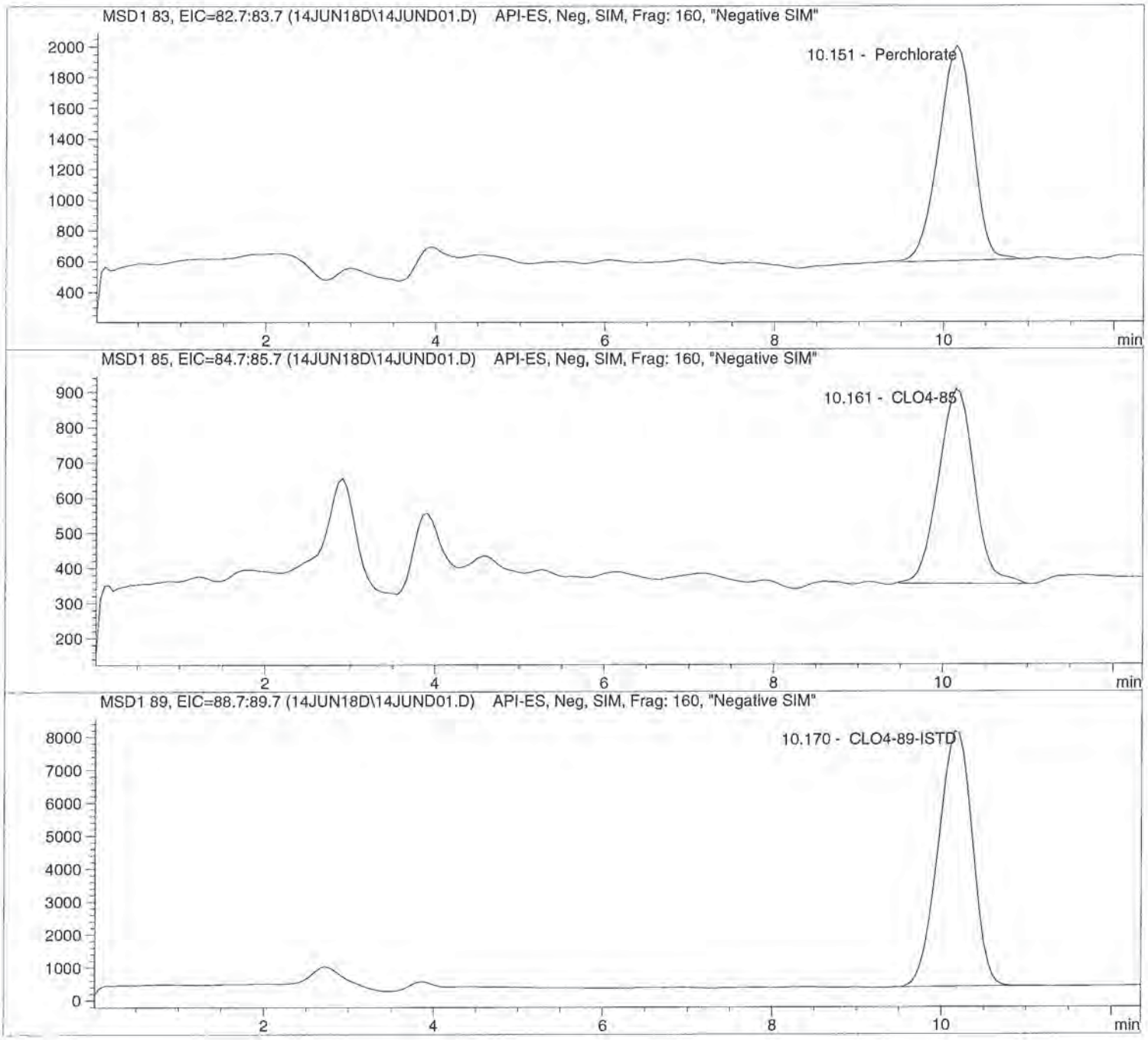
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605272 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605273 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605274 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605275 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605276 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815740001 1K	CLO4-DOD	1	Sample		
15	Vial 81	605274 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
16	Vial 85	1815740002 1K	CLO4-DOD	1	Sample		
17	Vial 86	1815740003 10	CLO4-DOD	1	Sample		
18	Vial 87	1815740004	CLO4-DOD	1	Sample		
19	Vial 88	1815740005	CLO4-DOD	1	Sample		
20	Vial 61	Rinse	CLO4-DOD	1	Sample	50	
21	Vial 89	1815740006	CLO4-DOD	1	Sample		
22	Vial 90	1815740007	CLO4-DOD	1	Sample		
23	Vial 91	1815988001	CLO4-DOD	1	Sample		
24	Vial 92	1815988002 1K	CLO4-DOD	1	Sample		
25	Vial 93	1815988003 1K	CLO4-DOD	1	Sample		
26	Vial 91	1815988001 1K	CLO4-DOD	1	Sample		
27	Vial 75	605277 CCV@25	CLO4-DOD	1	Ctrl Samp		
28	Vial 61	Rinse	CLO4-DOD	1	Sample	50	
29	Vial 71	605278 LODV@1.	CLO4-DOD	1	Ctrl Samp		
30	Vial 62	605278 LODV@1.	CLO4-DOD	1	Ctrl Samp		
31	Vial 94	1815988004 MS	CLO4-DOD	1	Sample		
32	Vial 95	1815988005 MSD	CLO4-DOD	1	Sample		
33	Vial 96	1815991001	CLO4-DOD	1	Sample		
34	Vial 97	1815992001 1K	CLO4-DOD	1	Sample		
35	Vial 98	1815993001	CLO4-DOD	1	Sample		
36	Vial 99	1816534001	CLO4-DOD	1	Sample		
37	Vial 51	1815740002 100	CLO4-DOD	1	Sample		
38	Vial 52	1815740003 10K	CLO4-DOD	1	Sample		
39	Vial 53	1815740005 100	CLO4-DOD	1	Sample		
40	Vial 75	605342 CCV@25	CLO4-DOD	1	Ctrl Samp		
41	Vial 71	605343 LODV@1.	CLO4-DOD	1	Ctrl Samp		
42	Vial 62	605343 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/14/2018 09:51:06	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/14/2018 09:51:06	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.151	BBA	39338.0	0.9914	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.161	BBA	16195.4	0.9531	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.170	PBA	216478.8	5.0000	CLO4-89-ISTD

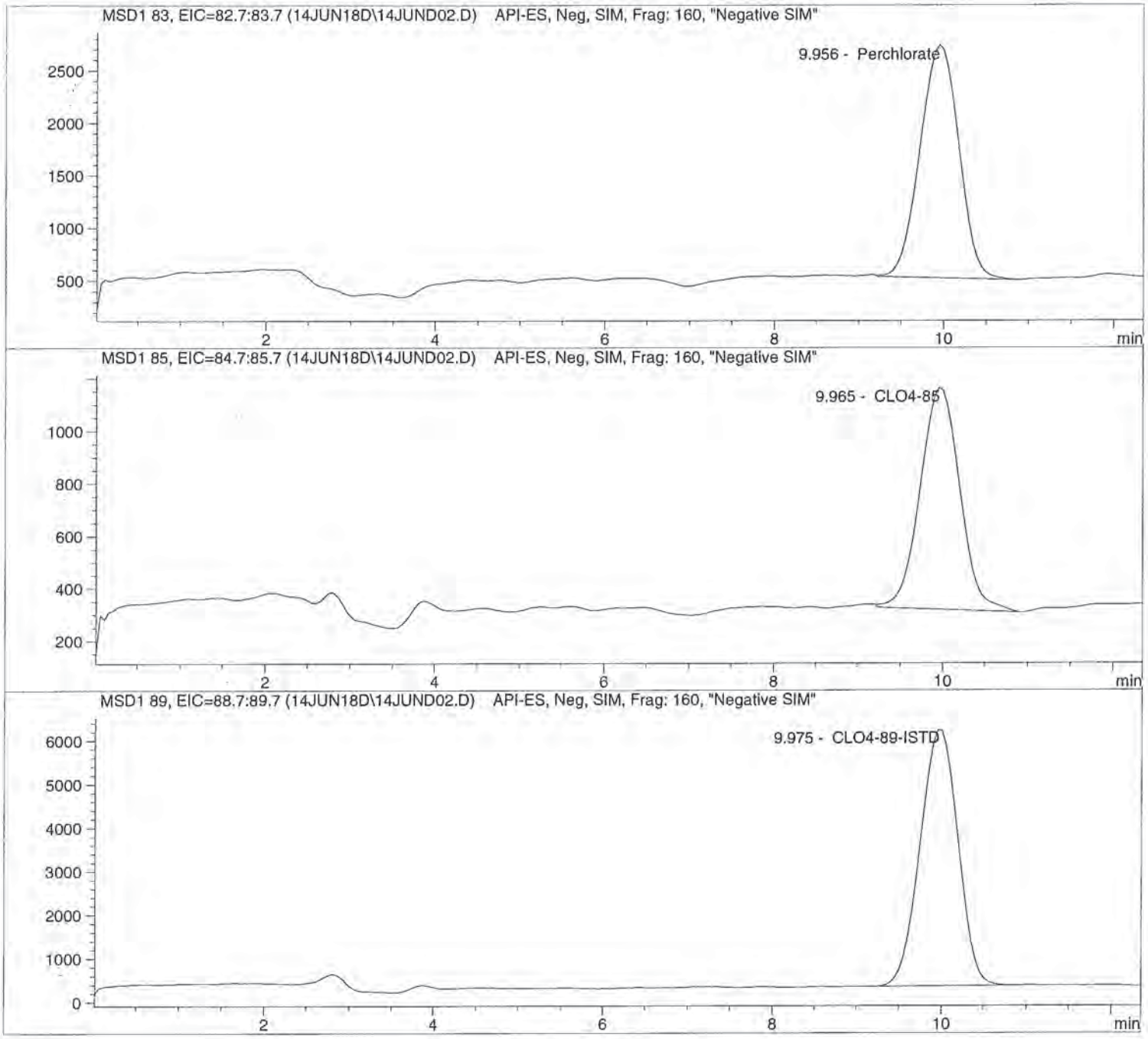
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND02.D Sample Name: ICAL2@ 2.0ug/L 00903500

Injection Date:	6/14/2018 10:05:22	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/14/2018 10:05:22	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.956	BBA	70057.6	2.0589	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.965	BBA	27407.9	2.1243	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.975	PBA	181269.5	5.0000	CLO4-89-ISTD

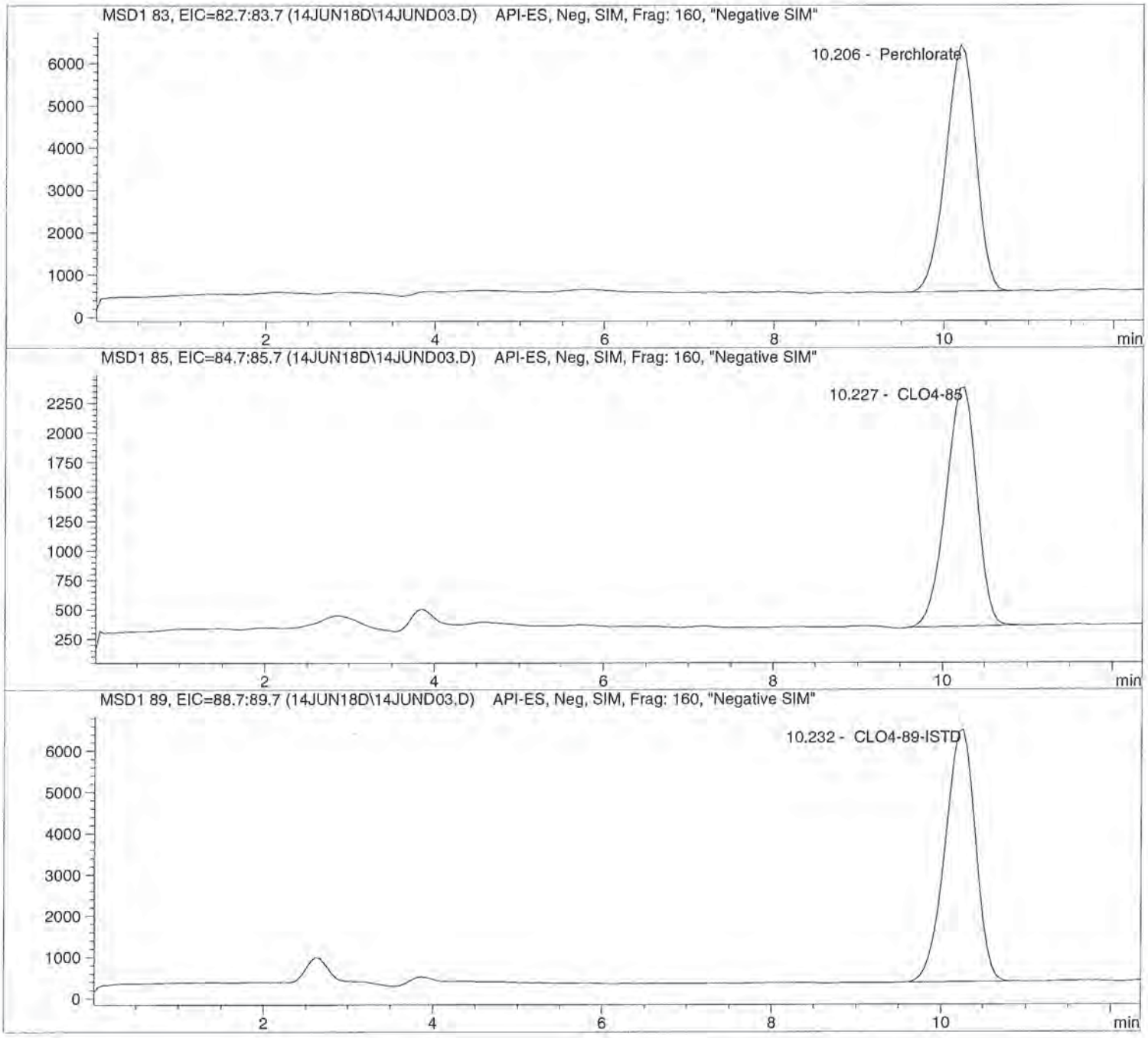
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/14/2018 10:19:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/14/2018 10:19:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.206	PBA	144153.2	4.8955	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.227	PBA	51695.0	4.9230	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.232	BBA	153679.7	5.0000	CLO4-89-ISTD

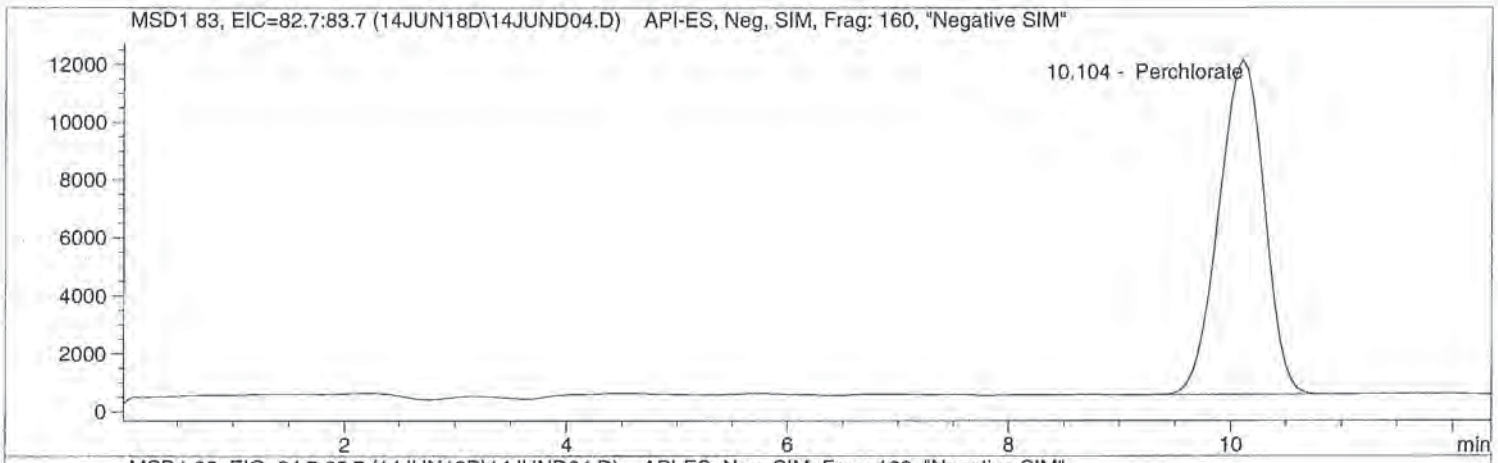
*** End of Report ***

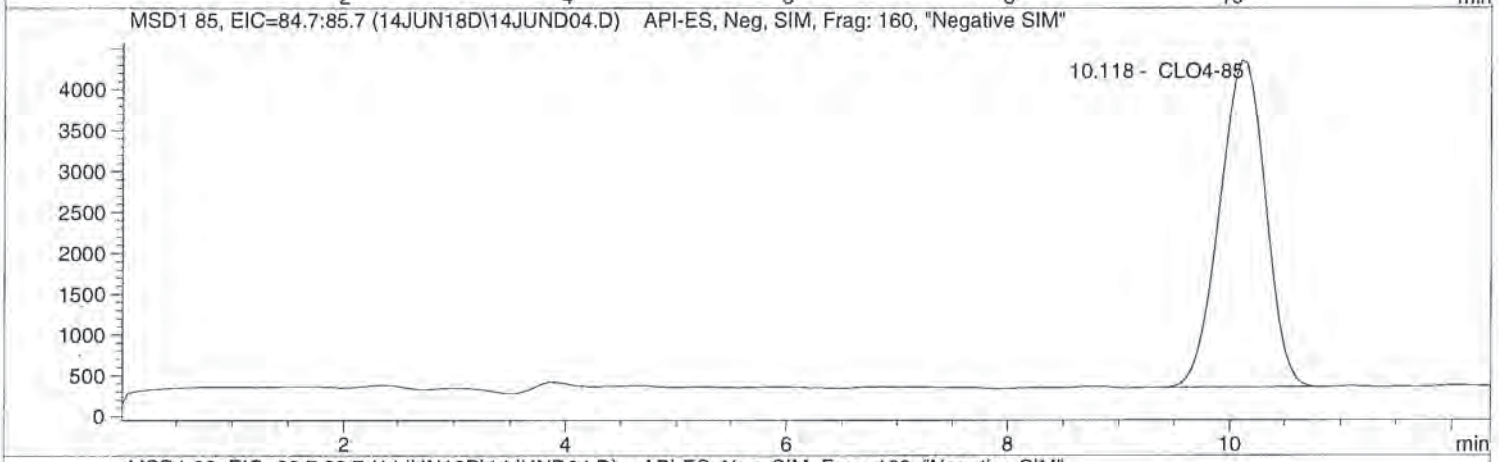
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND04.D Sample Name: ICAL4@ 10.ug/L

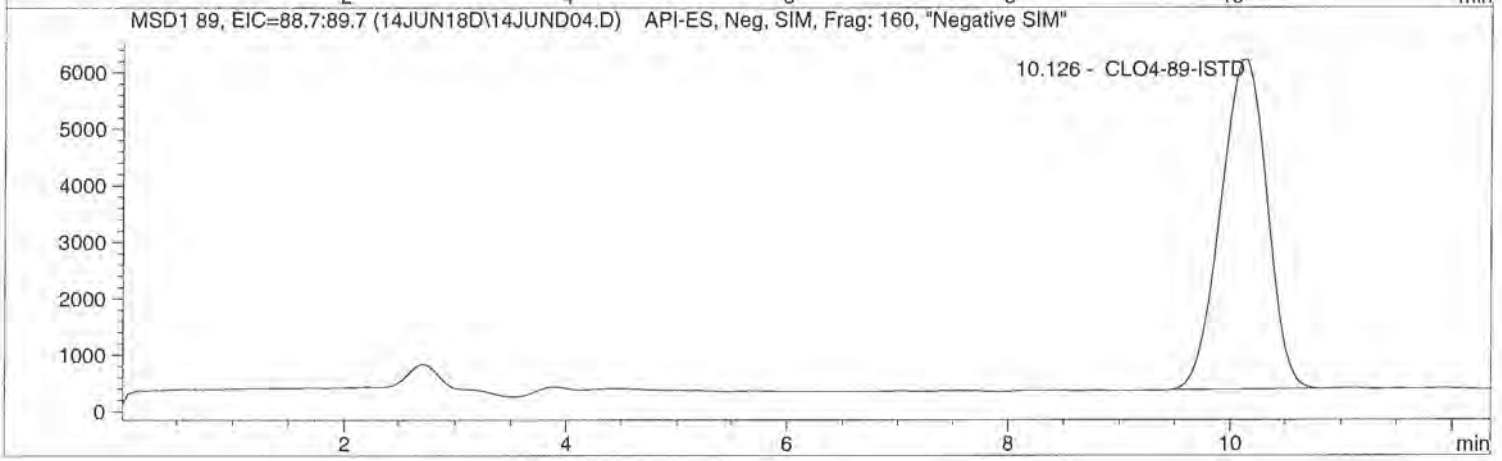
Injection Date:	6/14/2018 10:33:59	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/14/2018 10:33:59	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.104	BBA	331117.7	9.9018	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.118	PBA	115839.4	9.9424	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.126	PBA	170890.1	5.0000	CLO4-89-ISTD

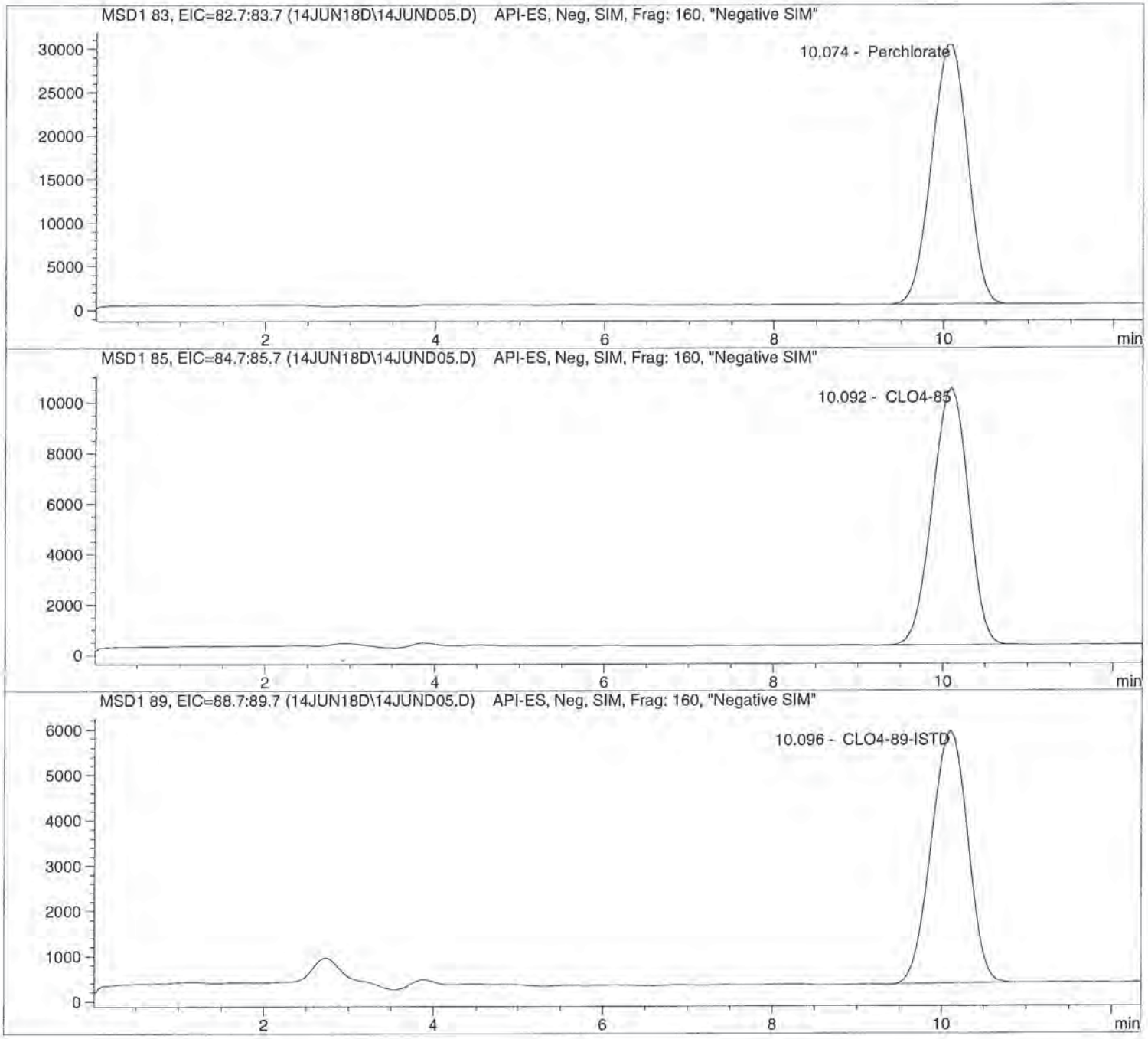
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/14/2018 10:48:17	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/14/2018 10:48:17	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.074	PBA	876318.4	25.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.092	PBA	300354.8	25.2800	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.096	PBA	167255.6	5.0000	CLO4-89-ISTD

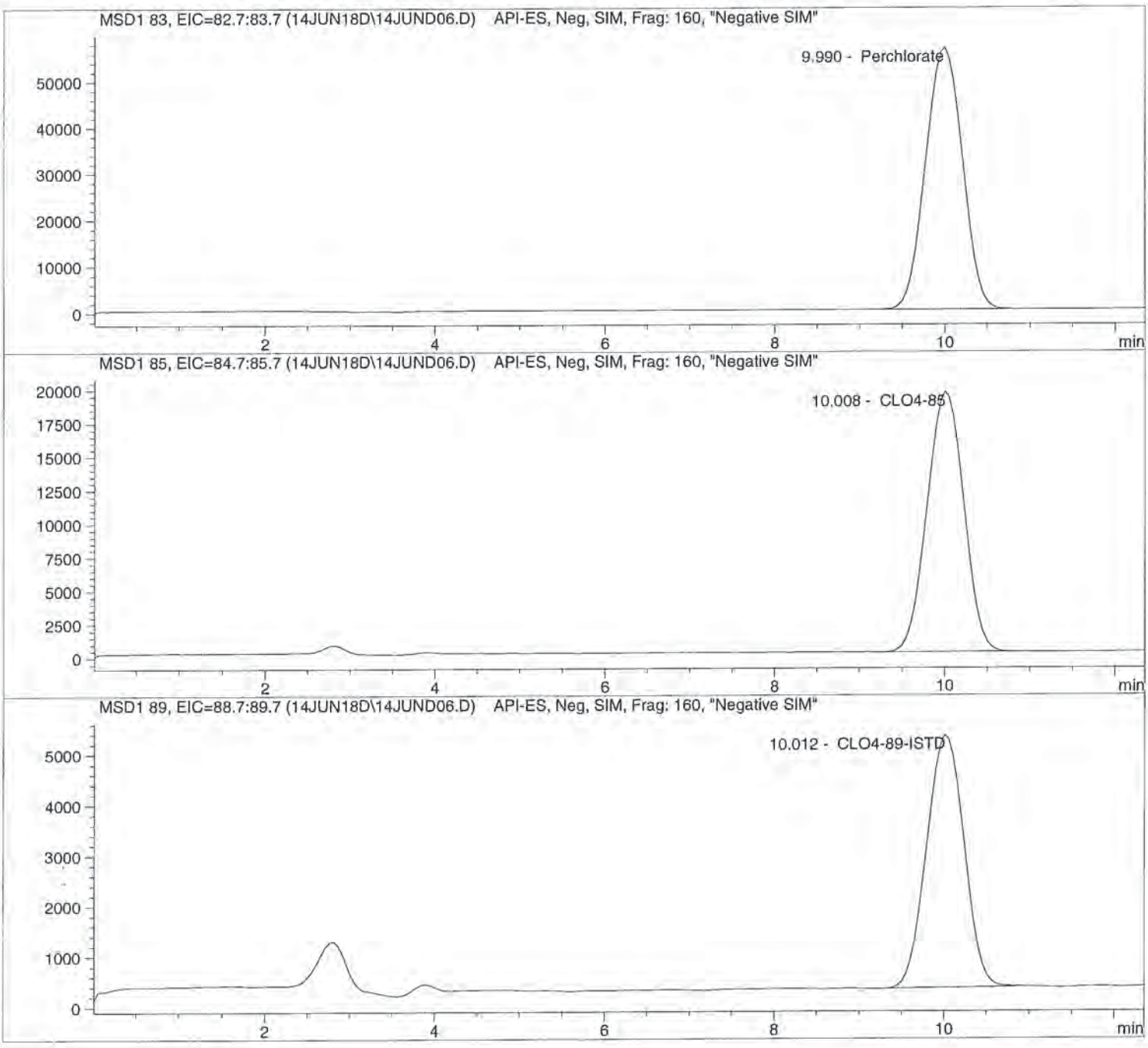
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/14/2018 11:02:36	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/14/2018 11:02:36	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.990	BBA	1697669.4	49.6594	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.008	PBA	583139.8	49.6284	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.012	PBA	153417.6	5.0000	CLO4-89-ISTD

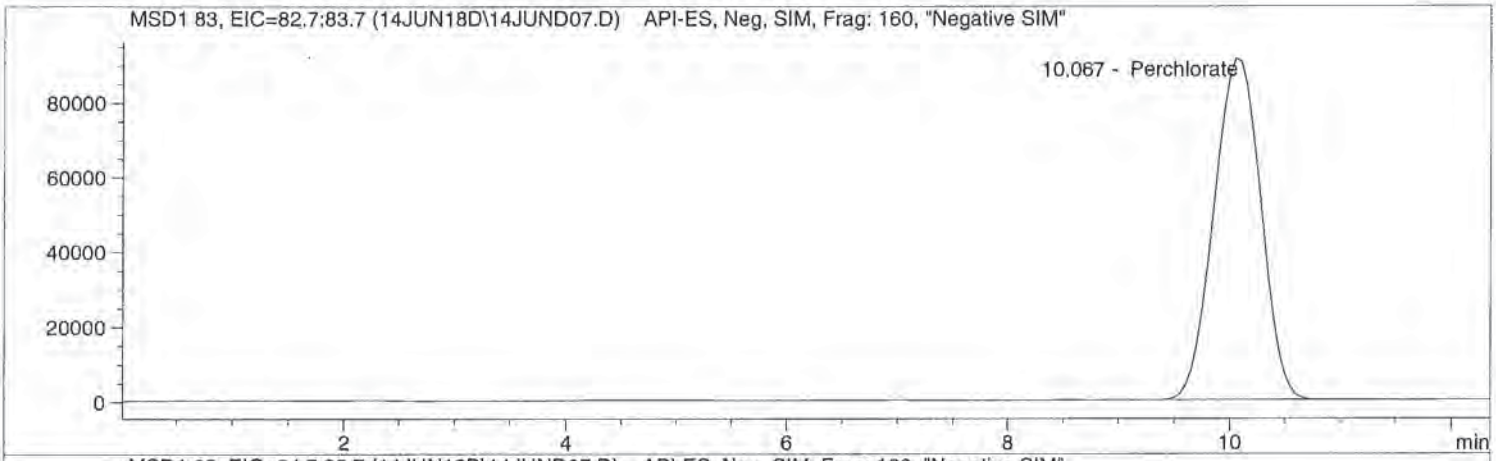
*** End of Report ***

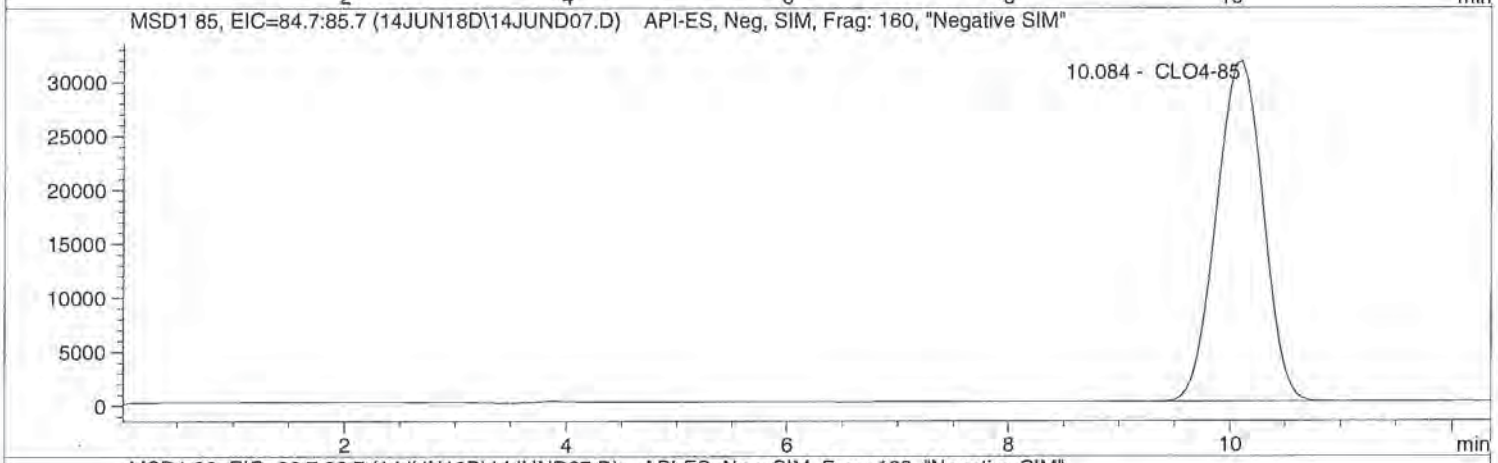
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND07.D Sample Name: ICAL7@ 75.ug/L

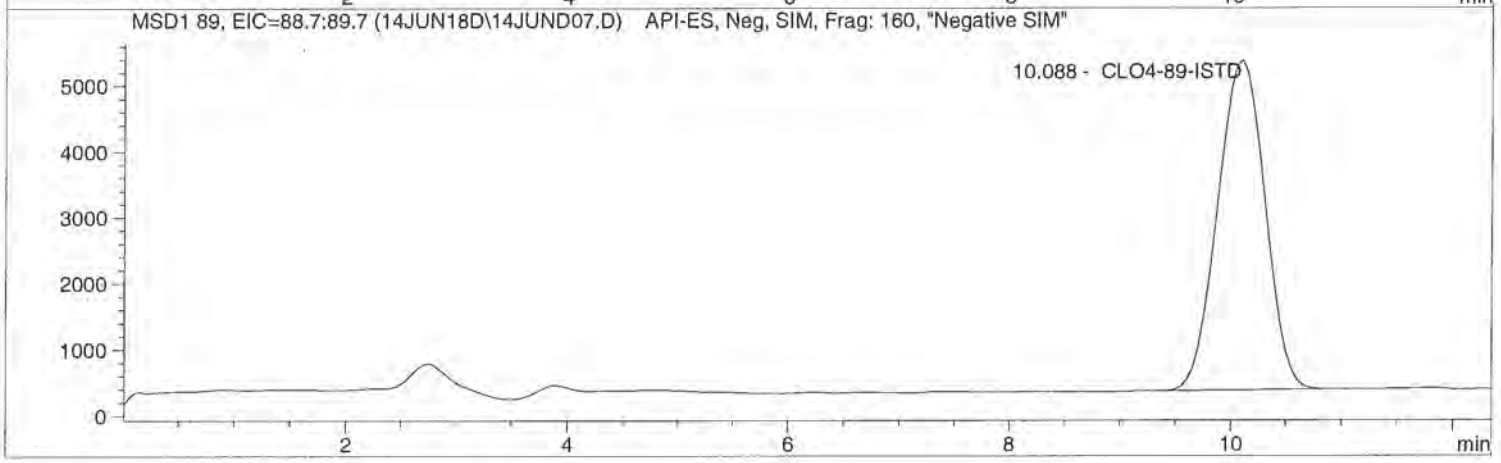
Injection Date:	6/14/2018 11:16:57	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/14/2018 11:16:57	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.067	BBA	2688168.5	75.1168	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.084	PBA	925902.0	75.1538	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.088	BBA	149174.9	5.0000	CLO4-89-ISTD

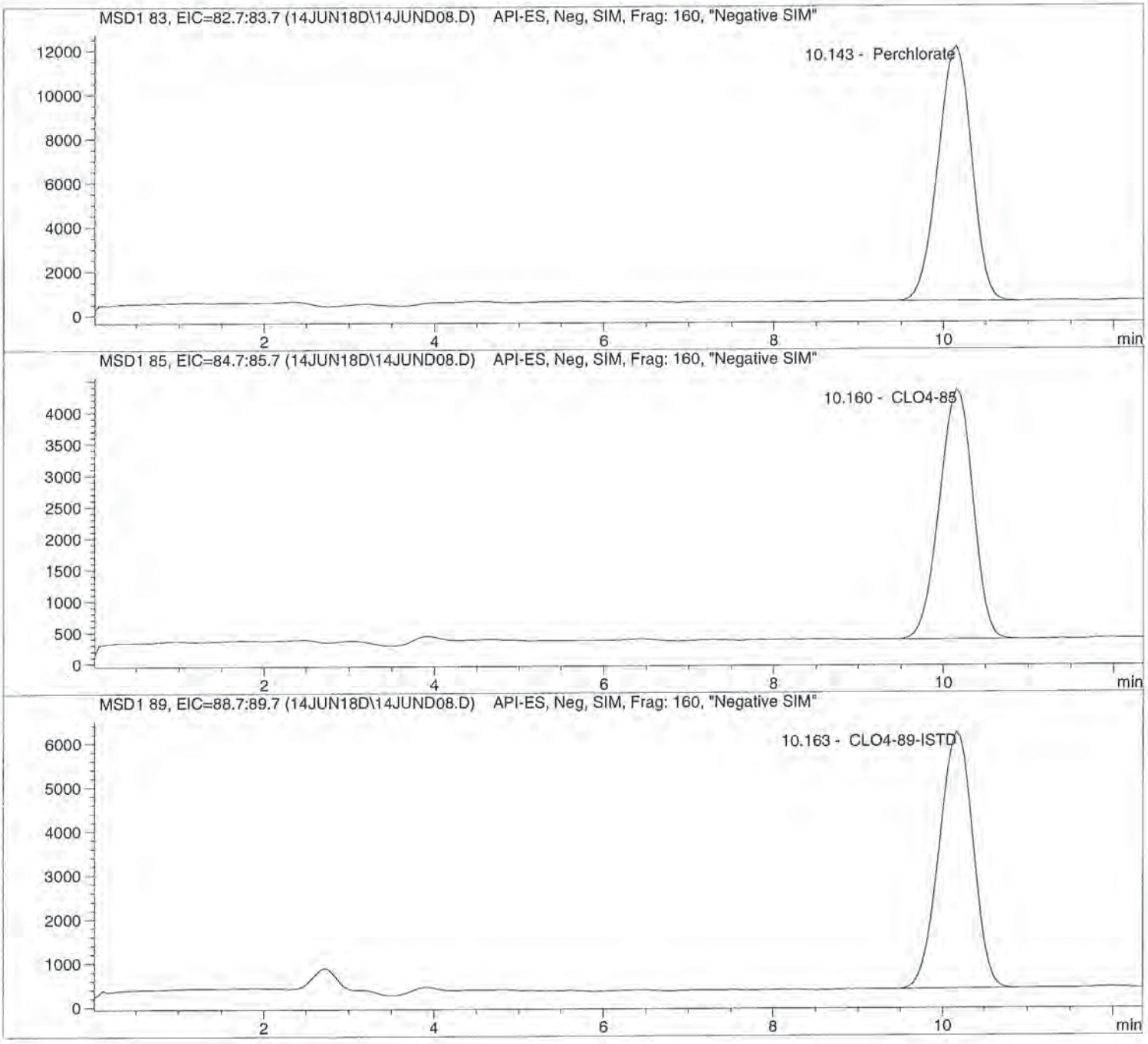
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/14/2018 11:31:15	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/14/2018 11:31:15	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.143	BBA	319377.5	9.9871	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.160	BBA	110126.9	9.8881	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.163	PBA	163369.0	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

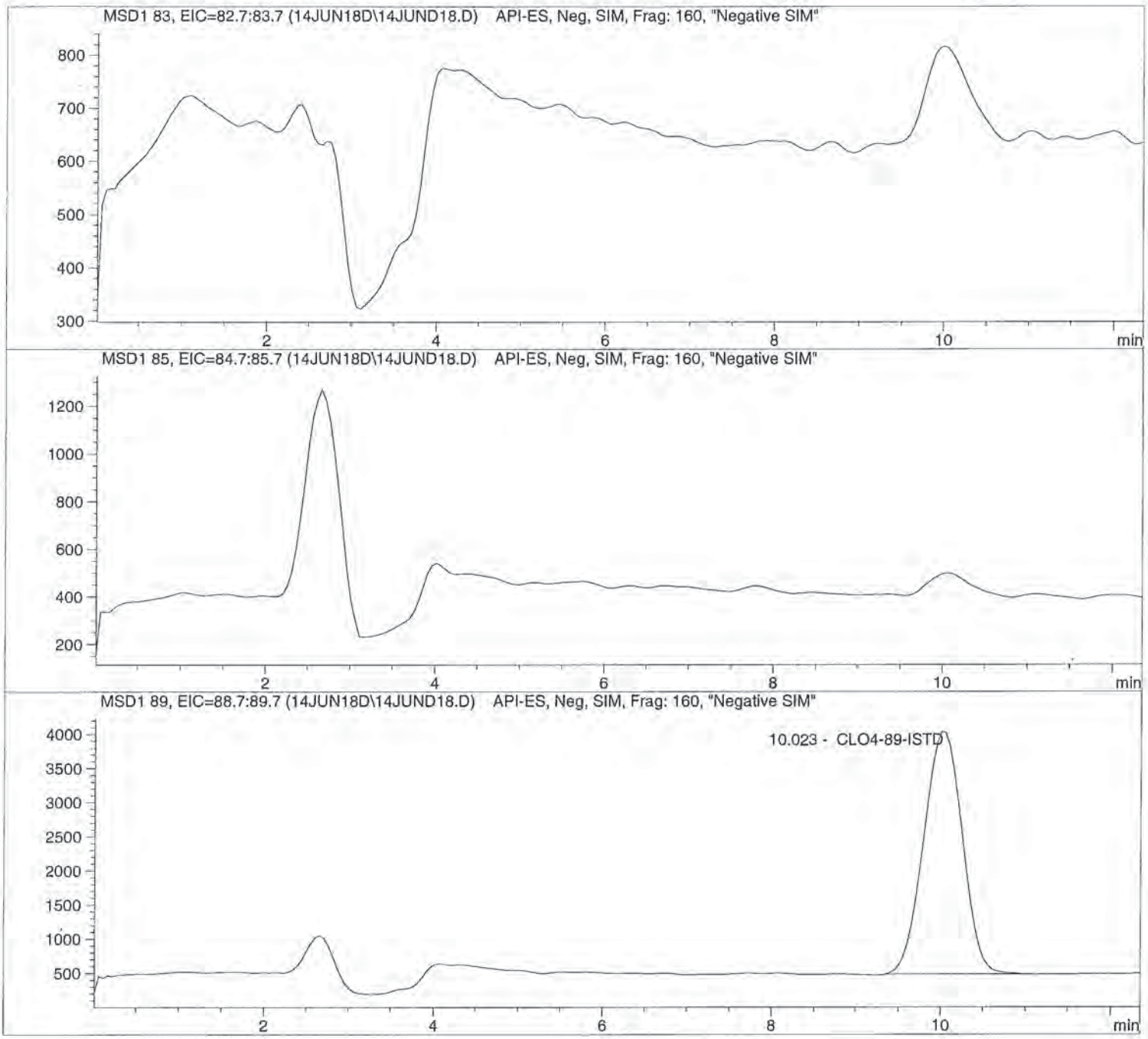
Unmodified

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND18.D Sample Name: 1815740004

Injection Date:	6/14/2018 13:56:06	Seq Line:	18
Sample Name:	1815740004	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.023	BBA	112834.3	5.0000	CLO4-89-ISTD

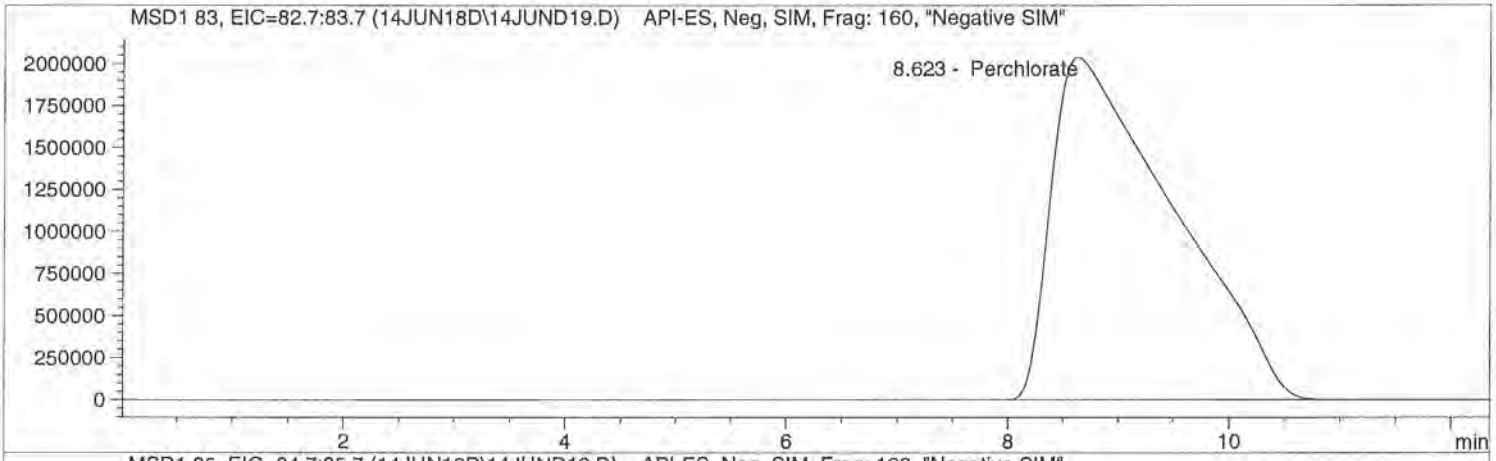
*** End of Report ***

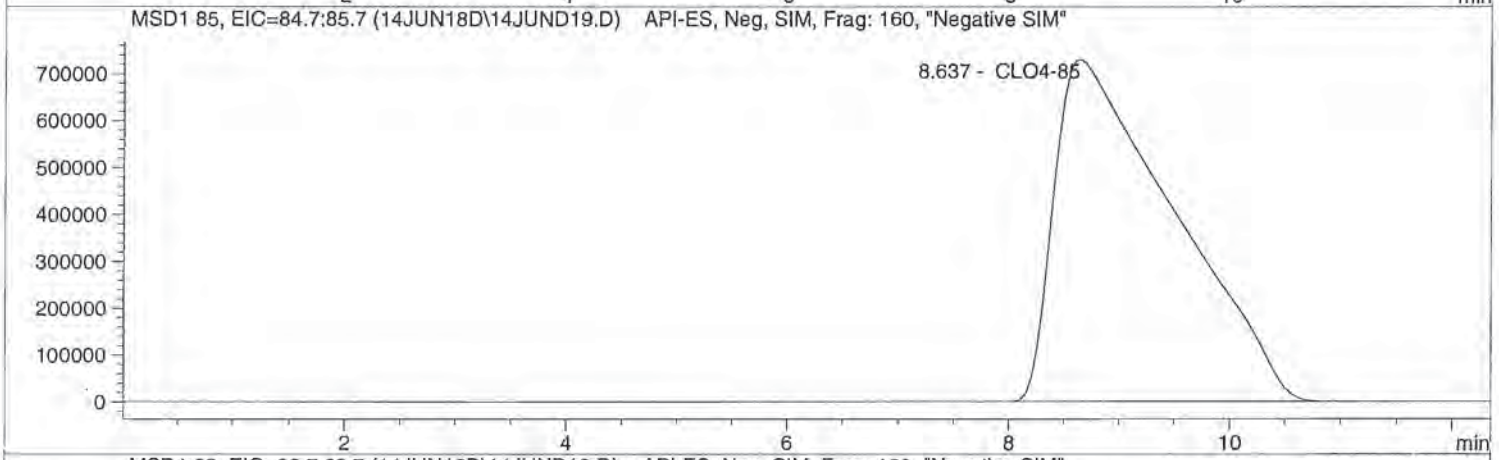
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

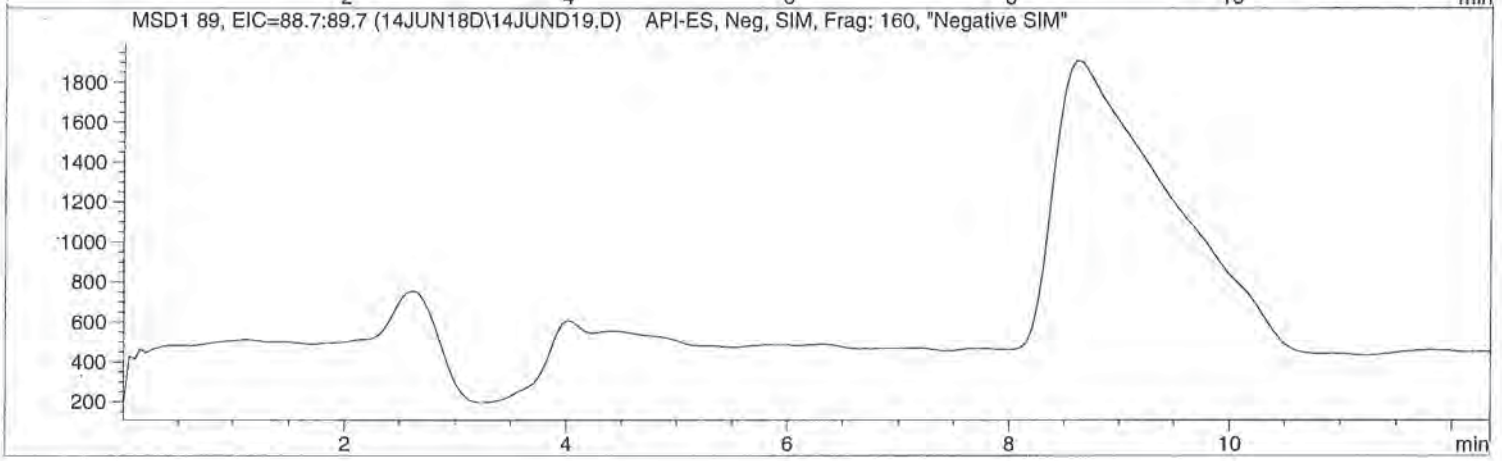
Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND19.D Sample Name: 1815740005

Injection Date:	6/14/2018 14:10:21	Seq Line:	19
Sample Name:	1815740005	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.623	PBA	156101936.0	0.0373	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.637	PBA	55016480.0	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

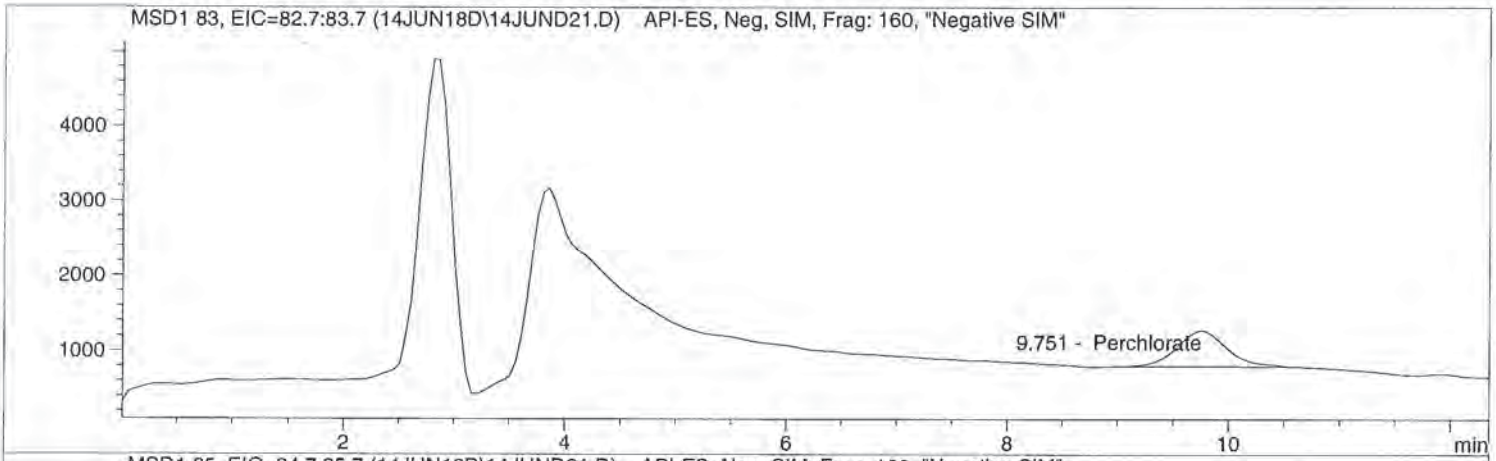
*** End of Report ***

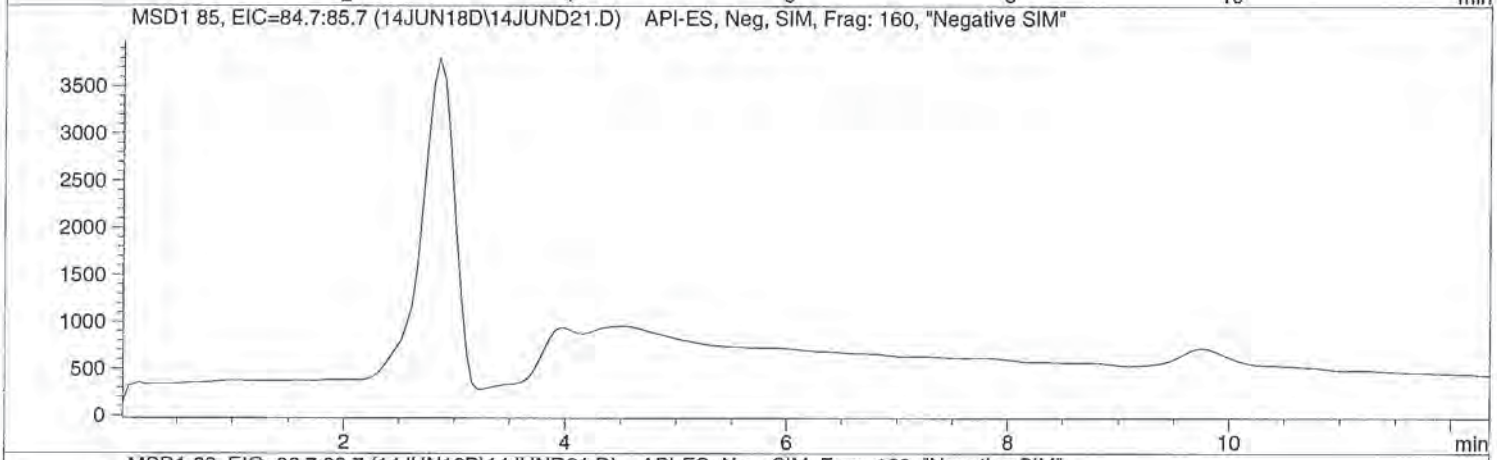
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

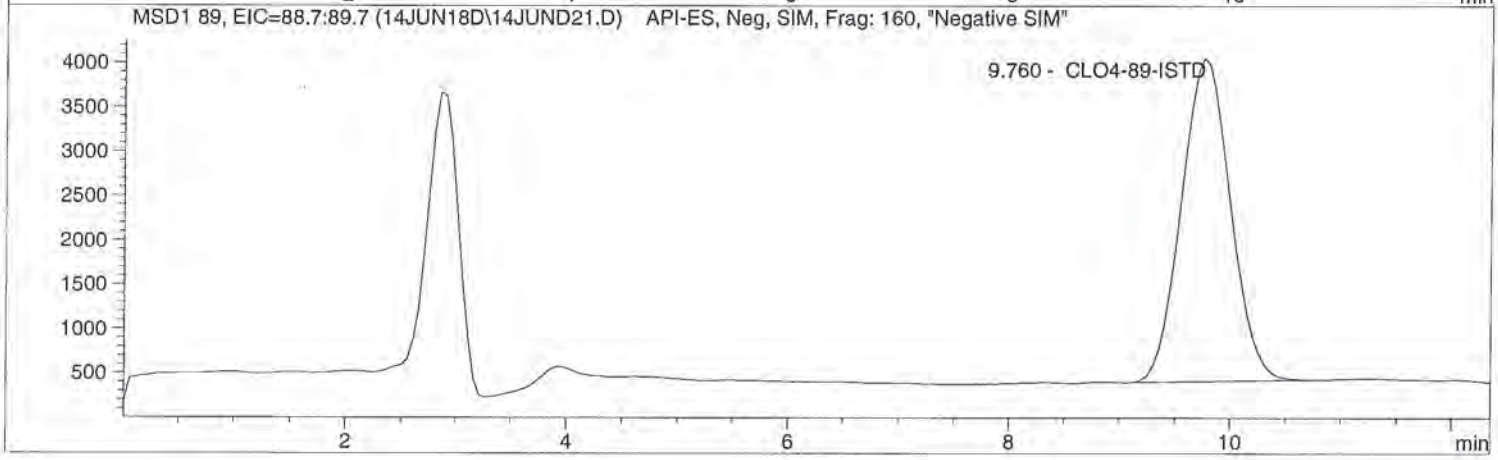
Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND21.D Sample Name: 1815740006

Injection Date:	6/14/2018 14:39:24	Seq Line:	21
Sample Name:	1815740006	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.751	PBA	14951.0	0.7364	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
9.760	PBA	112386.4	5.0000	CLO4-89-ISTD

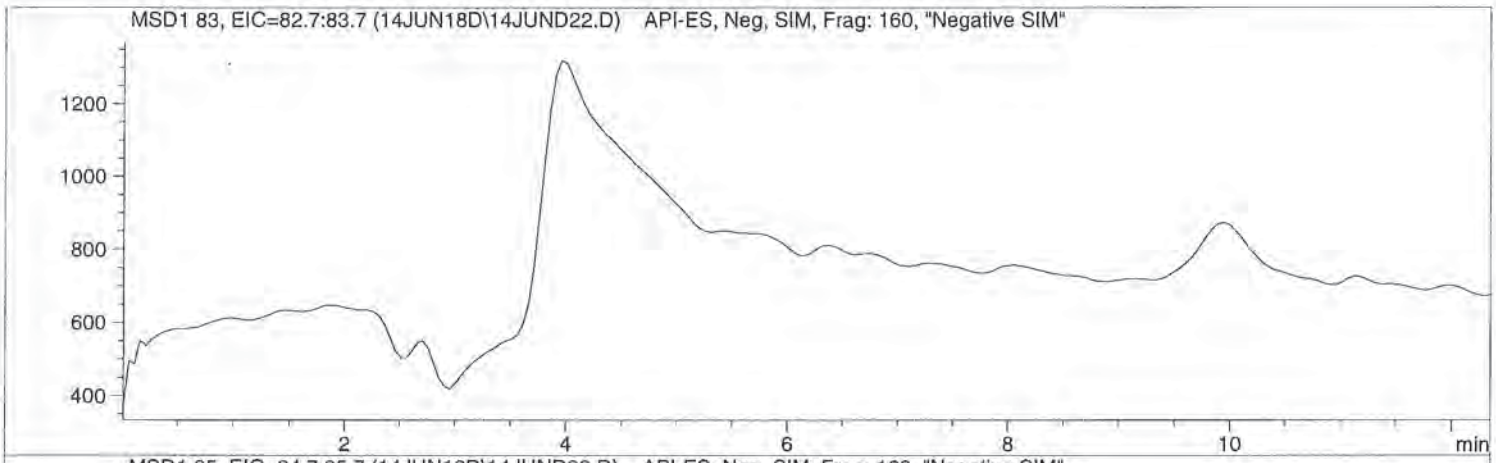
*** End of Report ***

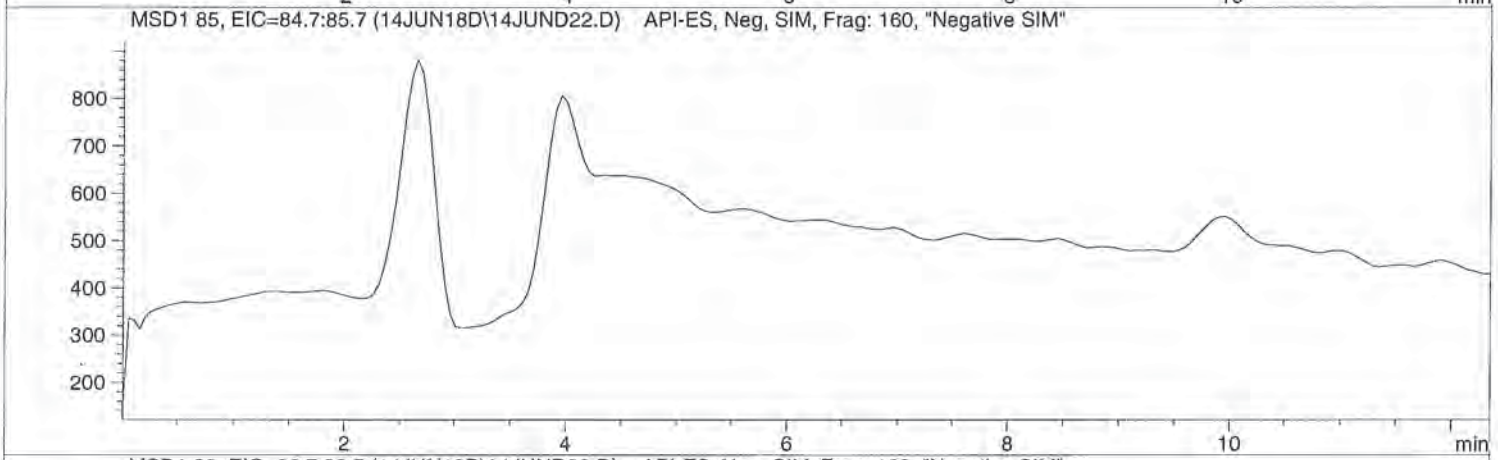
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

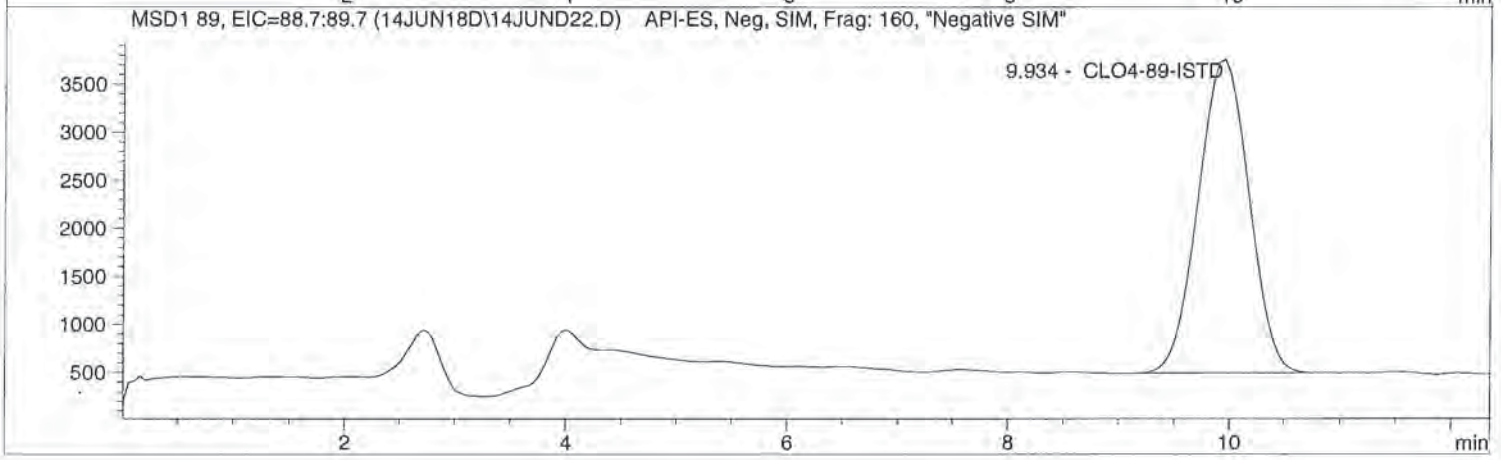
Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND22.D Sample Name: 1815740007

Injection Date:	6/14/2018 14:53:42	Seq Line:	22
Sample Name:	1815740007	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
9.934	PBA	103960.3	5.0000	CLO4-89-ISTD

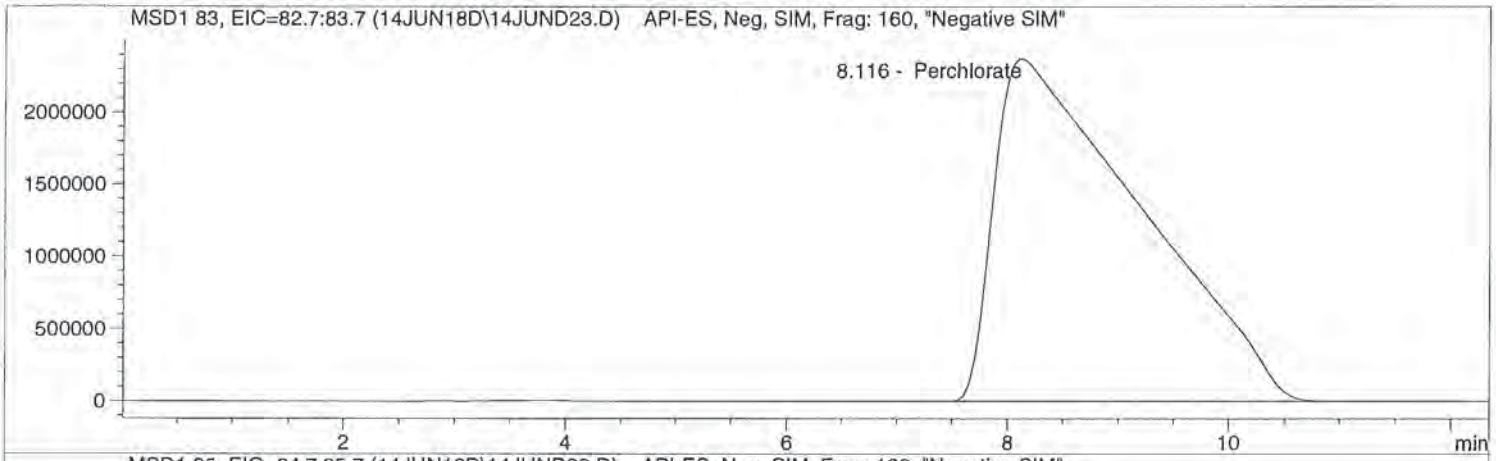
*** End of Report ***

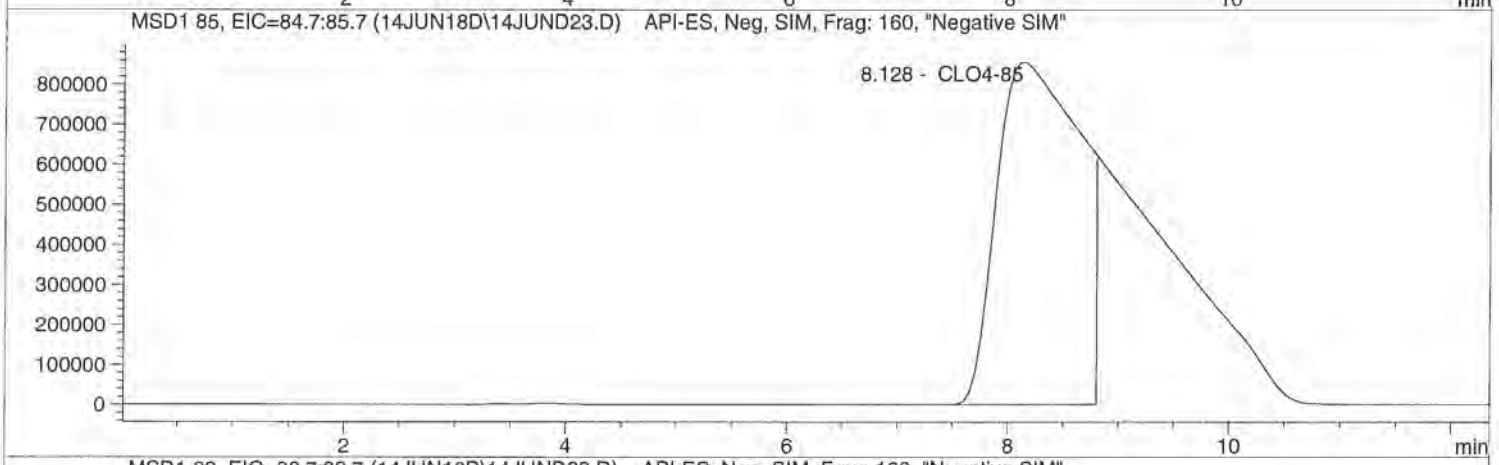
Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

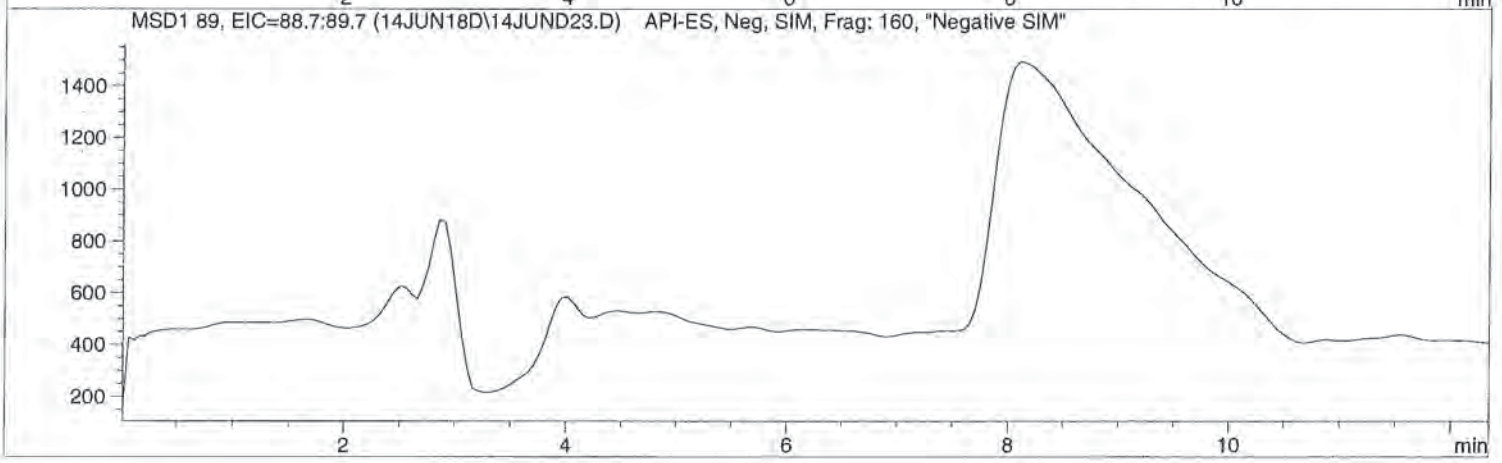
Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND23.D Sample Name: 1815988001

Injection Date:	6/14/2018 15:07:59	Seq Line:	23
Sample Name:	1815988001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
8.116	PBA	218628112.0	0.0373	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.128	PBA	44399768.0	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

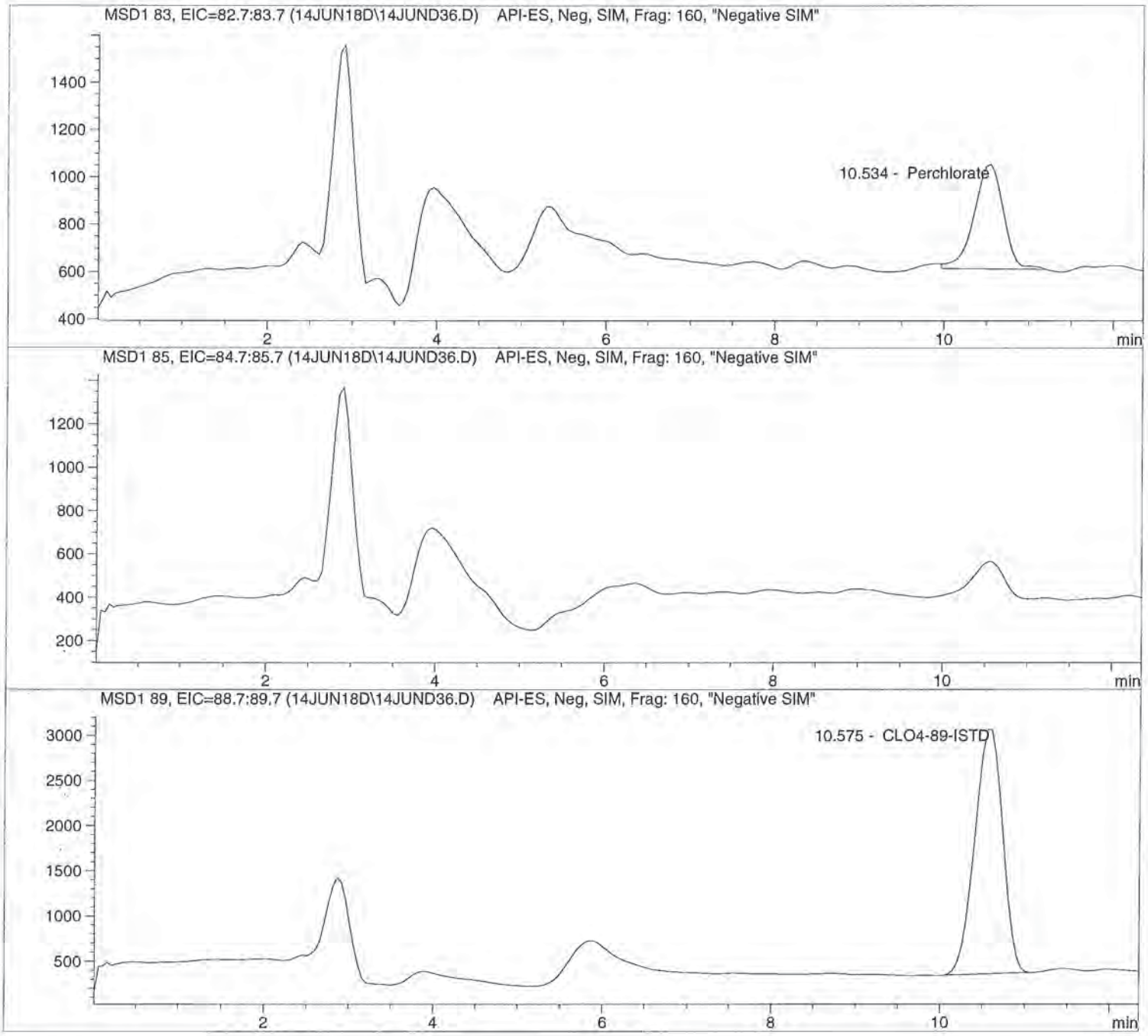
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14JUN18D\14JUND36.D Sample Name: 1816534001

Injection Date:	6/14/2018 19:36:36	Seq Line:	36
Sample Name:	1816534001	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 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
10.534	BBA	10511.0	0.9336	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
10.575	PBA	61582.9	5.0000	CLO4-89-ISTD

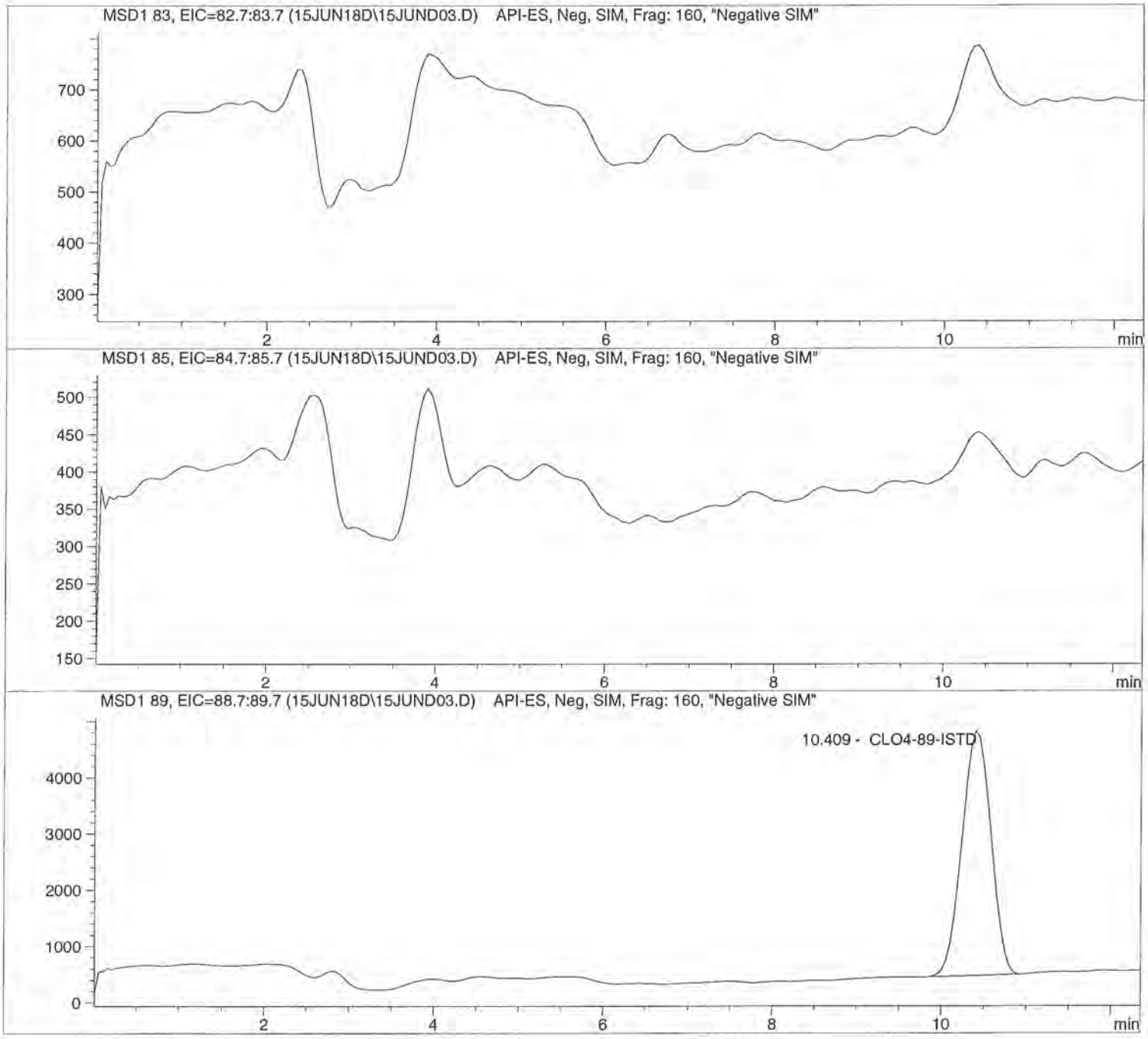
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND03.D Sample Name: 1815991001 5X

Injection Date:	6/15/2018 11:05:53	Seq Line:	3
Sample Name:	1815991001 5X	Location:	Vial 43
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
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
10.409	PBA	102814.8	25.0000	CLO4-89-ISTD

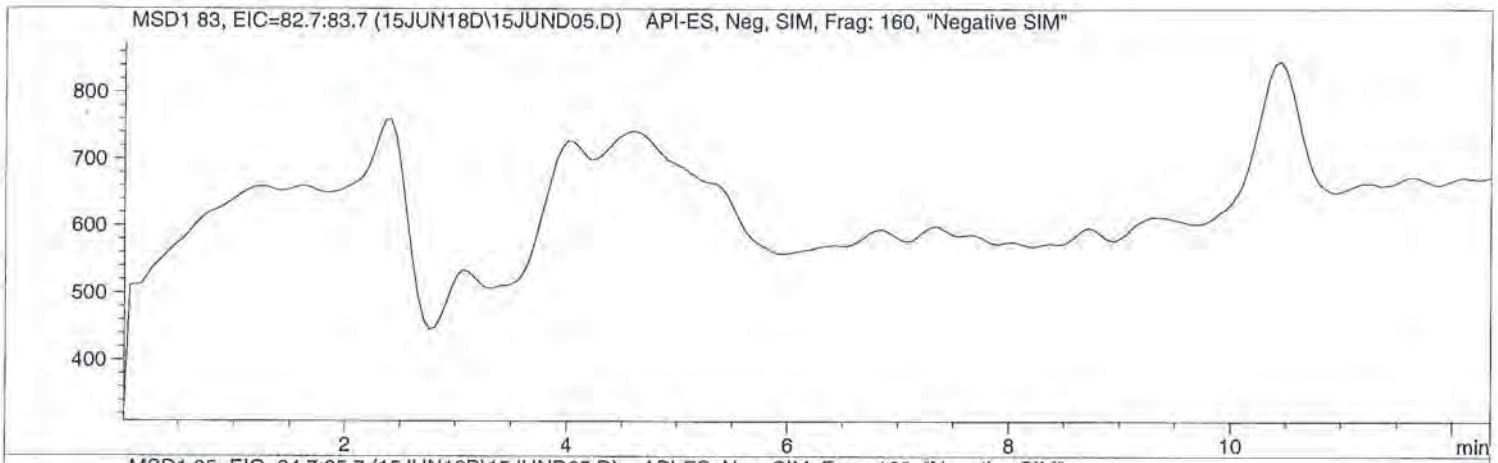
*** End of Report ***

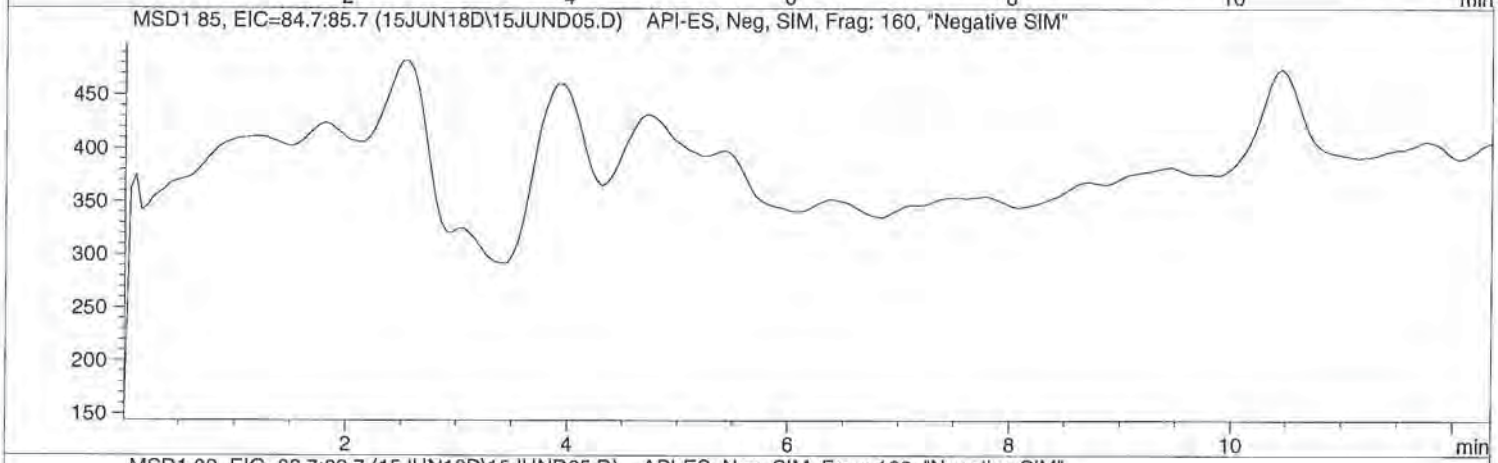
Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

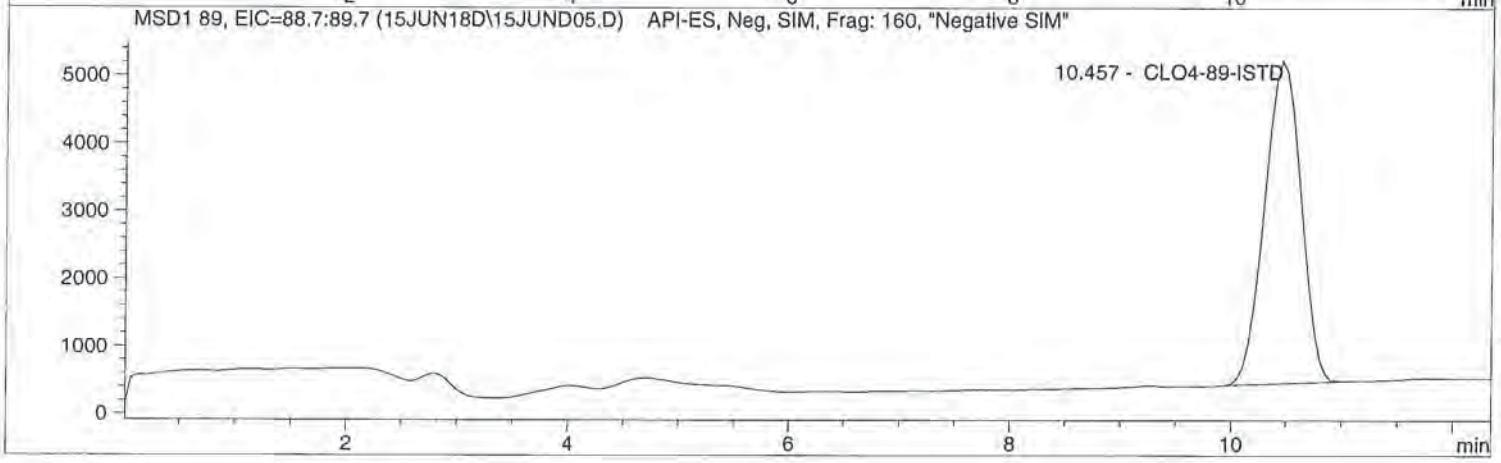
Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\15JUN18D\15JUND05.D Sample Name: 1816534001 5X

Injection Date:	6/15/2018 11:46:31	Seq Line:	5
Sample Name:	1816534001 5X	Location:	Vial 45
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/14/2018 13:03:31

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 14. Jun. 2018,01:02:34 pm
Multiplier:	1.000000
Dilution:	5.000000
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
10.457	PBA	109428.6	25.0000	CLO4-89-ISTD

*** End of Report ***

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

WorkOrder: HS18060661

Longhorn GW Treatment Plant Weekly Samples

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

16-Jul-2018

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

June 28, 2018

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

Work Order: **HS18060661**

Laboratory Results for: **Longhorn GW Treatment Plant Weekly Samples**

Dear Marcia,

ALS Environmental received 1 sample(s) on Jun 14, 2018 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 Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18060661

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060661-01	LH18/24-SP650_061318	Water		13-Jun-2018 14:00	14-Jun-2018 08:57	☐

ALS Group Houston, Corp Date: 28-Jun-18

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

CASE NARRATIVE

Work Order Comments

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

WetChemistry by Method E350.3

Batch ID: R318681

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

WetChemistry by Method E365.3

Batch ID: R318386

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

WetChemistry by Method E415.1

Batch ID: R318044

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

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder:HS18060661
Sample ID: LH18/24-SP650_061318
Lab ID:HS18060661-01
Collection Date: 13-Jun-2018 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)	**36**		**2.0**	**2.0**	**2.0**	**mg/L**	10	26-Jun-2018 14:00
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**2.17**		**0.100**	**0.100**	**0.250**	**mg/L**	10	15-Jun-2018 12:15
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**165**		**2.50**	**3.00**	**5.00**	**mg/L**	5	15-Jun-2018 06:32
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	28-Jun-2018 09:16

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

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18060661

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318044	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18060661-01	LH18/24-SP650_061318	13 Jun 2018 14:00			15 Jun 2018 06:32	5
Batch ID R318386	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18060661-01	LH18/24-SP650_061318	13 Jun 2018 14:00			15 Jun 2018 12:15	10
Batch ID R318681	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18060661-01	LH18/24-SP650_061318	13 Jun 2018 14:00			26 Jun 2018 14:00	10
Batch ID R318810	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18060661-01	LH18/24-SP650_061318	13 Jun 2018 14:00			28 Jun 2018 09:16	1

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18060661

QC BATCH REPORT

Batch ID: R318044 **Instrument: TOC_02** **Method: E415.1**

MBLK Sample ID: **WBLKW3-180614** Units: **mg/L** Analysis Date: **15-Jun-2018 04:44**
Client ID: Run ID: **TOC_02_318044** SeqNo: **4610999** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW3-180614** Units: **mg/L** Analysis Date: **15-Jun-2018 04:59**
Client ID: Run ID: **TOC_02_318044** SeqNo: **4611000** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.975	1.00	10	0	99.8	80 - 120				

LCSD Sample ID: **WLCSDW3-180614** Units: **mg/L** Analysis Date: **15-Jun-2018 05:13**
Client ID: Run ID: **TOC_02_318044** SeqNo: **4611001** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.16	1.00	10	0	102	80 - 120	9.975	1.84	20	

MS Sample ID: **HS18060409-01MS** Units: **mg/L** Analysis Date: **15-Jun-2018 05:39**
Client ID: Run ID: **TOC_02_318044** SeqNo: **4611003** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	24.55	1.00	10	14.3	102	80 - 120				

The following samples were analyzed in this batch: HS18060661-01

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

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18060661

QC BATCH REPORT

Batch ID: R318386 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-318386** Units: **mg/L** Analysis Date: **15-Jun-2018 12:15**
Client ID: Run ID: **UV-2450_318386** SeqNo: **4618829** 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)	0.0100	0.0250								U

LCS Sample ID: **LCS-318386** Units: **mg/L** Analysis Date: **15-Jun-2018 12:15**
Client ID: Run ID: **UV-2450_318386** SeqNo: **4618830** 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: **HS18060661-01MS** Units: **mg/L** Analysis Date: **15-Jun-2018 12:15**
Client ID: **LH18/24-SP650_061318** Run ID: **UV-2450_318386** SeqNo: **4618831** 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)	4.25	0.250	2.5	2.17	83.2	80 - 120				

MSD Sample ID: **HS18060661-01MSD** Units: **mg/L** Analysis Date: **15-Jun-2018 12:15**
Client ID: **LH18/24-SP650_061318** Run ID: **UV-2450_318386** SeqNo: **4618832** 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)	4.23	0.250	2.5	2.17	82.4	80 - 120	4.25	0.472	20	

The following samples were analyzed in this batch: HS18060661-01

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

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18060661

QC BATCH REPORT

Batch ID: R318681 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-318681** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625739** 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)	0.20	0.20								U

LCS Sample ID: **LCS-318681** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625740** 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: **HS18060893-01MS** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625743** 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	0.1198	100	80 - 120				

MSD Sample ID: **HS18060893-01MSD** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625744** 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)	10.2	0.20	10	0.1198	101	80 - 120	10.16	0.393	20	

The following samples were analyzed in this batch: HS18060661-01

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

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: **HS18060661**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

ALS Group Houston, Corp Date: 28-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18060661

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18060661-01	LH18/24-SP650_061318	Login	6/14/2018 2:54:36 PM	JRM	Sub
HS18060661-01	LH18/24-SP650_061318	Login	6/14/2018 2:54:36 PM	JRM	WET004
HS18060661-01	LH18/24-SP650_061318	Login	6/14/2018 2:54:36 PM	JRM	WET004
HS18060661-01	LH18/24-SP650_061318	Login	6/14/2018 2:54:36 PM	JRM	WET004

Date: 28-Jun-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18060661
Date/Time Received: **14-Jun-2018 08:57**
Received by: **NDR**

Checklist completed by: *Jared R. Makan* eSignature 14-Jun-2018 Date
Reviewed by: *RJ Modashia* eSignature 14-Jun-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	3.6c/3.2c UC/C	IR30	
Cooler(s)/Kit(s):	43884		
Date/Time sample(s) sent to storage:	06/14/2018 15:00		
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:

00903544

bhate ENVIRONMENTAL ASSOCIATES, INC.

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP WEEKLY

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	Perchlorate	Orthophosphate						Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHAAP-SB650-060318		6/3/18	1400	-	N		W	5	X	X	X	X									
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	

HS18060661

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Weekly Samples

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	Scott Beesinger	6/3/18	1430	[illegible]	6/4/18	0857
2.				43884		
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped No.: ____

Method of Shipment: ____

____ Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stanaliff 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)

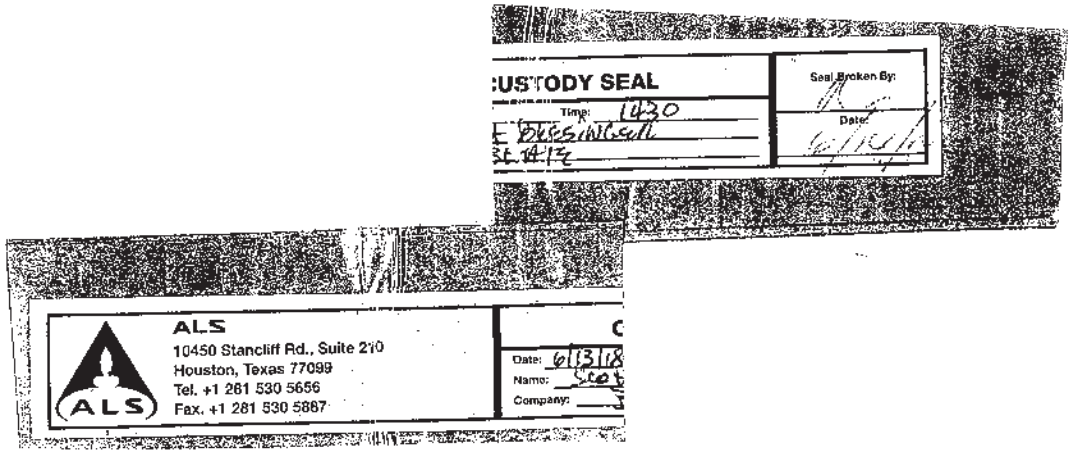
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

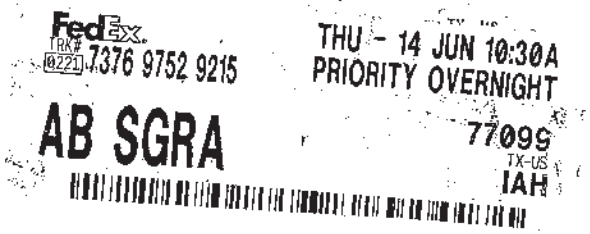
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

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


CUSTODY SEAL
Seal Broken By:
Time: 1430
Date:
ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Date: 6/13/18
Name:
Company:


FedEx
TRK# 7376 9752 9215
0221
THU - 14 JUN 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH

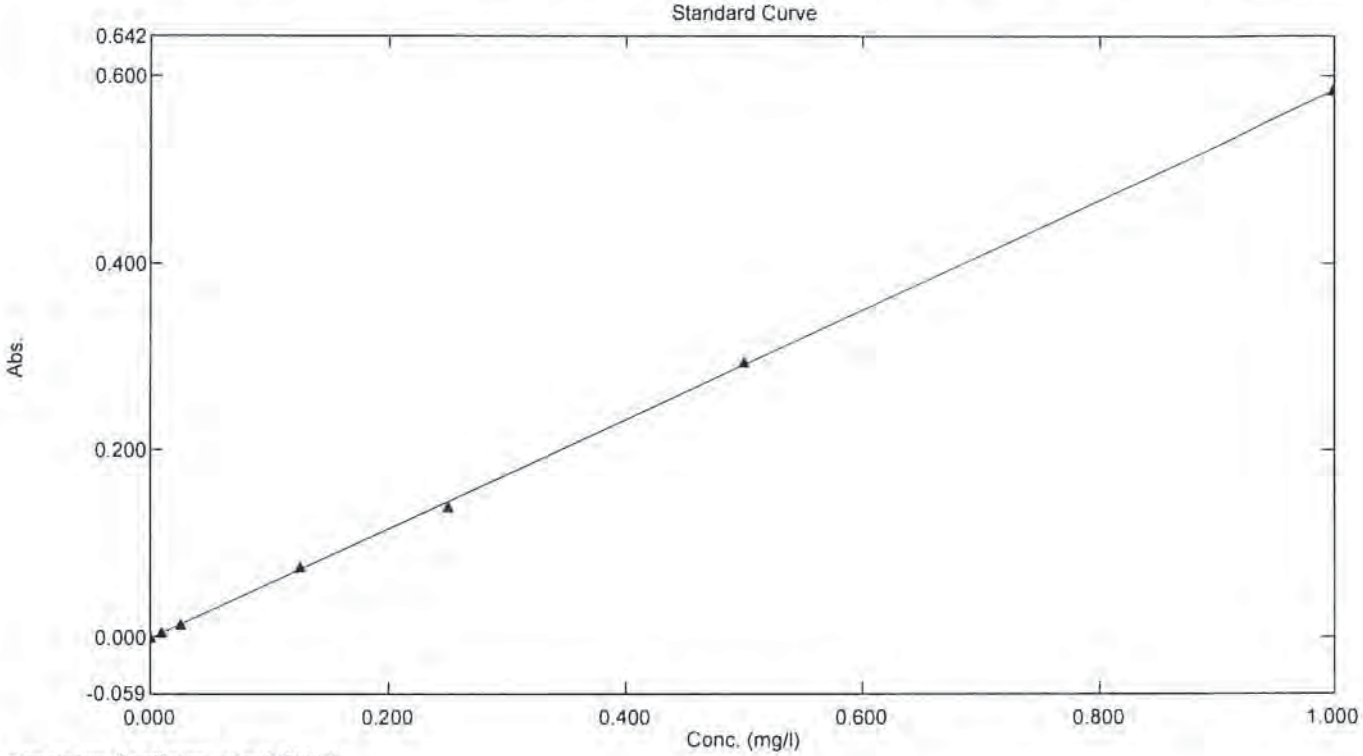
Wet Chemistry Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
WEEKLY SAMPLES
ALS WO# HS18060661

Standard Table Report

07/03/2018 05:43:05 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180615_P_ORTH



Correlation Coefficient r2 = 0.99986

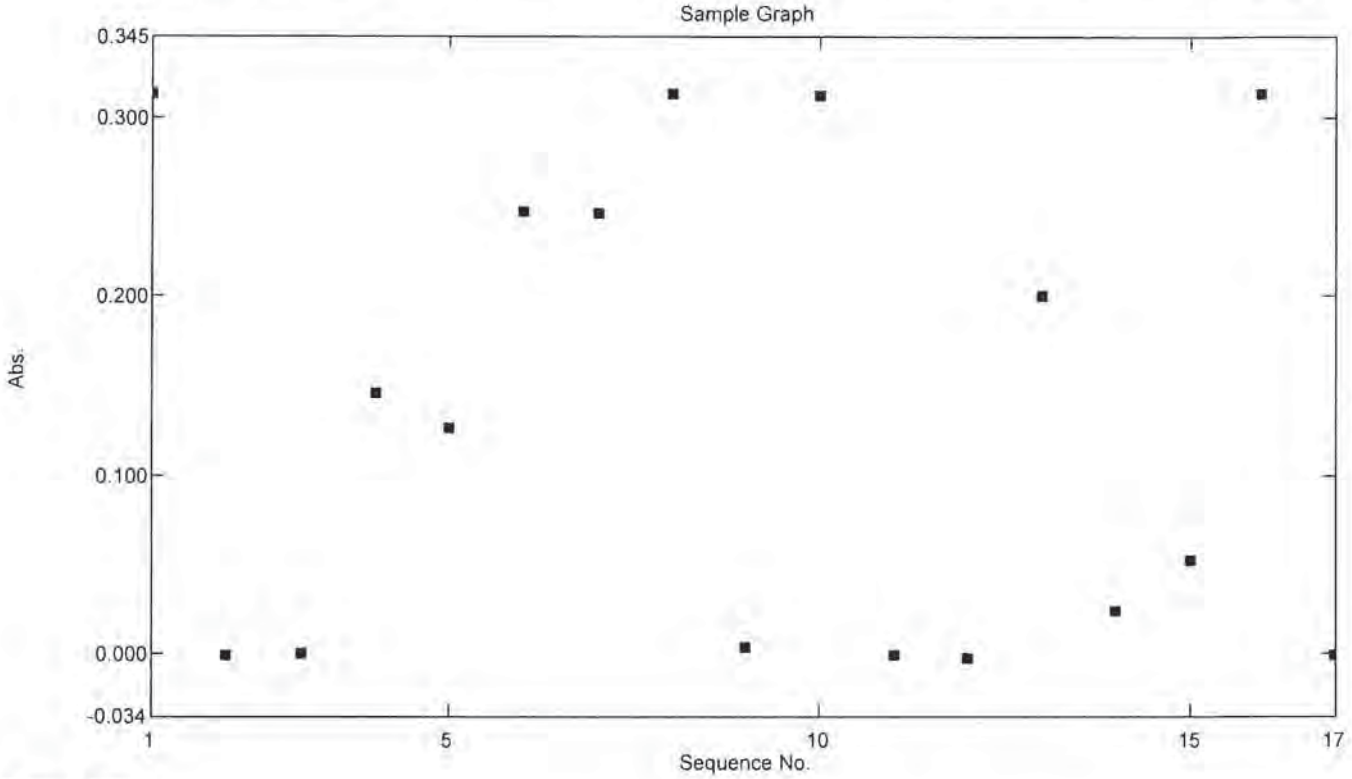
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.000	1.000	
2	STD2	Standard		0.010	0.006	1.000	
3	STD3	Standard		0.025	0.014	1.000	
4	STD4	Standard		0.125	0.075	1.000	
5	STD5	Standard		0.250	0.140	1.000	
6	STD6	Standard		0.500	0.294	1.000	
7	STD7	Standard		1.000	0.584	1.000	
8							

Sample Table Report

07/03/2018 05:43:09 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180615_P_ORT



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.537	0.313	
2	CCB	Unknown		0.000	-0.000	
3	MBLK	Unknown		0.001	0.000	
4	LCS	Unknown		0.251	0.146	
5	18060661.01	Unknown		0.217	0.126	FILTER,10X,12:15PM
6	18060661.01MS	Unknown		0.425	0.248	10X
7	18060661.01MSD	Unknown		0.423	0.247	10X
8	CCV2	Unknown		0.537	0.313	
9	CCB2	Unknown		0.007	0.004	
10	CCV4	Unknown		0.536	0.312	
11	CCB4	Unknown		-0.000	-0.001	
12	18060718.02	Unknown		-0.004	-0.003	FILTER,03:45PM
13	18060718.04	Unknown		0.343	0.200	PF:5X
14	18040837.16	Unknown		0.043	0.024	
15	18040838.16	Unknown		0.092	0.053	
16	CCV5	Unknown		0.536	0.313	
17	CCB5	Unknown		-0.000	-0.001	
18						

HS1806066 1
NIT - AMN - WISE

ALS Laboratory Group

Logbook **30622**

Ion Selective Electrode Logbook

Analyst: MD	Date: 06/26/2018
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F	

Probe Calibration Date:		Cal Std ID:		Probe ID:
06/26/2018		30606(03-07)		SR15190
Std Level		mV	Conc., mg/L:	Sodium Thiosulfate ID:
STD 1 (mg/L):	0.2	117.0	0.2019	Std Level / mV / Conc., mg/L:
STD 2 (mg/L):	1	97.4	1.054	STD 4 (mg/L) 10 / 17.1 / 10.07
STD 3 (mg/L):	5	35.2	5.000	STD 5 (mg/L) 50 / -25.0 / 50.05
LSC / MS Spike ID:	2970206404			ICAL Date & Slope:
ICV Cal STD ID:	30606 2002			100.0% / -60.0 mV
DPD Reagent ID:	2970206302			

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/ -)	Comments
ICV		some	some		10.24			
CCB		↓	↓		0.02230			
MBLK					0.02240			
LCS					10.09			
HS1806066 1-01		5ml	some	10X	3.551		-ve	
HS1806073-01		some			0.2037		-ve	
HS1806089 3-01					0.1198		-ve	
HS1806089 3-01MS					10.16			
HS1806089 3-01MSD			↓		10.20			
HS1806 1031-01		5ml	some	10X	1.640		-ve	
HS1806 1189-01		some	some		0.1590		-ve	
CCV		some	some		10.2			
CCB		↓	↓		0.02239			

Batch ID:	Reported By	Reviewed By:
3186791 / 3186811	MD	MM

HS1806066l

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
1	U	NPOC	CCV	306.060.106	05-08-2018_	NPOC:24.84mg/L	Completed	6/14/2018 6:21:19 PM	1
2	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.07429mg/	Completed	6/14/2018 6:36:37 PM	2
3	U	NPOC	WLCS1-180614	297.020.5605	05-08-2018_	NPOC:10.04mg/L	Completed	6/14/2018 6:49:57 PM	3
4	U	NPOC	WLCS2-180614	Untitled	05-08-2018_	NPOC:9.965mg/L	Completed	6/14/2018 7:03:19 PM	4
5	U	NPOC	WLCS3-180614	Untitled	05-08-2018_	NPOC:9.962mg/L	Completed	6/14/2018 7:16:36 PM	5
6	U	NPOC	WLCS4-180614	Untitled	05-08-2018_	NPOC:10.02mg/L	Completed	6/14/2018 7:29:49 PM	6
7	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.23mg/L	Completed	6/14/2018 7:43:29 PM	7
8	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.05811mg/	Completed	6/14/2018 7:58:47 PM	8
9	U	NPOC	WBLKW1-180614	TOC_W 5310	05-08-2018_	NPOC:0.1069mg/L	Completed	6/14/2018 8:14:00 PM	9
10	U	NPOC	WLCSW1-180614	Untitled	05-08-2018_	NPOC:10.09mg/L	Completed	6/14/2018 8:27:08 PM	10
11	U	NPOC	WLCSDW1-180614	Untitled	05-08-2018_	NPOC:10.05mg/L	Completed	6/14/2018 8:40:21 PM	11
12	U	NPOC	HS18060522-01	1/1	05-08-2018_	NPOC:0.1385mg/L	Completed	6/14/2018 8:53:34 PM	12
13	U	NPOC	HS18060523-01	1/2	05-08-2018_	NPOC:0.09843mg/	Completed	6/14/2018 9:08:52 PM	13
14	U	NPOC	HS18060524-01	1/2	05-08-2018_	NPOC:0.1094mg/L	Completed	6/14/2018 9:22:00 PM	14
15	U	NPOC	HS18060479-01	1/2	05-08-2018_	NPOC:17.36mg/L	Completed	6/14/2018 9:37:24 PM	15
16	U	NPOC	HS18060479-01MS	1/2	05-08-2018_	NPOC:26.39mg/L	Completed	6/14/2018 9:50:32 PM	16
17	U	NPOC	HS18060478-01	1/2	05-08-2018_	NPOC:23.07mg/L	Completed	6/14/2018 10:03:45 PM	17
18	U	NPOC	HS18060525-01	1/2	05-08-2018_	NPOC:9.941mg/L	Completed	6/14/2018 10:16:58 PM	18
19	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.33mg/L	Completed	6/14/2018 10:30:11 PM	19
20	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1195mg/L	Completed	6/14/2018 10:45:28 PM	20
21	U	NPOC	HS18060598-01	1/2	05-08-2018_	NPOC:15.84mg/L	Completed	6/14/2018 10:58:36 PM	21
22	U	NPOC	HS18060570-01DF10	1/2	05-08-2018_	NPOC:1.910mg/L	Completed	6/14/2018 11:11:50 PM	22
23	U	NPOC	HS18060575-01DF10	1/2	05-08-2018_	NPOC:1.893mg/L	Completed	6/14/2018 11:27:08 PM	23
24	U	NPOC	HS18060578-01DF200	1/2	05-08-2018_	NPOC:6.275mg/L	Completed	6/14/2018 11:40:16 PM	24
25	U	NPOC	HS18060578-01DF400	1/2	05-08-2018_	NPOC:3.258mg/L	Completed	6/14/2018 11:53:28 PM	25
26	U	NPOC	FLUSH	Untitled	05-08-2018_	NPOC:0.08834mg/	Completed	6/15/2018 12:08:46 AM	26
27	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.12mg/L	Completed	6/15/2018 12:22:06 AM	27
28	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1132mg/L	Completed	6/15/2018 12:37:25 AM	28
29	U	NPOC	WBLKW2-180614	TOC_W 5310	05-08-2018_	NPOC:0.1081mg/L	Completed	6/15/2018 12:50:35 AM	29
30	U	NPOC	WLCSW2-180614	Untitled	05-08-2018_	NPOC:10.02mg/L	Completed	6/15/2018 1:04:24 AM	30
31	U	NPOC	WLCSDW2-180614	Untitled	05-08-2018_	NPOC:10.04mg/L	Completed	6/15/2018 1:17:37 AM	31
32	U	NPOC	HS18060588-01	1/2	05-08-2018_	NPOC:4.961mg/L	Completed	6/15/2018 1:30:51 AM	32
33	U	NPOC	HS18060588-01MS	1/2	05-08-2018_	NPOC:14.68mg/L	Completed	6/15/2018 1:44:05 AM	33
34	U	NPOC	HS18060589-01	1/2	05-08-2018_	NPOC:18.99mg/L	Completed	6/15/2018 1:57:19 AM	34
35	U	NPOC	HS18060622-01DF10	1/1	05-08-2018_	NPOC:7.192mg/L	Completed	6/15/2018 2:12:39 AM	35
36	U	NPOC	HS18060622-02DF10	1/1	05-08-2018_	NPOC:6.498mg/L	Completed	6/15/2018 2:27:52 AM	36
37	U	NPOC	HS18060622-03DF10	1/1	05-08-2018_	NPOC:15.84mg/L	Completed	6/15/2018 2:41:01 AM	37
38	U	NPOC	HS18060622-04DF10	1/1	05-08-2018_	NPOC:12.46mg/L	Completed	6/15/2018 2:56:20 AM	38
39	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.48mg/L	Completed	6/15/2018 3:09:32 AM	39
40	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1205mg/L	Completed	6/15/2018 3:24:51 AM	40
41	U	NPOC	HS18060622-05DF5	1/1	05-08-2018_	NPOC:33.92mg/L	Completed	6/15/2018 3:38:18 AM	41
42	U	NPOC	HS18060622-06DF10	1/1	05-08-2018_	NPOC:4.684mg/L	Completed	6/15/2018 3:53:37 AM	42
43	U	NPOC	HS18060622-07DF20	1/1	05-08-2018_	NPOC:24.34mg/L	Completed	6/15/2018 4:06:46 AM	43
44	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.20mg/L	Completed	6/15/2018 4:20:04 AM	44
45	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1530mg/L	Completed	6/15/2018 4:35:23 AM	45
46	U	NPOC	WBLKW3-180614	TOC_W	05-08-2018_	NPOC:0.1124mg/L	Completed	6/15/2018 4:50:37 AM	46
47	U	NPOC	WLCSW3-180614	Untitled	05-08-2018_	NPOC:9.975mg/L	Completed	6/15/2018 5:03:59 AM	47
48	U	NPOC	WLCSDW3-180614	Untitled	05-08-2018_	NPOC:10.16mg/L	Completed	6/15/2018 5:17:18 AM	48
49	U	NPOC	HS18060409-01	1/2	05-08-2018_	NPOC:14.30mg/L	Completed	6/15/2018 5:30:33 AM	49
50	U	NPOC	HS18060409-01MS	1/2	05-08-2018_	NPOC:24.55mg/L	Completed	6/15/2018 5:43:48 AM	50
51	U	NPOC	HS18060550-01	1/2	05-08-2018_	NPOC:7.678mg/L	Completed	6/15/2018 5:57:03 AM	51

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
52	U	NPOC	HS18060660-01	1/2	05-08-2018_	NPOC:14.91mg/L	Completed	6/15/2018 6:10:18 AM	52
53	U	NPOC	HS18060661-01	1/2	05-08-2018_	NPOC:169.6mg/L	Completed	6/15/2018 6:23:50 AM	53
54	U	NPOC	HS18060661-01DF5	1/2	05-08-2018_	NPOC:33.01mg/L	Completed	6/15/2018 6:37:05 AM	54
55	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.53mg/L	Completed	6/15/2018 6:50:26 AM	55
56	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.2830mg/L	Completed	6/15/2018 7:05:51 AM	56
57	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:24.71mg/L	Completed	6/15/2018 1:34:47 PM	1
58	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1355mg/L	Completed	6/15/2018 1:50:05 PM	2
59	U	NPOC	HS18060570-01	1/2	05-08-2018_	NPOC:19.15mg/L	Completed	6/15/2018 2:03:13 PM	3
60	U	NPOC	HS18060575-01	1/2	05-08-2018_	NPOC:18.54mg/L	Completed	6/15/2018 2:18:41 PM	4
61	U	NPOC	HS18060622-03DF10	1/1	05-08-2018_	NPOC:16.12mg/L	Completed	6/15/2018 2:31:49 PM	5
62	U	NPOC	HS18060622-05DF5	1/1	05-08-2018_	NPOC:34.45mg/L	Completed	6/15/2018 2:45:02 PM	6
63	U	NPOC	HS18060622-07DF20	1/1	05-08-2018_	NPOC:25.05mg/L	Completed	6/15/2018 2:58:15 PM	7
64	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.46mg/L	Completed	6/15/2018 3:11:29 PM	8
65	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.2062mg/L	Completed	6/15/2018 3:26:47 PM	9

Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

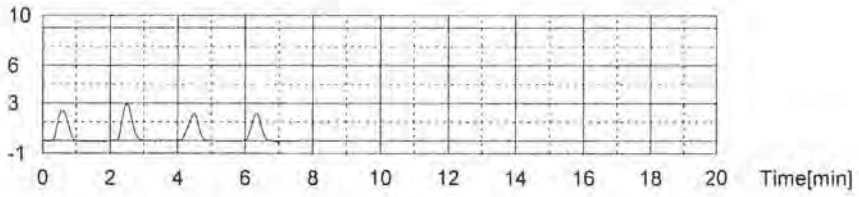
Sample Name:	CAL
Sample ID:	306.067:504-509
Cal. Curve:	05-08-2018_W.2018_05_08_16_59_08.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	5.281	50uL	1	*******		5/8/2018 5:07:52 PM
2	5.767	50uL	1	*******	E	5/8/2018 5:09:57 PM
3	4.377	50uL	1	*******		5/8/2018 5:12:02 PM
4	4.321	50uL	1	*******		5/8/2018 5:14:07 PM

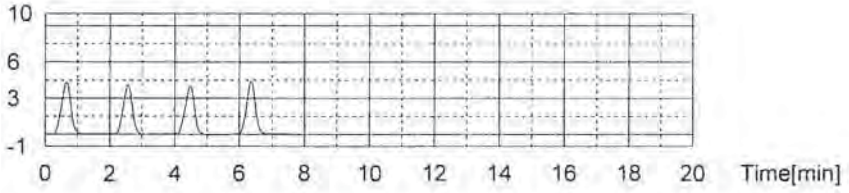
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 4.660



Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	8.552	50uL	1	*******	E	5/8/2018 5:23:05 PM
2	7.956	50uL	1	*******		5/8/2018 5:25:10 PM
3	7.917	50uL	1	*******		5/8/2018 5:27:15 PM
4	7.981	50uL	1	*******		5/8/2018 5:29:20 PM

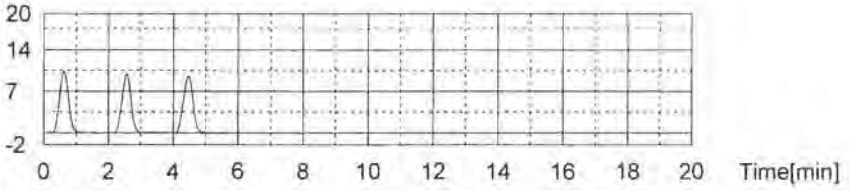
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 7.951



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	19.68	50uL	1	*******		5/8/2018 5:38:18 PM
2	19.11	50uL	1	*******		5/8/2018 5:40:23 PM
3	19.32	50uL	1	*******		5/8/2018 5:42:28 PM

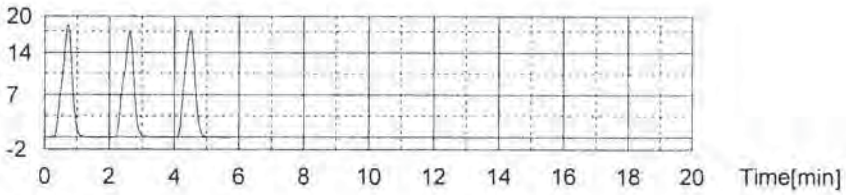
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 19.37



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	38.73	50uL	1	*******		5/8/2018 5:51:31 PM
2	37.61	50uL	1	*******		5/8/2018 5:53:36 PM
3	38.22	50uL	1	*******		5/8/2018 5:55:41 PM

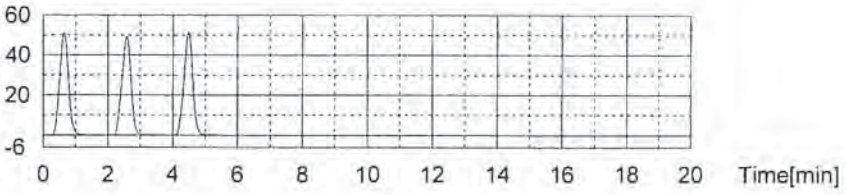
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 38.19



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	97.00	50uL	1	*******		5/8/2018 6:04:44 PM
2	96.71	50uL	1	*******		5/8/2018 6:06:49 PM
3	96.75	50uL	1	*******		5/8/2018 6:08:54 PM

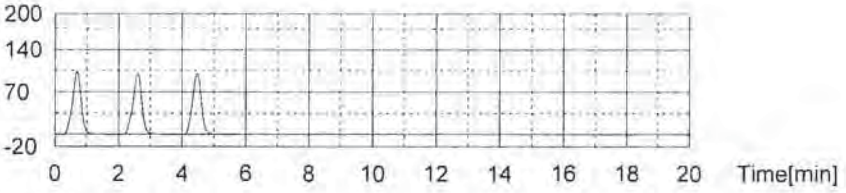
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 96.82



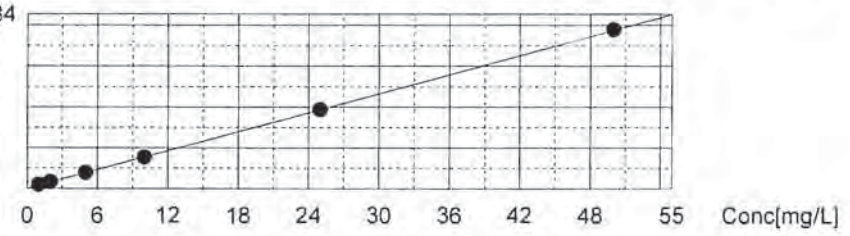
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	195.4	50uL	1	*******		5/8/2018 6:17:57 PM
2	193.7	50uL	1	*******		5/8/2018 6:20:02 PM
3	194.1	50uL	1	*******		5/8/2018 6:22:07 PM

Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 194.4



Slope: 3.881
Intercept 0.07512
r^2 1.0000
r 1.0000
Zero Shift No



Sample

Sample Name: ICV
Sample ID: 306.067.601
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

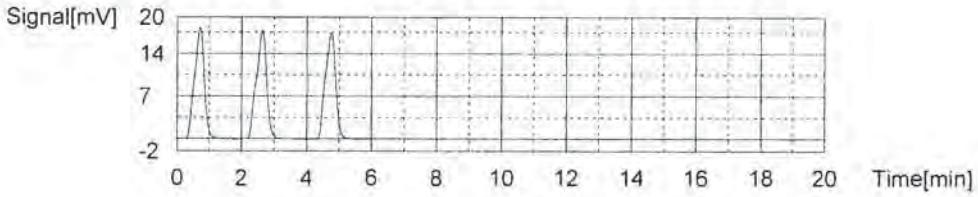
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.923mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.63	9.934mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:31:10 PM
2	38.67	9.944mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:33:30 PM
3	38.46	9.890mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:35:35 PM

Mean Area 38.59
Mean Conc. 9.923mg/L



Sample

Sample Name: ICB
Sample ID: Untitled
Origin; 05-08-2018_W.cal
Status Completed
Chk. Result

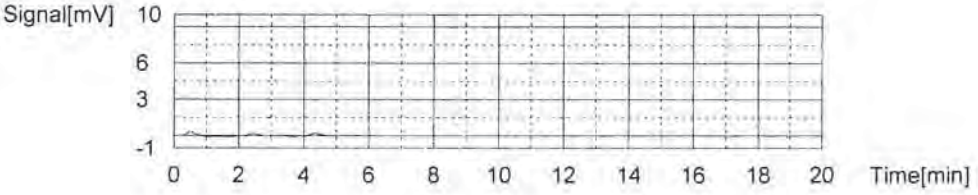
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09481mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4983	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:44:38 PM
2	0.3330	0.06645mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:46:43 PM
3	0.4980	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:48:48 PM

Mean Area 0.4431
Mean Conc. 0.09481mg/L



Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Sample

Sample Name:	CCV
Sample ID:	Untitled
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

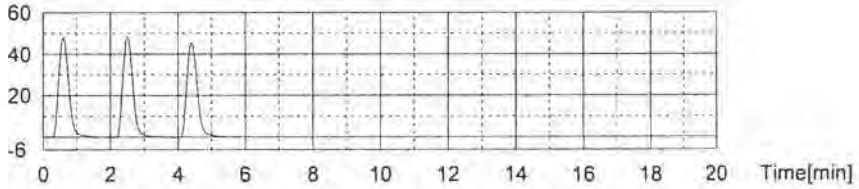
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.20mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	98.86	25.45mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:15:50 AM
2	97.54	25.11mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:17:55 AM
3	97.27	25.04mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:20:04 AM

Mean Area 97.89
Mean Conc. 25.20mg/L



Sample

Sample Name:	CCB
Sample ID:	Untitled
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

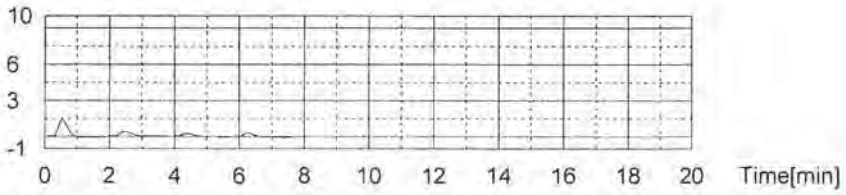
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1530mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.713	0.6797mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:29:08 AM
2	0.9361	0.2218mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:31:13 AM
3	0.4731	0.1025mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:33:18 AM
4	0.5980	0.1347mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:35:23 AM

Mean Area 0.6691
Mean Conc. 0.1530mg/L



Sample

Sample Name: WBLKW3-180614
Sample ID: TOC_W
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

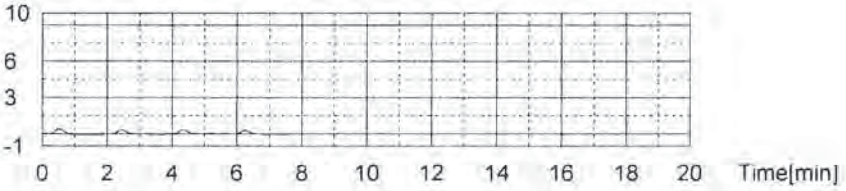
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1124mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.7647	0.1777mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:44:22 AM
2	0.5587	0.1246mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:46:27 AM
3	0.4980	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:48:32 AM
4	0.4776	0.1037mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:50:37 AM

Mean Area 0.5114
Mean Conc. 0.1124mg/L



Sample

Sample Name: WLCSW3-180614
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

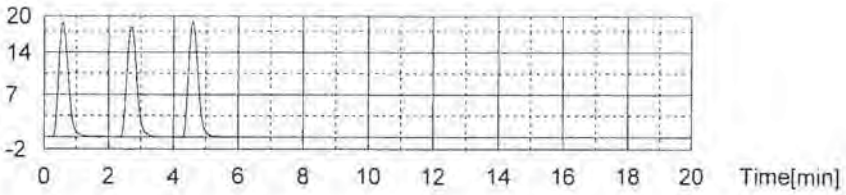
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.975mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	39.19	10.08mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 4:59:49 AM
2	38.49	9.898mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:01:54 AM
3	38.68	9.947mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:03:59 AM

Mean Area 38.79
Mean Conc. 9.975mg/L



Sample

Sample Name: WLCSDW3-180614
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

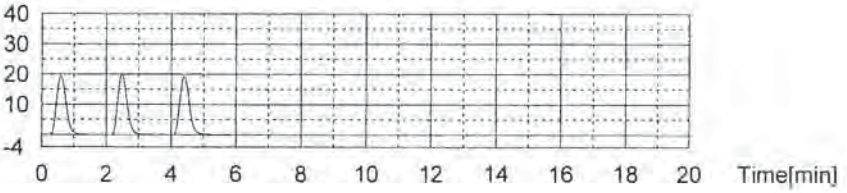
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.16mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	39.69	10.21mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:13:04 AM
2	39.61	10.19mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:15:09 AM
3	39.21	10.08mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:17:18 AM

Mean Area 39.50
Mean Conc. 10.16mg/L



Sample

Sample Name: HS18060409-01
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

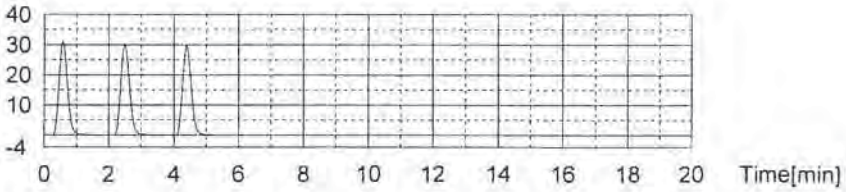
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:14.30mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	55.75	14.35mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:26:23 AM
2	55.86	14.37mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:28:28 AM
3	55.07	14.17mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:30:33 AM

Mean Area 55.56
Mean Conc. 14.30mg/L



Sample

Sample Name: HS18060409-01MS
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

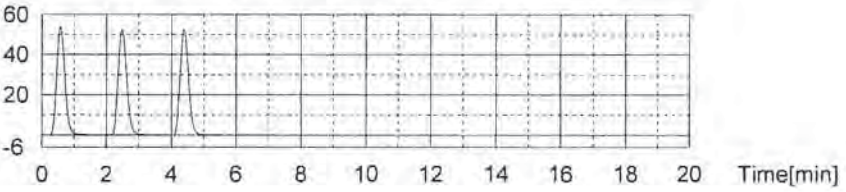
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.55mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	94.41	24.31mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:39:38 AM
2	96.29	24.79mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:41:43 AM
3	95.34	24.55mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 5:43:48 AM

Mean Area 95.35
Mean Conc. 24.55mg/L



Sample

Sample Name: HS18060661-01
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

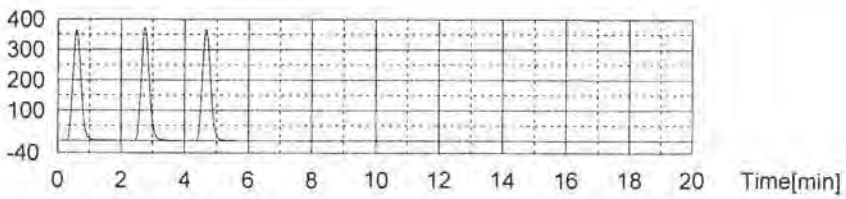
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:169.6mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	657.1	169.3mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:19:39 AM
2	659.9	170.0mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:21:45 AM
3	657.4	169.4mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:23:50 AM

Mean Area 658.1
Mean Conc. 169.6mg/L



Sample

Sample Name: HS18060661-01DF5
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

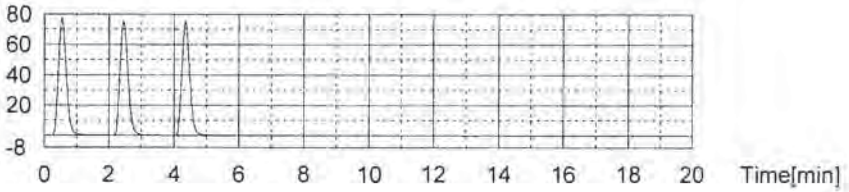
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:33.01mg/L

1, Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	128.8	33.17mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:32:55 AM
2	129.6	33.37mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:35:00 AM
3	126.2	32.50mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:37:05 AM

Mean Area 128.2
Mean Conc. 33.01mg/L



Sample

Sample Name: CCV
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

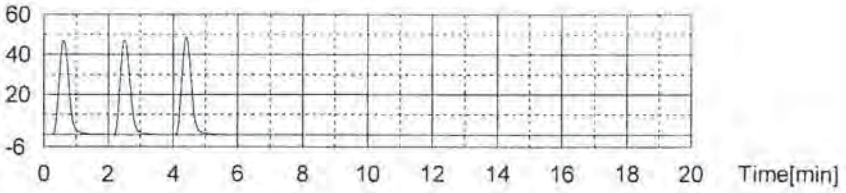
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.53mg/L

1, Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	98.08	25.25mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:46:10 AM
2	100.2	25.80mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:48:15 AM
3	99.18	25.54mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:50:26 AM

Mean Area 99.15
Mean Conc. 25.53mg/L



Sample

Sample Name: CCB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

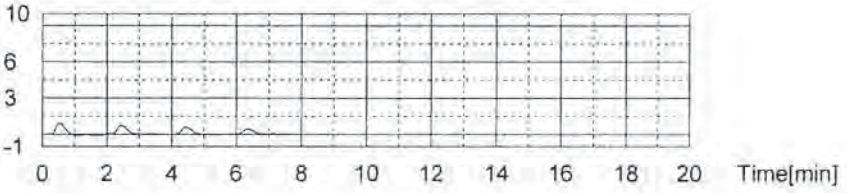
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2830mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.779	0.4390mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 6:59:31 AM
2	1.334	0.3244mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 7:01:41 AM
3	1.276	0.3094mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 7:03:46 AM
4	0.9104	0.2152mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/15/2018 7:05:51 AM

Mean Area 1.173
Mean Conc. 0.2830mg/L



Sub Contract Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
WEEKLY SAMPLES
ALS WO# HS18060661

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1816951; 1816952; 1816954

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2106 (217071)

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: The following samples were analyzed and reported at various dilutions. 1816952001 – 10; 1816952004/1816954001/04 – 100; 1816954002/05 – 1,000. Samples 1816951001 and 1816952006 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 606014) was less than 1/2 the CRDL. The recovery for the LCS (606015) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1816951001 (Client ID: LH18/24-SP650_061318). The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.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. Manual Integrations was performed for datafile 19JUNP17. The initial CCV (606051) analyzed on 06/20/18 for sequence 19JUN18Q.s was a corrupted file and could not be used. The LODV (1.0µg/L - 606052) that was analyzed next passes the method criteria of +/- 15%.

Thomas Bosch June 21, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 22, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1816951**
Project ID: HS18060661 061318
Purchase Order: HS18060661
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_061318	1816951001	06/13/18	06/15/18	

ANALYTICAL REPORT

Workorder: 34-1816951
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_061318**	Sampling Site: NA	Collected: 06/13/2018
Lab ID: 1816951001	Media: 125 mL Nalgene	Received: 06/15/2018
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/2106 (HBN: 217071)	**Percent Solid:** NA
	Analyzed: 06/19/2018 18:06	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Comments

Workorder: 1816951

Sample 1816951001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 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 06/21/2018 11:46	/S/ Stephen Brose 06/22/2018 14:30

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: 34-1816951
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1816951

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2106 (HBN: 217071)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 606014
Analyzed: 06/19/2018 17:08
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 606015
Analyzed: 06/19/2018 17:22
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.17	5.00	103	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1816951001	**MS:**	606016				**MSD:**	606017			
Analyzed:	06/19/2018 18:06	**Analyzed:**	06/19/2018 18:20				**Analyzed:**	06/19/2018 18:35			
Dilution:	5	**Dilution:**	5				**Dilution:**	5			
Units:	ug/L	**Units:**	ug/L				**Units:**	ug/L			

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	27.3	25	109	78.8	123.8	28.8	115	5.37	0.0	20.0

Continuing Calibration Verification

CCV:	606011			**CCV:**	606018			**CCV:**	606020		
Analyzed:	06/19/2018 16:25			**Analyzed:**	06/19/2018 20:28			**Analyzed:**	06/19/2018 23:18		
Units:	ug/L			**Units:**	ug/L			**Units:**	ug/L		
Criteria:	± 15%			**Criteria:**	± 15%			**Criteria:**	± 15%		

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	23.9	25.0	95.6	22.8	25.0	91.2	22.9	25.0	91.5

CCV: 606053
Analyzed: 06/20/2018 08:58
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.
Perchlorate	25.3	25.0	101

Interference Check Sample

ICSA: 606013
Analyzed: 06/19/2018 16:54
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.976	1.00	97.6

Quality Control Sample Batch Report

Analysis Information

Workorder: 1816951

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2106 (HBN: 217071)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

LODV: 606012 **Analyzed:** 06/19/2018 16:39 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 606019 **Analyzed:** 06/19/2018 20:42 **Units:** ug/L **Criteria:** ± 50%			**LODV:** 606021 **Analyzed:** 06/19/2018 23:32 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.06	1.00	106	0.955	1.00	95.5	1.00	1.00	100

LODV: 606052 **Analyzed:** 06/20/2018 08:25 **Units:** ug/L **Criteria:** ± 50%				**LODV:** 606054 **Analyzed:** 06/20/2018 09:12 **Units:** ug/L **Criteria:** ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	1.03	1.00	103	1.00	1.00	100

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

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/21/2018 11:47	06/22/2018 14:30

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

18698
~~15085~~ / 2

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

1816951

W

Subcontract Chain of Custody

COC ID: 9289

1816951

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:	HS18060661
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060661-01**	**LH18/24-SP650_061318**	**Water**	**13 Jun 2018 14:00**
	SUB_Perch-6850			26 Jun 2018

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:	6/14/18 18:00
Received By:	[illegible] Warden/ALS	Date/Time:	6/15/18 0925
Cooler ID(s):		Temperature(s):	6°C

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18060661	Split:	Workorder ID: 1816951	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	Containers ID(s)	Containers Count	EPA 6850, DoD QSM
1	06/13/2018 14:00	LH18/24-SP650_061318	1816951001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

40 of 158

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	06/15/2018 09:25	ALS Sample Receiving	Sample Login
Ruth Warath 6/18/18 1300		4B	storage
R.33.1	6.19.18/10:35	T.Bosch	6850

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: Houston

Project/Task/Site: 181695

Date/Time of Receipt: 6/15/18 0925

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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 - 8636	6 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Julie Worcester (Signature) Julie Worcester (Printed Name) 6/15/18 (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: _____

CRIR.doc

Revised 01/01/2018



Part # 156469-494 RIT2 EXP 03/19

546C2/93DF/53C1

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

SHIP DATE: 14JUN18
ACTWGT: 17.80 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060669/661 RJ

FedEx Express

J17101610201101uv

FRI - 15 JUN 3:00P
STANDARD OVERNIGHT

TRK# 0201 4380 9530 0735

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2106 Created: 6/19/2018 15:43 Instrument: LCMS04 HBN: 217071

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

Workorder: 1816951 [ENV_LVL4]
Workorder: 1816952 [ENV_LVL4]
Workorder: 1816954 [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	606011	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018
2	606012	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
3	606013	ICS for HBN 217071 [ELMS/2106]				ICS	3		E6850..D3Q	5311		6/28/2018	6/19/2018
4	606014	LMB for HBN 217071 [ELMS/2106]				LMB	3		E6850Q413Q	5311		6/28/2018	6/19/2018
5	606015	LCS for HBN 217071 [ELMS/2106]				LCS	3		E6850Q413Q	5311		6/28/2018	6/19/2018
6	1816951001	LH18/24-SP650_061318				SAMPLE	3	1816951001-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
7	606016	LH18/24-SP650...(1816951001MS)				MS	3		E6850Q413Q	5311		6/28/2018	6/19/2018
8	606017	LH18/24-SP65...(1816951001MSD)				MSD	3		E6850Q413Q	5311		6/28/2018	6/19/2018
9	1816952001	102_061318				SAMPLE	3	1816952001-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
10	1816952002	MW12_061318				SAMPLE	3	1816952002-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
11	1816952003	MW12_061318_a				SAMPLE	3	1816952003-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
12	1816952004	18CPTMW14_061318				SAMPLE	3	1816952004-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
13	1816952005	18CPTMW24_061318				SAMPLE	3	1816952005-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
14	1816952006	C08_061318				SAMPLE	3	1816952006-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/20/2018
15	1816952007	MW16_061318				SAMPLE	3	1816952007-A	E6850Q41.3	5480	7/11/2018	6/28/2018	6/19/2018
16	1816954001	129_061418				SAMPLE	3	1816954001-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
17	1816954002	120_061418				SAMPLE	3	1816954002-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
18	606018	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018
19	606019	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
20	1816954003	123_061418				SAMPLE	3	1816954003-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
21	1816954004	109_061418				SAMPLE	3	1816954004-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
22	1816954005	MW3_061418				SAMPLE	3	1816954005-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
23	1816954006	18cptMW07_061418				SAMPLE	3	1816954006-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
24	1816954007	MW19_061418				SAMPLE	3	1816954007-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
25	1816954008	17WW08_061418				SAMPLE	3	1816954008-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
26	1816954009	18cptMW26SW_061418				SAMPLE	3	1816954009-A	E6850Q41.3	5480	7/12/2018	6/28/2018	6/19/2018
27	606020	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/19/2018

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
28	606021	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/19/2018
29	606052	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/20/2018
30	606053	CCV for HBN 217071 [ELMS/2106]				CCV	3		E685041C3Q	5311		6/28/2018	6/20/2018
31	606054	LODV for HBN 217071 [ELMS/2106				LODV	3		E6850..D3Q	5311		6/28/2018	6/20/2018

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816951 (001); 1816952 (001-07); 1816954 (001-09)
ELMS Batch/HBN ID: 2106 (217071)
Prep Date: 06/19/2018 Analysis Date: 06/19,20/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18P.s & 19JUN18Q.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 606015; Target = 5.0µg/L. ASTM type II water was used for LMB 606014.

MS/MSD: MS/MSD was performed on sample 1816951001 (Client ID: LH18/24-SP650_061318). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816952001 – 10; 1816952004/1816954001/04 – 100; 1816954002/05 – 1,000. Samples 1816951001 and 1816952006 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported from 1:5 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters. The initial CCV (606051) analyzed on 06/20/18 for sequence 19JUN18Q.s was a corrupted file and could not be used. The LODV (1.0µg/L - 606052) that was analyzed next passes the method criteria of +/- 15%
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUNP17.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217071-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
~~36733~~	~~CLO4 STOCK~~	~~6850 Stock AccStd 1,000ug/mL~~	~~CLO4 STOCK~~	~~0.1 mL~~	~~10/04/2018~~

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: **41830**
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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~~

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

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

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 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/INO-001
Rev. 5/16

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\19JUN18P\19JUN18P.B

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

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

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	606011 CCV@25	Vial 71	1	Control	1	8.37145e5	9.784	23.90156
*	606012 LODV@1.	Vial 72	1	Control	2	3.71575e4	9.903	1.05738
*	606013 ICS@1.0	Vial 73	1	Control	3	3.51228e4	9.699	9.76105e-1
*	606014 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	606015 QC@5.0	Vial 75	1	Control	5	2.18182e5	9.902	5.16784
*	1816951001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	1816951001 5X	Vial 76	1	Sample	8	0.00000	0.000	0.00000
*	606016 169591S	Vial 77	1	Sample	9	1.47719e5	10.202	27.25518
*	606017 169591D	Vial 78	1	Sample	10	1.58126e5	10.204	28.75952
*	1816952001 10	Vial 79	1	Sample	11	5.90108e5	9.875	174.89225
*	1816952002	Vial 80	1	Sample	12	0.00000	0.000	0.00000
*	1816952003	Vial 81	1	Sample	13	0.00000	0.000	0.00000
*	1816952004 100	Vial 82	1	Sample	14	5.17018e5	9.843	1563.63695
*	1816952005	Vial 83	1	Sample	15	4.00232e5	9.429	22.69571
*	1816952006	Vial 84	1	Sample	16	0.00000	0.000	0.00000
*	1816952007	Vial 85	1	Sample	17	1.04823e4	9.566	4.95612e-1
*	606018 CCV@25	Vial 71	1	Control	18	7.15730e5	9.747	22.80266
*	606019 LODV@1.	Vial 72	1	Control	19	3.08101e4	9.882	9.54839e-1
*	1816954001 100	Vial 86	1	Sample	20	1.35428e6	9.930	3921.39429
*	1816954002 1K	Vial 87	1	Sample	21	8.31551e5	9.937	2.59302e4
*	1816954002 10K	Vial 88	1	Sample	22	7.72936e4	9.970	2.48778e4
*	1816954003	Vial 89	1	Sample	23	1.95140e6	9.724	58.53650
*	1816954004 100	Vial 90	1	Sample	24	1.54448e6	9.931	4334.09081
*	1816954005 1K	Vial 91	1	Sample	25	5.08043e5	9.931	1.59686e4
*	1816954006	Vial 92	1	Sample	26	5.43937e4	9.617	2.11730
*	1816954007	Vial 93	1	Sample	27	0.00000	0.000	0.00000
*	1816954008	Vial 94	1	Sample	28	0.00000	0.000	0.00000
*	1816954009	Vial 95	1	Sample	29	0.00000	0.000	0.00000
*	606020 CCV@25	Vial 71	1	Control	30	7.31446e5	9.792	22.86368
	606021 LODV@1.	Vial 72	1	Control	31	3.29343e4	9.930	1.00088

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	606011 CCV@25	Vial 71	1	Control	1	1.59414e5	9.802	5.00000
*	606012 LODV@1.	Vial 72	1	Control	2	1.67132e5	9.930	5.00000
*	606013 ICS@1.0	Vial 73	1	Control	3	1.70642e5	9.715	5.00000
*	606014 LMB	Vial 74	1	Control	4	1.92525e5	9.823	5.00000
*	606015 QC@5.0	Vial 75	1	Control	5	2.03982e5	9.921	5.00000
*	1816951001	Vial 76	1	Sample	6	7.69295e4 ISTD LOW	10.385	5.00000
*	1816951001 5X	Vial 76	1	Sample	8	1.32652e5	10.232	25.00000
*	606016 169591S	Vial 77	1	Sample	9	1.30850e5	10.228	25.00000
*	606017 169591D	Vial 78	1	Sample	10	1.32649e5	10.224	25.00000
*	1816952001 10	Vial 79	1	Sample	11	1.56905e5	9.900	50.00000
*	1816952002	Vial 80	1	Sample	12	1.05560e5	9.620	5.00000
*	1816952003	Vial 81	1	Sample	13	9.72180e4	9.622	5.00000
*	1816952004 100	Vial 82	1	Sample	14	1.54717e5	9.862	500.00000
*	1816952005	Vial 83	1	Sample	15	8.05875e4	9.455	5.00000
*	1816952006	Vial 84	1	Sample	16	6.98825e4 ISTD LOW	9.473	5.00000
*	1816952007	Vial 85	1	Sample	17	9.66182e4	9.580	5.00000
*	606018 CCV@258	Vial 71	1	Control	18	1.43387e5	9.768	5.00000
*	606019 LODV@1.	Vial 72	1	Control	19	1.52895e5	9.909	5.00000
*	1816954001 100	Vial 86	1	Sample	20	1.49487e5	9.953	500.00000
*	1816954002 1K	Vial 87	1	Sample	21	1.44976e5	9.953	5000.00000
*	1816954002 10K	Vial 88	1	Sample	22	1.50287e5	9.986	5.00000e4
*	1816954003	Vial 89	1	Sample	23	1.35838e5	9.741	5.00000
*	1816954004 100	Vial 90	1	Sample	24	1.52226e5	9.950	500.00000
*	1816954005 1K	Vial 91	1	Sample	25	1.48704e5	9.951	5000.00000
*	1816954006	Vial 92	1	Sample	26	1.24077e5	9.633	5.00000
*	1816954007	Vial 93	1	Sample	27	1.09592e5	9.539	5.00000
*	1816954008	Vial 94	1	Sample	28	1.04383e5	9.544	5.00000

Batch Report: C:\HPCHEM\1\DATA\19JUN18P\19JUN18P.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	1816954009	Vial 95	1	Sample	29	1.00661e5	9.631	5.00000
*	606020 CCV@25	Vial 71	1	Control	30	1.46114e5	9.812	5.00000
	606021 LODV@1.	Vial 72	1	Control	31	1.56193e5	9.945	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	606011 CCV@25	Vial 71	1	Control	1	2.67584e5	9.801	22.91418
*	606012 LODV@1.	Vial 72	1	Control	2	1.41265e4	9.938	1.07331
*	606013 ICS@1.0	Vial 73	1	Control	3	1.38855e4	9.711	1.02679
*	606014 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	606015 QC@5.0	Vial 75	1	Control	5	7.31133e4	9.925	5.05989
*	1816951001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	1816951001 5X	Vial 76	1	Sample	8	0.00000	0.000	0.00000
*	606016 169591S	Vial 77	1	Sample	9	5.16254e4	10.224	27.88657
*	606017 169591D	Vial 78	1	Sample	10	5.36212e4	10.217	28.57961
*	1816952001 10	Vial 79	1	Sample	11	1.89839e5	9.896	168.08041
*	1816952002	Vial 80	1	Sample	12	0.00000	0.000	0.00000
*	1816952003	Vial 81	1	Sample	13	0.00000	0.000	0.00000
*	1816952004 100	Vial 82	1	Sample	14	1.70266e5	9.857	1534.83198
*	1816952005	Vial 83	1	Sample	15	1.65226e5	9.444	27.59936
*	1816952006	Vial 84	1	Sample	16	0.00000	0.000	0.00000
*	1816952007	Vial 85	1	Sample	17	5048.95410	9.576	5.96260e-1
*	606018 CCV@258	Vial 71	1	Control	18	2.30575e5	9.761	22.01042
*	606019 LODV@1.	Vial 72	1	Control	19	1.28038e4	9.911	1.06178
*	1816954001 100	Vial 86	1	Sample	20	4.37658e5	9.946	3817.20853
*	1816954002 1K	Vial 87	1	Sample	21	2.72271e5	9.953	2.54450e4
*	1816954002 10K	Vial 88	1	Sample	22	2.86589e4	9.984	2.63176e4
*	1816954003	Vial 89	1	Sample	23	6.23129e5	9.739	56.62311
*	1816954004 100	Vial 90	1	Sample	24	4.95655e5	9.948	4197.04286
*	1816954005 1K	Vial 91	1	Sample	25	1.62678e5	9.947	1.52608e4
*	1816954006	Vial 92	1	Sample	26	1.95449e4	9.633	2.14669
*	1816954007	Vial 93	1	Sample	27	0.00000	0.000	0.00000
*	1816954008	Vial 94	1	Sample	28	0.00000	0.000	0.00000
*	1816954009	Vial 95	1	Sample	29	0.00000	0.000	0.00000
*	606020 CCV@25	Vial 71	1	Control	30	2.35064e5	9.807	22.01950
	606021 LODV@1.	Vial 72	1	Control	31	1.20472e4	9.944	9.64146e-1

*** End of Report ***

Batch Report: C:\HPCHEM\1\DATA\19JUN18Q\19JUN18Q.B

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

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

#	*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
	*	606052	LODV@1.	Vial 72	1	Control	2	3.87227e4	9.891	1.02897
	*	1816952006	5X	Vial 84	1	Sample	3	0.00000	0.000	0.00000
	*	606053	CCV@25	Vial 71	1	Control	4	1.00229e6	9.899	25.30312
	*	606054	LODV@1.	Vial 72	1	Control	5	3.71843e4	9.895	1.00434

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
	*	606052	LODV@1.	Vial 72	1	Control	2	1.78810e5	9.907	5.00000
	*	1816952006	5X	Vial 84	1	Sample	3	1.69285e5	9.904	25.00000
	*	606053	CCV@25	Vial 71	1	Control	4	1.79448e5	9.917	5.00000
	*	606054	LODV@1.	Vial 72	1	Control	5	1.75765e5	9.914	5.00000

#	*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
	*	606052	LODV@1.	Vial 72	1	Control	2	1.34338e4	9.908	9.34583e-1
	*	1816952006	5X	Vial 84	1	Sample	3	0.00000	0.000	0.00000
	*	606053	CCV@25	Vial 71	1	Control	4	3.16463e5	9.916	23.99703
	*	606054	LODV@1.	Vial 72	1	Control	5	1.41475e4	9.902	1.01378

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18P.S

Sequence Table:

Method and Injection Info Part:

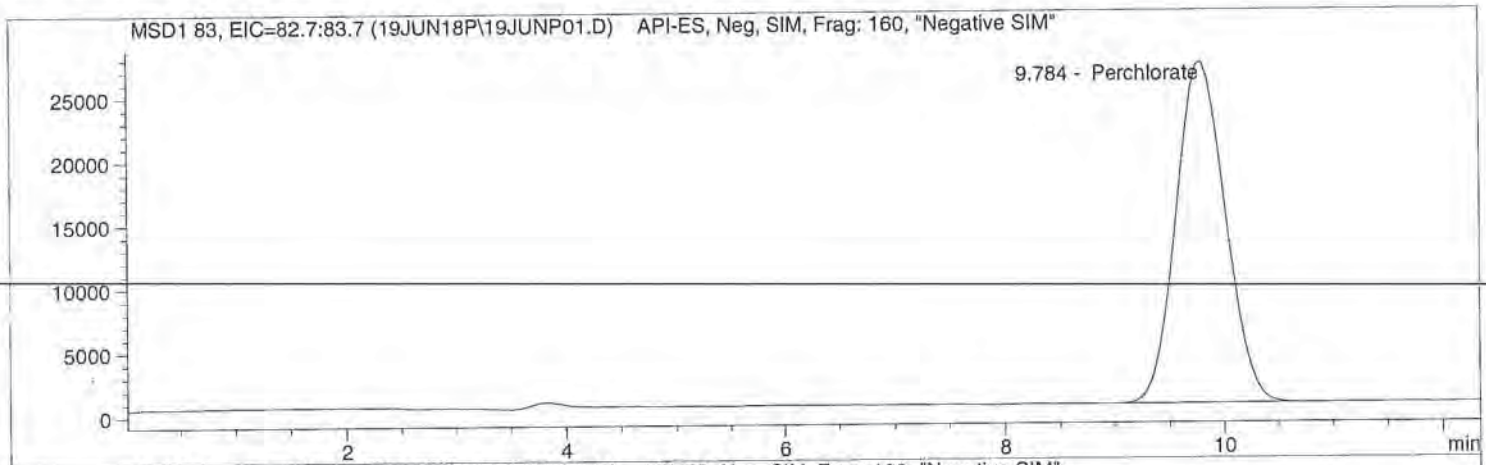
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	606011 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	606012 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	606013 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	606014 LMB	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	606015 QC@5.0	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	1816951001	CLO4-DOD	1	Sample		
7	Vial 77	606016 169591S	CLO4-DOD	1	Sample		
8	Vial 76	1816951001 5X	CLO4-DOD	1	Sample		
9	Vial 77	606016 169591S	CLO4-DOD	1	Sample		
10	Vial 78	606017 169591D	CLO4-DOD	1	Sample		
11	Vial 79	1816952001 10	CLO4-DOD	1	Sample		
12	Vial 80	1816952002	CLO4-DOD	1	Sample		
13	Vial 81	1816952003	CLO4-DOD	1	Sample		
14	Vial 82	1816952004 100	CLO4-DOD	1	Sample		
15	Vial 83	1816952005	CLO4-DOD	1	Sample		
16	Vial 84	1816952006	CLO4-DOD	1	Sample		
17	Vial 85	1816952007	CLO4-DOD	1	Sample		
18	Vial 71	606018 CCV@25	CLO4-DOD	1	Ctrl Samp		
19	Vial 72	606019 LODV@1.	CLO4-DOD	1	Ctrl Samp		
20	Vial 86	1816954001 100	CLO4-DOD	1	Sample		
21	Vial 87	1816954002 1K	CLO4-DOD	1	Sample		
22	Vial 88	1816954002 10K	CLO4-DOD	1	Sample		
23	Vial 89	1816954003	CLO4-DOD	1	Sample		
24	Vial 90	1816954004 100	CLO4-DOD	1	Sample		
25	Vial 91	1816954005 1K	CLO4-DOD	1	Sample		
26	Vial 92	1816954006	CLO4-DOD	1	Sample		
27	Vial 93	1816954007	CLO4-DOD	1	Sample		
28	Vial 94	1816954008	CLO4-DOD	1	Sample		
29	Vial 95	1816954009	CLO4-DOD	1	Sample		
30	Vial 71	606020 CCV@25	CLO4-DOD	1	Ctrl Samp		
31	Vial 72	606021 LODV@1.	CLO4-DOD	1	Ctrl Samp		

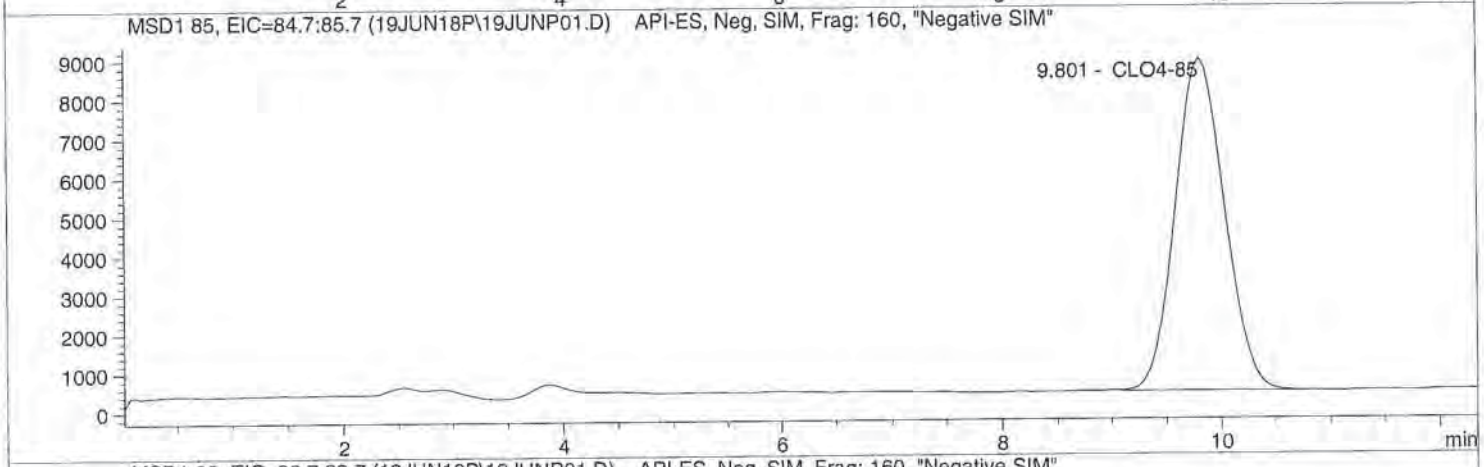
Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP01.D Sample Name: 606011 CCV@25

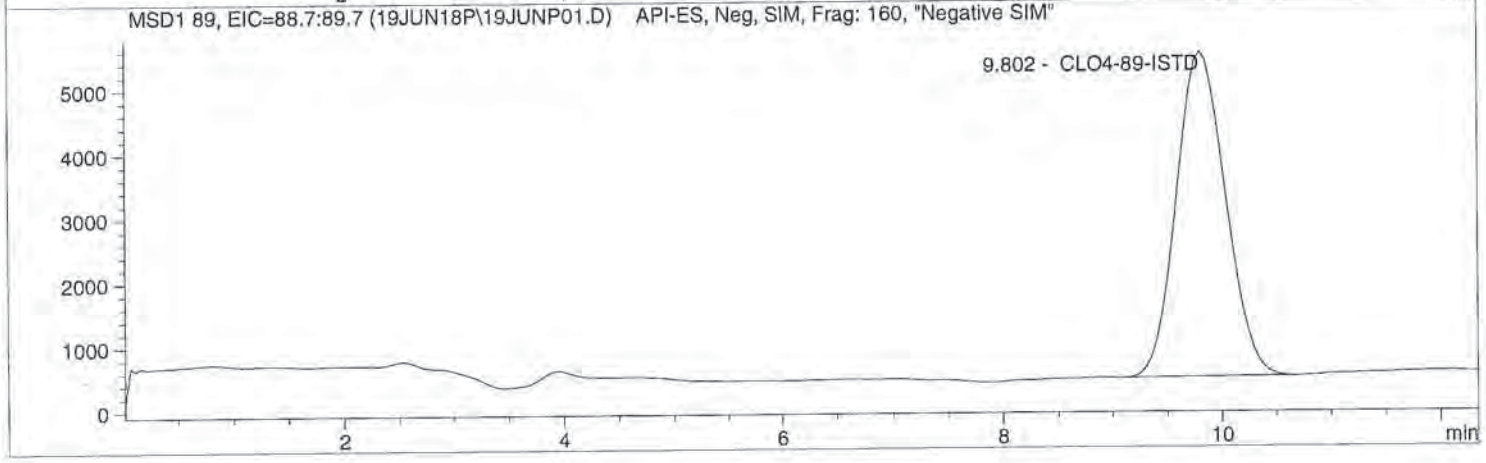
Injection Date:	6/19/2018 16:25:44	Seq Line:	1
Sample Name:	606011 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP01.D Sample Name: 606011 CCV@25

Injection Date:	6/19/2018 16:25:44	Seq Line:	1
Sample Name:	606011 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.784	PBA	837145.2	23.9016	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.801	BBA	267584.5	22.9142	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.802	BBA	159413.5	5.0000	CLO4-89-ISTD

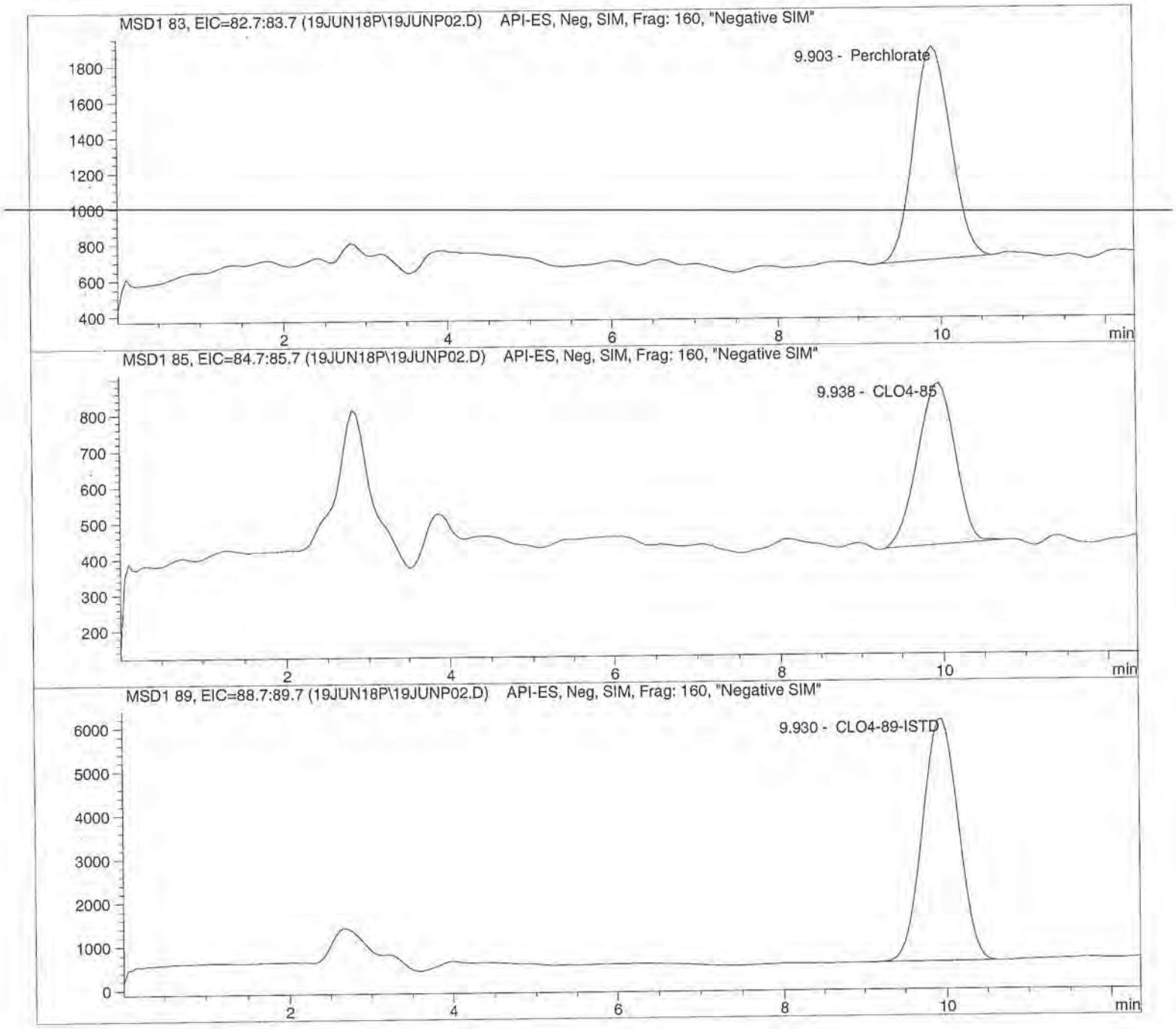
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP02.D Sample Name: 606012 LODV@1.

Injection Date:	6/19/2018 16:39:51	Seq Line:	2
Sample Name:	606012 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP02.D Sample Name: 606012 LODV@1.

Injection Date:	6/19/2018 16:39:51	Seq Line:	2
Sample Name:	606012 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.903	PBA	37157.5	1.0574	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.938	PBA	14126.5	1.0733	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.930	BBA	167131.9	5.0000	CLO4-89-ISTD

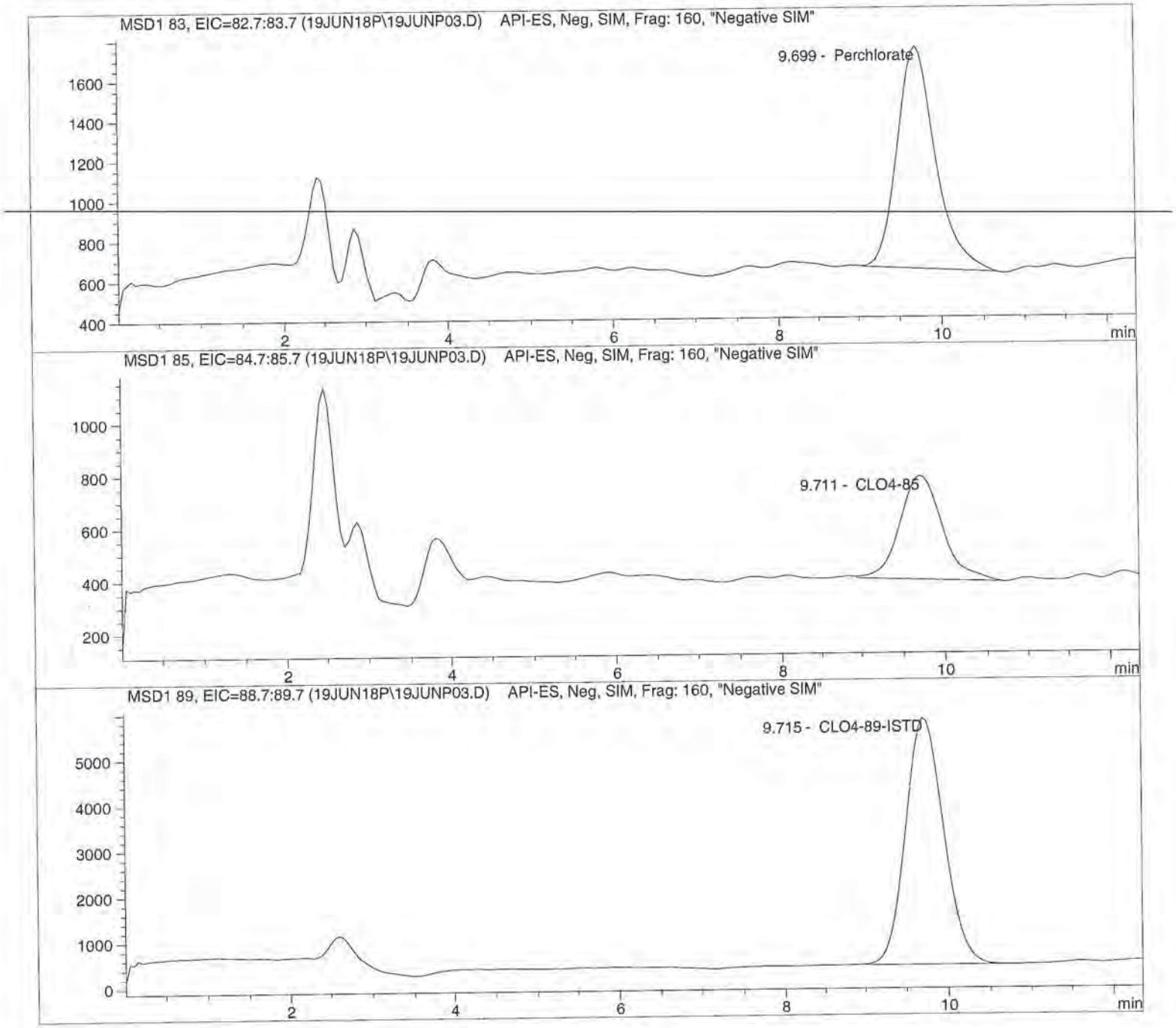
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP03.D Sample Name: 606013 ICS@1.0

Injection Date:	6/19/2018 16:54:00	Seq Line:	3
Sample Name:	606013 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP03.D Sample Name: 606013 ICS@1.0

Injection Date:	6/19/2018 16:54:00	Seq Line:	3
Sample Name:	606013 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.699	BBA	35122.8	0.9761	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.711	BBA	13885.5	1.0268	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.715	BBA	170642.2	5.0000	CLO4-89-ISTD

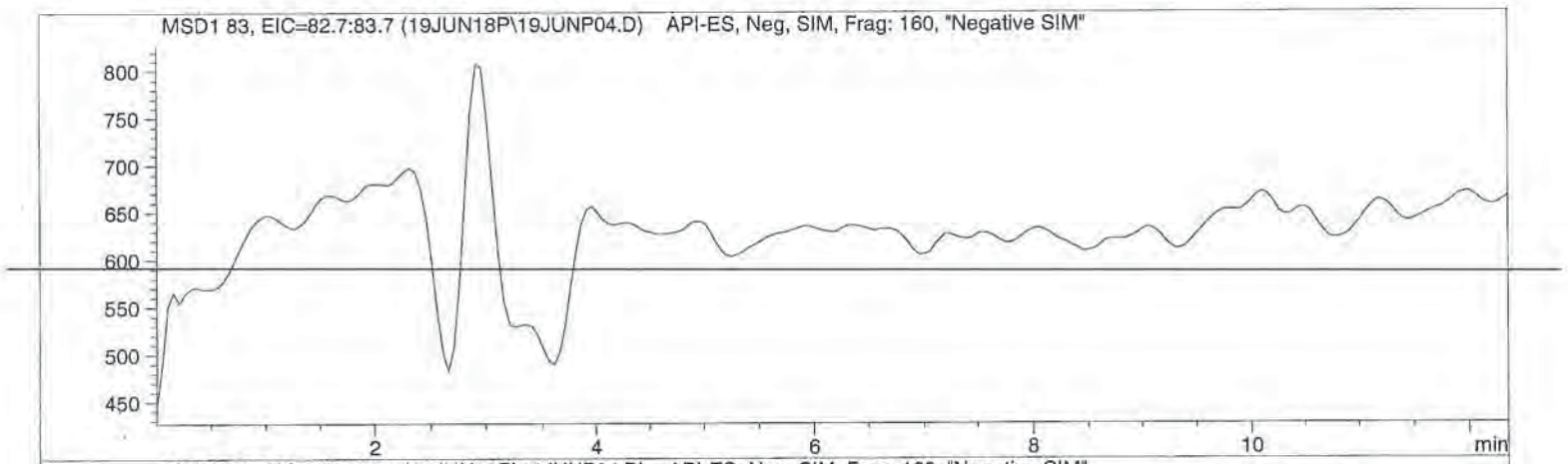
*** End of Report ***

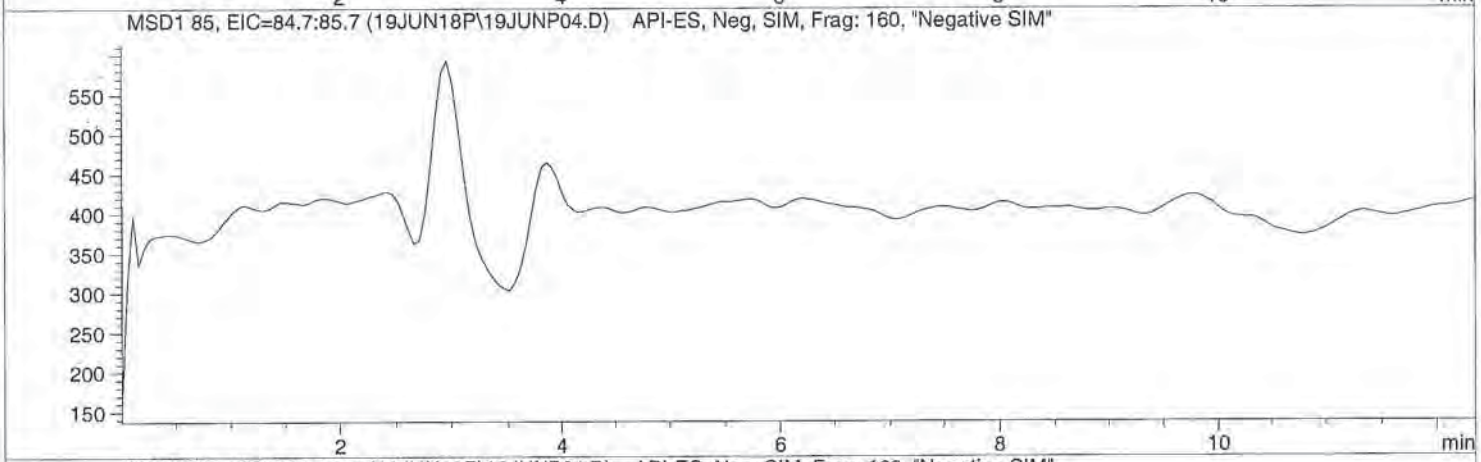
Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP04.D Sample Name: 606014 LMB

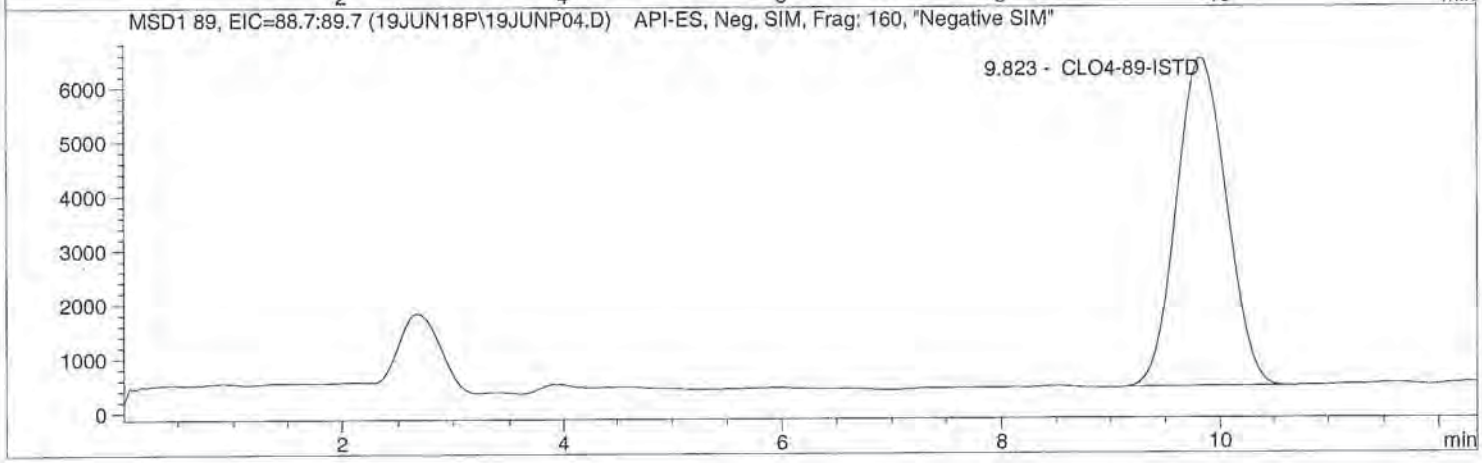
Injection Date:	6/19/2018 17:08:14	Seq Line:	4
Sample Name:	606014 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP04.D Sample Name: 606014 LMB

Injection Date:	6/19/2018 17:08:14	Seq Line:	4
Sample Name:	606014 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.823	PBA	192525.5	5.0000	CLO4-89-ISTD

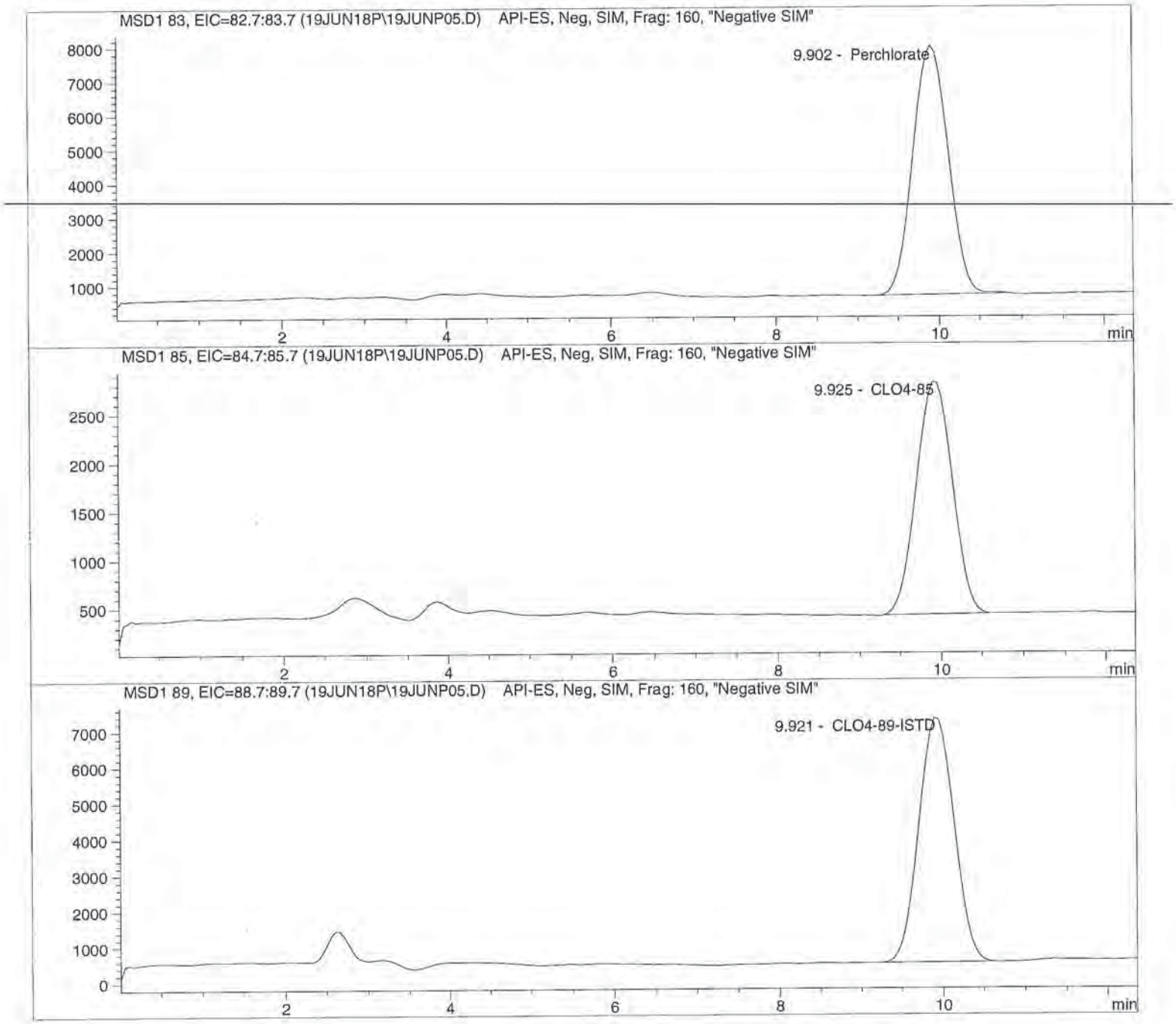
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP05.D Sample Name: 606015 QC@5.0

Injection Date:	6/19/2018 17:22:24	Seq Line:	5
Sample Name:	606015 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP05.D Sample Name: 606015 QC@5.0

Injection Date:	6/19/2018 17:22:24	Seq Line:	5
Sample Name:	606015 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.902	PBA	218182.3	5.1678	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.925	PBA	73113.3	5.0599	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.921	PBA	203981.8	5.0000	CLO4-89-ISTD

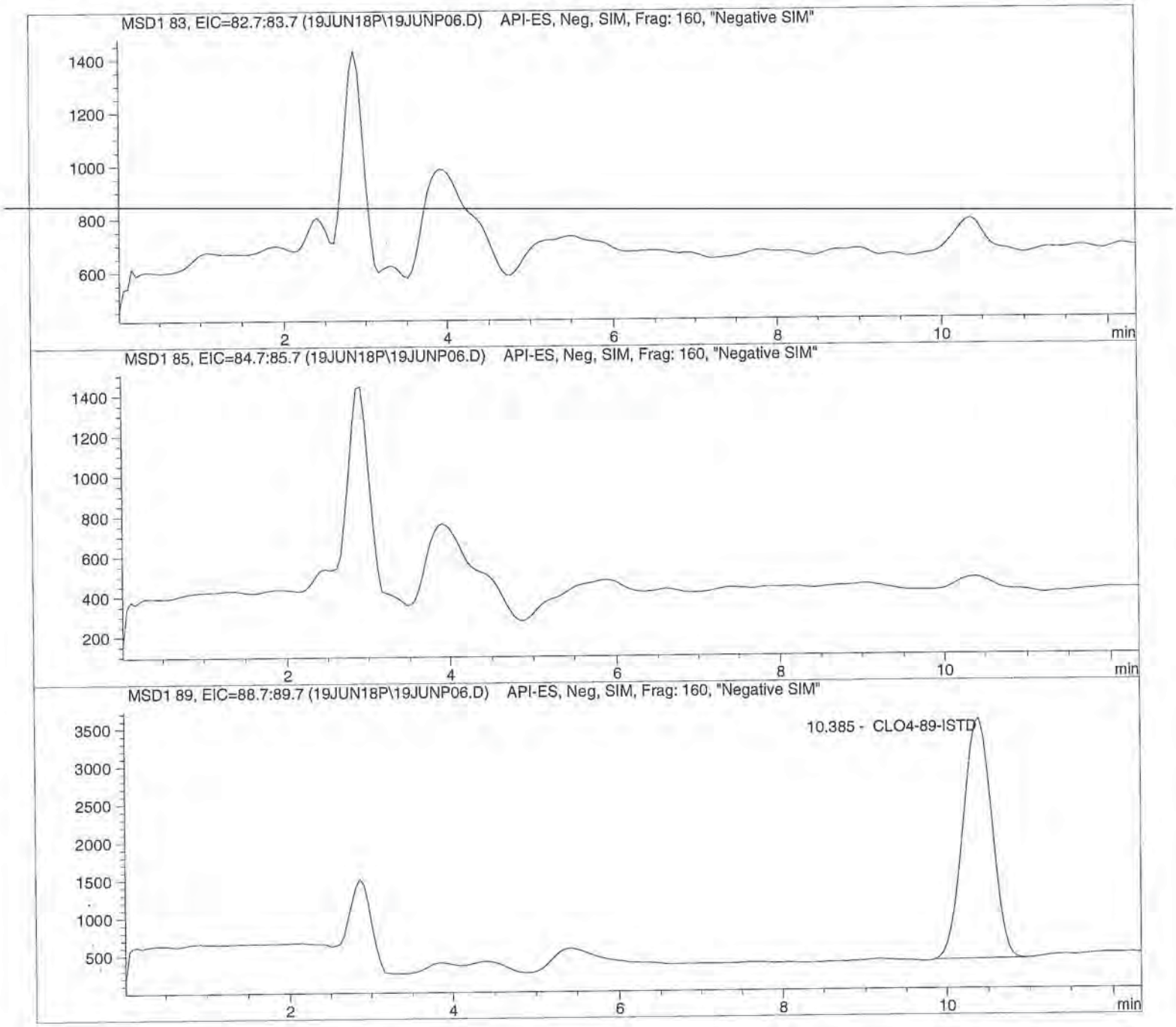
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP06.D Sample Name: 1816951001

Injection Date:	6/19/2018 17:36:37	Seq Line:	6
Sample Name:	1816951001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP06.D Sample Name: 1816951001

Injection Date:	6/19/2018 17:36:37	Seq Line:	6
Sample Name:	1816951001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.385	PBA	76929.5	5.0000	CLO4-89-ISTD

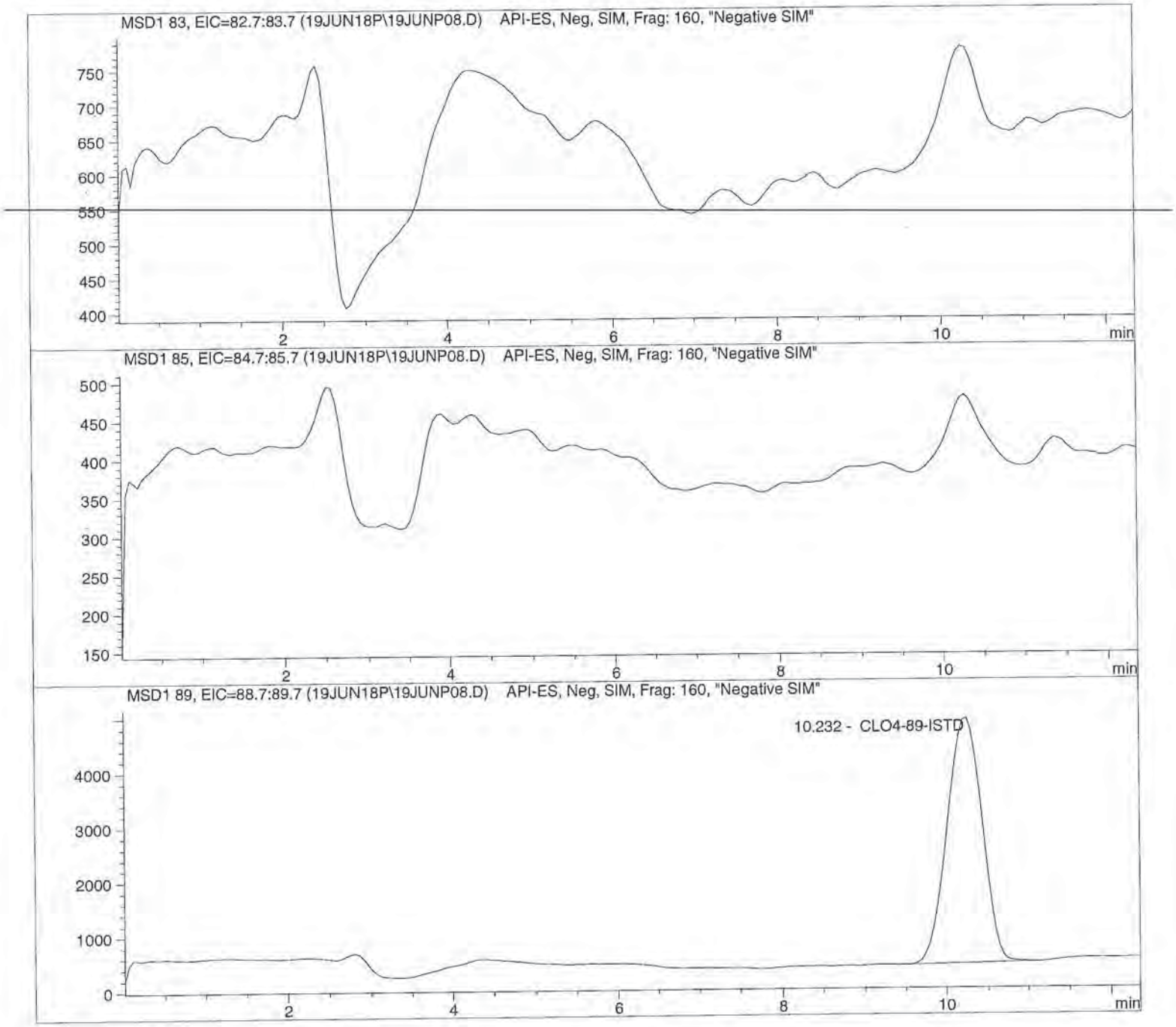
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP08.D Sample Name: 1816951001 5X

Injection Date:	6/19/2018 18:06:40	Seq Line:	8
Sample Name:	1816951001 5X	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP08.D Sample Name: 1816951001 5X

Injection Date:	6/19/2018 18:06:40	Seq Line:	8
Sample Name:	1816951001 5X	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
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
10.232	PBA	132651.9	25.0000	CLO4-89-ISTD

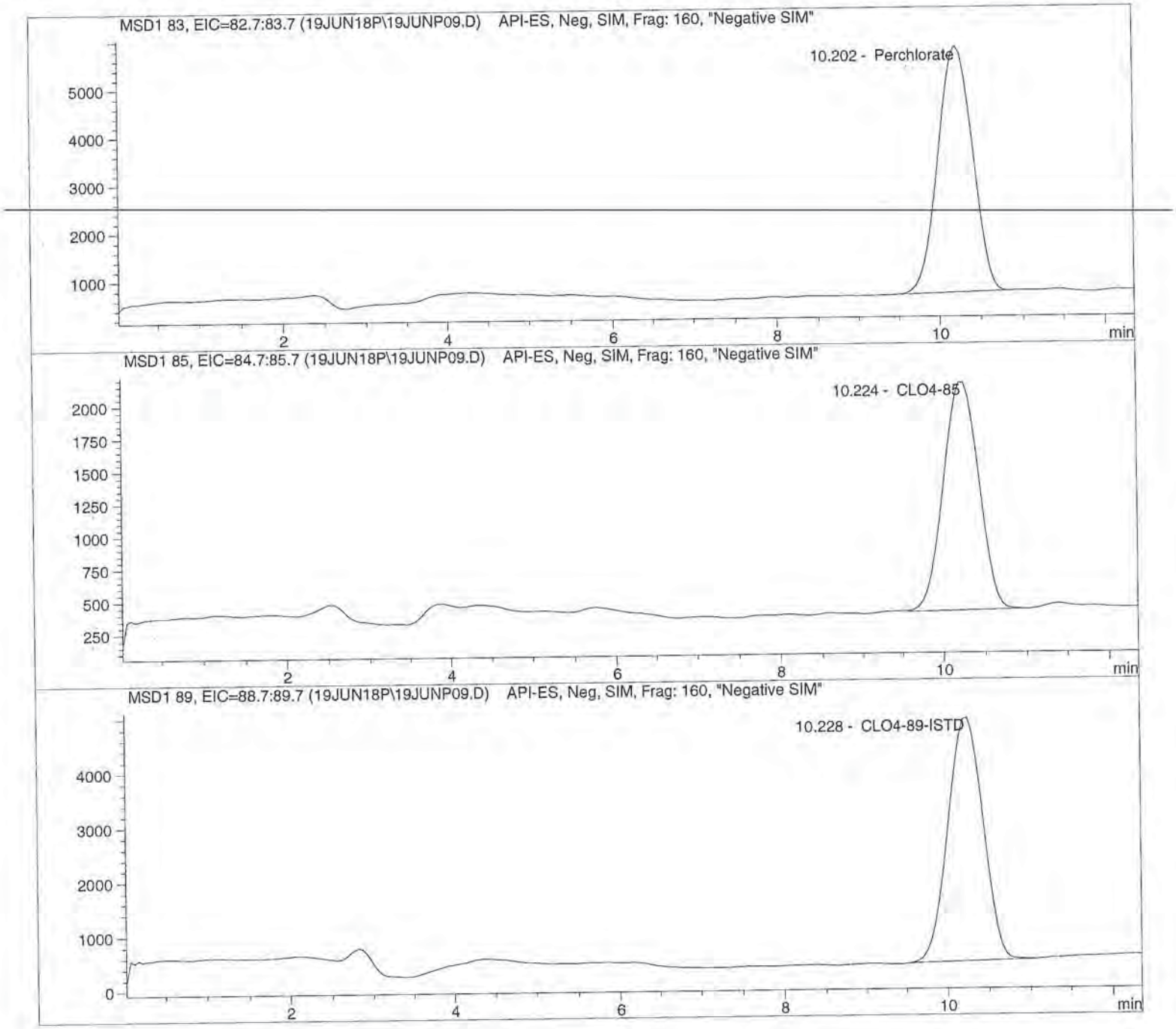
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP09.D Sample Name: 606016 169591S

Injection Date:	6/19/2018 18:20:51	Seq Line:	9
Sample Name:	606016 169591S	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP09.D Sample Name: 606016 169591S

Injection Date:	6/19/2018 18:20:51	Seq Line:	9
Sample Name:	606016 169591S	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.202	PBA	147719.3	27.2552	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.224	BBA	51625.4	27.8866	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.228	PBA	130849.8	25.0000	CLO4-89-ISTD

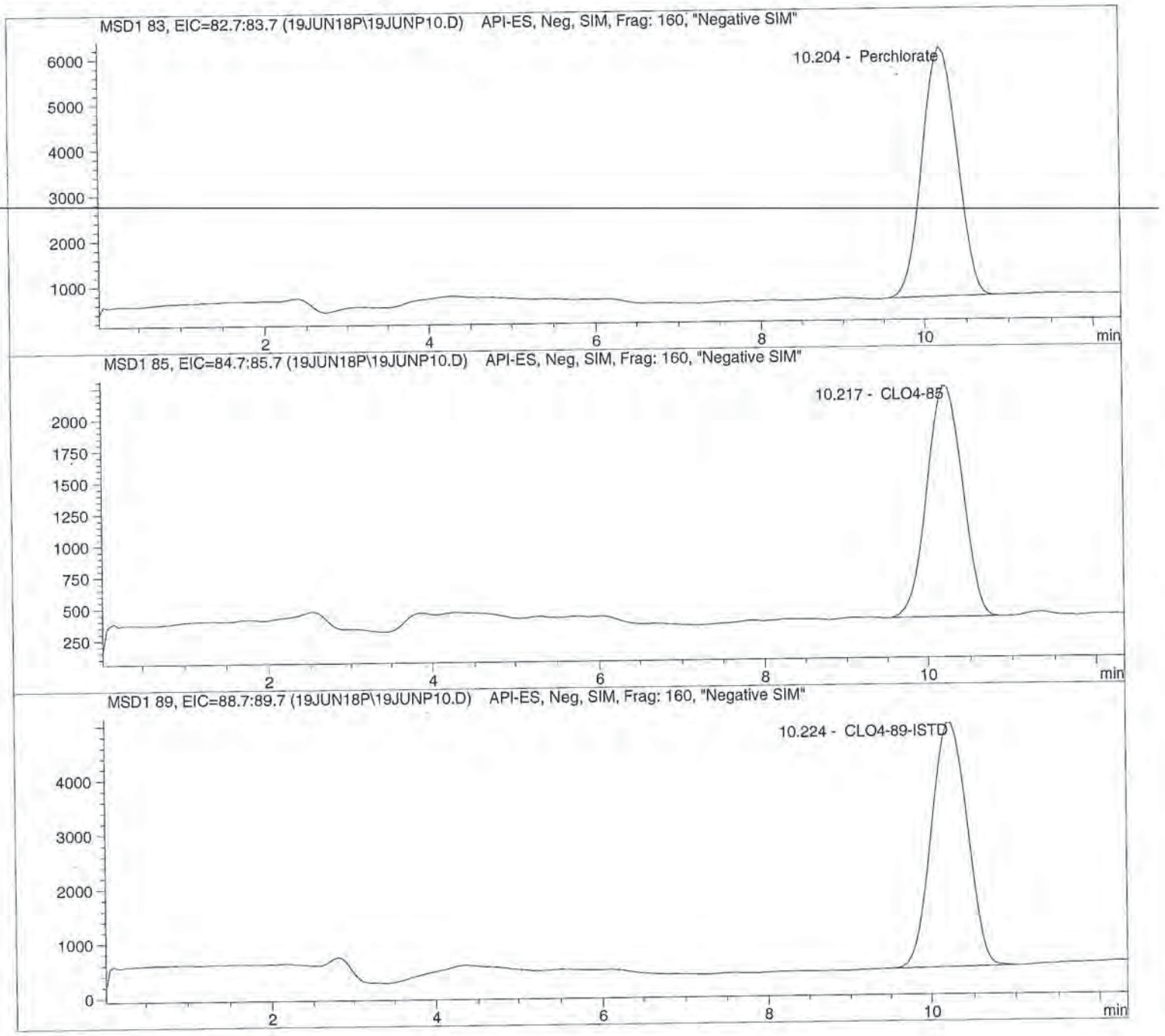
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP10.D Sample Name: 606017 169591D

Injection Date:	6/19/2018 18:35:01	Seq Line:	10
Sample Name:	606017 169591D	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP10.D Sample Name: 606017 169591D

Injection Date:	6/19/2018 18:35:01	Seq Line:	10
Sample Name:	606017 169591D	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.204	PBA	158125.8	28.7595	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.217	PBA	53621.2	28.5796	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.224	BBA	132649.0	25.0000	CLO4-89-ISTD

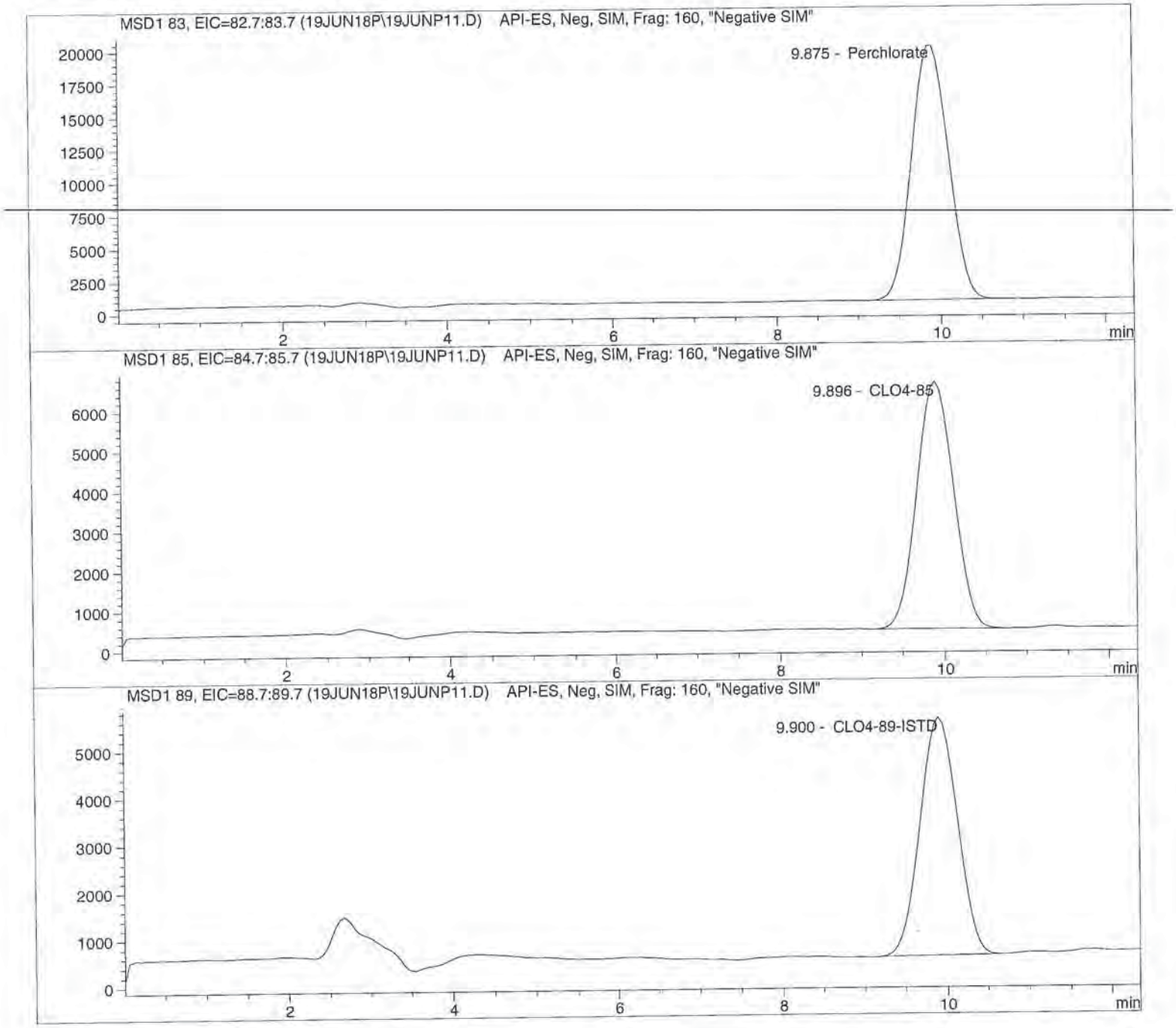
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP11.D Sample Name: 1816952001 10

Injection Date:	6/19/2018 18:49:12	Seq Line:	11
Sample Name:	1816952001 10	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP11.D Sample Name: 1816952001 10

Injection Date:	6/19/2018 18:49:12	Seq Line:	11
Sample Name:	1816952001 10	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.875	PBA	590108.0	174.8923	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.896	PBA	189838.6	168.0804	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.900	PBA	156905.5	50.0000	CLO4-89-ISTD

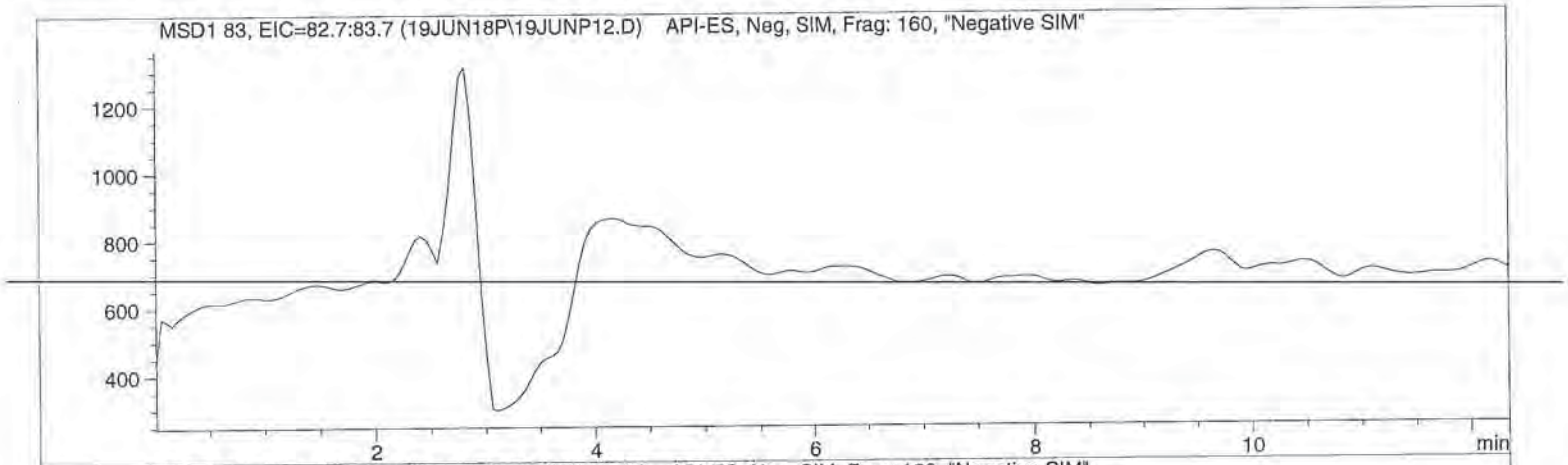
*** End of Report ***

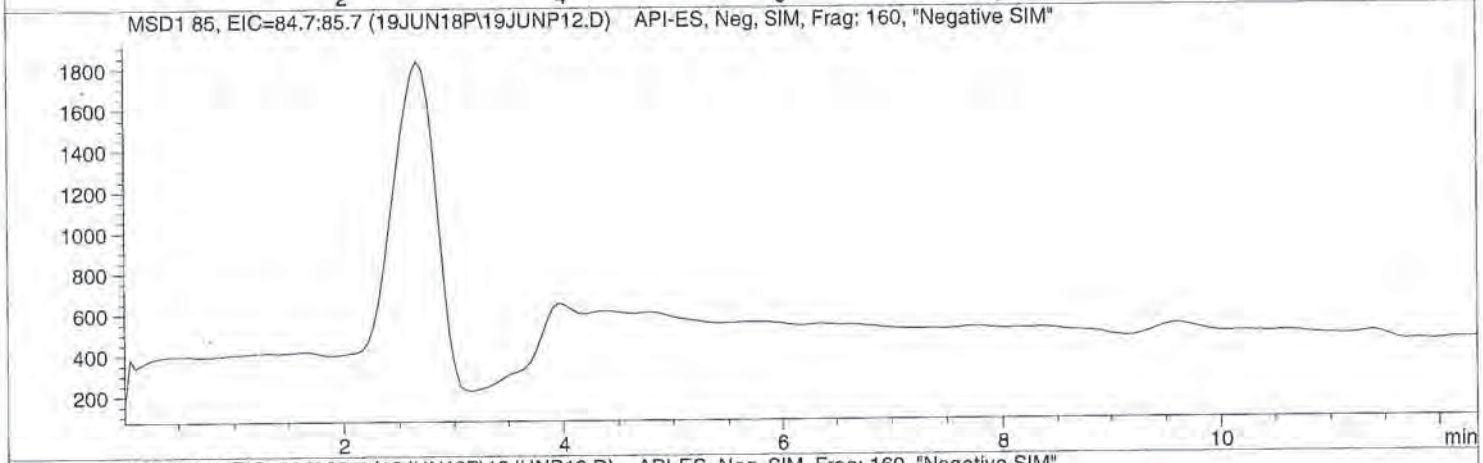
Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP12.D Sample Name: 1816952002

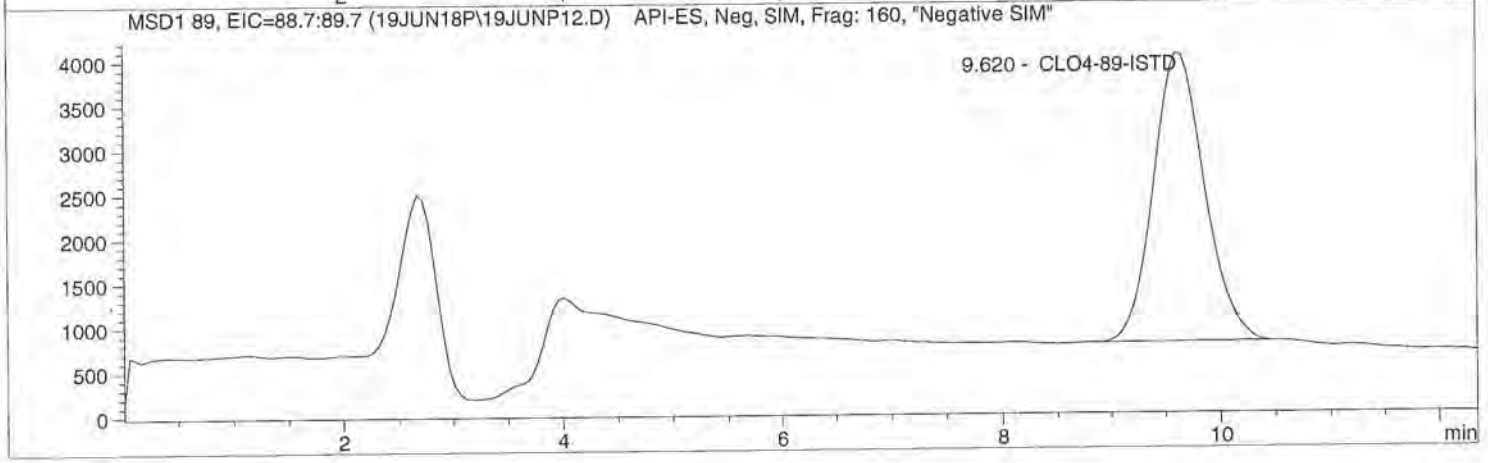
Injection Date:	6/19/2018 19:03:26	Seq Line:	12
Sample Name:	1816952002	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP12.D Sample Name: 1816952002

Injection Date:	6/19/2018 19:03:26	Seq Line:	12
Sample Name:	1816952002	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.620	PBA	105559.9	5.0000	CLO4-89-ISTD

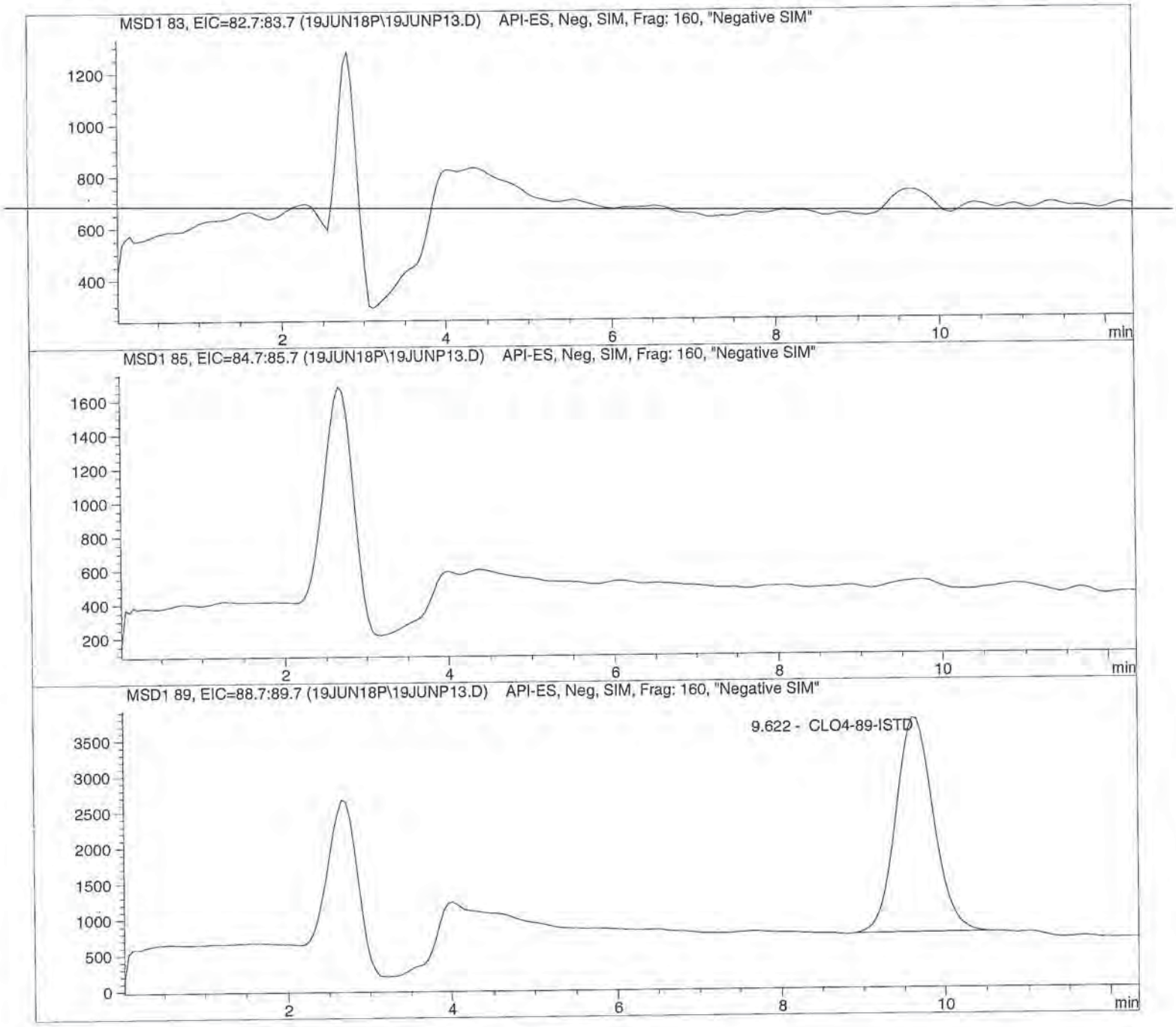
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP13.D Sample Name: 1816952003

Injection Date:	6/19/2018 19:17:36	Seq Line:	13
Sample Name:	1816952003	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP13.D Sample Name: 1816952003

Injection Date:	6/19/2018 19:17:36	Seq Line:	13
Sample Name:	1816952003	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.622	PBA	97218.0	5.0000	CLO4-89-ISTD

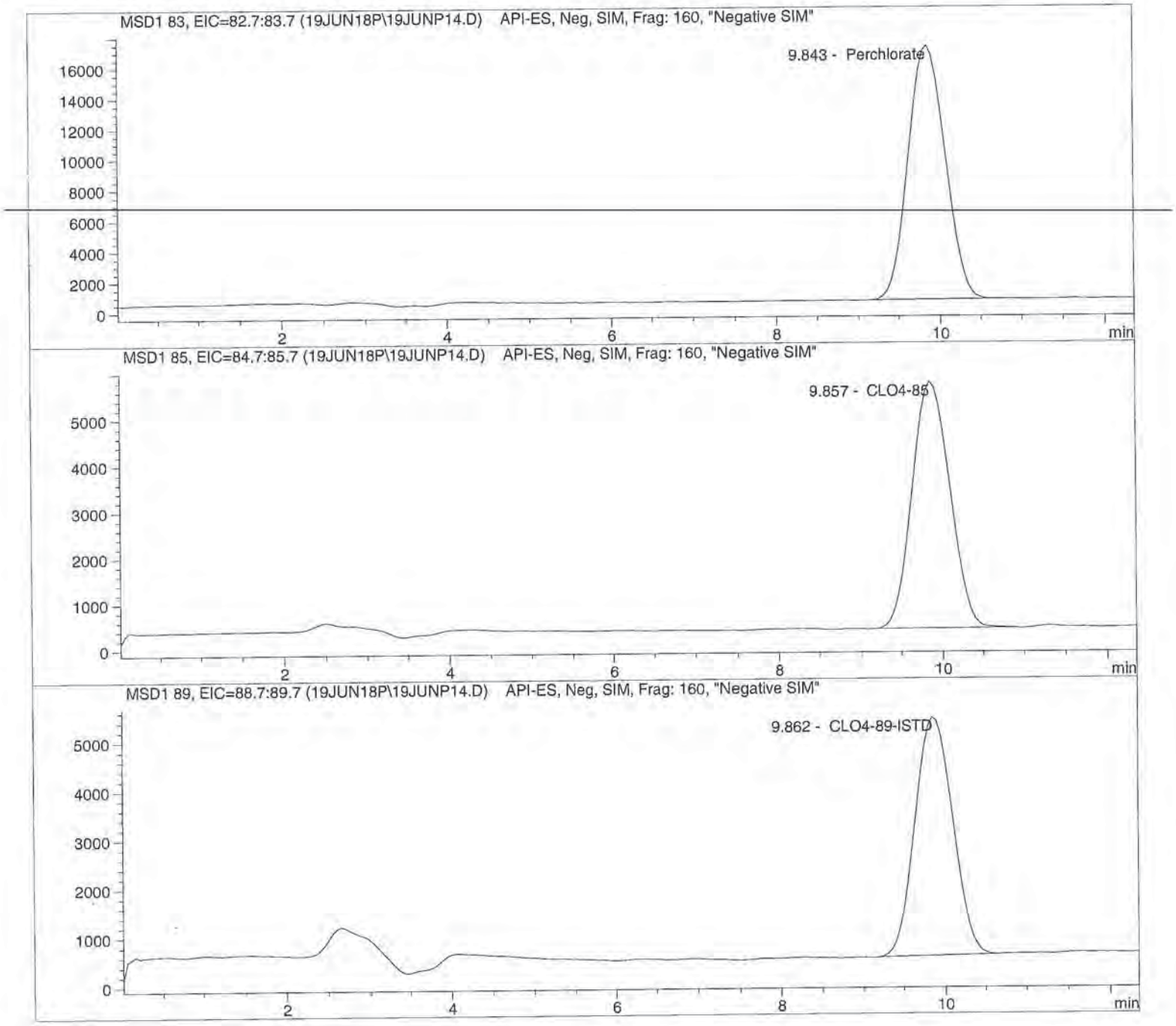
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP14.D Sample Name: 1816952004 100

Injection Date:	6/19/2018 19:31:44	Seq Line:	14
Sample Name:	1816952004 100	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP14.D Sample Name: 1816952004 100

Injection Date:	6/19/2018 19:31:44	Seq Line:	14
Sample Name:	1816952004 100	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.843	PBA	517017.6	1563.6370	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.857	BBA	170266.3	1534.8320	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.862	PBA	154717.3	500.0000	CLO4-89-ISTD

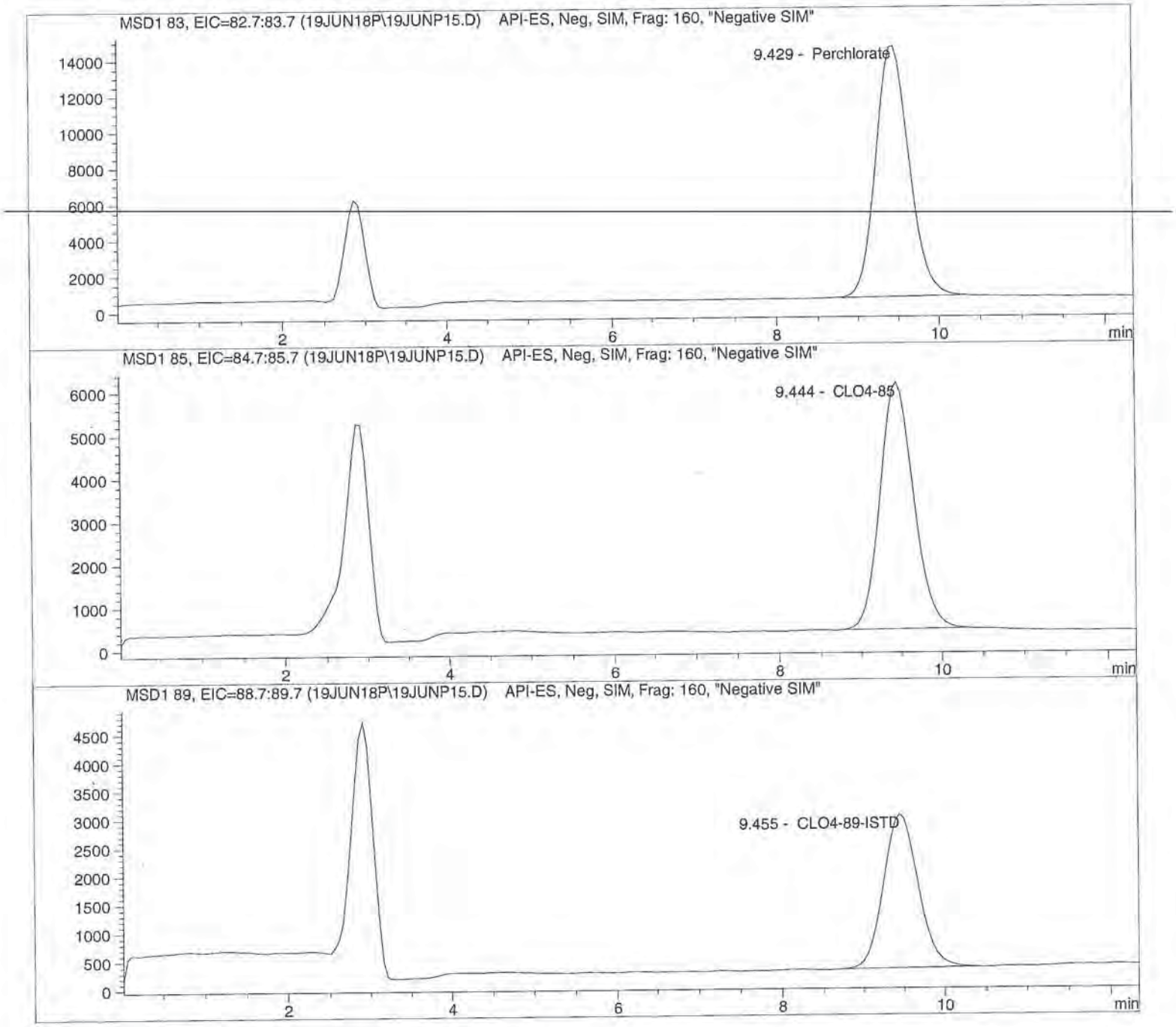
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP15.D Sample Name: 1816952005

Injection Date:	6/19/2018 19:45:50	Seq Line:	15
Sample Name:	1816952005	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP15.D Sample Name: 1816952005

Injection Date:	6/19/2018 19:45:50	Seq Line:	15
Sample Name:	1816952005	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.429	BBA	400231.7	22.6957	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.444	PBA	165226.1	27.5994	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.455	BBA	80587.5	5.0000	CLO4-89-ISTD

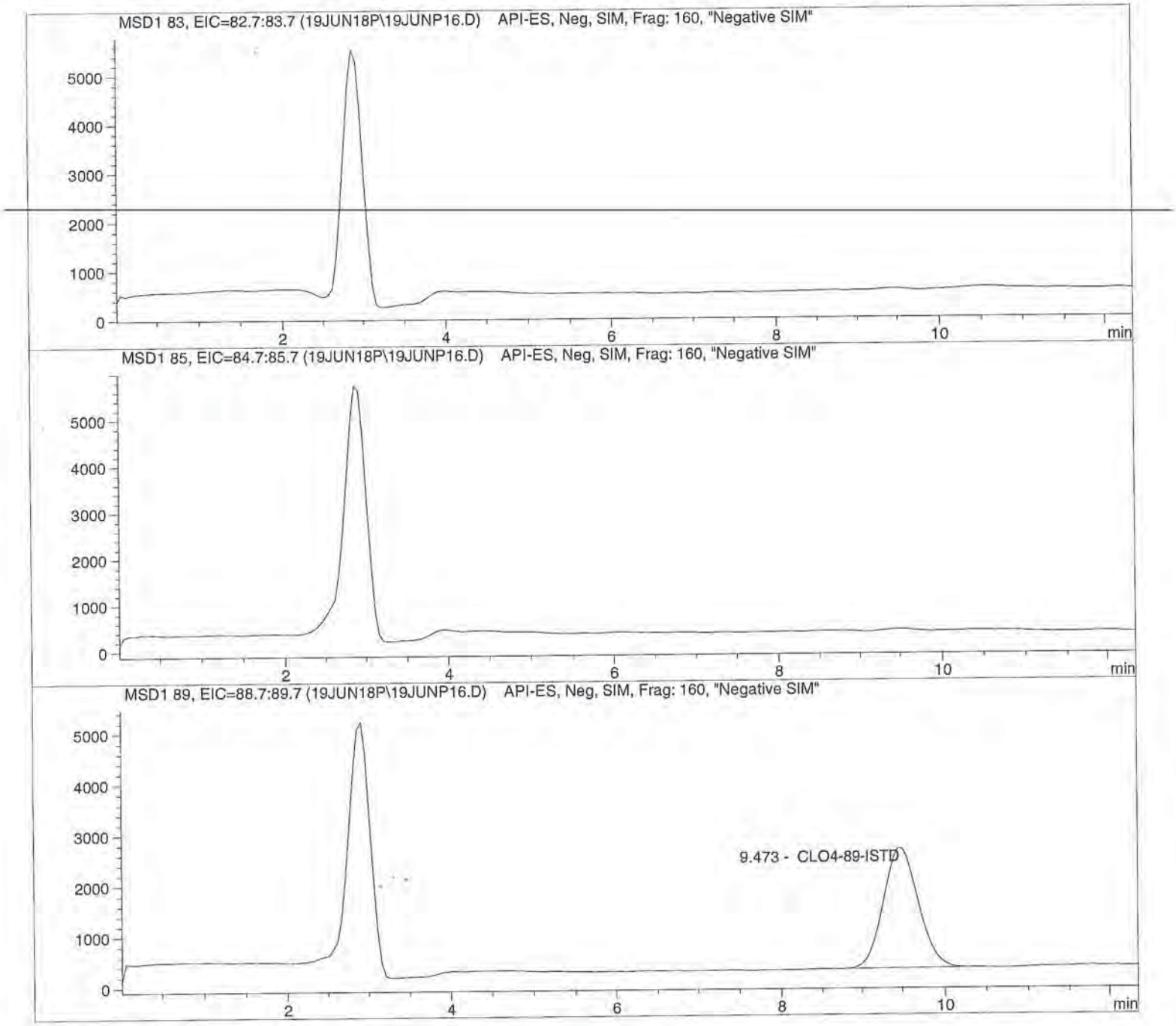
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP16.D Sample Name: 1816952006

Injection Date:	6/19/2018 19:59:58	Seq Line:	16
Sample Name:	1816952006	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP16.D Sample Name: 1816952006

Injection Date:	6/19/2018 19:59:58	Seq Line:	16
Sample Name:	1816952006	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.473	PBA	69882.5	5.0000	CLO4-89-ISTD

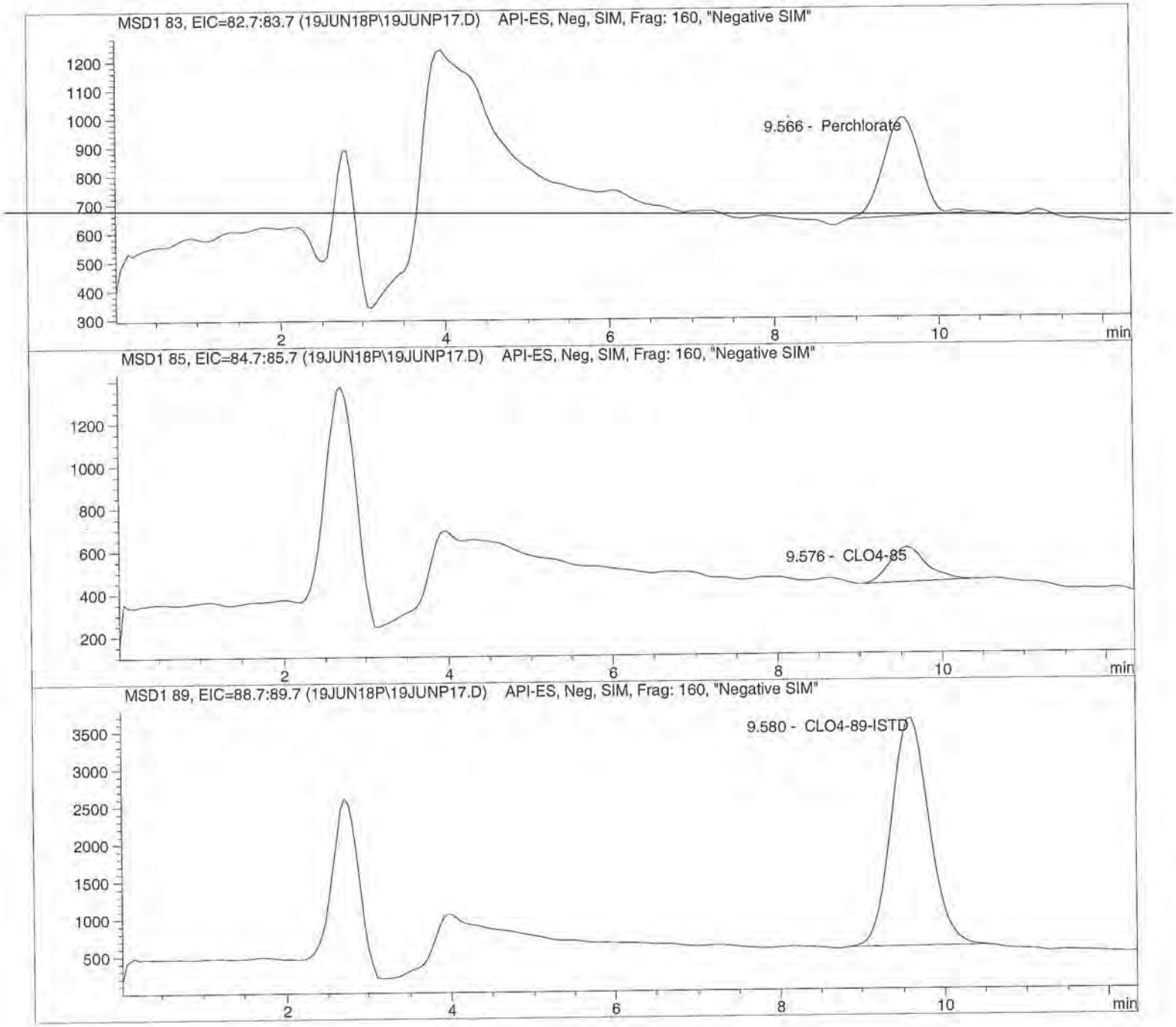
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP17.D Sample Name: 1816952007

Injection Date:	6/19/2018 20:14:05	Seq Line:	17
Sample Name:	1816952007	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP17.D Sample Name: 1816952007

Injection Date:	6/19/2018 20:14:05	Seq Line:	17
Sample Name:	1816952007	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.566	BBA	10482.3	0.4956	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.576	MM	5049.0	0.5963	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.580	PBA	96618.2	5.0000	CLO4-89-ISTD

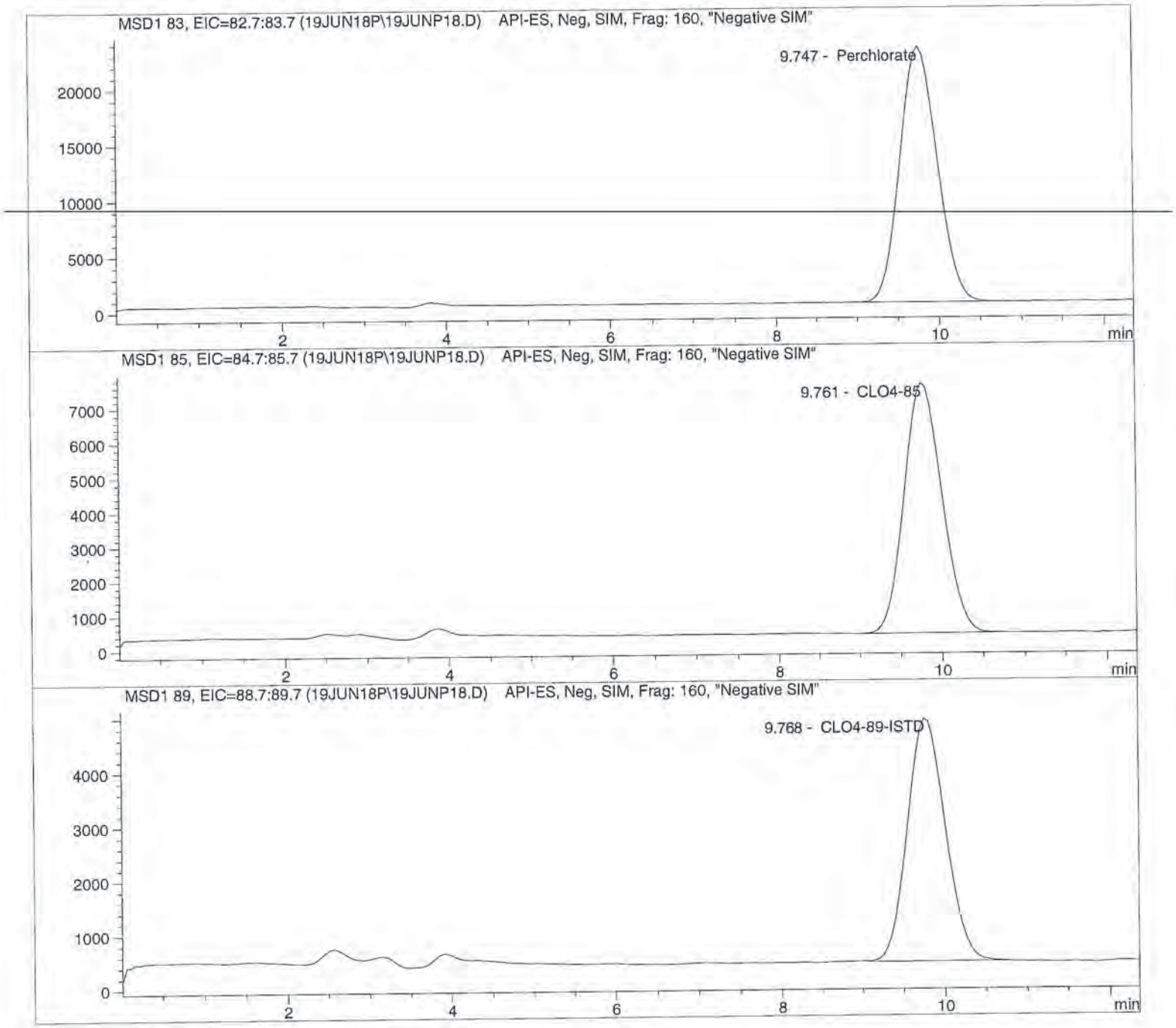
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP18.D Sample Name: 606018 CCV@258

Injection Date:	6/19/2018 20:28:13	Seq Line:	18
Sample Name:	606018 CCV@258	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP18.D Sample Name: 606018 CCV@258

Injection Date:	6/19/2018 20:28:13	Seq Line:	18
Sample Name:	606018 CCV@258	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.747	BBA	715730.1	22.8027	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.761	PBA	230574.8	22.0104	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.768	BBA	143386.6	5.0000	CLO4-89-ISTD

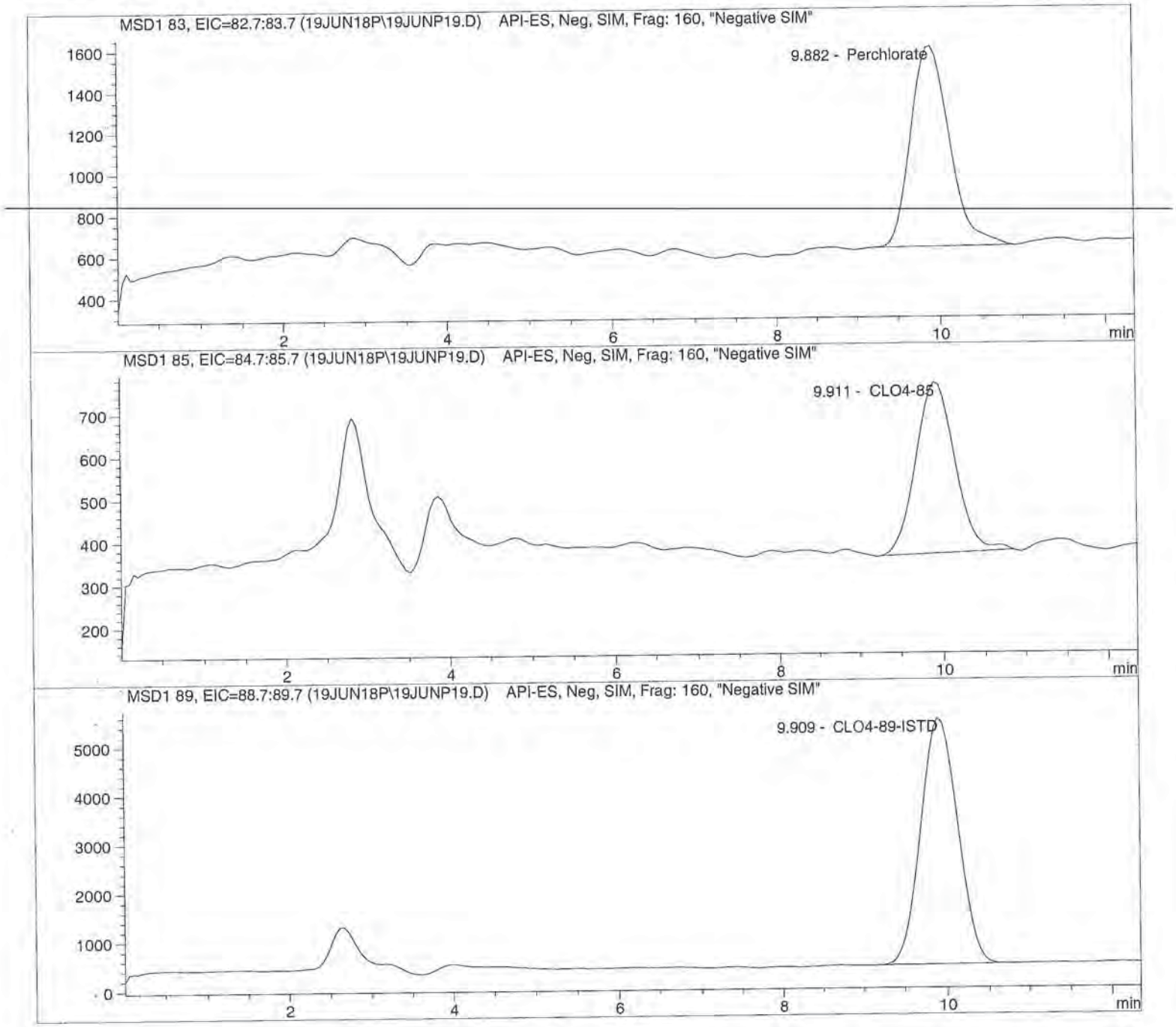
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP19.D Sample Name: 606019 LODV@1.

Injection Date:	6/19/2018 20:42:20	Seq Line:	19
Sample Name:	606019 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP19.D Sample Name: 606019 LODV@1.

Injection Date:	6/19/2018 20:42:20	Seq Line:	19
Sample Name:	606019 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.882	BBA	30810.1	0.9548	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.911	PBA	12803.8	1.0618	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.909	PBA	152894.8	5.0000	CLO4-89-ISTD

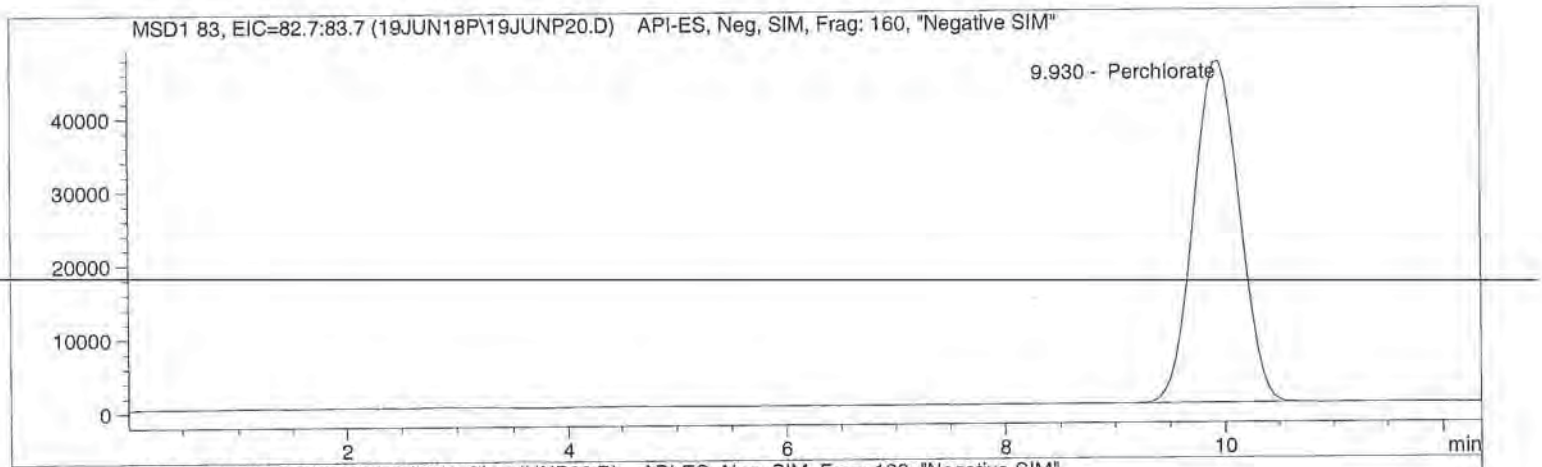
*** End of Report ***

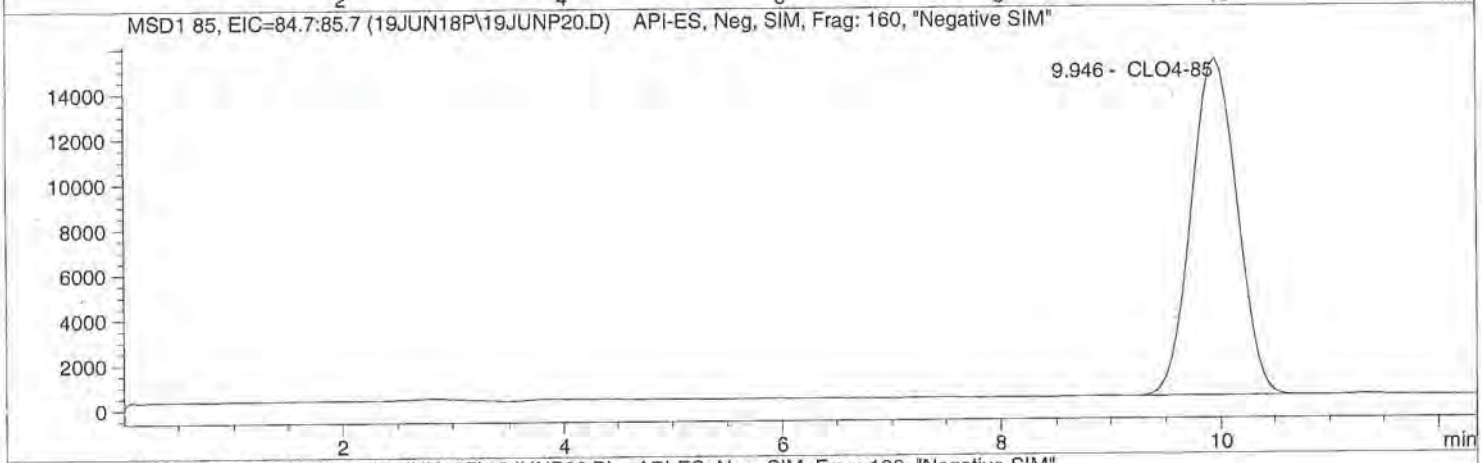
Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP20.D Sample Name: 1816954001 100

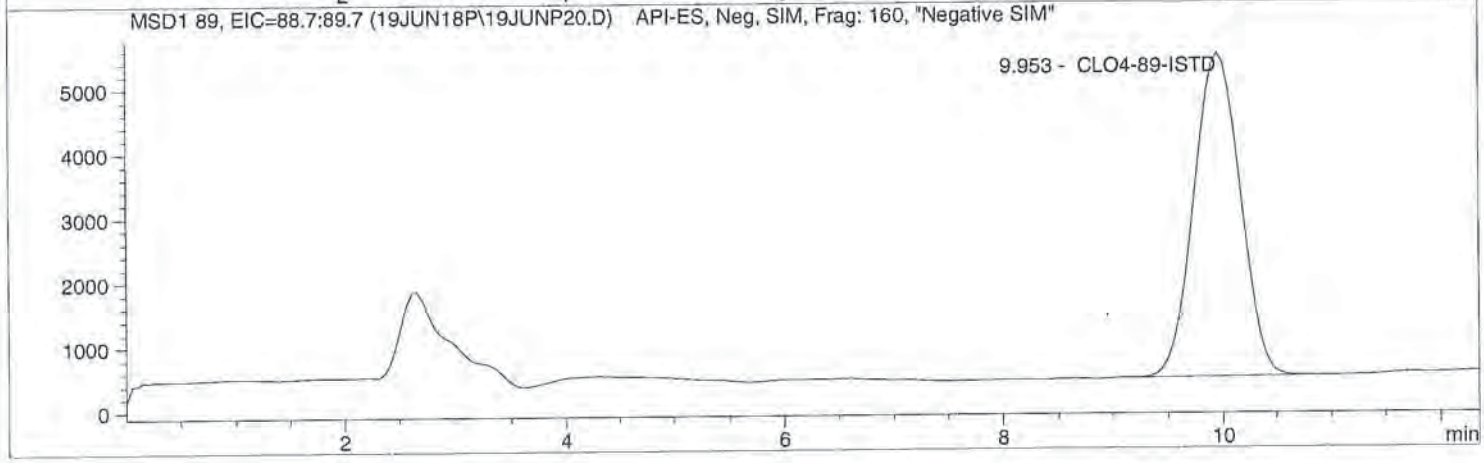
Injection Date:	6/19/2018 20:56:30	Seq Line:	20
Sample Name:	1816954001 100	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP20.D Sample Name: 1816954001 100

Injection Date:	6/19/2018 20:56:30	Seq Line:	20
Sample Name:	1816954001 100	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.930	PBA	1354284.1	3921.3943	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.946	PBA	437657.6	3817.2085	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.953	BBA	149487.1	500.0000	CLO4-89-ISTD

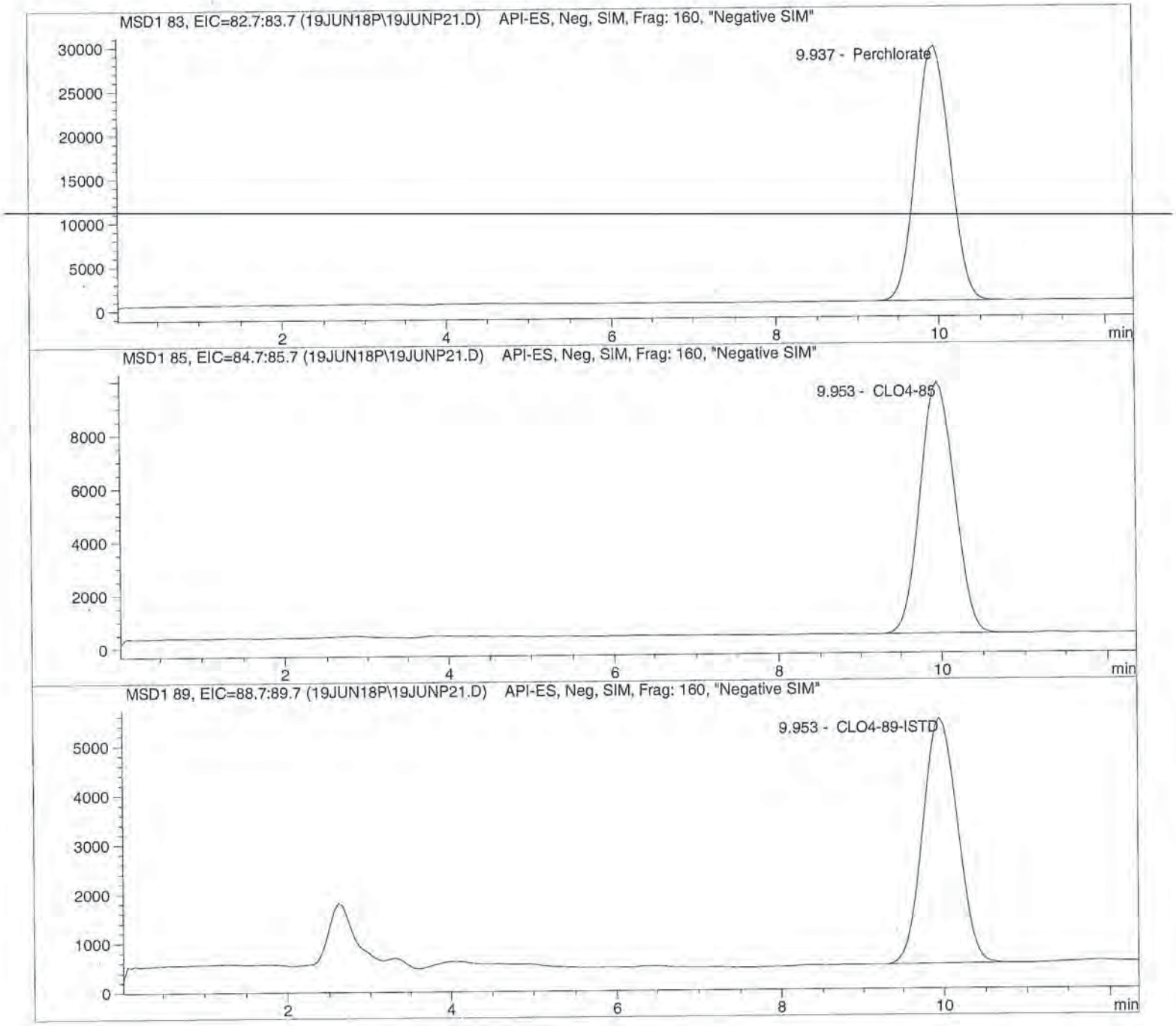
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP21.D Sample Name: 1816954002 1K

Injection Date:	6/19/2018 21:10:39	Seq Line:	21
Sample Name:	1816954002 1K	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP21.D Sample Name: 1816954002 1K

Injection Date:	6/19/2018 21:10:39	Seq Line:	21
Sample Name:	1816954002 1K	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.937	PBA	831551.3	25930.2454	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.953	BBA	272271.2	25444.9773	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.953	BBA	144976.4	5000.0000	CLO4-89-ISTD

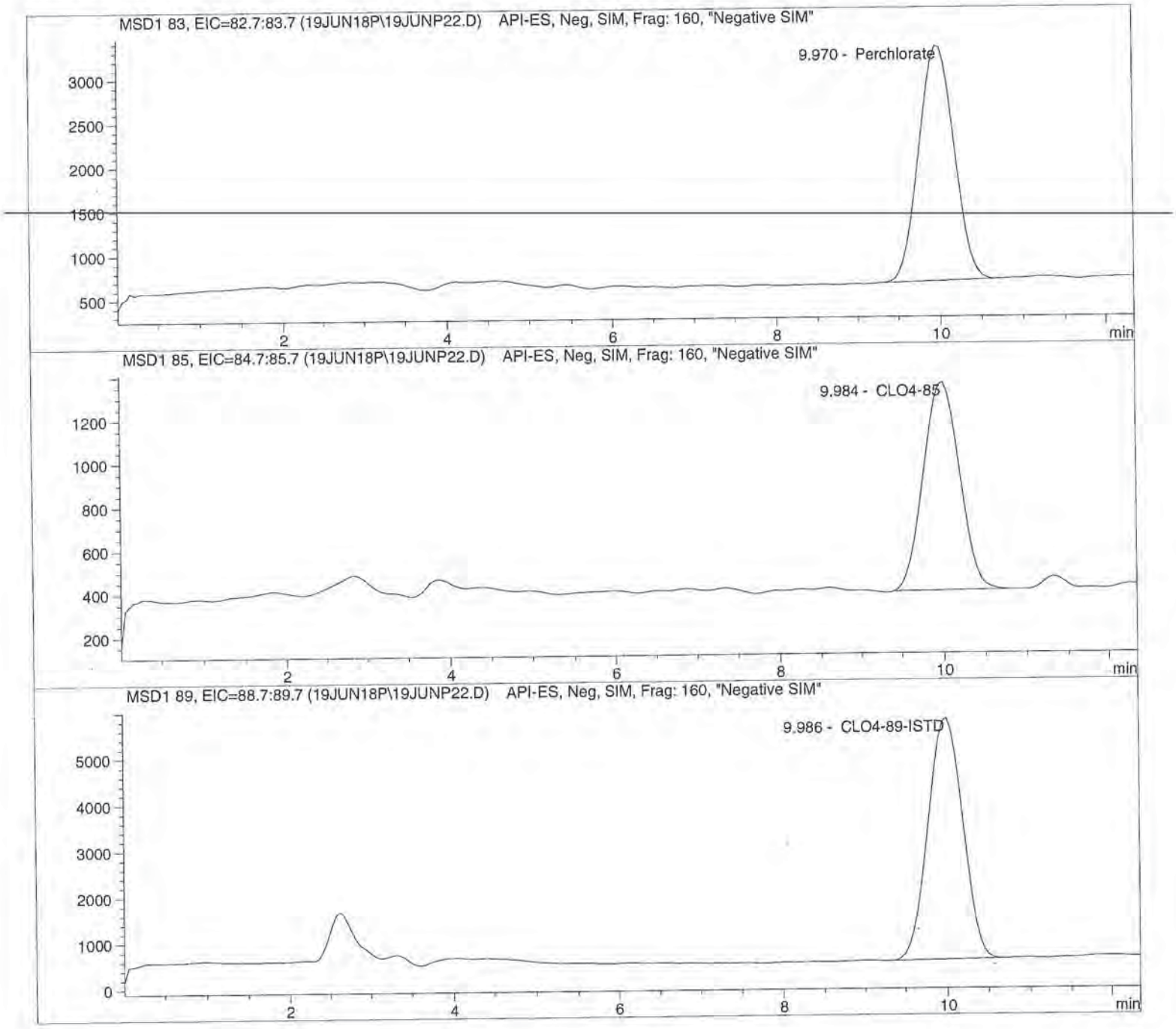
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP22.D Sample Name: 1816954002 10K

Injection Date:	6/19/2018 21:24:46	Seq Line:	22
Sample Name:	1816954002 10K	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP22.D Sample Name: 1816954002 10K

Injection Date:	6/19/2018 21:24:46	Seq Line:	22
Sample Name:	1816954002 10K	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.970	PBA	77293.6	24877.7855	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.984	PBA	28658.9	26317.6451	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.986	PBA	150287.2	50000.0000	CLO4-89-ISTD

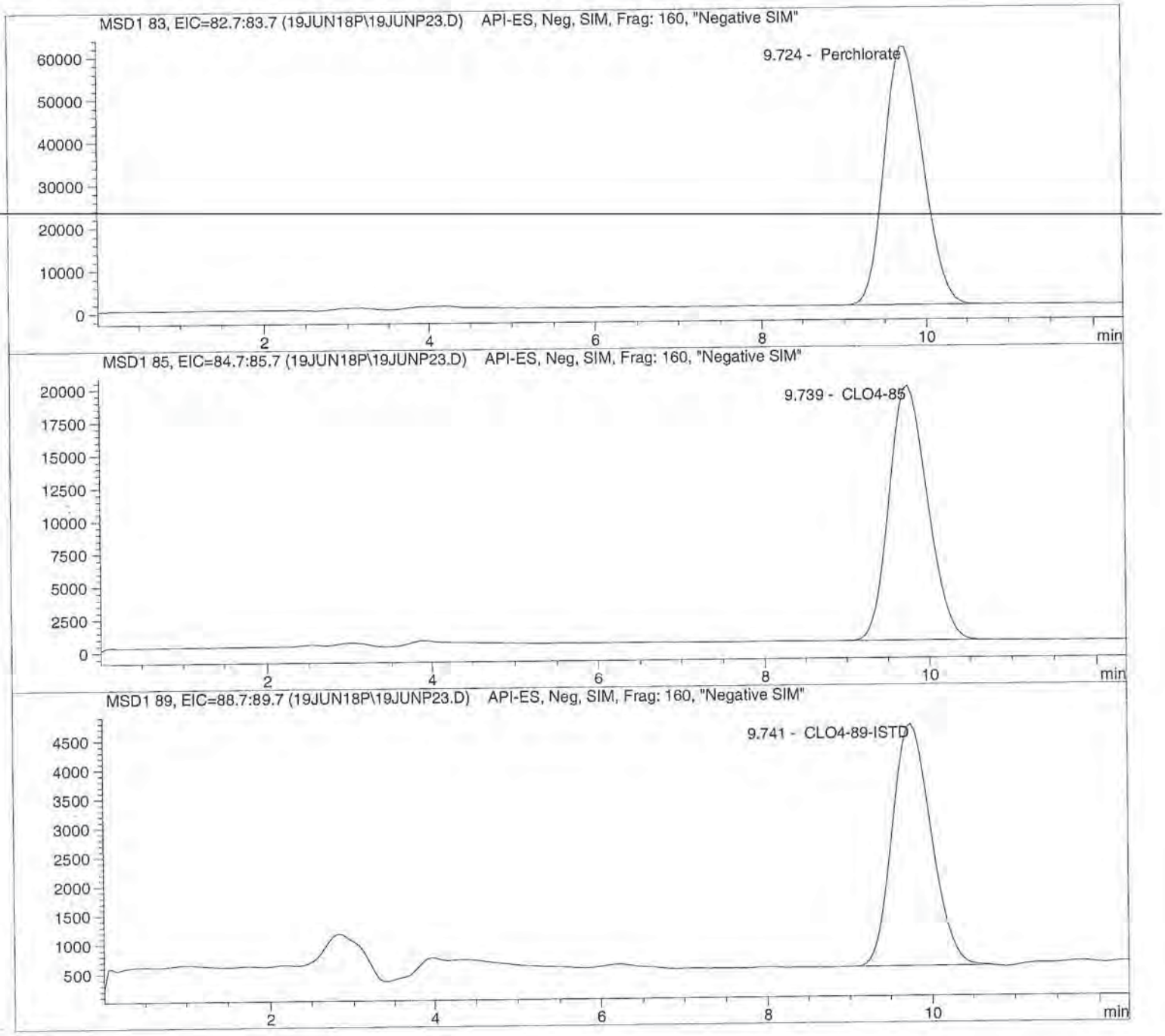
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP23.D Sample Name: 1816954003

Injection Date:	6/19/2018 21:39:01	Seq Line:	23
Sample Name:	1816954003	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP23.D Sample Name: 1816954003

Injection Date:	6/19/2018 21:39:01	Seq Line:	23
Sample Name:	1816954003	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.724	BBA	1951403.5	58.5365	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.739	PBA	623128.7	56.6231	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.741	BBA	135837.7	5.0000	CLO4-89-ISTD

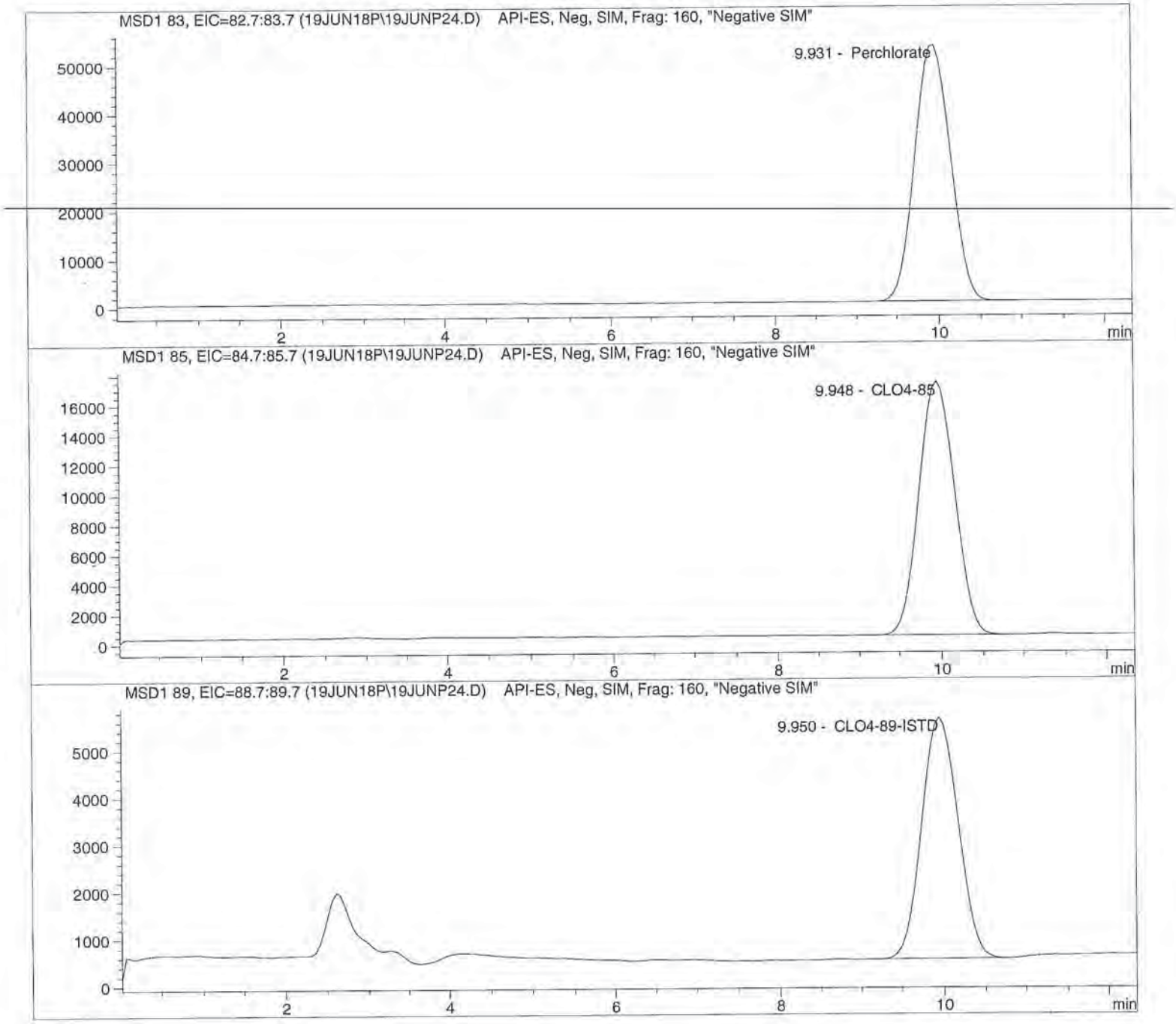
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP24.D Sample Name: 1816954004 100

Injection Date:	6/19/2018 21:53:14	Seq Line:	24
Sample Name:	1816954004 100	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP24.D Sample Name: 1816954004 100

Injection Date:	6/19/2018 21:53:14	Seq Line:	24
Sample Name:	1816954004 100	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.931	BBA	1544476.9	4334.0908	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.948	BBA	495654.8	4197.0429	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.950	BBA	152226.4	500.0000	CLO4-89-ISTD

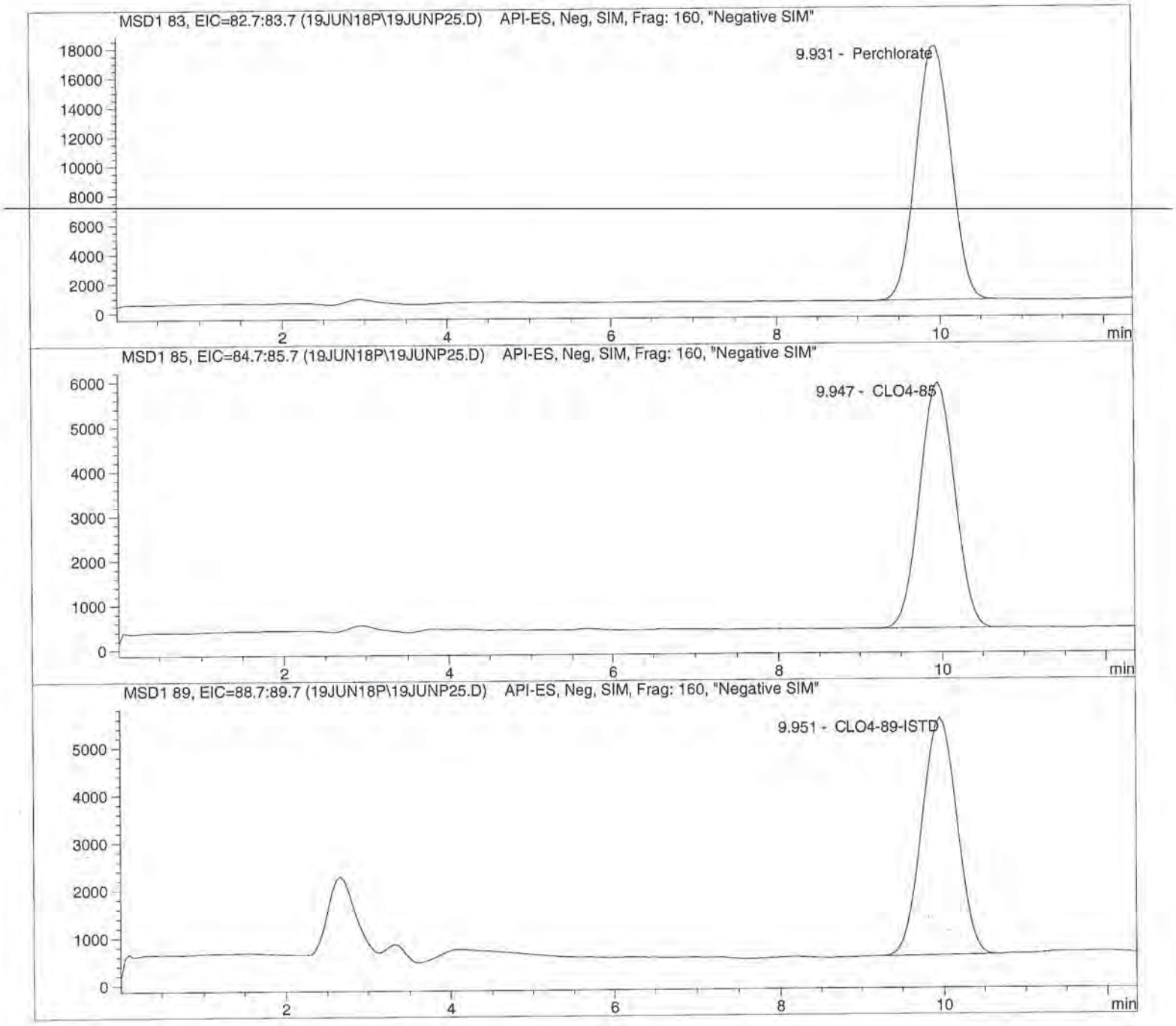
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP25.D Sample Name: 1816954005 1K

Injection Date:	6/19/2018 22:07:24	Seq Line:	25
Sample Name:	1816954005 1K	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP25.D Sample Name: 1816954005 1K

Injection Date:	6/19/2018 22:07:24	Seq Line:	25
Sample Name:	1816954005 1K	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.931	PBA	508043.0	15968.5506	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.947	PBA	162678.4	15260.8227	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.951	BBA	148704.0	5000.0000	CLO4-89-ISTD

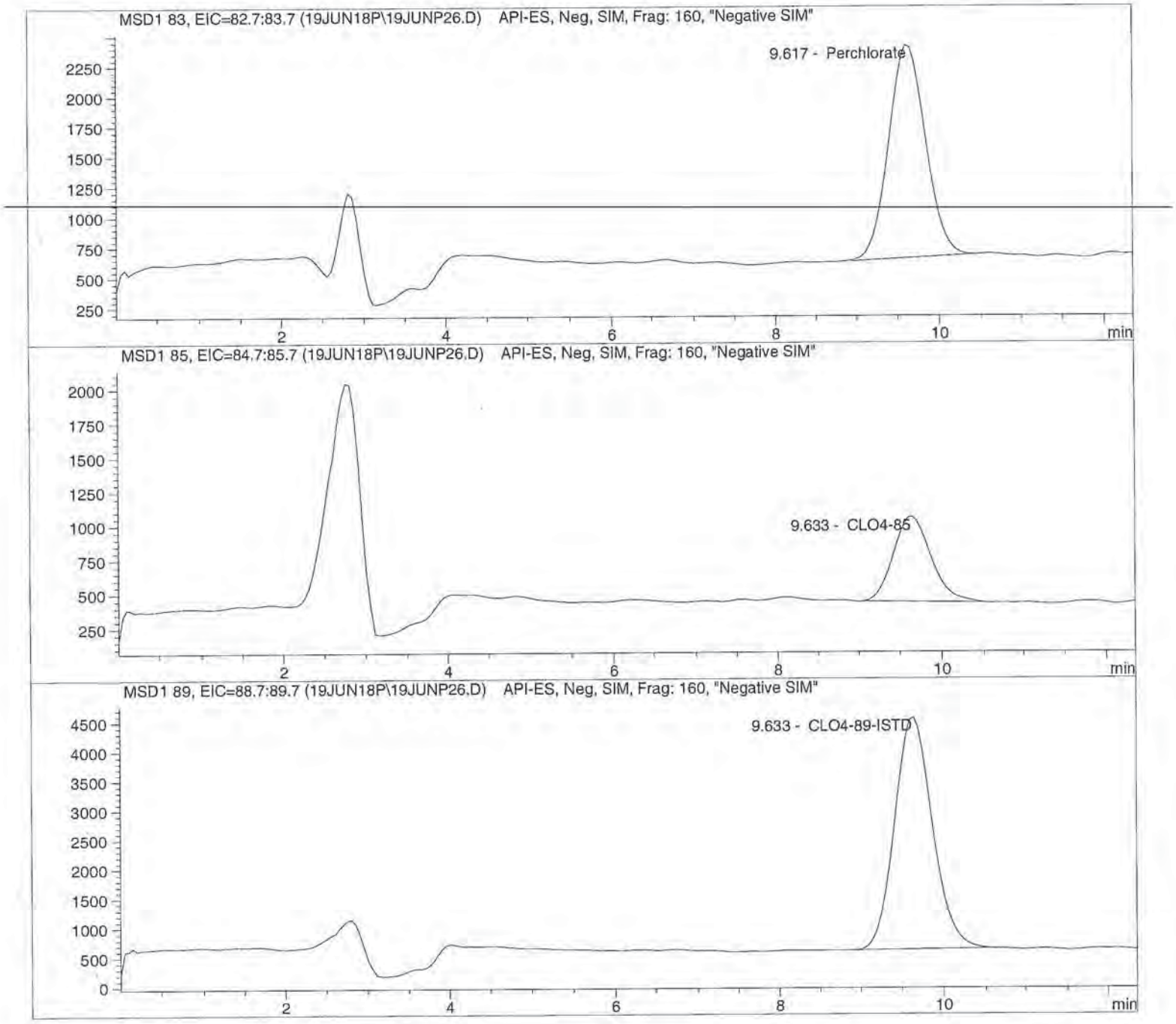
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP26.D Sample Name: 1816954006

Injection Date:	6/19/2018 22:21:31	Seq Line:	26
Sample Name:	1816954006	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP26.D Sample Name: 1816954006

Injection Date:	6/19/2018 22:21:31	Seq Line:	26
Sample Name:	1816954006	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.617	PBA	54393.7	2.1173	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.633	PBA	19544.9	2.1467	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.633	PBA	124076.6	5.0000	CLO4-89-ISTD

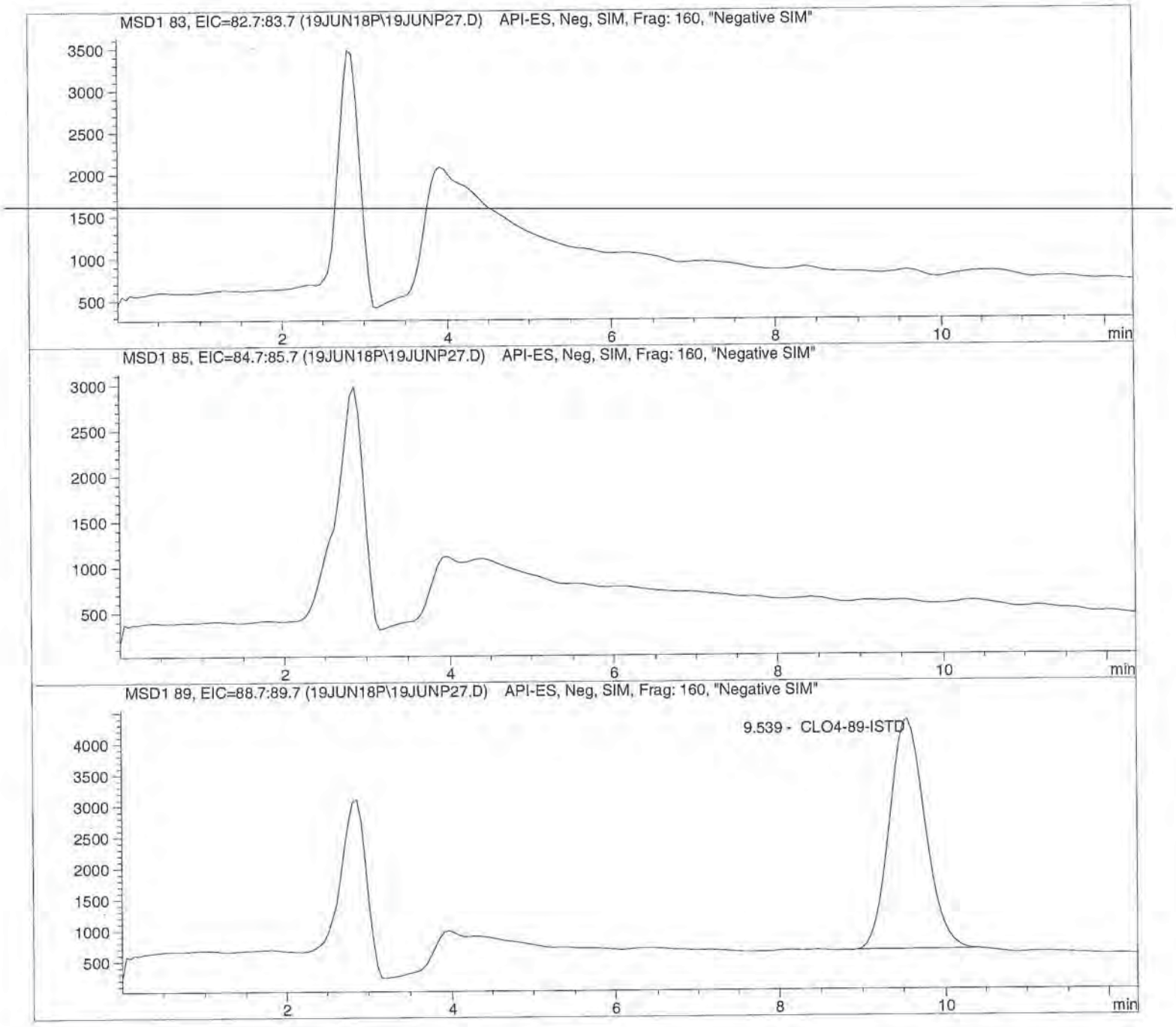
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP27.D Sample Name: 1816954007

Injection Date:	6/19/2018 22:35:41	Seq Line:	27
Sample Name:	1816954007	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP27.D Sample Name: 1816954007

Injection Date:	6/19/2018 22:35:41	Seq Line:	27
Sample Name:	1816954007	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.539	BBA	109591.8	5.0000	CLO4-89-ISTD

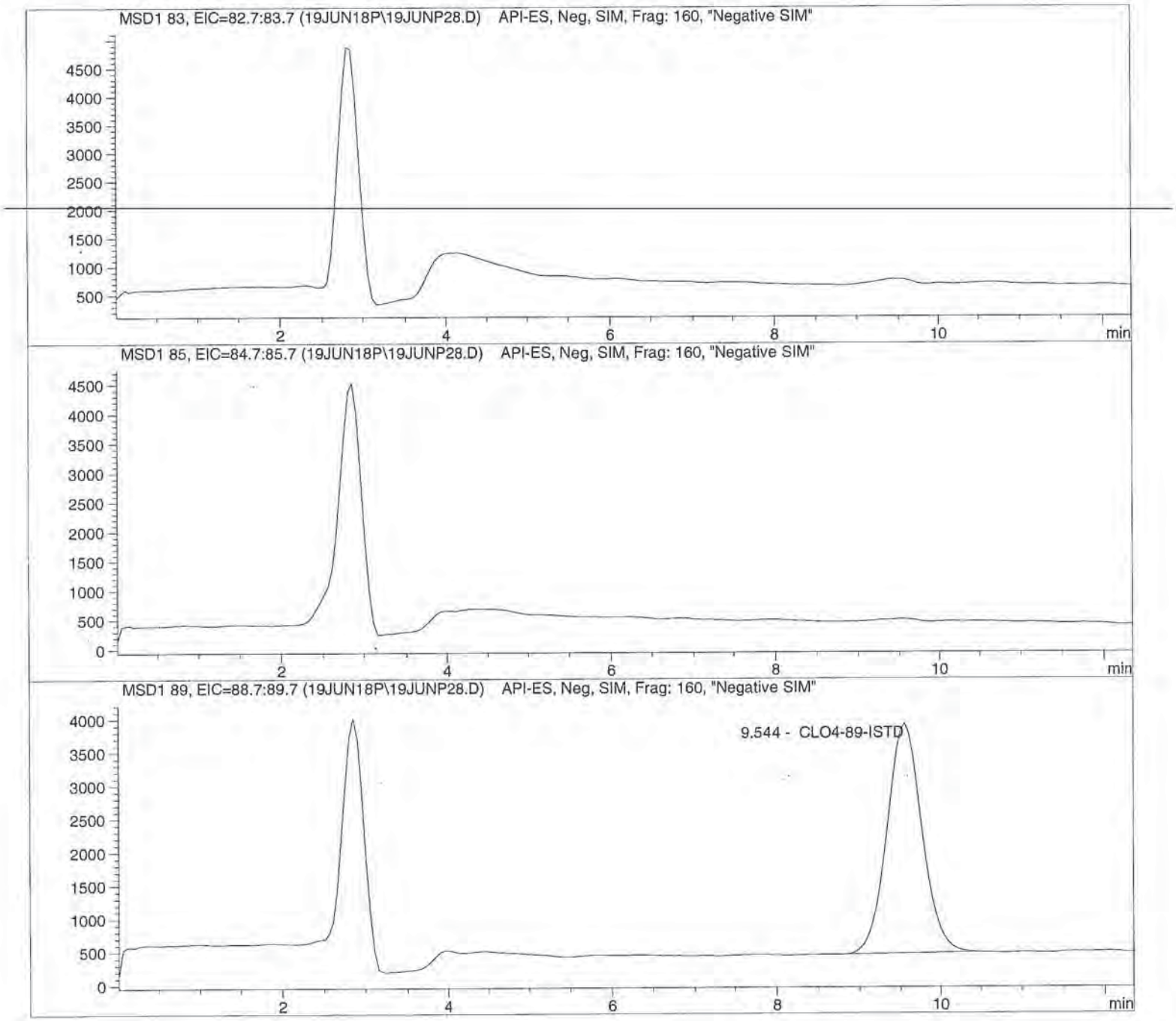
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP28.D Sample Name: 1816954008

Injection Date:	6/19/2018 22:49:50	Seq Line:	28
Sample Name:	1816954008	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP28.D Sample Name: 1816954008

Injection Date:	6/19/2018 22:49:50	Seq Line:	28
Sample Name:	1816954008	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.544	PBA	104382.7	5.0000	CLO4-89-ISTD

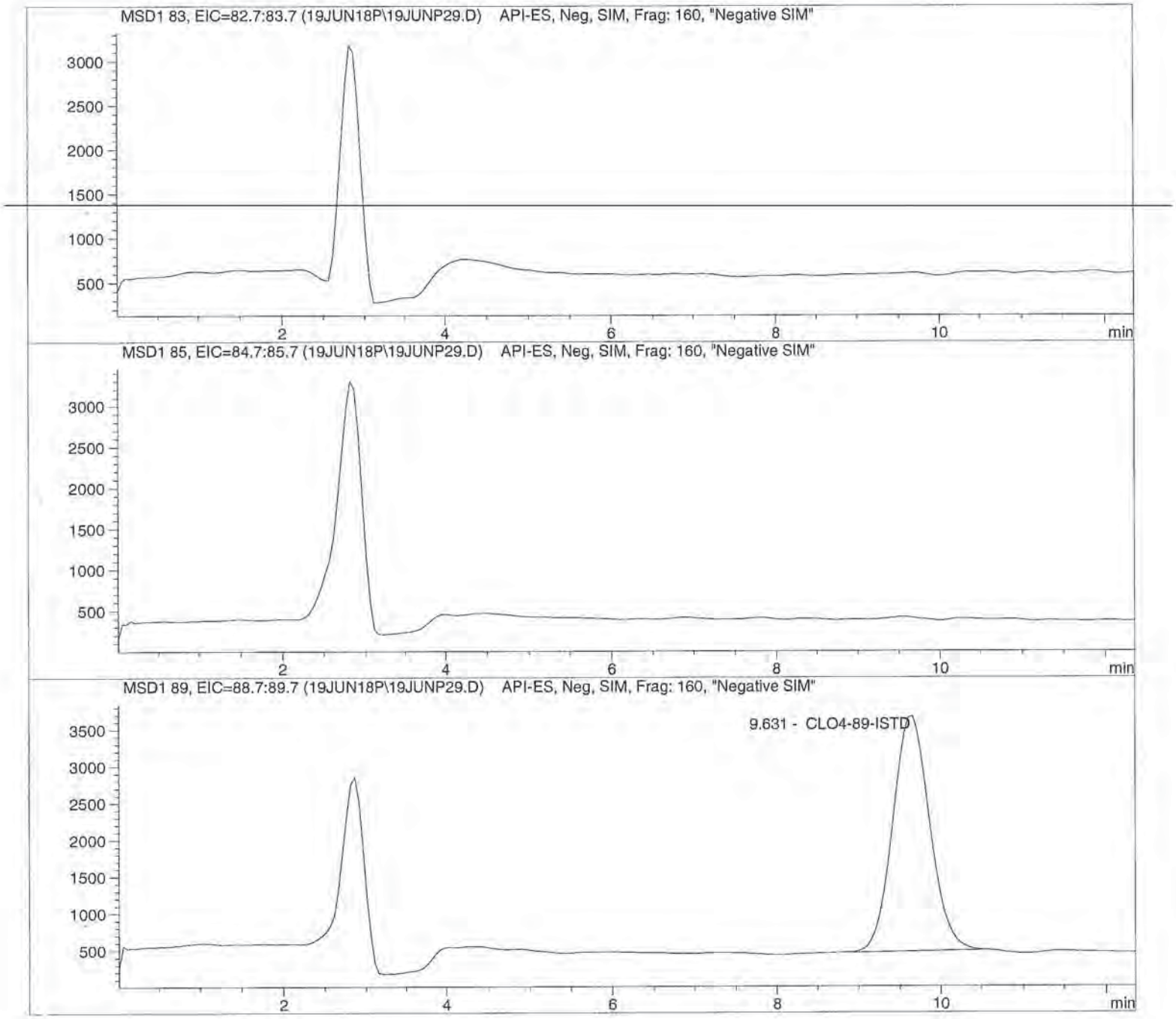
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP29.D Sample Name: 1816954009

Injection Date:	6/19/2018 23:03:59	Seq Line:	29
Sample Name:	1816954009	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP29.D Sample Name: 1816954009

Injection Date:	6/19/2018 23:03:59	Seq Line:	29
Sample Name:	1816954009	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.631	BBA	100660.5	5.0000	CLO4-89-ISTD

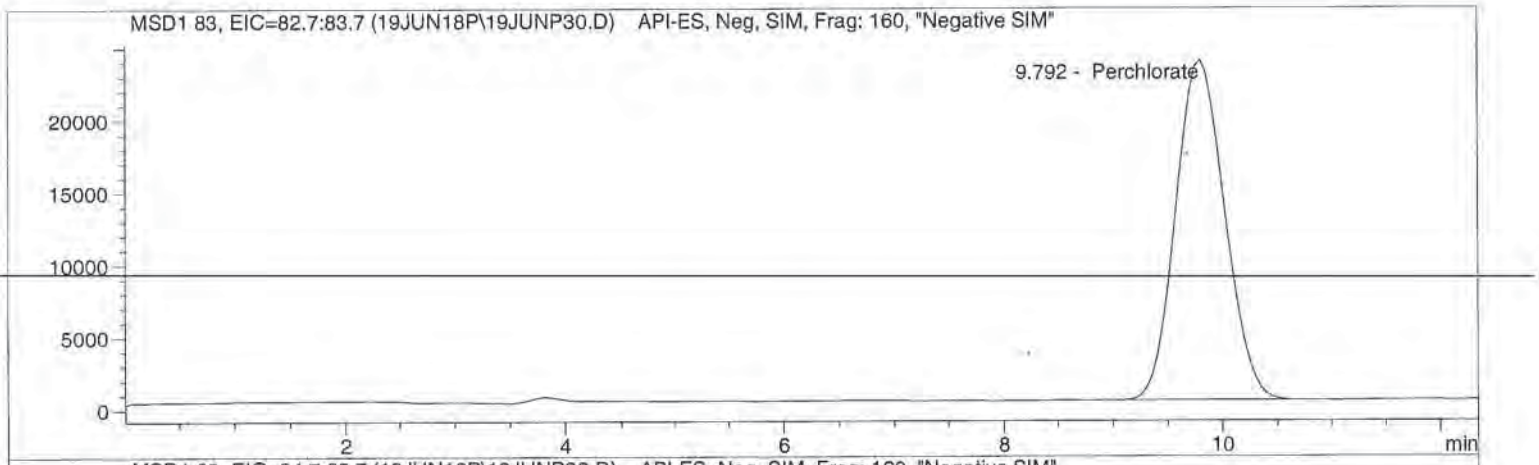
*** End of Report ***

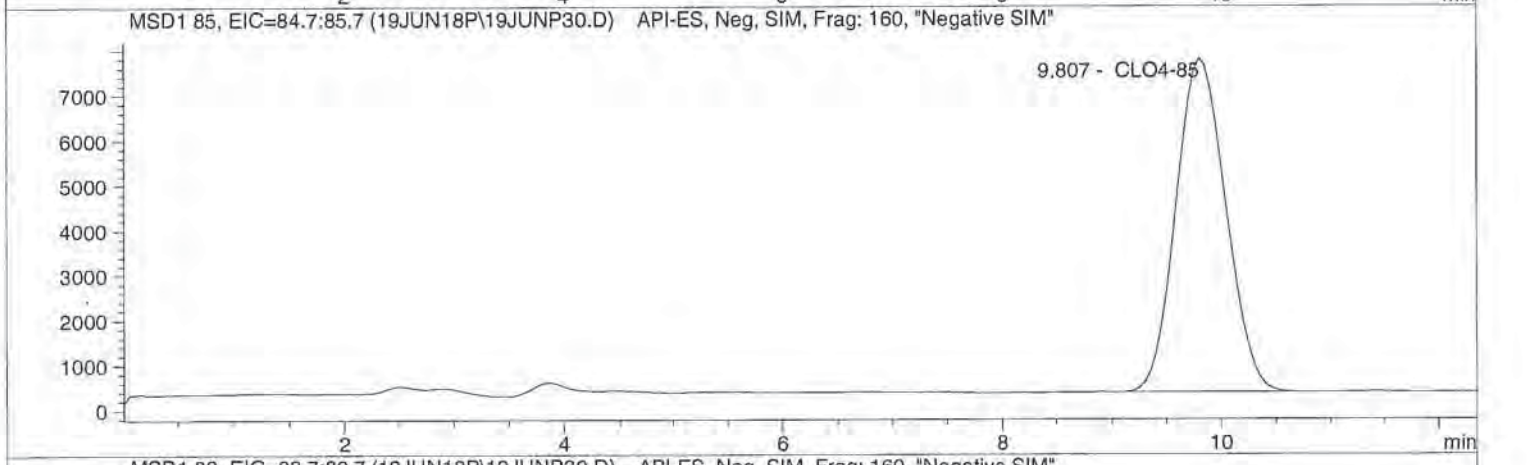
Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP30.D Sample Name: 606020 CCV@25

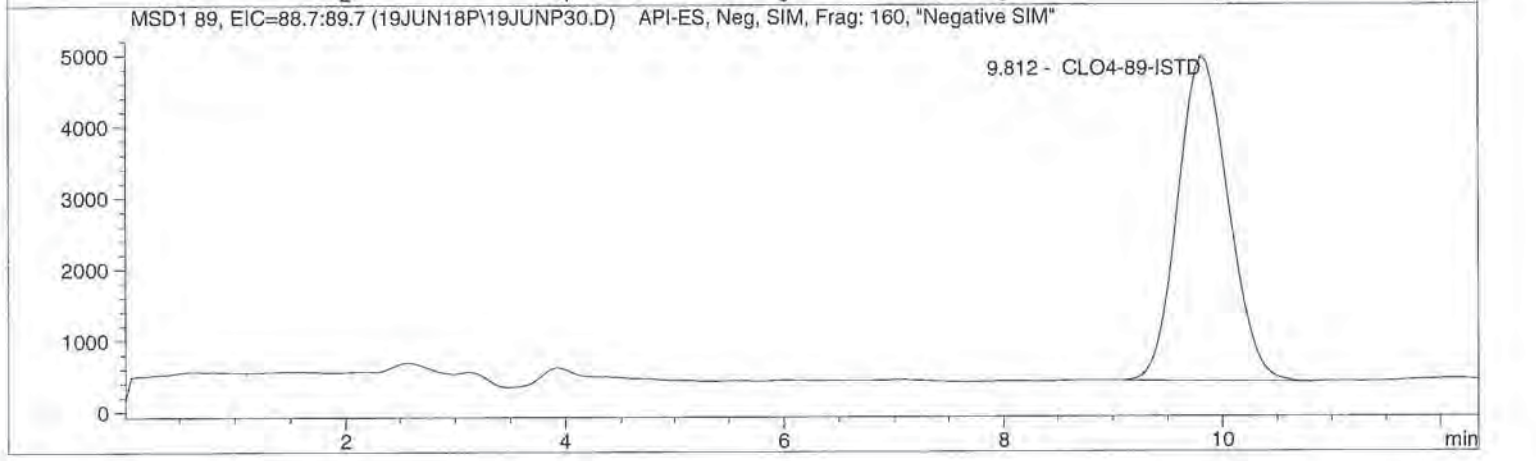
Injection Date:	6/19/2018 23:18:06	Seq Line:	30
Sample Name:	606020 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP30.D Sample Name: 606020 CCV@25

Injection Date:	6/19/2018 23:18:06	Seq Line:	30
Sample Name:	606020 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.792	BBA	731446.4	22.8637	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.807	PBA	235064.3	22.0195	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.812	BBA	146114.3	5.0000	CLO4-89-ISTD

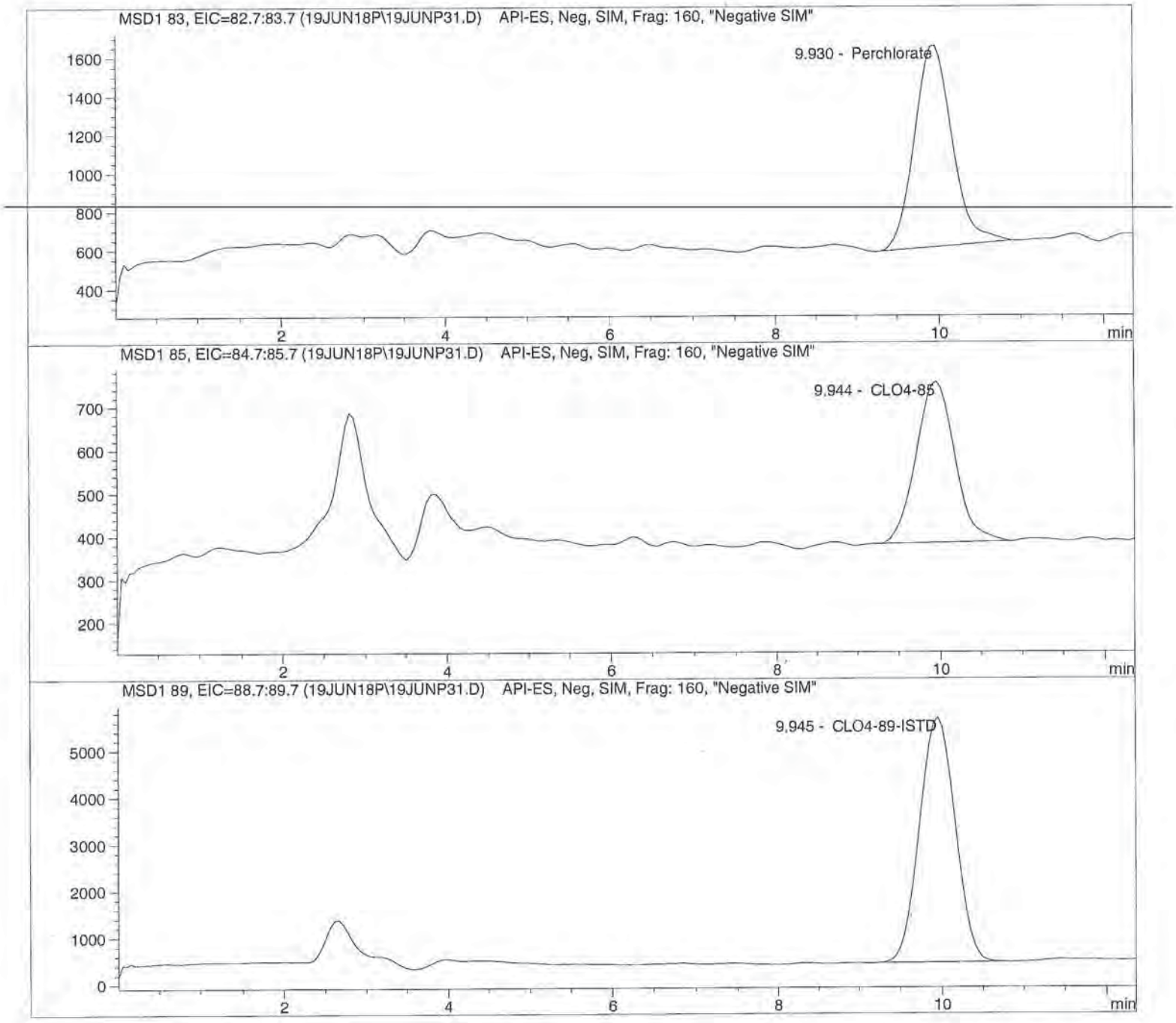
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP31.D Sample Name: 606021 LODV@1.

Injection Date:	6/19/2018 23:32:14	Seq Line:	31
Sample Name:	606021 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP31.D Sample Name: 606021 LODV@1.

Injection Date:	6/19/2018 23:32:14	Seq Line:	31
Sample Name:	606021 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.930	PBA	32934.3	1.0009	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.944	PBA	12047.2	0.9641	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.945	PBA	156193.2	5.0000	CLO4-89-ISTD

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18Q.S

Sequence Table:

Method and Injection Info Part:

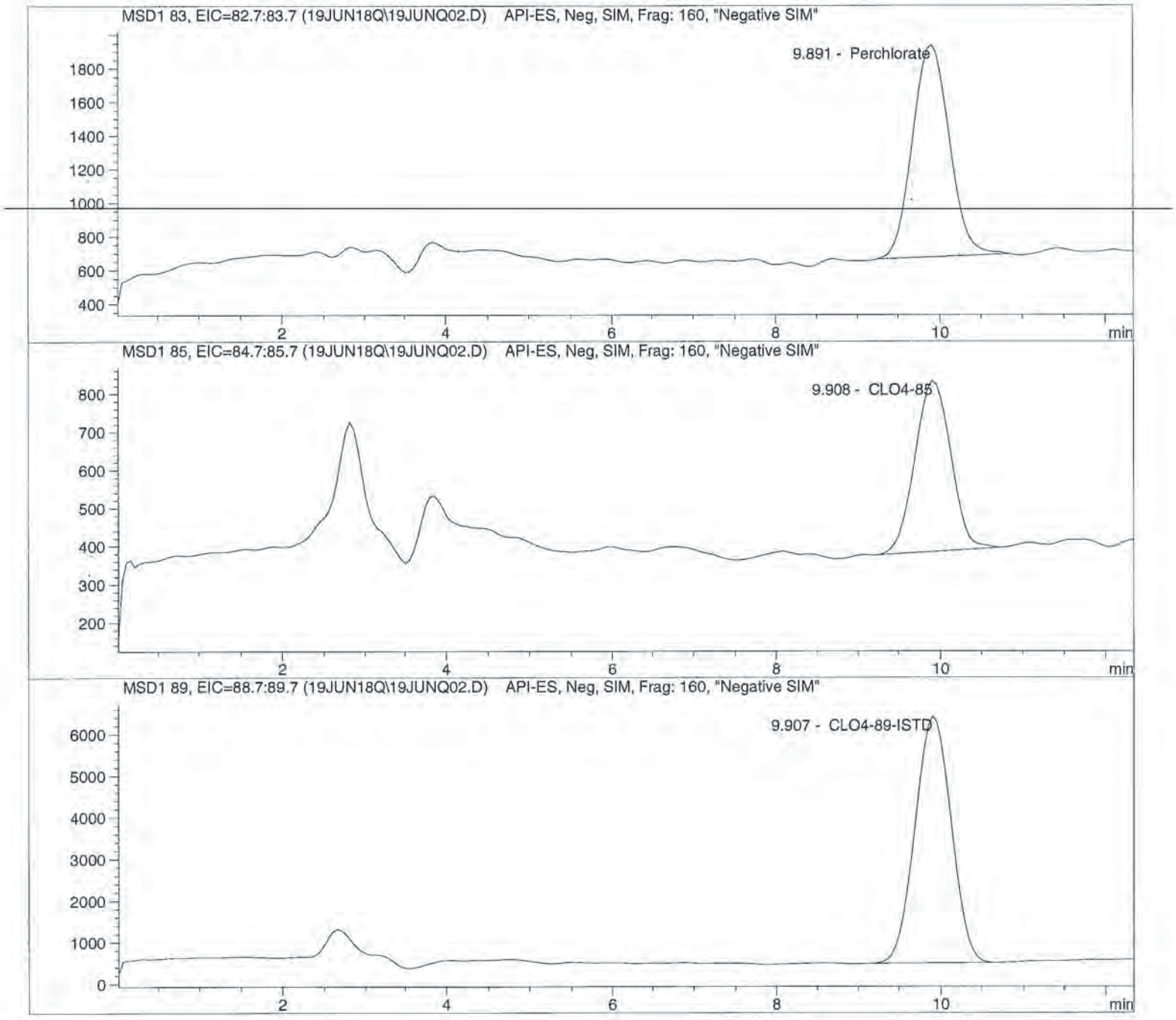
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	606051 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	606052 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 84	1816952006 5X	CLO4-DOD	1	Sample		
4	Vial 71	606053 CCV@258	CLO4-DOD	1	Ctrl Samp		
5	Vial 72	606054 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ02.D Sample Name: 606052 LODV@1.

Injection Date:	6/20/2018 08:25:36	Seq Line:	2
Sample Name:	606052 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ02.D Sample Name: 606052 LODV@1.

Injection Date:	6/20/2018 08:25:36	Seq Line:	2
Sample Name:	606052 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.891	PBA	38722.7	1.0290	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.908	PBA	13433.8	0.9346	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.907	PBA	178810.4	5.0000	CLO4-89-ISTD

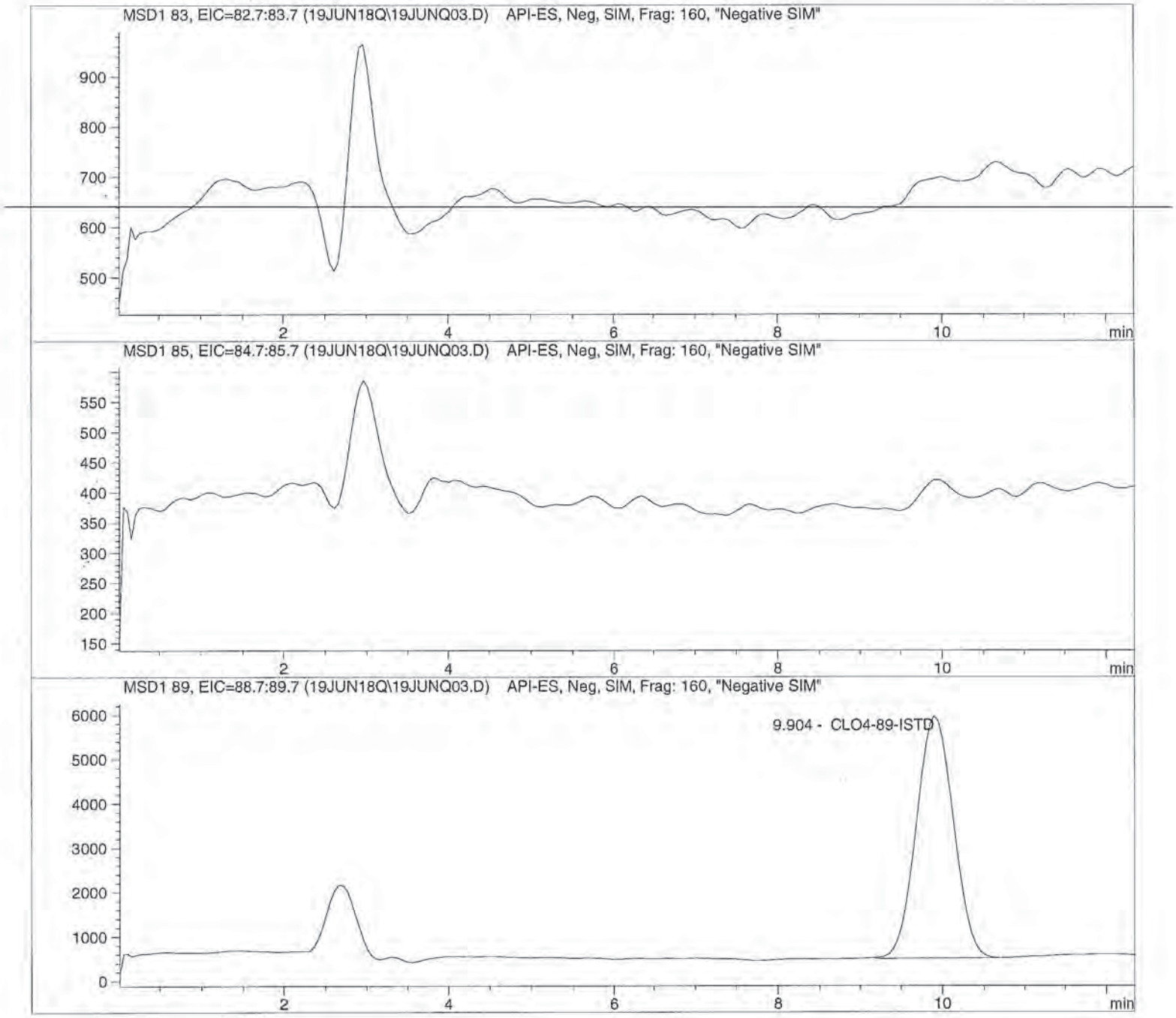
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ03.D Sample Name: 1816952006 5X

Injection Date:	6/20/2018 08:39:44	Seq Line:	3
Sample Name:	1816952006 5X	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ03.D Sample Name: 1816952006 5X

Injection Date:	6/20/2018 08:39:44	Seq Line:	3
Sample Name:	1816952006 5X	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
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
9.904	BBA	169285.3	25.0000	CLO4-89-ISTD

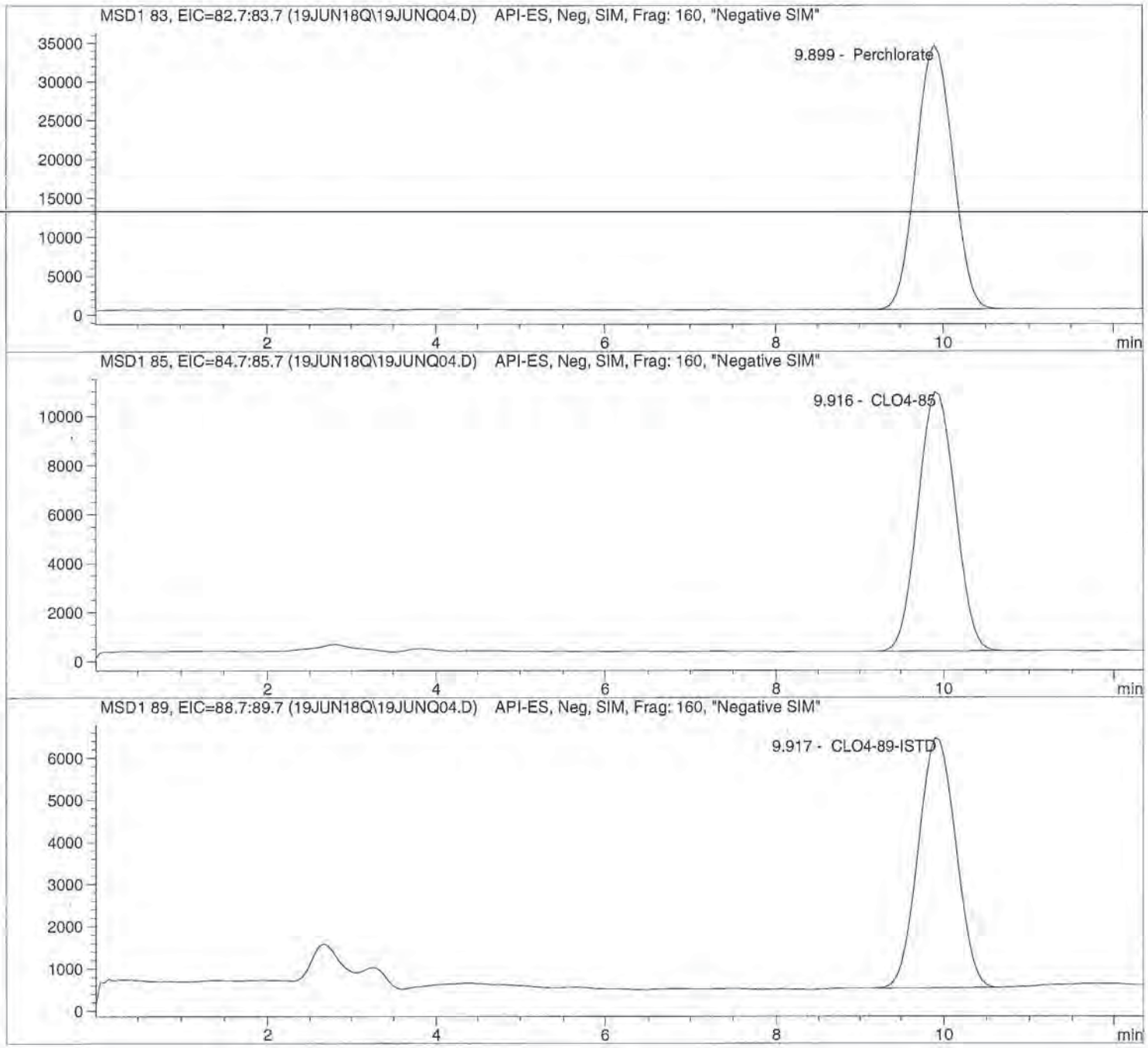
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ04.D Sample Name: 606053 CCV@25

Injection Date:	6/20/2018 08:58:36	Seq Line:	4
Sample Name:	606053 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ04.D Sample Name: 606053 CCV@25

Injection Date:	6/20/2018 08:58:36	Seq Line:	4
Sample Name:	606053 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.899	PBA	1002286.8	25.3031	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.916	PBA	316462.8	23.9970	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.917	BBA	179448.2	5.0000	CLO4-89-ISTD

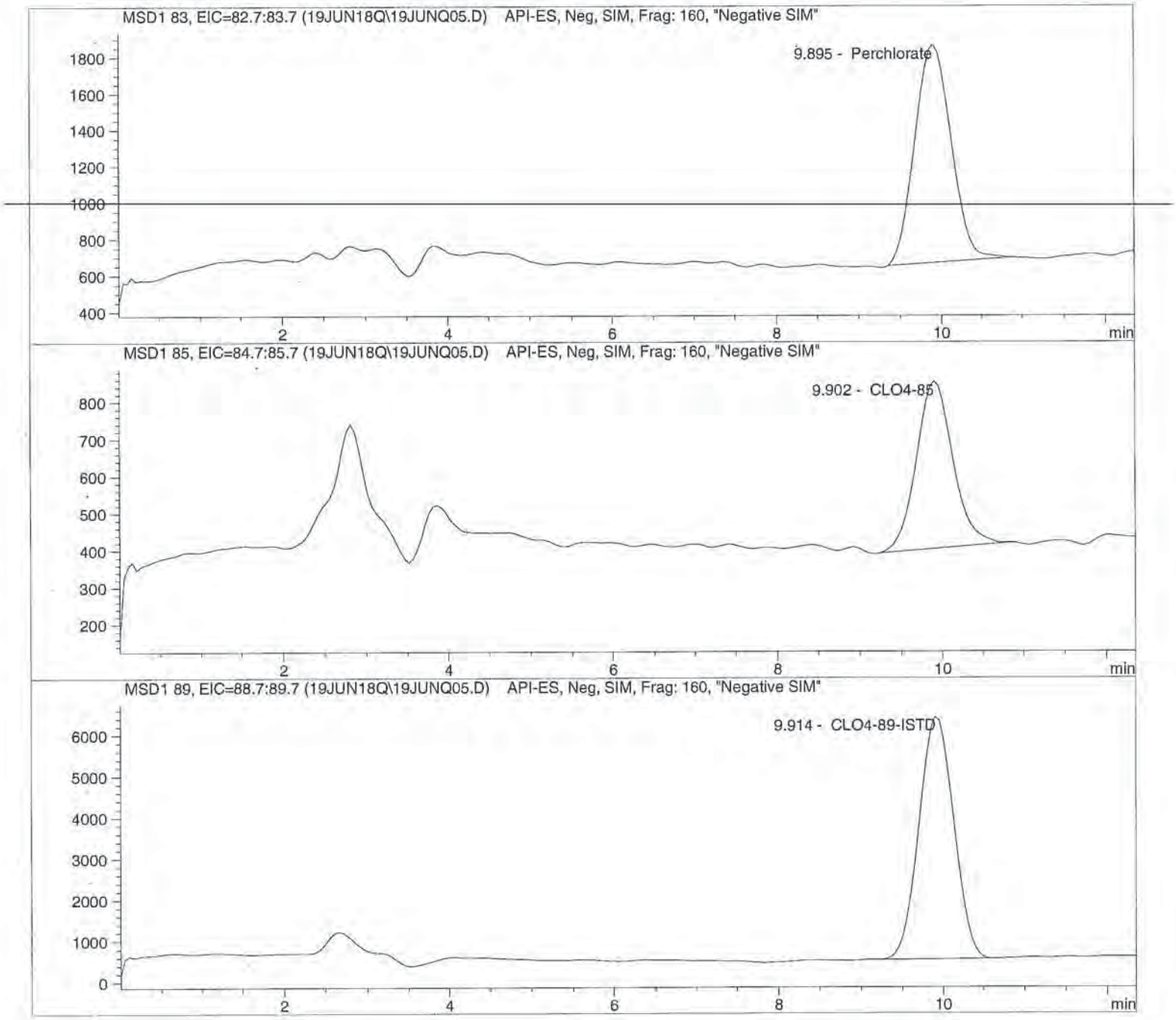
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ05.D Sample Name: 606054 LODV@1.

Injection Date:	6/20/2018 09:12:46	Seq Line:	5
Sample Name:	606054 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18Q\19JUNQ05.D Sample Name: 606054 LODV@1.

Injection Date:	6/20/2018 09:12:46	Seq Line:	5
Sample Name:	606054 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.895	PBA	37184.3	1.0043	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.902	PBA	14147.5	1.0138	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.914	BBA	175765.1	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-DPR.M

Calibration Table

Perchlorate

Calib. Data Modified : 6/18/2018 11:33:52 AM

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
9.970	1	1	1.00000	5.39328e4	1.85416e-5		1	Perchlorate
		2	2.00000	7.74447e4	2.58249e-5			
		3	5.00000	1.73718e5	2.87823e-5			
		4	10.00000	3.76746e5	2.65431e-5			
		5	25.00000	9.93283e5	2.51691e-5			
		6	50.00000	1.86489e6	2.68113e-5			
		7	75.00000	2.98097e6	2.51596e-5			
9.988	3	1	5.00000	2.52736e5	1.97835e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.82947e5	2.73304e-5			
		3	5.00000	1.74071e5	2.87238e-5			
		4	5.00000	1.82351e5	2.74196e-5			
		5	5.00000	1.76434e5	2.83393e-5			
		6	5.00000	1.57107e5	3.18255e-5			
		7	5.00000	1.54056e5	3.24558e-5			
9.988	2	1	1.00000	1.91282e4	5.22790e-5		1	CLO4-85
		2	2.00000	2.81496e4	7.10489e-5			
		3	5.00000	6.23358e4	8.02108e-5			
		4	10.00000	1.28536e5	7.77995e-5			
		5	25.00000	3.30100e5	7.57346e-5			
		6	50.00000	6.13931e5	8.14424e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	75.00000	9.91567e5	7.56379e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 7.880 min To 11.880 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 7.881 min To 11.866 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

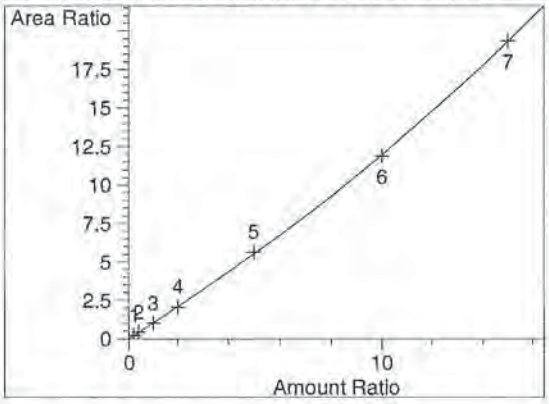
Compound: CLO4-85
- Time Window : From 7.882 min To 11.882 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Peak Sum Table

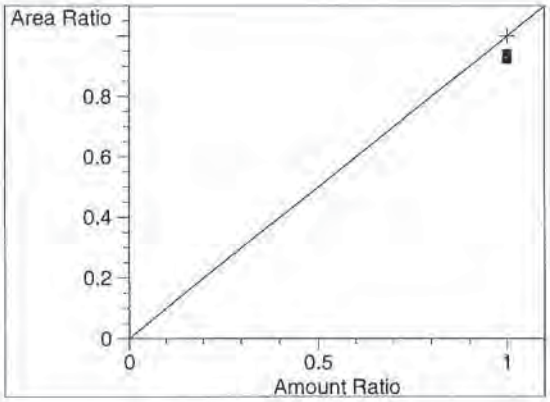
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

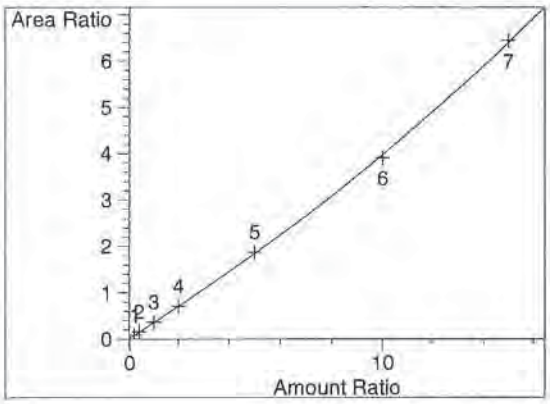
Calibration Curves



Perchlorate at exp. RT: 9.970
MSD1 83, EIC=82.7:83.7
Correlation: 0.99994
Residual Std. Dev.: 0.06841
Formula: $y = ax^2 + bx + c$
a: 1.87050e-2
b: 1.00736
c: 8.45547e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 9.988
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1



CLO4-85 at exp. RT: 9.988
MSD1 85, EIC=84.7:85.7
Correlation: 0.99991
Residual Std. Dev.: 0.03544
Formula: $y = ax^2 + bx + c$
a: 5.98841e-3
b: 3.36190e-1
c: 1.20802e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.S

Sequence Table:

Method and Injection Info Part:

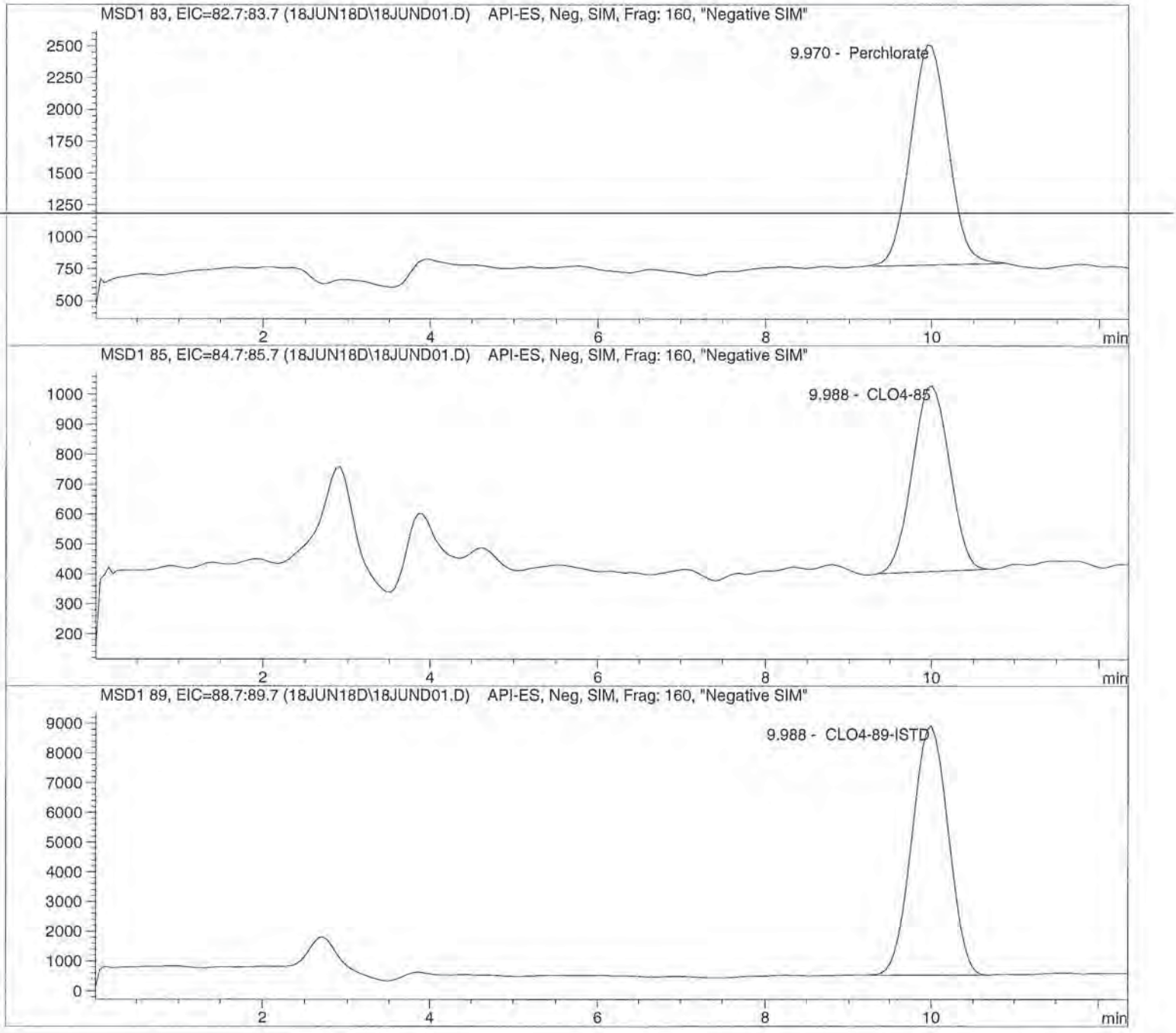
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605571 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605572 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605573 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605574 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605575 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815995001	CLO4-DOD	1	Sample		
15	Vial 85	1815995002	CLO4-DOD	1	Sample		
16	Vial 86	1815995003	CLO4-DOD	1	Sample		
17	Vial 87	1815995004 10X	CLO4-DOD	1	Sample		
18	Vial 88	1815995005 10X	CLO4-DOD	1	Sample		
19	Vial 89	1815995006	CLO4-DOD	1	Sample		
20	Vial 90	1815995007 100	CLO4-DOD	1	Sample		
21	Vial 91	1815995008	CLO4-DOD	1	Sample		
22	Vial 61	1816211001	CLO4-DOD	1	Sample		
23	Vial 62	1816211002 10X	CLO4-DOD	1	Sample		
24	Vial 75	605576 CCV@25	CLO4-DOD	1	Ctrl Samp		
25	Vial 71	605577 LODV@1.	CLO4-DOD	1	Ctrl Samp		
26	Vial 63	1816211003 10X	CLO4-DOD	1	Sample		
27	Vial 64	1816211004	CLO4-DOD	1	Sample		
28	Vial 65	1816211005 10X	CLO4-DOD	1	Sample		
29	Vial 66	1816211006 MS	CLO4-DOD	1	Sample		
30	Vial 67	1816211007 MSD	CLO4-DOD	1	Sample		
31	Vial 68	1816211008	CLO4-DOD	1	Sample		
32	Vial 69	1816211009 10X	CLO4-DOD	1	Sample		
33	Vial 70	1816211010	CLO4-DOD	1	Sample		
34	Vial 92	1815995007 1K	CLO4-DOD	1	Sample		
35	Vial 75	605578 CCV@25	CLO4-DOD	1	Ctrl Samp		
36	Vial 71	605579 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.970	BBA	53932.8	1.0134	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	PBA	19128.2	0.9428	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	BBA	252736.1	5.0000	CLO4-89-ISTD

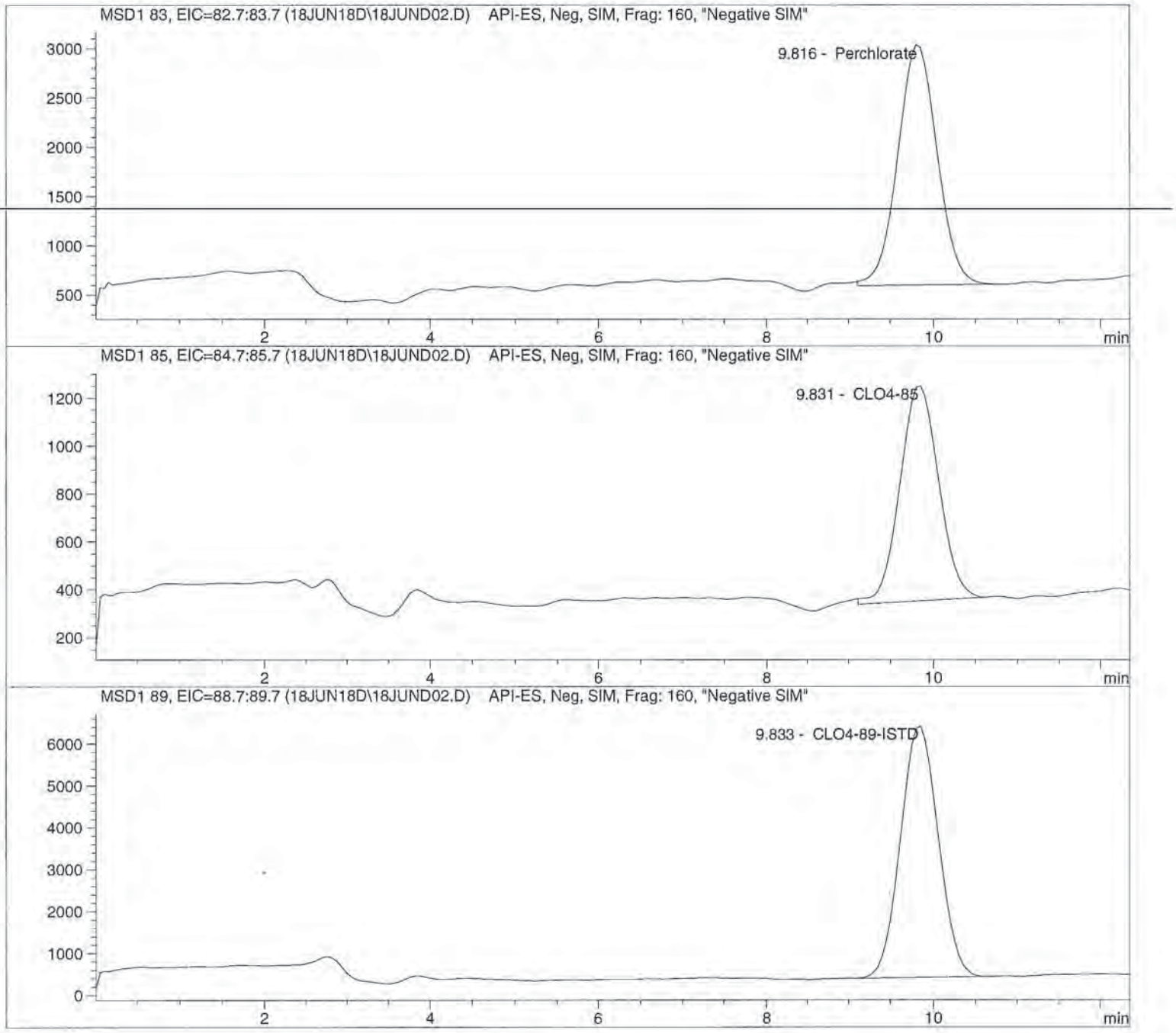
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.816	BBA	77444.7	2.0436	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.831	BBA	28149.6	2.0931	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.833	BBA	182946.7	5.0000	CLO4-89-ISTD

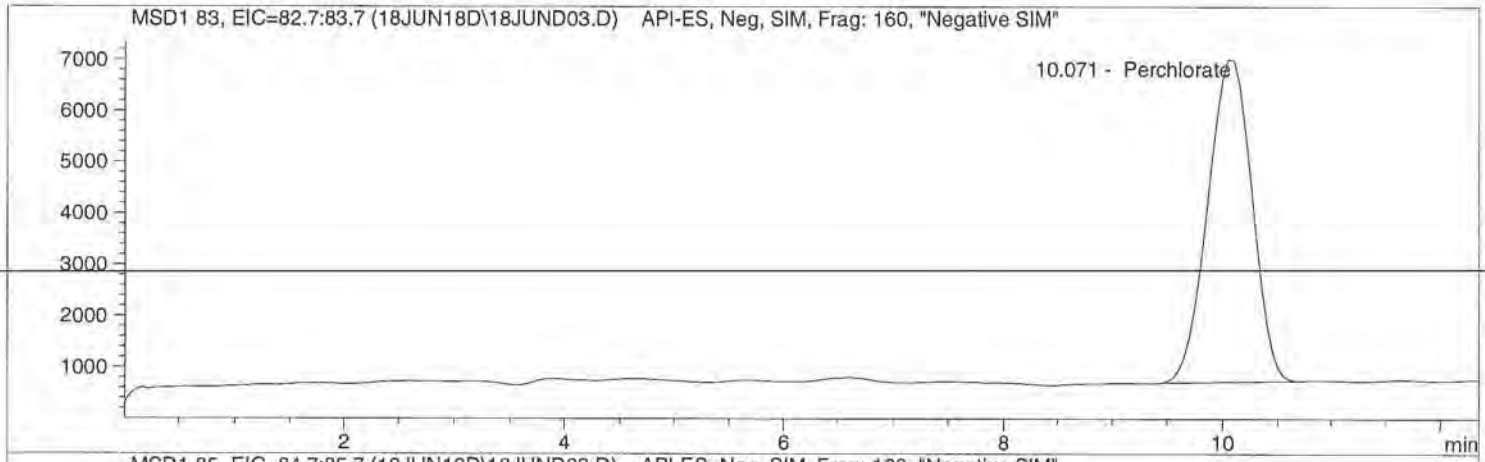
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

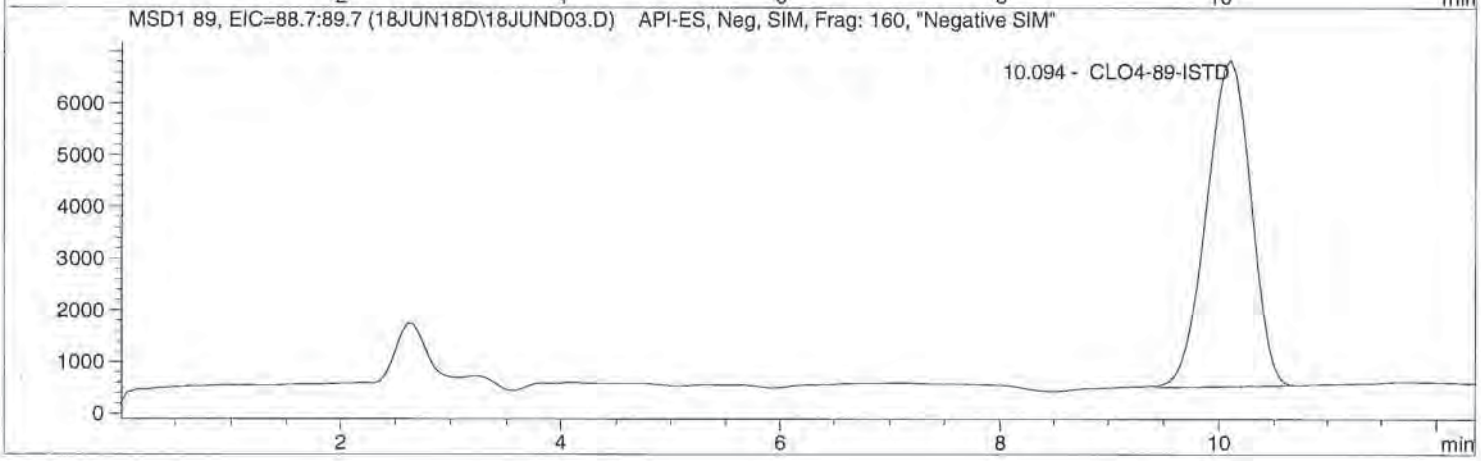
Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.071	PBA	173717.8	4.8249	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.084	PBA	62335.8	5.0552	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.094	BBA	174071.5	5.0000	CLO4-89-ISTD

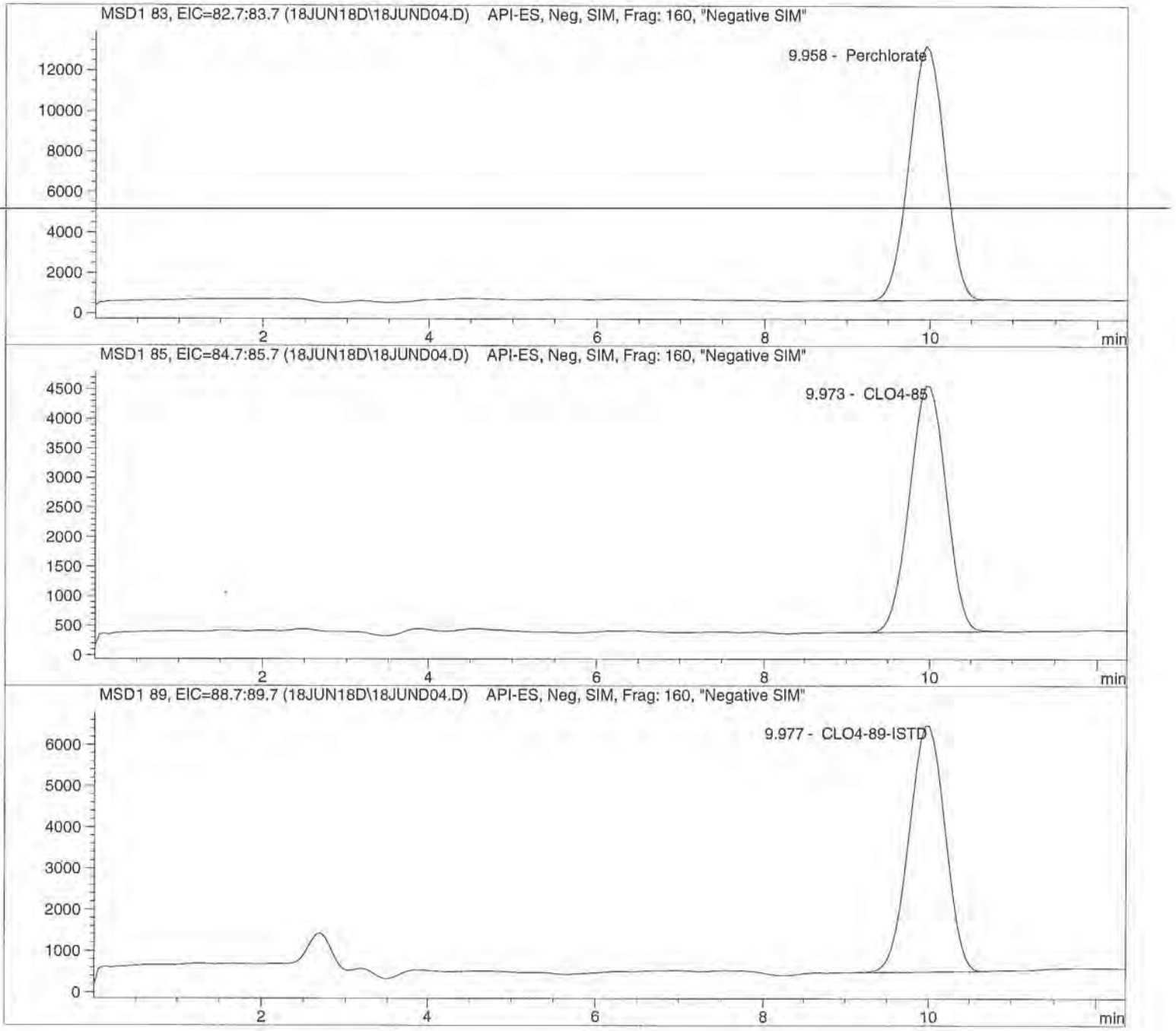
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.958	PBA	376746.4	9.8523	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.973	PBA	128535.5	9.9509	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.977	BBA	182351.5	5.0000	CLO4-89-ISTD

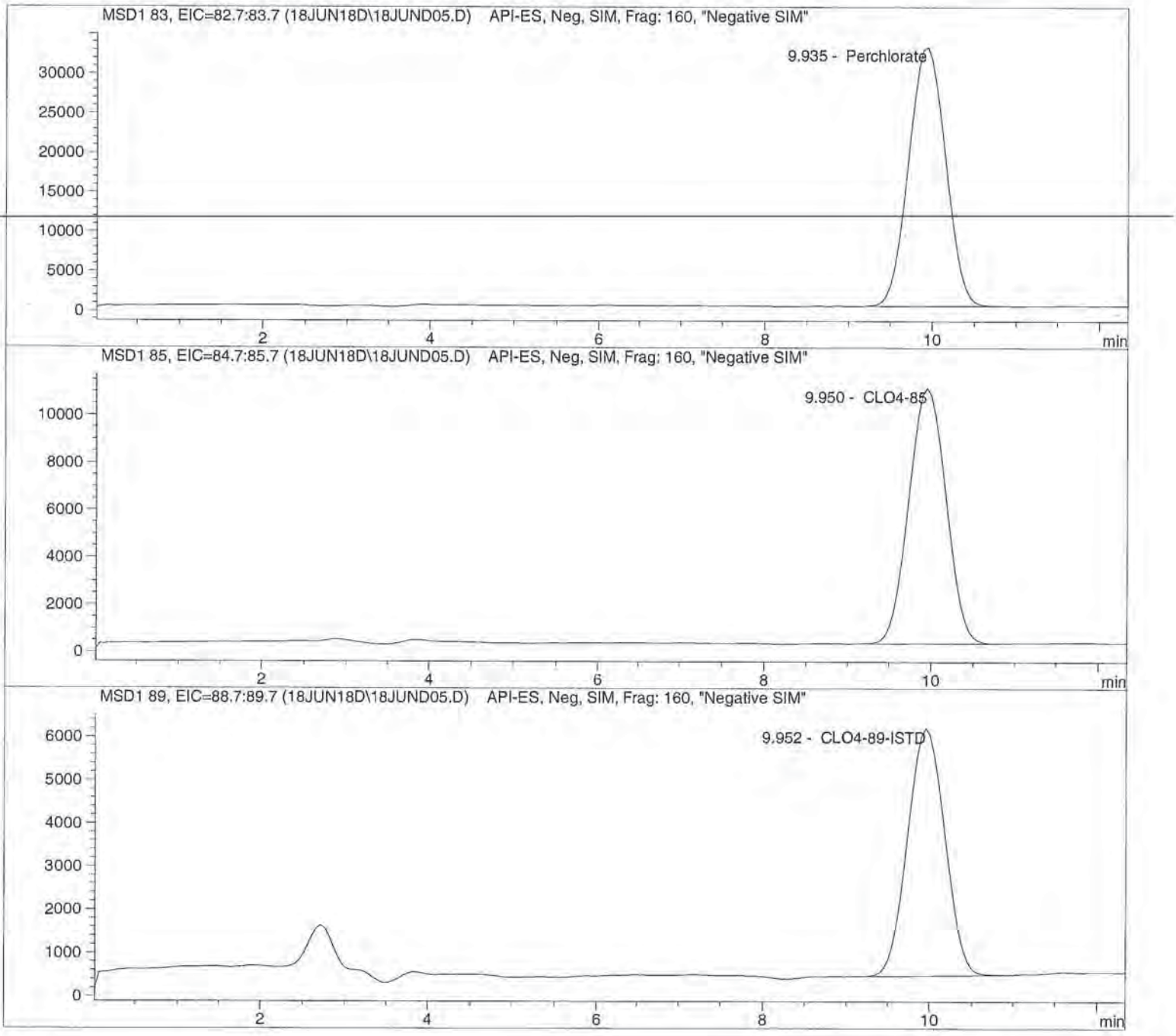
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.935	BBA	993282.6	25.4885	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.950	BBA	330100.2	25.3558	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.952	BBA	176433.5	5.0000	CLO4-89-ISTD

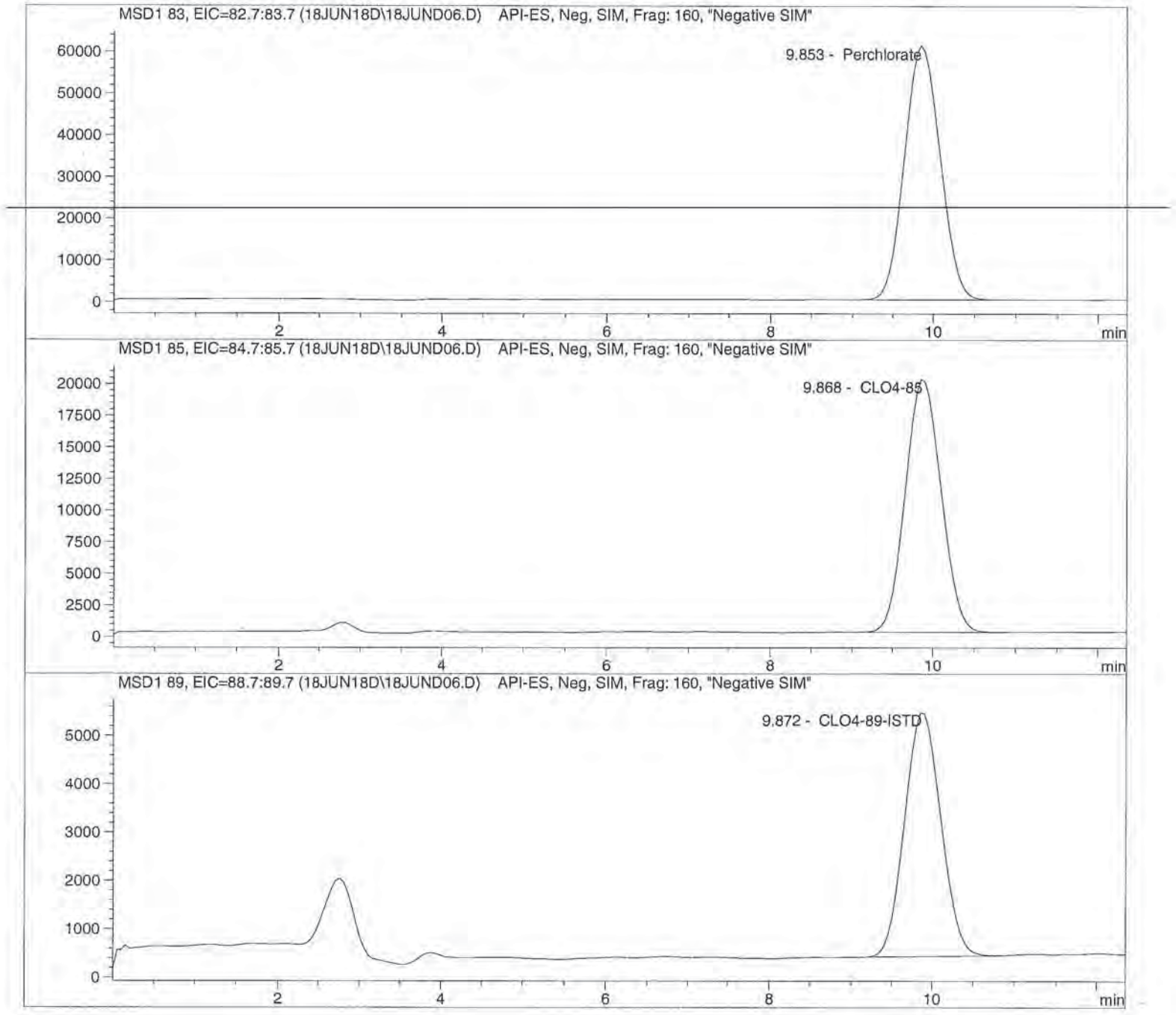
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.853	BBA	1864888.3	49.7015	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.868	BBA	613930.9	49.2848	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.872	PBA	157106.9	5.0000	CLO4-89-ISTD

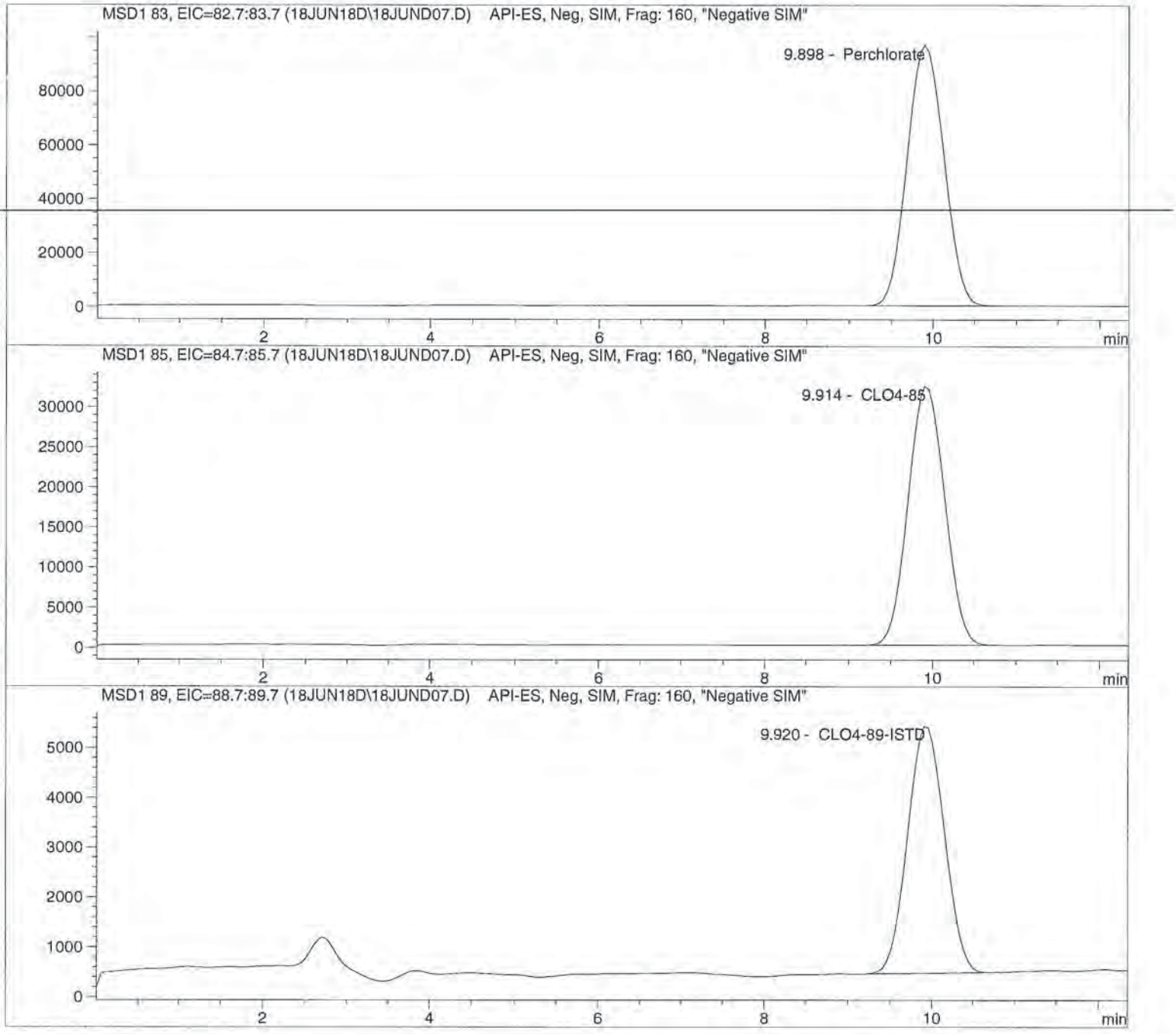
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.898	PBA	2980974.0	75.0714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.914	BBA	991566.9	75.3302	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.920	PBA	154055.8	5.0000	CLO4-89-ISTD

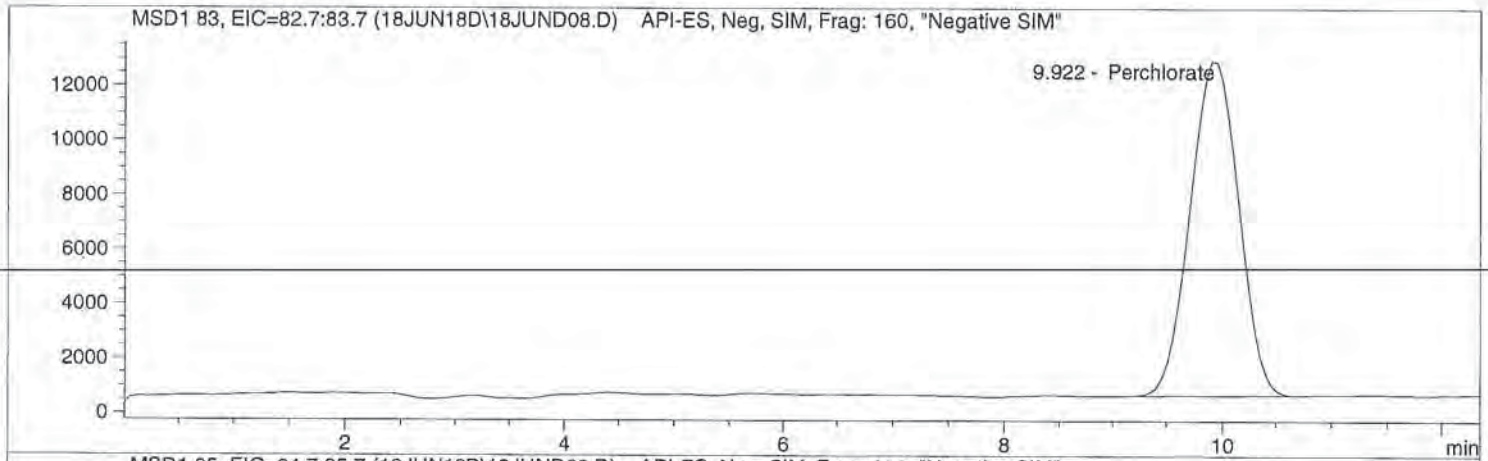
*** End of Report ***

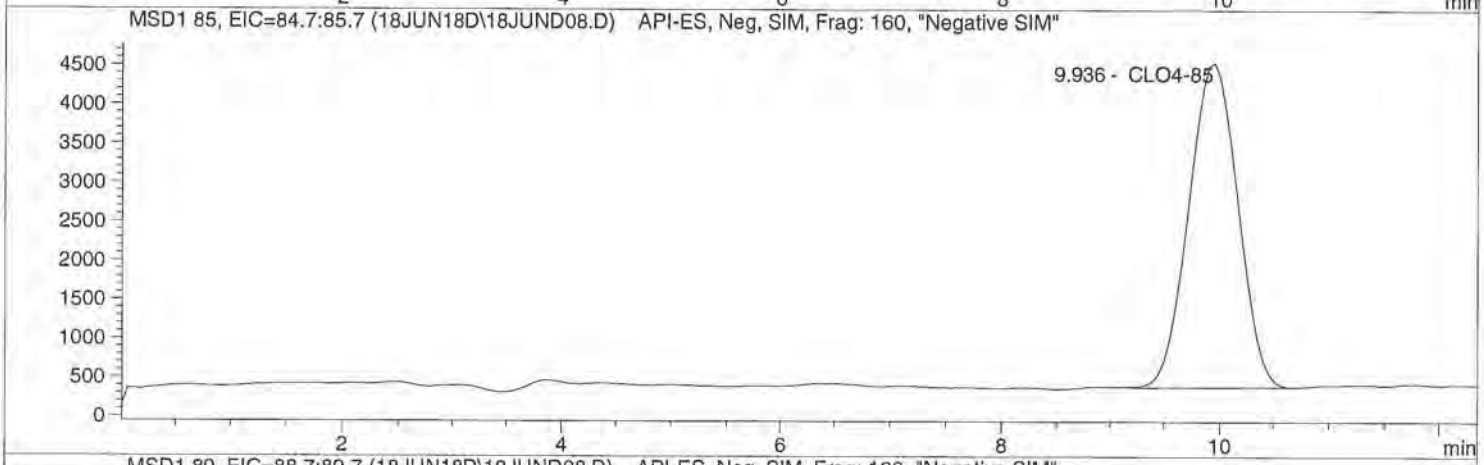
Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

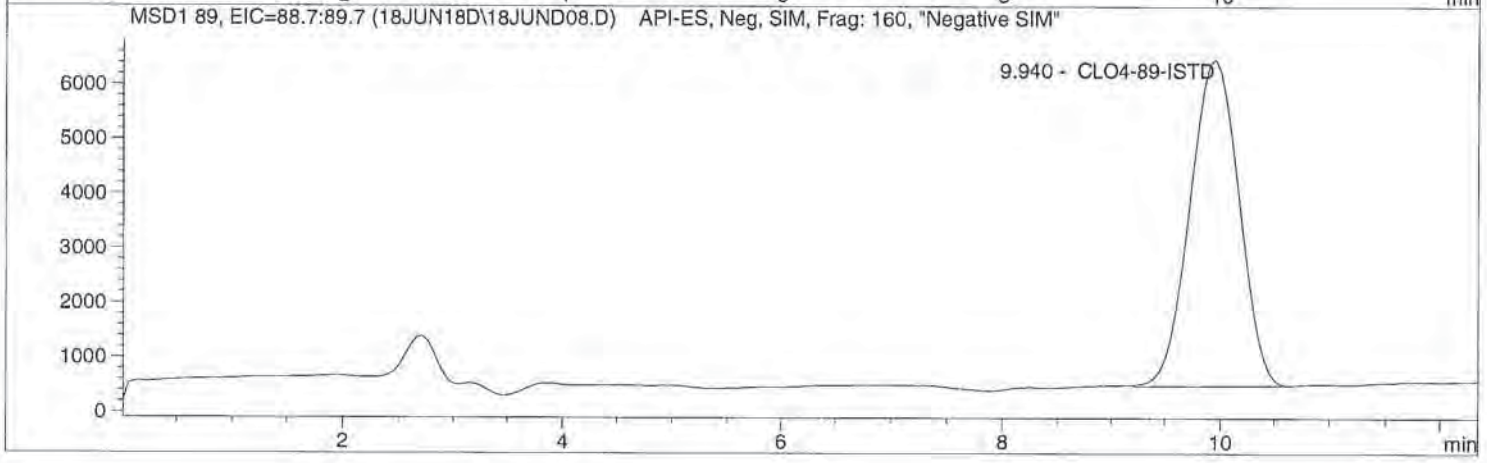
Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.922	BBA	376863.7	9.6854	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.936	BBA	129075.8	9.8174	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	BBA	185649.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

Raw Data

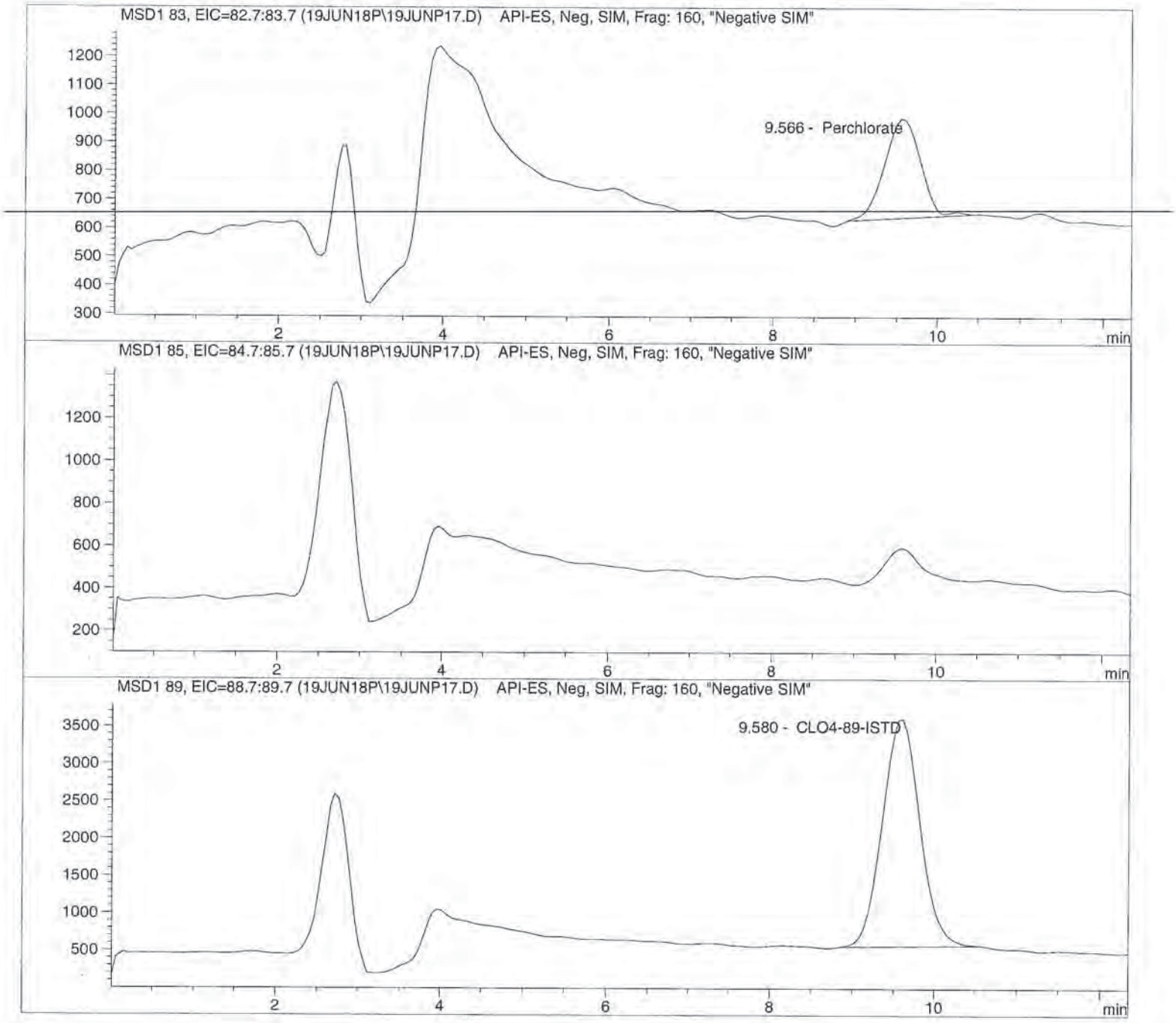
Unmodified

Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP17.D Sample Name: 1816952007

Injection Date:	6/19/2018 20:14:05	Seq Line:	17
Sample Name:	1816952007	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18P\19JUNP17.D Sample Name: 1816952007

Injection Date:	6/19/2018 20:14:05	Seq Line:	17
Sample Name:	1816952007	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.566	BBA	10482.3	0.4956	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
9.580	PBA	96618.2	5.0000	CLO4-89-ISTD

*** End of Report ***

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

WorkOrder: HS18060892

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

25-Jun-2018

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

June 25, 2018

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

Work Order: **HS18060892**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 1 sample(s) on Jun 19, 2018 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 Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18060892

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18060892-01	LH18/24-SP650_061818	Water		18-Jun-2018 08:00	19-Jun-2018 09:00	☐

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order:

CASE NARRATIVE

Work Order Comments

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

ALS Group Houston, Corp

Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: Longhorn GW Treatment Plant

WorkOrder:HS18060892

Sample ID: LH18/24-SP650_061818

Lab ID:HS18060892-01

Collection Date: 18-Jun-2018 08:00

Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	25-Jun-2018 09:39

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

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18060892

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318532	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	**Matrix:** Water				
HS18060892-01	LH18/24-SP650_061818	18 Jun 2018 08:00			25 Jun 2018 09:39	1

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18060892**

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 Group Houston, Corp Date: 25-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

ALS Group Houston, Corp Date: 25-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18060892

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18060892-01	LH18/24-SP650_061818	Login	6/19/2018 3:17:32 PM	RPG	Sub
HS18060892-01	LH18/24-SP650_061818	Login	6/19/2018 3:17:32 PM	RPG	WET160
HS18060892-01	LH18/24-SP650_061818	Login	6/19/2018 3:17:32 PM	RPG	WET160
HS18060892-01	LH18/24-SP650_061818	Login	6/19/2018 3:17:32 PM	RPG	WET160

00903698

bhate

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

UMS Number: ____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP

Client Name:

Collected by: Scott Beesinger

Field Sample ID (20 Characters Max)	ERSIMS 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	Perchlorate									Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
									Sample Analysis Requested (5)									Quality Assurance Samples (6)			
LH18MW-SB1000-061818		6/18/18	0800	-	N		W	1	X												
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	

HS18060892

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

COMMENTS: 48 Hour TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/18/18	1430	1.		
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 Stanolift Rd, Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONJA 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 101099-01 in the Equipment Blank Lot Control

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1816481; 1816548; 1817040

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2103 (217008)

General Set Information: There were fourteen 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: The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 605872) was less than 1/2 the CRDL. The recovery for the LCS (605873) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). 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. Manual Integrations was performed for datafiles 19JUND15/23/25.

Thomas Bosch June 21, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: June 22, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817040**
Project ID: LHAAP/GUTP 061818
Purchase Order: NWO1312.0150
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_061818	1817040001	06/18/18	06/19/18	LHAAP/GUTP

ANALYTICAL REPORT

Workorder: 34-1817040
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_061818** | Sampling Site: LHAAP/GUTP | Collected: 06/18/2018
Lab ID: 1817040001 | Media: 125 mL Nalgene | Received: 06/19/2018
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/2103 (HBN: 217008) | **Percent Solid:** NA
Analyzed: 06/19/2018 15:36 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Comments

Workorder: 1817040

Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. The sample was re-analyzed and reported from 1:5 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 06/20/2018 16:16	/S/ Stephen Brose 06/22/2018 08:16

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: 34-1817040
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1817040

Limits:	Client SOW/Contract Specified	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	ELMS/2103 (HBN: 217008)
Preparation:	NA	**Batch:**	NA
Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 605872
Analyzed: 06/19/2018 10:34
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 605873
Analyzed: 06/19/2018 10:48
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.06	5.00	101	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1816481002	**MS:** 605908	**MSD:** 605909
Analyzed: 06/19/2018 11:21	**Analyzed:** 06/19/2018 11:35	**Analyzed:** 06/19/2018 11:49
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	62.0	66.5	5	96.9	78.8	123.8	66.2	90.7	0.469	0.0	20.0

Continuing Calibration Verification

CCV: 605869	**CCV:** 605876	**CCV:** 605878
Analyzed: 06/19/2018 09:51	**Analyzed:** 06/19/2018 13:28	**Analyzed:** 06/19/2018 15:52
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	25.1	25.0	101	25.1	25.0	100	23.7	25.0	94.8

Interference Check Sample

ICSA: 605871
Analyzed: 06/19/2018 10:20
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.922	1.00	92.2

Limit of Detection Verification

LODV: 605870	**LODV:** 605877	**LODV:** 605879
Analyzed: 06/19/2018 10:06	**Analyzed:** 06/19/2018 13:42	**Analyzed:** 06/19/2018 16:06
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.907	1.00	90.7	0.956	1.00	95.6	1.05	1.00	105

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1817040

Limits:	Client SOW/Contract Specified	**Preparation:**	NA
Basis:	DoD QSM	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850, DoD QSM		
Batch:	ELMS/2103 (HBN: 217008)		
Analyzed By:	Thomas Bosch		

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

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
06/20/2018 16:16	06/22/2018 08:16

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

00903706

bhate ENVIRONMENTAL CONSTRUCTION LIMITED

W 1817040

18698/#4

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: 1817040

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) | Quality Assurance Samples (6)

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	PERCHLORATE										Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LH18/24-SP650-061818		6/18/18	0800	-	N		W	1	X													
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		

COMMENTS:

48 HOUR TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/18/18	1430	1. [signature]	6/19/18	1015
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: SONJA 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

00903707

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: NWO1312.0150	Split:	Workorder ID: 1817040	Level: ENV_LVL4
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	Requested Analysis: EPA 6850, DoD QSM
1	06/18/2018 08:00	LH18/24-SP650_061818	1817040001		Soil/Solid/Sediment	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	06/19/2018 10:15	ALS Sample Receiving	Sample Login
Julie Warath	6/19/18 1300	13B	storage
R.33.1	6.19.18/14:55	T. Bosch	6850

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

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

COC ID: 9308

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:	HS18060892
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18060892-01**	**LH18/24-SP650_061818**	**Water**	**18 Jun 2018 08:00**
	SUB_Perch-6850			21 Jun 2018

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: _____

Received By: _____ Date/Time: _____

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

00903709

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

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: BHATE

Project/Task/Site: 1817040

Date/Time of Receipt: 6/19/18 1045

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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 SYS3	5 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Marcel Sharp (Signature) Marcel Sharp (Printed Name) 6/19/18 (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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J461 687 982 2

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SALT LAKE CITY UT 84123-2502

P: BLACK S: MDBLU I: 1C

119-1005

191120 6/14 RRD United Parcel Service, Louisville, KY

Batch Worklist

Batch: ELMS/ 2103 Created: 6/19/2018 09:21 Instrument: LCMS04 HBN: 217008

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

Workorder: 1816481 [ENV_LVL4]
Workorder: 1816548 [ENV_LVL4]
Workorder: 1817040 [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	605869	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
2	605870	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
3	605871	ICS for HBN 217008 [ELMS/2103]				ICS	3		E6850..D3Q	5311		6/26/2018	6/19/2018
4	605872	LMB for HBN 217008 [ELMS/2103]				LMB	3		E6850Q413Q	5311		6/26/2018	6/19/2018
5	605873	LCS for HBN 217008 [ELMS/2103]				LCS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
6	1816481001	MW23_061118				SAMPLE	3	1816481001-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
7	1816481002	18CPTMW035_061118				SAMPLE	3	1816481002-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
8	605908	18CPTMW035_06...(1816481002MS)				MS	3		E6850Q413Q	5311		6/26/2018	6/19/2018
9	605909	18CPTMW035_0...(1816481002MSD)				MSD	3		E6850Q413Q	5311		6/26/2018	6/19/2018
10	1816481003	MW1_061118				SAMPLE	3	1816481003-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
11	1816481004	MW1_061118-a				SAMPLE	3	1816481004-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
12	1816481005	MW10_061118				SAMPLE	3	1816481005-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
13	1816481006	18CPlMW18_061118				SAMPLE	3	1816481006-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
14	1816481007	18WW22_061118				SAMPLE	3	1816481007-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
15	1816481008	C03_061118				SAMPLE	3	1816481008-A	E6850Q41.3	5480	7/9/2018	6/26/2018	6/19/2018
16	605876	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
17	605877	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018
18	1816548001	MW14_061218				SAMPLE	3	1816548001-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
19	1816548002	18CPTMW19_061218				SAMPLE	3	1816548002-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
20	1816548003	18CPTMW19SW_061218				SAMPLE	3	1816548003-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
21	1816548004	18WW03_061218				SAMPLE	3	1816548004-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
22	1816548005	18WW03_061218-a				SAMPLE	3	1816548005-A	E6850Q41.3	5480	7/10/2018	6/27/2018	6/19/2018
23	1817040001	LH18/24-SP650_061818				SAMPLE	3	1817040001-A	E6850Q41.3	5480	7/16/2018	7/3/2018	6/19/2018
24	605878	CCV for HBN 217008 [ELMS/2103]				CCV	3		E685041C3Q	5311		6/26/2018	6/19/2018
25	605879	LODV for HBN 217008 [ELMS/2103				LODV	3		E6850..D3Q	5311		6/26/2018	6/19/2018



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1816481 (001-08); 1816548 (001-05); 1817040 (001)
ELMS Batch/HBN ID: 2103 (217008)
Prep Date: 06/19/2018 Analysis Date: 06/19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605873; Target = 5.0µg/L. ASTM type II water was used for LMB 605872.

MS/MSD: MS/MSD was performed on sample 1816481002 (Client ID: 18CPTMW035_061118). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1816481001/1816548001 – 10,000; 1816481003/04 – 100. Sample 1817040001 failed the 50-150% method requirement for ISTD recovery. This sample was re-analyzed and reported from 1:5 dilution. 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\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 19JUND15/23/25.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\217008-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

ALS Work Order #'s & Sample #( )'s: 1815995 (001-08); 1816211 (001-10)
ELMS Batch/HBN ID: 2102 (216868)
Prep Date: 06/18/2018 Analysis Date: 06/18,19/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.s & 18JUN18B.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 605575; Target = 5.0µg/L. ASTM type II water was used for LMB 605574.

MS/MSD: MS/MSD was performed on samples 1815995006/06 (Client ID: MW22_060718). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1815995004/05; 1816211002/03/05-07/09 - 1:10; 1815995007 – 10,000. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate (MS/MSD – 1815995006/07) failed QC acceptance criteria for percent recoveries, biased high. 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\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 18JUND11/27.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\216868-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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 Reference Material Producer
ANAB 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 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

125 Market Street
New Haven, CT 06513
USA

AccuStandard®, Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

QR-ORG/INO-001
Rev. 5/15

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\19JUN18D\19JUN18D.B

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

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

#	*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
	*	605869 CCV@25	Vial 71	1	Control	2	1.04921e6	9.733	25.14272
	*	605870 LODV@1.	Vial 72	1	Control	3	3.28518e4	9.888	9.07214e-1
	*	605871 ICS@1.0	Vial 73	1	Control	4	3.36938e4	9.666	9.22282e-1
	*	605872 LMB	Vial 74	1	Control	5	0.00000	0.000	0.00000
	*	605873 QC@5.0	Vial 75	1	Control	6	2.11757e5	9.912	5.06331
	*	1816481001 10K	Vial 76	1	Sample	7	3.00030e5	9.888	9.09253e4
	*	1816481002	Vial 77	1	Sample	8	1.95169e6	9.501	61.61499
	*	605908 164822S	Vial 78	1	Sample	9	2.05363e6	9.492	66.46176
	*	605909 164822D	Vial 79	1	Sample	10	2.09468e6	9.491	66.15100
	*	1816481003 100	Vial 80	1	Sample	11	2.12737e6	9.800	5905.83887
	*	1816481004 100	Vial 81	1	Sample	12	2.13120e6	9.834	5973.35222
	*	1816481005	Vial 82	1	Sample	13	0.00000	0.000	0.00000
	*	1816481006	Vial 83	1	Sample	14	0.00000	0.000	0.00000
	*	1816481007	Vial 84	1	Sample	15	2.13319e4	9.567	9.59409e-1
	*	1816481008	Vial 85	1	Sample	16	7.66512e5	9.561	29.33930
	*	605876 CCV@258	Vial 71	1	Control	17	9.87419e5	9.743	25.05020
	*	605877 LODV@1.	Vial 72	1	Control	18	3.41921e4	9.897	9.56024e-1
	*	1816548001 10K	Vial 86	1	Sample	19	2.90652e5	9.905	9.35158e4
	*	1816548002	Vial 87	1	Sample	20	3.92451e5	9.742	15.16657
	*	1816548003	Vial 88	1	Sample	21	1.31455e5	9.707	5.91366
	*	1816548004	Vial 89	1	Sample	22	0.00000	0.000	0.00000
	*	1816548005	Vial 90	1	Sample	23	1.44309e4	9.708	5.94397e-1
	*	1817040001	Vial 91	1	Sample	24	2.59253e4	10.401	1.91282
	*	1817040001 5X	Vial 92	1	Sample	25	1.23968e4	10.275	5.59213e-1
	*	605878 CCV@25	Vial 71	1	Control	26	8.18320e5	9.746	118.57475
	*	605879 LODV@1.	Vial 72	1	Control	27	3.79033e4	9.928	1.04708

INCORRECT DILUTION of 5: CCV 605878 118.57 / 5 = 23.71 TB 6.20.18

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
	*	605869 CCV@25	Vial 71	1	Control	2	1.89150e5	9.753	5.00000
	*	605870 LODV@1.	Vial 72	1	Control	3	1.71237e5	9.903	5.00000
	*	605871 ICS@1.0	Vial 73	1	Control	4	1.72872e5	9.682	5.00000
	*	605872 LMB	Vial 74	1	Control	5	1.99712e5	9.817	5.00000
	*	605873 QC@5.0	Vial 75	1	Control	6	2.02105e5	9.930	5.00000
	*	1816481001 10K	Vial 76	1	Sample	7	1.57727e5	9.909	5.00000e4
	*	1816481002	Vial 77	1	Sample	8	1.27874e5	9.520	5.00000
	*	605908 164822S	Vial 78	1	Sample	9	1.22945e5	9.514	5.00000
	*	605909 164822D	Vial 79	1	Sample	10	1.26108e5	9.509	5.00000
	*	1816481003 100	Vial 80	1	Sample	11	1.46546e5	9.817	500.00000
	*	1816481004 100	Vial 81	1	Sample	12	1.44853e5	9.854	500.00000
	*	1816481005	Vial 82	1	Sample	13	1.18271e5	9.635	5.00000
	*	1816481006	Vial 83	1	Sample	14	9.60807e4	9.460	5.00000
	*	1816481007	Vial 84	1	Sample	15	1.05374e5	9.595	5.00000
	*	1816481008	Vial 85	1	Sample	16	1.16783e5	9.584	5.00000
	*	605876 CCV@258	Vial 71	1	Control	17	1.78722e5	9.764	5.00000
	*	605877 LODV@1.	Vial 72	1	Control	18	1.69476e5	9.918	5.00000
	*	1816548001 10K	Vial 86	1	Sample	19	1.48445e5	9.924	5.00000e4
	*	1816548002	Vial 87	1	Sample	20	1.21269e5	9.767	5.00000
	*	1816548003	Vial 88	1	Sample	21	1.07217e5	9.722	5.00000
	*	1816548004	Vial 89	1	Sample	22	1.00551e5	9.727	5.00000
	*	1816548005	Vial 90	1	Sample	23	1.12325e5	9.717	5.00000
	*	1817040001	Vial 91	1	Sample	24	6.53731e4	10.419	5.00000
	*	1817040001 5X	Vial 92	1	Sample	25	1.02153e5	10.264	5.00000
	*	605878 CCV@25	Vial 71	1	Control	26	1.57153e5	9.763	25.00000
	*	605879 LODV@1.	Vial 72	1	Control	27	1.72105e5	9.945	5.00000

Batch Report: C:\HPCHEM\1\DATA\19JUN18D\19JUN18D.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	605869 CCV@25	Vial 71	1	Control	2	3.49814e5	9.748	25.08405
*	605870 LODV@1.	Vial 72	1	Control	3	1.27460e4	9.906	9.24330e-1
*	605871 ICS@1.0	Vial 73	1	Control	4	1.32192e4	9.696	9.54370e-1
*	605872 LMB	Vial 74	1	Control	5	0.00000	0.000	0.00000
*	605873 QC@5.0	Vial 75	1	Control	6	7.18680e4	9.926	5.01921
*	1816481001 10K	Vial 76	1	Sample	7	1.01824e5	9.905	9.12498e4
*	1816481002	Vial 77	1	Sample	8	6.53062e5	9.515	62.05646
*	605908 164822S	Vial 78	1	Sample	9	6.94397e5	9.507	67.56018
*	605909 164822D	Vial 79	1	Sample	10	7.03073e5	9.508	66.82739
*	1816481003 100	Vial 80	1	Sample	11	6.85610e5	9.815	5758.68889
*	1816481004 100	Vial 81	1	Sample	12	6.89892e5	9.849	5847.31140
*	1816481005	Vial 82	1	Sample	13	0.00000	0.000	0.00000
*	1816481006	Vial 83	1	Sample	14	0.00000	0.000	0.00000
*	1816481007	Vial 84	1	Sample	15	8197.90039	9.587	9.74008e-1
*	1816481008	Vial 85	1	Sample	16	2.53154e5	9.577	29.05304
*	605876 CCV@258	Vial 71	1	Control	17	3.30661e5	9.760	25.09344
*	605877 LODV@1.	Vial 72	1	Control	18	1.32996e4	9.902	9.84006e-1
*	1816548001 10K	Vial 86	1	Sample	19	9.78878e4	9.917	9.31826e4
*	1816548002	Vial 87	1	Sample	20	1.29183e5	9.761	14.87518
*	1816548003	Vial 88	1	Sample	21	4.47528e4	9.725	5.90400
*	1816548004	Vial 89	1	Sample	22	0.00000	0.000	0.00000
*	1816548005	Vial 90	1	Sample	23	5934.75098	9.734	6.04834e-1
*	1817040001	Vial 91	1	Sample	24	9289.77930	10.410	1.92064
*	1817040001 5X	Vial 92	1	Sample	25	4847.35010	10.281	5.25086e-1
*	605878 CCV@25	Vial 71	1	Control	26	2.59598e5	9.761	112.86390
*	605879 LODV@1.	Vial 72	1	Control	27	1.40815e4	9.940	1.03339

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\19JUN18D.S

Sequence Table:

Method and Injection Info Part:

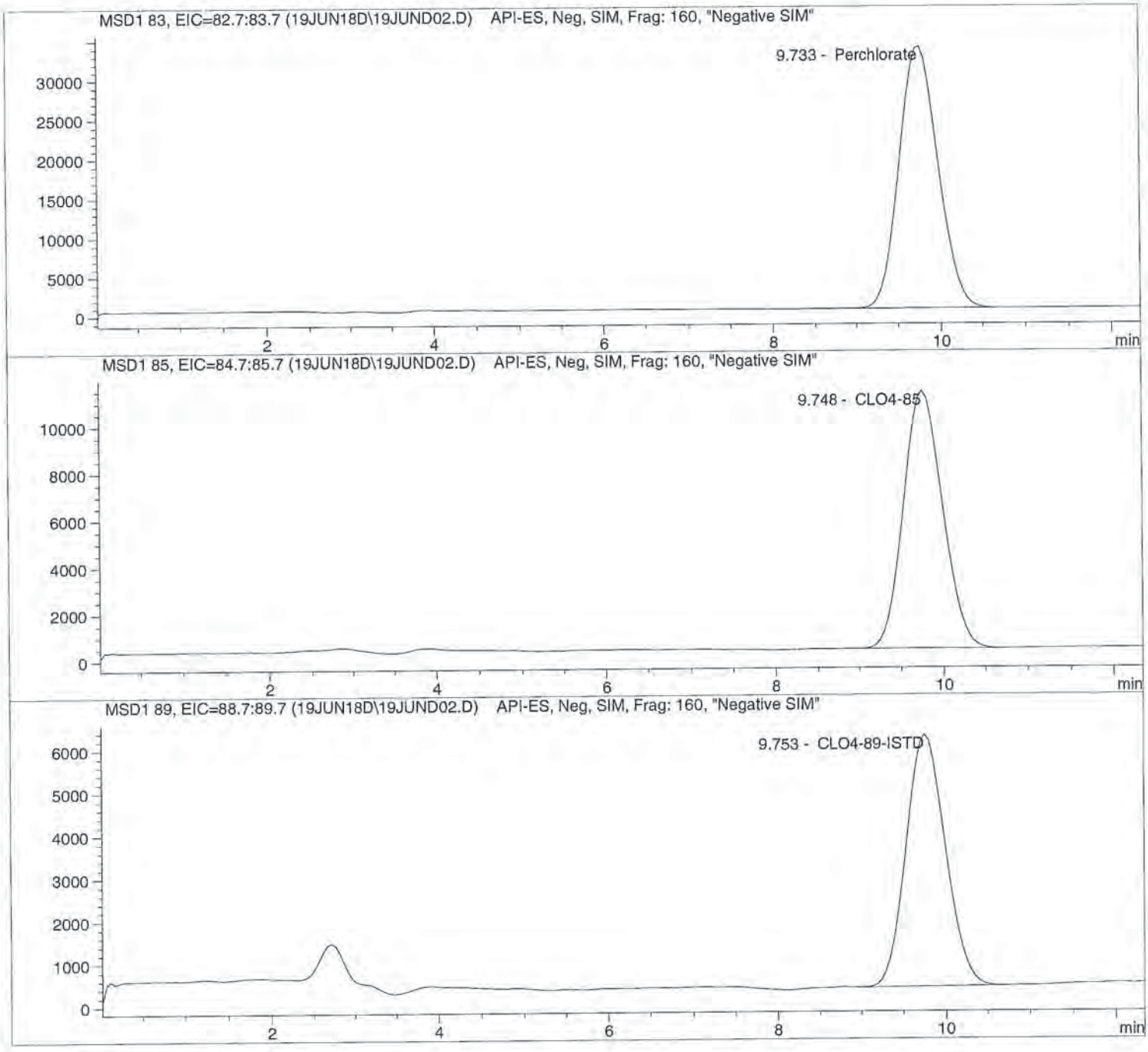
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	605869 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 71	605869 CCV@25	CLO4-DOD	1	Ctrl Samp		
3	Vial 72	605870 LODV@1.	CLO4-DOD	1	Ctrl Samp		
4	Vial 73	605871 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
5	Vial 74	605872 LMB	CLO4-DOD	1	Ctrl Samp		
6	Vial 75	605873 QC@5.0	CLO4-DOD	1	Ctrl Samp		
7	Vial 76	1816481001 10K	CLO4-DOD	1	Sample		
8	Vial 77	1816481002	CLO4-DOD	1	Sample		
9	Vial 78	605908 164822S	CLO4-DOD	1	Sample		
10	Vial 79	605909 164822D	CLO4-DOD	1	Sample		
11	Vial 80	1816481003 100	CLO4-DOD	1	Sample		
12	Vial 81	1816481004 100	CLO4-DOD	1	Sample		
13	Vial 82	1816481005	CLO4-DOD	1	Sample		
14	Vial 83	1816481006	CLO4-DOD	1	Sample		
15	Vial 84	1816481007	CLO4-DOD	1	Sample		
16	Vial 85	1816481008	CLO4-DOD	1	Sample		
17	Vial 71	605876 CCV@258	CLO4-DOD	1	Ctrl Samp		
18	Vial 72	605877 LODV@1.	CLO4-DOD	1	Ctrl Samp		
19	Vial 86	1816548001 10K	CLO4-DOD	1	Sample		
20	Vial 87	1816548002	CLO4-DOD	1	Sample		
21	Vial 88	1816548003	CLO4-DOD	1	Sample		
22	Vial 89	1816548004	CLO4-DOD	1	Sample		
23	Vial 90	1816548005	CLO4-DOD	1	Sample		
24	Vial 91	1817040001	CLO4-DOD	1	Sample		
25	Vial 92	1817040001 5X	CLO4-DOD	1	Sample		
26	Vial 71	605878 CCV@25	CLO4-DOD	1	Ctrl Samp		
27	Vial 72	605879 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND02.D Sample Name: 605869 CCV@25

Injection Date:	6/19/2018 09:51:18	Seq Line:	2
Sample Name:	605869 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND02.D Sample Name: 605869 CCV@25

Injection Date:	6/19/2018 09:51:18	Seq Line:	2
Sample Name:	605869 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.733	BBA	1049214.8	25.1427	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.748	BBA	349813.5	25.0841	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.753	BBA	189149.6	5.0000	CLO4-89-ISTD

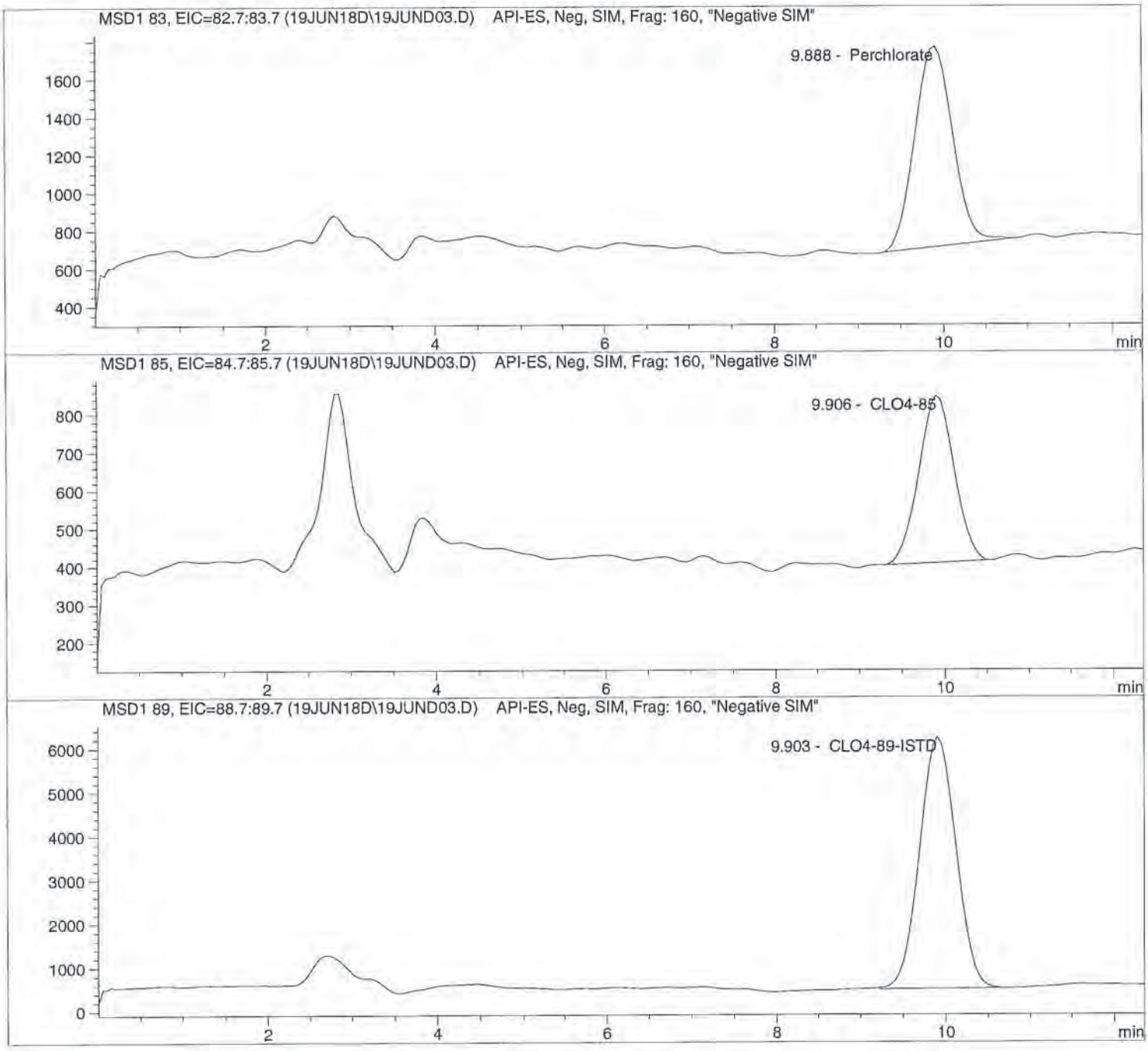
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND03.D Sample Name: 605870 LODV@1.

Injection Date:	6/19/2018 10:06:19	Seq Line:	3
Sample Name:	605870 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND03.D Sample Name: 605870 LODV@1.

Injection Date:	6/19/2018 10:06:19	Seq Line:	3
Sample Name:	605870 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.888	PBA	32851.8	0.9072	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.906	PBA	12746.0	0.9243	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.903	BBA	171236.7	5.0000	CLO4-89-ISTD

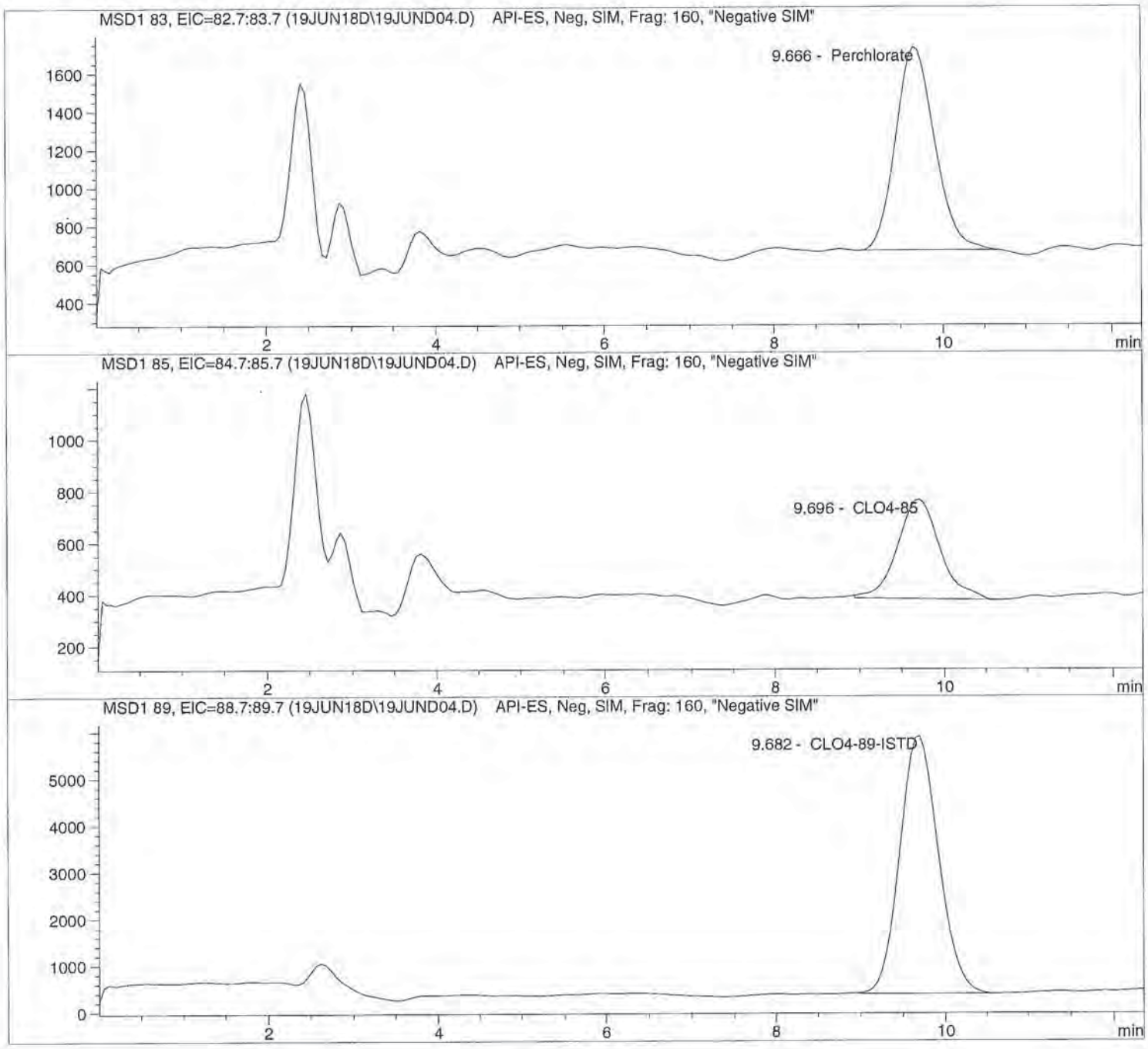
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND04.D Sample Name: 605871 ICS@1.0

Injection Date:	6/19/2018 10:20:29	Seq Line:	4
Sample Name:	605871 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND04.D Sample Name: 605871 ICS@1.0

Injection Date:	6/19/2018 10:20:29	Seq Line:	4
Sample Name:	605871 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.666	PBA	33693.8	0.9223	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.696	BBA	13219.2	0.9544	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.682	BBA	172871.7	5.0000	CLO4-89-ISTD

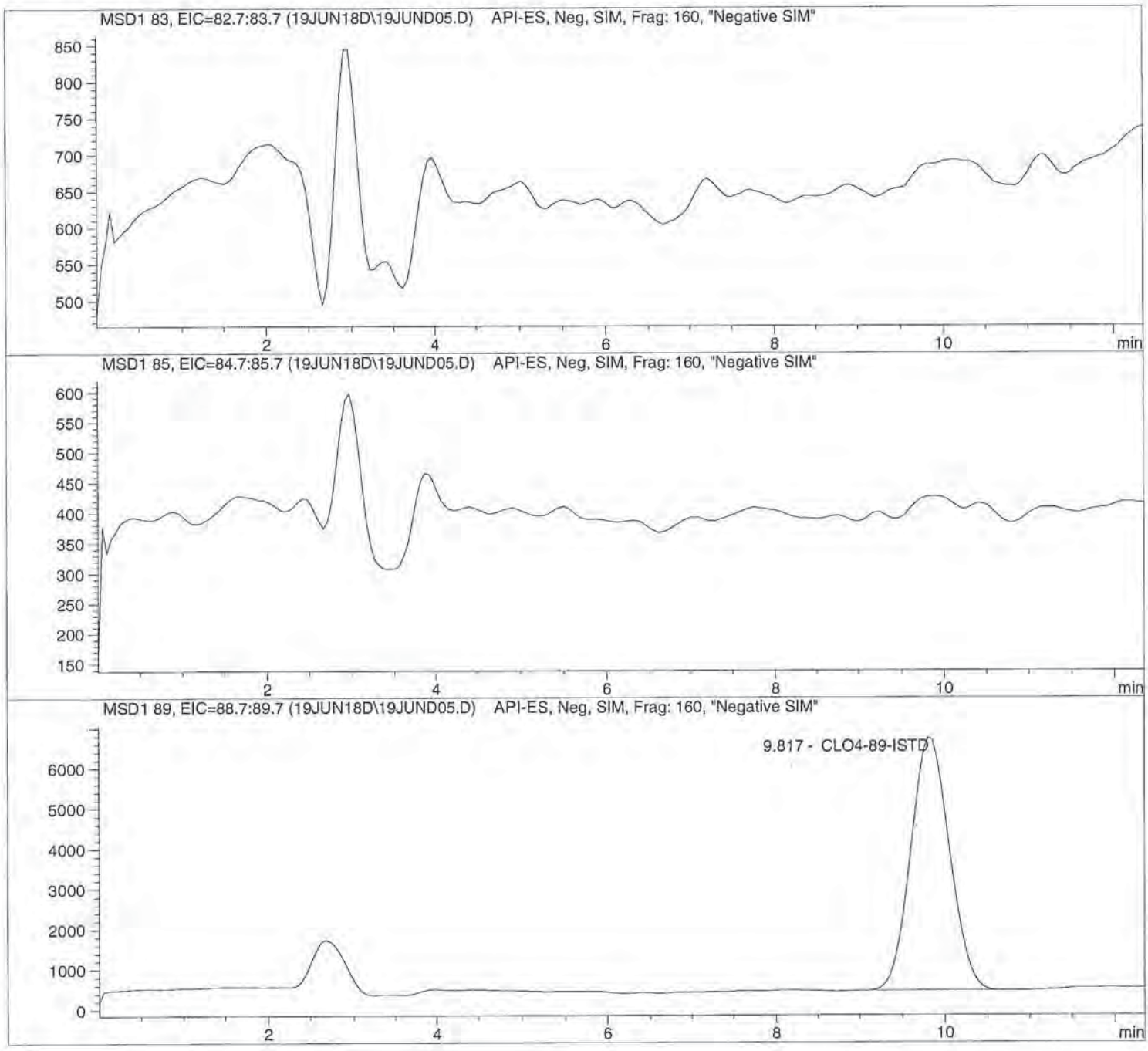
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND05.D Sample Name: 605872 LMB

Injection Date:	6/19/2018 10:34:42	Seq Line:	5
Sample Name:	605872 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND05.D Sample Name: 605872 LMB

Injection Date:	6/19/2018 10:34:42	Seq Line:	5
Sample Name:	605872 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.817	PBA	199711.5	5.0000	CLO4-89-ISTD

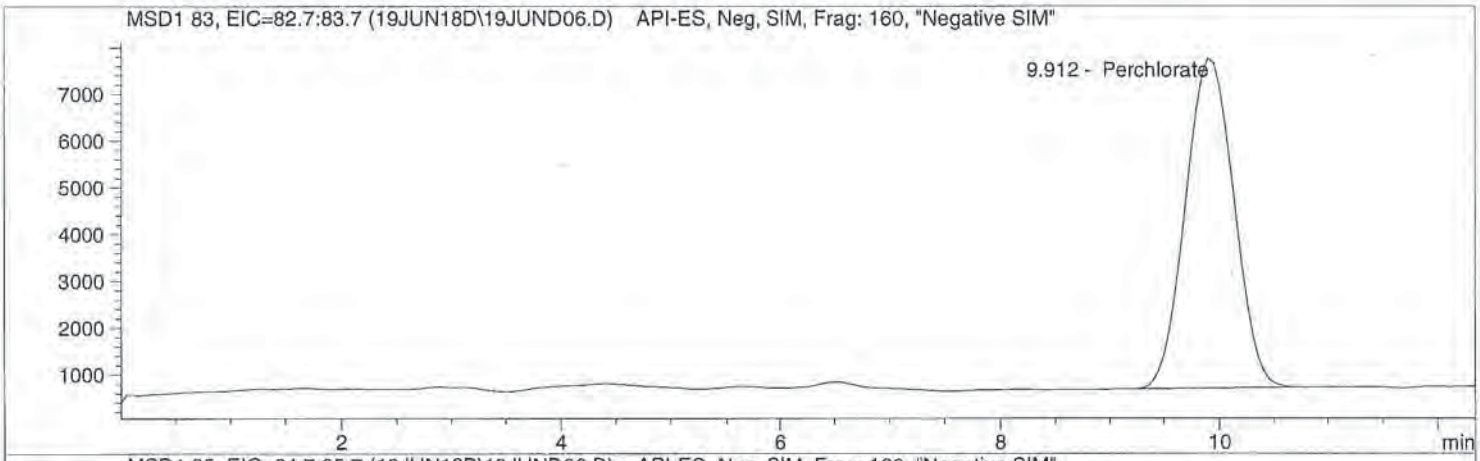
*** End of Report ***

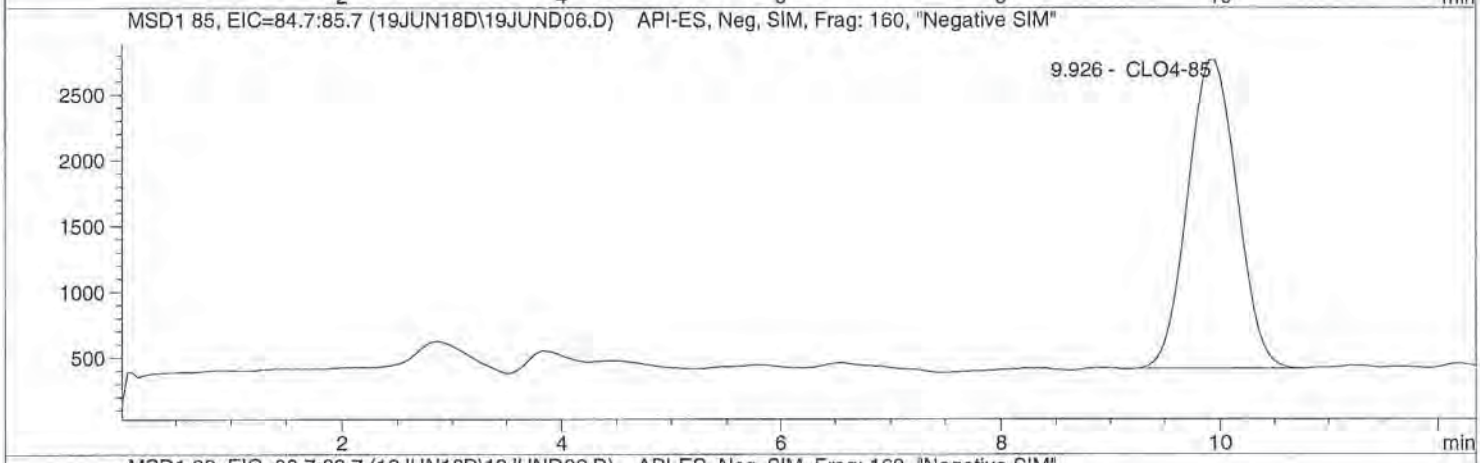
Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND06.D Sample Name: 605873 QC@5.0

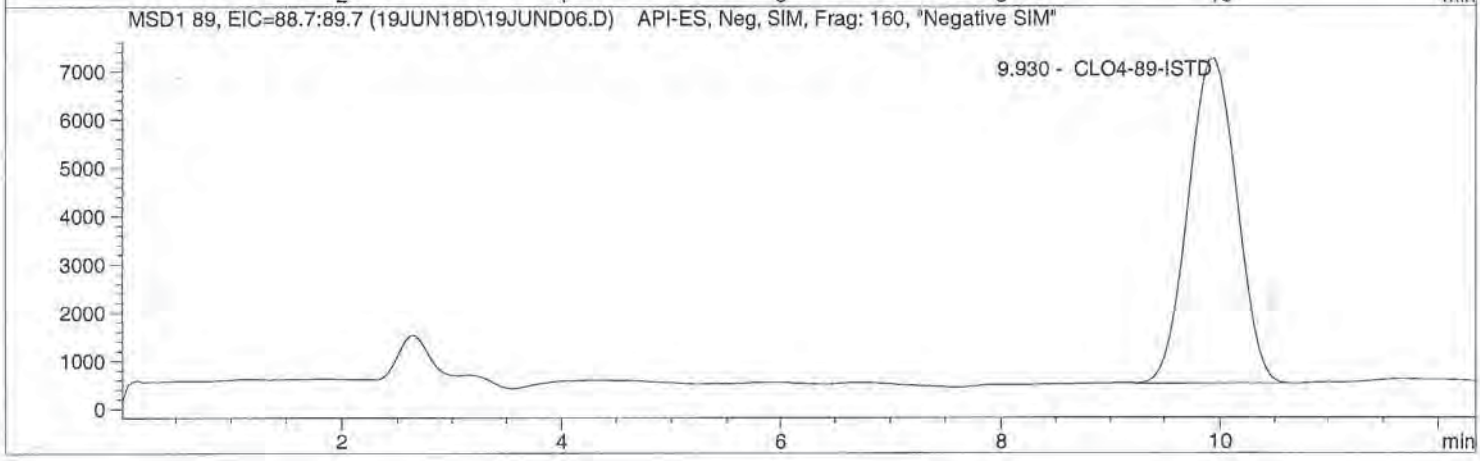
Injection Date:	6/19/2018 10:48:55	Seq Line:	6
Sample Name:	605873 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND06.D Sample Name: 605873 QC@5.0

Injection Date:	6/19/2018 10:48:55	Seq Line:	6
Sample Name:	605873 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.912	PBA	211757.4	5.0633	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.926	BBA	71868.0	5.0192	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.930	BBA	202105.4	5.0000	CLO4-89-ISTD

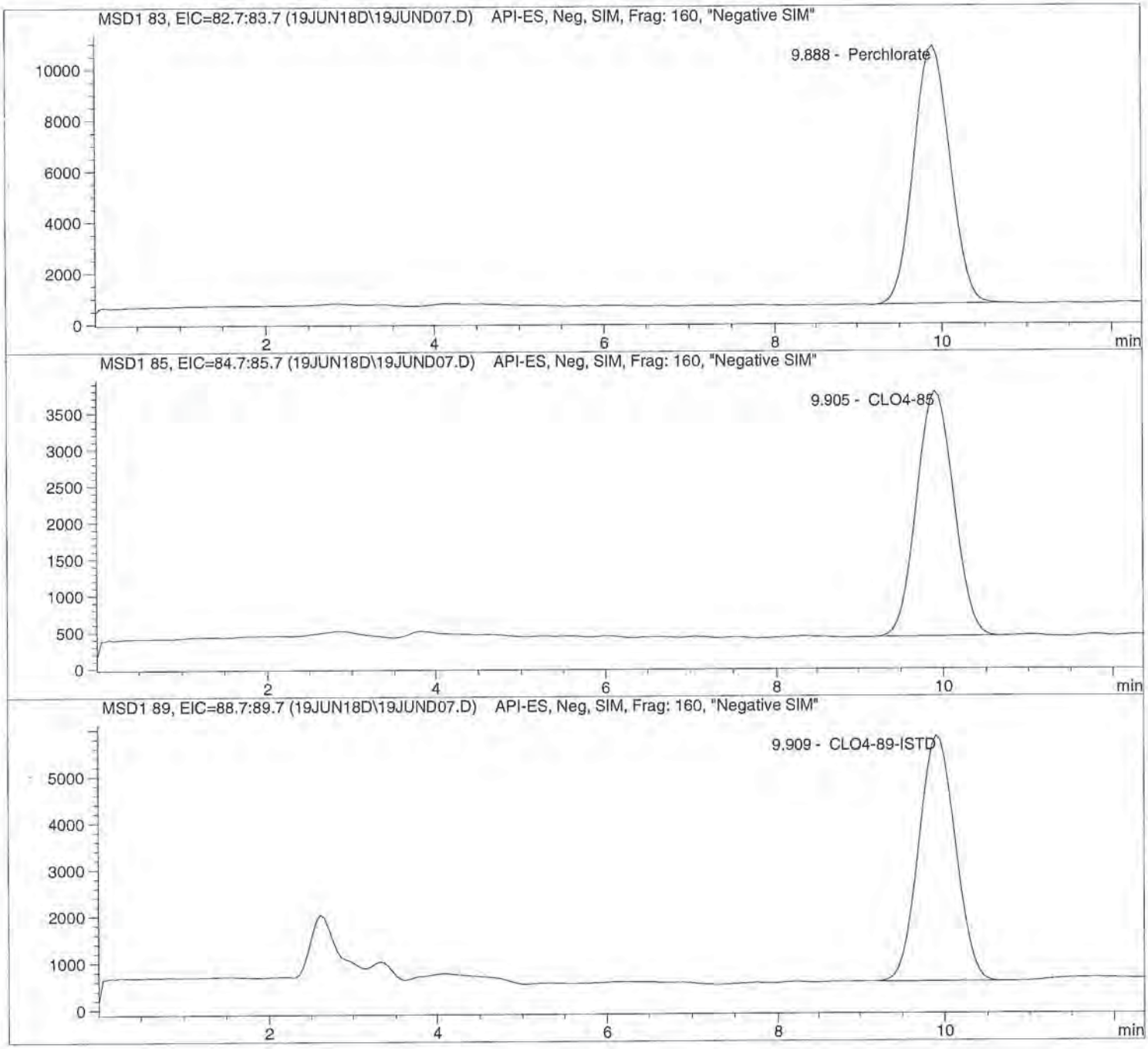
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND07.D Sample Name: 1816481001 10K

Injection Date:	6/19/2018 11:06:50	Seq Line:	7
Sample Name:	1816481001 10K	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND07.D Sample Name: 1816481001 10K

Injection Date:	6/19/2018 11:06:50	Seq Line:	7
Sample Name:	1816481001 10K	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.888	BBA	300030.2	90925.3438	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.905	PBA	101824.0	91249.7717	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.909	BBA	157727.0	50000.0000	CLO4-89-ISTD

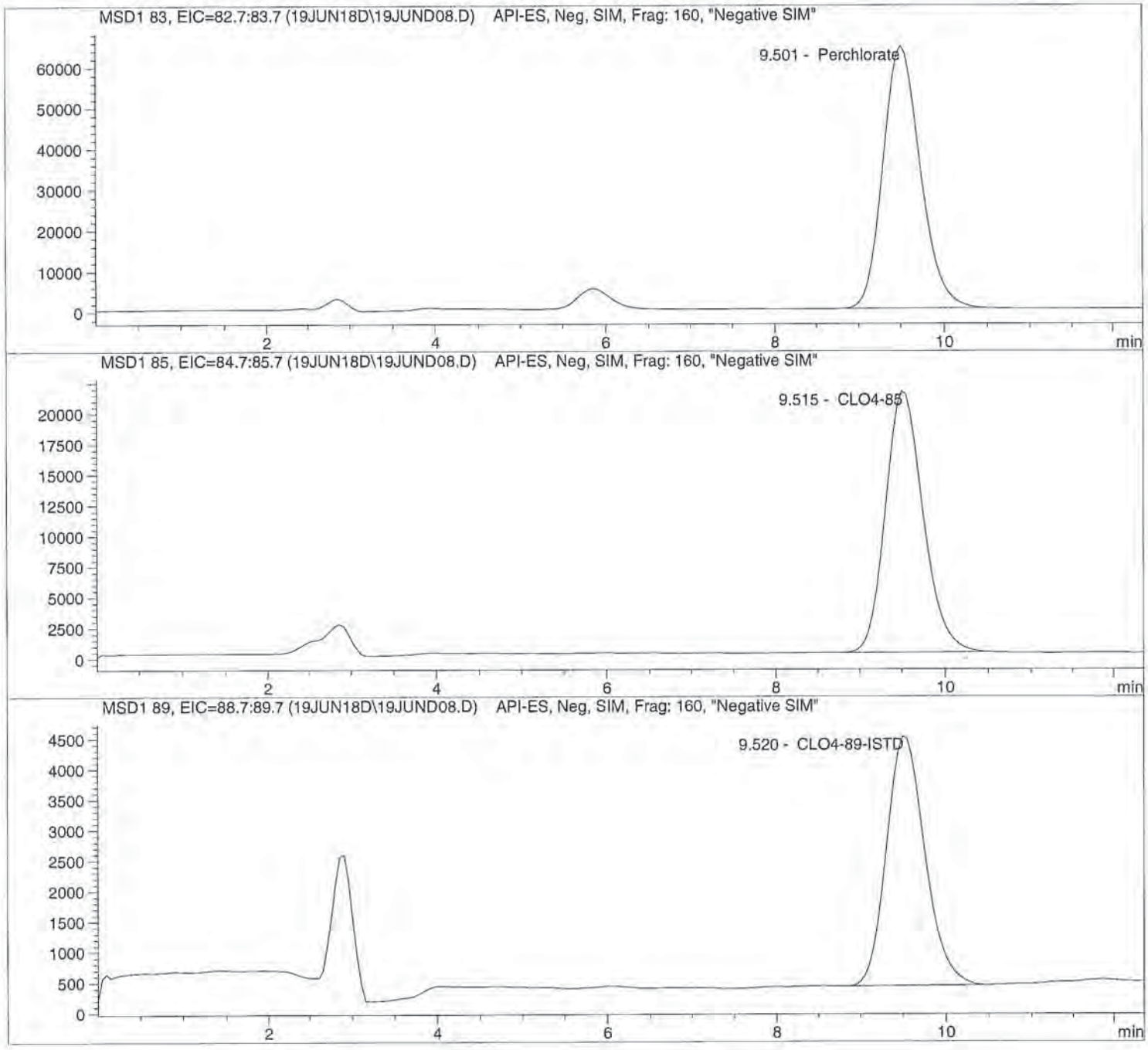
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND08.D Sample Name: 1816481002

Injection Date:	6/19/2018 11:21:01	Seq Line:	8
Sample Name:	1816481002	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND08.D Sample Name: 1816481002

Injection Date:	6/19/2018 11:21:01	Seq Line:	8
Sample Name:	1816481002	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.501	BBA	1951694.1	61.6150	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.515	BBA	653062.1	62.0565	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.520	PBA	127873.6	5.0000	CLO4-89-ISTD

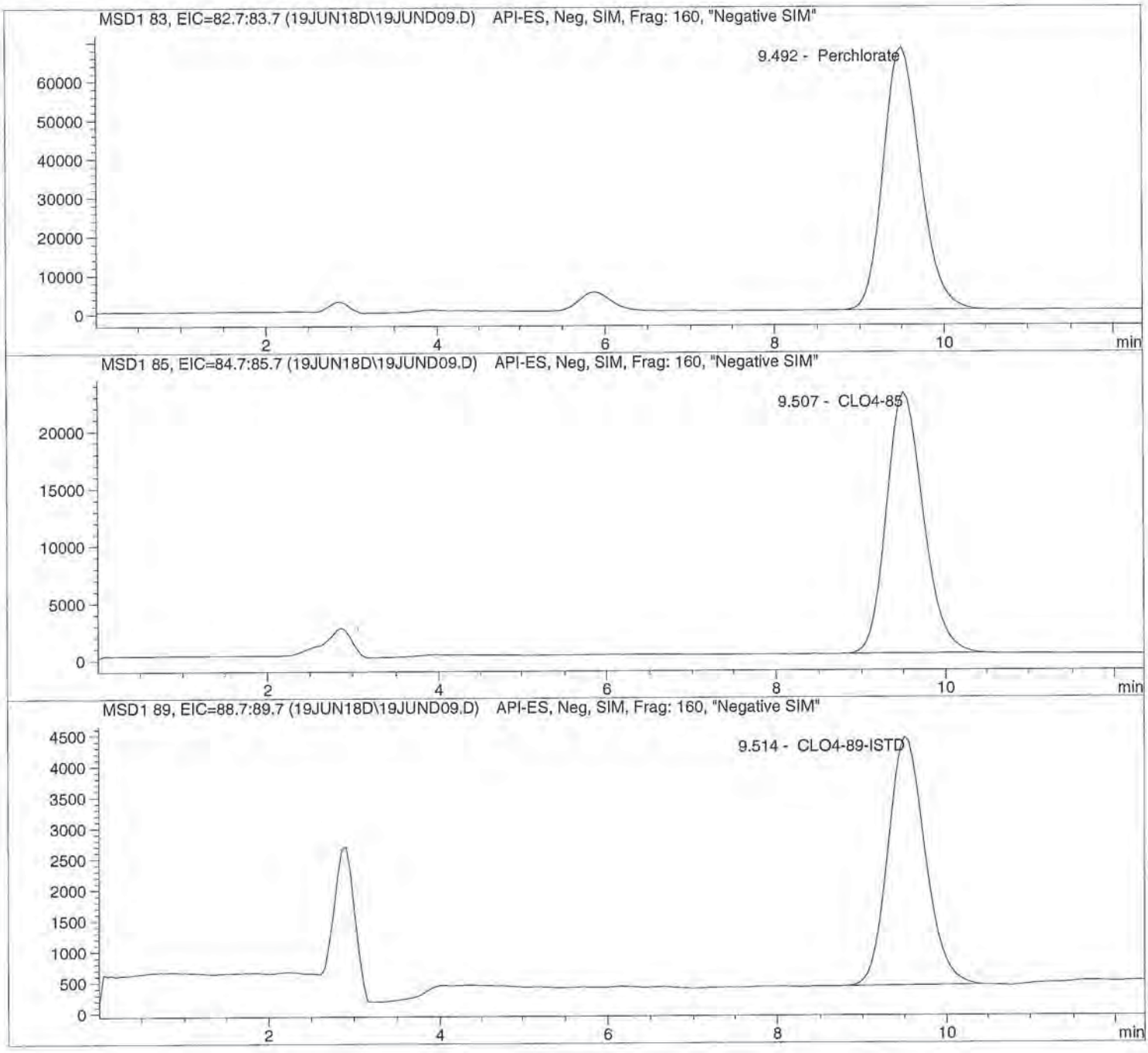
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND09.D Sample Name: 605908 164822S

Injection Date:	6/19/2018 11:35:09	Seq Line:	9
Sample Name:	605908 164822S	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND09.D Sample Name: 605908 164822S

Injection Date:	6/19/2018 11:35:09	Seq Line:	9
Sample Name:	605908 164822S	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.492	BBA	2053626.3	66.4618	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.507	BBA	694396.6	67.5602	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.514	PBA	122944.9	5.0000	CLO4-89-ISTD

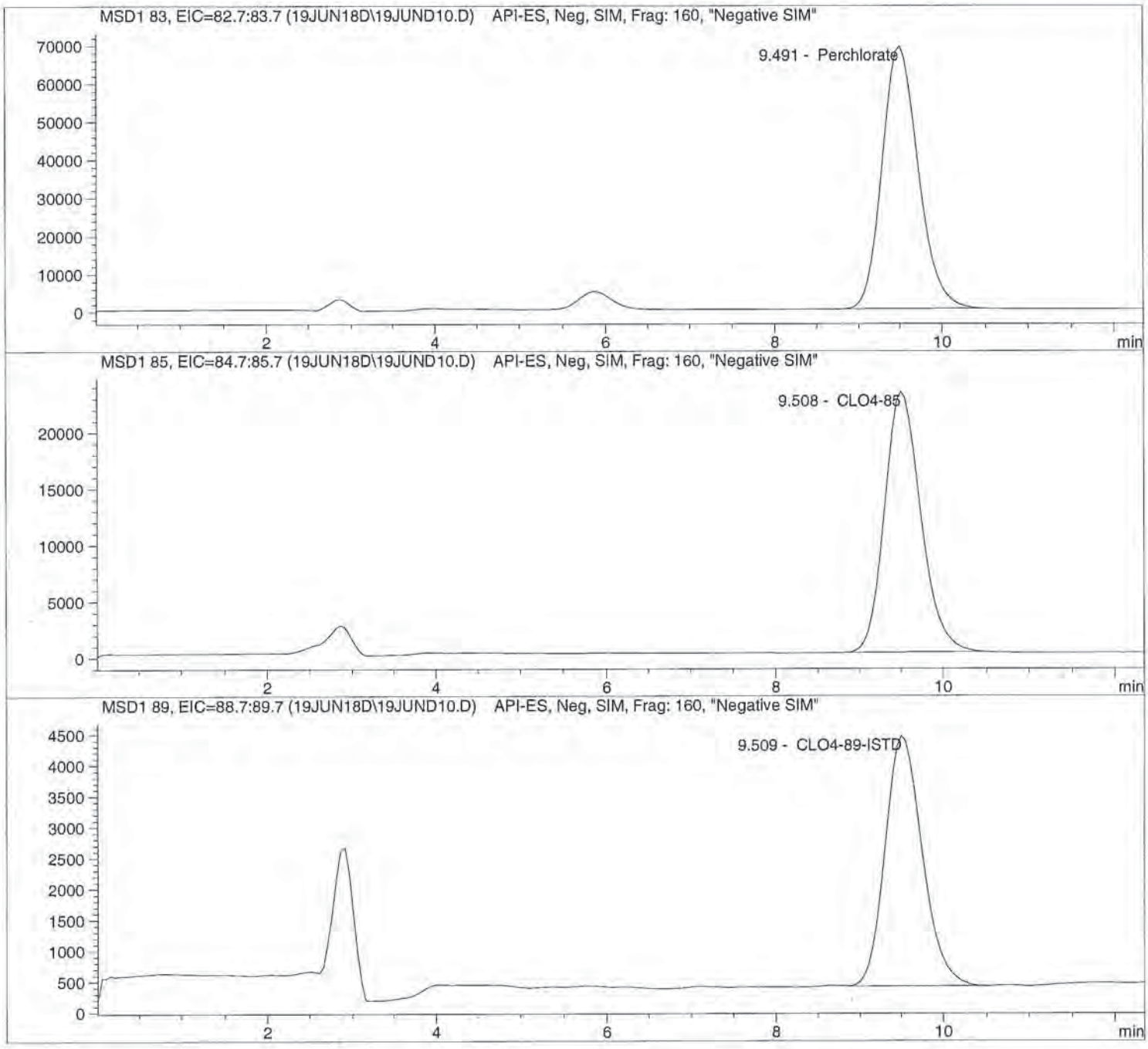
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND10.D Sample Name: 605909 164822D

Injection Date:	6/19/2018 11:49:18	Seq Line:	10
Sample Name:	605909 164822D	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND10.D Sample Name: 605909 164822D

Injection Date:	6/19/2018 11:49:18	Seq Line:	10
Sample Name:	605909 164822D	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.491	BBA	2094676.4	66.1510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.508	PBA	703073.2	66.8274	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.509	BBA	126108.0	5.0000	CLO4-89-ISTD

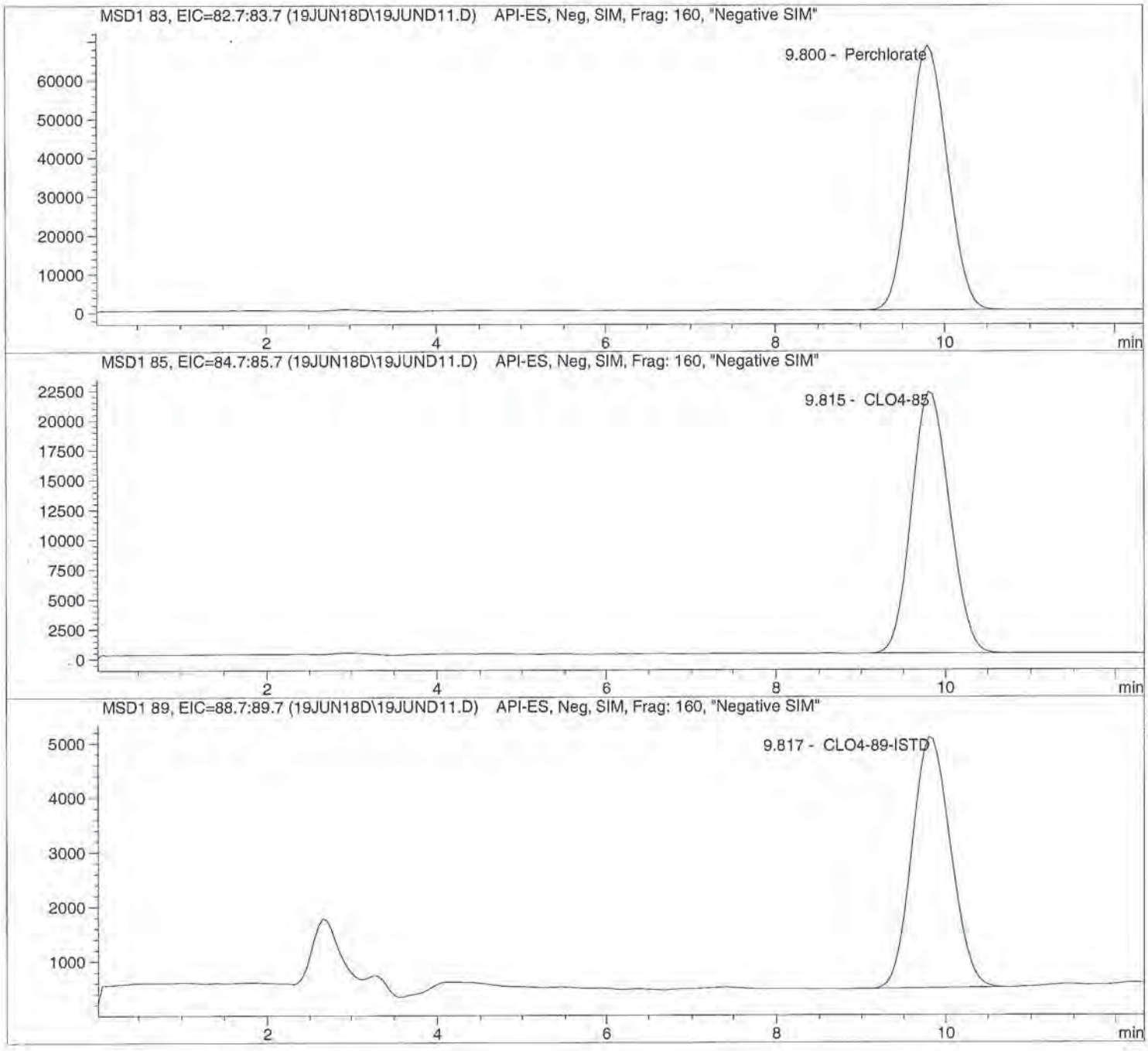
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND11.D Sample Name: 1816481003 100

Injection Date:	6/19/2018 12:03:32	Seq Line:	11
Sample Name:	1816481003 100	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND11.D Sample Name: 1816481003 100

Injection Date:	6/19/2018 12:03:32	Seq Line:	11
Sample Name:	1816481003 100	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.800	PBA	2127370.2	5905.8389	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.815	PBA	685610.3	5758.6889	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.817	PBA	146545.7	500.0000	CLO4-89-ISTD

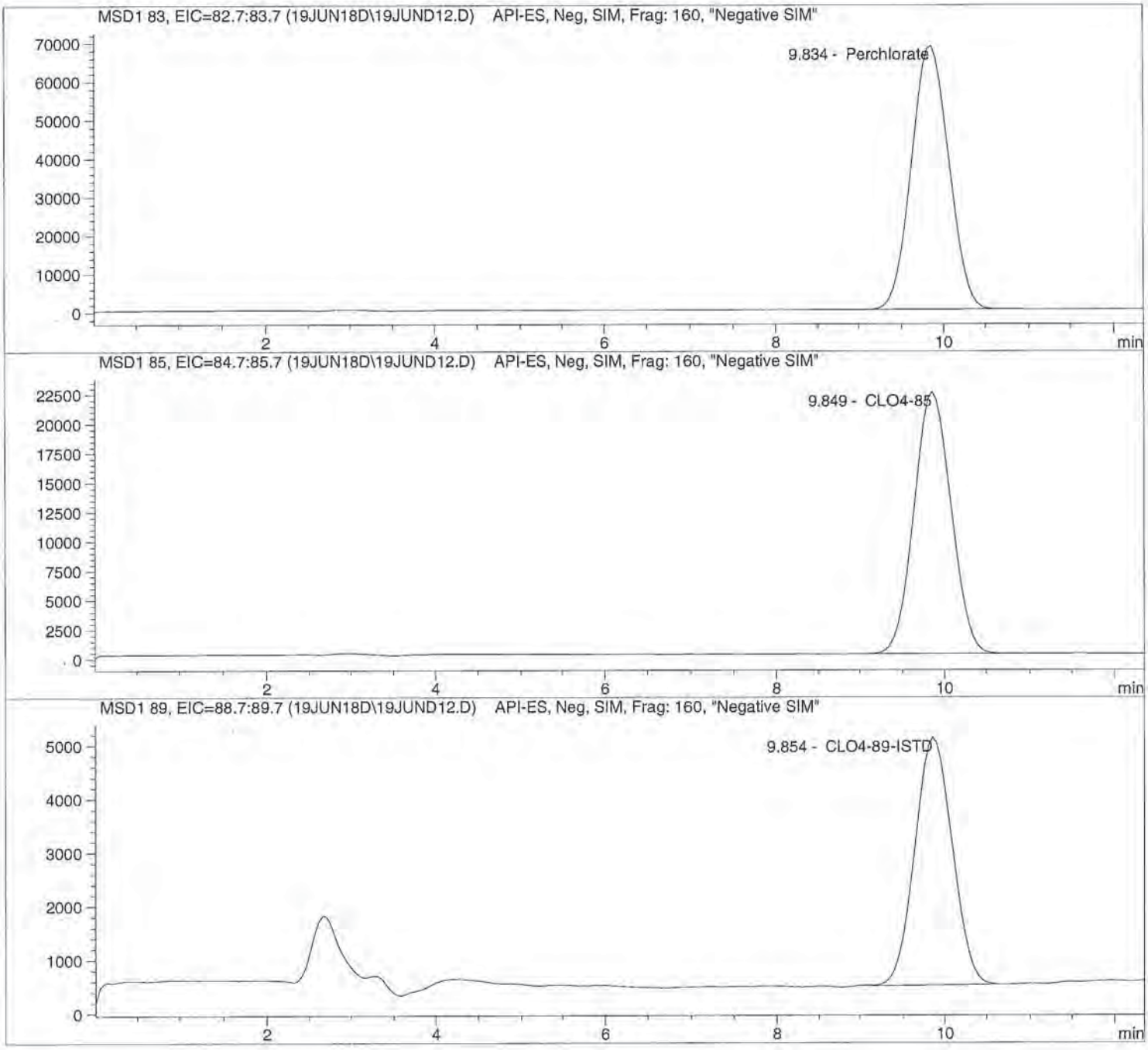
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND12.D Sample Name: 1816481004 100

Injection Date:	6/19/2018 12:17:41	Seq Line:	12
Sample Name:	1816481004 100	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND12.D Sample Name: 1816481004 100

Injection Date:	6/19/2018 12:17:41	Seq Line:	12
Sample Name:	1816481004 100	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.834	BBA	2131196.2	5973.3522	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.849	BBA	689892.4	5847.3114	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.854	BBA	144853.3	500.0000	CLO4-89-ISTD

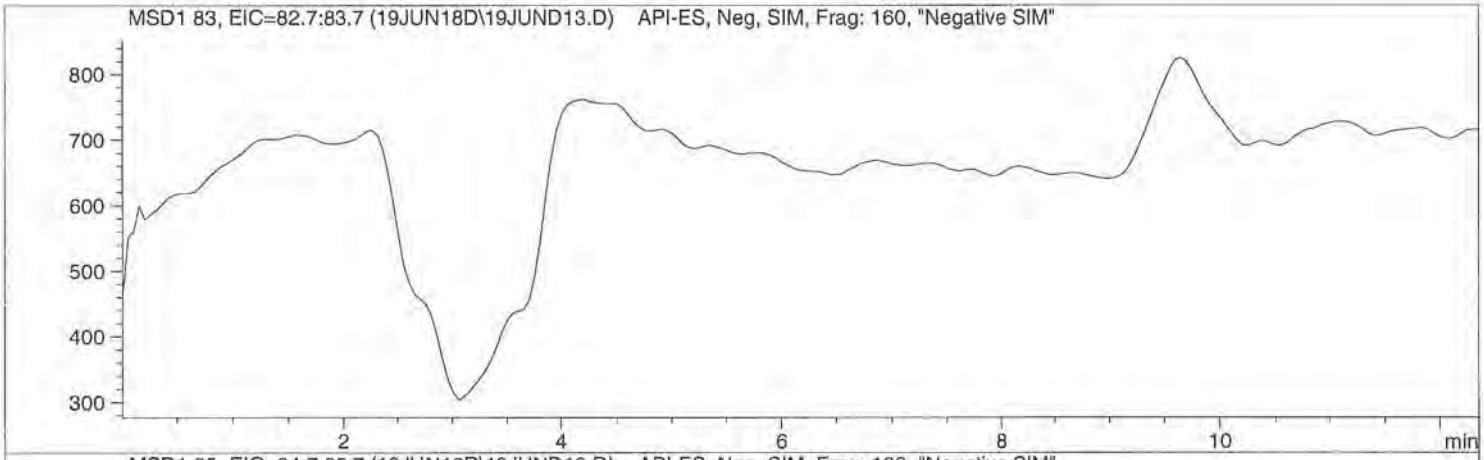
*** End of Report ***

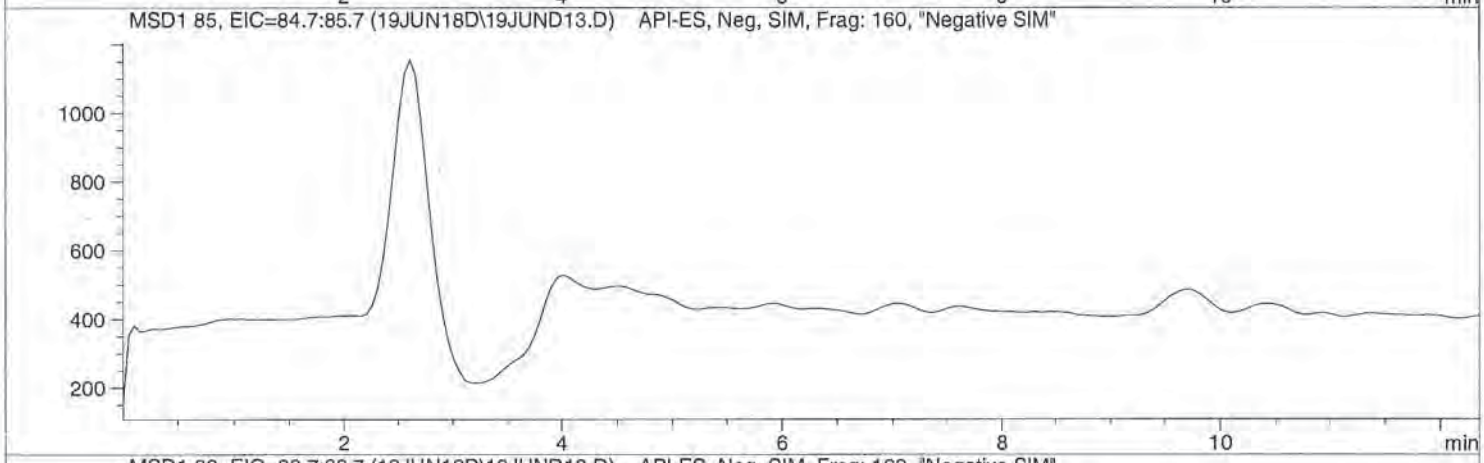
Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND13.D Sample Name: 1816481005

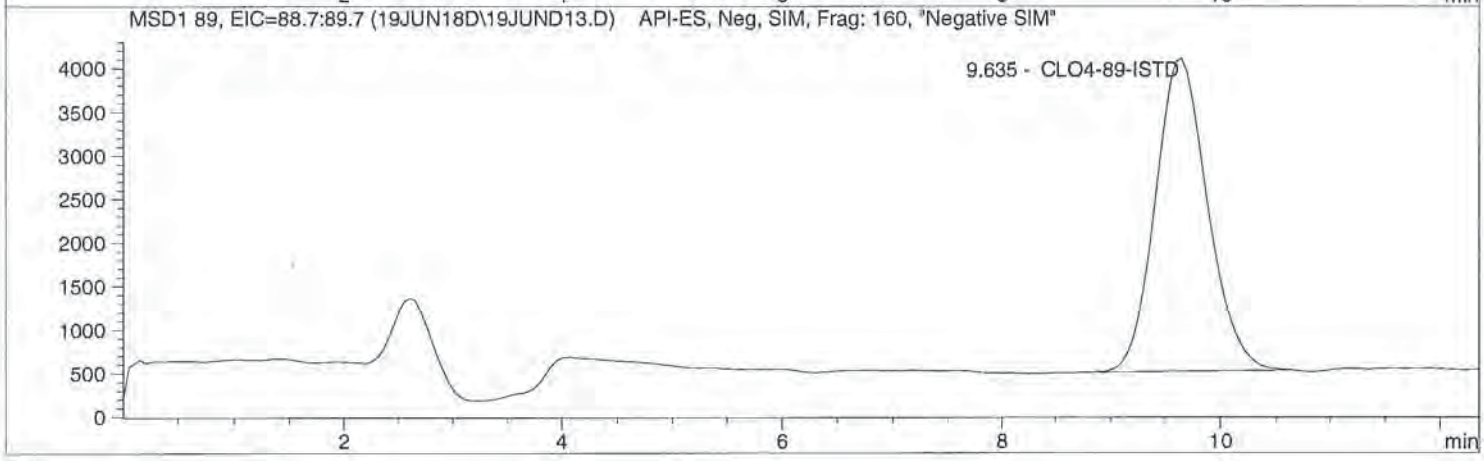
Injection Date:	6/19/2018 12:31:50	Seq Line:	13
Sample Name:	1816481005	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND13.D Sample Name: 1816481005

Injection Date:	6/19/2018 12:31:50	Seq Line:	13
Sample Name:	1816481005	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.635	BBA	118270.8	5.0000	CLO4-89-ISTD

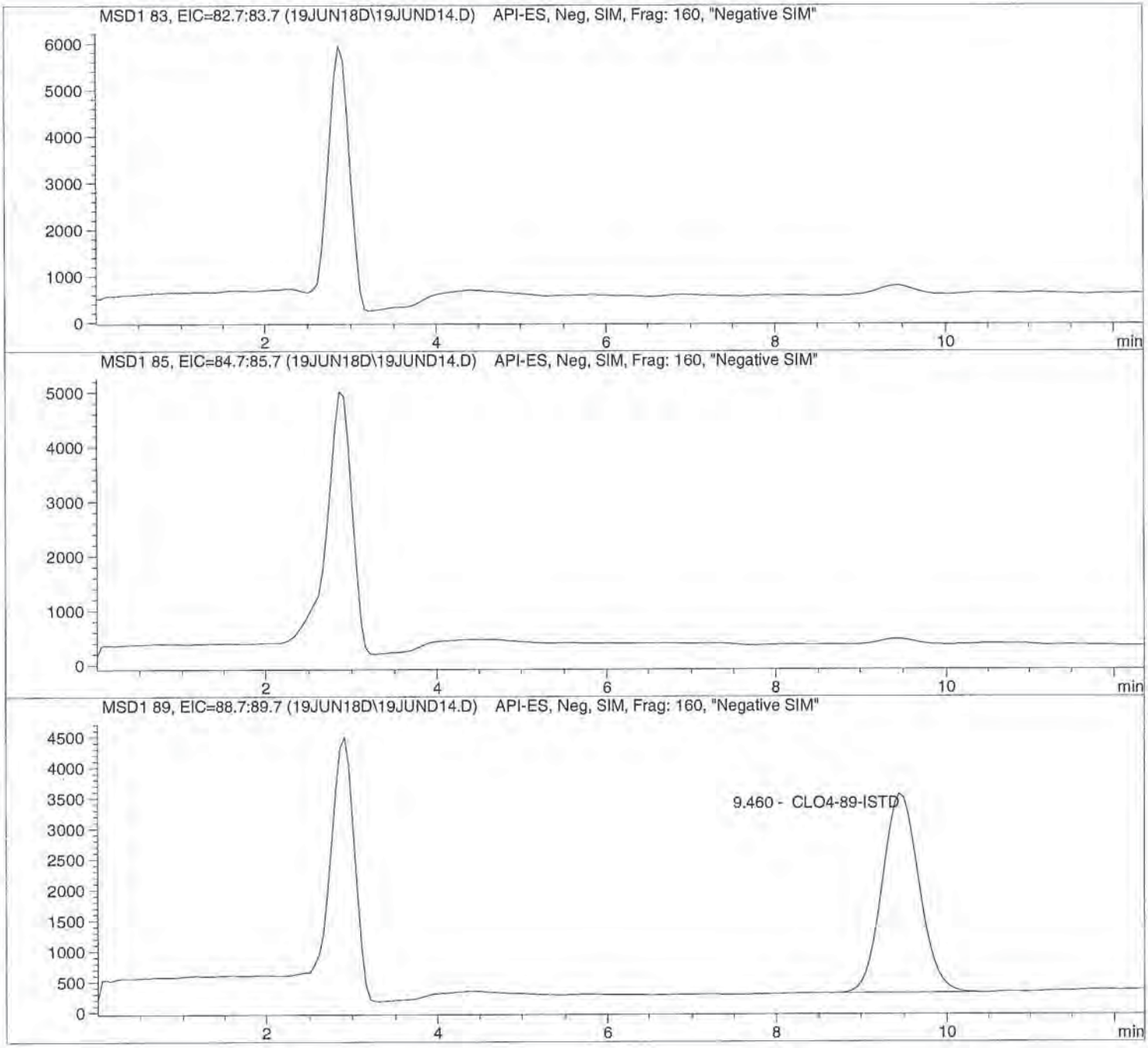
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND14.D Sample Name: 1816481006

Injection Date:	6/19/2018 12:45:59	Seq Line:	14
Sample Name:	1816481006	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND14.D Sample Name: 1816481006

Injection Date:	6/19/2018 12:45:59	Seq Line:	14
Sample Name:	1816481006	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.460	BBA	96080.7	5.0000	CLO4-89-ISTD

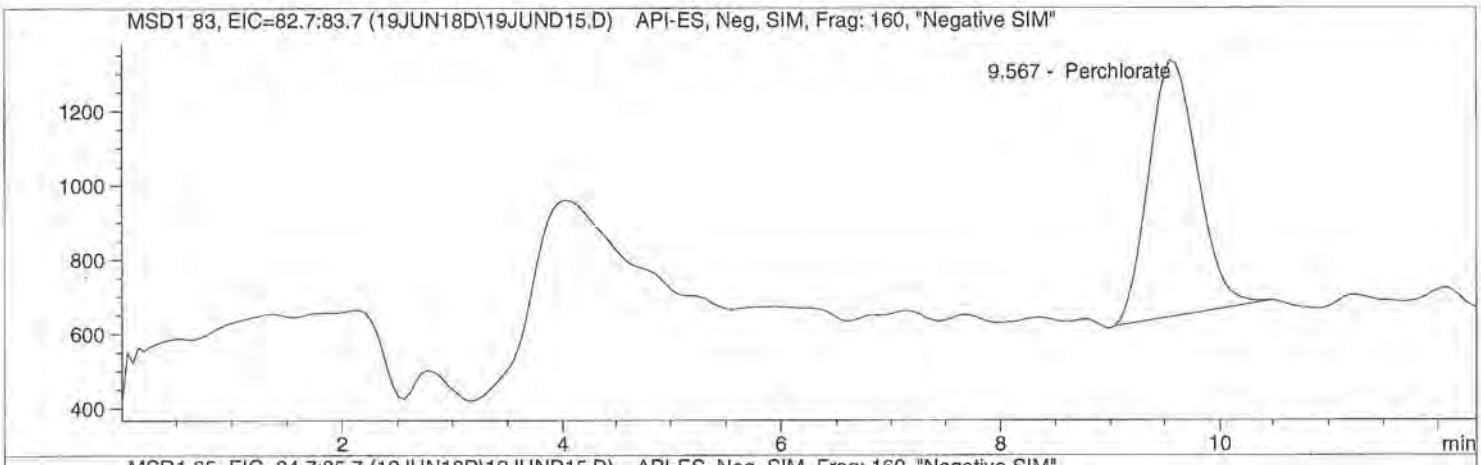
*** End of Report ***

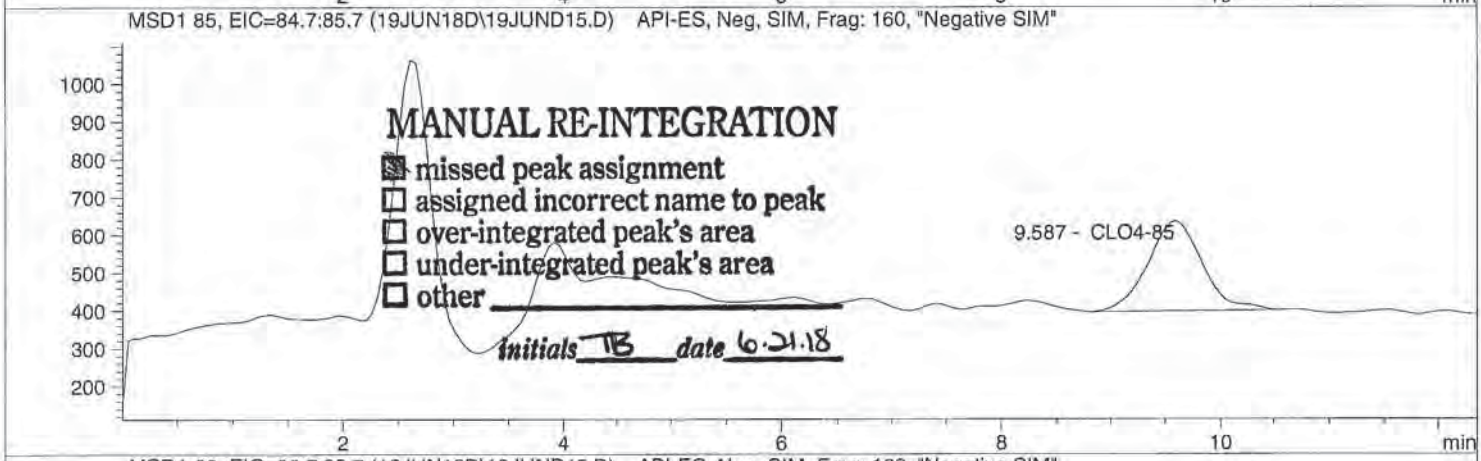
Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND15.D Sample Name: 1816481007

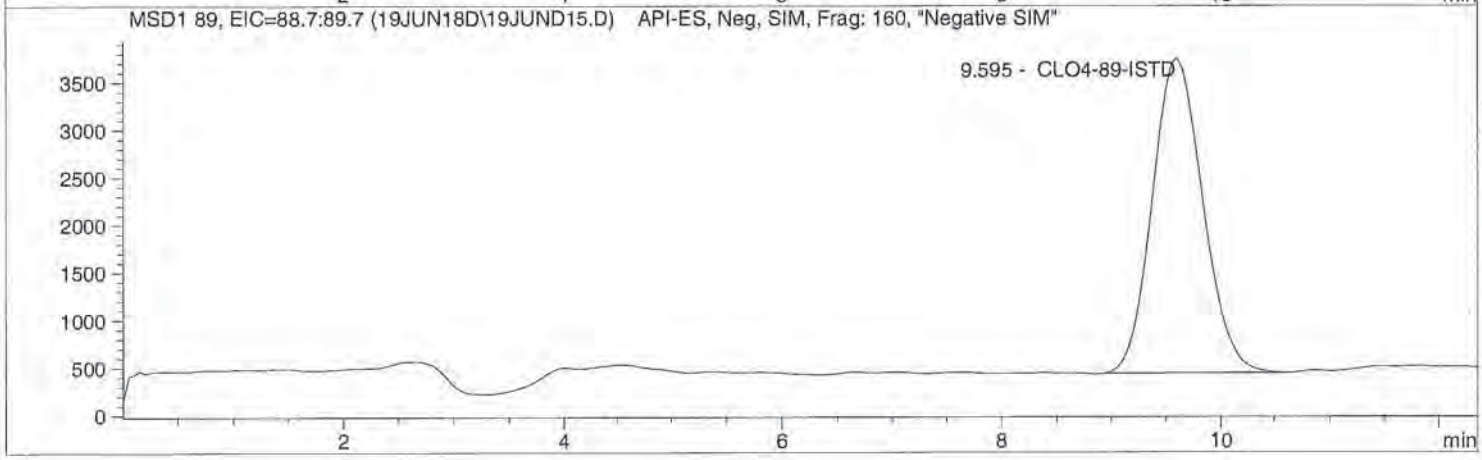
Injection Date:	6/19/2018 13:00:11	Seq Line:	15
Sample Name:	1816481007	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND15.D Sample Name: 1816481007

Injection Date:	6/19/2018 13:00:11	Seq Line:	15
Sample Name:	1816481007	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.567	PBA	21331.9	0.9594	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.587	MM	8197.9	0.9740	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.595	PBA	105374.4	5.0000	CLO4-89-ISTD

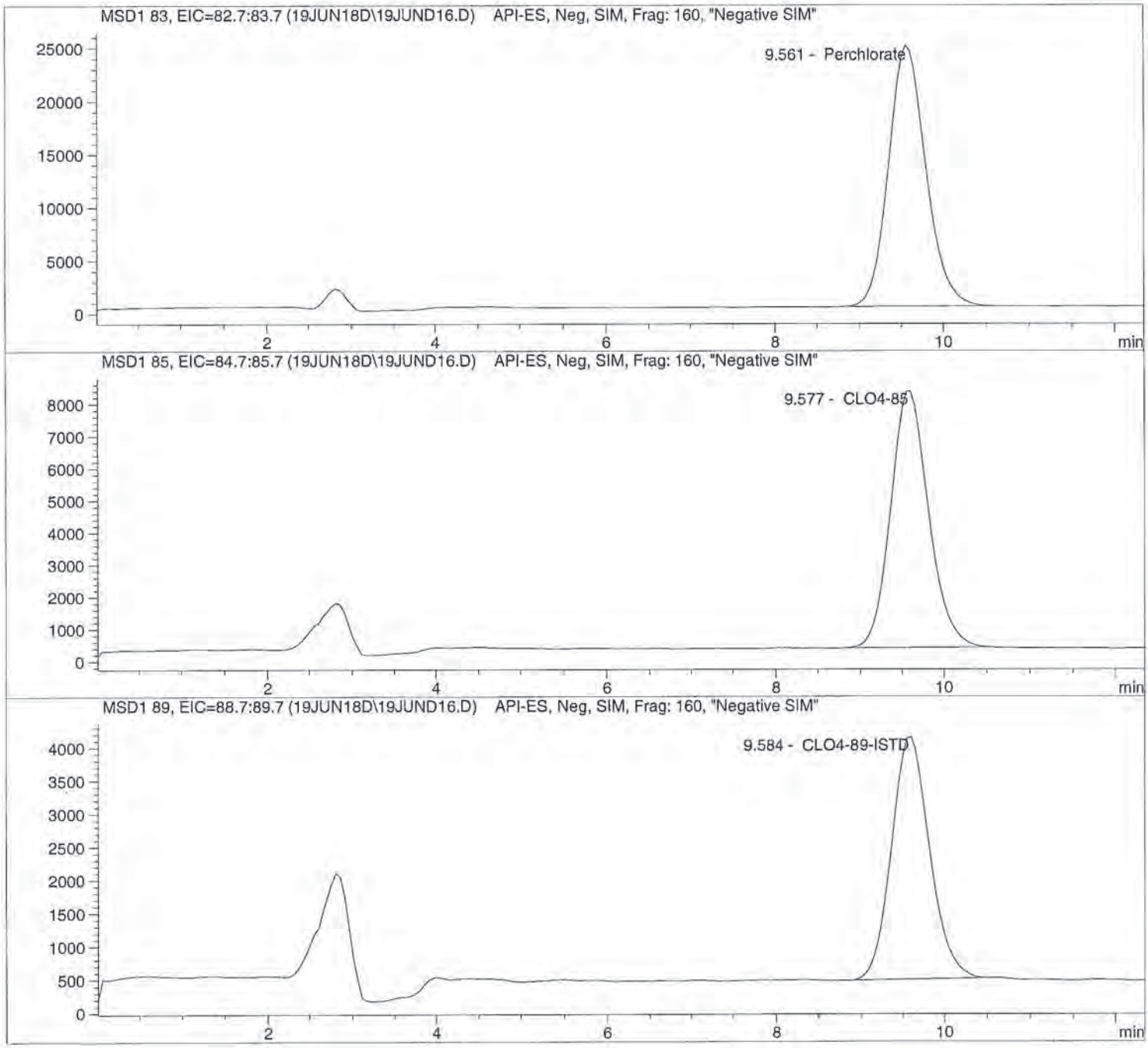
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND16.D Sample Name: 1816481008

Injection Date:	6/19/2018 13:14:21	Seq Line:	16
Sample Name:	1816481008	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND16.D Sample Name: 1816481008

Injection Date:	6/19/2018 13:14:21	Seq Line:	16
Sample Name:	1816481008	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.561	BBA	766512.3	29.3393	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.577	BBA	253154.2	29.0530	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.584	PBA	116782.7	5.0000	CLO4-89-ISTD

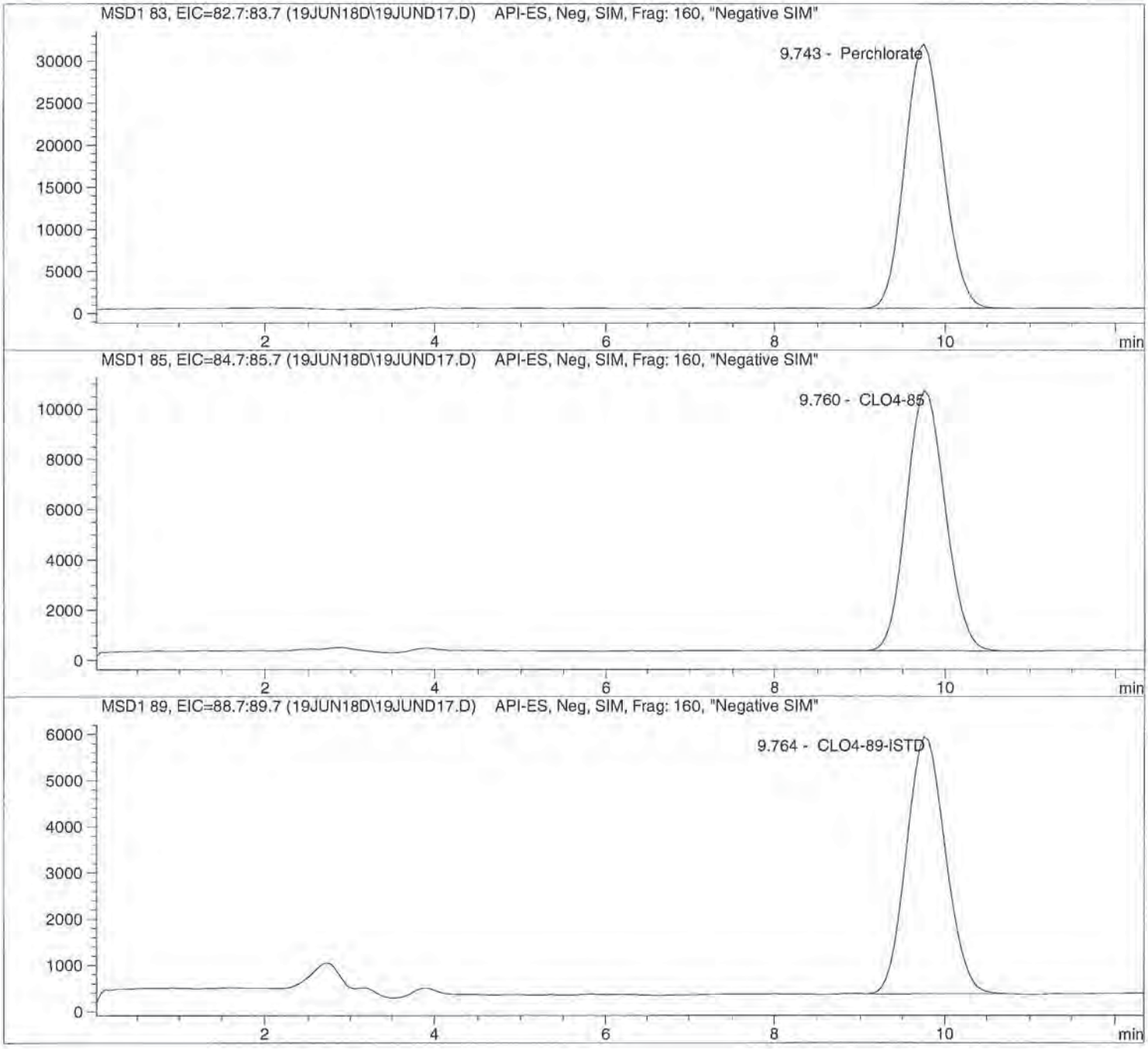
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND17.D Sample Name: 605876 CCV@258

Injection Date:	6/19/2018 13:28:31	Seq Line:	17
Sample Name:	605876 CCV@258	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND17.D Sample Name: 605876 CCV@258

Injection Date:	6/19/2018 13:28:31	Seq Line:	17
Sample Name:	605876 CCV@258	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.743	PBA	987419.0	25.0502	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.760	PBA	330661.2	25.0934	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.764	BBA	178721.7	5.0000	CLO4-89-ISTD

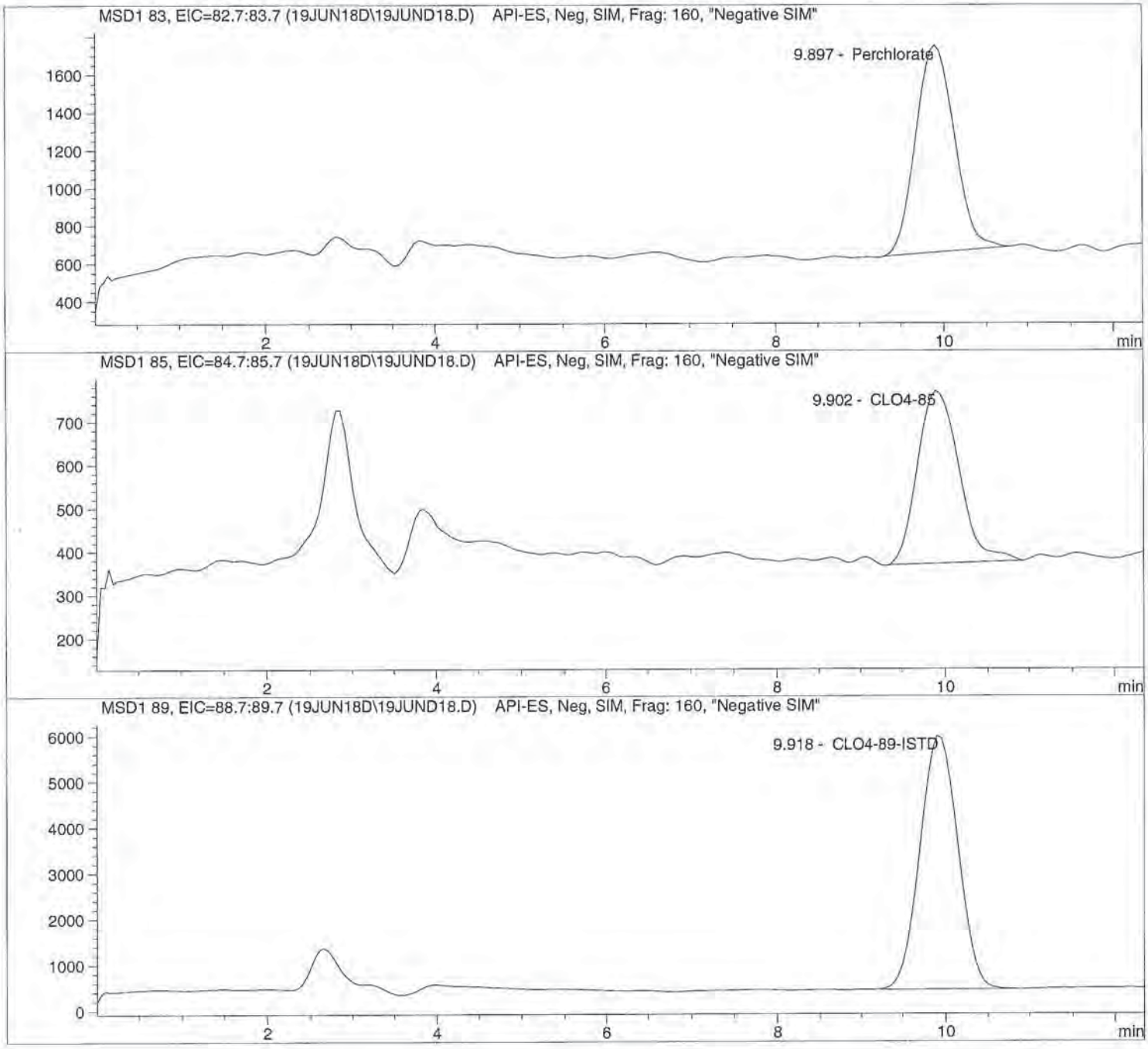
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND18.D Sample Name: 605877 LODV@1.

Injection Date:	6/19/2018 13:42:40	Seq Line:	18
Sample Name:	605877 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND18.D Sample Name: 605877 LODV@1.

Injection Date:	6/19/2018 13:42:40	Seq Line:	18
Sample Name:	605877 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.897	PBA	34192.1	0.9560	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.902	PBA	13299.6	0.9840	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.918	BBA	169475.8	5.0000	CLO4-89-ISTD

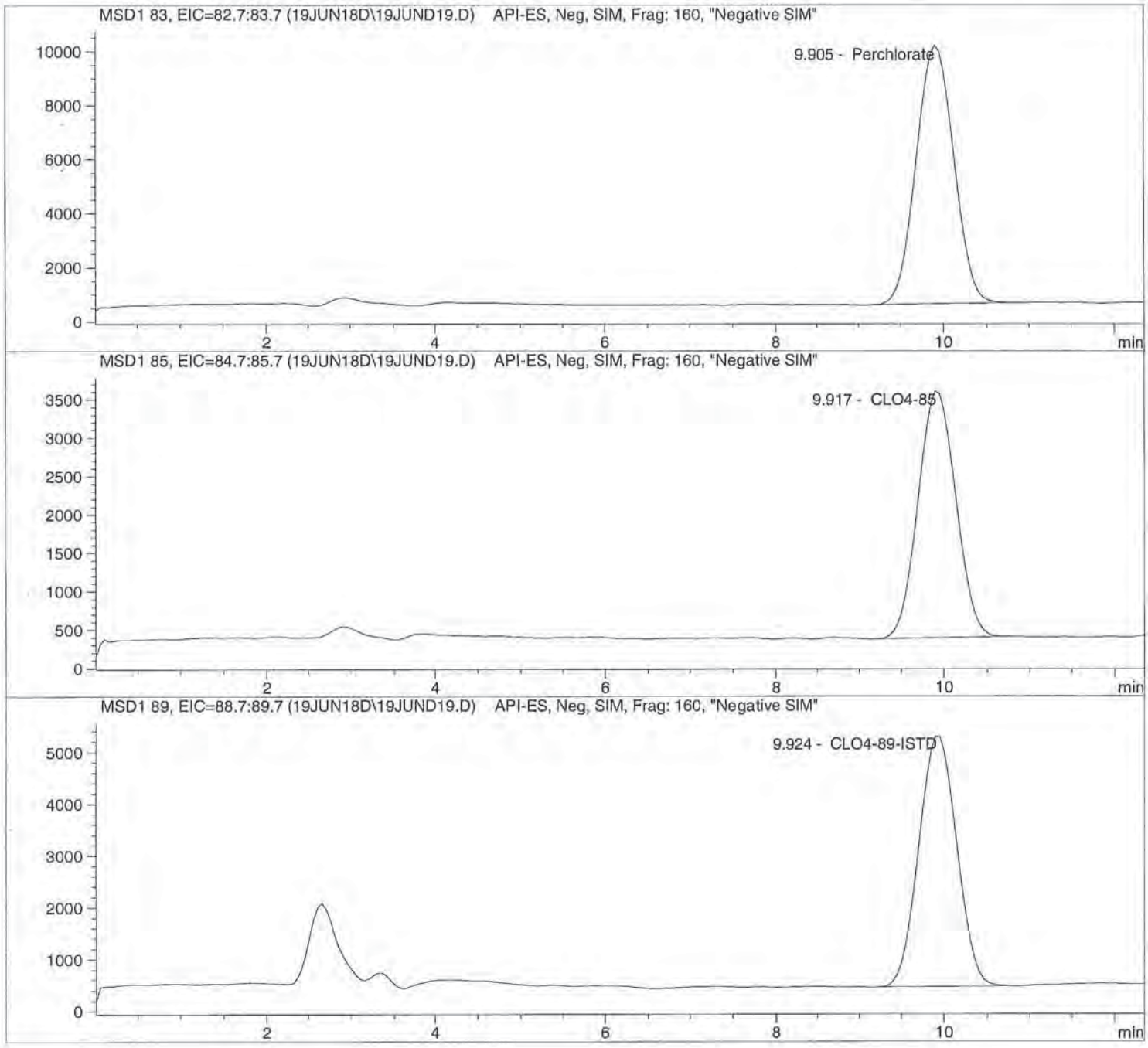
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND19.D Sample Name: 1816548001 10K

Injection Date:	6/19/2018 13:56:57	Seq Line:	19
Sample Name:	1816548001 10K	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND19.D Sample Name: 1816548001 10K

Injection Date:	6/19/2018 13:56:57	Seq Line:	19
Sample Name:	1816548001 10K	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.905	PBA	290652.3	93515.8498	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.917	PBA	97887.8	93182.5621	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.924	PBA	148445.1	50000.0000	CLO4-89-ISTD

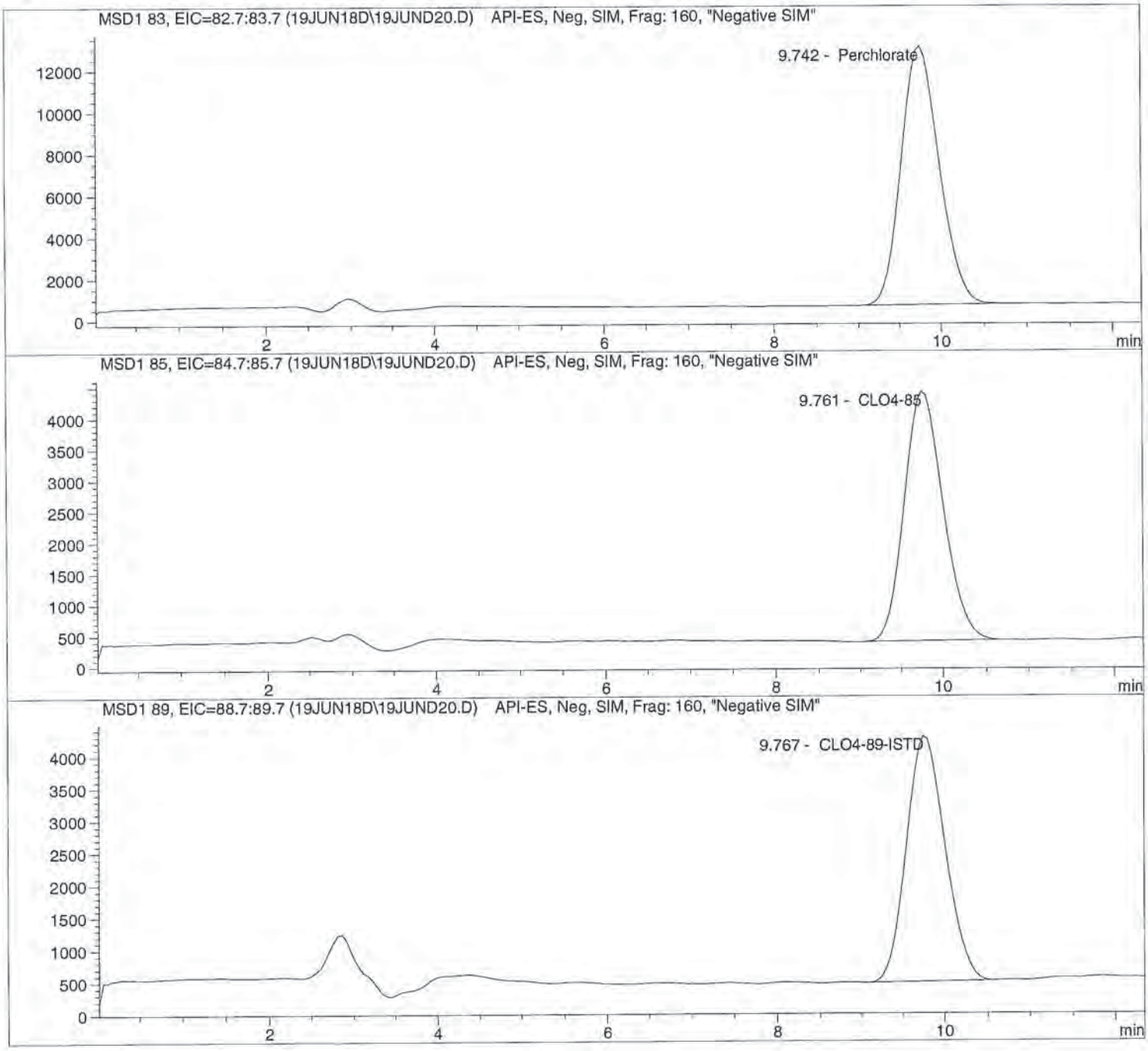
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND20.D Sample Name: 1816548002

Injection Date:	6/19/2018 14:11:07	Seq Line:	20
Sample Name:	1816548002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND20.D Sample Name: 1816548002

Injection Date:	6/19/2018 14:11:07	Seq Line:	20
Sample Name:	1816548002	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.742	PBA	392450.7	15.1666	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.761	PBA	129182.6	14.8752	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.767	PBA	121268.5	5.0000	CLO4-89-ISTD

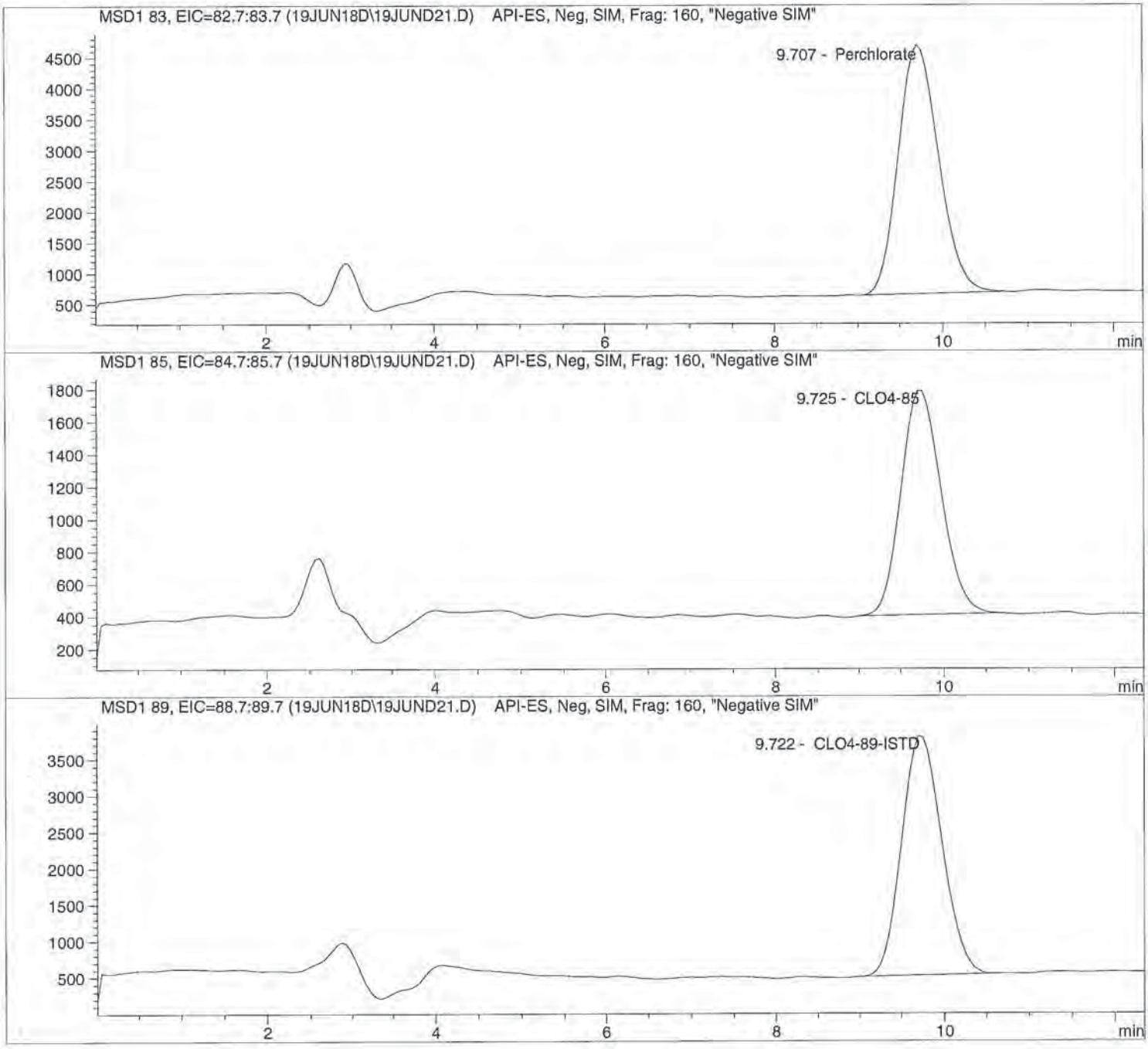
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND21.D Sample Name: 1816548003

Injection Date:	6/19/2018 14:25:18	Seq Line:	21
Sample Name:	1816548003	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND21.D Sample Name: 1816548003

Injection Date:	6/19/2018 14:25:18	Seq Line:	21
Sample Name:	1816548003	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.707	PBA	131455.2	5.9137	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.725	BBA	44752.8	5.9040	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.722	PBA	107217.3	5.0000	CLO4-89-ISTD

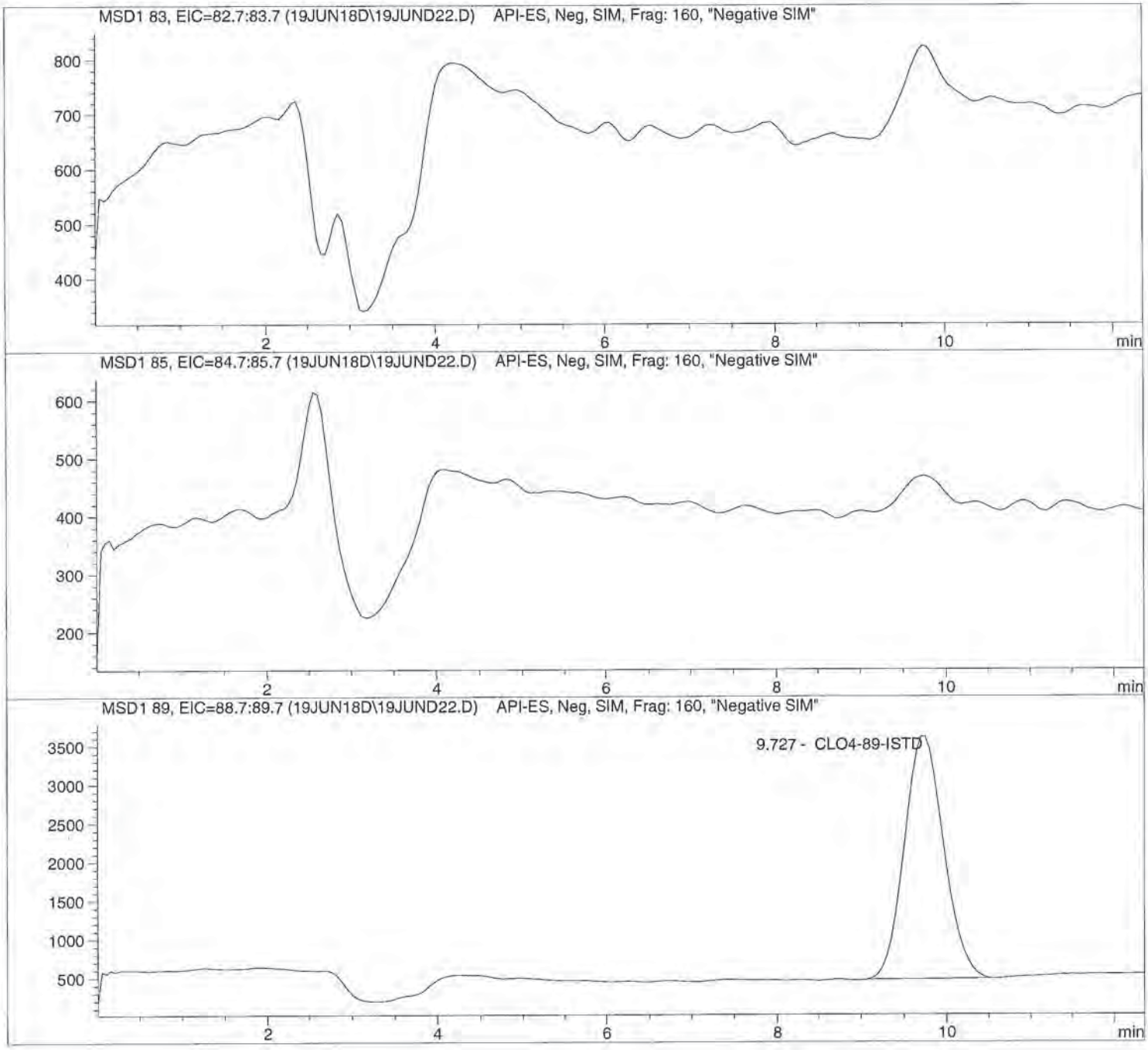
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND22.D Sample Name: 1816548004

Injection Date:	6/19/2018 14:39:31	Seq Line:	22
Sample Name:	1816548004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND22.D Sample Name: 1816548004

Injection Date:	6/19/2018 14:39:31	Seq Line:	22
Sample Name:	1816548004	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.727	PBA	100550.5	5.0000	CLO4-89-ISTD

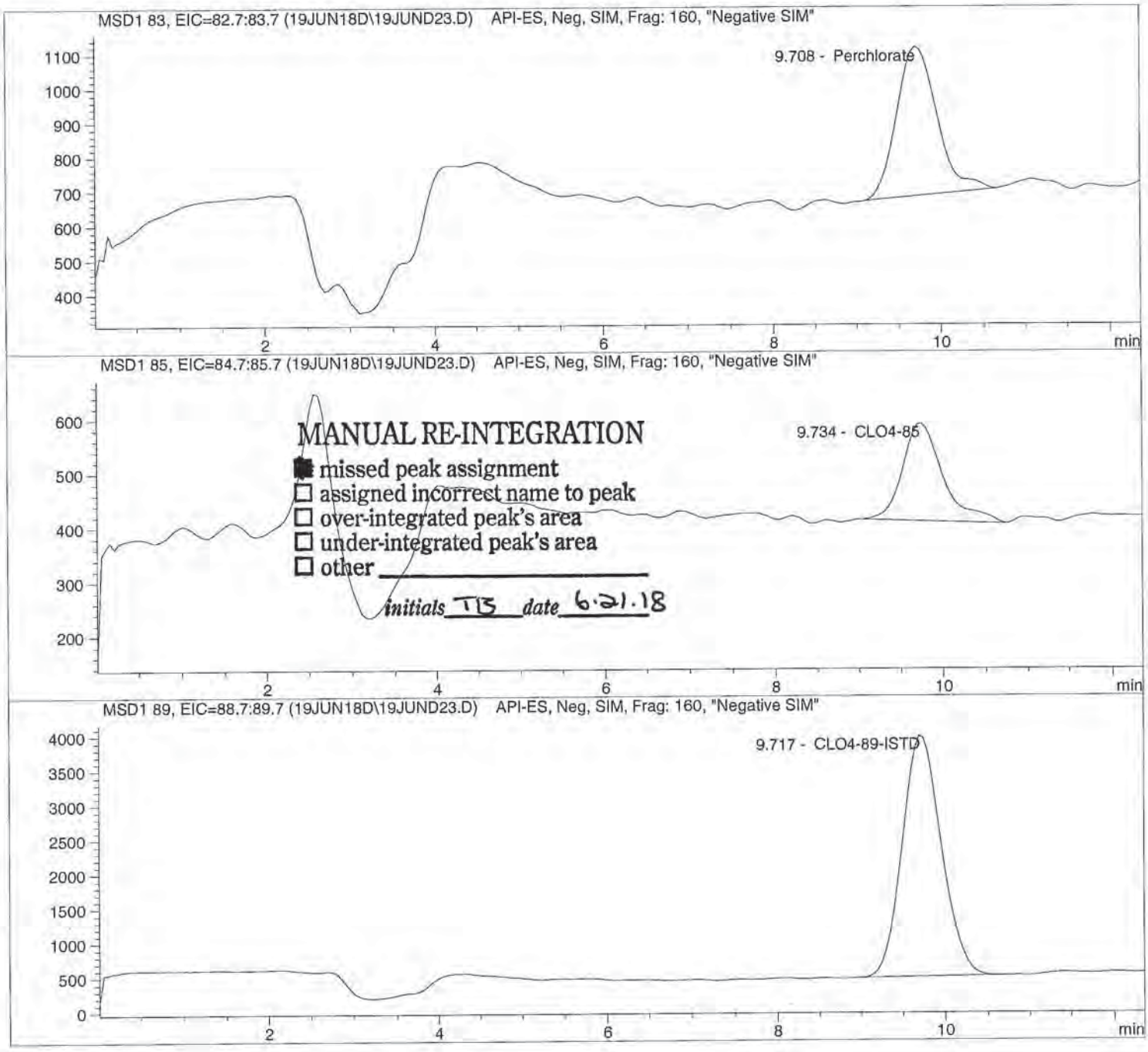
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND23.D Sample Name: 1816548005

Injection Date:	6/19/2018 14:53:45	Seq Line:	23
Sample Name:	1816548005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND23.D Sample Name: 1816548005

Injection Date:	6/19/2018 14:53:45	Seq Line:	23
Sample Name:	1816548005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.708	PBA	14430.9	0.5944	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.734	MM	5934.8	0.6048	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.717	PBA	112324.7	5.0000	CLO4-89-ISTD

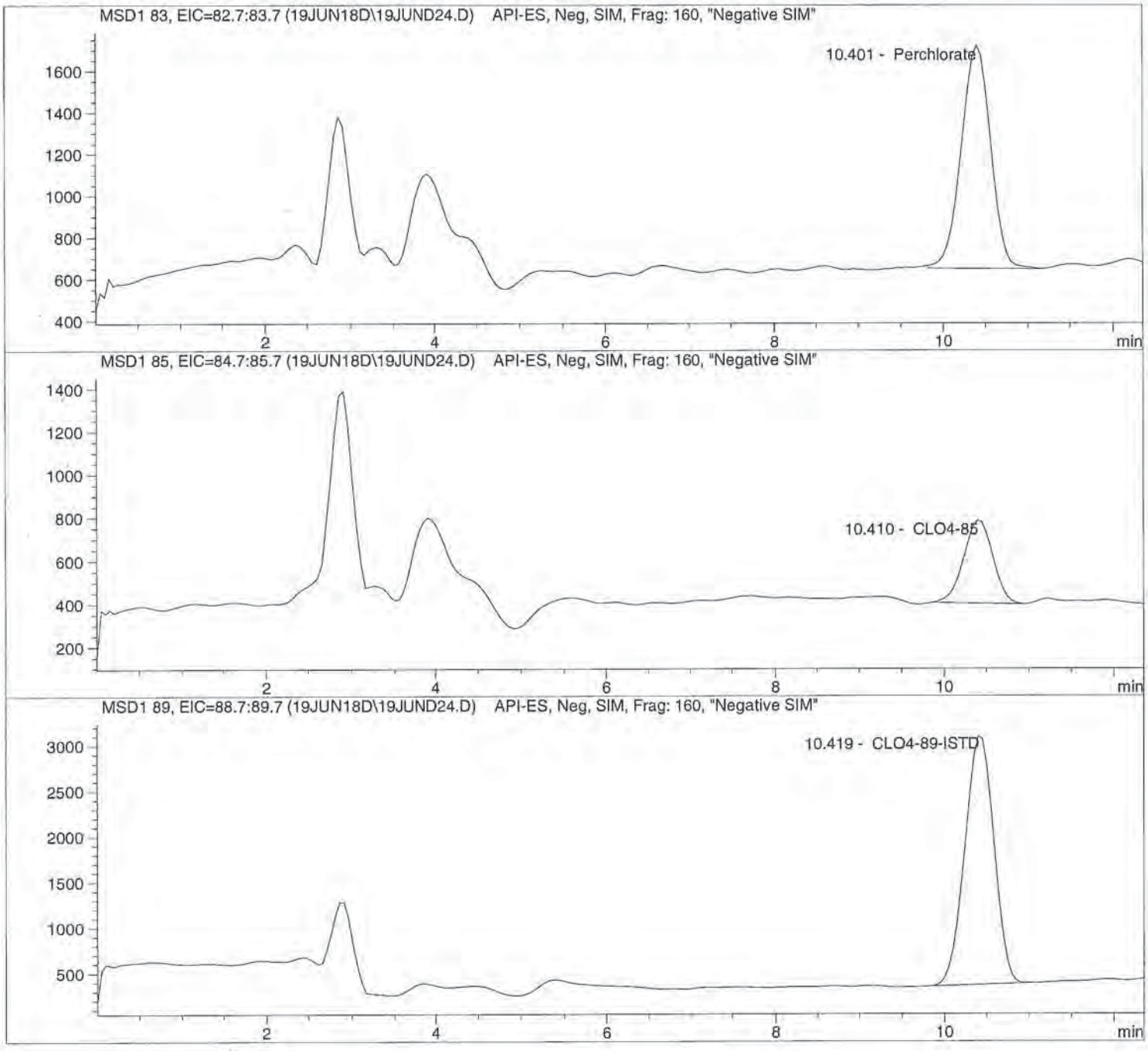
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND24.D Sample Name: 1817040001

Injection Date:	6/19/2018 15:07:56	Seq Line:	24
Sample Name:	1817040001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND24.D Sample Name: 1817040001

Injection Date:	6/19/2018 15:07:56	Seq Line:	24
Sample Name:	1817040001	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.401	BBA	25925.3	1.9128	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.410	PBA	9289.8	1.9206	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.419	PBA	65373.1	5.0000	CLO4-89-ISTD

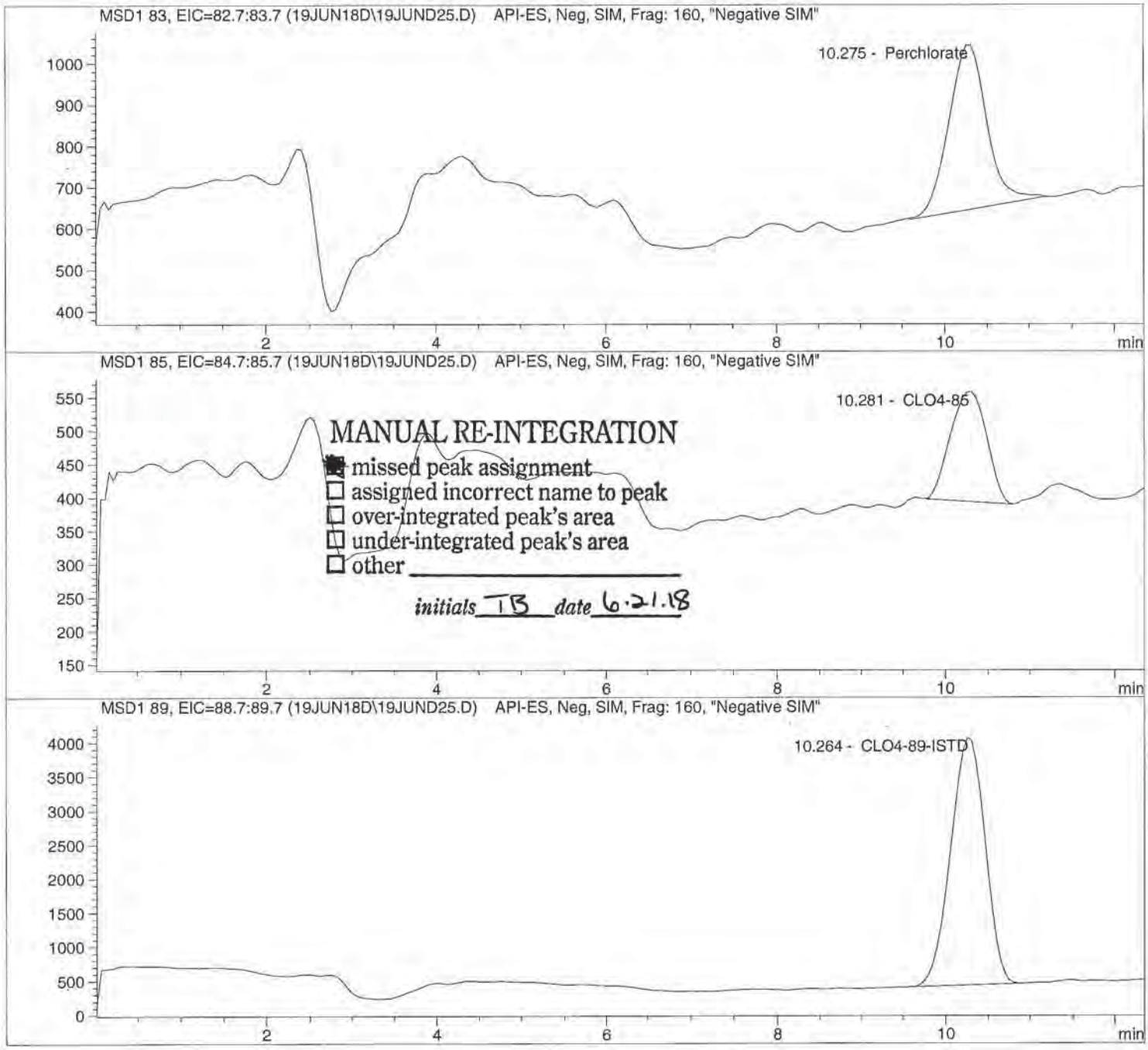
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND25.D Sample Name: 1817040001 5X

Injection Date:	6/19/2018 15:36:23	Seq Line:	25
Sample Name:	1817040001 5X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND25.D Sample Name: 1817040001 5X

Injection Date:	6/19/2018 15:36:23	Seq Line:	25
Sample Name:	1817040001 5X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.275	BBA	12396.8	0.5592	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.281	MM	4847.4	0.5251	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.264	PBA	102152.7	5.0000	CLO4-89-ISTD

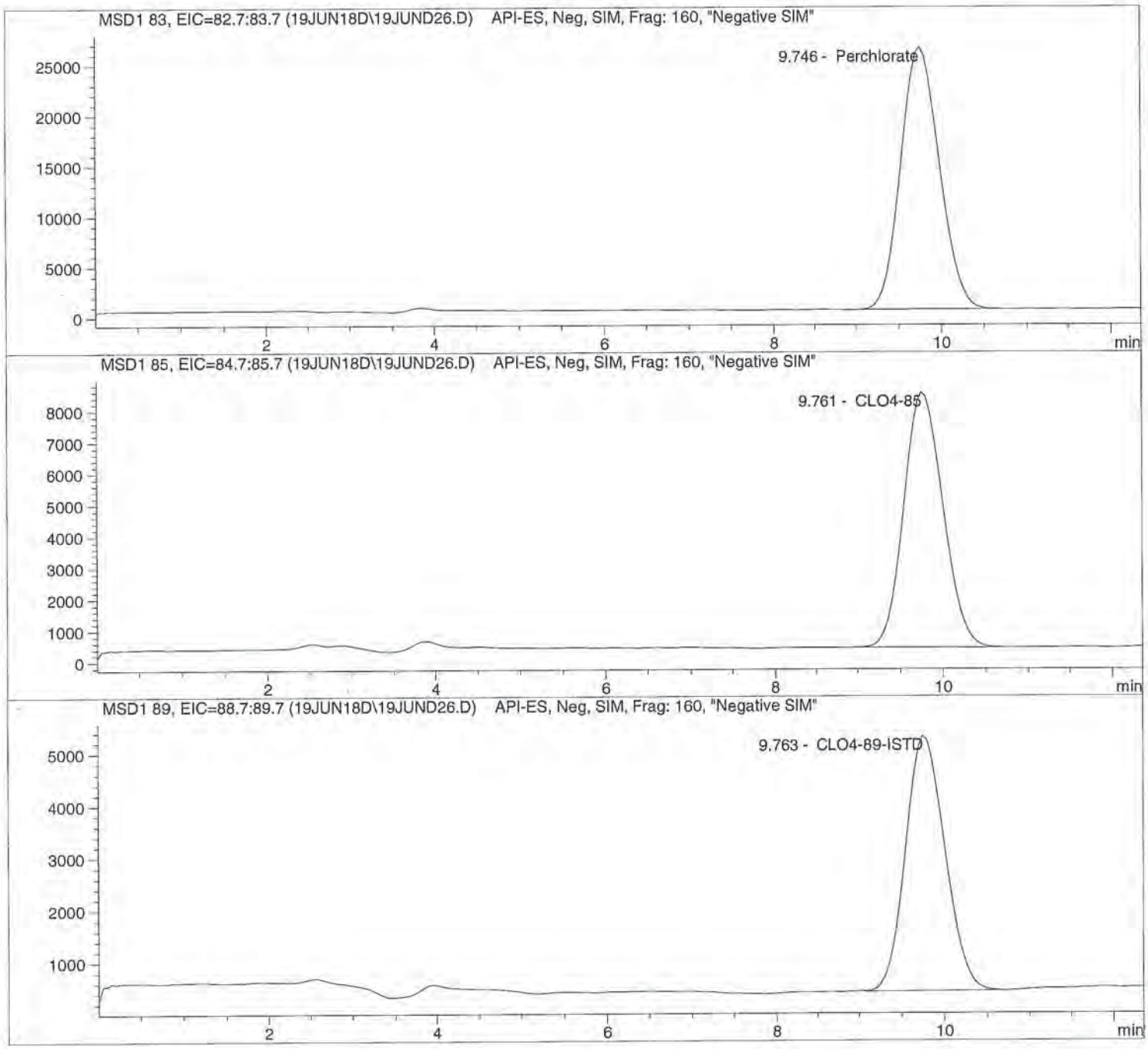
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND26.D Sample Name: 605878 CCV@25

Injection Date:	6/19/2018 15:52:20	Seq Line:	26
Sample Name:	605878 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND26.D Sample Name: 605878 CCV@25

Injection Date:	6/19/2018 15:52:20	Seq Line:	26
Sample Name:	605878 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution: = 1.	~~5.000000~~ INCORRECT DILUTION TB 6.20.18
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.746	PBA	818320.1	118.5748	Perchlorate

118.57/5 = 23.71

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.761	BBA	259597.7	112.8639	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.763	BBA	157152.8	25.0000	CLO4-89-ISTD

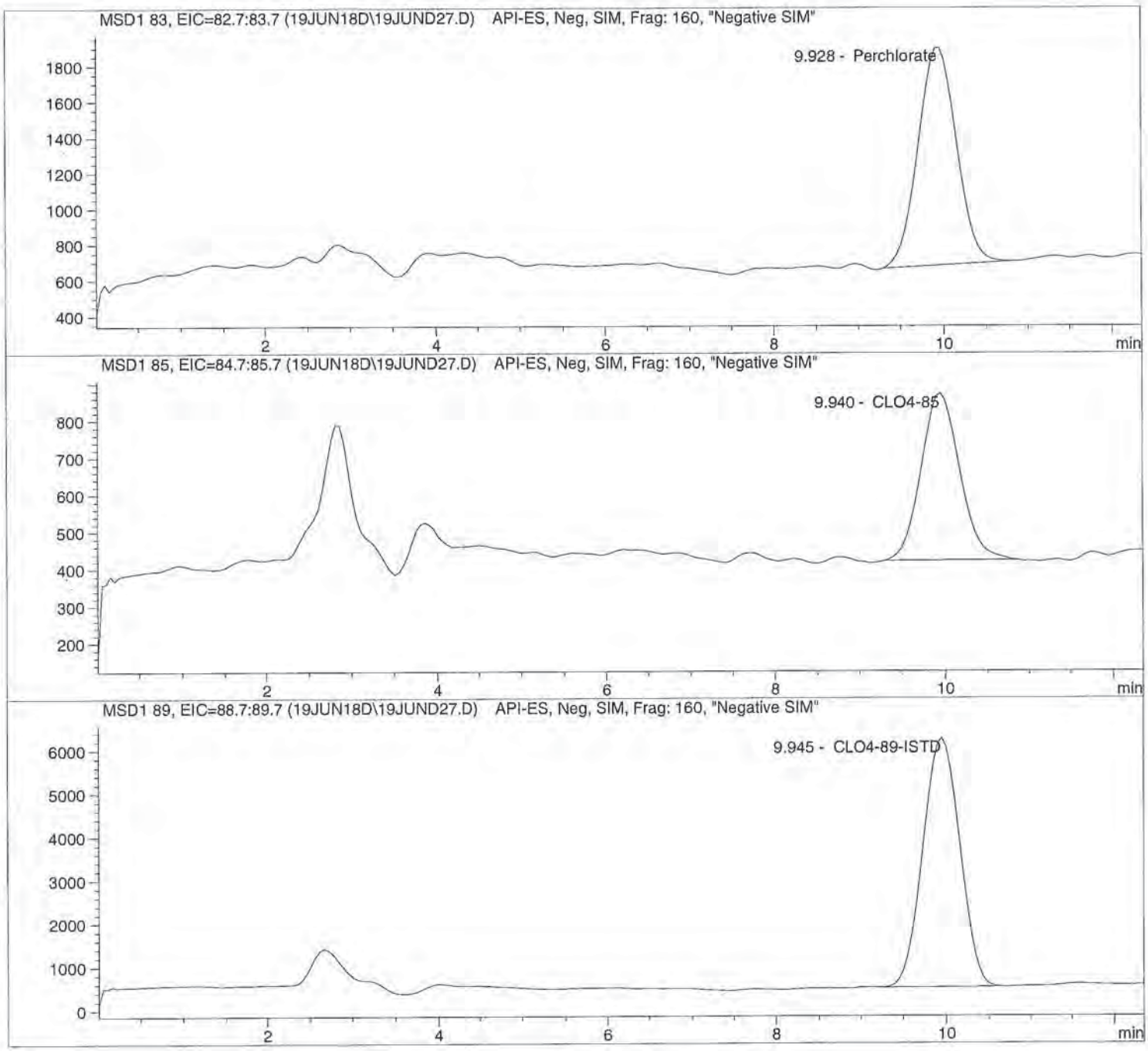
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND27.D Sample Name: 605879 LODV@1.

Injection Date:	6/19/2018 16:06:29	Seq Line:	27
Sample Name:	605879 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND27.D Sample Name: 605879 LODV@1.

Injection Date:	6/19/2018 16:06:29	Seq Line:	27
Sample Name:	605879 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.928	PBA	37903.3	1.0471	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	PBA	14081.5	1.0334	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.945	BBA	172104.8	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Calibration Table

Perchlorate

Calib. Data Modified : 6/18/2018 11:33:52 AM

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
9.970	1	1	1.00000	5.39328e4	1.85416e-5		1	Perchlorate
		2	2.00000	7.74447e4	2.58249e-5			
		3	5.00000	1.73718e5	2.87823e-5			
		4	10.00000	3.76746e5	2.65431e-5			
		5	25.00000	9.93283e5	2.51691e-5			
		6	50.00000	1.86489e6	2.68113e-5			
		7	75.00000	2.98097e6	2.51596e-5			
9.988	3	1	5.00000	2.52736e5	1.97835e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.82947e5	2.73304e-5			
		3	5.00000	1.74071e5	2.87238e-5			
		4	5.00000	1.82351e5	2.74196e-5			
		5	5.00000	1.76434e5	2.83393e-5			
		6	5.00000	1.57107e5	3.18255e-5			
		7	5.00000	1.54056e5	3.24558e-5			
9.988	2	1	1.00000	1.91282e4	5.22790e-5		1	CLO4-85
		2	2.00000	2.81496e4	7.10489e-5			
		3	5.00000	6.23358e4	8.02108e-5			
		4	10.00000	1.28536e5	7.77995e-5			
		5	25.00000	3.30100e5	7.57346e-5			
		6	50.00000	6.13931e5	8.14424e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Lvl	Amount	Area	Amt/Area	Ref Grp	Name
	7	75.00000	9.91567e5	7.56379e-5		

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 7.880 min To 11.880 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 7.881 min To 11.866 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

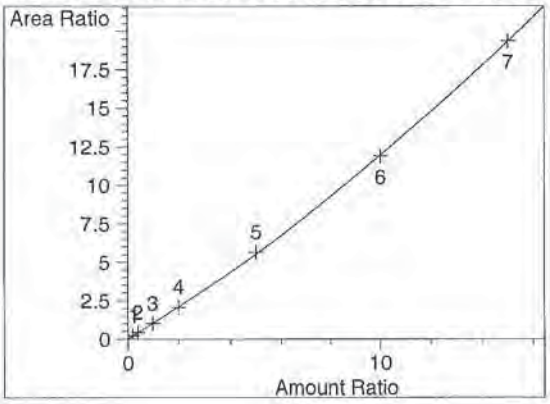
Compound: CLO4-85
- Time Window : From 7.882 min To 11.882 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Peak Sum Table

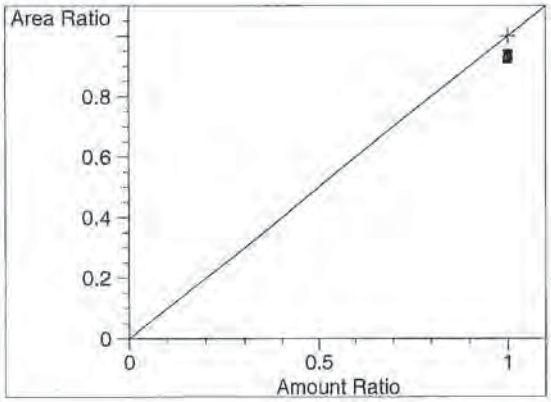
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

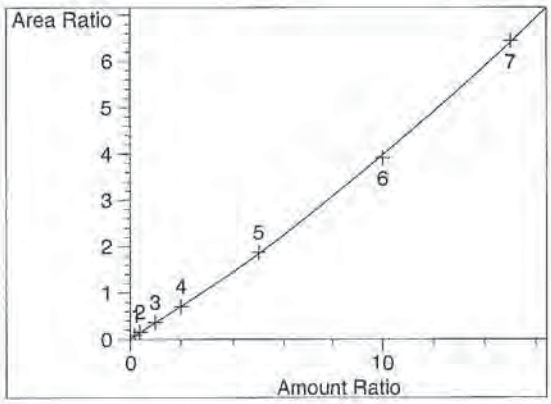
Calibration Curves



Perchlorate at exp. RT: 9.970
MSD1 83, EIC=82.7:83.7
Correlation: 0.99994
Residual Std. Dev.: 0.06841
Formula: $y = ax^2 + bx + c$
a: 1.87050e-2
b: 1.00736
c: 8.45547e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 9.988
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1



CLO4-85 at exp. RT: 9.988
MSD1 85, EIC=84.7:85.7
Correlation: 0.99991
Residual Std. Dev.: 0.03544
Formula: $y = ax^2 + bx + c$
a: 5.98841e-3
b: 3.36190e-1
c: 1.20802e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.S

Sequence Table:

Method and Injection Info Part:

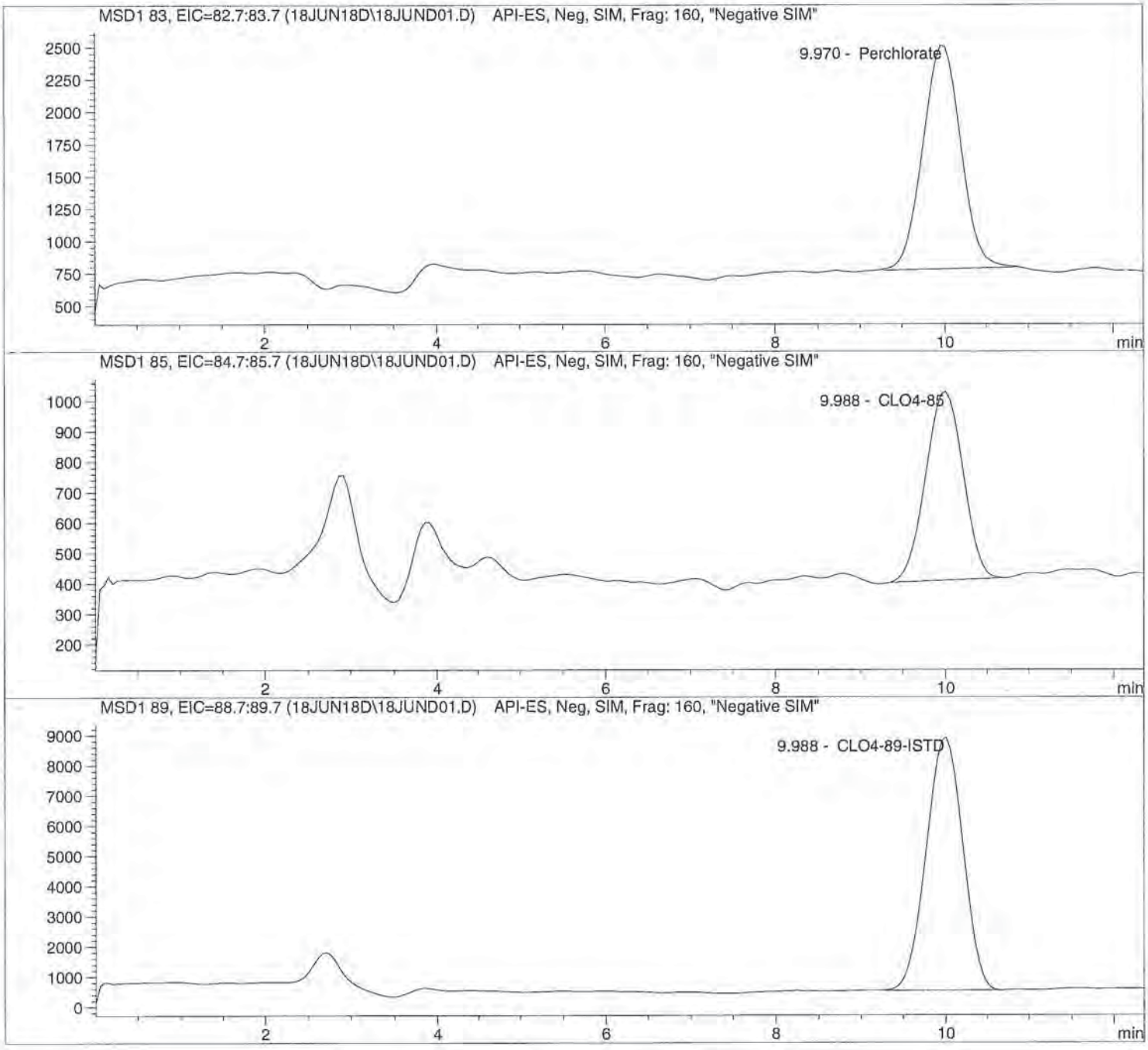
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605571 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605572 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605573 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605574 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605575 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815995001	CLO4-DOD	1	Sample		
15	Vial 85	1815995002	CLO4-DOD	1	Sample		
16	Vial 86	1815995003	CLO4-DOD	1	Sample		
17	Vial 87	1815995004 10X	CLO4-DOD	1	Sample		
18	Vial 88	1815995005 10X	CLO4-DOD	1	Sample		
19	Vial 89	1815995006	CLO4-DOD	1	Sample		
20	Vial 90	1815995007 100	CLO4-DOD	1	Sample		
21	Vial 91	1815995008	CLO4-DOD	1	Sample		
22	Vial 61	1816211001	CLO4-DOD	1	Sample		
23	Vial 62	1816211002 10X	CLO4-DOD	1	Sample		
24	Vial 75	605576 CCV@25	CLO4-DOD	1	Ctrl Samp		
25	Vial 71	605577 LODV@1.	CLO4-DOD	1	Ctrl Samp		
26	Vial 63	1816211003 10X	CLO4-DOD	1	Sample		
27	Vial 64	1816211004	CLO4-DOD	1	Sample		
28	Vial 65	1816211005 10X	CLO4-DOD	1	Sample		
29	Vial 66	1816211006 MS	CLO4-DOD	1	Sample		
30	Vial 67	1816211007 MSD	CLO4-DOD	1	Sample		
31	Vial 68	1816211008	CLO4-DOD	1	Sample		
32	Vial 69	1816211009 10X	CLO4-DOD	1	Sample		
33	Vial 70	1816211010	CLO4-DOD	1	Sample		
34	Vial 92	1815995007 1K	CLO4-DOD	1	Sample		
35	Vial 75	605578 CCV@25	CLO4-DOD	1	Ctrl Samp		
36	Vial 71	605579 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.970	BBA	53932.8	1.0134	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	PBA	19128.2	0.9428	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	BBA	252736.1	5.0000	CLO4-89-ISTD

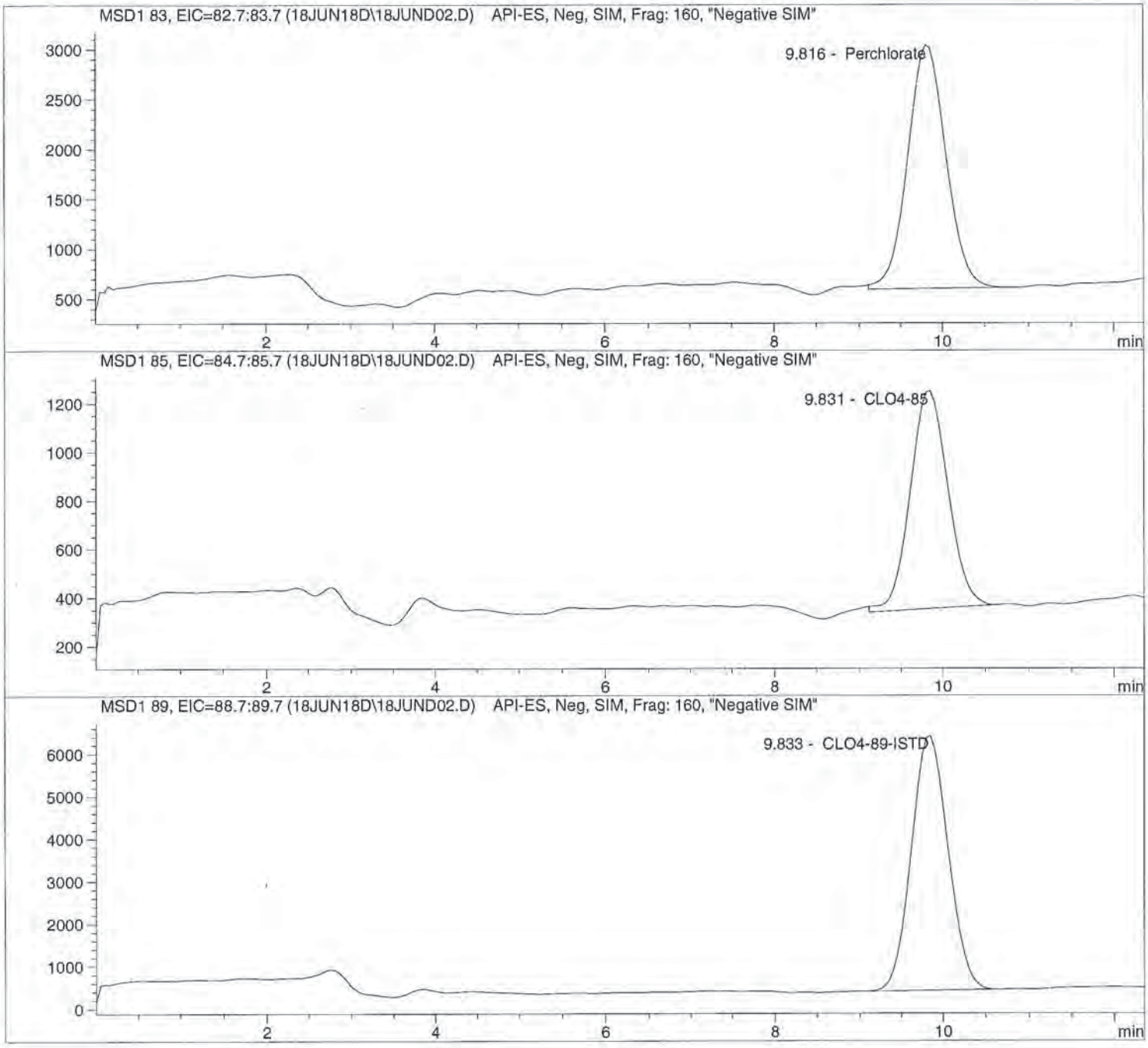
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.816	BBA	77444.7	2.0436	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.831	BBA	28149.6	2.0931	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.833	BBA	182946.7	5.0000	CLO4-89-ISTD

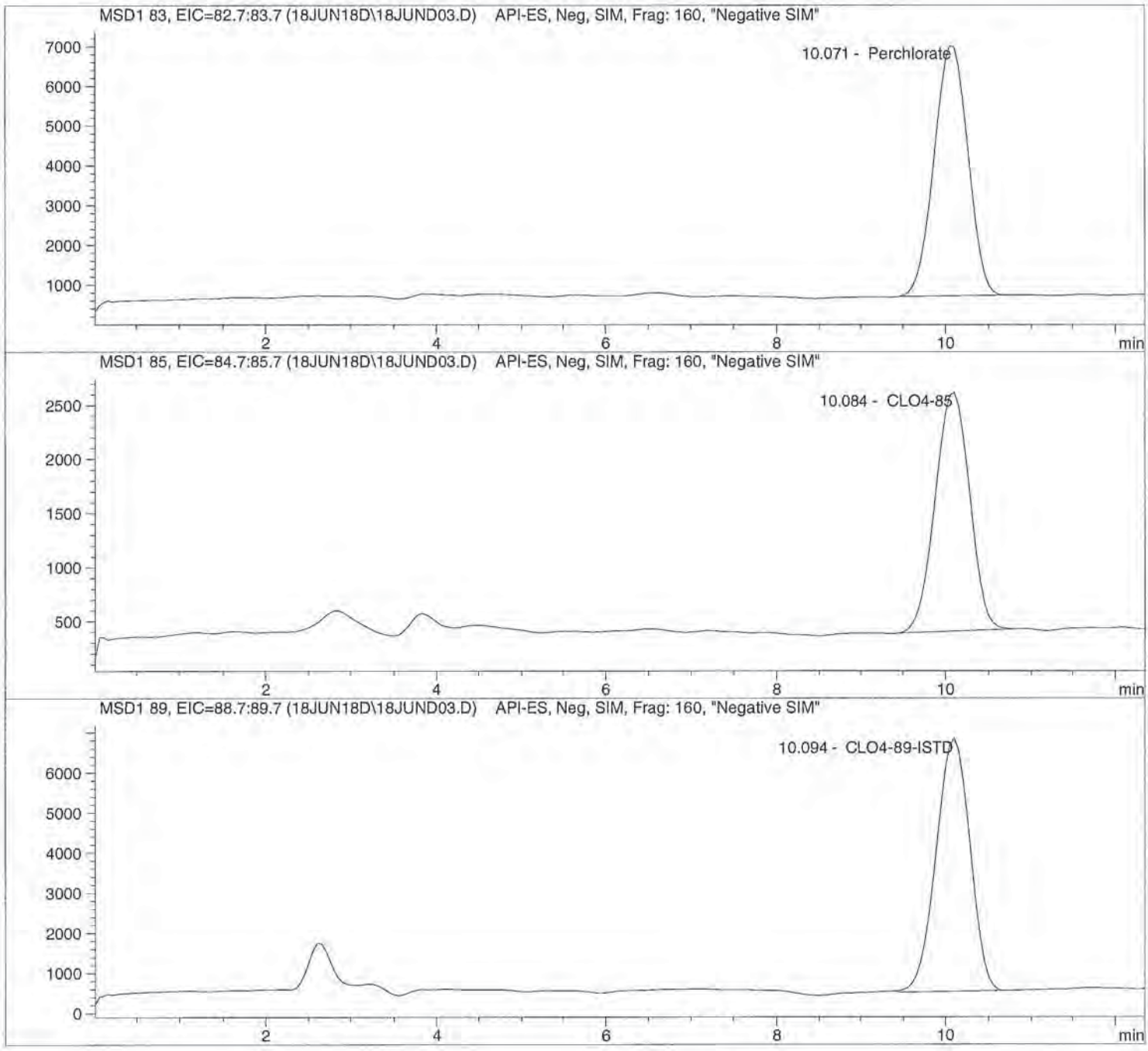
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.071	PBA	173717.8	4.8249	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.084	PBA	62335.8	5.0552	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.094	BBA	174071.5	5.0000	CLO4-89-ISTD

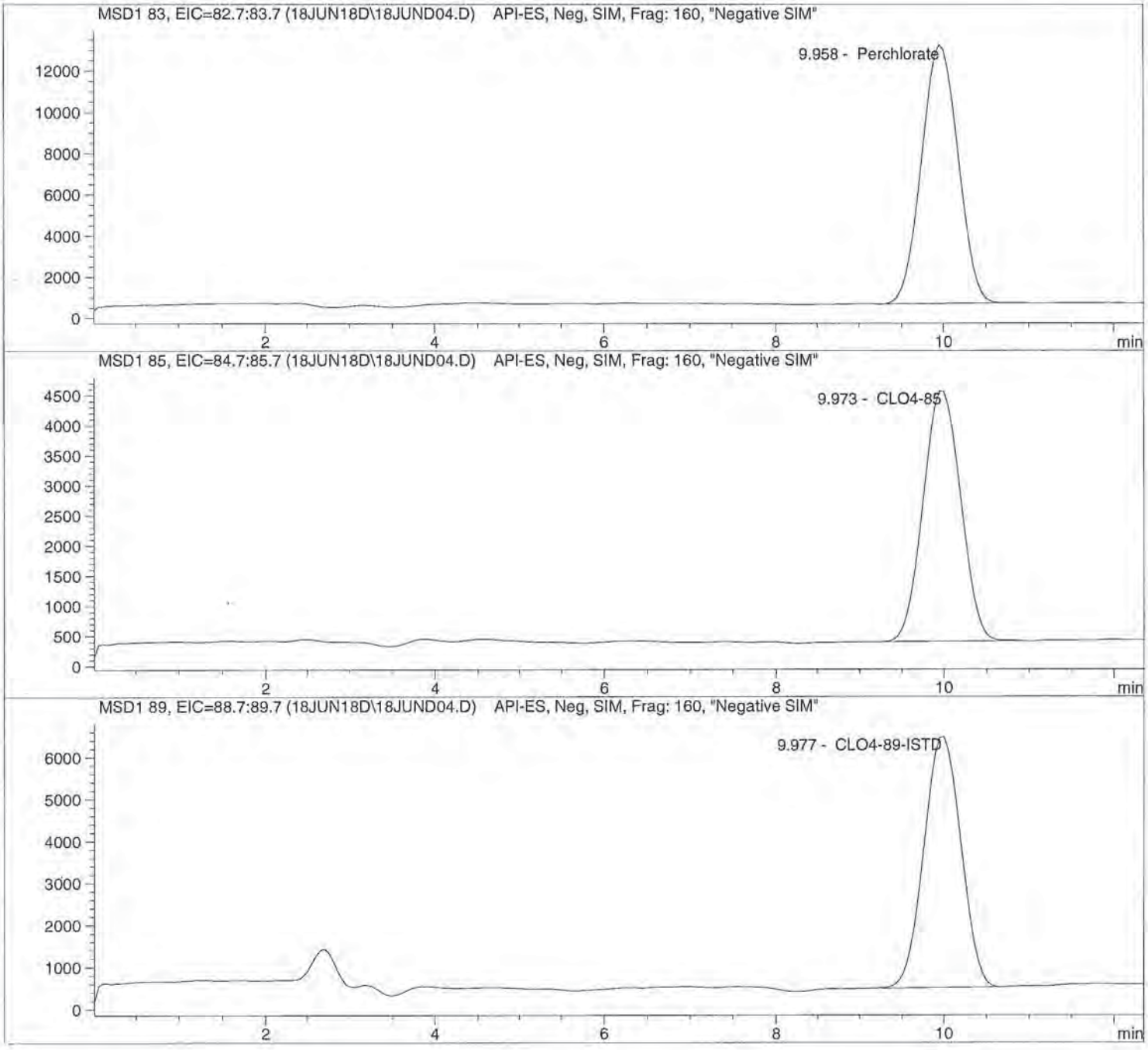
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.958	PBA	376746.4	9.8523	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.973	PBA	128535.5	9.9509	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.977	BBA	182351.5	5.0000	CLO4-89-ISTD

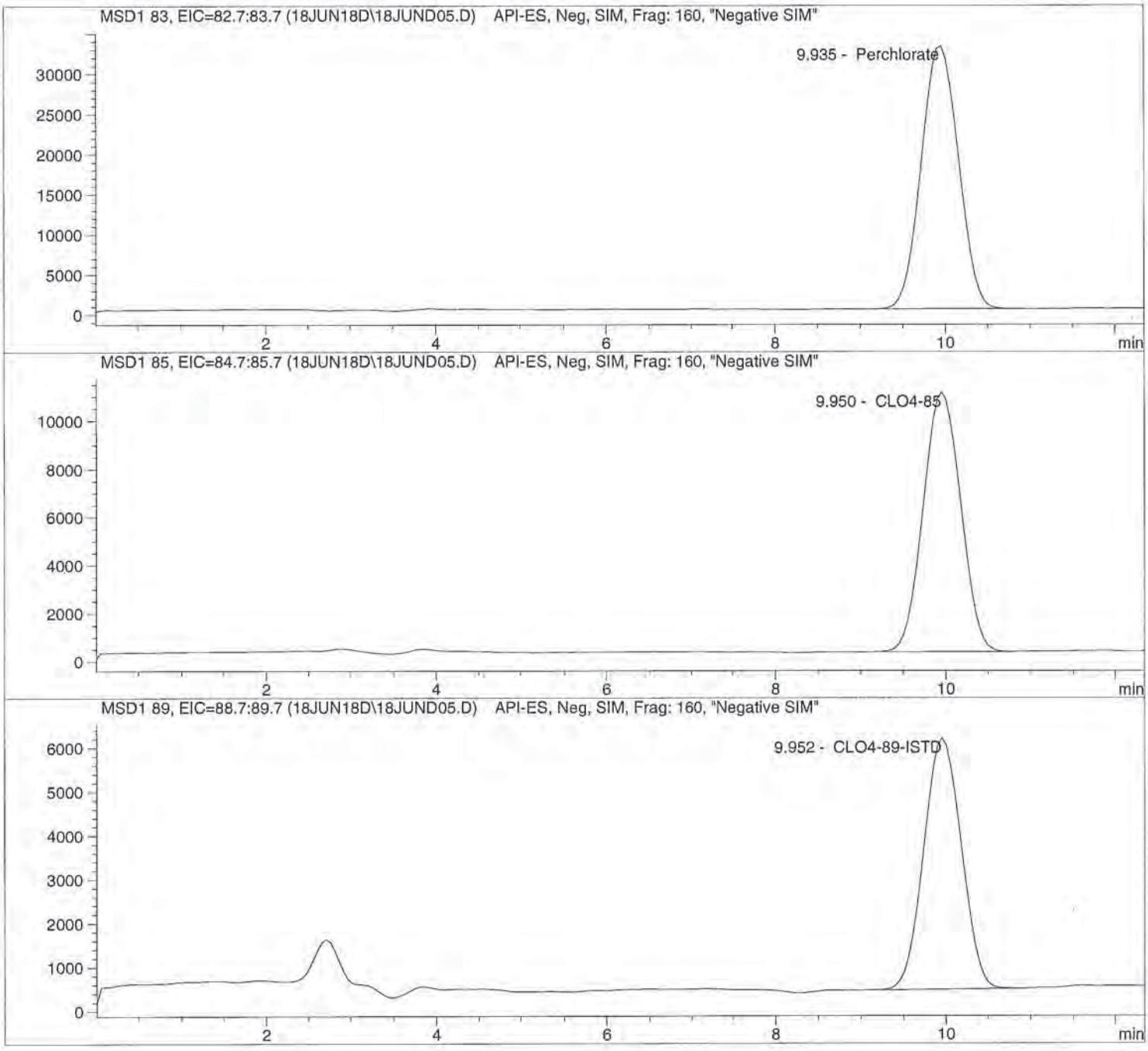
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.935	BBA	993282.6	25.4885	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.950	BBA	330100.2	25.3558	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.952	BBA	176433.5	5.0000	CLO4-89-ISTD

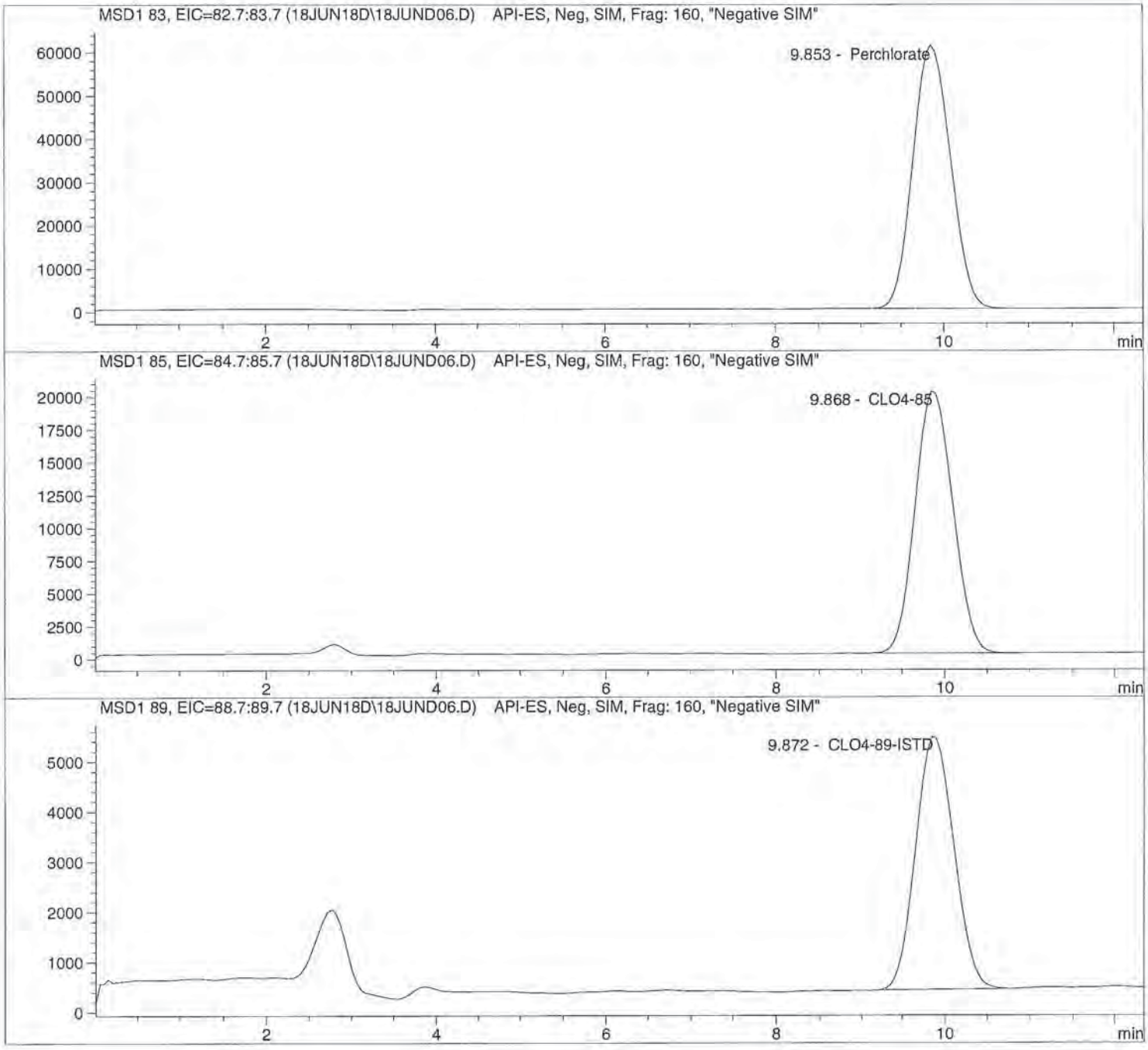
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.853	BBA	1864888.3	49.7015	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.868	BBA	613930.9	49.2848	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.872	PBA	157106.9	5.0000	CLO4-89-ISTD

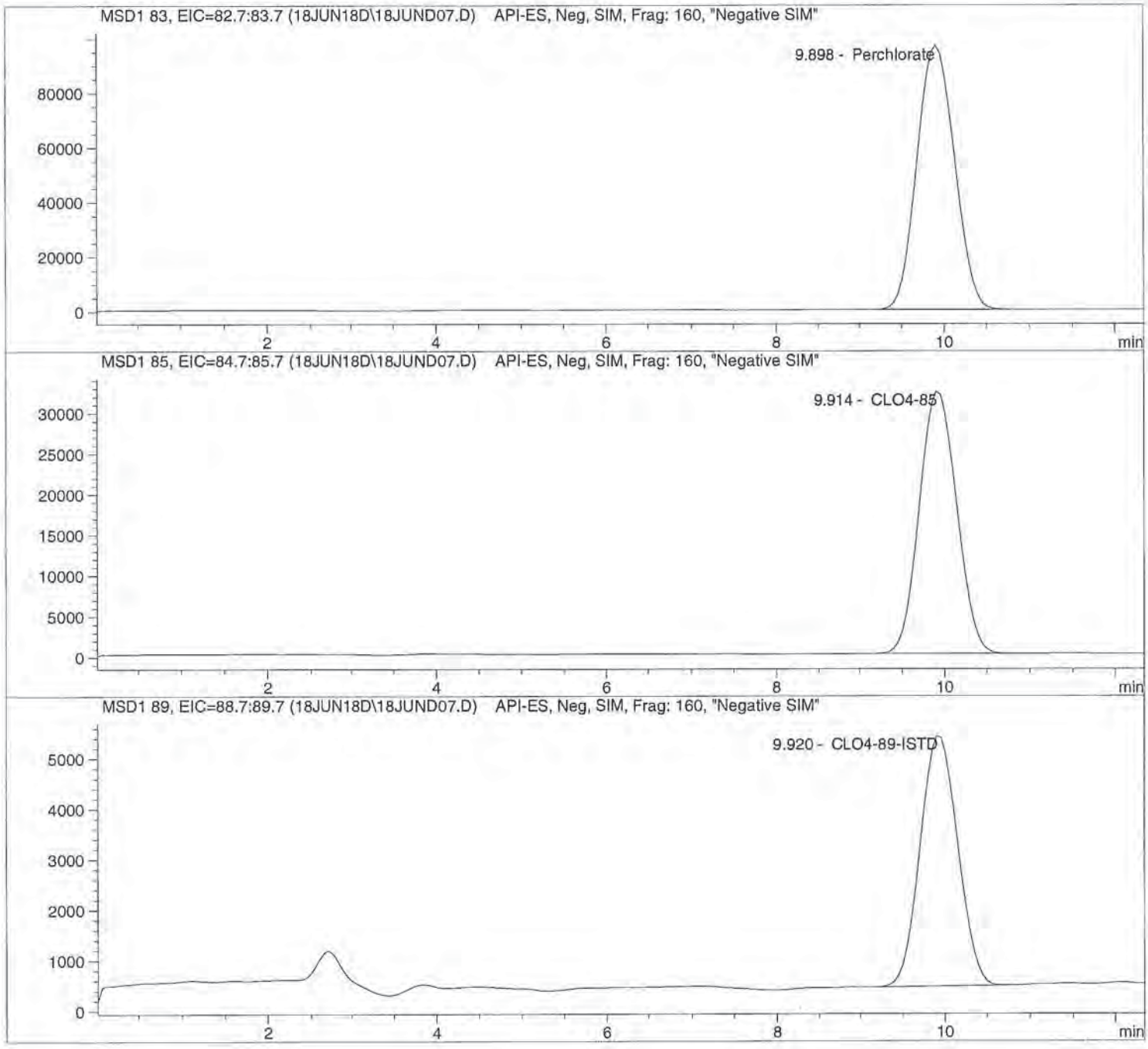
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.898	PBA	2980974.0	75.0714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.914	BBA	991566.9	75.3302	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.920	PBA	154055.8	5.0000	CLO4-89-ISTD

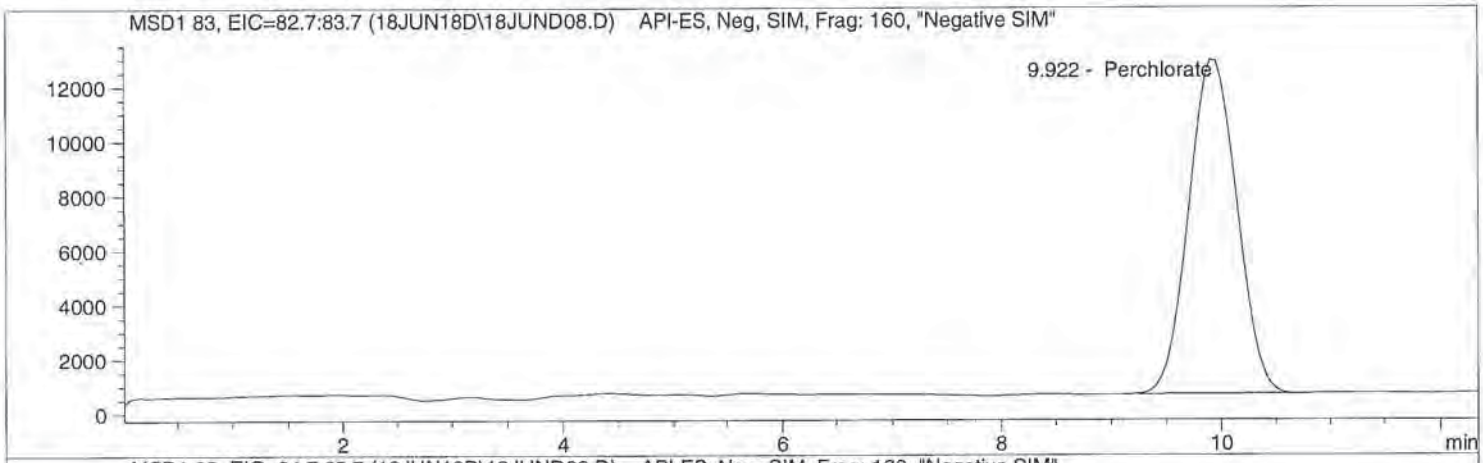
*** End of Report ***

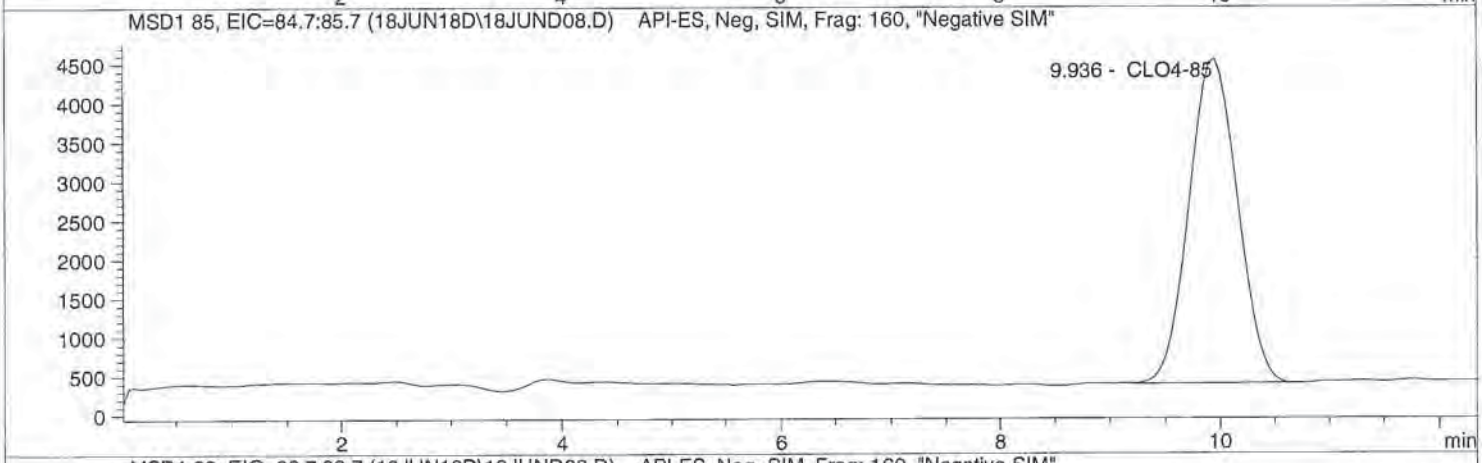
Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

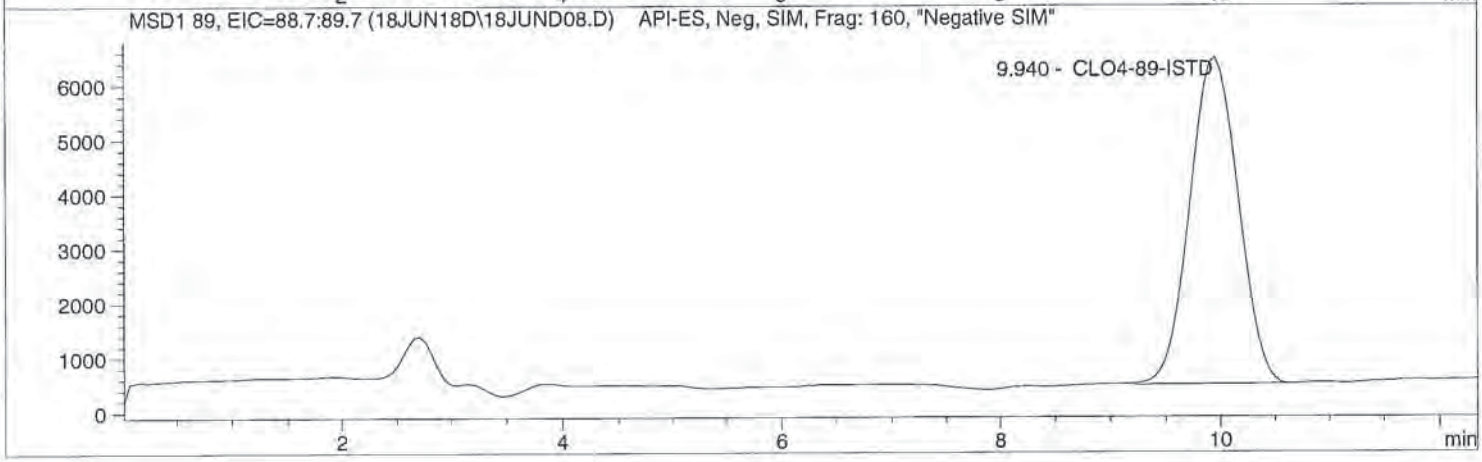
Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.922	BBA	376863.7	9.6854	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.936	BBA	129075.8	9.8174	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	BBA	185649.3	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

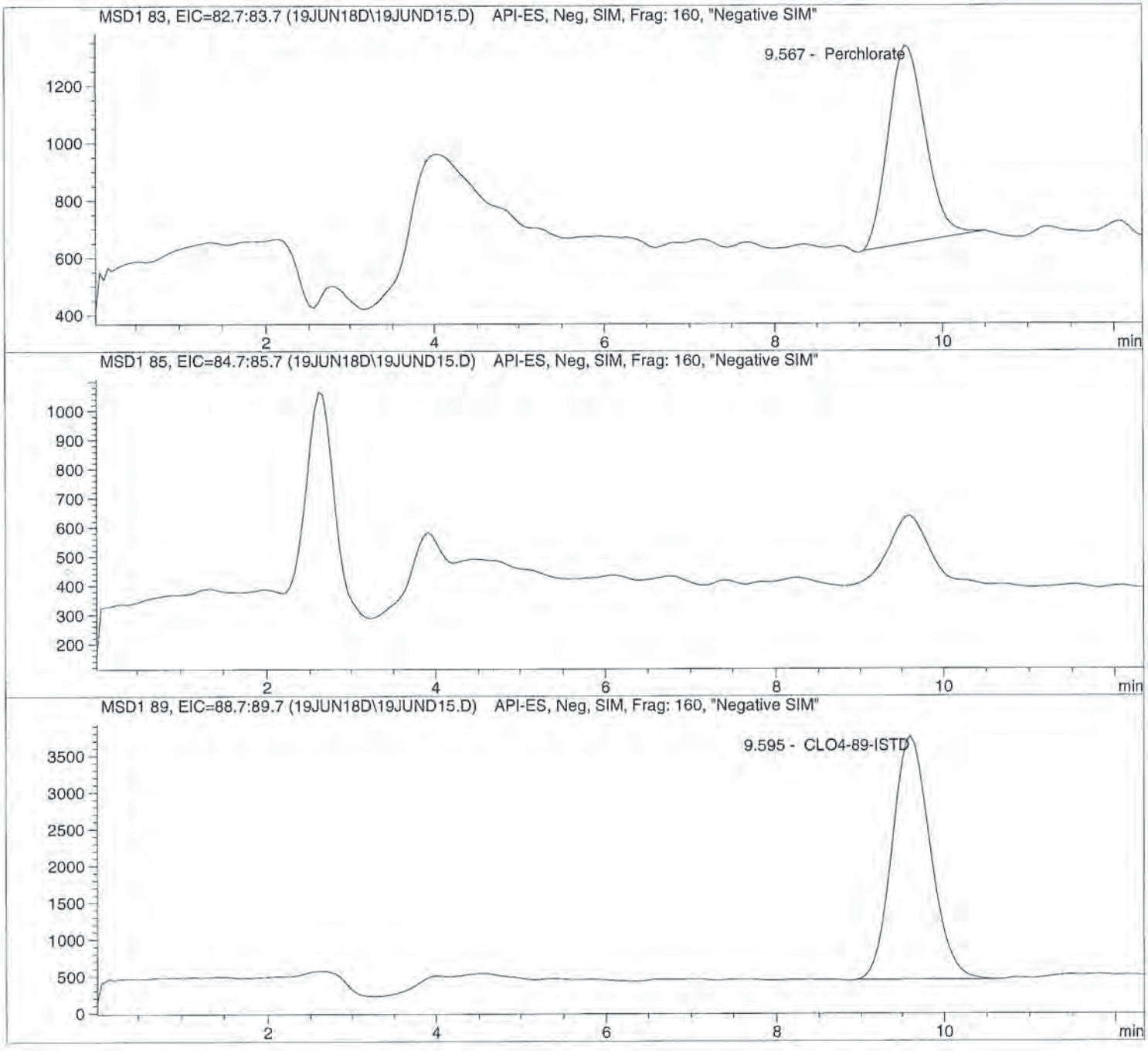
Unmodified

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND15.D Sample Name: 1816481007

Injection Date:	6/19/2018 13:00:11	Seq Line:	15
Sample Name:	1816481007	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND15.D Sample Name: 1816481007

Injection Date:	6/19/2018 13:00:11	Seq Line:	15
Sample Name:	1816481007	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.567	PBA	21331.9	0.9594	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
9.595	PBA	105374.4	5.0000	CLO4-89-ISTD

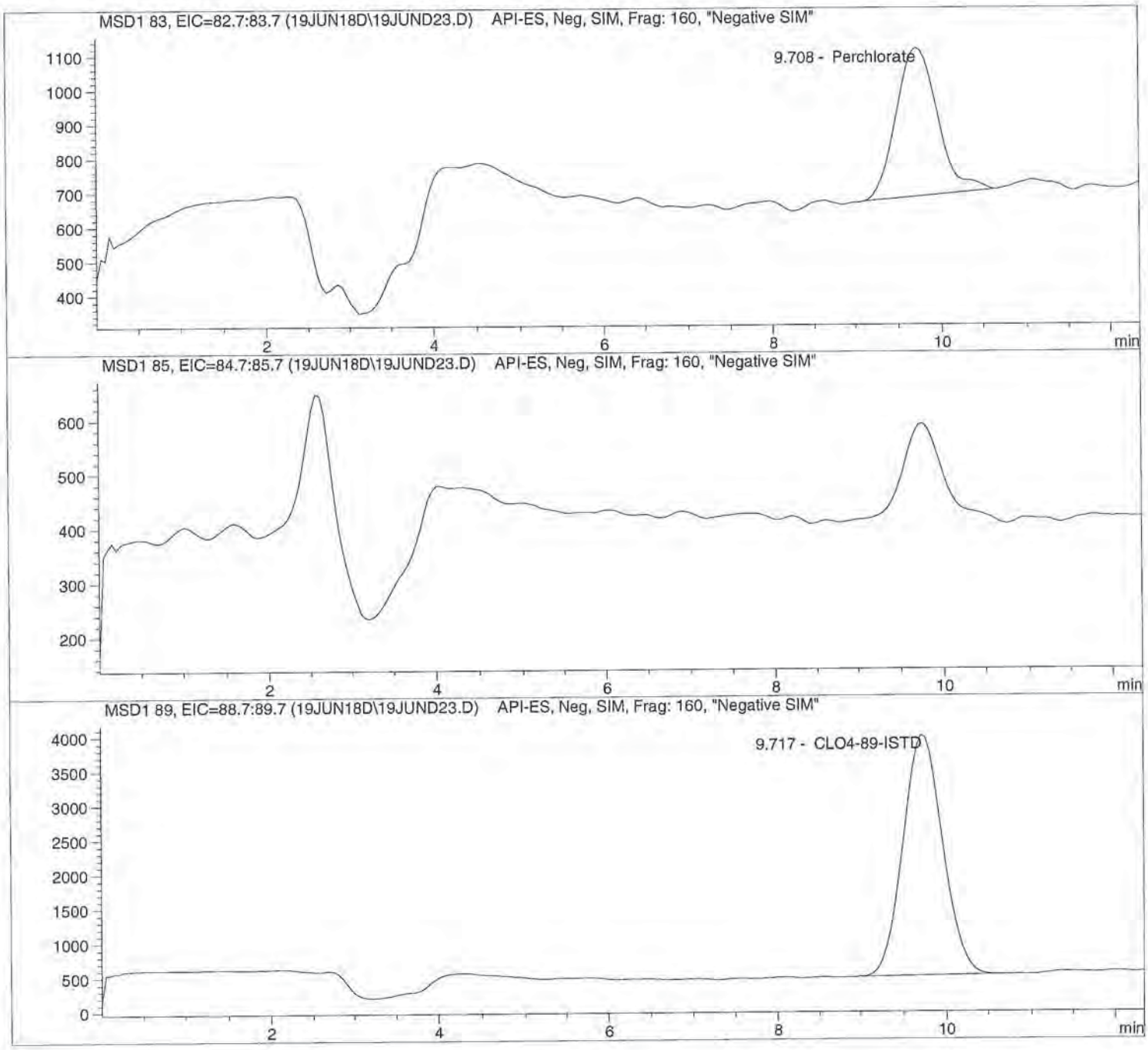
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND23.D Sample Name: 1816548005

Injection Date:	6/19/2018 14:53:45	Seq Line:	23
Sample Name:	1816548005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND23.D Sample Name: 1816548005

Injection Date:	6/19/2018 14:53:45	Seq Line:	23
Sample Name:	1816548005	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.708	PBA	14430.9	0.5944	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
9.717	PBA	112324.7	5.0000	CLO4-89-ISTD

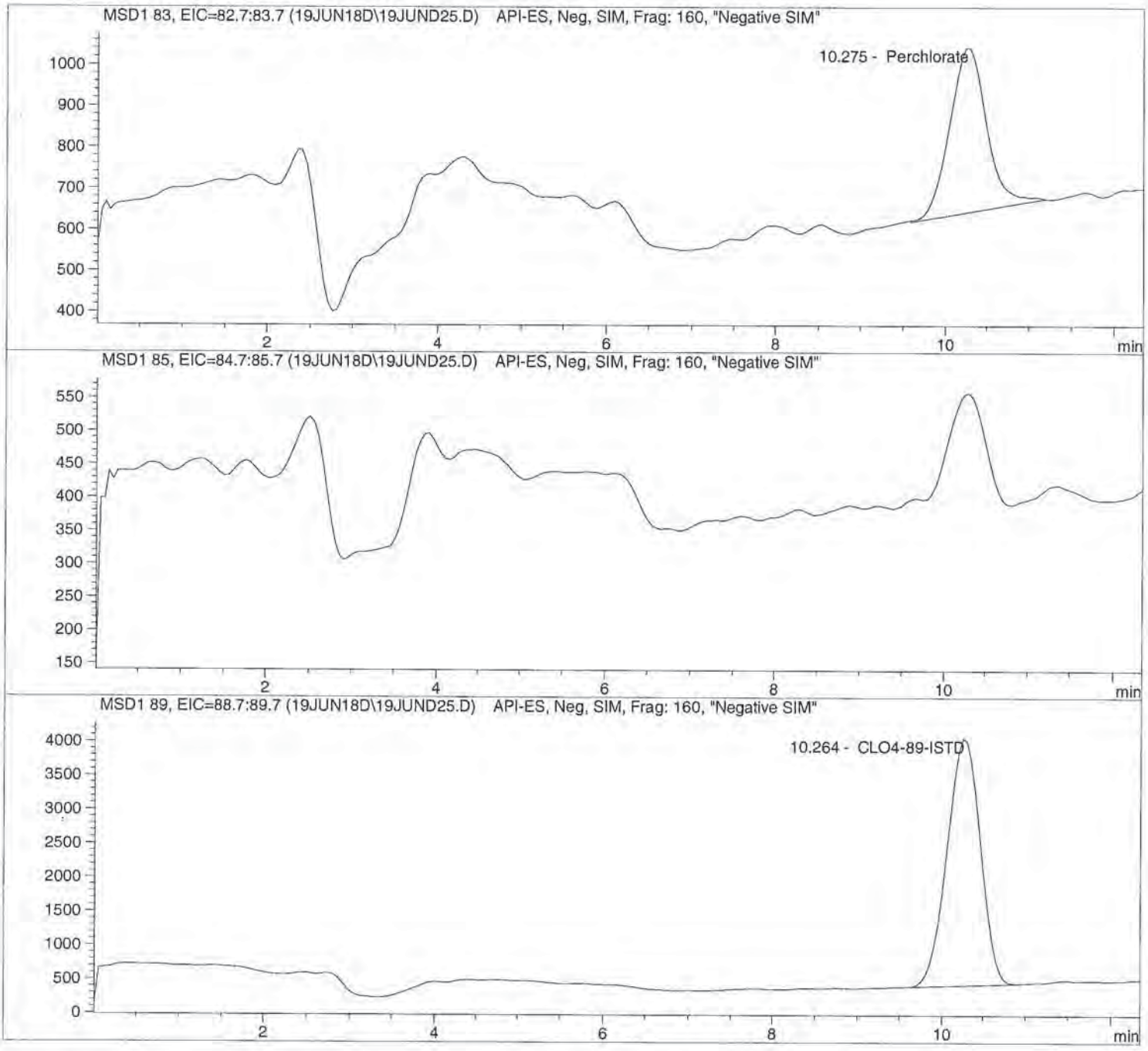
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND25.D Sample Name: 1817040001 5X

Injection Date:	6/19/2018 15:36:23	Seq Line:	25
Sample Name:	1817040001 5X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\19JUN18D\19JUND25.D Sample Name: 1817040001 5X

Injection Date:	6/19/2018 15:36:23	Seq Line:	25
Sample Name:	1817040001 5X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.275	BBA	12396.8	0.5592	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
10.264	PBA	102152.7	5.0000	CLO4-89-ISTD

*** End of Report ***

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www.alsglobal.com

WorkOrder: HS18061031

LHAAP/GWTP Weekly Effluent

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

16-Jul-2018

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

July 11, 2018

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

Work Order: **HS18061031**

Laboratory Results for: **LHAAP/GWTP Weekly Effluent**

Dear Marcia,

ALS Environmental received 1 sample(s) on Jun 21, 2018 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: RJ.MODASHIA
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Weekly Effluent
Work Order: HS18061031

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061031-01	LH18/24_SP650_062018	Water		20-Jun-2018 14:00	21-Jun-2018 08:45	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**

Project: LHAAP/GWTP Weekly Effluent

Work Order:

Work Order Comments

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

Work Order Comments

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

WetChemistry by Method E350.3

Batch ID: R318681

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

WetChemistry by Method E365.3

Batch ID: R318616

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

WetChemistry by Method E415.1

Batch ID: R318575

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

ALS Group Houston, Corp

Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP/GWTP Weekly Effluent

WorkOrder:HS18061031

Sample ID: LH18/24_SP650_062018

Lab ID:HS18061031-01

Collection Date: 20-Jun-2018 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)	**16**		**2.0**	**2.0**	**2.0**	**mg/L**	10	26-Jun-2018 14:00
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**3.34**		**0.100**	**0.100**	**0.250**	**mg/L**	10	22-Jun-2018 13:45
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**18.4**		**0.500**	**0.600**	**1.00**	**mg/L**	1	23-Jun-2018 16:38
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Weekly Effluent
WorkOrder: HS18061031

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318575	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18061031-01	LH18/24_SP650_062018	20 Jun 2018 14:00			23 Jun 2018 16:38	1
Batch ID R318616	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18061031-01	LH18/24_SP650_062018	20 Jun 2018 14:00			22 Jun 2018 13:45	10
Batch ID R318681	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18061031-01	LH18/24_SP650_062018	20 Jun 2018 14:00			26 Jun 2018 14:00	10
Batch ID R319293	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18061031-01	LH18/24_SP650_062018	20 Jun 2018 14:00			06 Jul 2018 16:39	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Weekly Effluent
WorkOrder: HS18061031

QC BATCH REPORT

Batch ID: R318575 **Instrument: TOC_02** **Method: E415.1**

MBLK Sample ID: **WBLKW1-180623** Units: **mg/L** Analysis Date: **23-Jun-2018 15:07**
Client ID: Run ID: **TOC_02_318575** SeqNo: **4623496** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW1-180623** Units: **mg/L** Analysis Date: **23-Jun-2018 15:22**
Client ID: Run ID: **TOC_02_318575** SeqNo: **4623497** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.08	1.00	10	0	101	80 - 120				

LCSD Sample ID: **WLCSDW1-180623** Units: **mg/L** Analysis Date: **23-Jun-2018 15:35**
Client ID: Run ID: **TOC_02_318575** SeqNo: **4623498** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.3	1.00	10	0	103	80 - 120	10.08	2.16	20	

MS Sample ID: **HS18060752-01MS** Units: **mg/L** Analysis Date: **23-Jun-2018 16:08**
Client ID: Run ID: **TOC_02_318575** SeqNo: **4623500** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.92	1.00	10	3.201	97.2	80 - 120				

The following samples were analyzed in this batch: HS18061031-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Weekly Effluent
WorkOrder: HS18061031

QC BATCH REPORT

Batch ID: R318616 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-318616** Units: **mg/L** Analysis Date: **22-Jun-2018 13:45**
Client ID: Run ID: **UV-2450_318616** SeqNo: **4624254** 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)	0.0100	0.0250								U

LCS Sample ID: **LCS-318616** Units: **mg/L** Analysis Date: **22-Jun-2018 13:45**
Client ID: Run ID: **UV-2450_318616** SeqNo: **4624255** 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: **HS18061099-02MS** Units: **mg/L** Analysis Date: **22-Jun-2018 13:45**
Client ID: Run ID: **UV-2450_318616** SeqNo: **4624263** 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)	0.292	0.0250	0.25	0.048	97.6	80 - 120				

MSD Sample ID: **HS18061099-02MSD** Units: **mg/L** Analysis Date: **22-Jun-2018 13:45**
Client ID: Run ID: **UV-2450_318616** SeqNo: **4624264** 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)	0.29	0.0250	0.25	0.048	96.8	80 - 120	0.292	0.687	20	

The following samples were analyzed in this batch: HS18061031-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Weekly Effluent
WorkOrder: HS18061031

QC BATCH REPORT

Batch ID: R318681 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-318681** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625739** 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)	0.20	0.20								U

LCS Sample ID: **LCS-318681** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625740** 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: **HS18060893-01MS** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625743** 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	0.1198	100	80 - 120				

MSD Sample ID: **HS18060893-01MSD** Units: **mg/L** Analysis Date: **26-Jun-2018 14:00**
Client ID: Run ID: **WetChem_HS_318681** SeqNo: **4625744** 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)	10.2	0.20	10	0.1198	101	80 - 120	10.16	0.393	20	

The following samples were analyzed in this batch: HS18061031-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Weekly Effluent
WorkOrder: **HS18061031**

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 Group Houston, Corp Date: 11-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 11-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Date/Time Received: **21-Jun-2018 08:45**
Work Order: HS18061031
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 21-Jun-2018 Date
Reviewed by: *RJ Modashia* eSignature — 21-Jun-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	2.4c/2.0c U/C	IR30	
Cooler(s)/Kit(s):	43651		
Date/Time sample(s) sent to storage:	6/21/18 14:40		
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:

00903825

Page: of 13 of 156

Project/Phase No: NWO1312.0150

COC Number(1):

LIMS Number:

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

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 (5)	Sample Matrix (4)	Number of containers	TOC	Ammonia-N	Perchlorate	Orthophosphate	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LH8/24-SP650.062018		6/20/18	1400	-	N		W	5	X	X	XX	X				
				-												
				-												
				-												
				-												
				-												
				-												
				-												
				-												

Sample Analysis Requested (3) | Quality Assurance Samples (6)

HS18061031
Bhate Environmental Associates, Inc.
LHAAP/GWTP Weekly Effluent

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/20/18	1430	1. R Cuga	6/21/18	08:45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number: 7376 9751 2724

Analytical Lab: ALS 10450 Stanolift Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time: R Cuga 6/21/18 08:45

cooler # 43651
TEMP 2.4c IR#30
cf -0.4

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

43651

CUSTODY SEAL

Date: 6/20/18 Time: 1430
Name: Scott Beesinger
Company: EHATE

Seal Broken By: [illegible]
Date: 06/21/18

43651 JUN 21 2018

CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-SW
RMA:

FedEx Express

E

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 7376 9751 2724

THU - 21 JUN 10:30A
PRIORITY OVERNIGHT

099

TRK# 7376 9751 2724

77099
TX-US
IAH

AR SGRA

Wet Chemistry Raw Data

Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP WEEKLY EFFLUENT
ALS WO# HS18061031

ALS Laboratory Group

NIT - HMN - WISE
HS1806 1037

Ion Selective Electrode Logbook

Analyst: MD	Date: 06/26/2018
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F	

Probe Calibration Date:	Cal Std ID:	Probe ID:
06/26/2018	30606(03-07)	SR15190

Std Level		mV	Conc., mg/L:
STD 1 (mg/L):	0.2	117.0	0.2019
STD 2 (mg/L):	1	77.4	1.054
STD 3 (mg/L):	5	35.2	5.000

Sodium Thiosulfate ID:		
Std Level	mV	Conc., mg/L:
STD 4 (mg/L) 10	17.1	10.07
STD 5 (mg/L) 50	-25.0	50.05

LSC / MS Spike ID: 29702064 04
ICV Cal STD ID: 30606 2002
DPD Reagent ID: 29702063 02

ICAL Date & Slope: 100.0% / -60.0 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		some	some		10.24			
CCB		↓	↓		0.02230			
MBLK					0.02240			
LCS					10.09			
HS1806 0661-01		5 mL	some	10X	3.551		-ve	
HS1806 0873-01		some			0.2037		-ve	
HS1806 0893-01					0.1198		-ve	
HS1806 0893-01MS					10.16			
HS1806 0893-01MSD			↓		10.20			
HS1806 1037-01		5 mL	some	10X	1.640		-ve	
HS1806 1184-01		5 mL	some		0.1590		-ve	
CCV		some	some		10.2			
CCB		↓	↓		0.02239			

Batch ID:	Reported By	Reviewed By:
3186791 / 3186811	MD	

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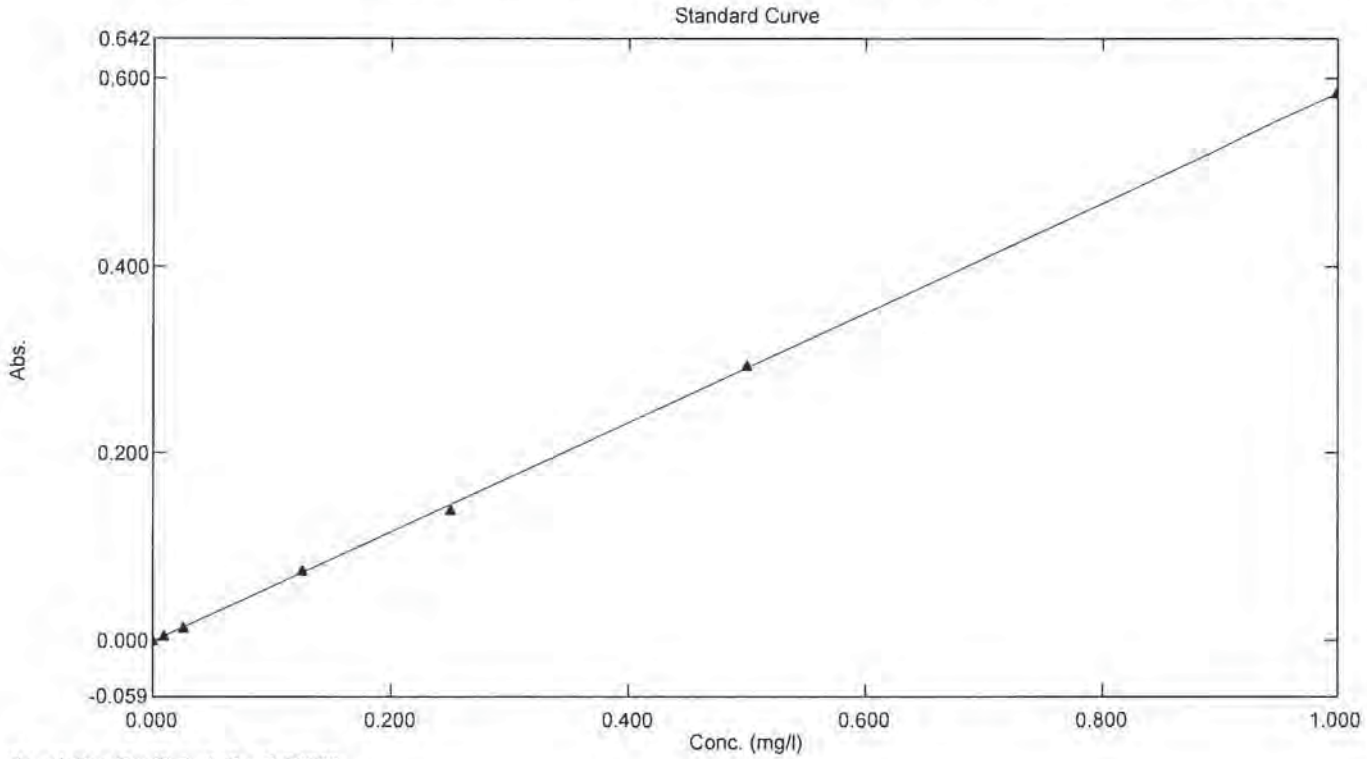
HS1806103

Standard Table Report

07/11/2018 04:04:16 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180622_P_ORTH



Correlation Coefficient r2 = 0.99986

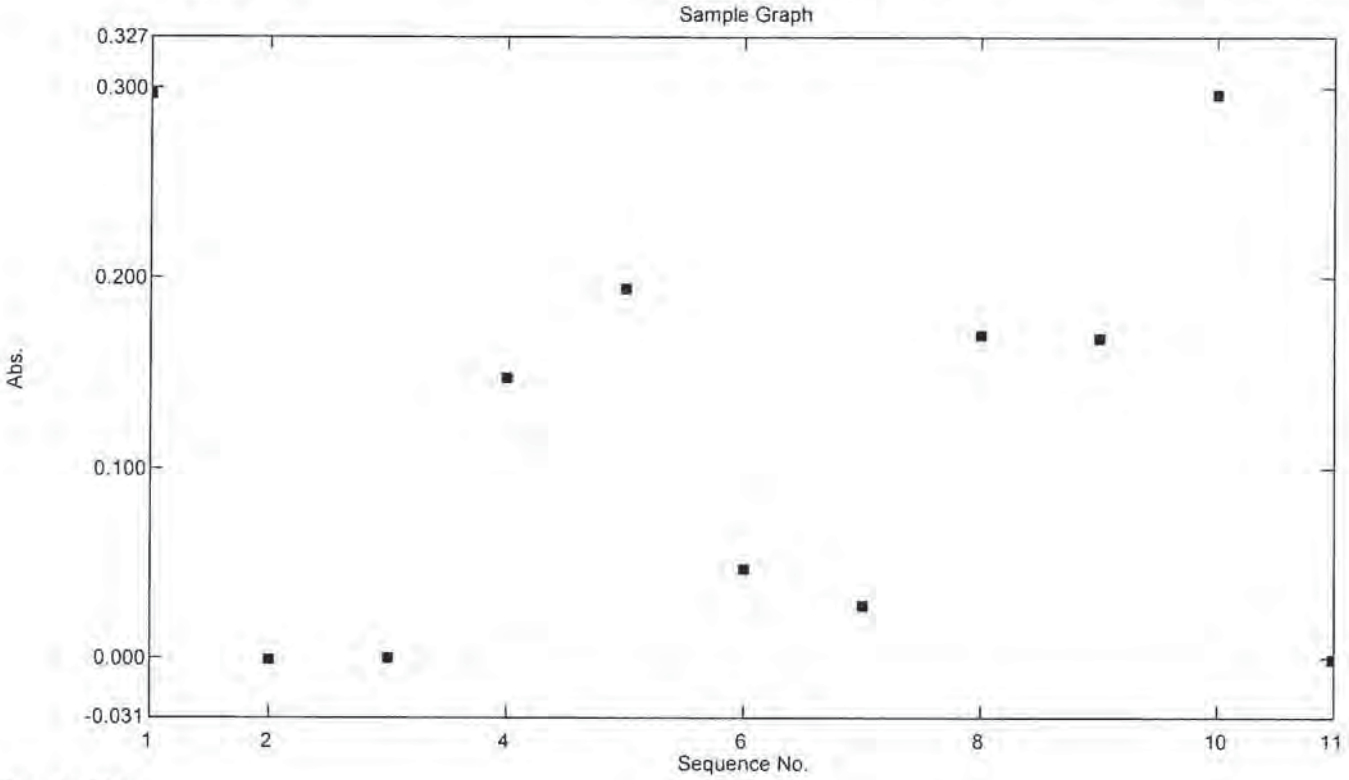
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.000	1.000	
2	STD2	Standard		0.010	0.006	1.000	
3	STD3	Standard		0.025	0.014	1.000	
4	STD4	Standard		0.125	0.075	1.000	
5	STD5	Standard		0.250	0.140	1.000	
6	STD6	Standard		0.500	0.294	1.000	
7	STD7	Standard		1.000	0.584	1.000	
8							

Sample Table Report

07/11/2018 04:04:20 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180622_P_ORT



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.509	0.297	
2	CCB	Unknown		-0.000	-0.001	
3	MBLK	Unknown		0.000	-0.001	
4	LCS	Unknown		0.254	0.148	
5	18061031.01	Unknown		0.334	0.195	FILTER,1:45PM,10X
6	18061072.01	Unknown		0.081	0.047	
7	18061099.02	Unknown		0.048	0.027	
8	18061099.02MS	Unknown		0.292	0.170	
9	18061099.02MSD	Unknown		0.290	0.169	
10	CCV2	Unknown		0.509	0.297	
11	CCB2	Unknown		-0.001	-0.001	
12						

HS18061031

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
1	U	NPOC	CCV	306.061.606	05-08-2018_	NPOC:25.42mg/L	Completed	6/23/2018 2:42:53 PM	1
2	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.09225mg/	Completed	6/23/2018 2:58:12 PM	2
3	U	NPOC	WBLKW1-180623	TOC_W	05-08-2018_	NPOC:0.1337mg/L	Completed	6/23/2018 3:13:25 PM	3
4	U	NPOC	WLCSW1-180623	Untitled	05-08-2018_	NPOC:10.08mg/L	Completed	6/23/2018 3:26:33 PM	4
5	U	NPOC	WLCSDW1-180623	Untitled	05-08-2018_	NPOC:10.30mg/L	Completed	6/23/2018 3:43:38 PM	5
6	U	NPOC	HS18060752-01	1/2	05-08-2018_	NPOC:3.201mg/L	Completed	6/23/2018 3:59:07 PM	6
7	U	NPOC	HS18060752-01MS	1/2	05-08-2018_	NPOC:12.92mg/L	Completed	6/23/2018 4:14:20 PM	7
8	U	NPOC	HS18060952-01	1/2	05-08-2018_	NPOC:8.044mg/L	Completed	6/23/2018 4:29:56 PM	8
9	U	NPOC	HS18061031-01	1/2	05-08-2018_	NPOC:18.36mg/L	Completed	6/23/2018 4:45:09 PM	9
10	U	NPOC	HS18061031-01DF5	1/2	05-08-2018_	NPOC:4.381mg/L	Completed	6/23/2018 5:00:22 PM	10
11	U	NPOC	HS18061052-01	1/2	05-08-2018_	NPOC:15.29mg/L	Completed	6/23/2018 5:15:35 PM	11
12	U	NPOC	HS18061052-02	1/2	05-08-2018_	NPOC:5.364mg/L	Completed	6/23/2018 5:28:43 PM	12
13	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.25mg/L	Completed	6/23/2018 5:41:58 PM	13
14	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.09383mg/	Completed	6/23/2018 5:57:16 PM	14
15	U	NPOC	HS18061171-01	1/2	05-08-2018_	NPOC:3.915mg/L	Completed	6/23/2018 6:10:24 PM	15
16	U	NPOC	HS18060769-01DF100	1/2 OFF	05-08-2018_	NPOC:1034mg/L	Completed	6/23/2018 6:31:35 PM	16
17	U	NPOC	HS18060769-02DF100	1/2 OFF	05-08-2018_	NPOC:1012mg/L	Completed	6/23/2018 6:52:32 PM	17
18	U	NPOC	HS18061016-01DF200	1/2 OFF	05-08-2018_	NPOC:9.090mg/L	Completed	6/23/2018 7:07:51 PM	18
19	U	NPOC	FLUSH	Untitled	05-08-2018_	NPOC:0.8195mg/L	Completed	6/23/2018 7:23:04 PM	19
20	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.88mg/L	Completed	6/23/2018 7:36:11 PM	20
21	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.3625mg/L	Completed	6/23/2018 7:51:29 PM	21
22	U	NPOC	WBLKW2-180623	TOC_W 5310B	05-08-2018_	NPOC:0.3233mg/L	Completed	6/23/2018 8:04:37 PM	22
23	U	NPOC	WLCSW2-180623	Untitled	05-08-2018_	NPOC:10.40mg/L	Completed	6/23/2018 8:17:50 PM	23
24	U	NPOC	WLCSDW2-180623	Untitled	05-08-2018_	NPOC:10.45mg/L	Completed	6/23/2018 8:31:03 PM	24
25	U	NPOC	HS18061174-02	1/2	05-08-2018_	NPOC:15.19mg/L	Completed	6/23/2018 8:46:21 PM	25
26	U	NPOC	HS18060897-01	1/2	05-08-2018_	NPOC:4.449mg/L	Completed	6/23/2018 8:59:29 PM	26
27	U	NPOC	HS18060897-02	1/2	05-08-2018_	NPOC:10.78mg/L	Completed	6/23/2018 9:12:43 PM	27
28	U	NPOC	HS18060897-03	1/2	05-08-2018_	NPOC:10.77mg/L	Completed	6/23/2018 9:25:57 PM	28
29	U	NPOC	HS18060910-01	1/2	05-08-2018_	NPOC:5.027mg/L	Completed	6/23/2018 9:41:16 PM	29
30	U	NPOC	HS18060959-01	1/2	05-08-2018_	NPOC:18.23mg/L	Completed	6/23/2018 9:56:34 PM	30
31	U	NPOC	HS18060959-01MS	1/2	05-08-2018_	NPOC:28.15mg/L	Completed	6/23/2018 10:09:43 PM	31
32	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.23mg/L	Completed	6/23/2018 10:22:57 PM	32
33	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.3364mg/L	Completed	6/23/2018 10:38:16 PM	33
34	U	NPOC	HS18060968-17	1/2	05-08-2018_	NPOC:16.96mg/L	Completed	6/23/2018 10:51:25 PM	34
35	U	NPOC	HS18060968-19	1/2	05-08-2018_	NPOC:13.96mg/L	Completed	6/23/2018 11:04:47 PM	35
36	U	NPOC	HS18060989-01	1/2	05-08-2018_	NPOC:5.573mg/L	Completed	6/23/2018 11:18:01 PM	36
37	U	NPOC	HS18060946-01	1/2	05-08-2018_	NPOC:6.116mg/L	Completed	6/23/2018 11:31:15 PM	37
38	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.50mg/L	Completed	6/23/2018 11:44:51 PM	38
39	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.2451mg/L	Completed	6/24/2018 12:00:10 AM	39
40	U	NPOC	FLUSH	Untitled	05-08-2018_	NPOC:0.3924mg/L	Completed	6/24/2018 12:15:24 AM	40
41	U	NPOC	FLUSH	Untitled	05-08-2018_	NPOC:0.2107mg/L	Completed	6/24/2018 12:30:38 AM	41
42	U	NPOC	FLUSH	Untitled	05-08-2018_	NPOC:0.2068mg/L	Completed	6/24/2018 12:45:52 AM	42
43	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.50mg/L	Completed	6/25/2018 2:21:50 PM	1
44	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.2206mg/L	Completed	6/25/2018 2:37:08 PM	2
45	U	NPOC	HS18060769-01DF3000	1/2	05-08-2018_	NPOC:85.20mg/L	Completed	6/25/2018 2:50:22 PM	3
46	U	NPOC	HS18060769-02DF3000	1/2	05-08-2018_	NPOC:80.13mg/L	Completed	6/25/2018 3:03:38 PM	4
47	U	NPOC	HS18061016-01DF200	1/2	05-08-2018_	NPOC:7.960mg/L	Completed	6/25/2018 3:28:47 PM	5
48	U	NPOC	HS18060769-01DF6000	1/2	05-08-2018_	NPOC:42.47mg/L	Completed	6/25/2018 3:42:00 PM	6
49	U	NPOC	HS18060769-02DF6000	1/2	05-08-2018_	NPOC:39.80mg/L	Completed	6/25/2018 3:55:13 PM	7
50	U	NPOC	FLUSH	Untitled	05-08-2018_	NPOC:0.1970mg/L	Completed	6/25/2018 4:10:31 PM	8
51	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.58mg/L	Completed	6/25/2018 4:23:53 PM	9

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
52	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1816mg/L	Completed	6/25/2018 4:39:11 PM	10

Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

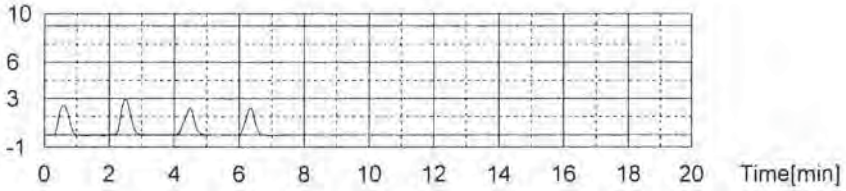
Sample Name:	CAL
Sample ID:	306.067:504-509
Cal. Curve:	05-08-2018_W.2018_05_08_16_59_08.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	5.281	50uL	1	*******		5/8/2018 5:07:52 PM
2	5.767	50uL	1	*******	E	5/8/2018 5:09:57 PM
3	4.377	50uL	1	*******		5/8/2018 5:12:02 PM
4	4.321	50uL	1	*******		5/8/2018 5:14:07 PM

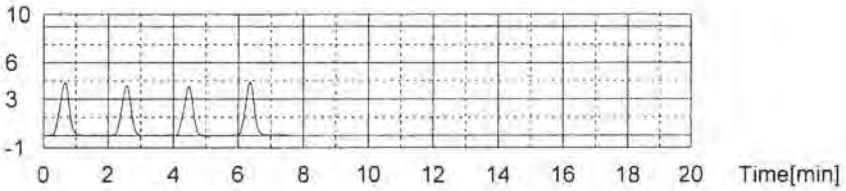
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 4.660



Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	8.552	50uL	1	*******	E	5/8/2018 5:23:05 PM
2	7.956	50uL	1	*******		5/8/2018 5:25:10 PM
3	7.917	50uL	1	*******		5/8/2018 5:27:15 PM
4	7.981	50uL	1	*******		5/8/2018 5:29:20 PM

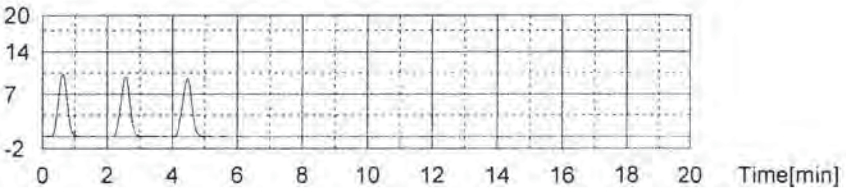
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 7.951



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	19.68	50uL	1	*******		5/8/2018 5:38:18 PM
2	19.11	50uL	1	*******		5/8/2018 5:40:23 PM
3	19.32	50uL	1	*******		5/8/2018 5:42:28 PM

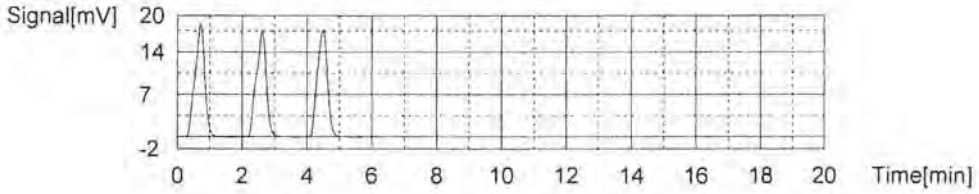
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 19.37



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	38.73	50uL	1	*******		5/8/2018 5:51:31 PM
2	37.61	50uL	1	*******		5/8/2018 5:53:36 PM
3	38.22	50uL	1	*******		5/8/2018 5:55:41 PM

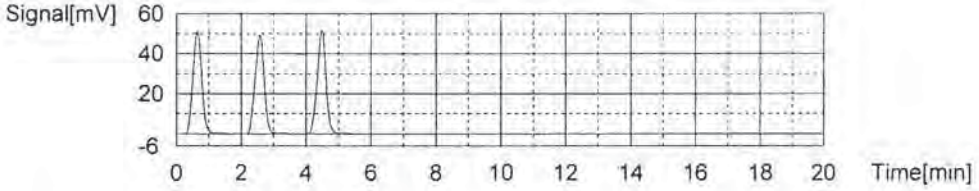
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 38.19



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	97.00	50uL	1	*******		5/8/2018 6:04:44 PM
2	96.71	50uL	1	*******		5/8/2018 6:06:49 PM
3	96.75	50uL	1	*******		5/8/2018 6:08:54 PM

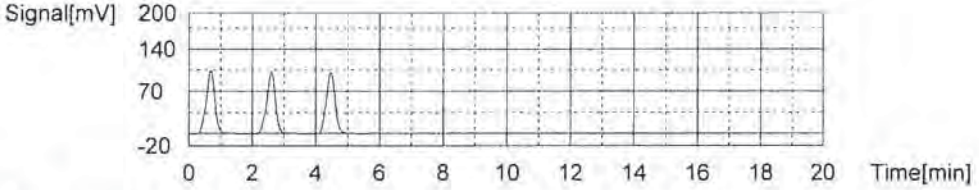
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 96.82



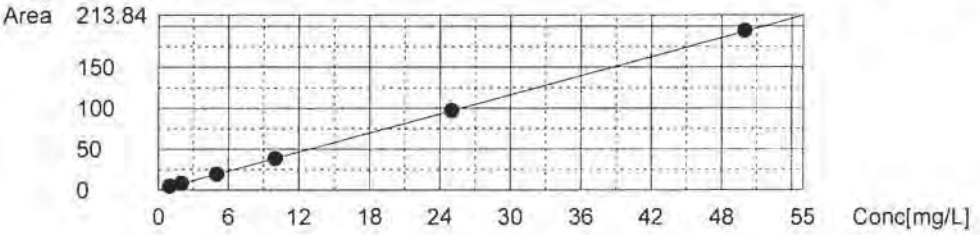
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	195.4	50uL	1	*******		5/8/2018 6:17:57 PM
2	193.7	50uL	1	*******		5/8/2018 6:20:02 PM
3	194.1	50uL	1	*******		5/8/2018 6:22:07 PM

Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 194.4



Slope: 3.881
Intercept 0.07512
r^2 1.0000
r 1.0000
Zero Shift No



Sample

Sample Name: ICV
Sample ID: 306.067.601
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

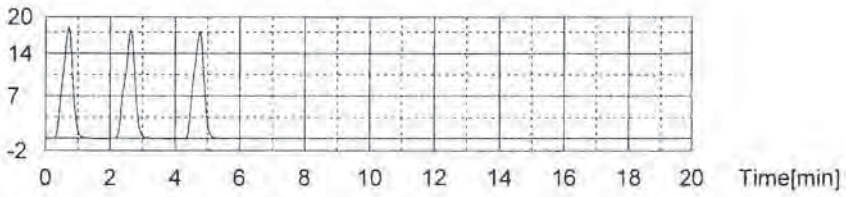
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.923mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.63	9.934mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:31:10 PM
2	38.67	9.944mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:33:30 PM
3	38.46	9.890mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:35:35 PM

Mean Area 38.59
Mean Conc. 9.923mg/L



Sample

Sample Name: ICB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

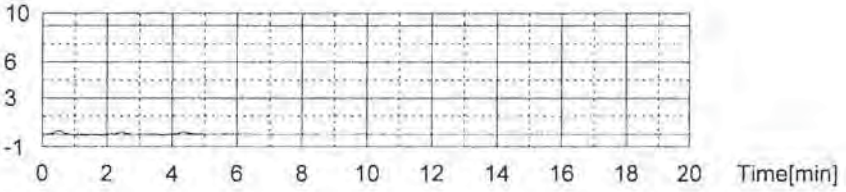
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09481mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4983	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:44:38 PM
2	0.3330	0.06645mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:46:43 PM
3	0.4980	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:48:48 PM

Mean Area 0.4431
Mean Conc. 0.09481mg/L



Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Sample

Sample Name:	CCV
Sample ID:	306.061.606
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

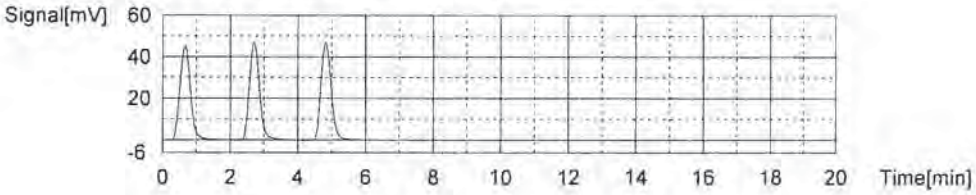
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.42mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	98.20	25.28mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:38:27 PM
2	99.47	25.61mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:40:45 PM
3	98.48	25.36mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:42:53 PM

Mean Area 98.72
Mean Conc. 25.42mg/L



Sample

Sample Name:	CCB
Sample ID:	Untitled
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

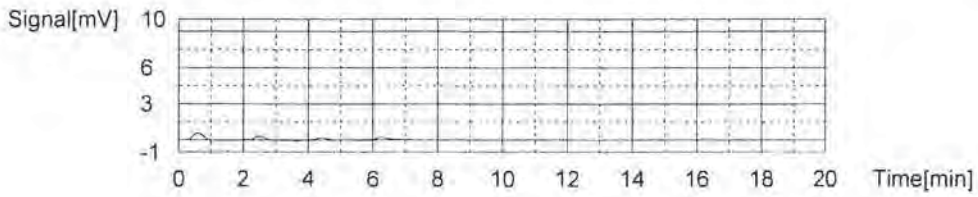
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09225mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.218	0.2945mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:51:57 PM
2	0.6117	0.1383mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:54:02 PM
3	0.3348	0.06691mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:56:07 PM
4	0.3529	0.07157mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 2:58:12 PM

Mean Area 0.4331
Mean Conc. 0.09225mg/L



Sample

Sample Name: WBLKW1-180623
Sample ID: TOC_W
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

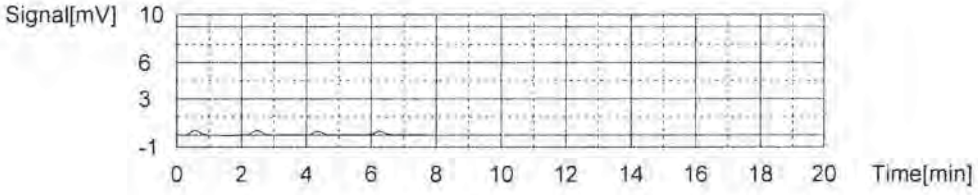
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1337mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.7672	0.1783mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:07:10 PM
2	0.6843	0.1570mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:09:15 PM
3	0.5558	0.1239mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:11:20 PM
4	0.5420	0.1203mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:13:25 PM

Mean Area 0.5940
Mean Conc. 0.1337mg/L



Sample

Sample Name: WLCSW1-180623
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

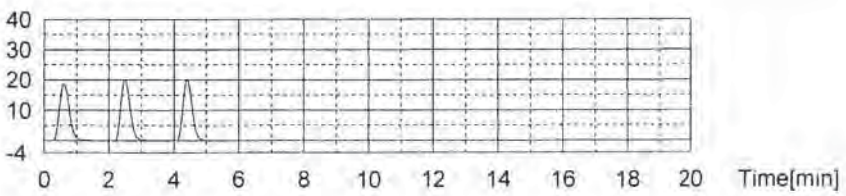
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.08mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.79	9.975mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:22:23 PM
2	39.43	10.14mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:24:28 PM
3	39.36	10.12mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:26:33 PM

Mean Area 39.19
Mean Conc. 10.08mg/L



Sample

Sample Name: WLCSDW1-180623
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

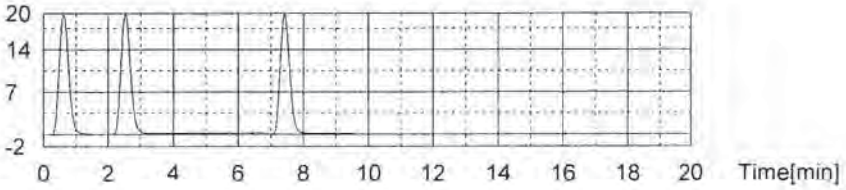
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.30mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	39.72	10.22mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:35:36 PM
2	40.52	10.42mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:40:41 PM
3	39.94	10.27mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:43:38 PM

Mean Area 40.06
Mean Conc. 10.30mg/L



Sample

Sample Name: HS18060752-01
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

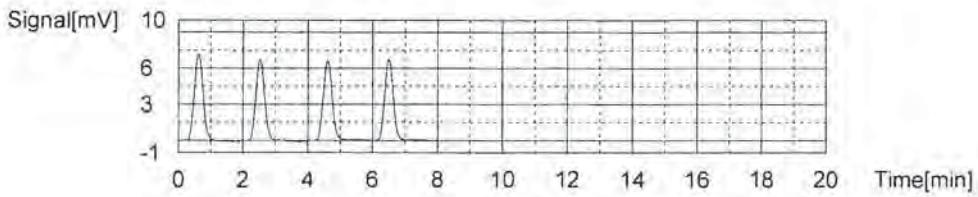
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:3.201mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.45	3.446mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:52:41 PM
2	12.62	3.232mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:54:57 PM
3	12.48	3.196mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:57:02 PM
4	12.40	3.176mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 3:59:07 PM

Mean Area 12.50
Mean Conc. 3.201mg/L



Sample

Sample Name: HS18060752-01MS
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

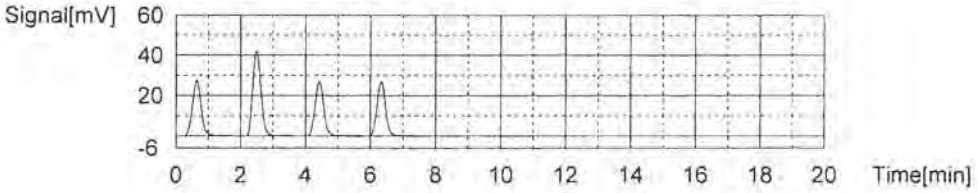
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:12.92mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	51.37	13.22mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:08:05 PM
2	74.63	19.21mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:10:10 PM
3	49.85	12.83mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:12:15 PM
4	49.44	12.72mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:14:20 PM

Mean Area 50.22
Mean Conc. 12.92mg/L



Sample

Sample Name: HS18061031-01
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

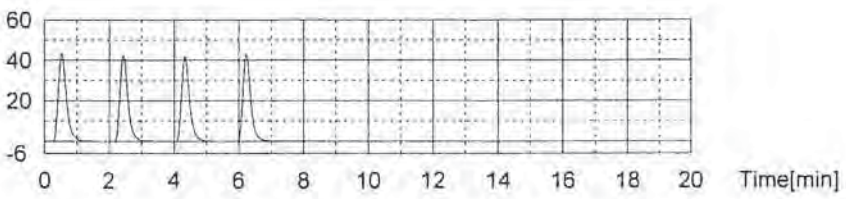
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:18.36mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	74.58	19.20mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:38:54 PM
2	71.81	18.48mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:40:59 PM
3	71.34	18.36mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:43:04 PM
4	70.89	18.25mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:45:09 PM

Mean Area 71.35
Mean Conc. 18.36mg/L



Sample

Sample Name: HS18061031-01DF5
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

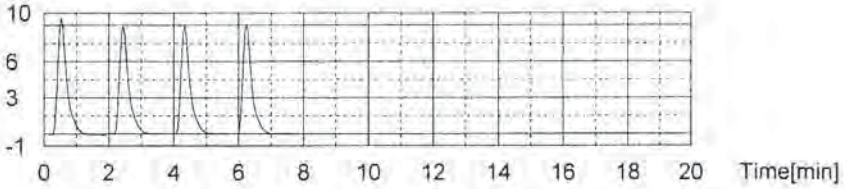
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:4.381mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	18.34	4.706mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:54:06 PM
2	17.17	4.405mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:56:11 PM
3	16.98	4.356mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 4:58:16 PM
4	17.08	4.382mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:00:22 PM

Mean Area 17.08
Mean Conc. 4.381mg/L



Sample

Sample Name: CCV
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

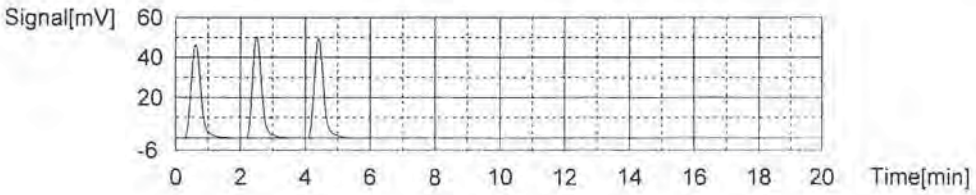
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.25mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	96.58	24.87mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:37:46 PM
2	98.92	25.47mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:39:51 PM
3	98.71	25.41mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:41:58 PM

Mean Area 98.07
Mean Conc. 25.25mg/L



Sample

Sample Name: CCB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

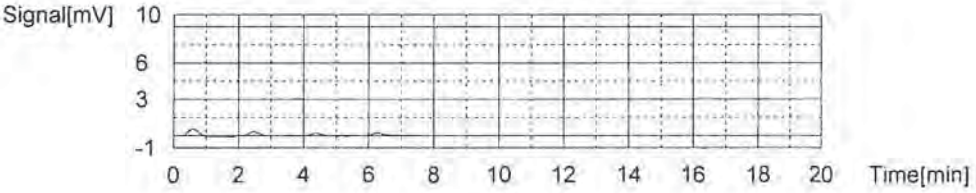
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09383mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.182	0.2852mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:51:01 PM
2	0.5691	0.1273mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:53:06 PM
3	0.4252	0.09020mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:55:11 PM
4	0.3235	0.06400mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	6/23/2018 5:57:16 PM

Mean Area 0.4393
Mean Conc. 0.09383mg/L



Sub Contract Data

Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP WEEKLY EFFLUENT
ALS WO# HS18061031

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817359; 1817361; 1817362; 1817365; 1817368

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2114 (218216)

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: The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608585) was less than 1/2 the CRDL. The recovery for the LCS (608586) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1817359001 (Client ID: 18WW19_061918). 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. Manual Integrations was performed for datafiles 05JULD20.

Thomas Bosch July 07, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 06, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817362**
Project ID: HS18061031 062018
Purchase Order: HS18061031
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24_SP650_062018	1817362001	06/20/18	06/22/18	

ANALYTICAL REPORT

Workorder: 34-1817362
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24_SP650_062018**	Sampling Site: NA	Collected: 06/20/2018
Lab ID: 1817362001	Media: 125 mL Nalgene	Received: 06/22/2018
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/2114 (HBN: 218216)	**Percent Solid:** NA
	Analyzed: 07/05/2018 14:26	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**13**	1.0	2.0	4.0	1	

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 218216)

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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 07/06/2018 11:40	/S/ Stephen Brose 07/06/2018 13:50

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: 34-1817362
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI) Nevada Oklahoma Iowa		

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.
< 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: 1817362

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 608585
Analyzed: 07/05/2018 09:23
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608586
Analyzed: 07/05/2018 09:52
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

	Sample: 1817359001	MS: 608587	MSD: 608588
Analyzed:	07/05/2018 10:38	07/05/2018 10:10	07/05/2018 10:24
Dilution:	1	1	1
Units:	ug/L	ug/L	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	6.14	5	123	78.8	123.8	6.18	124	0.51	0.0	20.0

Continuing Calibration Verification

	CCV: 608582	CCV: 608589	CCV: 608591
Analyzed:	07/05/2018 08:52	07/05/2018 13:01	07/05/2018 15:09
Units:	ug/L	ug/L	ug/L
Criteria:	± 15%	± 15%	± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.3	25.0	105	27.1	25.0	108	26.7	25.0	107

Interference Check Sample

ICSA: 608584
Analyzed: 07/05/2018 09:38
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.861	1.00	86.1

Limit of Detection Verification

	LODV: 608583	LODV: 608590	LODV: 608592
Analyzed:	07/05/2018 09:09	07/05/2018 13:15	07/05/2018 15:23
Units:	ug/L	ug/L	ug/L
Criteria:	± 50%	± 50%	± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.970	1.00	97.0	0.988	1.00	98.8

Quality Control Sample Batch Report

Analysis Information

Workorder: 1817362

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Comments

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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
07/06/2018 11:40	07/06/2018 13:49

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



1817362

18698/#7

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

COC ID: 9323

1817362

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:	HS18061031
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18061031-01**	**LH18/24_SP650_062018**	**Water**	**20 Jun 2018 14:00**
	SUB_Perch-6850			29 Jun 2018

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: Jennifer Fossler Date/Time: 6/21/18 1800.

Received By: Date/Time: 06-22-18 9:40

Cooler ID(s): Temperature(s):

00903851

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061031	Split:	Workorder ID: 1817362	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	06/20/2018 14:00	LH18/24_SP650_062018	1817362001		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	06/22/2018 09:40	ALS Sample Receiving	Sample Login
Julie Warath 6/22/18 1400		STB	storage
R.33.1 7.3.18/08.45		T. Bush	6850

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: 1817362

Date/Time of Receipt: 06-22-18 9:40 — Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA tbt 06-22-18	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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 80108	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tammi Tassell (Signature) — Tammi Tassell (Printed Name) — 06-22-18 (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: _____



ALS

Part # 159469-434 RIT2 EXP 03/19

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

SHIP DATE: 21JUN18
ACTWGT: 19.60 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060769/1031/1036/1039-RJ

546C2/93DF/53C1

FedEx Express

J171016102001uv

TRK# 0201 430 9530 2543

FRI - 22 JUN 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC



Batch Worklist

Batch: ELMS/ 2114
Rule: EPA 6850, DoD QSM Water

Created: 7/5/2018 08:36
Analyst: T. Bosch

Instrument:
Status: WP

HBN: 218216

Workorder: 1817359 [ENV_LVL4]
Workorder: 1817361 [ENV_LVL4]
Workorder: 1817362 [ENV_LVL4]
Workorder: 1817365 [ENV_LVL4]
Workorder: 1817368 [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	608582	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
2	608583	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
3	608584	ICS for HBN 218216 [ELMS/2114]				ICS	3		E6850..D3Q	5311		7/5/2018	
4	608585	LMB for HBN 218216 [ELMS/2114]				LMB	3		E6850Q413Q	5311		7/5/2018	
5	608586	LCS for HBN 218216 [ELMS/2114]				LCS	3		E6850Q413Q	5311		7/5/2018	
6	1817359001	18WW19_061918				SAMPLE	3	1817359001-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
7	608587	18WW19_061918(1817359001MS)				MS	3		E6850Q413Q	5311		7/5/2018	
8	608588	18WW19_061918(1817359001MSD)				MSD	3		E6850Q413Q	5311		7/5/2018	
9	1817359002	18WW19_061918-a				SAMPLE	3	1817359002-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
10	1817359003	18WW20_061918				SAMPLE	3	1817359003-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
11	1817359004	AWD4_061918				SAMPLE	3	1817359004-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
12	1817359005	18WW06_061918				SAMPLE	3	1817359005-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
13	1817359006	18WW02_061918				SAMPLE	3	1817359006-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
14	1817359007	18WW14_061918				SAMPLE	3	1817359007-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
15	1817361001	AWD3_061818				SAMPLE	3	1817361001-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
16	1817361002	MW7_061818				SAMPLE	3	1817361002-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
17	1817361003	18CPTMW12DW_061818				SAMPLE	3	1817361003-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
18	608589	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
19	608590	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
20	1817361004	18CPTMW12SW_061818				SAMPLE	3	1817361004-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
21	1817361005	MW13_061818				SAMPLE	3	1817361005-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
22	1817361006	C02_061818				SAMPLE	3	1817361006-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
23	1817361007	MW17_061818				SAMPLE	3	1817361007-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
24	1817362001	LH18/24_SP650_062018				SAMPLE	3	1817362001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
25	1817365001	LH18/24_SP140_062018				SAMPLE	3	1817365001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
26	1817368001	LH18/24_SP650_062018				SAMPLE	3	1817368001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
27	608591	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
28	608592	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817359 (001-07); 1817361 9001-07); 1817362 (001); 1817365 (001); 1817368 (001) ELMS Batch/HBN ID: 2114 (218216)
Prep Date: 07/03/2018 Analysis Date: 07/05/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608586; Target = 5.0µg/L. ASTM type II water was used for LMB 608585.

MS/MSD: MS/MSD was performed on sample 1817359001 (Client ID: 18WW19_061918). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 05JULP20.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218216-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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.

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

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

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18D.S

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	608582 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	608583 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	608585 LMB	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	608584 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	608586 QC@5.0	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	608587 173591S	CLO4-DOD	1	Sample		
7	Vial 77	608588 173591D	CLO4-DOD	1	Sample		
8	Vial 78	1817359001	CLO4-DOD	1	Sample		
9	Vial 79	1817359002	CLO4-DOD	1	Sample		
10	Vial 80	1817359003	CLO4-DOD	1	Sample		
11	Vial 81	1817359004	CLO4-DOD	1	Sample		
12	Vial 82	1817359005 100	CLO4-DOD	1	Sample		
13	Vial 83	1817359006	CLO4-DOD	1	Sample		
14	Vial 84	1817359007	CLO4-DOD	1	Sample		
15	Vial 85	1817361001 10	CLO4-DOD	1	Sample		
16	Vial 86	1817361002 1K	CLO4-DOD	1	Sample		
17	Vial 87	1817361003	CLO4-DOD	1	Sample		
18	Vial 71	608589 CCV@25	CLO4-DOD	1	Ctrl Samp		
19	Vial 72	608590 LODV@1.	CLO4-DOD	1	Ctrl Samp		
20	Vial 88	1817361004	CLO4-DOD	1	Sample		
21	Vial 89	1817361005	CLO4-DOD	1	Sample		
22	Vial 90	1817361006	CLO4-DOD	1	Sample		
23	Vial 91	1817361007	CLO4-DOD	1	Sample		
24	Vial 92	1817362001	CLO4-DOD	1	Sample		
25	Vial 93	1817365001 1K	CLO4-DOD	1	Sample		
26	Vial 94	1817368001	CLO4-DOD	1	Sample		
27	Vial 71	608591 CCV@25	CLO4-DOD	1	Ctrl Samp		
28	Vial 72	608592 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Batch Report: C:\HPCHEM\1\DATA\05JUL18D\05JUL18D.B

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

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

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	608582 CCV@25	Vial 71	1	Control	1	9.54961e5	9.983	26.26830
*	608583 LODV@1.	Vial 72	1	Control	2	4.55776e4	9.984	9.74578e-1
*	608585 LMB	Vial 73	1	Control	3	0.00000	0.000	0.00000
*	608584 ICS@1.0	Vial 74	1	Control	4	3.12102e4	9.719	8.61103e-1
*	608586 QC@5.0	Vial 75	1	Control	5	1.86929e5	9.758	4.79403
*	608587 173591S	Vial 76	1	Sample	6	1.37908e5	9.808	6.14386
*	608588 173591D	Vial 77	1	Sample	7	1.81290e5	9.792	6.17525
*	1817359001	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1817359002	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1817359003	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1817359004	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	1817359005 100	Vial 82	1	Sample	12	8.37110e5	9.937	2404.24473
*	1817359006	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1817359007	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	1817361001 10	Vial 85	1	Sample	15	9.58490e5	9.866	248.36564
*	1817361002 1K	Vial 86	1	Sample	16	7.17032e5	9.922	2.12573e4
*	1817361003	Vial 87	1	Sample	17	7.97914e4	9.616	2.96041
*	608589 CCV@25	Vial 71	1	Control	18	1.03819e6	9.849	27.05872
*	608590 LODV@1.	Vial 72	1	Control	19	4.74906e4	9.866	9.69921e-1
*	1817361004	Vial 88	1	Sample	20	2.43033e4	9.505	1.04203
*	1817361005	Vial 89	1	Sample	21	0.00000	0.000	0.00000
*	1817361006	Vial 90	1	Sample	22	0.00000	0.000	0.00000
*	1817361007	Vial 91	1	Sample	23	0.00000	0.000	0.00000
*	1817362001	Vial 92	1	Sample	24	3.11455e5	9.544	13.20497
*	1817365001 1K	Vial 93	1	Sample	25	3.10425e5	9.870	9370.58465
*	1817368001	Vial 94	1	Sample	26	3.99056e5	9.536	14.75745
*	608591 CCV@25	Vial 71	1	Control	27	1.01499e6	9.843	26.74687
*	608592 LODV@1.	Vial 72	1	Control	28	4.75631e4	9.873	9.88167e-1

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	608582 CCV@25	Vial 71	1	Control	1	1.64165e5	10.005	5.00000
*	608583 LODV@1.	Vial 72	1	Control	2	2.21770e5	10.000	5.00000
*	608585 LMB	Vial 73	1	Control	3	1.70815e5	9.902	5.00000
*	608584 ICS@1.0	Vial 74	1	Control	4	1.71016e5	9.734	5.00000
*	608586 QC@5.0	Vial 75	1	Control	5	1.88528e5	9.779	5.00000
*	608587 173591S	Vial 76	1	Sample	6	1.08204e5	9.827	5.00000
*	608588 173591D	Vial 77	1	Sample	7	1.41508e5	9.814	5.00000
*	1817359001	Vial 78	1	Sample	8	1.07717e5	9.833	5.00000
*	1817359002	Vial 79	1	Sample	9	1.12189e5	9.828	5.00000
*	1817359003	Vial 80	1	Sample	10	1.24470e5	9.812	5.00000
*	1817359004	Vial 81	1	Sample	11	1.16950e5	9.832	5.00000
*	1817359005 100	Vial 82	1	Sample	12	1.58398e5	9.962	500.00000
*	1817359006	Vial 83	1	Sample	13	1.20323e5	9.711	5.00000
*	1817359007	Vial 84	1	Sample	14	1.19990e5	9.622	5.00000
*	1817361001 10	Vial 85	1	Sample	15	1.75102e5	9.885	50.00000
*	1817361002 1K	Vial 86	1	Sample	16	1.54890e5	9.946	5000.00000
*	1817361003	Vial 87	1	Sample	17	1.30494e5	9.641	5.00000
*	608589 CCV@25	Vial 71	1	Control	18	1.72806e5	9.868	5.00000
*	608590 LODV@1.	Vial 72	1	Control	19	2.32146e5	9.881	5.00000
*	1817361004	Vial 88	1	Sample	20	1.10869e5	9.536	5.00000
*	1817361005	Vial 89	1	Sample	21	1.20757e5	9.642	5.00000
*	1817361006	Vial 90	1	Sample	22	1.05915e5	9.655	5.00000
*	1817361007	Vial 91	1	Sample	23	1.26470e5	9.619	5.00000
*	1817362001	Vial 92	1	Sample	24	1.11259e5	9.563	5.00000
*	1817365001 1K	Vial 93	1	Sample	25	1.58213e5	9.890	5000.00000
*	1817368001	Vial 94	1	Sample	26	1.26901e5	9.555	5.00000
*	608591 CCV@25	Vial 71	1	Control	27	1.71090e5	9.864	5.00000
*	608592 LODV@1.	Vial 72	1	Control	28	2.28367e5	9.894	5.00000

Batch Report: C:\HPCHEM\1\DATA\05JUL18D\05JUL18D.B

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	608582 CCV@25	Vial 71	1	Control	1	3.23136e5	10.001	26.57831
*	608583 LODV@1.	Vial 72	1	Control	2	1.61617e4	10.006	9.01290e-1
*	608585 LMB	Vial 73	1	Control	3	0.00000	0.000	0.00000
*	608584 ICS@1.0	Vial 74	1	Control	4	1.13194e4	9.725	8.02448e-1
*	608586 QC@5.0	Vial 75	1	Control	5	6.39653e4	9.783	4.78485
*	608587 173591S	Vial 76	1	Sample	6	4.80302e4	9.823	6.28146
*	608588 173591D	Vial 77	1	Sample	7	6.23518e4	9.815	6.23504
*	1817359001	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	1817359002	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1817359003	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	1817359004	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	1817359005 100	Vial 82	1	Sample	12	2.70091e5	9.954	2325.37092
*	1817359006	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1817359007	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	1817361001 10	Vial 85	1	Sample	15	3.09225e5	9.883	240.27903
*	1817361002 1K	Vial 86	1	Sample	16	2.34293e5	9.941	2.07790e4
*	1817361003	Vial 87	1	Sample	17	2.77646e4	9.641	2.95360
*	608589 CCV@25	Vial 71	1	Control	18	3.44086e5	9.865	26.86325
*	608590 LODV@1.	Vial 72	1	Control	19	1.76433e4	9.883	9.47462e-1
*	1817361004	Vial 88	1	Sample	20	9718.08105	9.542	1.11951
*	1817361005	Vial 89	1	Sample	21	0.00000	0.000	0.00000
*	1817361006	Vial 90	1	Sample	22	0.00000	0.000	0.00000
*	1817361007	Vial 91	1	Sample	23	0.00000	0.000	0.00000
*	1817362001	Vial 92	1	Sample	24	1.09924e5	9.555	13.83267
*	1817365001 1K	Vial 93	1	Sample	25	1.05052e5	9.889	9381.99592
*	1817368001	Vial 94	1	Sample	26	1.41033e5	9.552	15.49387
*	608591 CCV@25	Vial 71	1	Control	27	3.39468e5	9.858	26.77564
*	608592 LODV@1.	Vial 72	1	Control	28	1.80437e4	9.900	9.91937e-1

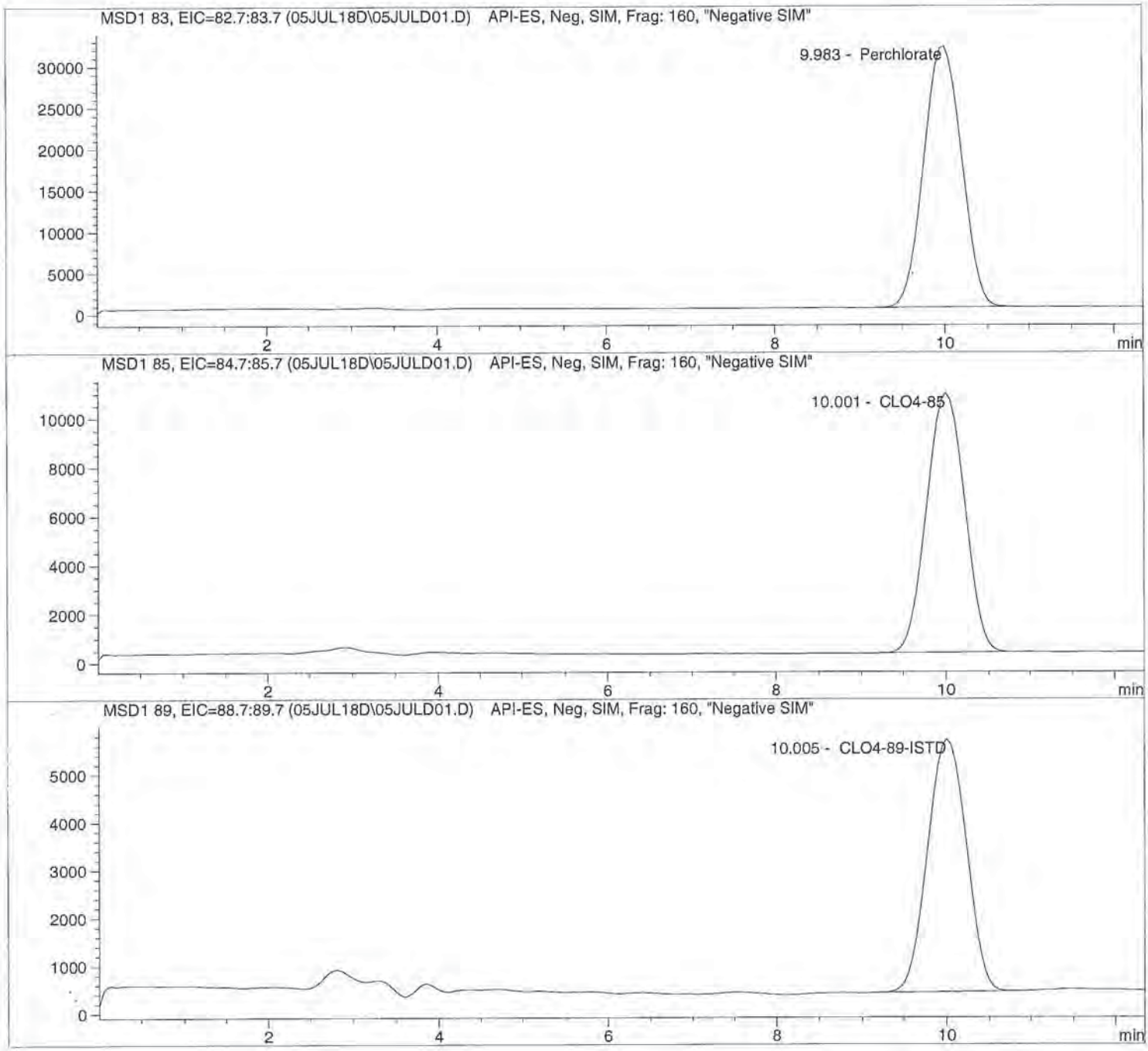
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD01.D Sample Name: 608582 CCV@25

Injection Date:	7/05/2018 08:52:49	Seq Line:	1
Sample Name:	608582 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD01.D Sample Name: 608582 CCV@25

Injection Date:	7/05/2018 08:52:49	Seq Line:	1
Sample Name:	608582 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.983	PBA	954961.3	26.2683	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.001	PBA	323136.5	26.5783	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.005	BBA	164165.0	5.0000	CLO4-89-ISTD

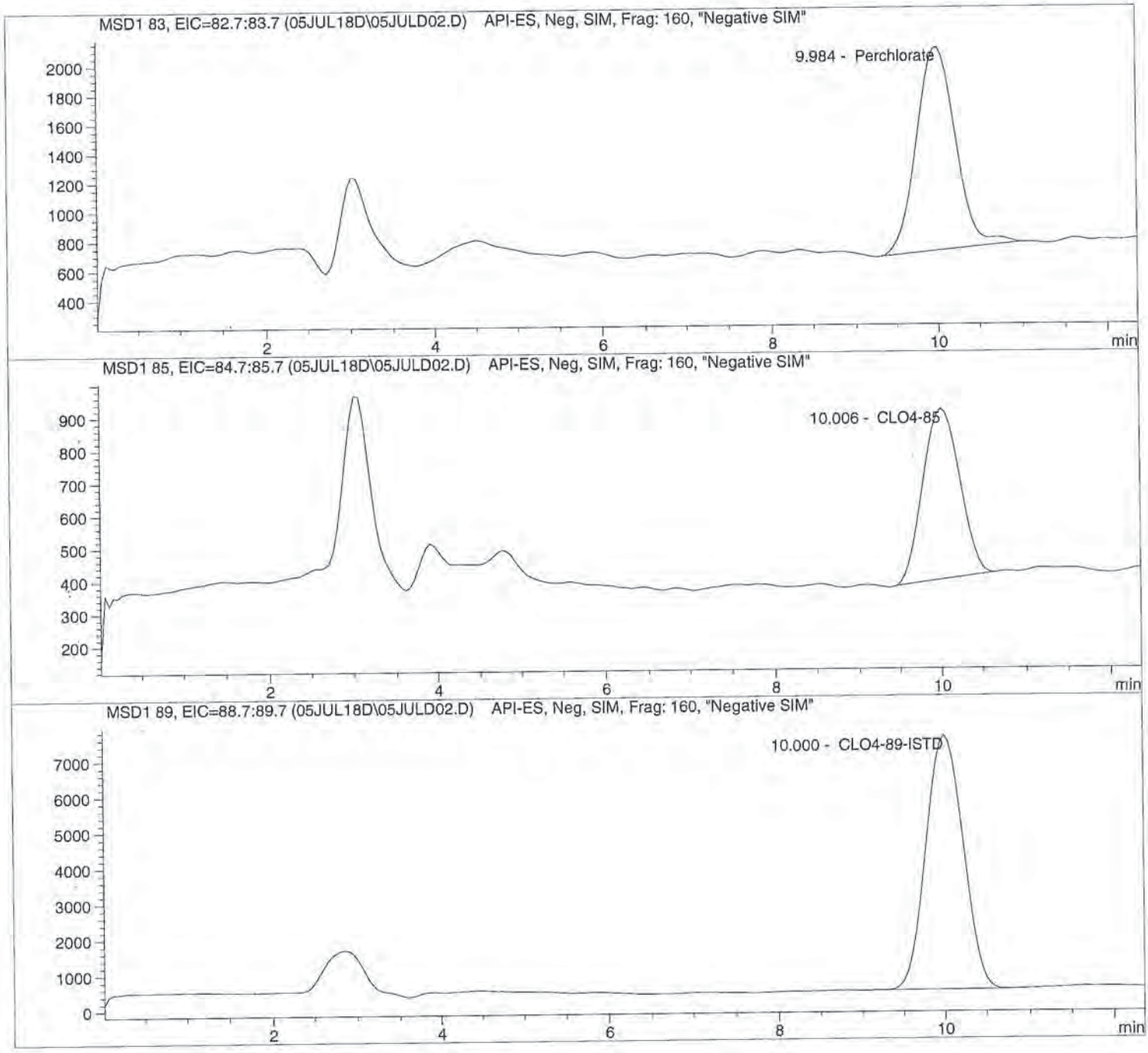
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD02.D Sample Name: 608583 LODV@1.

Injection Date:	7/05/2018 09:09:21	Seq Line:	2
Sample Name:	608583 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD02.D Sample Name: 608583 LODV@1.

Injection Date:	7/05/2018 09:09:21	Seq Line:	2
Sample Name:	608583 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.984	PBA	45577.6	0.9746	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.006	PBA	16161.7	0.9013	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.000	BBA	221770.5	5.0000	CLO4-89-ISTD

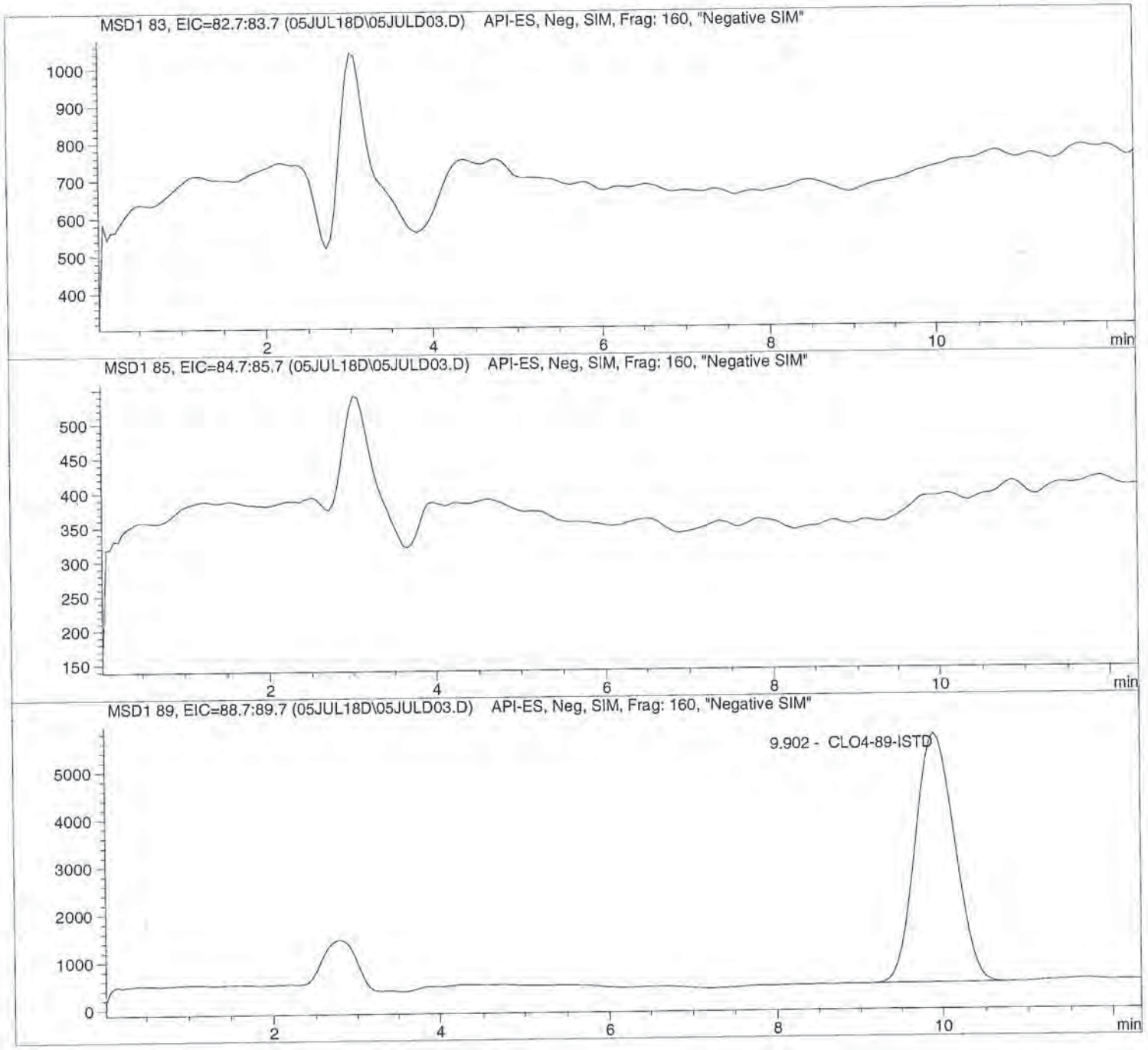
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD03.D Sample Name: 608585 LMB

Injection Date:	7/05/2018 09:23:41	Seq Line:	3
Sample Name:	608585 LMB	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD03.D Sample Name: 608585 LMB

Injection Date:	7/05/2018 09:23:41	Seq Line:	3
Sample Name:	608585 LMB	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
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
9.902	PBA	170815.0	5.0000	CLO4-89-ISTD

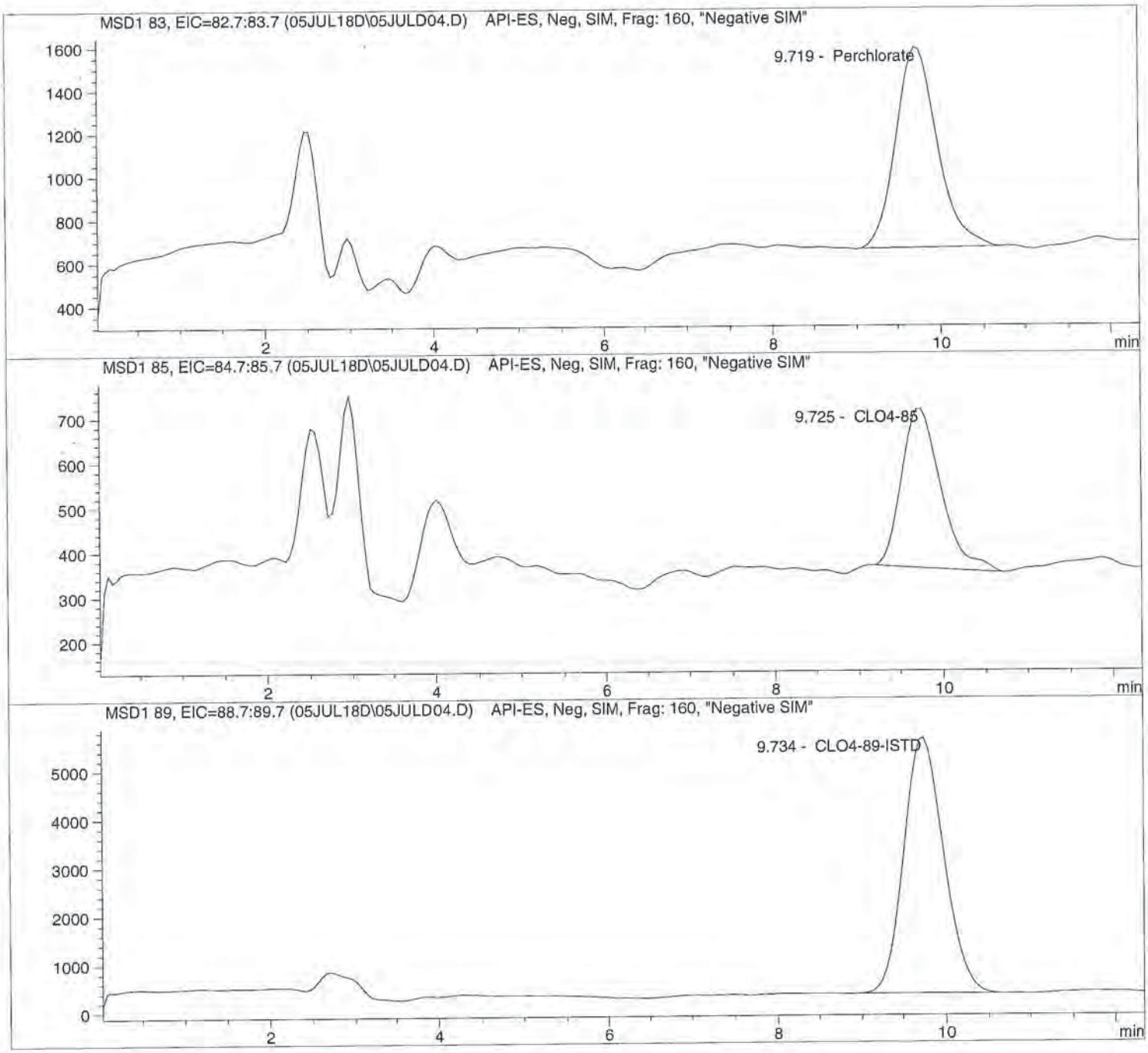
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD04.D Sample Name: 608584 ICS@1.0

Injection Date:	7/05/2018 09:38:01	Seq Line:	4
Sample Name:	608584 ICS@1.0	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD04.D Sample Name: 608584 ICS@1.0

Injection Date:	7/05/2018 09:38:01	Seq Line:	4
Sample Name:	608584 ICS@1.0	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.719	PBA	31210.2	0.8611	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.725	MM	11319.4	0.8024	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.734	PBA	171015.6	5.0000	CLO4-89-ISTD

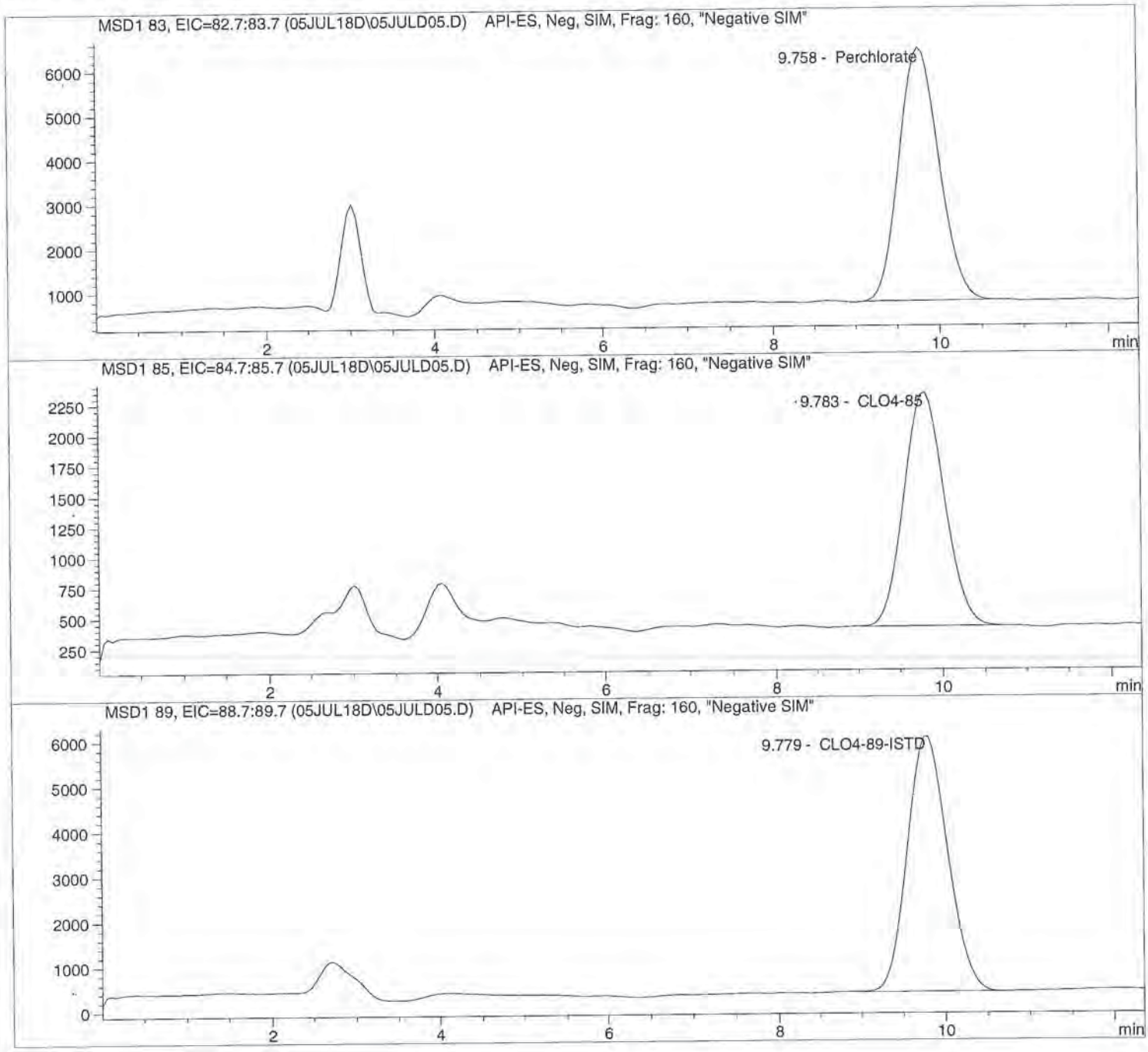
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD05.D Sample Name: 608586 QC@5.0

Injection Date:	7/05/2018 09:52:18	Seq Line:	5
Sample Name:	608586 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD05.D Sample Name: 608586 QC@5.0

Injection Date:	7/05/2018 09:52:18	Seq Line:	5
Sample Name:	608586 QC@5.0	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.758	PBA	186928.7	4.7940	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.783	BBA	63965.3	4.7848	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.779	BBA	188527.9	5.0000	CLO4-89-ISTD

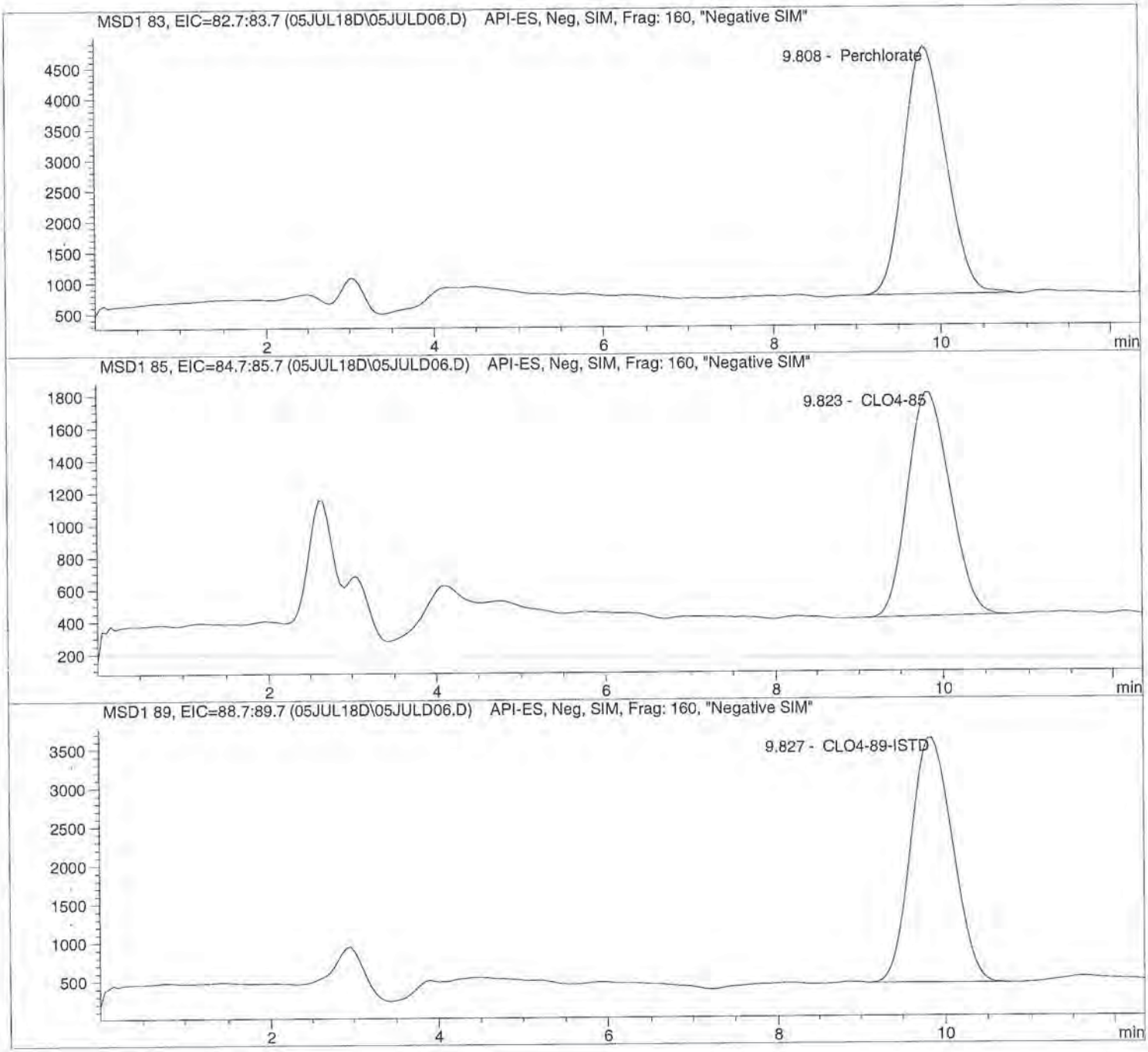
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD06.D Sample Name: 608587 173591S

Injection Date:	7/05/2018 10:10:10	Seq Line:	6
Sample Name:	608587 173591S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD06.D Sample Name: 608587 173591S

Injection Date:	7/05/2018 10:10:10	Seq Line:	6
Sample Name:	608587 173591S	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.808	BBA	137908.3	6.1439	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.823	PBA	48030.2	6.2815	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.827	PBA	108204.3	5.0000	CLO4-89-ISTD

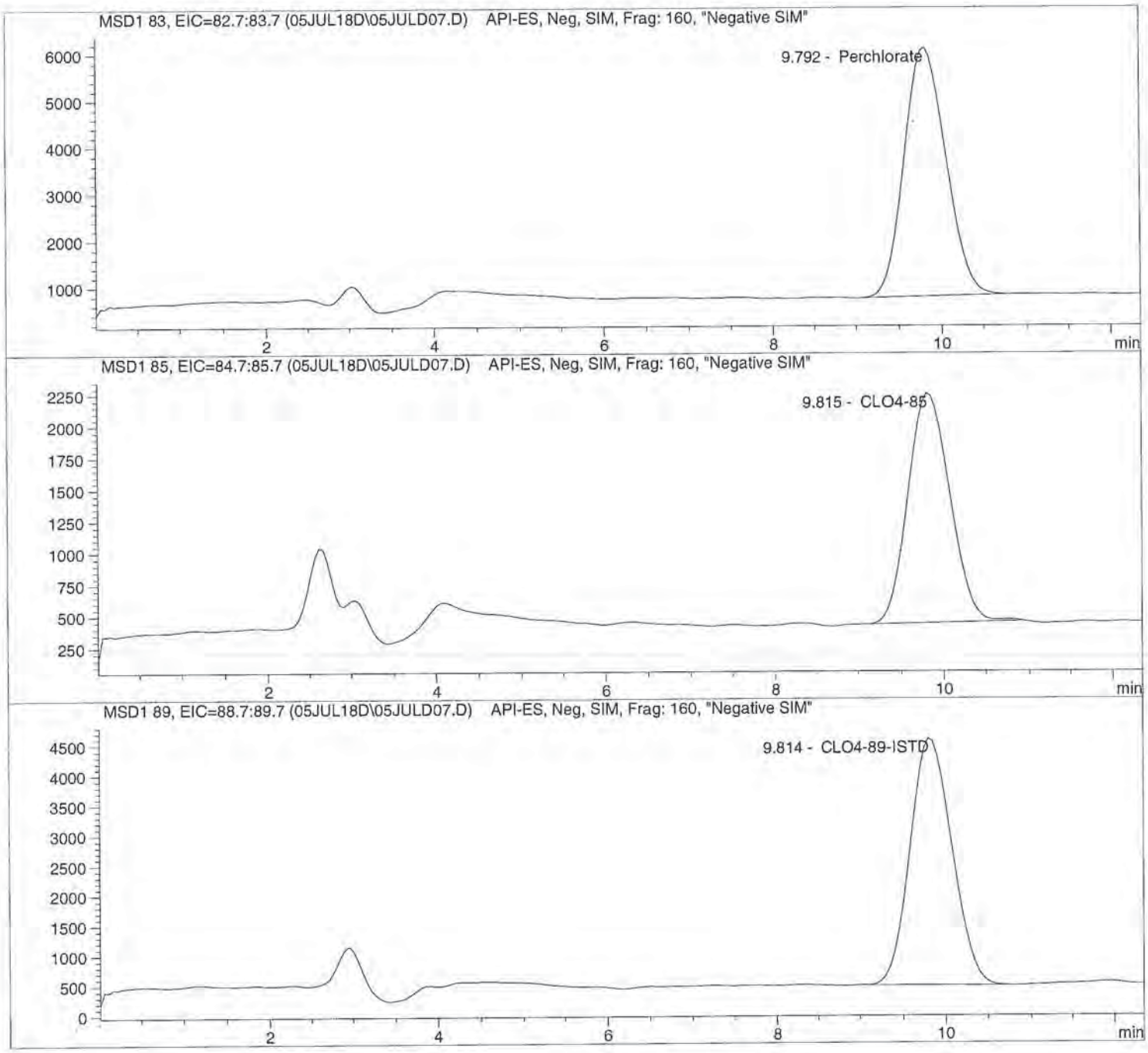
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD07.D Sample Name: 608588 173591D

Injection Date:	7/05/2018 10:24:24	Seq Line:	7
Sample Name:	608588 173591D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD07.D Sample Name: 608588 173591D

Injection Date:	7/05/2018 10:24:24	Seq Line:	7
Sample Name:	608588 173591D	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.792	PBA	181290.3	6.1753	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.815	BBA	62351.8	6.2350	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.814	BBA	141507.8	5.0000	CLO4-89-ISTD

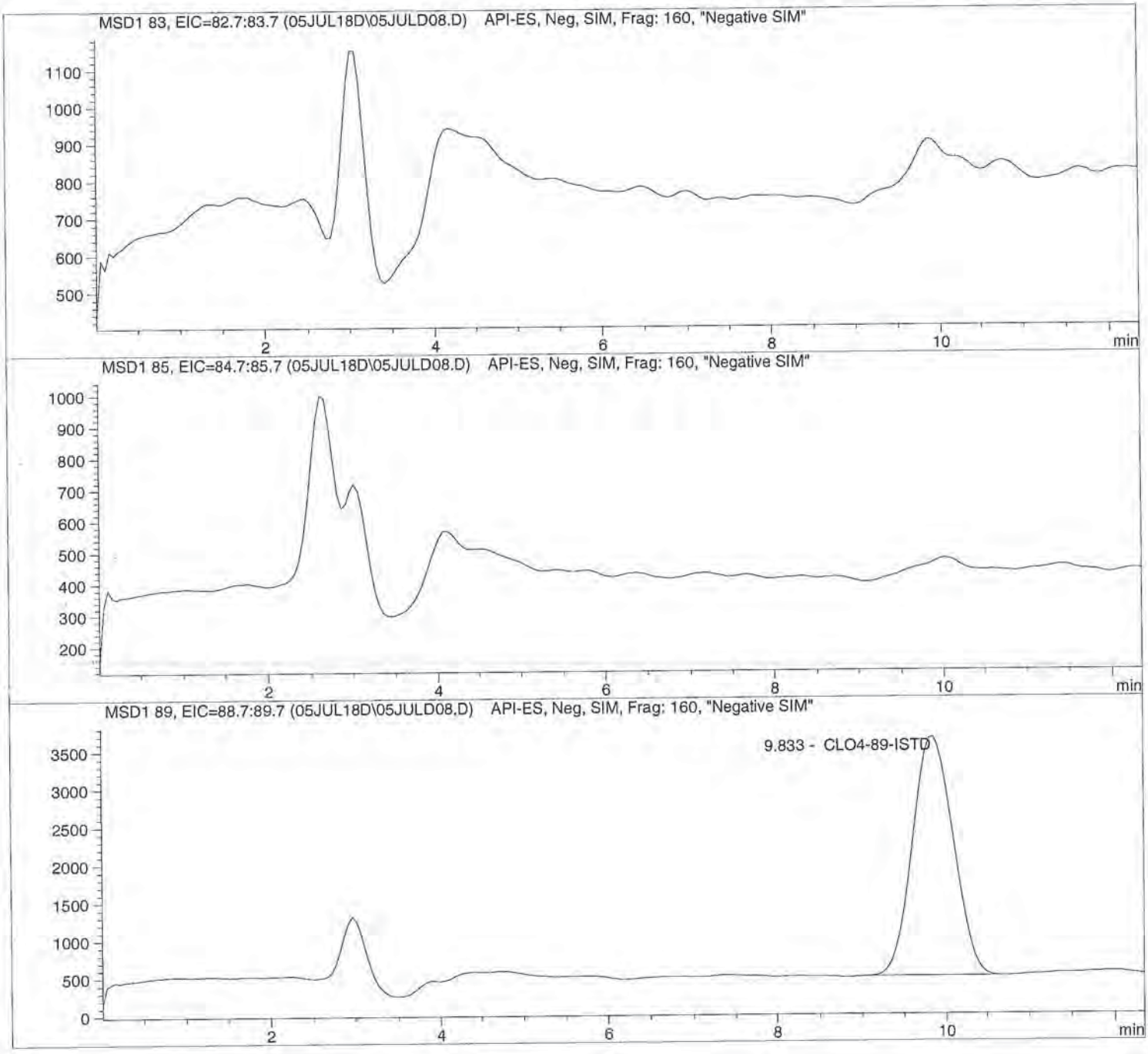
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD08.D Sample Name: 1817359001

Injection Date:	7/05/2018 10:38:40	Seq Line:	8
Sample Name:	1817359001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD08.D Sample Name: 1817359001

Injection Date:	7/05/2018 10:38:40	Seq Line:	8
Sample Name:	1817359001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.833	BBA	107716.7	5.0000	CLO4-89-ISTD

*** End of Report ***

Batch Report: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-05 11-21-54\05JUL18-WTR-QC.B

Batch Review Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M

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

#	*	Sample	Location	Inj	SampleType	Run	Perchlor RT	Perchlorate Area	Perchlorate Amount
	*	608697 CCV@25.	Vial 67	1	Control	11	8.695	3.12647e5	25.81592
	*	608698 RLVS@0.2	Vial 62	1	Control	12	8.560	2781.01392	1.85859e-1
	*	608699 LODV@0.1	Vial 61	1	Control	13	8.906	1430.41589	8.85221e-2
	*	608700 ICS@1.0	Vial 71	1	Control	14	7.622	4534.07422	9.09947e-1
	*	608702 LCS@5.0	Vial 73	1	Control	16	7.743	5.57723e4	4.68934
	*	608701 LMB	Vial 72	1	Control	17	0.000	0.00000	0.00000

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD RT	CLO4-89-ISTD Area	CLO4-89-ISTD Amount
	*	608697 CCV@25.	Vial 67	1	Control	11	8.706	5.27557e4	5.00000
	*	608698 RLVS@0.2	Vial 62	1	Control	12	8.555	6.42374e4	5.00000
	*	608699 LODV@0.1	Vial 61	1	Control	13	8.914	6.73500e4	5.00000
	*	608700 ICS@1.0	Vial 71	1	Control	14	7.603	2.18592e4	5.00000
	*	608702 LCS@5.0	Vial 73	1	Control	16	7.746	5.23165e4	5.00000
	*	608701 LMB	Vial 72	1	Control	17	8.926	5.73460e4	5.00000

#	*	Sample	Location	Inj	SampleType	Run	CLO4-85 RT	CLO4-85 Area	CLO4-85 Amount
	*	608697 CCV@25.	Vial 67	1	Control	11	8.694	1.06783e5	25.79609
	*	608698 RLVS@0.2	Vial 62	1	Control	12	8.593	933.64276	1.39050e-1
	*	608699 LODV@0.1	Vial 61	1	Control	13	8.911	509.93381	4.89511e-2
	*	608700 ICS@1.0	Vial 71	1	Control	14	7.618	961.36646	5.19982e-1
	*	608702 LCS@5.0	Vial 73	1	Control	16	7.742	1.88429e4	4.60091
	*	608701 LMB	Vial 72	1	Control	17	0.000	0.00000	0.00000

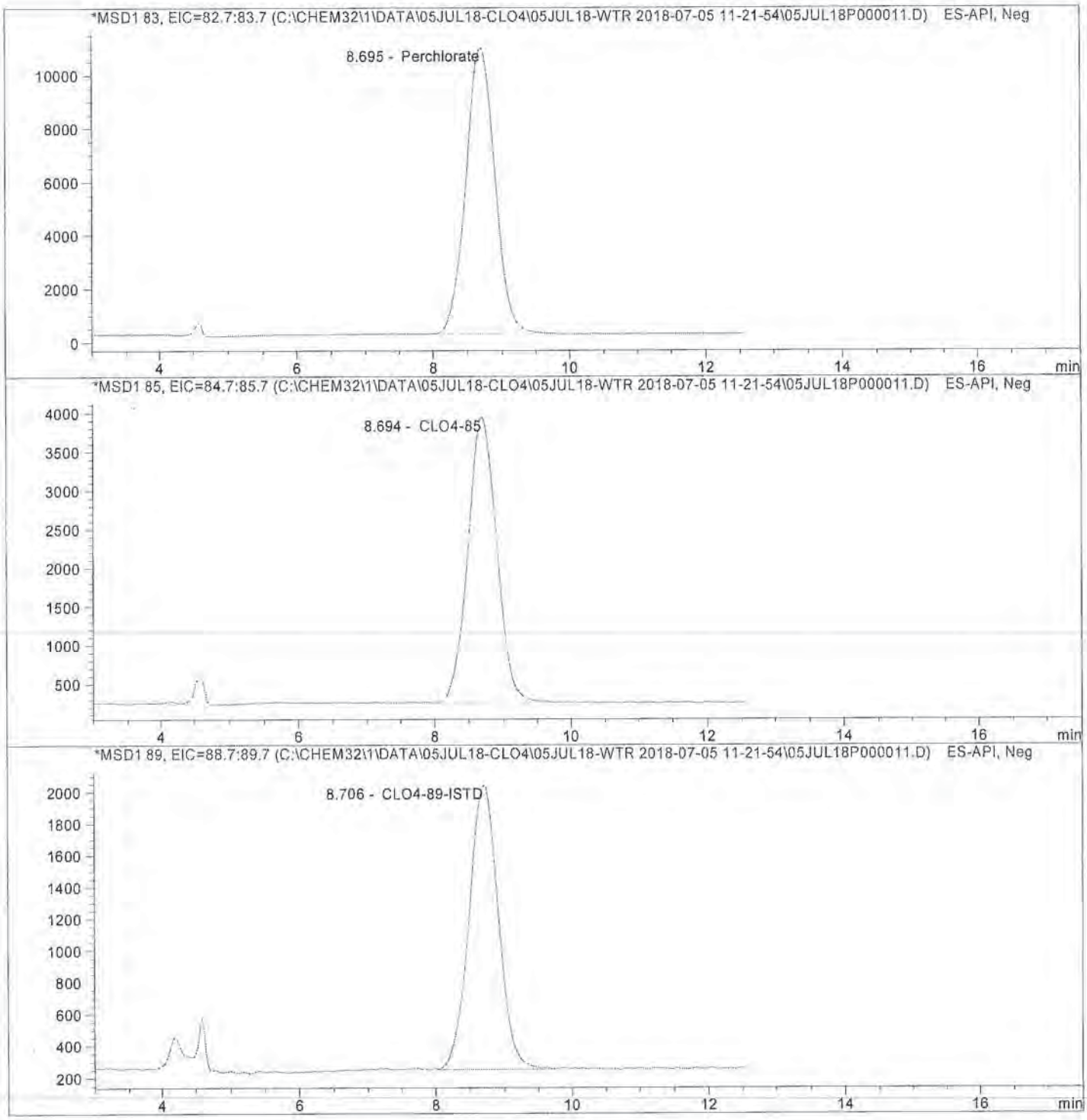
*** End of Report ***

Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608697 CCV@25.

Injection Date:	7/05/2018 13:53:37	Seq Line:	11
Sample Name:	608697 CCV@25.	Location:	Vial 67
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate



Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608697 CCV@25.

Injection Date:	7/05/2018 13:53:37	Seq Line:	11
Sample Name:	608697 CCV@25.	Location:	Vial 67
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 5. Jul. 2018, 02:47:14 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000 ug/L

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.695	MM	312647.0	25.8159	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.694	BB	106783.0	25.7961	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.706	BB	52755.7	5.0000	CLO4-89-ISTD

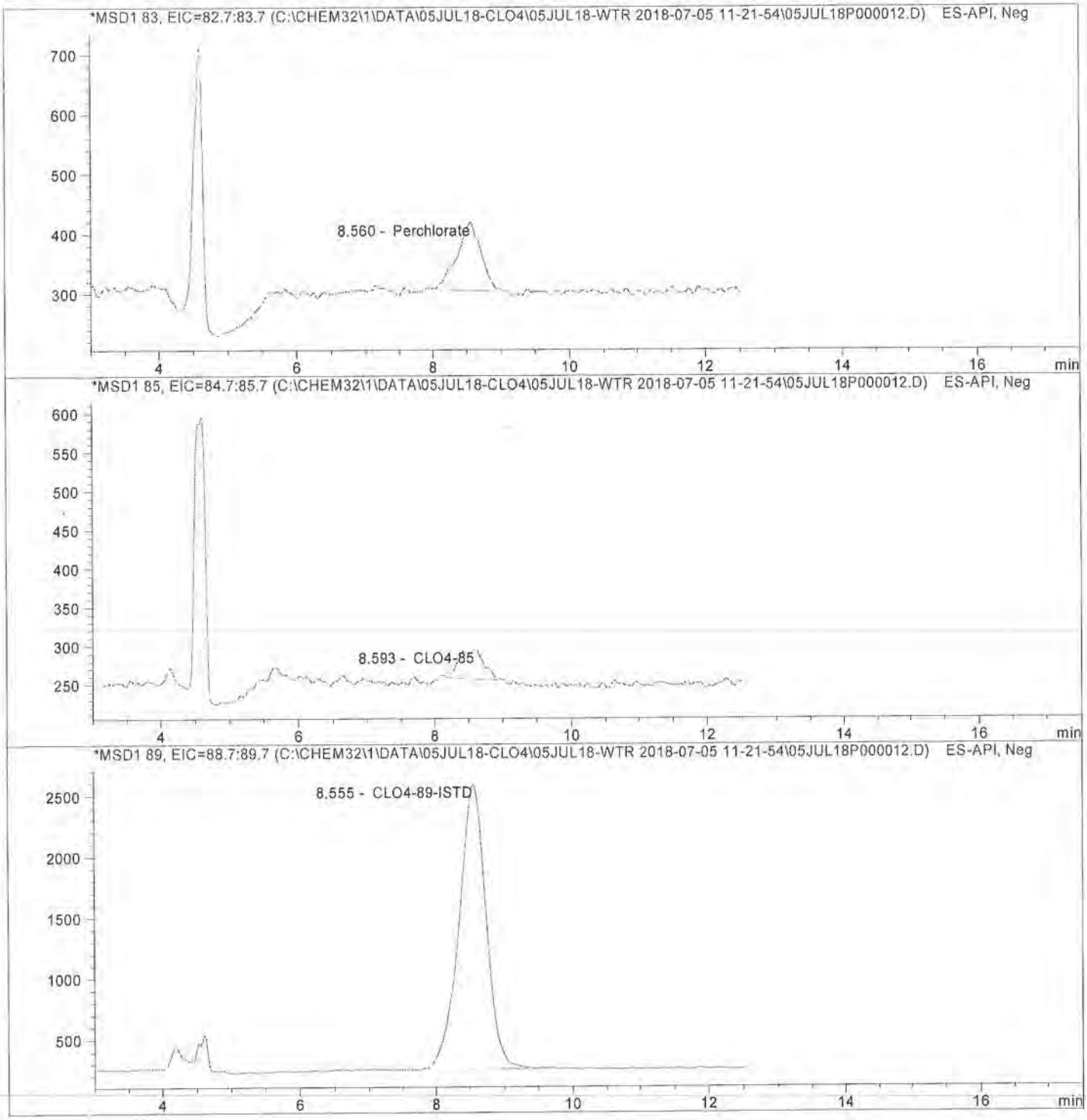
*** End of Report ***

Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608698 RLVS@0.2

Injection Date:	7/05/2018 14:08:02	Seq Line:	12
Sample Name:	608698 RLVS@0.2	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate



Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608698 RLVS@0.2

Injection Date:	7/05/2018 14:08:02	Seq Line:	12
Sample Name:	608698 RLVS@0.2	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 5. Jul. 2018, 02:47:14 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.200 ug/L

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.560	MM	2781.0	0.1859	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.593	MM	933.6	0.1391	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.555	MM	64237.4	5.0000	CLO4-89-ISTD

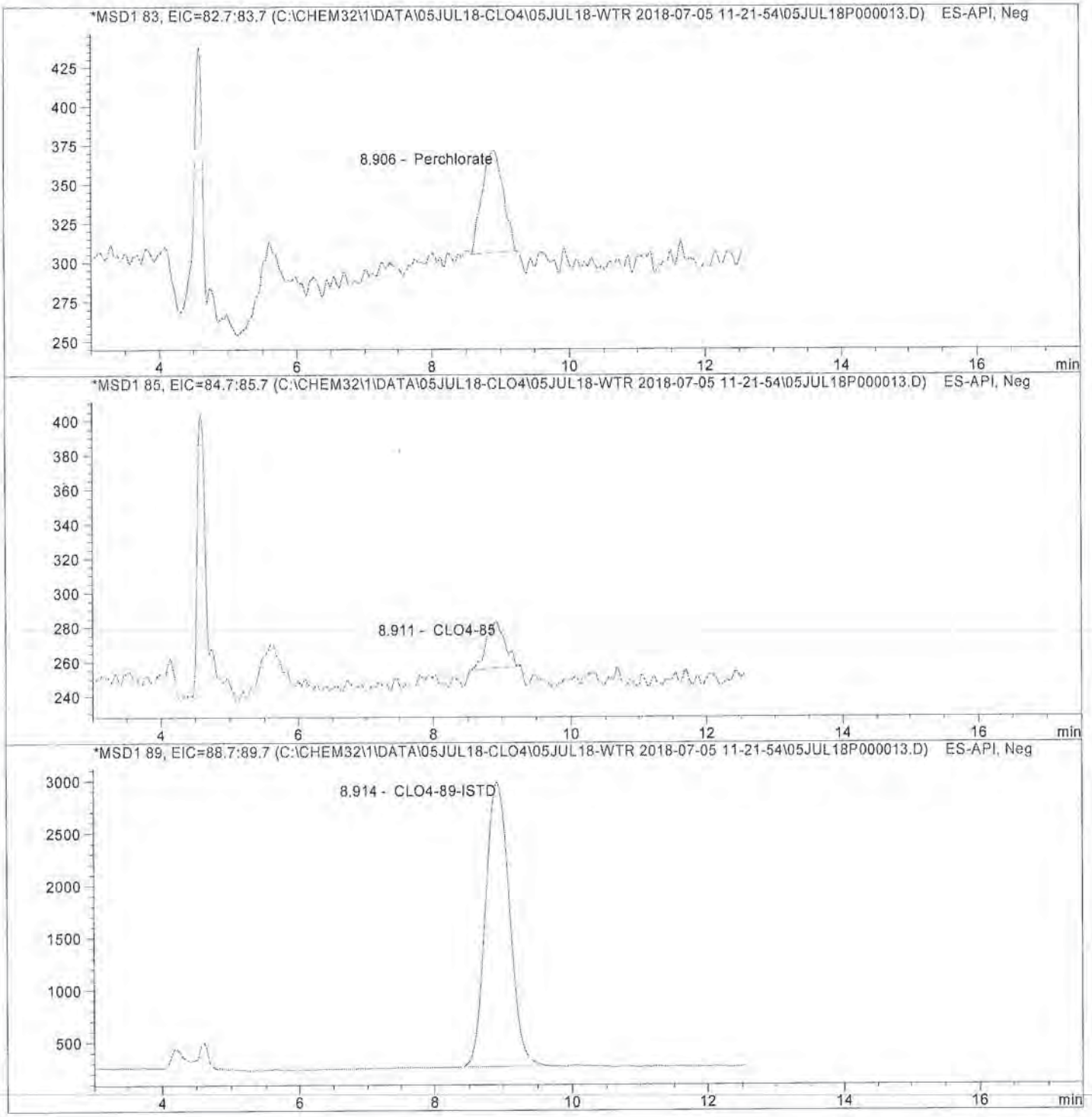
*** End of Report ***

Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608699 LODV@0.1

Injection Date:	7/05/2018 14:22:44	Seq Line:	13
Sample Name:	608699 LODV@0.1	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate



Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608699 LODV@0.1

Injection Date:	7/05/2018 14:22:44	Seq Line:	13
Sample Name:	608699 LODV@0.1	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method:	C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method:	C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed:	7/5/2018 16:36:51

Perchlorate

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 5. Jul. 2018, 02:47:14 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.100 ug/L

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.906	MM	1430.4	0.0885	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.911	MM	509.9	0.0490	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.914	MM	67350.0	5.0000	CLO4-89-ISTD

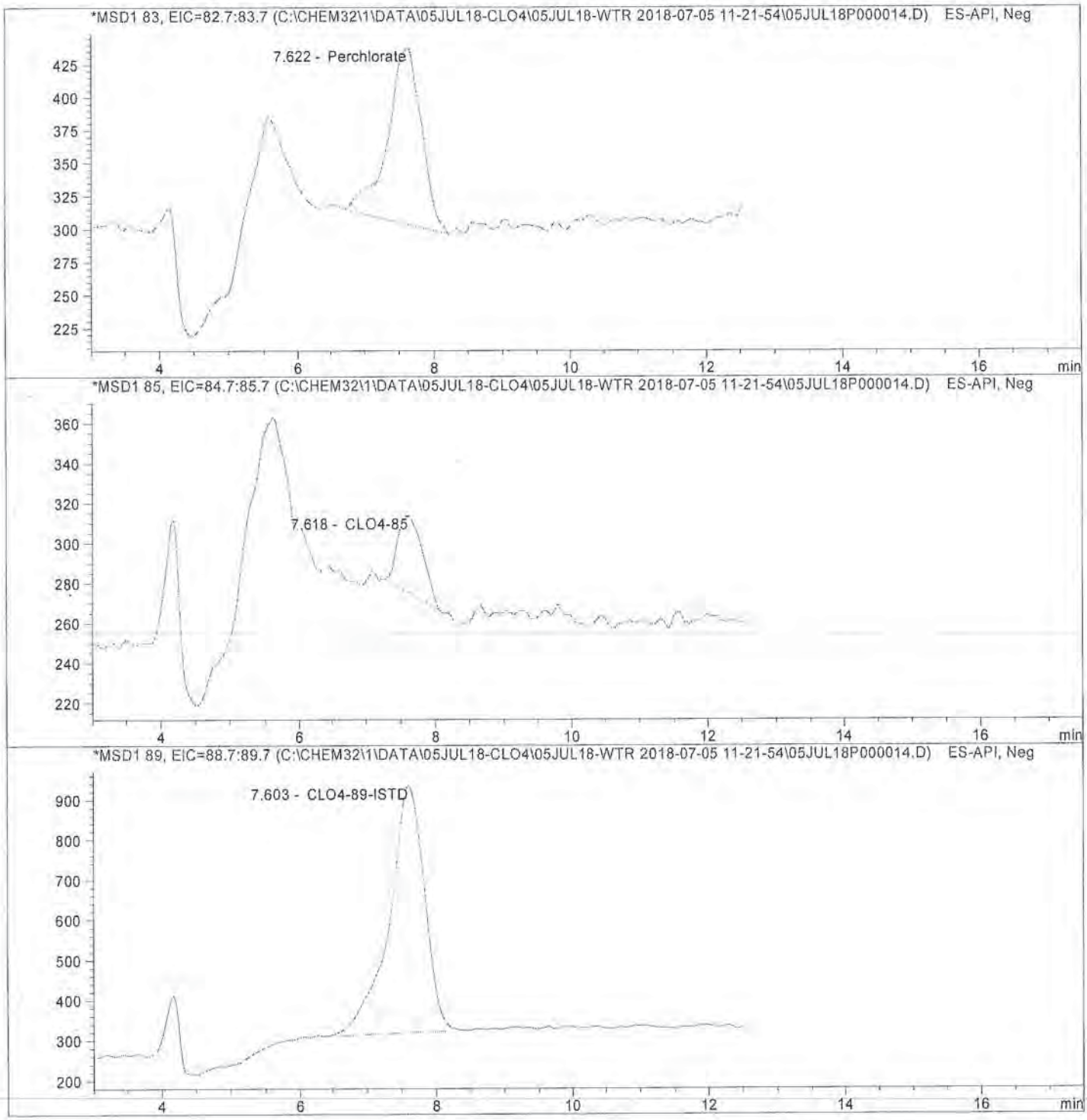
*** End of Report ***

Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608700 ICS@1.0

Injection Date:	7/05/2018 14:37:13	Seq Line:	14
Sample Name:	608700 ICS@1.0	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate



Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608700 ICS@1.0

Injection Date:	7/05/2018 14:37:13	Seq Line:	14
Sample Name:	608700 ICS@1.0	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 5. Jul. 2018, 02:47:14 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000 ug/L

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.622	BB	4534.1	0.9099	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.618	MM	961.4	0.5200	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.603	MM	21859.2	5.0000	CLO4-89-ISTD

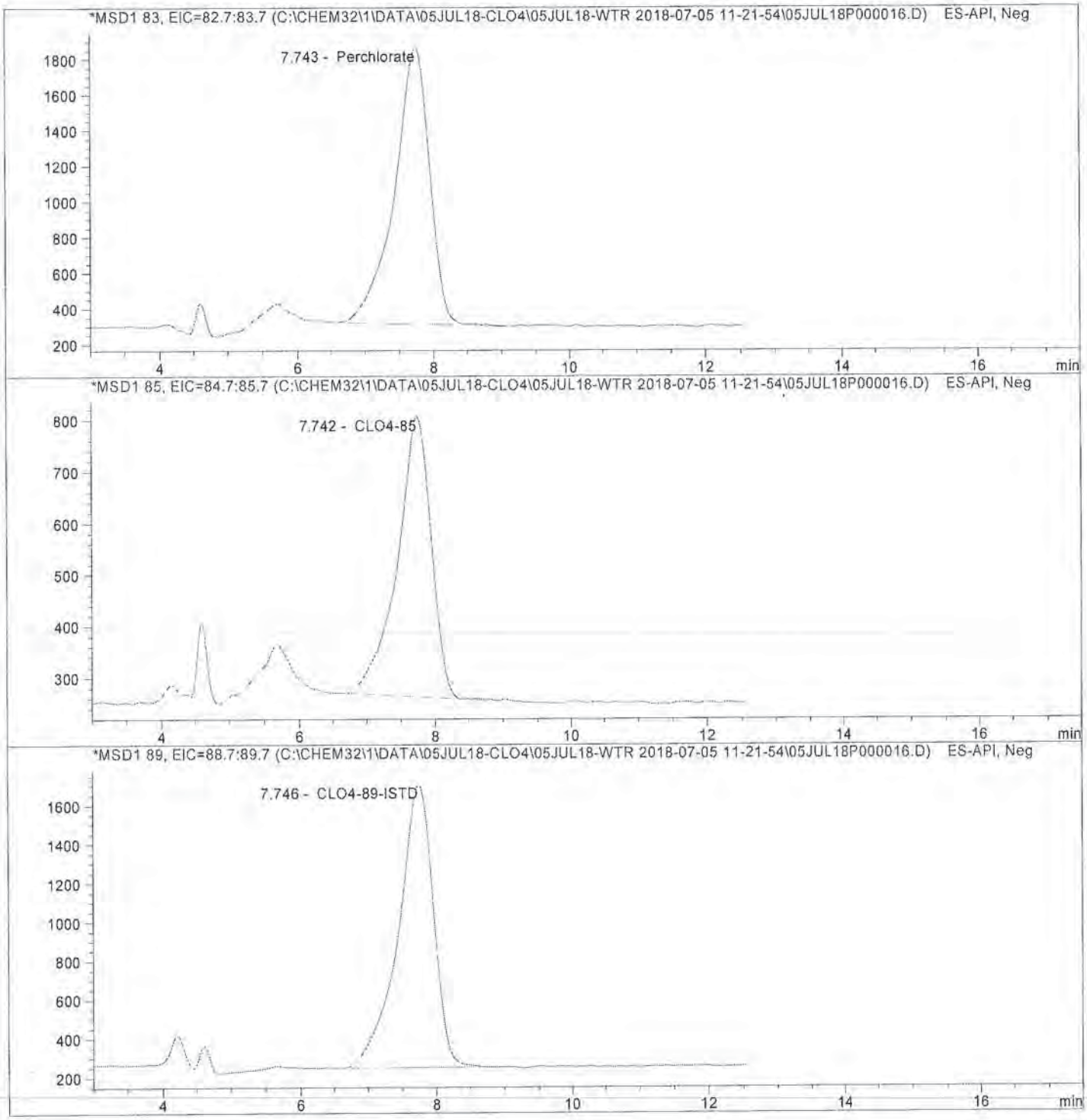
*** End of Report ***

Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608702 LCS@5.0

Injection Date:	7/05/2018 15:06:08	Seq Line:	16
Sample Name:	608702 LCS@5.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate



Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608702 LCS@5.0

Injection Date:	7/05/2018 15:06:08	Seq Line:	16
Sample Name:	608702 LCS@5.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 5. Jul. 2018, 02:47:14 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000 ug/L

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.743	BB	55772.3	4.6893	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.742	BB	18842.9	4.6009	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.746	MM	52316.5	5.0000	CLO4-89-ISTD

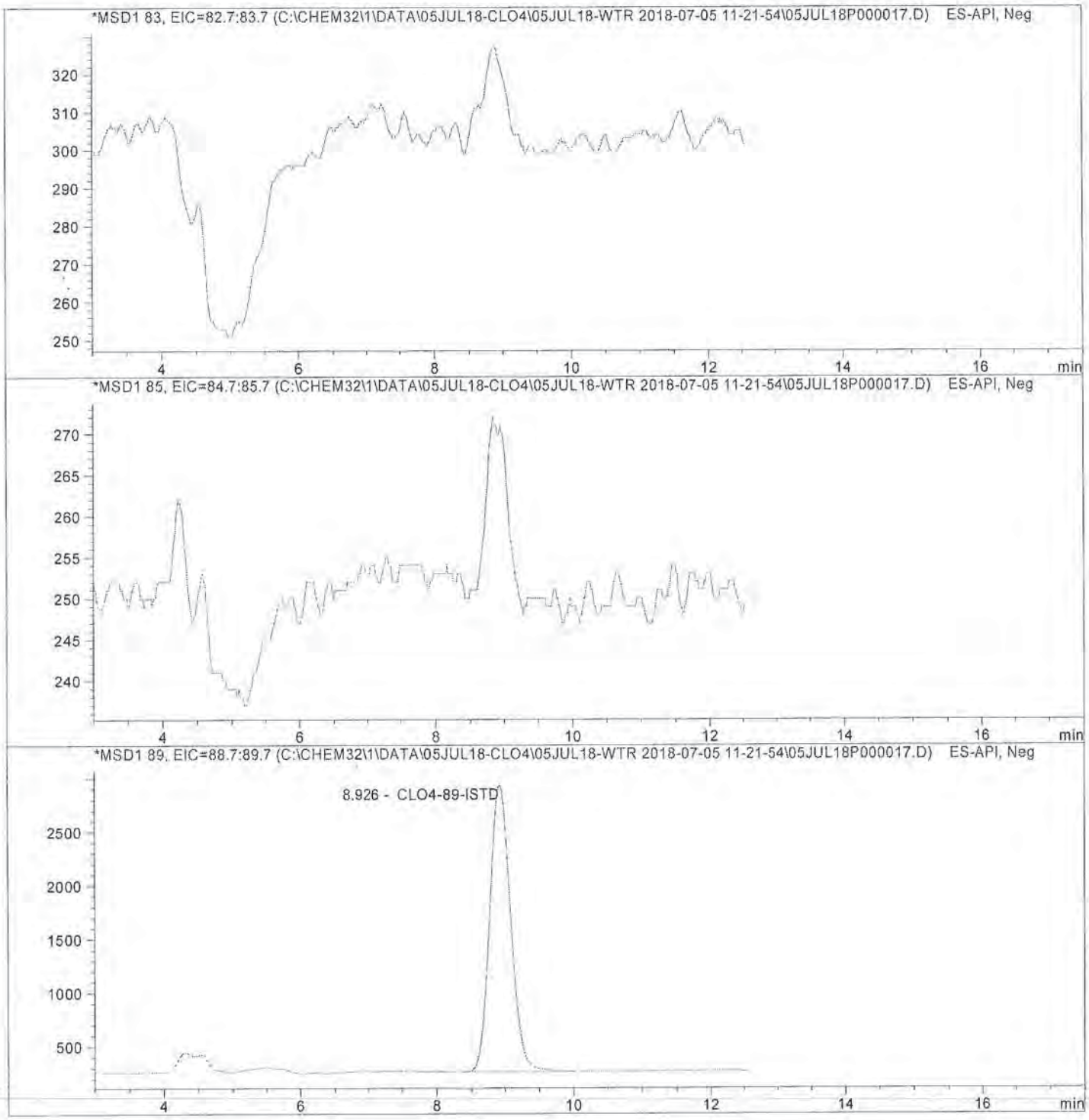
*** End of Report ***

Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608701 LMB

Injection Date:	7/05/2018 15:20:36	Seq Line:	17
Sample Name:	608701 LMB	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate



Data file: C:\CHEM32\1\DATA\05JUL18-CLO4\05JUL18-WT-> Sample Name: 608701 LMB

Injection Date:	7/05/2018 15:20:36	Seq Line:	17
Sample Name:	608701 LMB	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	50 µl

Acq. Method: C:\Chem32\1\DATA\05JUL18-CLO4\05JUL18-WTR 2018-07-0->
Analysis Method: C:\CHEM32\1\METHODS\CLO4-070518-PR.M
Last Changed: 7/5/2018 16:36:51

Perchlorate

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Thu, 5. Jul. 2018, 02:47:14 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000 ug/L

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
8.926	BB	57346.0	5.0000	CLO4-89-ISTD

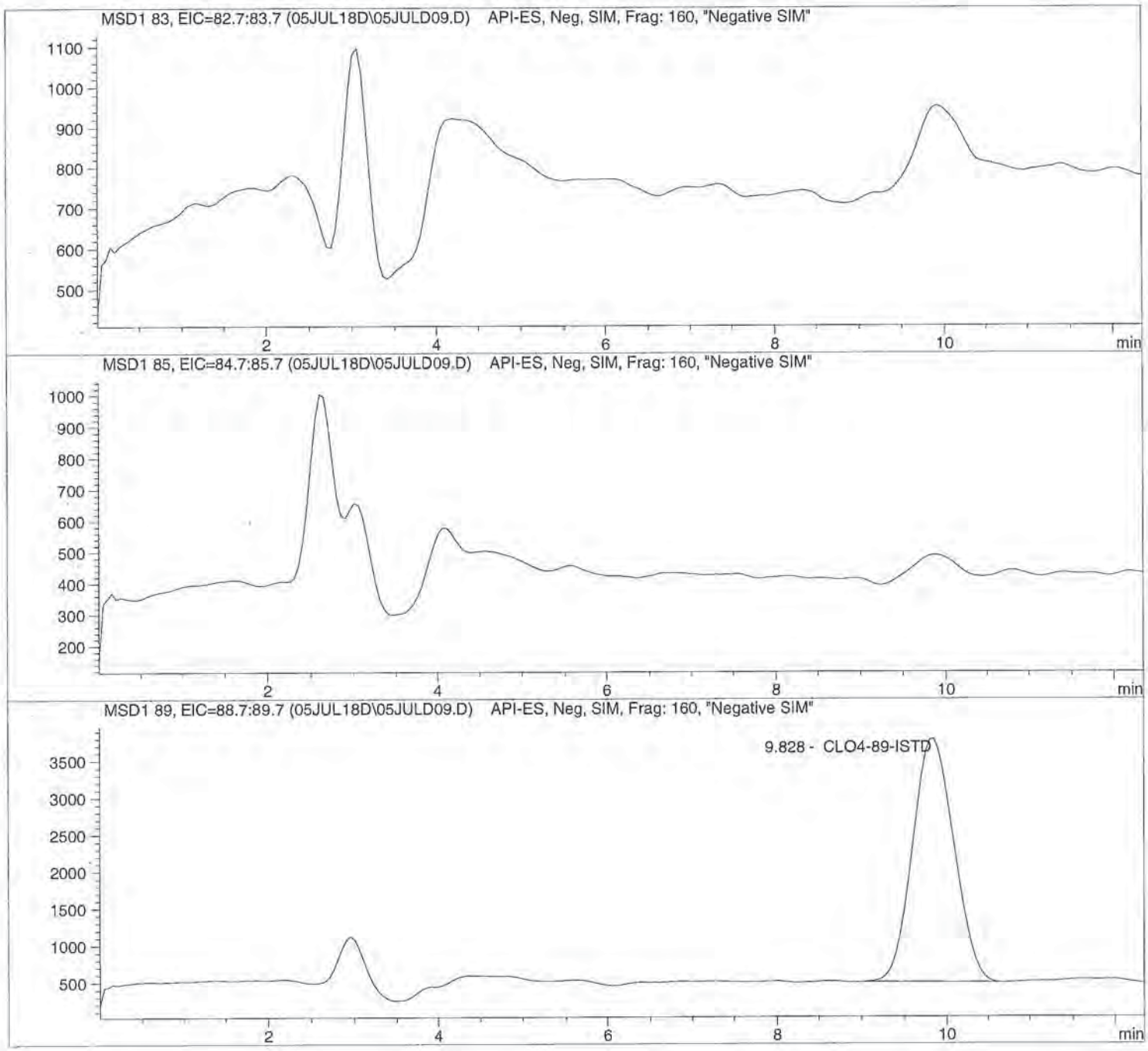
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD09.D Sample Name: 1817359002

Injection Date:	7/05/2018 10:52:56	Seq Line:	9
Sample Name:	1817359002	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD09.D Sample Name: 1817359002

Injection Date:	7/05/2018 10:52:56	Seq Line:	9
Sample Name:	1817359002	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.828	BBA	112189.0	5.0000	CLO4-89-ISTD

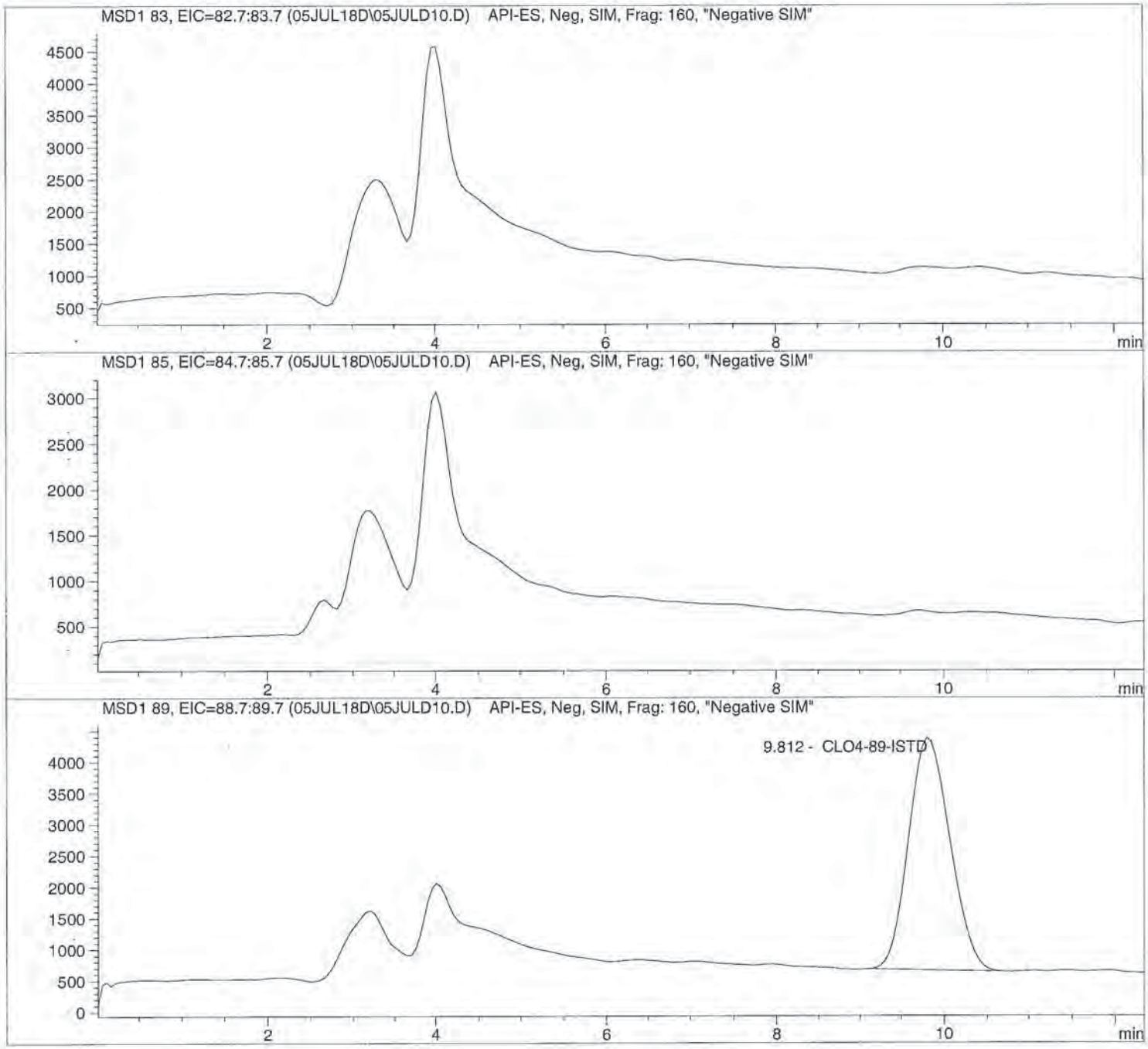
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD10.D Sample Name: 1817359003

Injection Date:	7/05/2018 11:07:13	Seq Line:	10
Sample Name:	1817359003	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD10.D Sample Name: 1817359003

Injection Date:	7/05/2018 11:07:13	Seq Line:	10
Sample Name:	1817359003	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.812	PBA	124469.5	5.0000	CLO4-89-ISTD

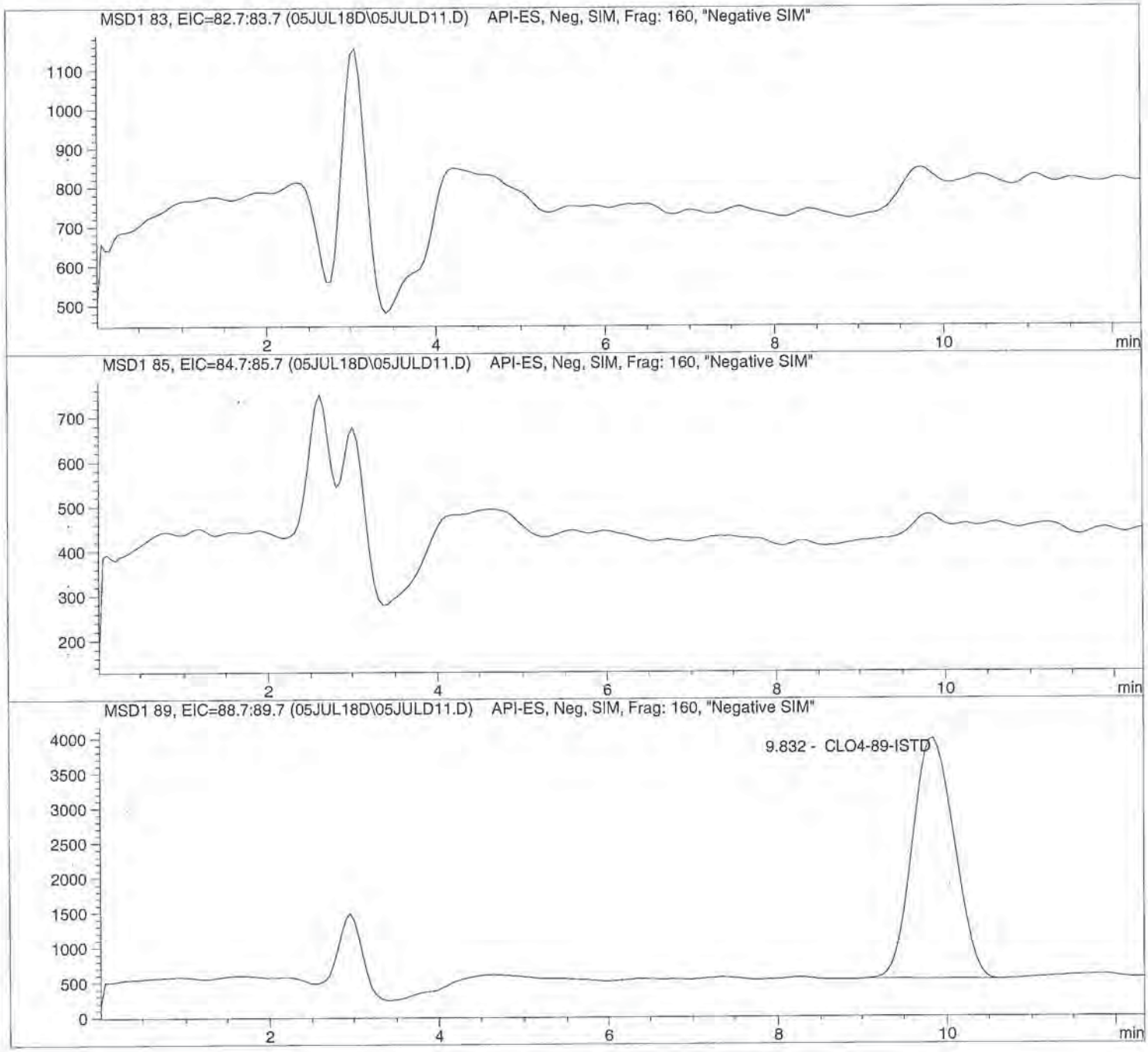
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD11.D Sample Name: 1817359004

Injection Date:	7/05/2018 11:21:26	Seq Line:	11
Sample Name:	1817359004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD11.D Sample Name: 1817359004

Injection Date:	7/05/2018 11:21:26	Seq Line:	11
Sample Name:	1817359004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.832	PBA	116949.7	5.0000	CLO4-89-ISTD

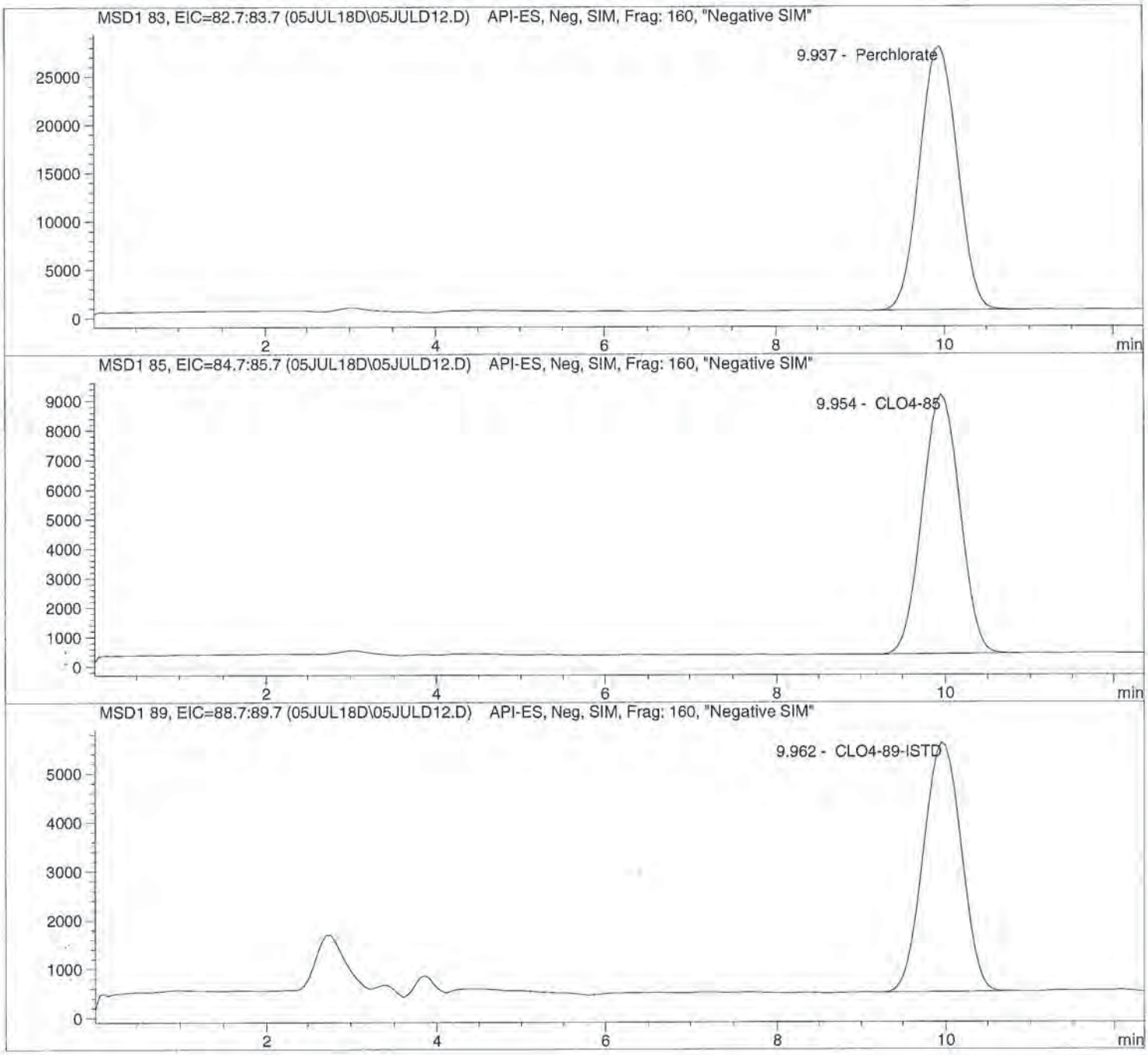
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD12.D Sample Name: 1817359005 100

Injection Date:	7/05/2018 11:35:40	Seq Line:	12
Sample Name:	1817359005 100	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD12.D Sample Name: 1817359005 100

Injection Date:	7/05/2018 11:35:40	Seq Line:	12
Sample Name:	1817359005 100	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.937	PBA	837109.7	2404.2447	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.954	PBA	270091.0	2325.3709	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.962	PBA	158398.1	500.0000	CLO4-89-ISTD

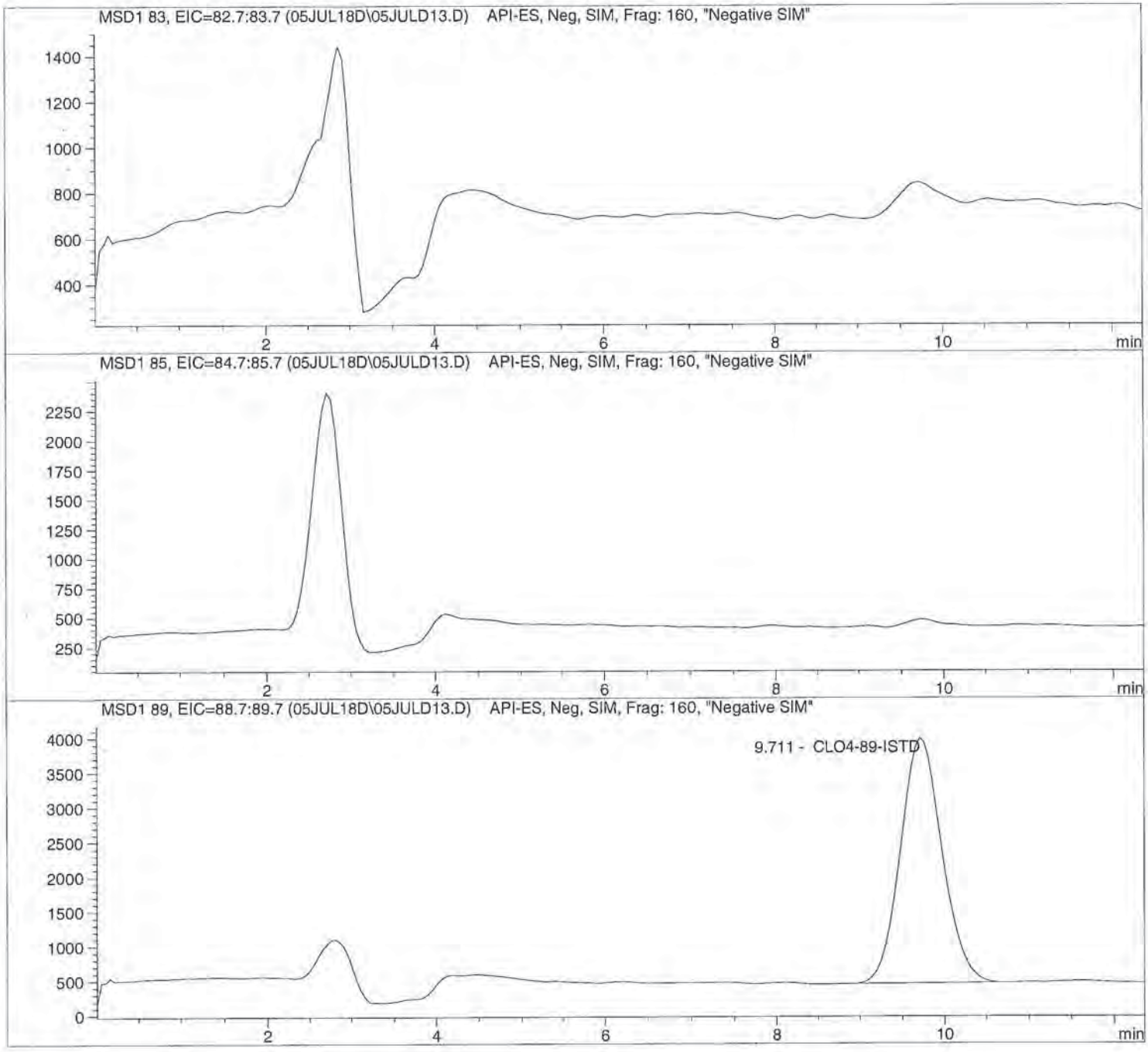
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD13.D Sample Name: 1817359006

Injection Date:	7/05/2018 11:49:54	Seq Line:	13
Sample Name:	1817359006	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD13.D Sample Name: 1817359006

Injection Date:	7/05/2018 11:49:54	Seq Line:	13
Sample Name:	1817359006	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.711	PBA	120323.5	5.0000	CLO4-89-ISTD

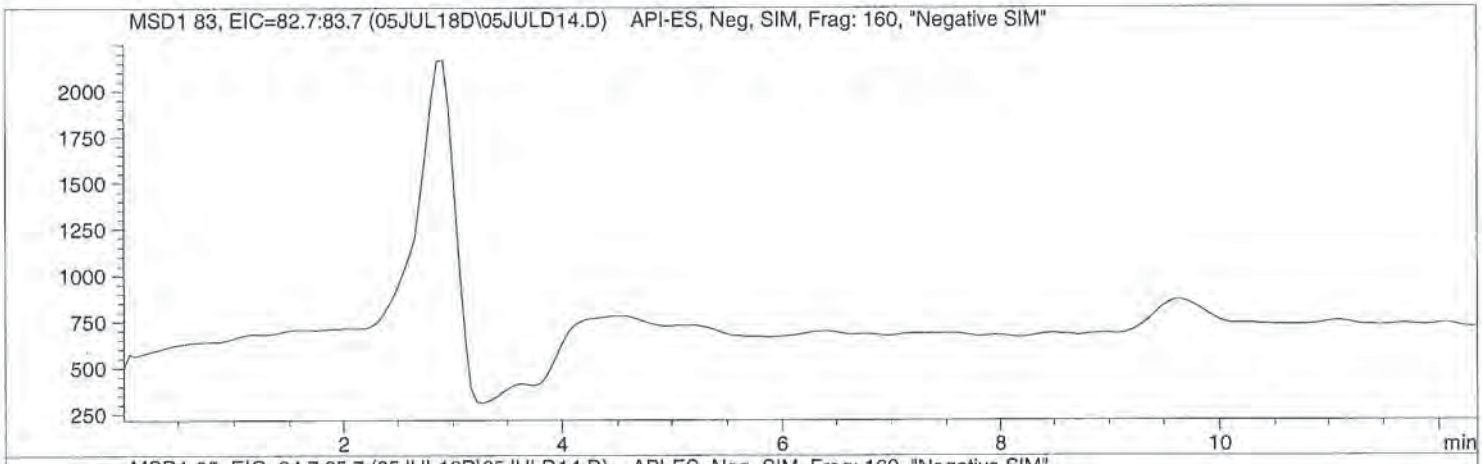
*** End of Report ***

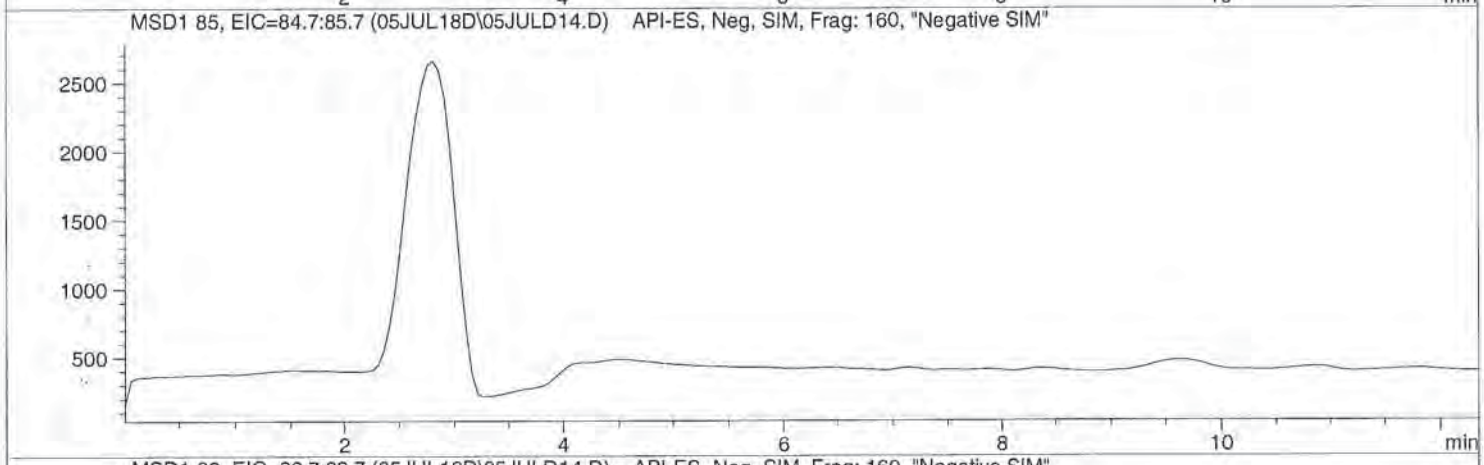
Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD14.D Sample Name: 1817359007

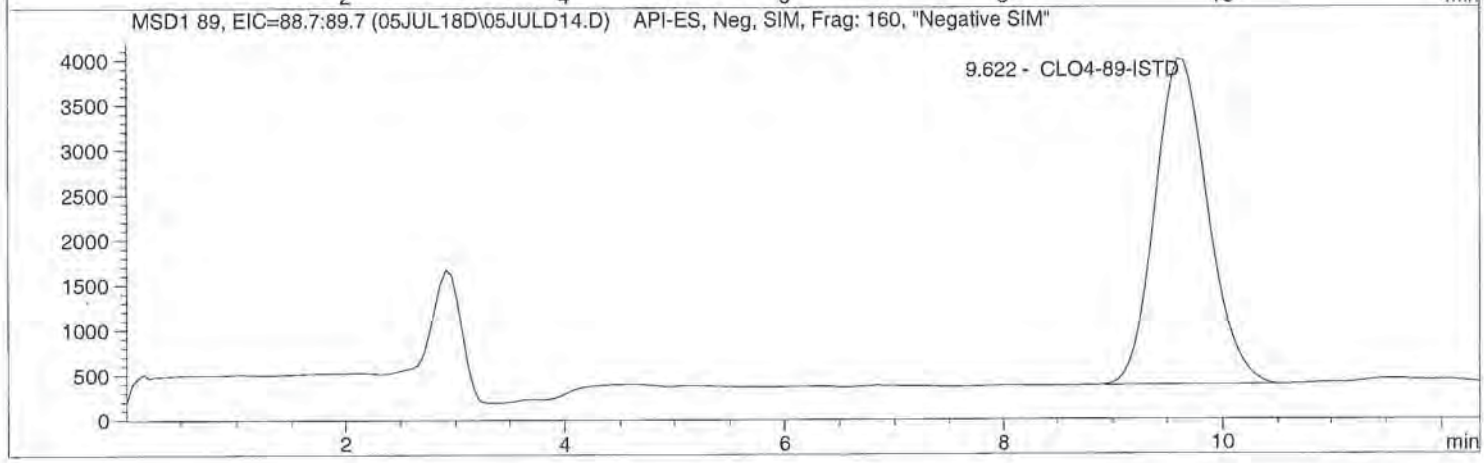
Injection Date:	7/05/2018 12:04:07	Seq Line:	14
Sample Name:	1817359007	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD14.D Sample Name: 1817359007

Injection Date:	7/05/2018 12:04:07	Seq Line:	14
Sample Name:	1817359007	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.622	BBA	119989.7	5.0000	CLO4-89-ISTD

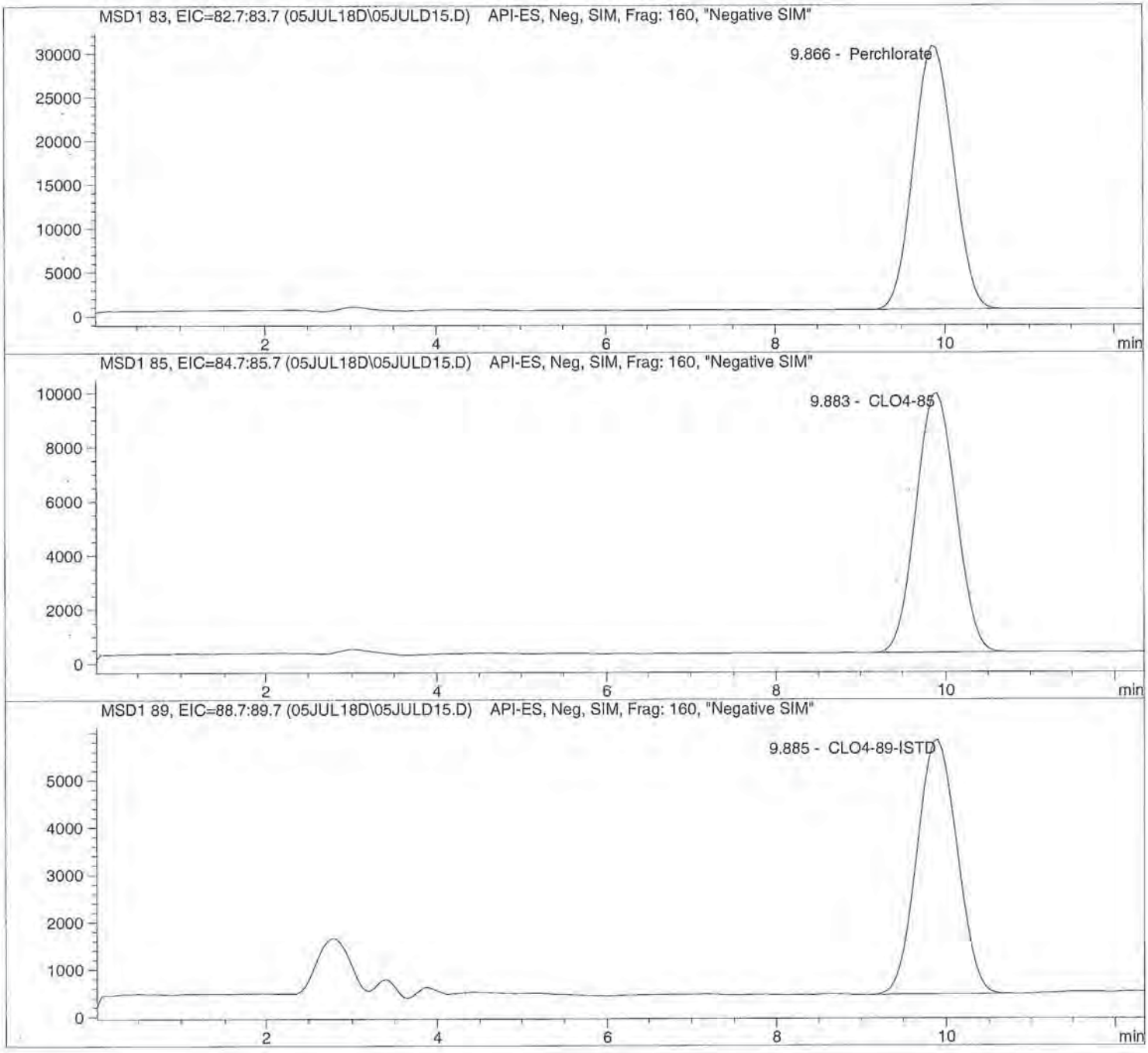
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD15.D Sample Name: 1817361001 10

Injection Date:	7/05/2018 12:18:24	Seq Line:	15
Sample Name:	1817361001 10	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD15.D Sample Name: 1817361001 10

Injection Date:	7/05/2018 12:18:24	Seq Line:	15
Sample Name:	1817361001 10	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.866	PBA	958490.1	248.3656	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.883	PBA	309224.6	240.2790	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.885	PBA	175102.5	50.0000	CLO4-89-ISTD

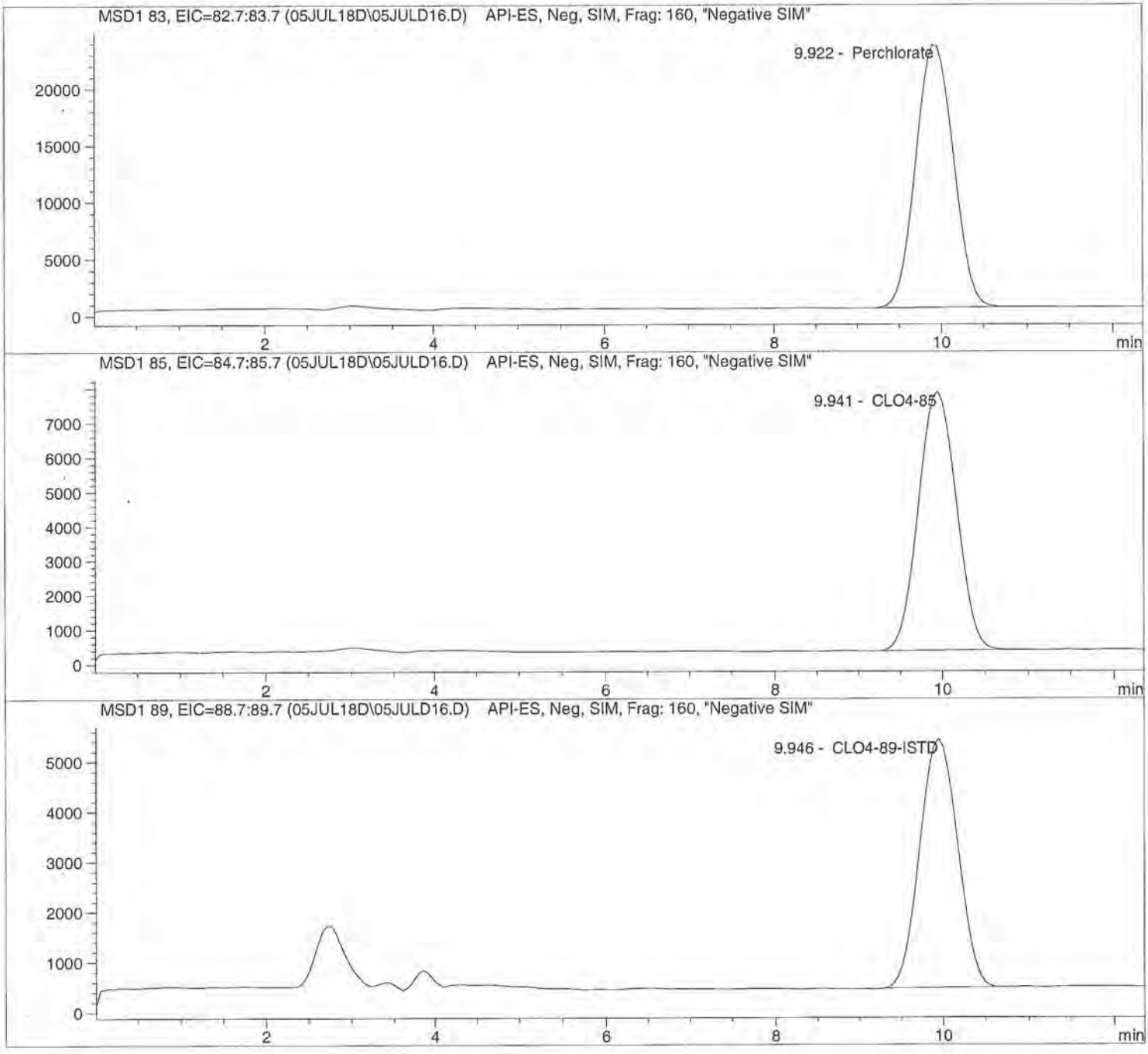
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD16.D Sample Name: 1817361002 1K

Injection Date:	7/05/2018 12:32:39	Seq Line:	16
Sample Name:	1817361002 1K	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD16.D Sample Name: 1817361002 1K

Injection Date:	7/05/2018 12:32:39	Seq Line:	16
Sample Name:	1817361002 1K	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.922	PBA	717031.6	21257.2723	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.941	PBA	234292.9	20779.0219	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.946	PBA	154889.5	5000.0000	CLO4-89-ISTD

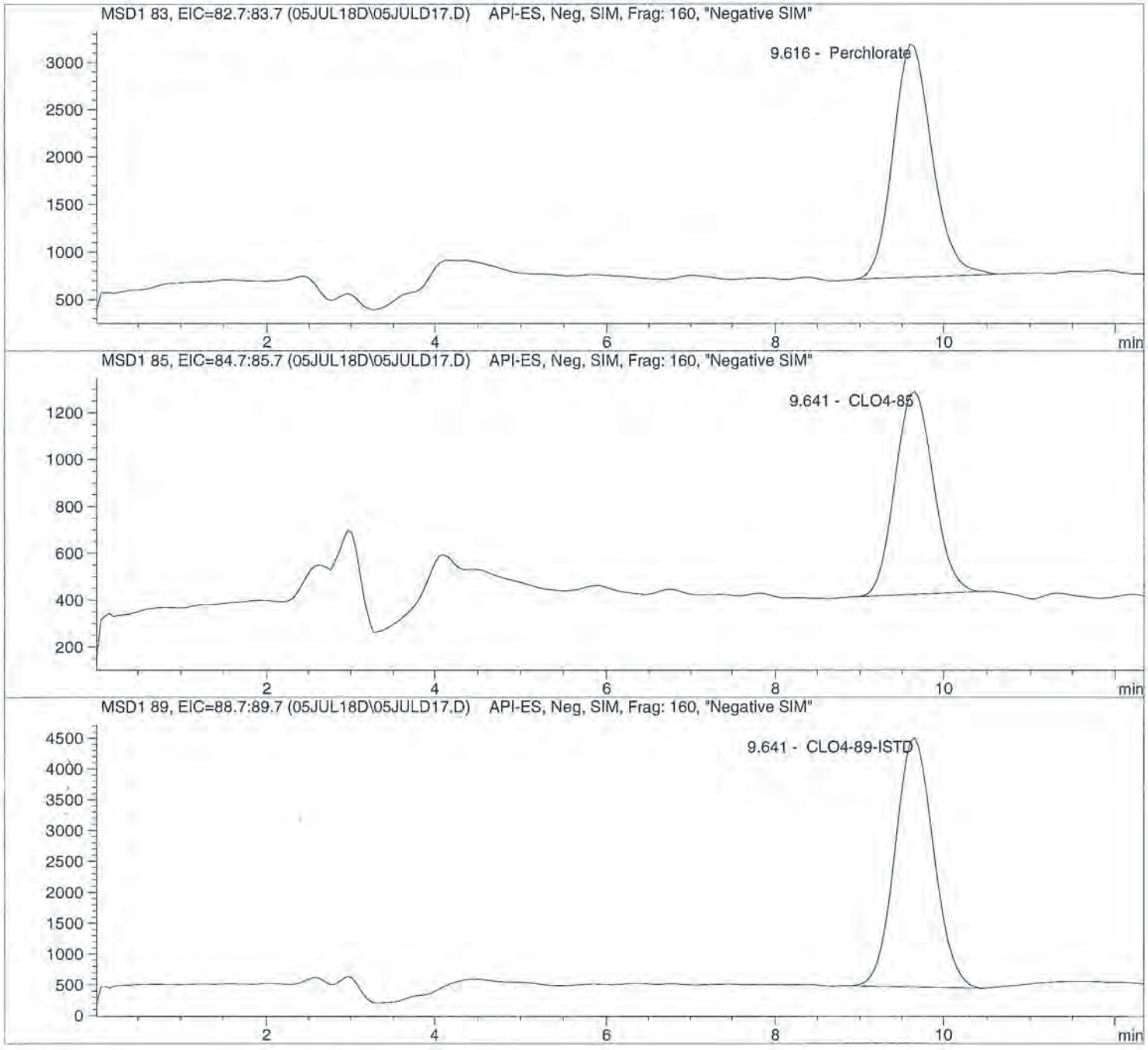
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD17.D Sample Name: 1817361003

Injection Date:	7/05/2018 12:46:54	Seq Line:	17
Sample Name:	1817361003	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD17.D Sample Name: 1817361003

Injection Date:	7/05/2018 12:46:54	Seq Line:	17
Sample Name:	1817361003	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.616	PBA	79791.4	2.9604	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.641	PBA	27764.6	2.9536	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.641	BBA	130494.4	5.0000	CLO4-89-ISTD

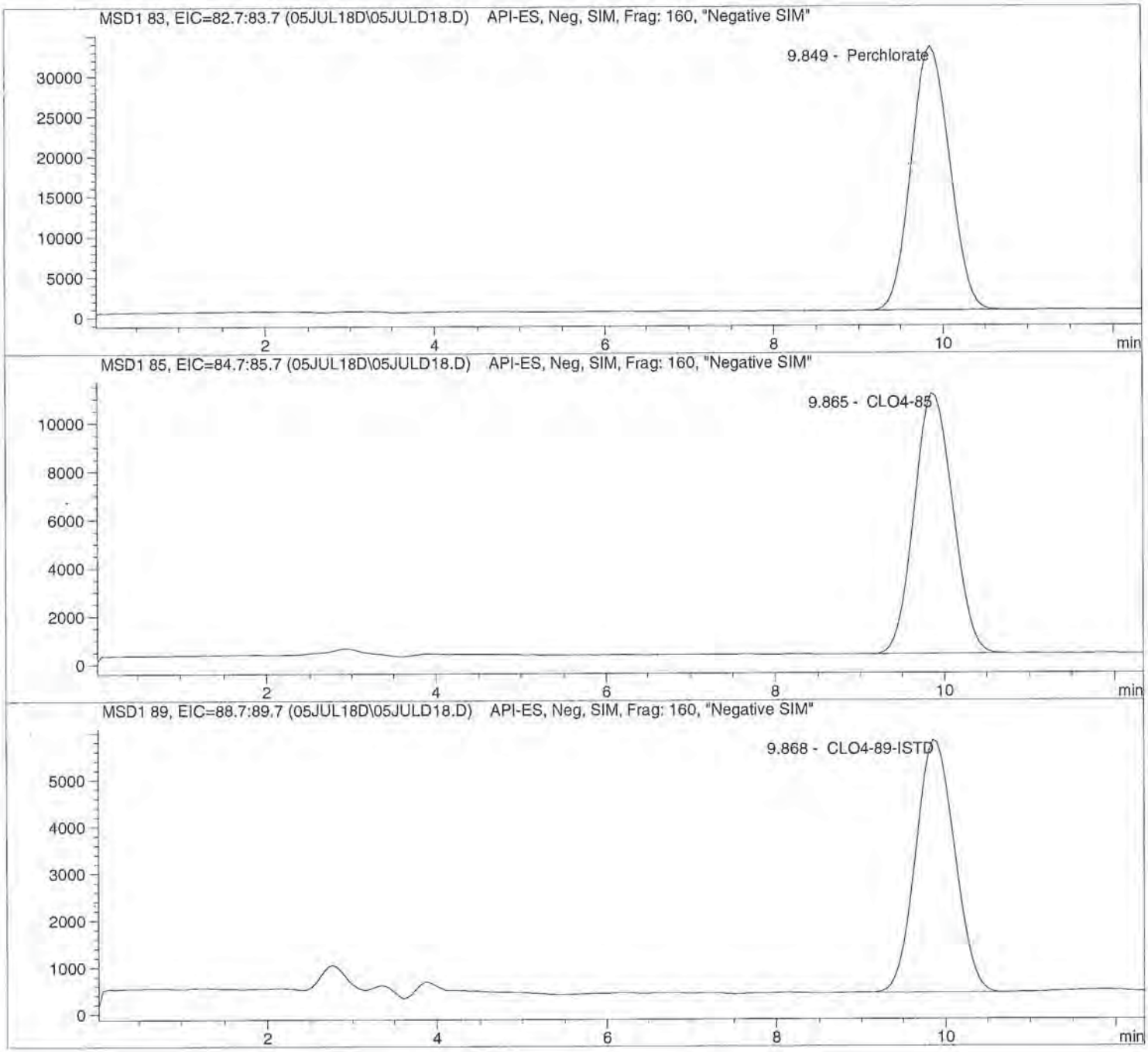
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD18.D Sample Name: 608589 CCV@25

Injection Date:	7/05/2018 13:01:12	Seq Line:	18
Sample Name:	608589 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD18.D Sample Name: 608589 CCV@25

Injection Date:	7/05/2018 13:01:12	Seq Line:	18
Sample Name:	608589 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.849	BBA	1038194.1	27.0587	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.865	PBA	344085.7	26.8632	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.868	BBA	172805.8	5.0000	CLO4-89-ISTD

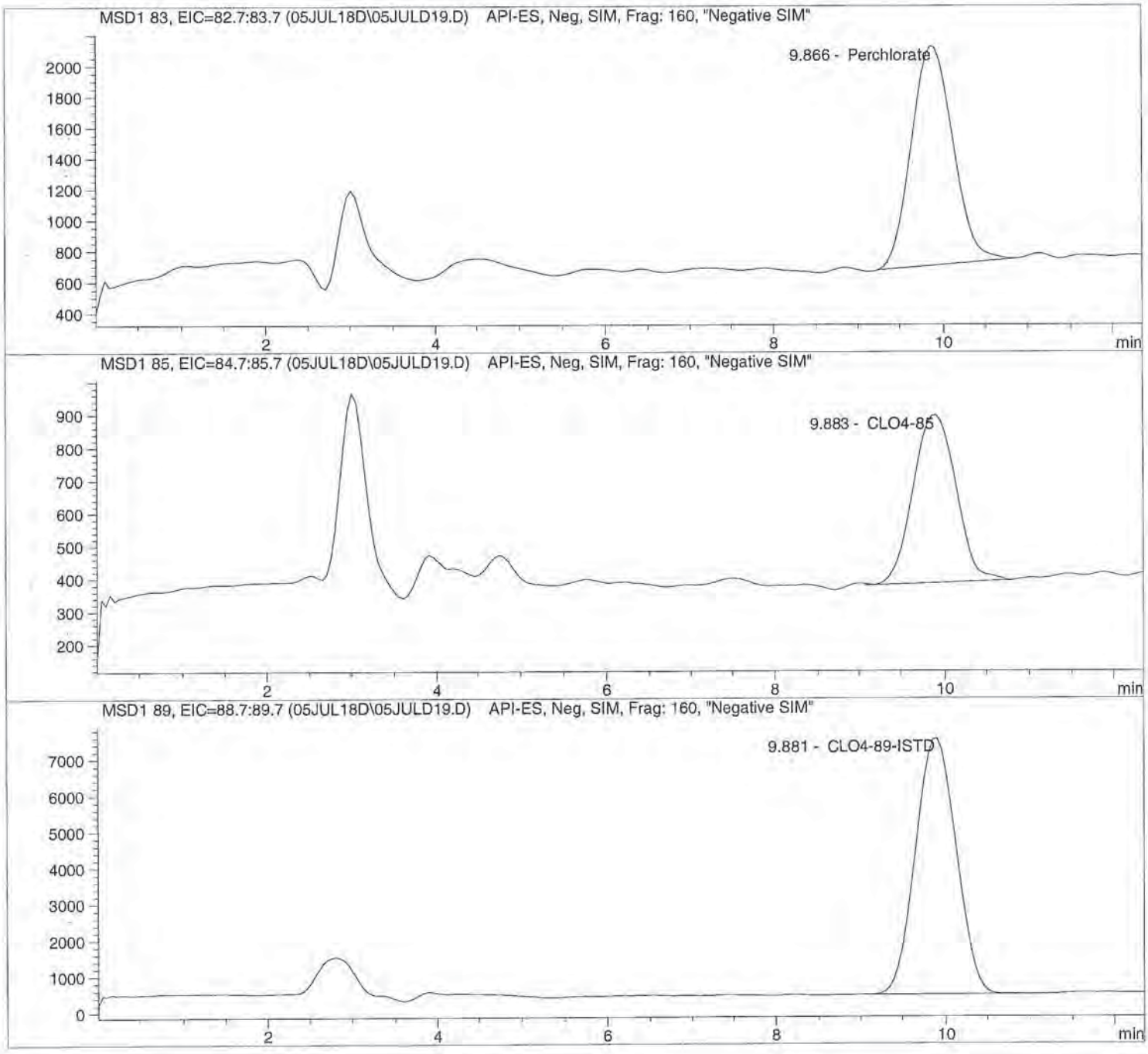
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD19.D Sample Name: 608590 LODV@1.

Injection Date:	7/05/2018 13:15:26	Seq Line:	19
Sample Name:	608590 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD19.D Sample Name: 608590 LODV@1.

Injection Date:	7/05/2018 13:15:26	Seq Line:	19
Sample Name:	608590 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.866	PBA	47490.6	0.9699	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.883	BBA	17643.3	0.9475	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.881	BBA	232146.0	5.0000	CLO4-89-ISTD

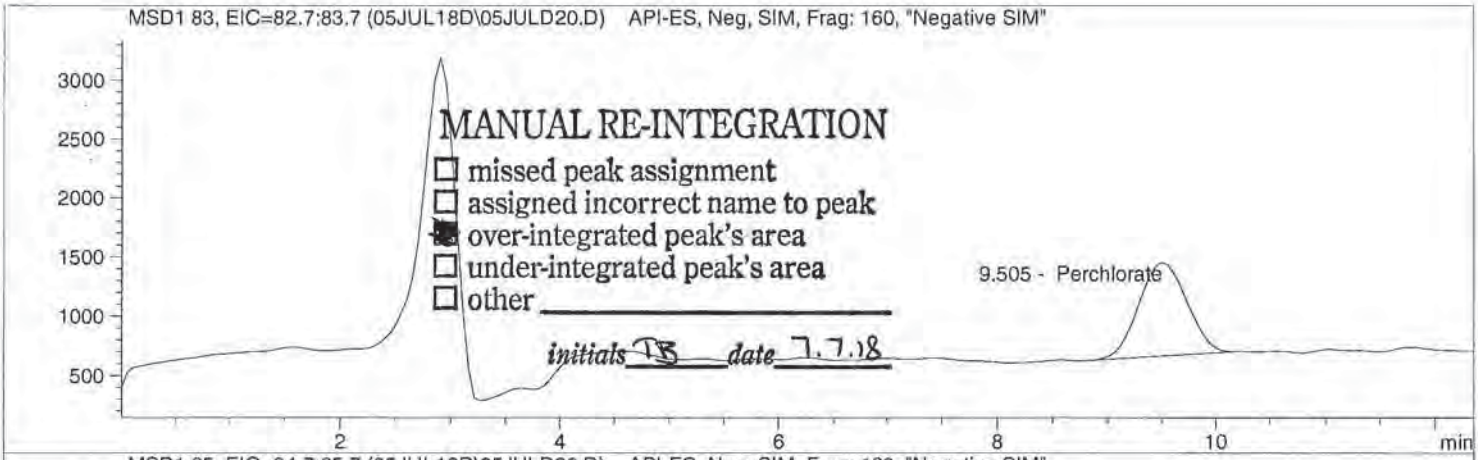
*** End of Report ***

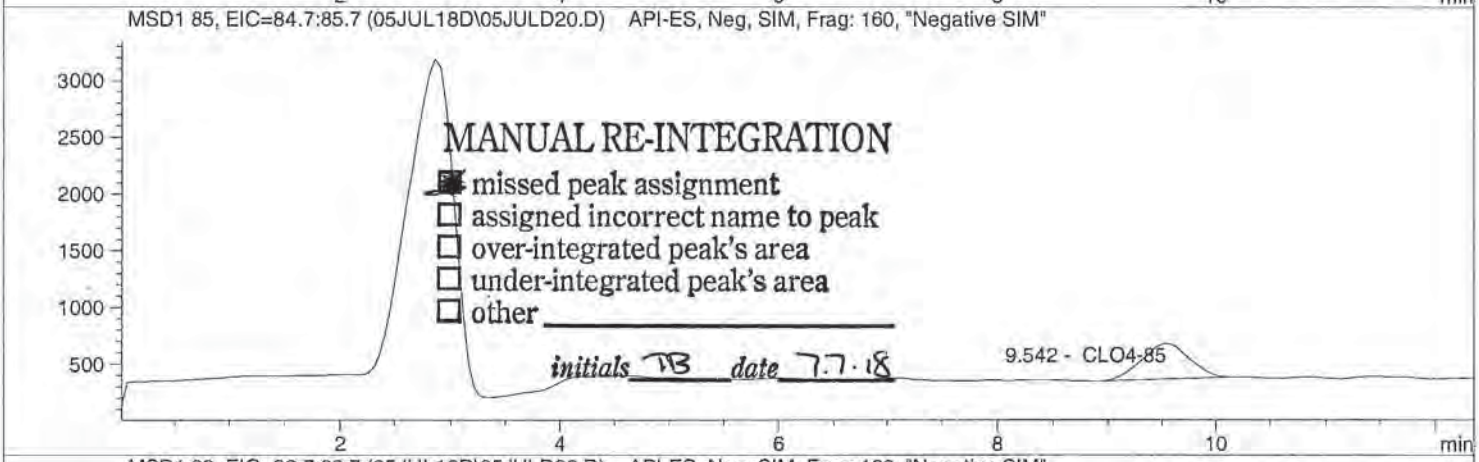
Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD20.D Sample Name: 1817361004

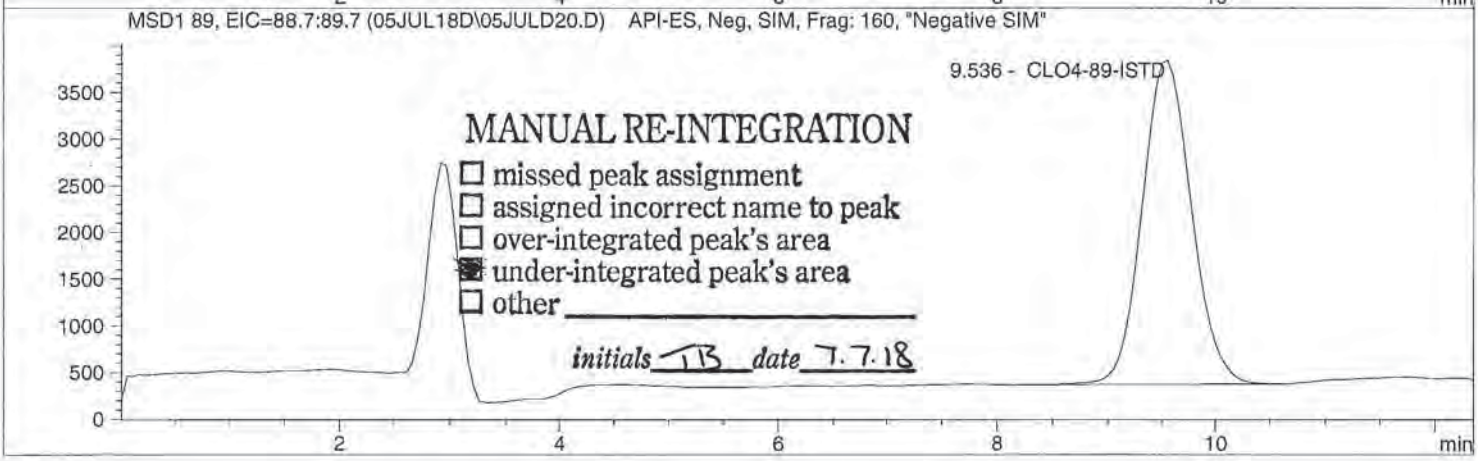
Injection Date:	7/05/2018 13:29:43	Seq Line:	20
Sample Name:	1817361004	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD20.D Sample Name: 1817361004

Injection Date:	7/05/2018 13:29:43	Seq Line:	20
Sample Name:	1817361004	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.505	MM	24303.3	1.0420	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.542	MM	9718.1	1.1195	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.536	MM	110868.6	5.0000	CLO4-89-ISTD

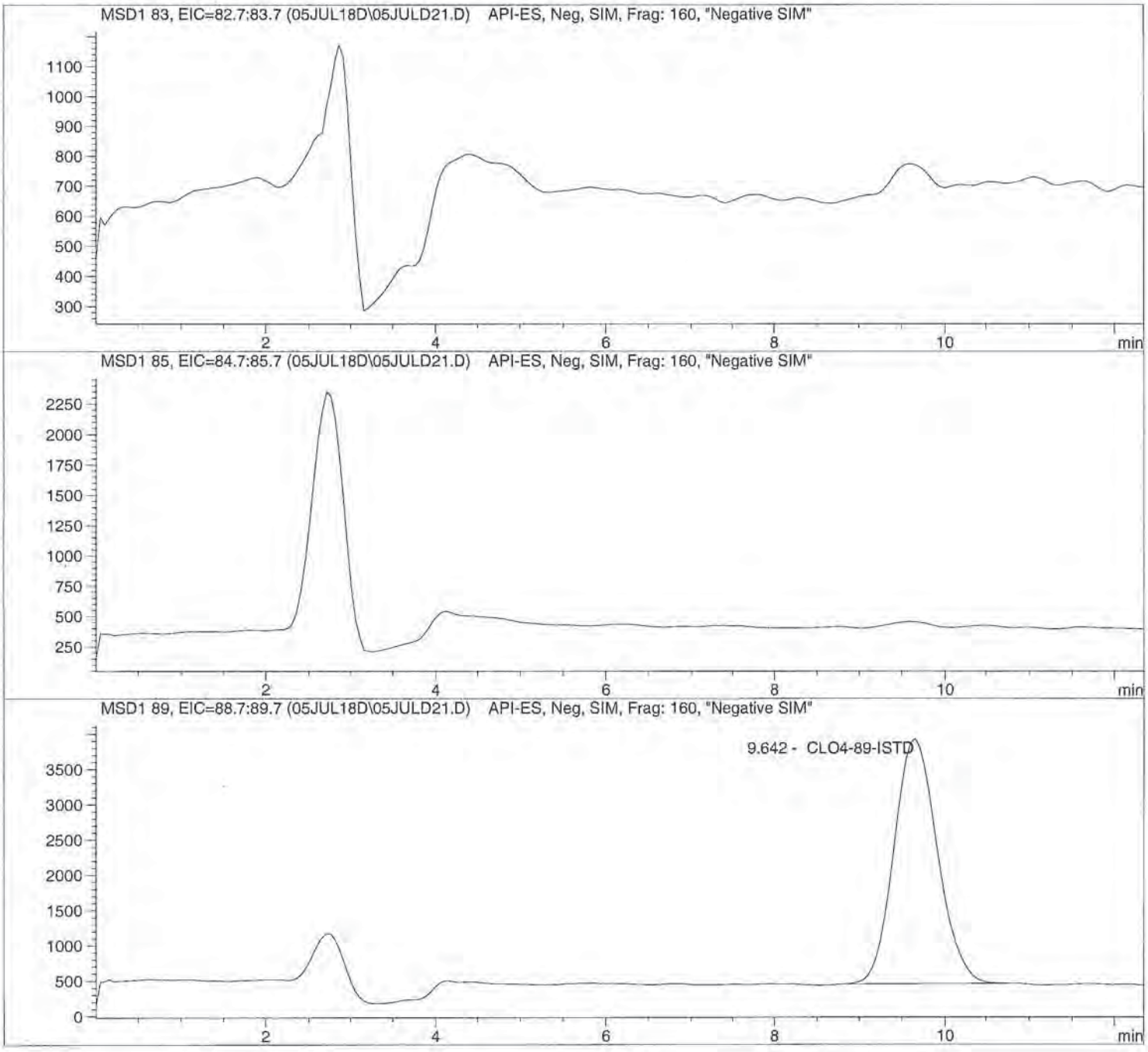
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD21.D Sample Name: 1817361005

Injection Date:	7/05/2018 13:44:02	Seq Line:	21
Sample Name:	1817361005	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD21.D Sample Name: 1817361005

Injection Date:	7/05/2018 13:44:02	Seq Line:	21
Sample Name:	1817361005	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.642	BBA	120757.3	5.0000	CLO4-89-ISTD

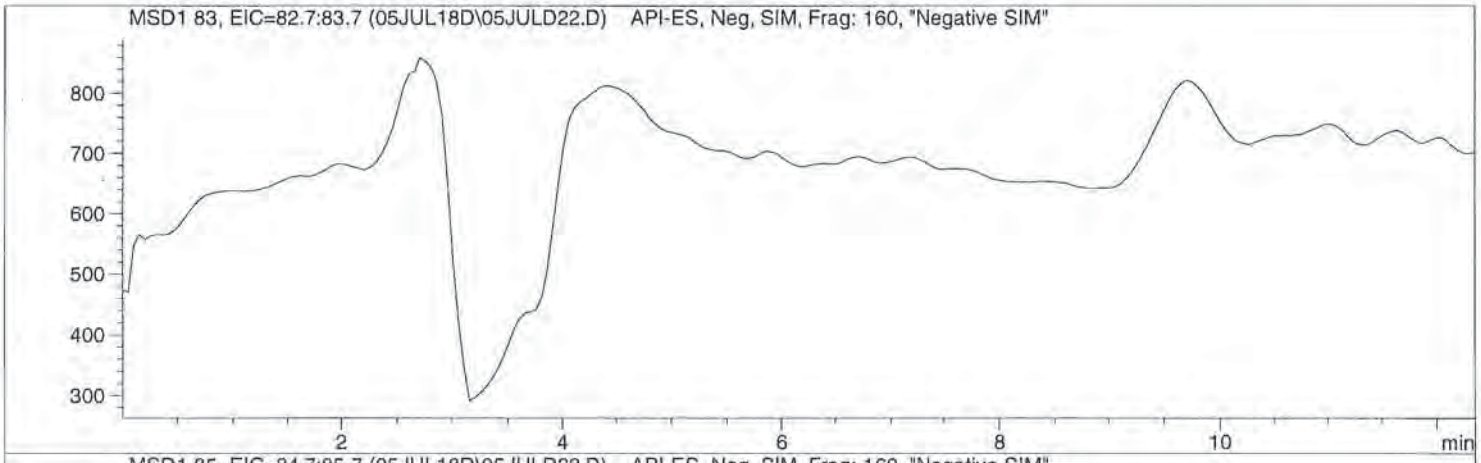
*** End of Report ***

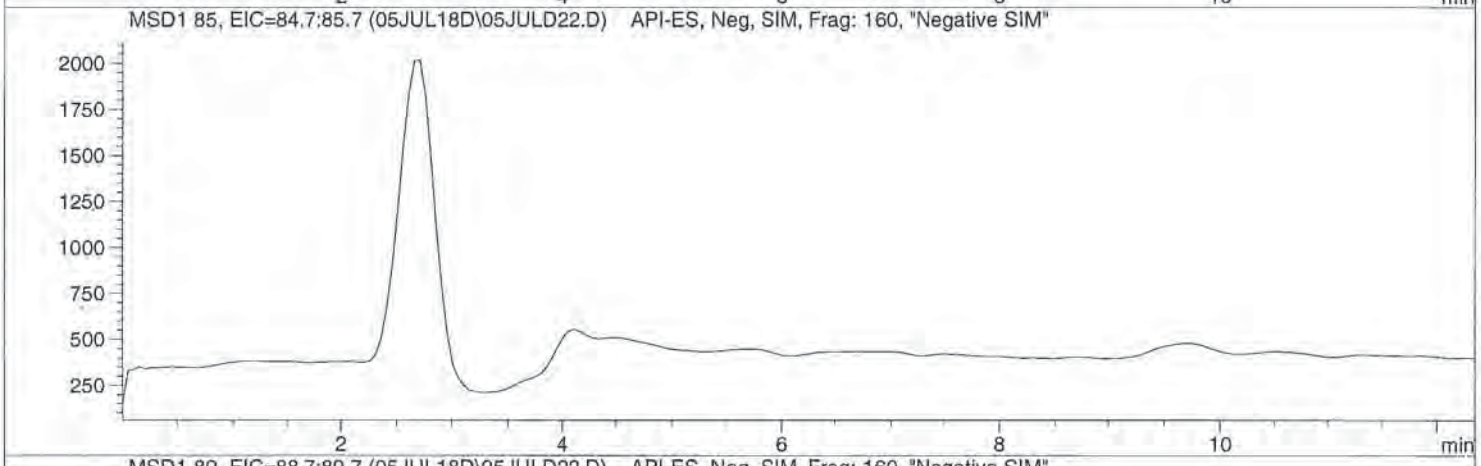
Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD22.D Sample Name: 1817361006

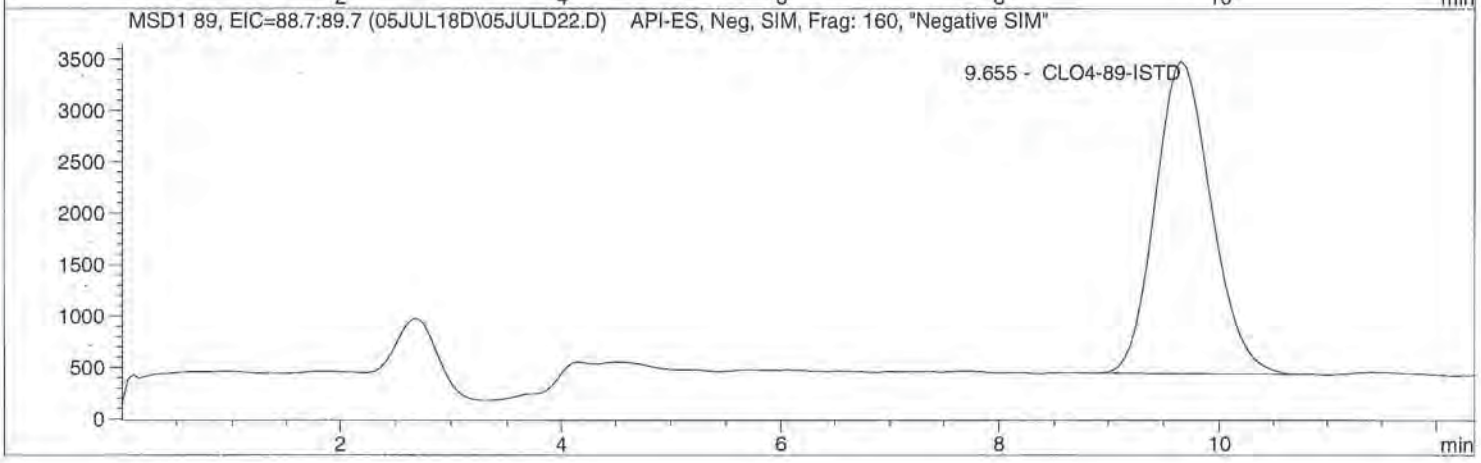
Injection Date:	7/05/2018 13:58:19	Seq Line:	22
Sample Name:	1817361006	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD22.D Sample Name: 1817361006

Injection Date:	7/05/2018 13:58:19	Seq Line:	22
Sample Name:	1817361006	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.655	BBA	105915.4	5.0000	CLO4-89-ISTD

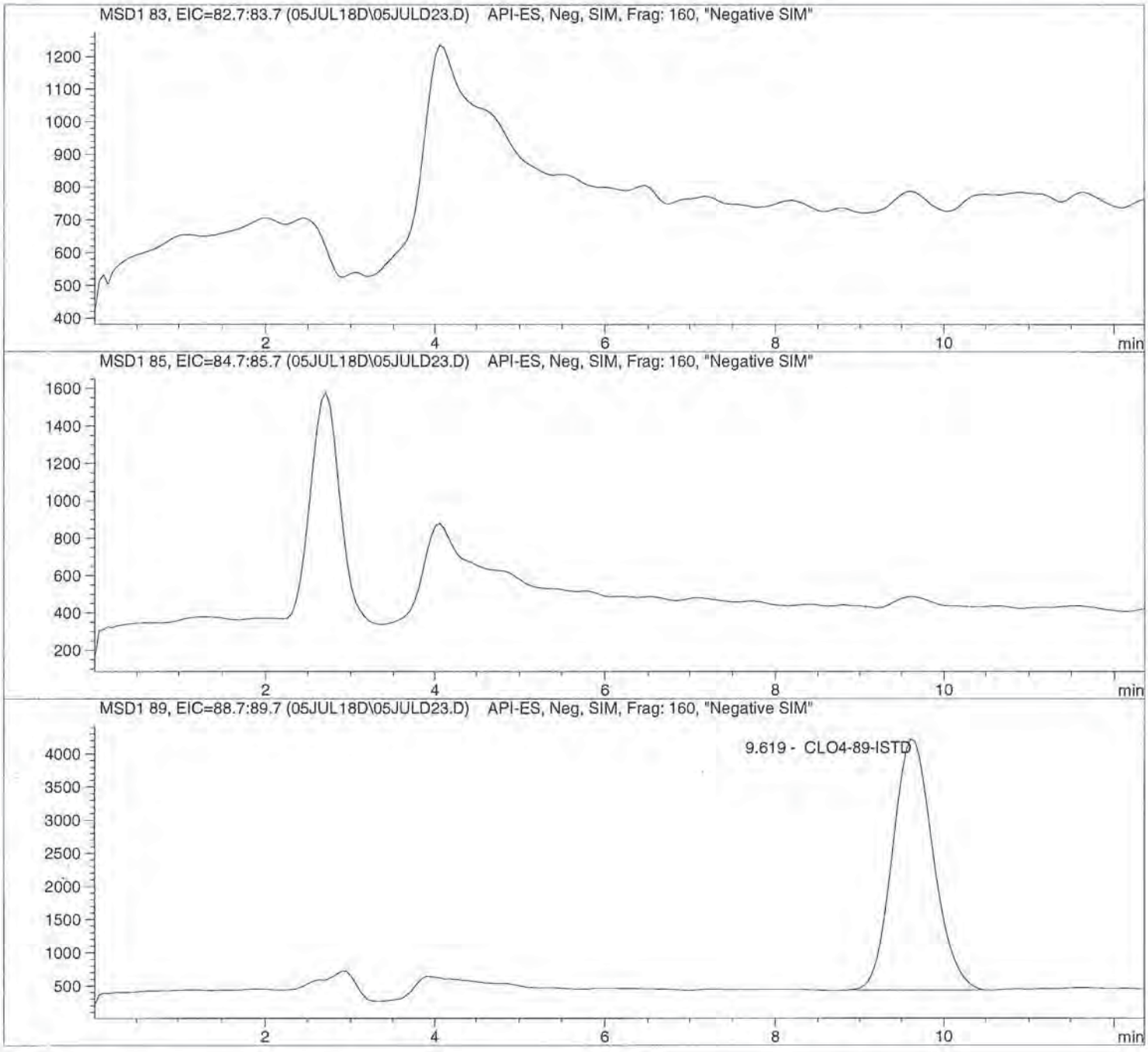
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD23.D Sample Name: 1817361007

Injection Date:	7/05/2018 14:12:37	Seq Line:	23
Sample Name:	1817361007	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD23.D Sample Name: 1817361007

Injection Date:	7/05/2018 14:12:37	Seq Line:	23
Sample Name:	1817361007	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.619	PBA	126470.4	5.0000	CLO4-89-ISTD

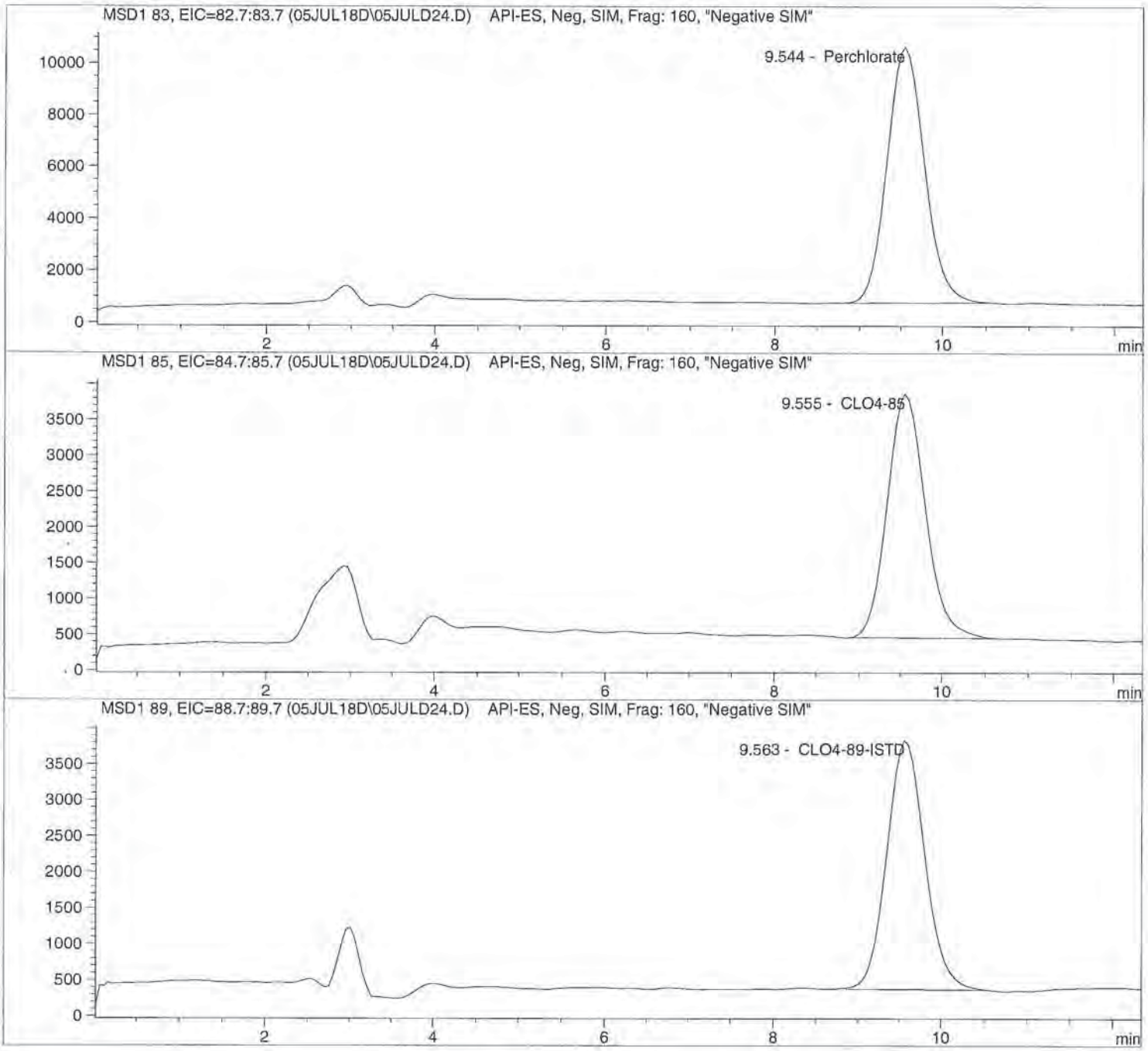
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD24.D Sample Name: 1817362001

Injection Date:	7/05/2018 14:26:51	Seq Line:	24
Sample Name:	1817362001	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD24.D Sample Name: 1817362001

Injection Date:	7/05/2018 14:26:51	Seq Line:	24
Sample Name:	1817362001	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.544	BBA	311455.2	13.2050	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.555	PBA	109923.7	13.8327	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.563	BBA	111259.3	5.0000	CLO4-89-ISTD

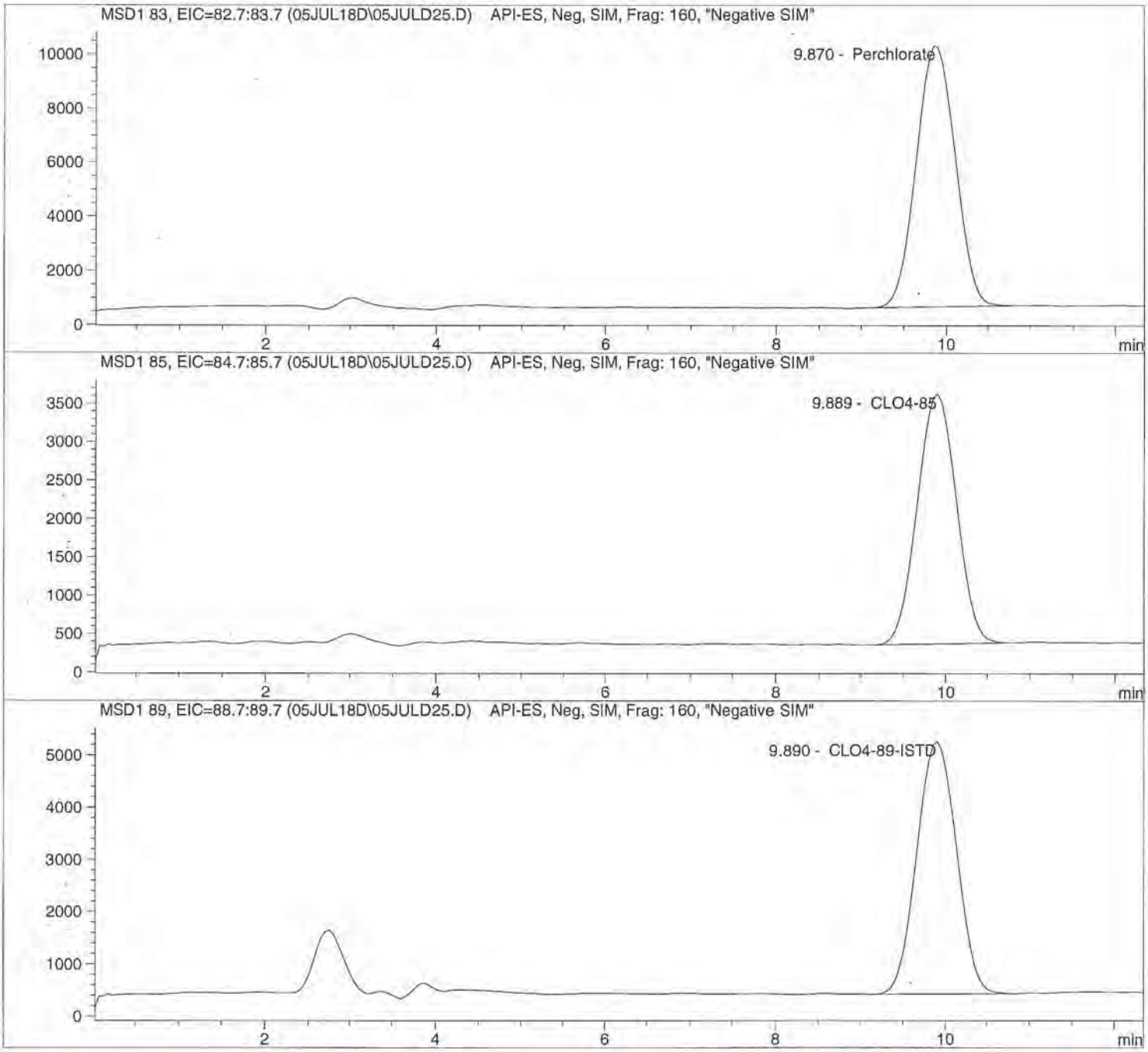
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD25.D Sample Name: 1817365001 1K

Injection Date:	7/05/2018 14:41:10	Seq Line:	25
Sample Name:	1817365001 1K	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD25.D Sample Name: 1817365001 1K

Injection Date:	7/05/2018 14:41:10	Seq Line:	25
Sample Name:	1817365001 1K	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.870	PBA	310424.7	9370.5847	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.889	PBA	105051.9	9381.9959	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.890	PBA	158212.7	5000.0000	CLO4-89-ISTD

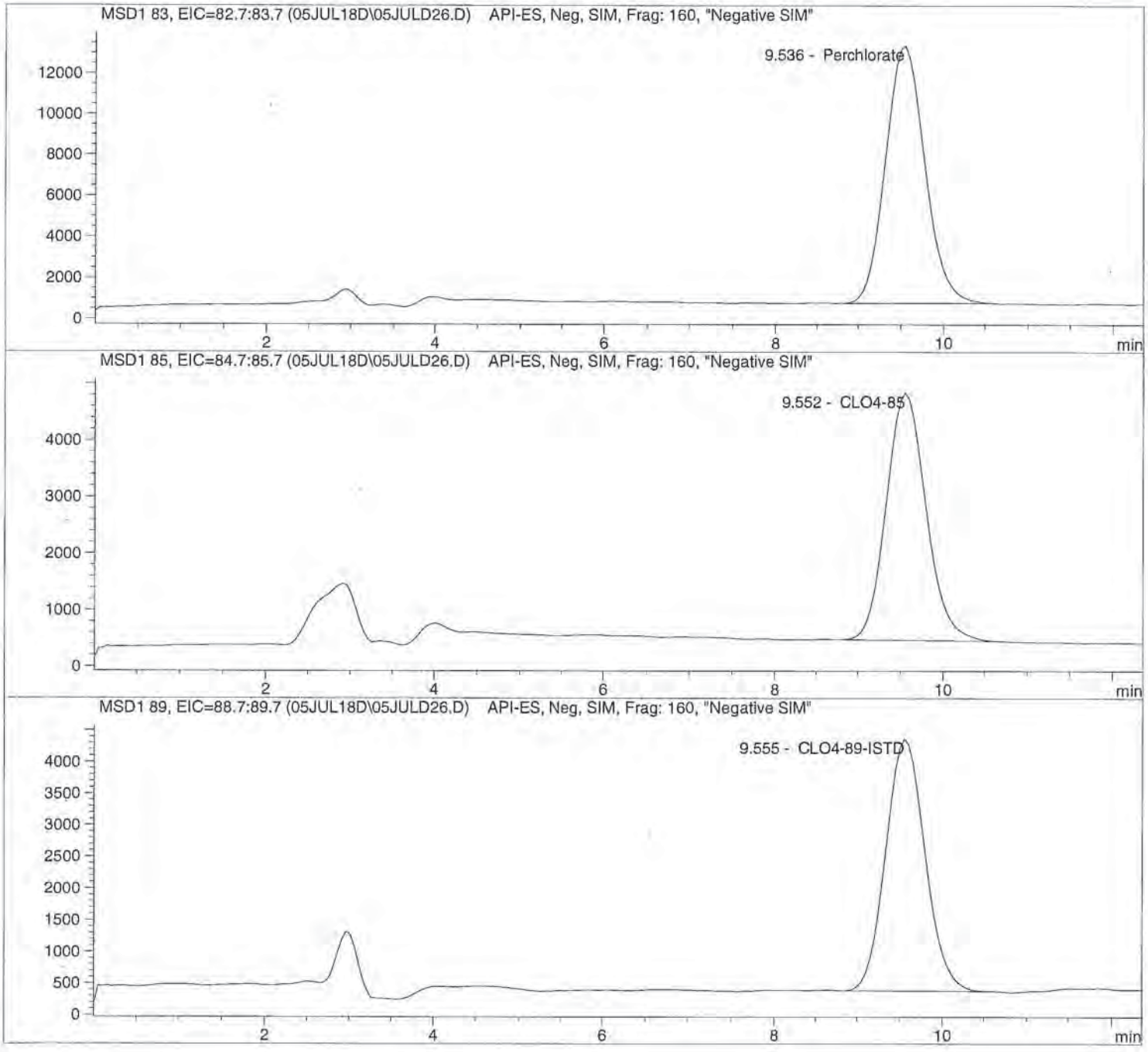
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD26.D Sample Name: 1817368001

Injection Date:	7/05/2018 14:55:26	Seq Line:	26
Sample Name:	1817368001	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD26.D Sample Name: 1817368001

Injection Date:	7/05/2018 14:55:26	Seq Line:	26
Sample Name:	1817368001	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.536	BBA	399056.4	14.7574	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.552	BBA	141032.9	15.4939	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.555	PBA	126901.1	5.0000	CLO4-89-ISTD

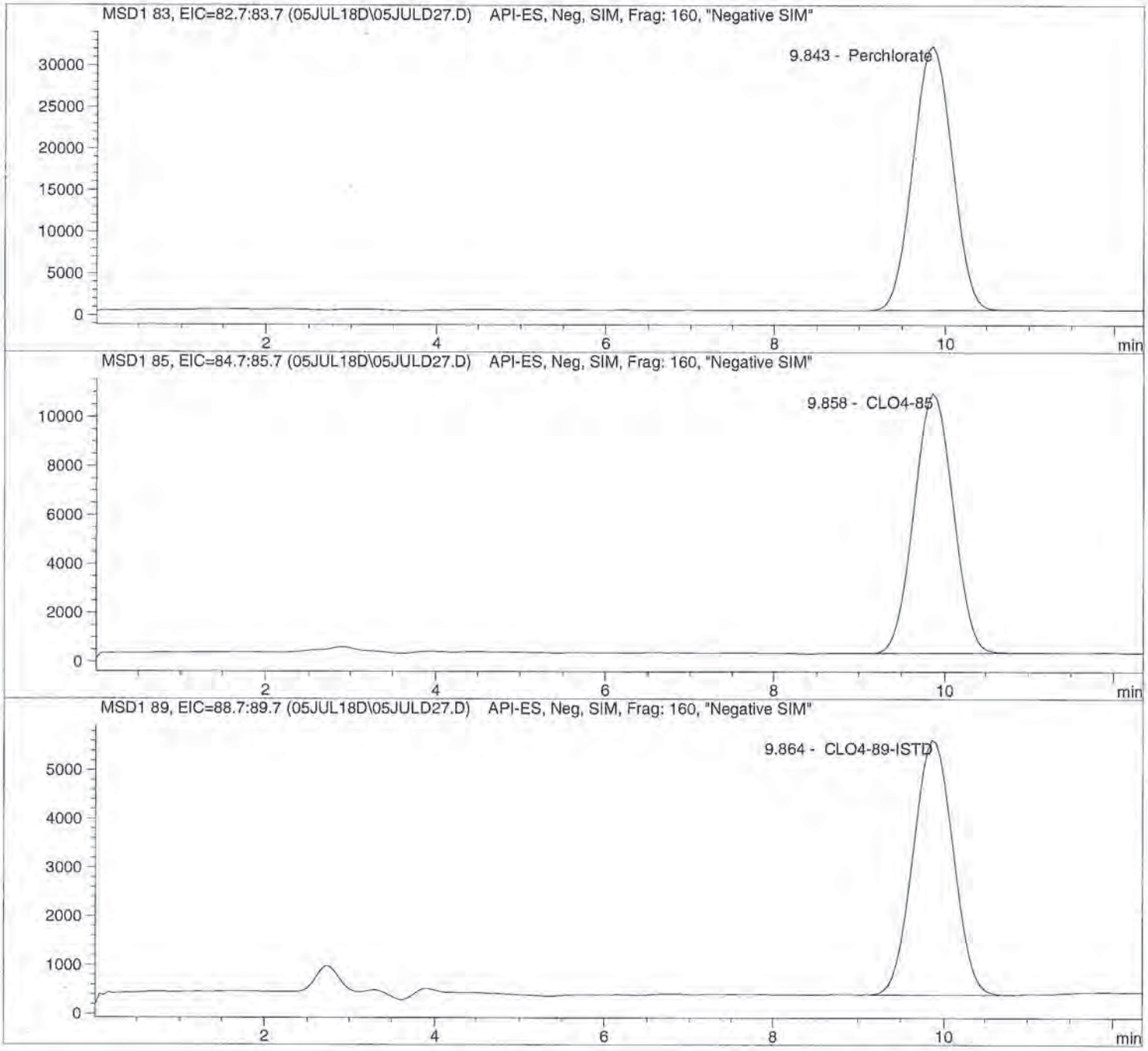
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD27.D Sample Name: 608591 CCV@25

Injection Date:	7/05/2018 15:09:43	Seq Line:	27
Sample Name:	608591 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD27.D Sample Name: 608591 CCV@25

Injection Date:	7/05/2018 15:09:43	Seq Line:	27
Sample Name:	608591 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.843	PBA	1014986.2	26.7469	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.858	PBA	339468.2	26.7756	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.864	BBA	171089.6	5.0000	CLO4-89-ISTD

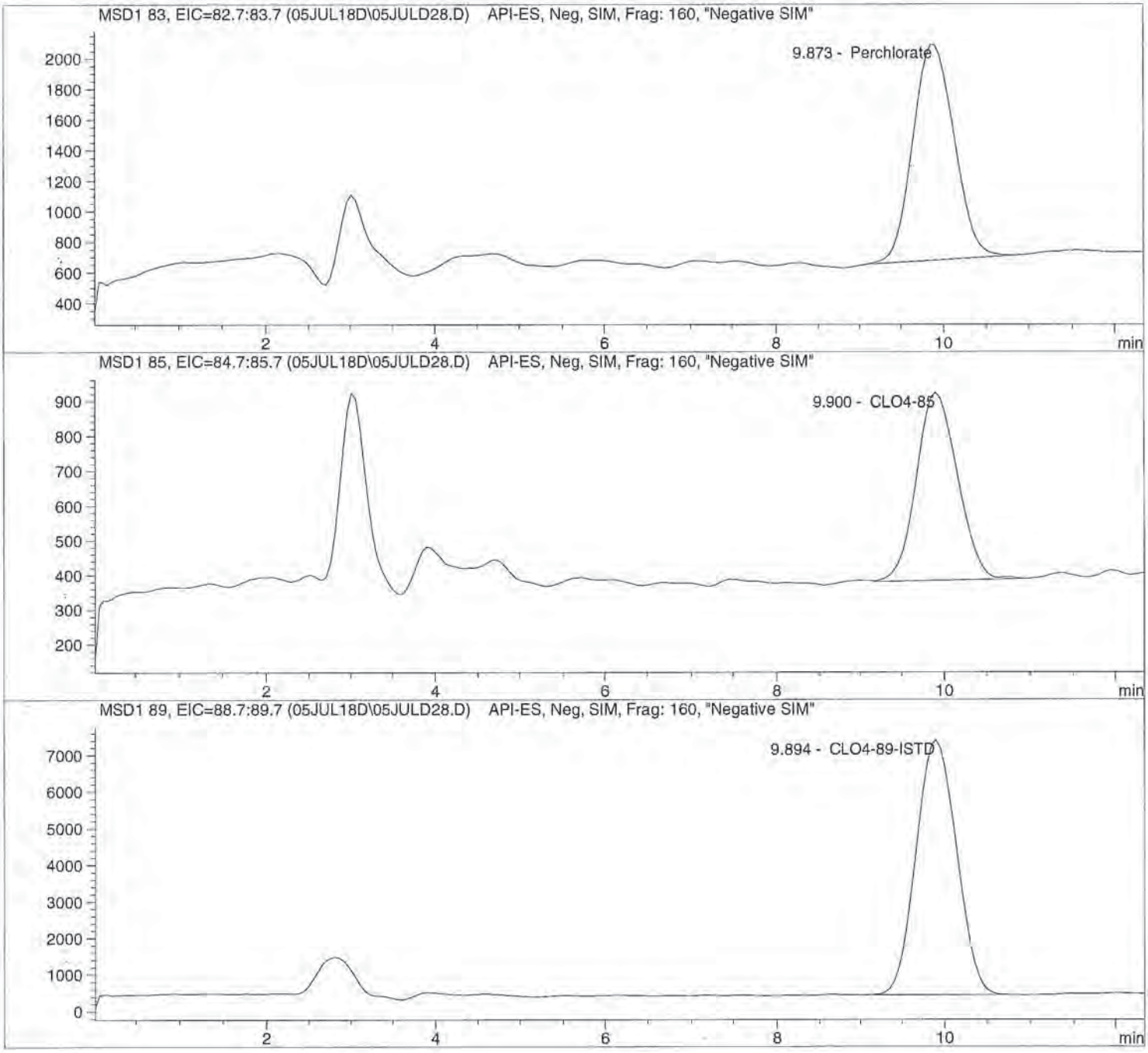
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD28.D Sample Name: 608592 LODV@1.

Injection Date:	7/05/2018 15:23:57	Seq Line:	28
Sample Name:	608592 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD28.D Sample Name: 608592 LODV@1

Injection Date:	7/05/2018 15:23:57	Seq Line:	28
Sample Name:	608592 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.873	BBA	47563.1	0.9882	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.900	BBA	18043.7	0.9919	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.894	BBA	228367.0	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-DPR.M

Calibration Table

Perchlorate

Calib. Data Modified : 6/18/2018 11:33:52 AM

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
9.970	1	1	1.00000	5.39328e4	1.85416e-5	1		Perchlorate
		2	2.00000	7.74447e4	2.58249e-5			
		3	5.00000	1.73718e5	2.87823e-5			
		4	10.00000	3.76746e5	2.65431e-5			
		5	25.00000	9.93283e5	2.51691e-5			
		6	50.00000	1.86489e6	2.68113e-5			
		7	75.00000	2.98097e6	2.51596e-5			
9.988	3	1	5.00000	2.52736e5	1.97835e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.82947e5	2.73304e-5			
		3	5.00000	1.74071e5	2.87238e-5			
		4	5.00000	1.82351e5	2.74196e-5			
		5	5.00000	1.76434e5	2.83393e-5			
		6	5.00000	1.57107e5	3.18255e-5			
		7	5.00000	1.54056e5	3.24558e-5			
9.988	2	1	1.00000	1.91282e4	5.22790e-5	1		CLO4-85
		2	2.00000	2.81496e4	7.10489e-5			
		3	5.00000	6.23358e4	8.02108e-5			
		4	10.00000	1.28536e5	7.77995e-5			
		5	25.00000	3.30100e5	7.57346e-5			
		6	50.00000	6.13931e5	8.14424e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
	7	75.00000	9.91567e5	7.56379e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 7.880 min To 11.880 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 7.881 min To 11.866 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

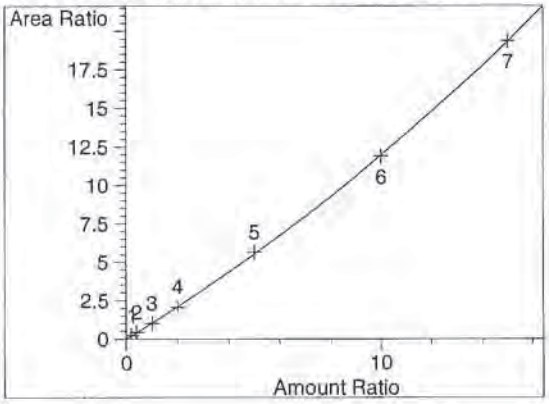
Compound: CLO4-85
- Time Window : From 7.882 min To 11.882 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Peak Sum Table

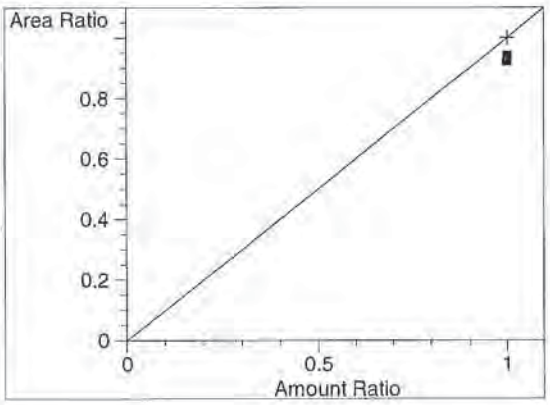
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

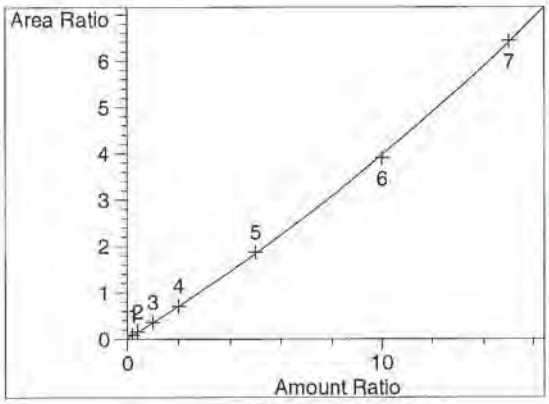
Calibration Curves



Perchlorate at exp. RT: 9.970
MSD1 83, EIC=82.7:83.7
Correlation: 0.99994
Residual Std. Dev.: 0.06841
Formula: $y = ax^2 + bx + c$
a: 1.87050e-2
b: 1.00736
c: 8.45547e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 9.988
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1



CLO4-85 at exp. RT: 9.988
MSD1 85, EIC=84.7:85.7
Correlation: 0.99991
Residual Std. Dev.: 0.03544
Formula: $y = ax^2 + bx + c$
a: 5.98841e-3
b: 3.36190e-1
c: 1.20802e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.S

Sequence Table:

Method and Injection Info Part:

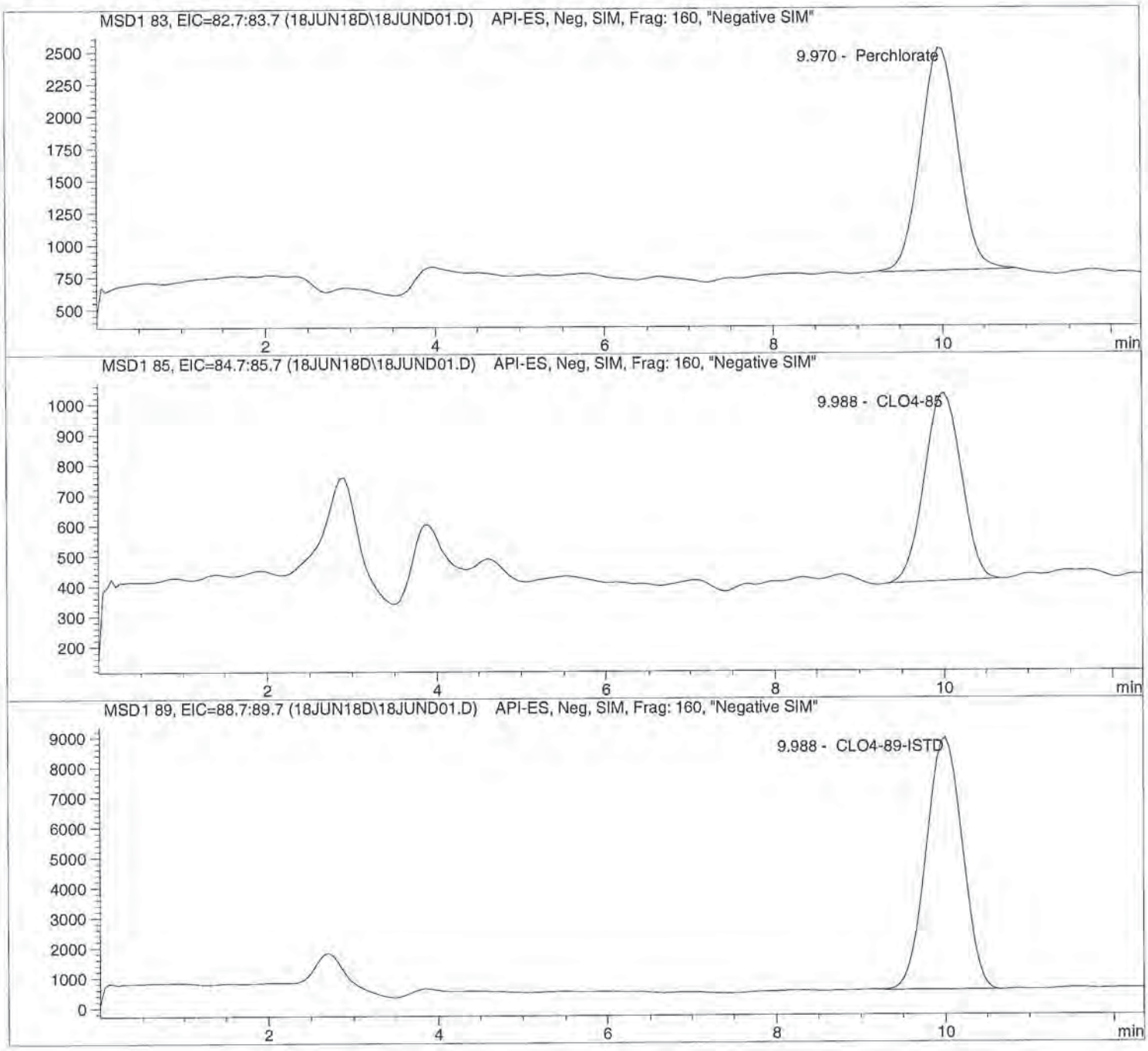
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605571 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605572 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605573 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605574 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605575 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815995001	CLO4-DOD	1	Sample		
15	Vial 85	1815995002	CLO4-DOD	1	Sample		
16	Vial 86	1815995003	CLO4-DOD	1	Sample		
17	Vial 87	1815995004 10X	CLO4-DOD	1	Sample		
18	Vial 88	1815995005 10X	CLO4-DOD	1	Sample		
19	Vial 89	1815995006	CLO4-DOD	1	Sample		
20	Vial 90	1815995007 100	CLO4-DOD	1	Sample		
21	Vial 91	1815995008	CLO4-DOD	1	Sample		
22	Vial 61	1816211001	CLO4-DOD	1	Sample		
23	Vial 62	1816211002 10X	CLO4-DOD	1	Sample		
24	Vial 75	605576 CCV@25	CLO4-DOD	1	Ctrl Samp		
25	Vial 71	605577 LODV@1.	CLO4-DOD	1	Ctrl Samp		
26	Vial 63	1816211003 10X	CLO4-DOD	1	Sample		
27	Vial 64	1816211004	CLO4-DOD	1	Sample		
28	Vial 65	1816211005 10X	CLO4-DOD	1	Sample		
29	Vial 66	1816211006 MS	CLO4-DOD	1	Sample		
30	Vial 67	1816211007 MSD	CLO4-DOD	1	Sample		
31	Vial 68	1816211008	CLO4-DOD	1	Sample		
32	Vial 69	1816211009 10X	CLO4-DOD	1	Sample		
33	Vial 70	1816211010	CLO4-DOD	1	Sample		
34	Vial 92	1815995007 1K	CLO4-DOD	1	Sample		
35	Vial 75	605578 CCV@25	CLO4-DOD	1	Ctrl Samp		
36	Vial 71	605579 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.970	BBA	53932.8	1.0134	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	PBA	19128.2	0.9428	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	BBA	252736.1	5.0000	CLO4-89-ISTD

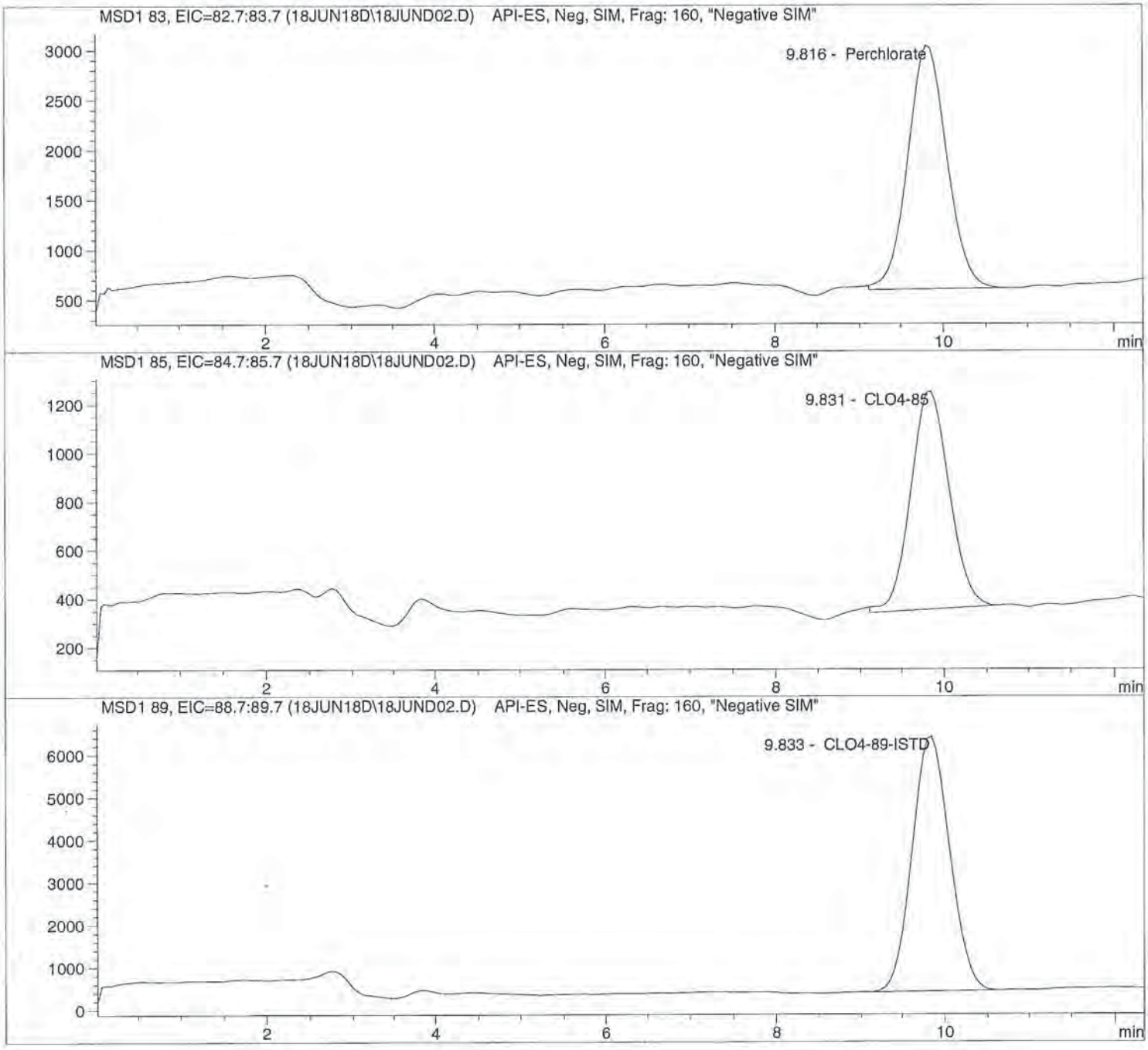
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.816	BBA	77444.7	2.0436	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.831	BBA	28149.6	2.0931	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.833	BBA	182946.7	5.0000	CLO4-89-ISTD

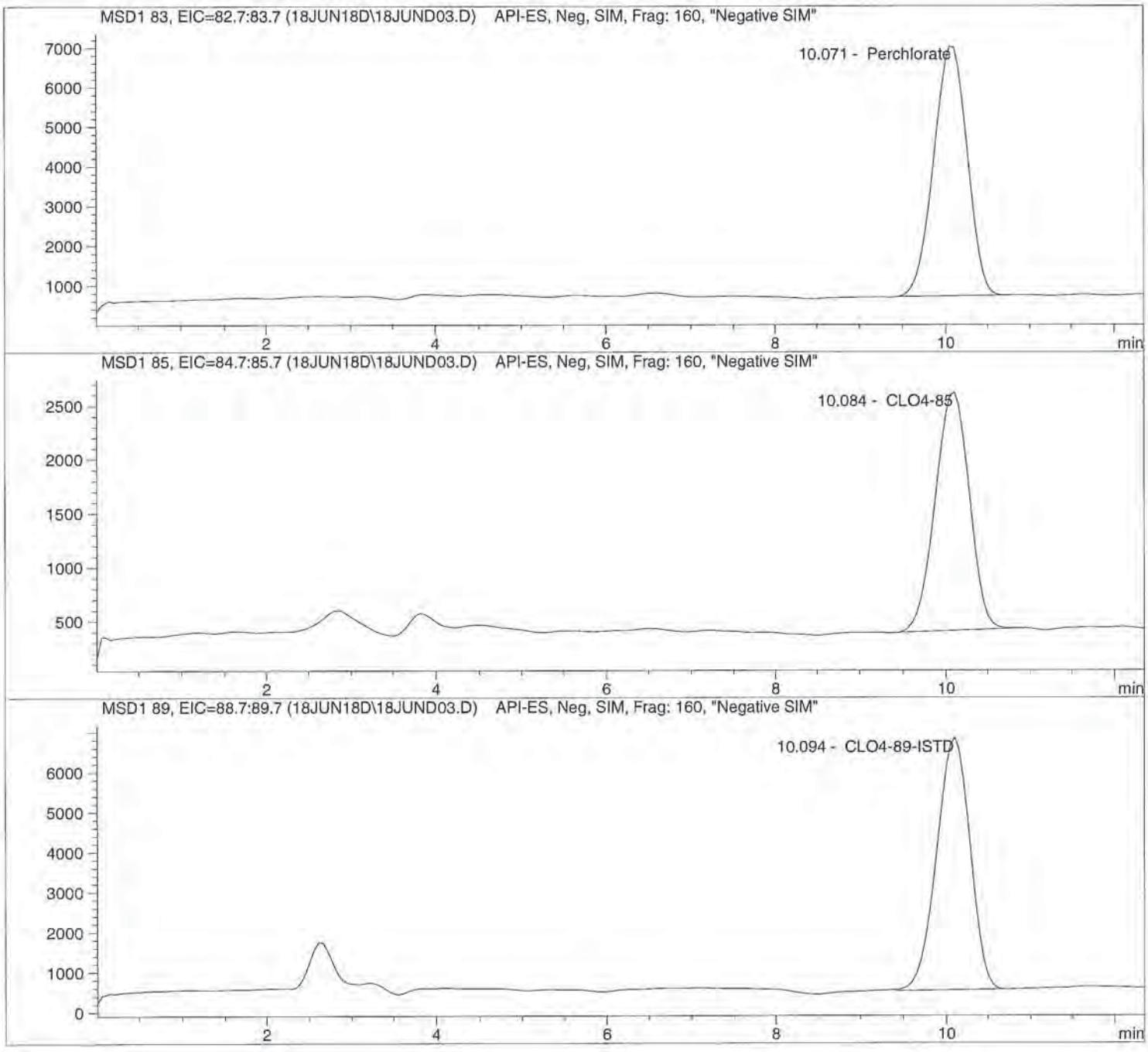
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.071	PBA	173717.8	4.8249	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.084	PBA	62335.8	5.0552	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.094	BBA	174071.5	5.0000	CLO4-89-ISTD

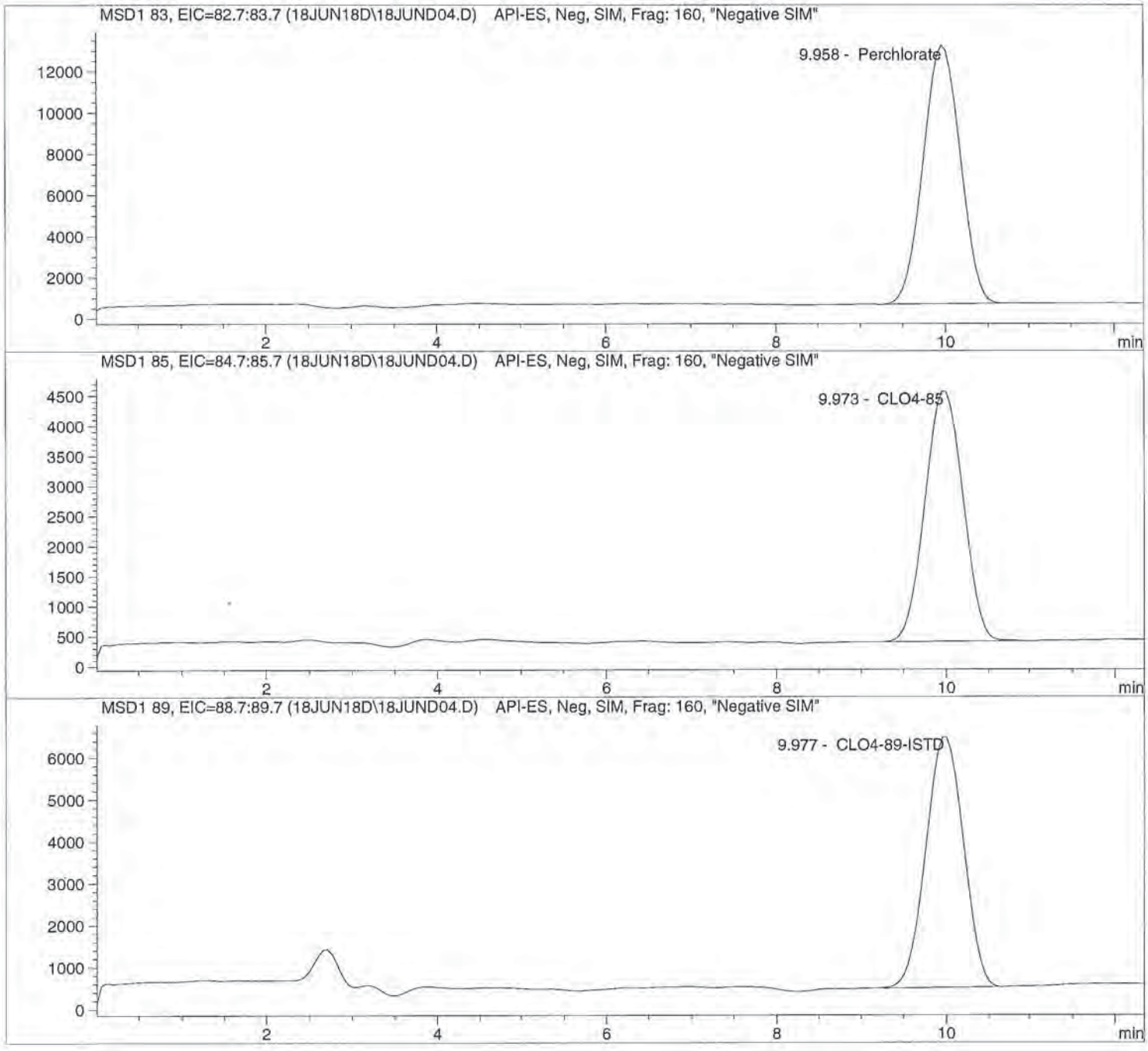
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.958	PBA	376746.4	9.8523	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.973	PBA	128535.5	9.9509	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.977	BBA	182351.5	5.0000	CLO4-89-ISTD

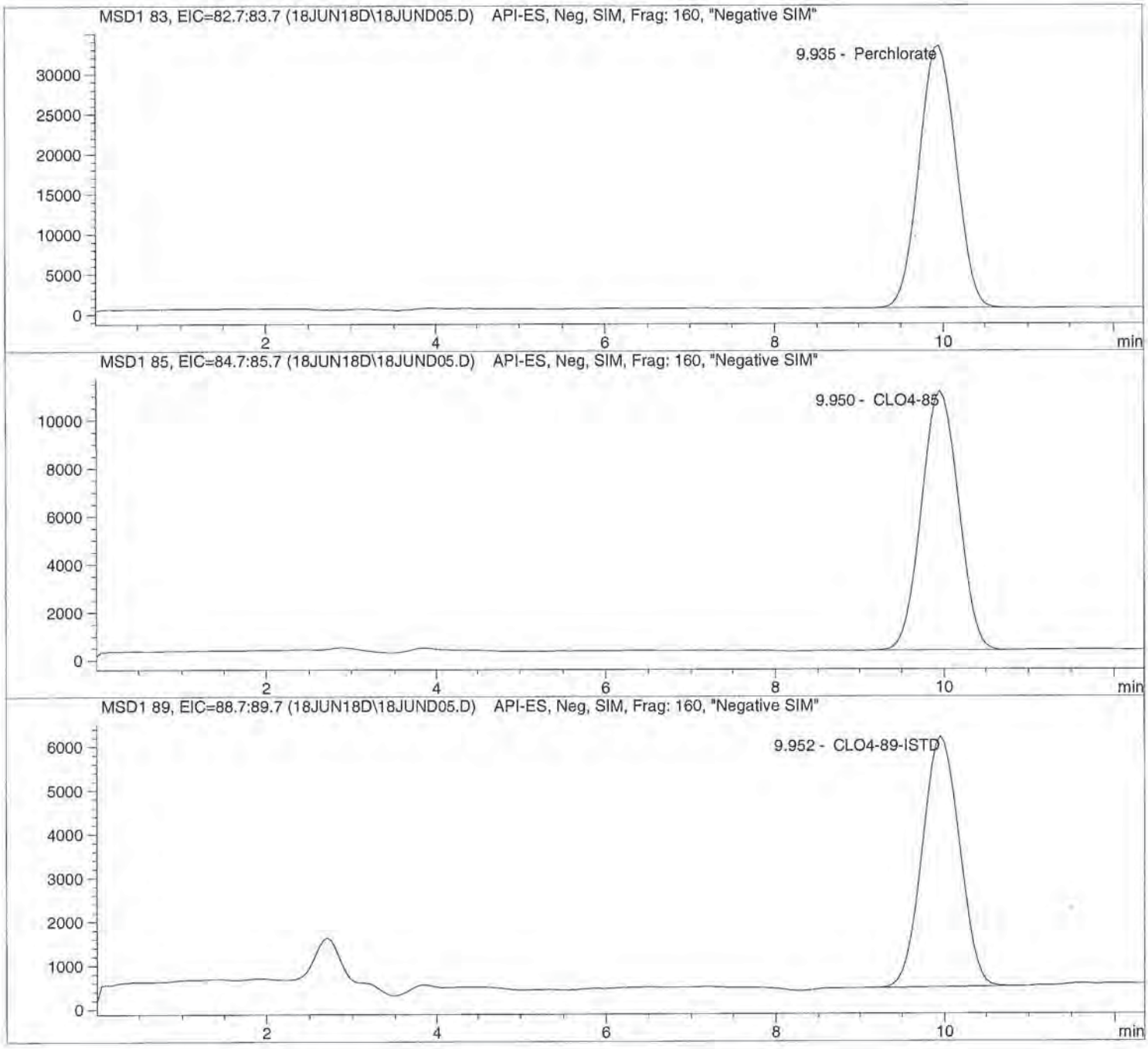
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.935	BBA	993282.6	25.4885	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.950	BBA	330100.2	25.3558	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.952	BBA	176433.5	5.0000	CLO4-89-ISTD

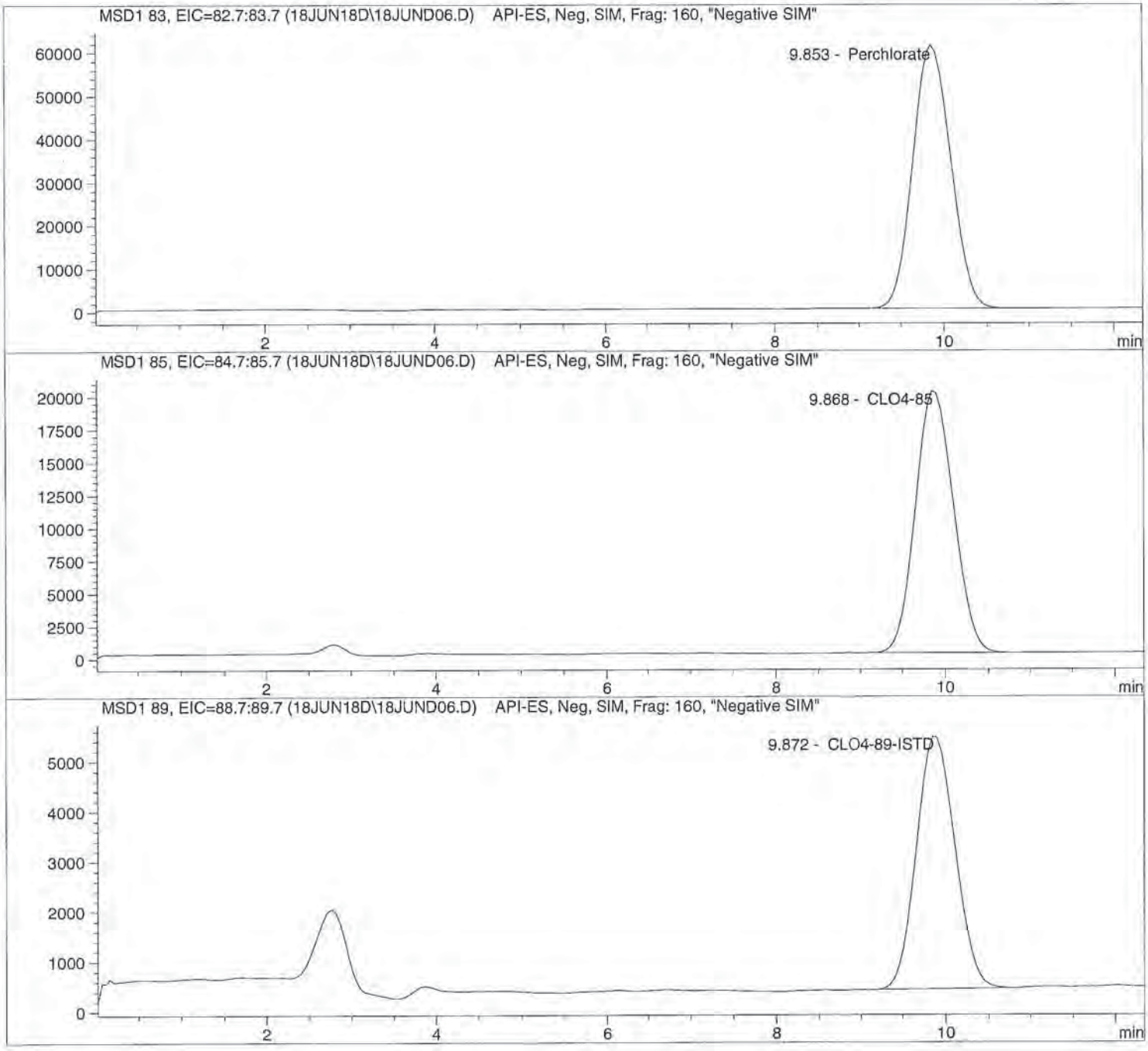
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.853	BBA	1864888.3	49.7015	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.868	BBA	613930.9	49.2848	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.872	PBA	157106.9	5.0000	CLO4-89-ISTD

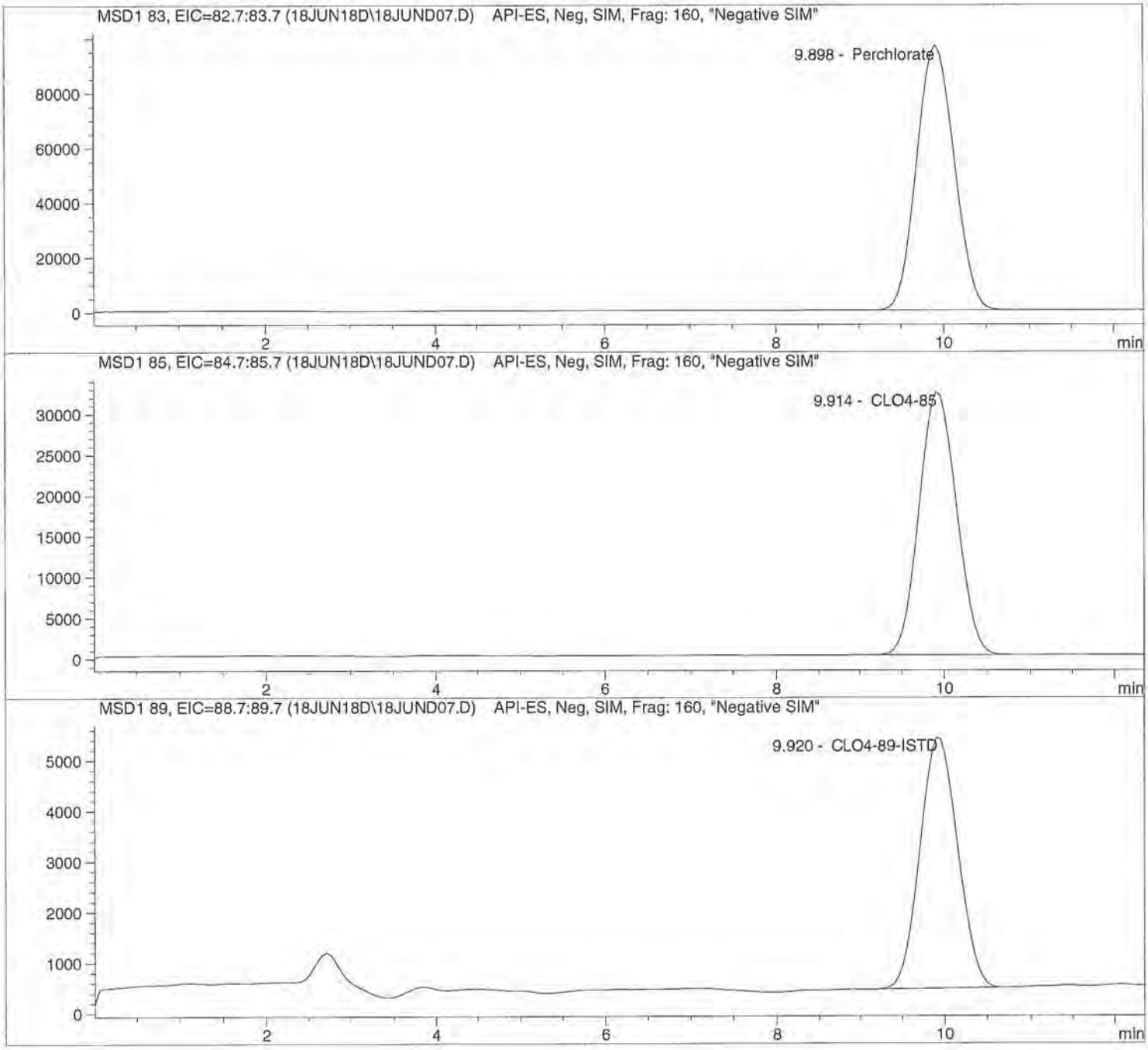
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.898	PBA	2980974.0	75.0714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.914	BBA	991566.9	75.3302	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.920	PBA	154055.8	5.0000	CLO4-89-ISTD

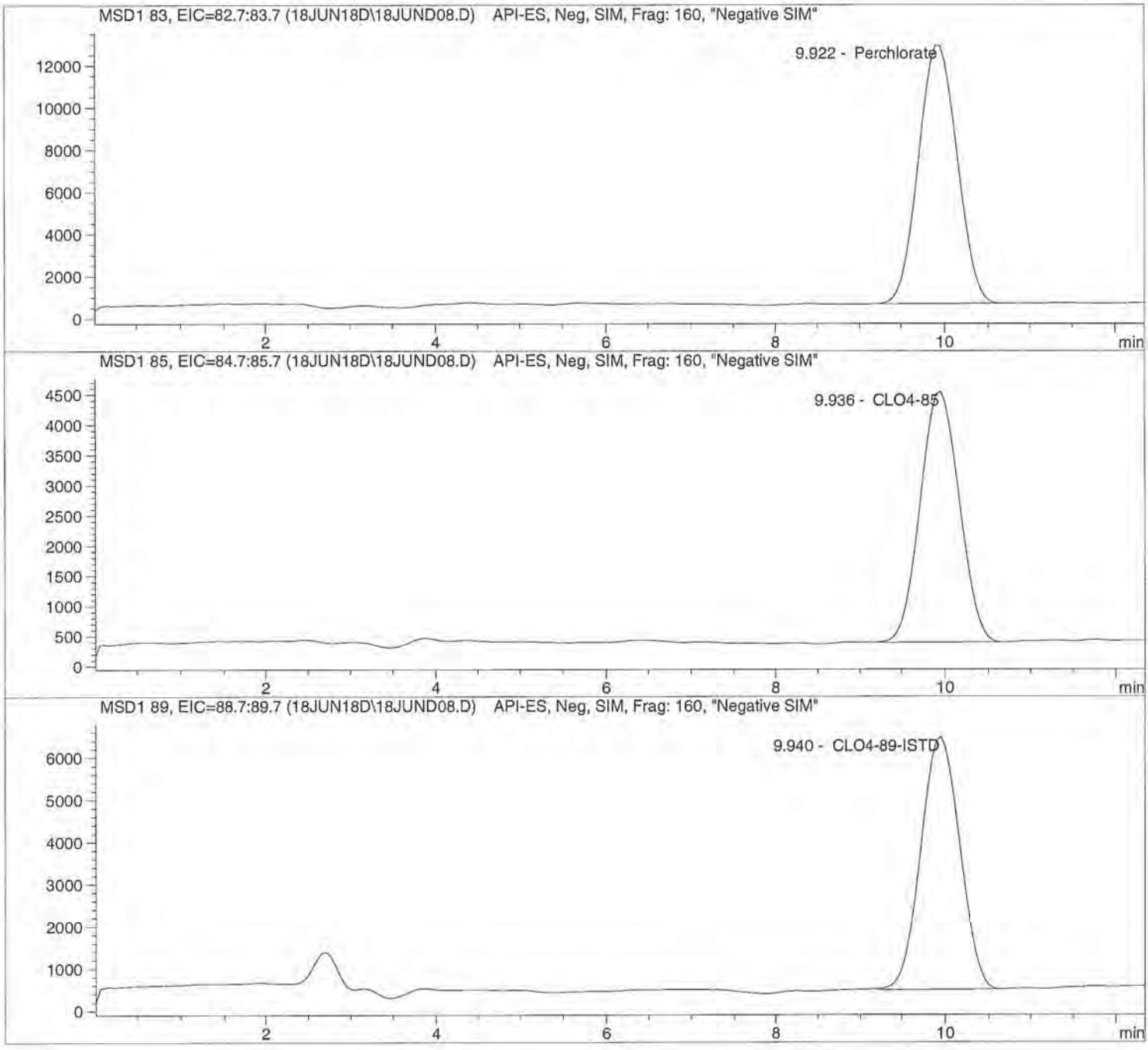
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.922	BBA	376863.7	9.6854	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.936	BBA	129075.8	9.8174	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	BBA	185649.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

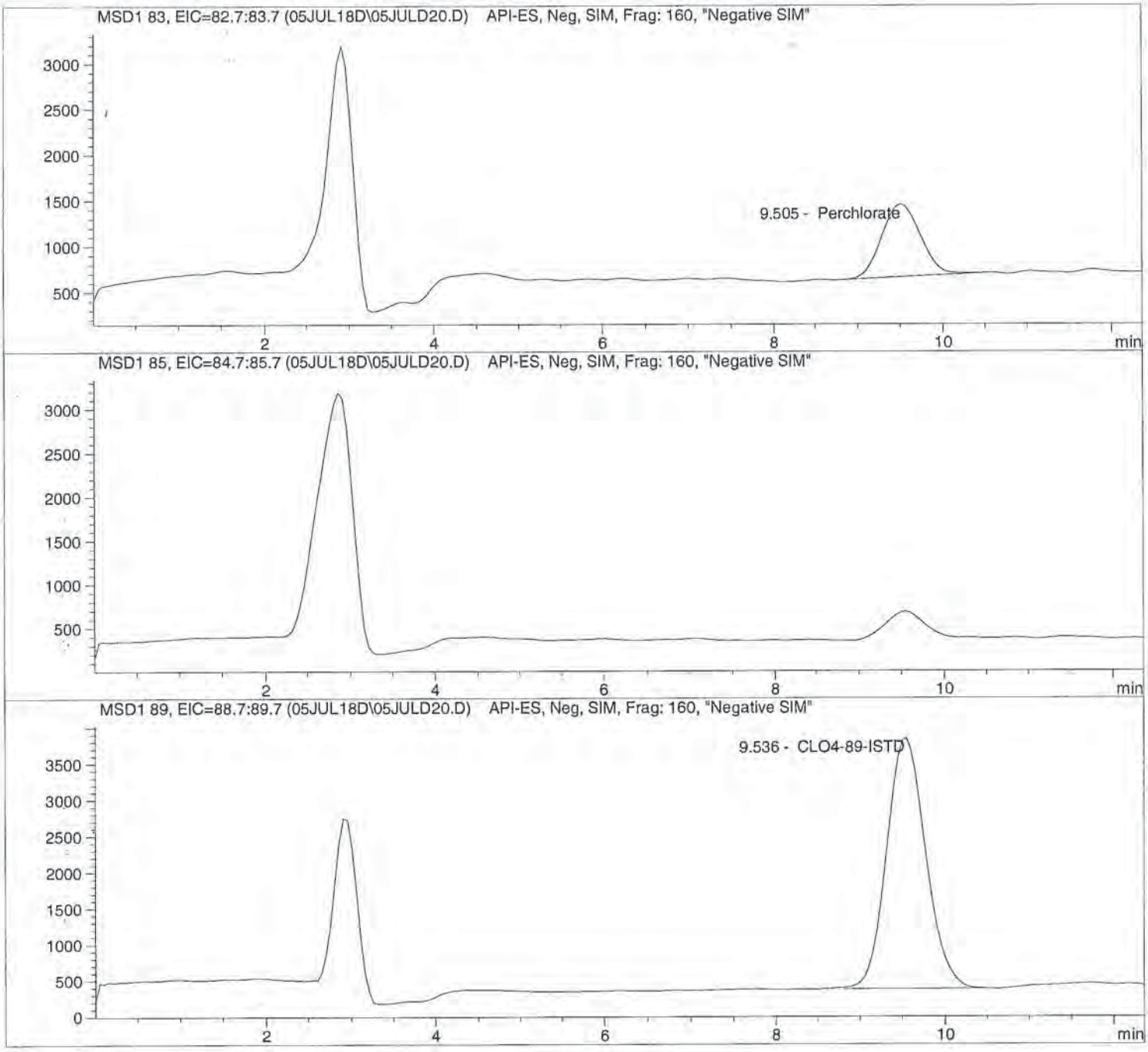
Unmodified

Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD20.D Sample Name: 1817361004

Injection Date:	7/05/2018 13:29:43	Seq Line:	20
Sample Name:	1817361004	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\05JUL18D\05JULD20.D Sample Name: 1817361004

Injection Date:	7/05/2018 13:29:43	Seq Line:	20
Sample Name:	1817361004	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.505	PBA	24923.0	1.0746	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
9.536	BBA	110366.5	5.0000	CLO4-89-ISTD

*** End of Report ***

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

July 11, 2018

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

Work Order: **HS18061036**

Laboratory Results for: **LHAAP/GWTP Quarterly Influent**

Dear Marcia,

ALS Environmental received 2 sample(s) on Jun 21, 2018 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: RJ.MODASHIA
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Work Order: HS18061036

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061036-01	LH18/24_SP140_062018	Water		20-Jun-2018 14:00	21-Jun-2018 08:45	☐
HS18061036-02	Trip Blank	Water	ALS-051618-97	20-Jun-2018 00:00	21-Jun-2018 08:45	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Work Order:

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 Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129659

Sample ID: LH18/24_SP140_062018 (HS18061036-01)

• The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: LCSD-129659

• LCS/LCSD RPD was above the control limits for surrogate 2-Fluorobiphenyl

GCMS Volatiles by Method SW8260

Batch ID: R318780

Sample ID: CCV

• Naphthalene exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: VLCSW-180627

• 1,1,2,2,-Tetrachloroethenane and Naphthalene exceeded QC limits for LCS.

Batch ID: R318858

Sample ID: VSTD050

• Naphthalene exceeded %D limits for CCV. Samples are ND for this compound.

Metals by Method SW7470

Batch ID: 129991

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

Metals by Method SW6020

Batch ID: 129863

Sample ID: HS18061144-03MS

• MS/MSD and DUPs are for an unrelated sample

WetChemistry by Method E1664A

Batch ID: R318885

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

WetChemistry by Method E410.4

Batch ID: R318763

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Work Order:

CASE NARRATIVE

WetChemistry by Method E410.4

Batch ID: R318763

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

WetChemistry by Method SW9056

Batch ID: R318752

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Sample ID: LH18/24_SP140_062018
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061036
Lab ID:HS18061036-01
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	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
1,1,1-Trichloroethane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
1,1,2,2-Tetrachloroethane	10	U	10	10	20	ug/L	20	28-Jun-2018 14:28
1,1,2-Trichloroethane	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
1,1-Dichloroethane	**8.9**	J	**4.0**	**10**	**20**	**ug/L**	20	28-Jun-2018 14:28
1,1-Dichloroethene	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
1,1-Dichloropropene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
1,2,3-Trichlorobenzene	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
1,2,3-Trichloropropane	10	U	10	10	20	ug/L	20	28-Jun-2018 14:28
1,2,4-Trichlorobenzene	10	U	10	10	20	ug/L	20	28-Jun-2018 14:28
1,2,4-Trimethylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
1,2-Dibromo-3-chloropropane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
1,2-Dibromoethane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
1,2-Dichlorobenzene	10	U	10	10	20	ug/L	20	28-Jun-2018 14:28
1,2-Dichloroethane	**56**		**4.0**	**10**	**20**	**ug/L**	20	28-Jun-2018 14:28
1,2-Dichloropropane	10	U	10	10	20	ug/L	20	28-Jun-2018 14:28
1,3,5-Trimethylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
1,3-Dichlorobenzene	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
1,3-Dichloropropane	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
1,4-Dichlorobenzene	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
2,2-Dichloropropane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
2-Butanone	20	U	10	20	40	ug/L	20	28-Jun-2018 14:28
2-Chlorotoluene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
2-Hexanone	20	U	20	20	40	ug/L	20	28-Jun-2018 14:28
4-Chlorotoluene	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
4-Isopropyltoluene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
4-Methyl-2-pentanone	20	U	14	20	40	ug/L	20	28-Jun-2018 14:28
Acetone	20	U	8.0	20	40	ug/L	20	28-Jun-2018 14:28
Benzene	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
Bromobenzene	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
Bromochloromethane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
Bromodichloromethane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
Bromoform	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
Bromomethane	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
Carbon disulfide	20	U	12	20	40	ug/L	20	28-Jun-2018 14:28
Carbon tetrachloride	10	U	10	10	20	ug/L	20	28-Jun-2018 14:28
Chlorobenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Chloroethane	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Sample ID: LH18/24_SP140_062018
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061036
Lab ID:HS18061036-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
Chloromethane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
cis-1,2-Dichloroethene	**3,100**		**4.0**	**10**	**20**	**ug/L**	20	28-Jun-2018 14:28
cis-1,3-Dichloropropene	10	U	2.0	10	20	ug/L	20	28-Jun-2018 14:28
Dibromochloromethane	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Dibromomethane	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
Dichlorodifluoromethane	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Ethylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Hexachlorobutadiene	10	U	20	10	20	ug/L	20	28-Jun-2018 14:28
Isopropylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
m,p-Xylene	20	U	10	20	40	ug/L	20	28-Jun-2018 14:28
Methylene chloride	**28**	J	**8.0**	**20**	**40**	**ug/L**	20	28-Jun-2018 14:28
n-Butylbenzene	10	U	8.0	10	20	ug/L	20	28-Jun-2018 14:28
n-Propylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Naphthalene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
o-Xylene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
sec-Butylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Styrene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
tert-Butylbenzene	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Tetrachloroethene	**51**		**6.0**	**10**	**20**	**ug/L**	20	28-Jun-2018 14:28
Toluene	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
trans-1,2-Dichloroethene	**10**	J	**4.0**	**10**	**20**	**ug/L**	20	28-Jun-2018 14:28
trans-1,3-Dichloropropene	10	U	4.0	10	20	ug/L	20	28-Jun-2018 14:28
Trichloroethene	**6,000**		**20**	**50**	**100**	**ug/L**	100	27-Jun-2018 19:24
Trichlorofluoromethane	10	U	6.0	10	20	ug/L	20	28-Jun-2018 14:28
Vinyl chloride	**33**		**4.0**	**10**	**20**	**ug/L**	20	28-Jun-2018 14:28
Surr: 1,2-Dichloroethane-d4	*91.1*			**0**	*81-118*	*%REC*	*100*	*27-Jun-2018 19:24*
Surr: 1,2-Dichloroethane-d4	*95.1*			**0**	*81-118*	*%REC*	*20*	*28-Jun-2018 14:28*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*85-114*	*%REC*	*100*	*27-Jun-2018 19:24*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*20*	*28-Jun-2018 14:28*
Surr: Dibromofluoromethane	*90.6*			**0**	*80-119*	*%REC*	*100*	*27-Jun-2018 19:24*
Surr: Dibromofluoromethane	*92.4*			**0**	*80-119*	*%REC*	*20*	*28-Jun-2018 14:28*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*27-Jun-2018 19:24*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*20*	*28-Jun-2018 14:28*

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Sample ID: LH18/24_SP140_062018
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061036
Lab ID:HS18061036-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**13**		**1.0**	**1.0**	**1.0**	**ug/L**	100	25-Jun-2018 18:36
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*25-Jun-2018 18:36*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*25-Jun-2018 18:36*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*25-Jun-2018 18:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.0160**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:15
Antimony	**0.000585**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:15
Arsenic	**0.000735**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:15
Barium	**0.440**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:15
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:15
Cadmium	**0.00103**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:15
Calcium	**33.4**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:15
Chromium	**0.00147**	J	**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:15
Cobalt	**0.0128**		**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:15
Iron	**0.283**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:15
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 15:45
Magnesium	**25.0**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:15
Manganese	**0.637**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:15
Nickel	**0.0296**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:15
Potassium	**1.63**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:15
Selenium	**0.00199**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	28-Jun-2018 14:15
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:15
Sodium	**177**		**0.140**	**1.00**	**2.00**	**mg/L**	10	28-Jun-2018 15:37
Thallium	**0.000338**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:15
Vanadium	0.00100	U	0.000600	0.00100	0.00500	mg/L	1	28-Jun-2018 14:15
Zinc	**0.651**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:15
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 29-Jun-2018		Analyst: JCJ
Mercury	**0.0000640**	J	**0.0000300**	**0.0000500**	**0.000200**	**mg/L**	1	30-Jun-2018 14:18
OIL & GREASE (HEM) BY E1664A		**Method:E1664A**						Analyst: KAH
Oil and Grease	**0.625**	J	**0.610**	**1.20**	**2.00**	**mg/L**	1	28-Jun-2018 14:15
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**						Analyst: AJH
Chemical Oxygen Demand	**12.0**	J	**5.00**	**5.00**	**15.0**	**mg/L**	1	27-Jun-2018 12:30
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**374**		**2.00**	**5.00**	**5.00**	**mg/L**	10	25-Jun-2018 21:15
Sulfate	**50.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	25-Jun-2018 21:01
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Sample ID: Trip Blank
Collection Date: 20-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18061036
Lab ID:HS18061036-02
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	27-Jun-2018 16:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 16:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 16:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 16:06
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 16:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 16:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
Sample ID: Trip Blank
Collection Date: 20-Jun-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18061036
Lab ID:HS18061036-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 16:06
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 16:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:06
Surr: 1,2-Dichloroethane-d4	*92.4*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 16:06*
Surr: 4-Bromofluorobenzene	*99.6*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 16:06*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 16:06*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 16:06*

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

ALS Group Houston, Corp

Date: 11-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

Batch ID: 129659 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061036-01	1	1000	1 (mL)	0.001

Batch ID: 129863 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061036-01	1	10	10 (mL)	1

Batch ID: 129991 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061036-01	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129659	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00		21 Jun 2018 10:00	25 Jun 2018 18:36	100
Batch ID 129863	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00		27 Jun 2018 12:52	28 Jun 2018 15:45	1
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00		27 Jun 2018 12:52	28 Jun 2018 15:37	10
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00		27 Jun 2018 12:52	28 Jun 2018 14:15	1
Batch ID 129991	**Test Name :** MERCURY BY SW7470A			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00		29 Jun 2018 19:17	30 Jun 2018 14:18	1
Batch ID R318752	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			25 Jun 2018 21:15	10
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			25 Jun 2018 21:01	1
Batch ID R318763	**Test Name :** CHEMICAL OXYGEN DEMAND BY E410.4			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			27 Jun 2018 12:30	1
Batch ID R318780	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			27 Jun 2018 19:24	100
HS18061036-02	Trip Blank	20 Jun 2018 00:00			27 Jun 2018 16:06	1
Batch ID R318858	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			28 Jun 2018 14:28	20
Batch ID R318885	**Test Name :** OIL & GREASE (HEM) BY E1664A			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			28 Jun 2018 14:15	1
Batch ID R319293	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18061036-01	LH18/24_SP140_062018	20 Jun 2018 14:00			06 Jul 2018 16:39	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 14:11**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629417** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004584	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Iron	0.100	0.200								U
Magnesium	0.01223	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.04625	0.200								J
Silver	0.00100	0.00200								U
Sodium	0.09338	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

MBLK Sample ID: **MBLK-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 15:35**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629703** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.00100	0.00200								U
Selenium	0.00200	0.00200								U

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 14:13**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629418** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09554	0.0100	0.1	0	95.5	80 - 120				
Antimony	0.04608	0.00200	0.05	0	92.2	80 - 120				
Arsenic	0.04772	0.00200	0.05	0	95.4	80 - 120				
Barium	0.04474	0.00400	0.05	0	89.5	80 - 120				
Beryllium	0.04665	0.00200	0.05	0	93.3	80 - 120				
Cadmium	0.04513	0.00200	0.05	0	90.3	80 - 120				
Calcium	4.46	0.500	5	0	89.2	80 - 120				
Chromium	0.04598	0.00400	0.05	0	92.0	80 - 120				
Cobalt	0.0477	0.00500	0.05	0	95.4	80 - 120				
Iron	4.547	0.200	5	0	90.9	80 - 120				
Magnesium	4.62	0.200	5	0	92.4	80 - 120				
Manganese	0.04681	0.00500	0.05	0	93.6	80 - 120				
Nickel	0.04683	0.00200	0.05	0	93.7	80 - 120				
Potassium	4.675	0.200	5	0	93.5	80 - 120				
Selenium	0.05137	0.00200	0.05	0	103	80 - 120				
Silver	0.04446	0.00200	0.05	0	88.9	80 - 120				
Sodium	4.819	0.200	5	0	96.4	80 - 120				
Thallium	0.04118	0.00200	0.05	0	82.4	80 - 120				
Vanadium	0.04549	0.00500	0.05	0	91.0	80 - 120				
Zinc	0.0471	0.00400	0.05	0	94.2	80 - 120				

LCS Sample ID: **LCS-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 15:31**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629701** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0492	0.00200	0.05	0	98.4	80 - 120				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:25**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629424** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1159	0.0100	0.1	0.01811	97.8	80 - 120				
Antimony	0.04647	0.00200	0.05	0.000166	92.6	80 - 120				
Arsenic	0.05012	0.00200	0.05	0.000942	98.4	80 - 120				
Barium	0.9189	0.00400	0.05	0.8762	85.2	80 - 120				O
Beryllium	0.05133	0.00200	0.05	0.000058	103	80 - 120				
Cadmium	0.04673	0.00200	0.05	0.000135	93.2	80 - 120				
Calcium	25.49	0.500	5	21.67	76.4	80 - 120				SO
Chromium	0.0461	0.00400	0.05	0.000398	91.4	80 - 120				
Cobalt	0.04756	0.00500	0.05	0.001732	91.6	80 - 120				
Iron	48.58	0.200	5	43.7	97.6	80 - 120				O
Magnesium	13.7	0.200	5	9.403	85.9	80 - 120				
Manganese	0.7838	0.00500	0.05	0.76	47.6	80 - 120				SO
Nickel	0.04588	0.00200	0.05	0.001762	88.2	80 - 120				
Potassium	7.682	0.200	5	3.253	88.6	80 - 120				
Selenium	0.0512	0.00200	0.05	0.000787	101	80 - 120				
Silver	0.0439	0.00200	0.05	0.000004	87.8	80 - 120				
Sodium	169.5	0.200	5	167.9	31.9	80 - 120				SO
Thallium	0.0407	0.00200	0.05	-0.000001	81.4	80 - 120				
Vanadium	0.04581	0.00500	0.05	-0.000169	92.0	80 - 120				
Zinc	0.05591	0.00400	0.05	0.006966	97.9	80 - 120				

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **28-Jun-2018 15:59**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629715** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04461	0.00200	0.05	0.000218	88.8	80 - 120				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **28-Jun-2018 14:27**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629425** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1158	0.0100	0.1	0.01811	97.6	80 - 120	0.1159	0.167	20	
Antimony	0.04778	0.00200	0.05	0.000166	95.2	80 - 120	0.04647	2.78	20	
Arsenic	0.05144	0.00200	0.05	0.000942	101	80 - 120	0.05012	2.61	20	
Barium	0.9105	0.00400	0.05	0.8762	68.5	80 - 120	0.9189	0.915	20	SO
Beryllium	0.05152	0.00200	0.05	0.000058	103	80 - 120	0.05133	0.358	20	
Cadmium	0.04696	0.00200	0.05	0.000135	93.7	80 - 120	0.04673	0.491	20	
Calcium	26.19	0.500	5	21.67	90.5	80 - 120	25.49	2.73	20	O
Chromium	0.04584	0.00400	0.05	0.000398	90.9	80 - 120	0.0461	0.572	20	
Cobalt	0.0495	0.00500	0.05	0.001732	95.5	80 - 120	0.04756	4.01	20	
Iron	49.99	0.200	5	43.7	126	80 - 120	48.58	2.84	20	SO
Magnesium	14.26	0.200	5	9.403	97.1	80 - 120	13.7	4	20	
Manganese	0.8212	0.00500	0.05	0.76	122	80 - 120	0.7838	4.65	20	SO
Nickel	0.04932	0.00200	0.05	0.001762	95.1	80 - 120	0.04588	7.23	20	
Potassium	7.833	0.200	5	3.253	91.6	80 - 120	7.682	1.94	20	
Selenium	0.05266	0.00200	0.05	0.000787	104	80 - 120	0.0512	2.82	20	
Silver	0.04311	0.00200	0.05	0.000004	86.2	80 - 120	0.0439	1.8	20	
Sodium	178.1	0.200	5	167.9	204	80 - 120	169.5	4.96	20	SO
Thallium	0.04314	0.00200	0.05	-0.000001	86.3	80 - 120	0.0407	5.82	20	
Vanadium	0.04641	0.00500	0.05	-0.000169	93.2	80 - 120	0.04581	1.29	20	
Zinc	0.05601	0.00400	0.05	0.006966	98.1	80 - 120	0.05591	0.175	20	

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **28-Jun-2018 16:01**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629716** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0461	0.00200	0.05	0.000218	91.8	80 - 120	0.04461	3.28	20	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18061144-03PDS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:29**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629426** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Aluminum	0.1056	0.0100	0.1	0.01811	87.5	75 - 125			
Antimony	0.08158	0.00200	0.1	0.000166	81.4	75 - 125			
Arsenic	0.09628	0.00200	0.1	0.000942	95.3	75 - 125			
Barium	0.9026	0.00400	0.1	0.8762	26.3	75 - 125			SO
Beryllium	0.1004	0.00200	0.1	0.000058	100	75 - 125			
Cadmium	0.09053	0.00200	0.1	0.000135	90.4	75 - 125			
Calcium	28.58	0.500	10	21.67	69.1	75 - 125			S
Chromium	0.08566	0.00400	0.1	0.000398	85.3	75 - 125			
Cobalt	0.0919	0.00500	0.1	0.001732	90.2	75 - 125			
Iron	49.07	0.200	10	43.7	53.7	75 - 125			SO
Magnesium	17.44	0.200	10	9.403	80.3	75 - 125			
Manganese	0.7728	0.00500	0.1	0.76	12.8	75 - 125			SO
Nickel	0.09047	0.00200	0.1	0.001762	88.7	75 - 125			
Potassium	11.81	0.200	10	3.253	85.5	75 - 125			
Selenium	0.1001	0.00200	0.1	0.000787	99.4	75 - 125			
Silver	0.08301	0.00200	0.1	0.000004	83.0	75 - 125			
Sodium	165.4	0.200	10	167.9	-24.2	75 - 125			SO
Thallium	0.08666	0.00200	0.1	-0.000001	86.7	75 - 125			
Vanadium	0.08879	0.00500	0.1	-0.000169	89.0	75 - 125			
Zinc	0.1003	0.00400	0.1	0.006966	93.3	75 - 125			

PDS Sample ID: **HS18061144-03PDS** Units: **mg/L** Analysis Date: **28-Jun-2018 16:03**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629717** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Lead	0.08799	0.00200	0.1	0.000218	87.8	75 - 125			

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18061144-03SD** Units: **mg/L** Analysis Date: **28-Jun-2018 14:23**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629423** PrepDate: **27-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02585	0.0500					0.01811	0	10	J
Antimony	0.00500	0.0100					0.000166	0	10	U
Arsenic	0.00500	0.0100					0.000942	0	10	U
Barium	0.8204	0.0200					0.8762	6.37	10	
Beryllium	0.00500	0.0100					0.000058	0	10	U
Cadmium	0.00500	0.0100					0.000135	0	10	U
Calcium	21.85	2.50					21.67	0.846	10	
Chromium	0.00500	0.0200					0.000398	0	10	U
Cobalt	0.001628	0.0250					0.001732	0	10	J
Iron	45.43	1.00					43.7	3.95	10	
Magnesium	9.874	1.00					9.403	5	10	
Manganese	0.7468	0.0250					0.76	1.74	10	
Nickel	0.00500	0.0100					0.001762	0	10	U
Potassium	3.485	1.00					3.253	7.13	10	
Selenium	0.0100	0.0100					0.000787	0	10	U
Silver	0.00500	0.0100					0.000004	0	10	U
Sodium	174.1	1.00					167.9	3.74	10	
Thallium	0.00500	0.0100					-0.000001	0	10	U
Vanadium	0.00500	0.0250					-0.000169	0	10	U
Zinc	0.01108	0.0200					0.006966	0	10	J

SD Sample ID: **HS18061144-03SD** Units: **mg/L** Analysis Date: **28-Jun-2018 15:57**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629714** PrepDate: **27-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Lead	0.00500	0.0100					0.000218	0	10	U

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129991 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129991** Units: **mg/L** Analysis Date: **30-Jun-2018 13:53**
Client ID: Run ID: **HG03_319005** SeqNo: **4632370** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129991** Units: **mg/L** Analysis Date: **30-Jun-2018 13:55**
Client ID: Run ID: **HG03_319005** SeqNo: **4632371** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0047	0.000200	0.005	0	94.0	80 - 120				

MS Sample ID: **HS18060981-08MS** Units: **mg/L** Analysis Date: **30-Jun-2018 14:03**
Client ID: Run ID: **HG03_319005** SeqNo: **4632376** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00464	0.000200	0.005	-0.000051	93.8	75 - 125				

MSD Sample ID: **HS18060981-08MSD** Units: **mg/L** Analysis Date: **30-Jun-2018 14:10**
Client ID: Run ID: **HG03_319005** SeqNo: **4632377** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00473	0.000200	0.005	-0.000051	95.6	75 - 125	0.00464	1.92	20	

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: 129659 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 10:54**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625531** PrepDate: **21-Jun-2018** 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	*0.1011*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06319*	*0*	*0.08*	*0*	*79.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05838*	*0*	*0.08*	*0*	*73.0*	*40 - 140*				

LCS Sample ID: **LCS-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:14**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625532** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07838	0.010	0.08	0	98.0	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08025*	*0*	*0.08*	*0*	*100*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06393*	*0*	*0.08*	*0*	*79.9*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0471*	*0*	*0.08*	*0*	*58.9*	*40 - 140*				

LCSD Sample ID: **LCSD-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:35**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625533** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07178	0.010	0.08	0	89.7	40 - 140	0.07838	8.79	20	
Surr: 2-Fluorobiphenyl	*0.1005*	*0*	*0.08*	*0*	*126*	*40 - 140*	*0.08025*	*22.4*	*20*	R
Surr: 4-Terphenyl-d14	*0.06624*	*0*	*0.08*	*0*	*82.8*	*40 - 140*	*0.06393*	*3.56*	*20*	
Surr: Nitrobenzene-d5	*0.057*	*0*	*0.08*	*0*	*71.2*	*40 - 140*	*0.0471*	*19*	*20*	

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** 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

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** 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	*45.16*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.39*	*1.0*	*50*	*0*	*98.8*	*85 - 114*				
Surr: Dibromofluoromethane	*44.55*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** 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	49.63	1.0	50	0	99.3	78 - 124				
1,1,1-Trichloroethane	52.25	1.0	50	0	105	74 - 131				
1,1,2,2-Tetrachloroethane	61.69	1.0	50	0	123	71 - 121				S
1,1,2-Trichloroethane	51.91	1.0	50	0	104	80 - 119				
1,1-Dichloroethane	54.56	1.0	50	0	109	77 - 125				
1,1-Dichloroethene	50.53	1.0	50	0	101	71 - 131				
1,1-Dichloropropene	50.78	1.0	50	0	102	78 - 125				
1,2,3-Trichlorobenzene	58.64	1.0	50	0	117	69 - 129				
1,2,3-Trichloropropane	58.46	1.0	50	0	117	73 - 122				
1,2,4-Trichlorobenzene	57.09	1.0	50	0	114	69 - 130				
1,2,4-Trimethylbenzene	56.94	1.0	50	0	114	76 - 124				
1,2-Dibromo-3-chloropropane	63.01	1.0	50	0	126	62 - 128				
1,2-Dibromoethane	52.75	1.0	50	0	105	77 - 121				
1,2-Dichlorobenzene	56.91	1.0	50	0	114	80 - 119				
1,2-Dichloroethane	50.51	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	50.69	1.0	50	0	101	78 - 122				
1,3,5-Trimethylbenzene	56.18	1.0	50	0	112	75 - 124				
1,3-Dichlorobenzene	55.69	1.0	50	0	111	80 - 119				
1,3-Dichloropropane	56.26	1.0	50	0	113	80 - 119				
1,4-Dichlorobenzene	56.02	1.0	50	0	112	79 - 118				
2,2-Dichloropropane	56.07	1.0	50	0	112	60 - 139				
2-Butanone	113.6	2.0	100	0	114	56 - 143				
2-Chlorotoluene	56.12	1.0	50	0	112	79 - 122				
2-Hexanone	117	2.0	100	0	117	57 - 139				
4-Chlorotoluene	56.45	1.0	50	0	113	78 - 122				
4-Isopropyltoluene	52.74	1.0	50	0	105	77 - 127				
4-Methyl-2-pentanone	111.7	2.0	100	0	112	67 - 130				
Acetone	112.2	2.0	100	0	112	39 - 160				
Benzene	49.05	1.0	50	0	98.1	79 - 120				
Bromobenzene	55.92	1.0	50	0	112	80 - 120				
Bromochloromethane	48.11	1.0	50	0	96.2	78 - 123				
Bromodichloromethane	49.44	1.0	50	0	98.9	79 - 125				
Bromoform	56.08	1.0	50	0	112	66 - 130				
Bromomethane	48.56	1.0	50	0	97.1	53 - 141				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	95.91	2.0	100	0	95.9	64 - 133				
Carbon tetrachloride	49.55	1.0	50	0	99.1	72 - 136				
Chlorobenzene	50.24	1.0	50	0	100	82 - 118				
Chloroethane	58.38	1.0	50	0	117	60 - 138				
Chloroform	47.91	1.0	50	0	95.8	79 - 124				
Chloromethane	48.81	1.0	50	0	97.6	50 - 139				
cis-1,2-Dichloroethene	49.08	1.0	50	0	98.2	78 - 123				
cis-1,3-Dichloropropene	51.5	1.0	50	0	103	75 - 124				
Dibromochloromethane	55.72	1.0	50	0	111	74 - 126				
Dibromomethane	53.82	1.0	50	0	108	79 - 123				
Dichlorodifluoromethane	46.69	1.0	50	0	93.4	32 - 152				
Ethylbenzene	51.51	1.0	50	0	103	79 - 121				
Hexachlorobutadiene	59.72	1.0	50	0	119	66 - 134				
Isopropylbenzene	50.24	1.0	50	0	100	72 - 131				
m,p-Xylene	100.6	2.0	100	0	101	80 - 121				
Methylene chloride	52.17	2.0	50	0	104	74 - 124				
Naphthalene	66.13	1.0	50	0	132	61 - 128				S
n-Butylbenzene	58.75	1.0	50	0	117	75 - 128				
n-Propylbenzene	51.37	1.0	50	0	103	76 - 126				
o-Xylene	50.8	1.0	50	0	102	78 - 122				
sec-Butylbenzene	56.63	1.0	50	0	113	77 - 126				
Styrene	51.06	1.0	50	0	102	78 - 123				
tert-Butylbenzene	56.44	1.0	50	0	113	78 - 124				
Tetrachloroethene	50.96	1.0	50	0	102	74 - 129				
Toluene	50.72	1.0	50	0	101	80 - 121				
trans-1,2-Dichloroethene	49.08	1.0	50	0	98.2	75 - 124				
trans-1,3-Dichloropropene	52.99	1.0	50	0	106	73 - 127				
Trichloroethene	49.36	1.0	50	0	98.7	79 - 123				
Trichlorofluoromethane	55.66	1.0	50	0	111	65 - 141				
Vinyl chloride	53.46	1.0	50	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.71*	*1.0*	*50*	*0*	*91.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.92*	*1.0*	*50*	*0*	*97.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.47*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*49.03*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627715** 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	44.36	1.0	50	0	88.7	78 - 124				
1,1,1-Trichloroethane	41.39	1.0	50	0	82.8	74 - 131				
1,1,2,2-Tetrachloroethane	55.33	1.0	50	0	111	71 - 121				
1,1,2-Trichloroethane	47.78	1.0	50	0	95.6	80 - 119				
1,1-Dichloroethane	45.19	1.0	50	0	90.4	77 - 125				
1,1-Dichloroethene	39.64	1.0	50	0	79.3	71 - 131				
1,1-Dichloropropene	40.63	1.0	50	0	81.3	78 - 125				
1,2,3-Trichlorobenzene	45.93	1.0	50	0	91.9	69 - 129				
1,2,3-Trichloropropane	53.44	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	45.91	1.0	50	0	91.8	69 - 130				
1,2,4-Trimethylbenzene	45.91	1.0	50	0	91.8	76 - 124				
1,2-Dibromo-3-chloropropane	56.05	1.0	50	0	112	62 - 128				
1,2-Dibromoethane	48.06	1.0	50	0	96.1	77 - 121				
1,2-Dichlorobenzene	47.72	1.0	50	0	95.4	80 - 119				
1,2-Dichloroethane	45.56	1.0	50	0	91.1	73 - 128				
1,2-Dichloropropane	44.84	1.0	50	0	89.7	78 - 122				
1,3,5-Trimethylbenzene	45.1	1.0	50	0	90.2	75 - 124				
1,3-Dichlorobenzene	46.2	1.0	50	0	92.4	80 - 119				
1,3-Dichloropropane	52.26	1.0	50	0	105	80 - 119				
1,4-Dichlorobenzene	46.34	1.0	50	0	92.7	79 - 118				
2,2-Dichloropropane	45.31	1.0	50	0	90.6	60 - 139				
2-Butanone	108	2.0	100	0	108	56 - 143				
2-Chlorotoluene	45.67	1.0	50	0	91.3	79 - 122				
2-Hexanone	115.1	2.0	100	0	115	57 - 139				
4-Chlorotoluene	46.56	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	42.35	1.0	50	0	84.7	77 - 127				
4-Methyl-2-pentanone	109.5	2.0	100	0	110	67 - 130				
Acetone	102.3	2.0	100	0	102	39 - 160				
Benzene	42.2	1.0	50	0	84.4	79 - 120				
Bromobenzene	47.75	1.0	50	0	95.5	80 - 120				
Bromochloromethane	42.96	1.0	50	0	85.9	78 - 123				
Bromodichloromethane	43.52	1.0	50	0	87.0	79 - 125				
Bromoform	52.35	1.0	50	0	105	66 - 130				
Bromomethane	36.21	1.0	50	0	72.4	53 - 141				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627715** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	77.28	2.0	100	0	77.3	64 - 133				
Carbon tetrachloride	38.56	1.0	50	0	77.1	72 - 136				
Chlorobenzene	44.44	1.0	50	0	88.9	82 - 118				
Chloroethane	47.7	1.0	50	0	95.4	60 - 138				
Chloroform	42.28	1.0	50	0	84.6	79 - 124				
Chloromethane	41.46	1.0	50	0	82.9	50 - 139				
cis-1,2-Dichloroethene	43.05	1.0	50	0	86.1	78 - 123				
cis-1,3-Dichloropropene	45.15	1.0	50	0	90.3	75 - 124				
Dibromochloromethane	50.95	1.0	50	0	102	74 - 126				
Dibromomethane	49.44	1.0	50	0	98.9	79 - 123				
Dichlorodifluoromethane	28.8	1.0	50	0	57.6	32 - 152				
Ethylbenzene	43.86	1.0	50	0	87.7	79 - 121				
Hexachlorobutadiene	54.45	1.0	50	0	109	66 - 134				
Isopropylbenzene	41.98	1.0	50	0	84.0	72 - 131				
m,p-Xylene	85.62	2.0	100	0	85.6	80 - 121				
Methylene chloride	48.15	2.0	50	0	96.3	74 - 124				
Naphthalene	51.8	1.0	50	0	104	61 - 128				
n-Butylbenzene	47.44	1.0	50	0	94.9	75 - 128				
n-Propylbenzene	41.77	1.0	50	0	83.5	76 - 126				
o-Xylene	44.48	1.0	50	0	89.0	78 - 122				
sec-Butylbenzene	44.82	1.0	50	0	89.6	77 - 126				
Styrene	44.87	1.0	50	0	89.7	78 - 123				
tert-Butylbenzene	45.07	1.0	50	0	90.1	78 - 124				
Tetrachloroethene	41.69	1.0	50	0	83.4	74 - 129				
Toluene	44.47	1.0	50	0	88.9	80 - 121				
trans-1,2-Dichloroethene	41.61	1.0	50	0	83.2	75 - 124				
trans-1,3-Dichloropropene	46.88	1.0	50	0	93.8	73 - 127				
Trichloroethene	42.4	1.0	50	0	84.8	79 - 123				
Trichlorofluoromethane	40.57	1.0	50	0	81.1	65 - 141				
Vinyl chloride	40.79	1.0	50	0	81.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.37*	*1.0*	*50*	*0*	*90.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.82*	*1.0*	*50*	*0*	*99.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.95*	*1.0*	*50*	*0*	*89.9*	*80 - 119*				
Surr: Toluene-d8	*50.08*	*1.0*	*50*	*0*	*100*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627716** 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	44.96	1.0	50	0	89.9	78 - 124	44.36	1.35	20	
1,1,1-Trichloroethane	45.72	1.0	50	0	91.4	74 - 131	41.39	9.94	20	
1,1,2,2-Tetrachloroethane	55.86	1.0	50	0	112	71 - 121	55.33	0.961	20	
1,1,2-Trichloroethane	46.67	1.0	50	0	93.3	80 - 119	47.78	2.36	20	
1,1-Dichloroethane	46.47	1.0	50	0	92.9	77 - 125	45.19	2.78	20	
1,1-Dichloroethene	44.11	1.0	50	0	88.2	71 - 131	39.64	10.7	20	
1,1-Dichloropropene	45.31	1.0	50	0	90.6	78 - 125	40.63	10.9	20	
1,2,3-Trichlorobenzene	50.83	1.0	50	0	102	69 - 129	45.93	10.1	20	
1,2,3-Trichloropropane	52.87	1.0	50	0	106	73 - 122	53.44	1.08	20	
1,2,4-Trichlorobenzene	49.53	1.0	50	0	99.1	69 - 130	45.91	7.59	20	
1,2,4-Trimethylbenzene	49.06	1.0	50	0	98.1	76 - 124	45.91	6.63	20	
1,2-Dibromo-3-chloropropane	60.11	1.0	50	0	120	62 - 128	56.05	6.99	20	
1,2-Dibromoethane	47.57	1.0	50	0	95.1	77 - 121	48.06	1.04	20	
1,2-Dichlorobenzene	49.79	1.0	50	0	99.6	80 - 119	47.72	4.25	20	
1,2-Dichloroethane	45.7	1.0	50	0	91.4	73 - 128	45.56	0.302	20	
1,2-Dichloropropane	45.22	1.0	50	0	90.4	78 - 122	44.84	0.843	20	
1,3,5-Trimethylbenzene	49.36	1.0	50	0	98.7	75 - 124	45.1	9.02	20	
1,3-Dichlorobenzene	48.9	1.0	50	0	97.8	80 - 119	46.2	5.68	20	
1,3-Dichloropropane	50.84	1.0	50	0	102	80 - 119	52.26	2.76	20	
1,4-Dichlorobenzene	49.15	1.0	50	0	98.3	79 - 118	46.34	5.89	20	
2,2-Dichloropropane	48.38	1.0	50	0	96.8	60 - 139	45.31	6.54	20	
2-Butanone	105	2.0	100	0	105	56 - 143	108	2.8	20	
2-Chlorotoluene	49.08	1.0	50	0	98.2	79 - 122	45.67	7.2	20	
2-Hexanone	112	2.0	100	0	112	57 - 139	115.1	2.72	20	
4-Chlorotoluene	49.3	1.0	50	0	98.6	78 - 122	46.56	5.72	20	
4-Isopropyltoluene	45.96	1.0	50	0	91.9	77 - 127	42.35	8.19	20	
4-Methyl-2-pentanone	106.9	2.0	100	0	107	67 - 130	109.5	2.46	20	
Acetone	97.77	2.0	100	0	97.8	39 - 160	102.3	4.56	20	
Benzene	43.14	1.0	50	0	86.3	79 - 120	42.2	2.22	20	
Bromobenzene	48.77	1.0	50	0	97.5	80 - 120	47.75	2.11	20	
Bromochloromethane	42.11	1.0	50	0	84.2	78 - 123	42.96	2	20	
Bromodichloromethane	43.54	1.0	50	0	87.1	79 - 125	43.52	0.0489	20	
Bromoform	51.02	1.0	50	0	102	66 - 130	52.35	2.57	20	
Bromomethane	42.91	1.0	50	0	85.8	53 - 141	36.21	16.9	20	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	84.92	2.0	100	0	84.9	64 - 133	77.28	9.43	20	
Carbon tetrachloride	43.9	1.0	50	0	87.8	72 - 136	38.56	12.9	20	
Chlorobenzene	45.07	1.0	50	0	90.1	82 - 118	44.44	1.39	20	
Chloroethane	50.16	1.0	50	0	100	60 - 138	47.7	5.01	20	
Chloroform	42.66	1.0	50	0	85.3	79 - 124	42.28	0.896	20	
Chloromethane	40.92	1.0	50	0	81.8	50 - 139	41.46	1.31	20	
cis-1,2-Dichloroethene	43.77	1.0	50	0	87.5	78 - 123	43.05	1.67	20	
cis-1,3-Dichloropropene	44.63	1.0	50	0	89.3	75 - 124	45.15	1.15	20	
Dibromochloromethane	50	1.0	50	0	100	74 - 126	50.95	1.87	20	
Dibromomethane	48.15	1.0	50	0	96.3	79 - 123	49.44	2.64	20	
Dichlorodifluoromethane	33.92	1.0	50	0	67.8	32 - 152	28.8	16.3	20	
Ethylbenzene	45.92	1.0	50	0	91.8	79 - 121	43.86	4.59	20	
Hexachlorobutadiene	45.99	1.0	50	0	92.0	66 - 134	54.45	16.9	20	
Isopropylbenzene	45.52	1.0	50	0	91.0	72 - 131	41.98	8.11	20	
m,p-Xylene	90.42	2.0	100	0	90.4	80 - 121	85.62	5.45	20	
Methylene chloride	47.86	2.0	50	0	95.7	74 - 124	48.15	0.596	20	
Naphthalene	59.42	1.0	50	0	119	61 - 128	51.8	13.7	20	
n-Butylbenzene	49.5	1.0	50	0	99.0	75 - 128	47.44	4.27	20	
n-Propylbenzene	45.97	1.0	50	0	91.9	76 - 126	41.77	9.57	20	
o-Xylene	45.29	1.0	50	0	90.6	78 - 122	44.48	1.82	20	
sec-Butylbenzene	48.84	1.0	50	0	97.7	77 - 126	44.82	8.57	20	
Styrene	45.49	1.0	50	0	91.0	78 - 123	44.87	1.37	20	
tert-Butylbenzene	49.44	1.0	50	0	98.9	78 - 124	45.07	9.23	20	
Tetrachloroethene	45.74	1.0	50	0	91.5	74 - 129	41.69	9.26	20	
Toluene	45.82	1.0	50	0	91.6	80 - 121	44.47	2.98	20	
trans-1,2-Dichloroethene	43.22	1.0	50	0	86.4	75 - 124	41.61	3.8	20	
trans-1,3-Dichloropropene	46.5	1.0	50	0	93.0	73 - 127	46.88	0.814	20	
Trichloroethene	43.84	1.0	50	0	87.7	79 - 123	42.4	3.34	20	
Trichlorofluoromethane	47.69	1.0	50	0	95.4	65 - 141	40.57	16.1	20	
Vinyl chloride	44.71	1.0	50	0	89.4	58 - 137	40.79	9.17	20	
Surr: 1,2-Dichloroethane-d4	*45.09*	*1.0*	*50*	*0*	*90.2*	*81 - 118*	*45.37*	*0.614*	*20*	
Surr: 4-Bromofluorobenzene	*49.22*	*1.0*	*50*	*0*	*98.4*	*85 - 114*	*49.82*	*1.22*	*20*	
Surr: Dibromofluoromethane	*45.19*	*1.0*	*50*	*0*	*90.4*	*80 - 119*	*44.95*	*0.55*	*20*	
Surr: Toluene-d8	*49.71*	*1.0*	*50*	*0*	*99.4*	*89 - 112*	*50.08*	*0.737*	*20*	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP/GWTP Quarterly Influent
WorkOrder:	HS18061036

QC BATCH REPORT

Batch ID:	**R318780**	**Instrument:**	**VOA6**	**Method:**	**SW8260**

The following samples were analyzed in this batch: HS18061036-01 HS18061036-02

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 11:36**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629357** 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

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 11:36**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629357** 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
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.65*	*1.0*	*50*	*0*	*93.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.22*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*45.66*	*1.0*	*50*	*0*	*91.3*	*80 - 119*				
Surr: Toluene-d8	*50.54*	*1.0*	*50*	*0*	*101*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629356** 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	46.54	1.0	50	0	93.1	78 - 124				
1,1,1-Trichloroethane	46.02	1.0	50	0	92.0	74 - 131				
1,1,2,2-Tetrachloroethane	58.13	1.0	50	0	116	71 - 121				
1,1,2-Trichloroethane	48.98	1.0	50	0	98.0	80 - 119				
1,1-Dichloroethane	48.37	1.0	50	0	96.7	77 - 125				
1,1-Dichloroethene	45.07	1.0	50	0	90.1	71 - 131				
1,1-Dichloropropene	45.3	1.0	50	0	90.6	78 - 125				
1,2,3-Trichlorobenzene	53.42	1.0	50	0	107	69 - 129				
1,2,3-Trichloropropane	55.68	1.0	50	0	111	73 - 122				
1,2,4-Trichlorobenzene	51.3	1.0	50	0	103	69 - 130				
1,2,4-Trimethylbenzene	49.6	1.0	50	0	99.2	76 - 124				
1,2-Dibromo-3-chloropropane	62.43	1.0	50	0	125	62 - 128				
1,2-Dibromoethane	49.97	1.0	50	0	99.9	77 - 121				
1,2-Dichlorobenzene	52.19	1.0	50	0	104	80 - 119				
1,2-Dichloroethane	47.57	1.0	50	0	95.1	73 - 128				
1,2-Dichloropropane	48.17	1.0	50	0	96.3	78 - 122				
1,3,5-Trimethylbenzene	49.12	1.0	50	0	98.2	75 - 124				
1,3-Dichlorobenzene	50.78	1.0	50	0	102	80 - 119				
1,3-Dichloropropane	53.75	1.0	50	0	107	80 - 119				
1,4-Dichlorobenzene	50.4	1.0	50	0	101	79 - 118				
2,2-Dichloropropane	49.62	1.0	50	0	99.2	60 - 139				
2-Butanone	108.8	2.0	100	0	109	56 - 143				
2-Chlorotoluene	50.29	1.0	50	0	101	79 - 122				
2-Hexanone	113.6	2.0	100	0	114	57 - 139				
4-Chlorotoluene	50.92	1.0	50	0	102	78 - 122				
4-Isopropyltoluene	44.88	1.0	50	0	89.8	77 - 127				
4-Methyl-2-pentanone	109.1	2.0	100	0	109	67 - 130				
Acetone	108	2.0	100	0	108	39 - 160				
Benzene	45.35	1.0	50	0	90.7	79 - 120				
Bromobenzene	51.41	1.0	50	0	103	80 - 120				
Bromochloromethane	43.83	1.0	50	0	87.7	78 - 123				
Bromodichloromethane	46.6	1.0	50	0	93.2	79 - 125				
Bromoform	54.3	1.0	50	0	109	66 - 130				
Bromomethane	45.76	1.0	50	0	91.5	53 - 141				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180628** Units: **ug/L** Analysis Date: **28-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629356** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	84.83	2.0	100	0	84.8	64 - 133				
Carbon tetrachloride	43.18	1.0	50	0	86.4	72 - 136				
Chlorobenzene	46.65	1.0	50	0	93.3	82 - 118				
Chloroethane	53.69	1.0	50	0	107	60 - 138				
Chloroform	45.17	1.0	50	0	90.3	79 - 124				
Chloromethane	48.56	1.0	50	0	97.1	50 - 139				
cis-1,2-Dichloroethene	45.15	1.0	50	0	90.3	78 - 123				
cis-1,3-Dichloropropene	47.52	1.0	50	0	95.0	75 - 124				
Dibromochloromethane	52.19	1.0	50	0	104	74 - 126				
Dibromomethane	51.79	1.0	50	0	104	79 - 123				
Dichlorodifluoromethane	39.41	1.0	50	0	78.8	32 - 152				
Ethylbenzene	47.22	1.0	50	0	94.4	79 - 121				
Hexachlorobutadiene	48.97	1.0	50	0	97.9	66 - 134				
Isopropylbenzene	44.67	1.0	50	0	89.3	72 - 131				
m,p-Xylene	91.3	2.0	100	0	91.3	80 - 121				
Methylene chloride	48.63	2.0	50	0	97.3	74 - 124				
Naphthalene	62.32	1.0	50	0	125	61 - 128				
n-Butylbenzene	49.62	1.0	50	0	99.2	75 - 128				
n-Propylbenzene	43.93	1.0	50	0	87.9	76 - 126				
o-Xylene	46.93	1.0	50	0	93.9	78 - 122				
sec-Butylbenzene	47.33	1.0	50	0	94.7	77 - 126				
Styrene	47.68	1.0	50	0	95.4	78 - 123				
tert-Butylbenzene	48.28	1.0	50	0	96.6	78 - 124				
Tetrachloroethene	43.98	1.0	50	0	88.0	74 - 129				
Toluene	46.47	1.0	50	0	92.9	80 - 121				
trans-1,2-Dichloroethene	44.6	1.0	50	0	89.2	75 - 124				
trans-1,3-Dichloropropene	50.14	1.0	50	0	100	73 - 127				
Trichlorofluoromethane	45.18	1.0	50	0	90.4	65 - 141				
Vinyl chloride	48.05	1.0	50	0	96.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.2*	*1.0*	*50*	*0*	*92.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.88*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.56*	*1.0*	*50*	*0*	*91.1*	*80 - 119*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-08MS** Units: **ug/L** Analysis Date: **28-Jun-2018 14:52**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629862** 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	43.01	1.0	50	0	86.0	78 - 124				
1,1,1-Trichloroethane	41.45	1.0	50	0	82.9	74 - 131				
1,1,2,2-Tetrachloroethane	56.11	1.0	50	0	112	71 - 121				
1,1,2-Trichloroethane	46.92	1.0	50	0	93.8	80 - 119				
1,1-Dichloroethane	45.49	1.0	50	0	91.0	77 - 125				
1,1-Dichloroethene	38.65	1.0	50	0	77.3	71 - 131				
1,1-Dichloropropene	39.85	1.0	50	0	79.7	78 - 125				
1,2,3-Trichlorobenzene	44.43	1.0	50	0	88.9	69 - 129				
1,2,3-Trichloropropane	53.57	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	43.83	1.0	50	0	87.7	69 - 130				
1,2,4-Trimethylbenzene	45.27	1.0	50	0	90.5	76 - 124				
1,2-Dibromo-3-chloropropane	59.36	1.0	50	0	119	62 - 128				
1,2-Dibromoethane	46.78	1.0	50	0	93.6	77 - 121				
1,2-Dichlorobenzene	47	1.0	50	0	94.0	80 - 119				
1,2-Dichloroethane	44.4	1.0	50	0	88.8	73 - 128				
1,2-Dichloropropane	43.66	1.0	50	0	87.3	78 - 122				
1,3,5-Trimethylbenzene	44.51	1.0	50	0	89.0	75 - 124				
1,3-Dichlorobenzene	45.54	1.0	50	0	91.1	80 - 119				
1,3-Dichloropropane	51	1.0	50	0	102	80 - 119				
1,4-Dichlorobenzene	45.74	1.0	50	0	91.5	79 - 118				
2,2-Dichloropropane	43.43	1.0	50	0	86.9	60 - 139				
2-Butanone	111.3	2.0	100	0	111	56 - 143				
2-Chlorotoluene	45.33	1.0	50	0	90.7	79 - 122				
2-Hexanone	117.2	2.0	100	0	117	57 - 139				
4-Chlorotoluene	45.9	1.0	50	0	91.8	78 - 122				
4-Isopropyltoluene	39.69	1.0	50	0	79.4	77 - 127				
4-Methyl-2-pentanone	110.5	2.0	100	0	111	67 - 130				
Acetone	103.8	2.0	100	0	104	39 - 160				
Benzene	41.1	1.0	50	0	82.2	79 - 120				
Bromobenzene	47.48	1.0	50	0	95.0	80 - 120				
Bromochloromethane	40.7	1.0	50	0	81.4	78 - 123				
Bromodichloromethane	42.56	1.0	50	0	85.1	79 - 125				
Bromoform	51.29	1.0	50	0	103	66 - 130				
Bromomethane	32.88	1.0	50	0	65.8	53 - 141				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-08MS** Units: **ug/L** Analysis Date: **28-Jun-2018 14:52**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629862** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	75.92	2.0	100	0	75.9	64 - 133				
Carbon tetrachloride	38.09	1.0	50	0	76.2	72 - 136				
Chlorobenzene	43.02	1.0	50	0	86.0	82 - 118				
Chloroethane	46.71	1.0	50	0	93.4	60 - 138				
Chloroform	41.3	1.0	50	0	82.6	79 - 124				
Chloromethane	39.75	1.0	50	0	79.5	50 - 139				
cis-1,2-Dichloroethene	41.76	1.0	50	0	83.5	78 - 123				
cis-1,3-Dichloropropene	44.52	1.0	50	0	89.0	75 - 124				
Dibromochloromethane	49.07	1.0	50	0	98.1	74 - 126				
Dibromomethane	48.85	1.0	50	0	97.7	79 - 123				
Dichlorodifluoromethane	28.76	1.0	50	0	57.5	32 - 152				
Ethylbenzene	42.36	1.0	50	0	84.7	79 - 121				
Hexachlorobutadiene	37.54	1.0	50	0	75.1	66 - 134				
Isopropylbenzene	40.46	1.0	50	0	80.9	72 - 131				
m,p-Xylene	82.92	2.0	100	0	82.9	80 - 121				
Methylene chloride	47.31	2.0	50	0	94.6	74 - 124				
Naphthalene	52.25	1.0	50	0	105	61 - 128				
n-Butylbenzene	42.3	1.0	50	0	84.6	75 - 128				
n-Propylbenzene	39.33	1.0	50	0	78.7	76 - 126				
o-Xylene	42.75	1.0	50	0	85.5	78 - 122				
sec-Butylbenzene	41.6	1.0	50	0	83.2	77 - 126				
Styrene	43.7	1.0	50	0	87.4	78 - 123				
tert-Butylbenzene	43.45	1.0	50	0	86.9	78 - 124				
Tetrachloroethene	40.03	1.0	50	0	80.1	74 - 129				
Toluene	42.57	1.0	50	0	85.1	80 - 121				
trans-1,2-Dichloroethene	40.61	1.0	50	0	81.2	75 - 124				
trans-1,3-Dichloropropene	46.11	1.0	50	0	92.2	73 - 127				
Trichlorofluoromethane	39.94	1.0	50	0	79.9	65 - 141				
Vinyl chloride	39.78	1.0	50	0	79.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.51*	*1.0*	*50*	*0*	*91.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.17*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*45.54*	*1.0*	*50*	*0*	*91.1*	*80 - 119*				
Surr: Toluene-d8	*49.63*	*1.0*	*50*	*0*	*99.3*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-08MSD** Units: **ug/L** Analysis Date: **28-Jun-2018 15:17**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629863** 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	43.08	1.0	50	0	86.2	78 - 124	43.01	0.159	20	
1,1,1-Trichloroethane	40.93	1.0	50	0	81.9	74 - 131	41.45	1.25	20	
1,1,2,2-Tetrachloroethane	56.8	1.0	50	0	114	71 - 121	56.11	1.22	20	
1,1,2-Trichloroethane	46.44	1.0	50	0	92.9	80 - 119	46.92	1.02	20	
1,1-Dichloroethane	45.52	1.0	50	0	91.0	77 - 125	45.49	0.0672	20	
1,1-Dichloroethene	38.95	1.0	50	0	77.9	71 - 131	38.65	0.782	20	
1,1-Dichloropropene	39.17	1.0	50	0	78.3	78 - 125	39.85	1.72	20	
1,2,3-Trichlorobenzene	47.77	1.0	50	0	95.5	69 - 129	44.43	7.25	20	
1,2,3-Trichloropropane	54.28	1.0	50	0	109	73 - 122	53.57	1.32	20	
1,2,4-Trichlorobenzene	45.81	1.0	50	0	91.6	69 - 130	43.83	4.41	20	
1,2,4-Trimethylbenzene	45.11	1.0	50	0	90.2	76 - 124	45.27	0.357	20	
1,2-Dibromo-3-chloropropane	61.43	1.0	50	0	123	62 - 128	59.36	3.42	20	
1,2-Dibromoethane	47.06	1.0	50	0	94.1	77 - 121	46.78	0.606	20	
1,2-Dichlorobenzene	47.67	1.0	50	0	95.3	80 - 119	47	1.41	20	
1,2-Dichloroethane	43.92	1.0	50	0	87.8	73 - 128	44.4	1.07	20	
1,2-Dichloropropane	43.79	1.0	50	0	87.6	78 - 122	43.66	0.306	20	
1,3,5-Trimethylbenzene	44.62	1.0	50	0	89.2	75 - 124	44.51	0.24	20	
1,3-Dichlorobenzene	45.6	1.0	50	0	91.2	80 - 119	45.54	0.12	20	
1,3-Dichloropropane	50.4	1.0	50	0	101	80 - 119	51	1.18	20	
1,4-Dichlorobenzene	46.04	1.0	50	0	92.1	79 - 118	45.74	0.656	20	
2,2-Dichloropropane	43.27	1.0	50	0	86.5	60 - 139	43.43	0.368	20	
2-Butanone	112.4	2.0	100	0	112	56 - 143	111.3	1.01	20	
2-Chlorotoluene	45.19	1.0	50	0	90.4	79 - 122	45.33	0.308	20	
2-Hexanone	118.5	2.0	100	0	118	57 - 139	117.2	1.12	20	
4-Chlorotoluene	46.3	1.0	50	0	92.6	78 - 122	45.9	0.863	20	
4-Isopropyltoluene	39.68	1.0	50	0	79.4	77 - 127	39.69	0.0169	20	
4-Methyl-2-pentanone	110.4	2.0	100	0	110	67 - 130	110.5	0.0612	20	
Acetone	106.6	2.0	100	0	107	39 - 160	103.8	2.7	20	
Benzene	40.64	1.0	50	0	81.3	79 - 120	41.1	1.12	20	
Bromobenzene	46.77	1.0	50	0	93.5	80 - 120	47.48	1.51	20	
Bromochloromethane	40.83	1.0	50	0	81.7	78 - 123	40.7	0.33	20	
Bromodichloromethane	42.96	1.0	50	0	85.9	79 - 125	42.56	0.939	20	
Bromoform	51.63	1.0	50	0	103	66 - 130	51.29	0.662	20	
Bromomethane	39.02	1.0	50	0	78.0	53 - 141	32.88	17.1	20	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318858 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-08MSD** Units: **ug/L** Analysis Date: **28-Jun-2018 15:17**
Client ID: Run ID: **VOA6_318858** SeqNo: **4629863** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	75.49	2.0	100	0	75.5	64 - 133	75.92	0.558	20	
Carbon tetrachloride	37.55	1.0	50	0	75.1	72 - 136	38.09	1.43	20	
Chlorobenzene	42.93	1.0	50	0	85.9	82 - 118	43.02	0.202	20	
Chloroethane	46.35	1.0	50	0	92.7	60 - 138	46.71	0.772	20	
Chloroform	41	1.0	50	0	82.0	79 - 124	41.3	0.721	20	
Chloromethane	41.07	1.0	50	0	82.1	50 - 139	39.75	3.25	20	
cis-1,2-Dichloroethene	41.57	1.0	50	0	83.1	78 - 123	41.76	0.457	20	
cis-1,3-Dichloropropene	43.77	1.0	50	0	87.5	75 - 124	44.52	1.68	20	
Dibromochloromethane	48.74	1.0	50	0	97.5	74 - 126	49.07	0.669	20	
Dibromomethane	48.12	1.0	50	0	96.2	79 - 123	48.85	1.52	20	
Dichlorodifluoromethane	27.42	1.0	50	0	54.8	32 - 152	28.76	4.79	20	
Ethylbenzene	42.14	1.0	50	0	84.3	79 - 121	42.36	0.524	20	
Hexachlorobutadiene	36.8	1.0	50	0	73.6	66 - 134	37.54	1.99	20	
Isopropylbenzene	40.42	1.0	50	0	80.8	72 - 131	40.46	0.0955	20	
m,p-Xylene	83.53	2.0	100	0	83.5	80 - 121	82.92	0.738	20	
Methylene chloride	47.18	2.0	50	0	94.4	74 - 124	47.31	0.275	20	
Naphthalene	59.34	1.0	50	0	119	61 - 128	52.25	12.7	20	
n-Butylbenzene	41.93	1.0	50	0	83.9	75 - 128	42.3	0.888	20	
n-Propylbenzene	39.53	1.0	50	0	79.1	76 - 126	39.33	0.513	20	
o-Xylene	42.69	1.0	50	0	85.4	78 - 122	42.75	0.155	20	
sec-Butylbenzene	41.83	1.0	50	0	83.7	77 - 126	41.6	0.559	20	
Styrene	43.61	1.0	50	0	87.2	78 - 123	43.7	0.206	20	
tert-Butylbenzene	43.31	1.0	50	0	86.6	78 - 124	43.45	0.314	20	
Tetrachloroethene	39.7	1.0	50	0	79.4	74 - 129	40.03	0.826	20	
Toluene	42.24	1.0	50	0	84.5	80 - 121	42.57	0.77	20	
trans-1,2-Dichloroethene	40.42	1.0	50	0	80.8	75 - 124	40.61	0.481	20	
trans-1,3-Dichloropropene	46.21	1.0	50	0	92.4	73 - 127	46.11	0.207	20	
Trichlorofluoromethane	39.02	1.0	50	0	78.0	65 - 141	39.94	2.33	20	
Vinyl chloride	40	1.0	50	0	80.0	58 - 137	39.78	0.555	20	
Surr: 1,2-Dichloroethane-d4	*45.91*	*1.0*	*50*	*0*	*91.8*	*81 - 118*	*45.51*	*0.882*	*20*	
Surr: 4-Bromofluorobenzene	*49.56*	*1.0*	*50*	*0*	*99.1*	*85 - 114*	*50.17*	*1.23*	*20*	
Surr: Dibromofluoromethane	*45.86*	*1.0*	*50*	*0*	*91.7*	*80 - 119*	*45.54*	*0.683*	*20*	
Surr: Toluene-d8	*49.55*	*1.0*	*50*	*0*	*99.1*	*89 - 112*	*49.63*	*0.162*	*20*	

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318752 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-062518** Units: **mg/L** Analysis Date: **25-Jun-2018 14:12**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627144** 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: **WLCSW1-062518** Units: **mg/L** Analysis Date: **25-Jun-2018 14:26**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627145** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.73	0.500	20	0	104	80 - 120				
Sulfate	20.76	0.500	20	0	104	80 - 120				

LCSD Sample ID: **WLCSDW1-062518** Units: **mg/L** Analysis Date: **25-Jun-2018 15:11**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.04	0.500	20	0	105	80 - 120	20.73	1.47	20	
Sulfate	21.25	0.500	20	0	106	80 - 120	20.76	2.35	20	

MS Sample ID: **HS18060751-01MS** Units: **mg/L** Analysis Date: **25-Jun-2018 16:09**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627148** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	569.4	5.00	100	472.9	96.4	80 - 120				O
Sulfate	143.1	5.00	100	40.22	103	80 - 120				

MSD Sample ID: **HS18060751-01MSD** Units: **mg/L** Analysis Date: **25-Jun-2018 16:24**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627149** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	573	5.00	100	472.9	100	80 - 120	569.4	0.641	20	O
Sulfate	143.3	5.00	100	40.22	103	80 - 120	143.1	0.111	20	

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318763 **Instrument: WetChem_HS** **Method: E410.4**

MBLK Sample ID: **MBLK-R318763** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627379** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	5.00	15.0								U

LCS Sample ID: **LCS-R318763** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627378** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	90	15.0	100	0	90.0	85 - 115				

MS Sample ID: **HS18061195-01MS** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627380** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	101	15.0	50	45	112	80 - 120				

DUP Sample ID: **HS18061195-01DUP** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627381** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	49	15.0					45	8.51	20	

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: HS18061036

QC BATCH REPORT

Batch ID: R318885 **Instrument: Balance1** **Method: E1664A**

MBLK Sample ID: **WBLKW-062818** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629783** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	1.20	2.00								U

LCS Sample ID: **WLCSW-062818** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629785** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	40.8	2.00	40	0	102	78 - 114				

LCSD Sample ID: **WLCSDW-062818** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629784** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	39.6	2.00	40	0	99.0	78 - 114	40.8	2.99	18	

MS Sample ID: **HS18061025-01MS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629769** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	37.2	2.00	40	0.8	91.0	78 - 114				

The following samples were analyzed in this batch: HS18061036-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Influent
WorkOrder: **HS18061036**

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 Group Houston, Corp Date: 11-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

00904010

Date: 11-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Date/Time Received: **21-Jun-2018 08:45**
Work Order: HS18061036
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 21-Jun-2018 Date
Reviewed by: *RJ Modashia* eSignature — 21-Jun-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	2.4c/2.0c U/c	IR30	
Cooler(s)/Kit(s):	43651		
Date/Time sample(s) sent to storage:	6/21/18 15:15		
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: O&G received in a neat 1lt Amber bottle

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00904011

bhate ENVIRONMENTAL ASSOCIATES, INC.

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 Quarterly Influent

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	VOC	TOTAL METALS	O&G 3 GRAB	COD	CHLORIDE & SULFATE	PERCHLORATE	1,4-DIOXANE					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHAP24-SP140-062018		6/20/18	1400	-	N		W	9	X	X	X	X	X	X	X									
TRIP BLANK		6/20/18		-	TB		W	2	X															
				-																				
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				-																				

HS18061036

Bhate Environmental Associates, Inc.

LHAAP GWTP Quarterly Influent

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/20/18	1430	1. R Ciga	6/21/18	0845
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: FEDEX Shipped No.:

Method of Shipment:

Fed Ex Airbill Number: 773697512724

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time: R Ciga 6/21/18 0845

Cooler #43651
Temp 2.4C IR#30
CF-0.4

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 101099-01 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

43651

CUSTODY SEAL

Date: 6/20/18 Time: 1730
Name: Scott Beesinger
Company: IHATA

Seal Broken By:
Date: 06/27/18

43651 JUN 21 2018

CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5865
REF: LHAAP - SW
RMA:

FedEx Express

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# (0221) 7376 9751 2724

THU - 21 JUN 10:30A
PRIORITY OVERNIGHT

099

7376 9751 2724

77099
TX-US
IAH

AR SGR

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817359; 1817361; 1817362; 1817365; 1817368

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2114 (218216)

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: The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608585) was less than 1/2 the CRDL. The recovery for the LCS (608586) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1817359001 (Client ID: 18WW19_061918). 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. Manual Integrations was performed for datafiles 05JULD20.

Thomas Bosch July 07, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 06, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817365**
Project ID: HS18061036 062018
Purchase Order: HS18061036
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24_SP140_062018	1817365001	06/20/18	06/22/18	

ANALYTICAL REPORT

Workorder: 34-1817365
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24_SP140_062018** | Sampling Site: NA | Collected: 06/20/2018
Lab ID: 1817365001 | Media: 125 mL Nalgene | Received: 06/22/2018
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/2114 (HBN: 218216) | **Percent Solid:** NA
Analyzed: 07/05/2018 14:41 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**9400**	1000	2000	4000	1000	

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 218216)**

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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 07/06/2018 11:40	/S/ Stephen Brose 07/06/2018 13:50

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: 34-1817365
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1817365

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 608585
Analyzed: 07/05/2018 09:23
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608586
Analyzed: 07/05/2018 09:52
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1817359001	**MS:** 608587	**MSD:** 608588
Analyzed: 07/05/2018 10:38	**Analyzed:** 07/05/2018 10:10	**Analyzed:** 07/05/2018 10:24
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	6.14	5	123	78.8	123.8	6.18	124	0.51	0.0	20.0

Continuing Calibration Verification

CCV: 608582	**CCV:** 608589	**CCV:** 608591
Analyzed: 07/05/2018 08:52	**Analyzed:** 07/05/2018 13:01	**Analyzed:** 07/05/2018 15:09
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.3	25.0	105	27.1	25.0	108	26.7	25.0	107

Interference Check Sample

ICSA: 608584
Analyzed: 07/05/2018 09:38
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.861	1.00	86.1

Limit of Detection Verification

LODV: 608583	**LODV:** 608590	**LODV:** 608592
Analyzed: 07/05/2018 09:09	**Analyzed:** 07/05/2018 13:15	**Analyzed:** 07/05/2018 15:23
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.970	1.00	97.0	0.988	1.00	98.8

Quality Control Sample Batch Report

Analysis Information

Workorder: 1817365

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Comments

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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
07/06/2018 11:40	07/06/2018 13:49

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 1817365

18698/#2

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

COC ID: 9326

1817365

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:	HS18061036
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18061036-01**	**LH18/24_SP140_062018**	**Water**	**20 Jun 2018 14:00**
	SUB_Perch-6850			29 Jun 2018

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: 6/21/18 1800.

Received By: _____ Date/Time: 062218 9:40

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

00904021

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061036	Split:	Workorder ID: 1817365	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	06/20/2018 14:00	LH18/24_SP140_062018	1817365001		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
Walath, Julie	06/22/2018 09:40	ALS Sample Receiving	Sample Login
Julie Worsham	6/22/18 1410	STB	storage
R.33.1	6-23-18/08:45	T.Bass	6850

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

Fri, 06/22/18 2:02 PM

ALSCOCV3.1

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

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston — Project/Task/Site: 1817365

Date/Time of Receipt: 06-22-18 9:40 — Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA 06-22-18	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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 86068	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Jennifer Tassell (Signature) Jennifer Tassell (Printed Name) 06-22-18 (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: _____

00904023



ALS

Part # 159469-434 RIT2 EXP 03/19

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

SHIP DATE: 21JUN18
ACTWGT: 19.60 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

546C2/93DF/53C1

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060769/1031/1036/1039 - RJ



FedEx Express

J171016102001sv

TRK# 0201 430 9530 2543

FRI - 22 JUN 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC



Batch Worklist

Batch: ELMS/ 2114 **Created:** 7/5/2018 08:36 **Instrument:** **HBN:** 218216

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

Workorder: 1817359 [ENV_LVL4]
Workorder: 1817361 [ENV_LVL4]
Workorder: 1817362 [ENV_LVL4]
Workorder: 1817365 [ENV_LVL4]
Workorder: 1817368 [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	608582	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
2	608583	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
3	608584	ICS for HBN 218216 [ELMS/2114]				ICS	3		E6850..D3Q	5311		7/5/2018	
4	608585	LMB for HBN 218216 [ELMS/2114]				LMB	3		E6850Q413Q	5311		7/5/2018	
5	608586	LCS for HBN 218216 [ELMS/2114]				LCS	3		E6850Q413Q	5311		7/5/2018	
6	1817359001	18WW19_061918				SAMPLE	3	1817359001-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
7	608587	18WW19_061918(1817359001MS)				MS	3		E6850Q413Q	5311		7/5/2018	
8	608588	18WW19_061918(1817359001MSD)				MSD	3		E6850Q413Q	5311		7/5/2018	
9	1817359002	18WW19_061918-a				SAMPLE	3	1817359002-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
10	1817359003	18WW20_061918				SAMPLE	3	1817359003-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
11	1817359004	AWD4_061918				SAMPLE	3	1817359004-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
12	1817359005	18WW06_061918				SAMPLE	3	1817359005-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
13	1817359006	18WW02_061918				SAMPLE	3	1817359006-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
14	1817359007	18WW14_061918				SAMPLE	3	1817359007-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
15	1817361001	AWD3_061818				SAMPLE	3	1817361001-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
16	1817361002	MW7_061818				SAMPLE	3	1817361002-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
17	1817361003	18CPTMW12DW_061818				SAMPLE	3	1817361003-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
18	608589	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
19	608590	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
20	1817361004	18CPTMW12SW_061818				SAMPLE	3	1817361004-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
21	1817361005	MW13_061818				SAMPLE	3	1817361005-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
22	1817361006	C02_061818				SAMPLE	3	1817361006-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
23	1817361007	MW17_061818				SAMPLE	3	1817361007-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
24	1817362001	LH18/24_SP650_062018				SAMPLE	3	1817362001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
25	1817365001	LH18/24_SP140_062018				SAMPLE	3	1817365001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
26	1817368001	LH18/24_SP650_062018				SAMPLE	3	1817368001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
27	608591	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
28	608592	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817359 (001-07); 1817361 9001-07); 1817362 (001); 1817365 (001); 1817368 (001) ELMS Batch/HBN ID: 2114 (218216)
Prep Date: 07/03/2018 Analysis Date: 07/05/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608586; Target = 5.0µg/L. ASTM type II water was used for LMB 608585.

MS/MSD: MS/MSD was performed on sample 1817359001 (Client ID: 18WW19_061918). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:

1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 05JULP20.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218216-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK	Description - 6850 WKG Std 100.ug/L

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard:	41827	**Created By:**	Thomas Bosch	**Amount:**	10 mL
MFG:	ALS/SLC	**Create Date:**	05/09/2018 10:05AM	**Expires:**	05/09/2019
MFG Lot:	TNB: 05/09/2018	**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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK — **Description - Perchlorate ISTD Stock**

Standard: 23118	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 04/04/2014 03:04PM	**Expires:** 02/27/2024
MFG Lot: SDDG-013	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:** 02/05/2009 12:02AM	**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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

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

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

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

July 11, 2018

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

Work Order: **HS18061039**

Laboratory Results for: **LHAAP/GWTP Quarterly Effluent**

Dear Marcia,

ALS Environmental received 2 sample(s) on Jun 21, 2018 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: RJ.MODASHIA
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Work Order: HS18061039

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061039-01	LH18/24_SP650_062018	Water		20-Jun-2018 14:00	21-Jun-2018 08:45	☐
HS18061039-02	Trip Blank	Water	ALS-050418-47	20-Jun-2018 14:00	21-Jun-2018 08:45	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Work Order:

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 Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 129659

Sample ID: LCSD-129659

• LCS/LCSD RPD was above the control limits for surrogate 2-Fluorobiphenyl

GCMS Volatiles by Method SW8260

Batch ID: R318780

Sample ID: CCV

• Naphthalene exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: VLCSW-180627

• 1,1,2,2,-Tetrachloroethenane and Naphthalene exceeded QC limits for LCS.

Metals by Method SW7470

Batch ID: 129991

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

Metals by Method SW6020

Batch ID: 129863

Sample ID: HS18061144-03MS

• MS/MSD and DUPs are for an unrelated sample

WetChemistry by Method E1664A

Batch ID: R318885

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

WetChemistry by Method E410.4

Batch ID: R318763

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

WetChemistry by Method SW9056

Batch ID: R318752

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

ALS Group Houston, Corp Date: 11-Jul-18

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Sample ID: LH18/24_SP650_062018
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061039
Lab ID:HS18061039-01
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	27-Jun-2018 16:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,2-Dichloroethane	**0.59**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 16:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 16:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 16:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 16:55
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 16:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 16:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder:HS18061039
Sample ID: LH18/24_SP650_062018
Lab ID:HS18061039-01
Collection Date: 20-Jun-2018 14:00
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
cis-1,2-Dichloroethene	**4.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 16:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 16:55
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 16:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Trichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	27-Jun-2018 16:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:55
Surr: 1,2-Dichloroethane-d4	*92.7*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 16:55*
Surr: 4-Bromofluorobenzene	*99.7*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 16:55*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 16:55*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 16:55*
SEMIVOLATILES SIM	**Method:SW8270SIM**					Prep:SW3510 / 21-Jun-2018		Analyst: ACN
1,4-Dioxane	**4.5**		**0.10**	**0.10**	**0.10**	**ug/L**	10	25-Jun-2018 17:55
Surr: 2-Fluorobiphenyl	*136*			**0**	*40-140*	*%REC*	*10*	*25-Jun-2018 17:55*
Surr: 4-Terphenyl-d14	*111*			**0**	*40-140*	*%REC*	*10*	*25-Jun-2018 17:55*
Surr: Nitrobenzene-d5	*105*			**0**	*40-140*	*%REC*	*10*	*25-Jun-2018 17:55*

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Sample ID: LH18/24_SP650_062018
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061039
Lab ID:HS18061039-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Jun-2018		Analyst: JDE
Aluminum	**0.0170**		**0.00180**	**0.00250**	**0.0100**	**mg/L**	1	28-Jun-2018 14:17
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	28-Jun-2018 14:17
Arsenic	**0.00110**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:17
Barium	**0.0709**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:17
Beryllium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:17
Cadmium	**0.000222**	J	**0.000200**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:17
Calcium	**7.66**		**0.0340**	**0.100**	**0.500**	**mg/L**	1	28-Jun-2018 14:17
Chromium	**0.00540**		**0.000400**	**0.00100**	**0.00400**	**mg/L**	1	28-Jun-2018 14:17
Cobalt	**0.00222**	J	**0.000200**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:17
Iron	**0.261**		**0.0120**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:17
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	28-Jun-2018 15:47
Magnesium	**19.0**		**0.0100**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:17
Manganese	**0.0777**		**0.000700**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:17
Nickel	**0.0125**		**0.000600**	**0.00100**	**0.00200**	**mg/L**	1	28-Jun-2018 14:17
Potassium	**1.82**		**0.0180**	**0.100**	**0.200**	**mg/L**	1	28-Jun-2018 14:17
Selenium	**0.00150**	J	**0.00110**	**0.00200**	**0.00200**	**mg/L**	1	28-Jun-2018 14:17
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:17
Sodium	**334**		**0.140**	**1.00**	**2.00**	**mg/L**	10	28-Jun-2018 15:39
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	28-Jun-2018 14:17
Vanadium	**0.00143**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	28-Jun-2018 14:17
Zinc	**0.455**		**0.00200**	**0.00250**	**0.00400**	**mg/L**	1	28-Jun-2018 14:17
MERCURY BY SW7470A		**Method:SW7470**				Prep:SW7470 / 29-Jun-2018		Analyst: JCJ
Mercury	0.0000500	U	0.0000300	0.0000500	0.000200	mg/L	1	30-Jun-2018 14:20
OIL & GREASE (HEM) BY E1664A		**Method:E1664A**						Analyst: KAH
Oil and Grease	**2.92**		**0.610**	**1.20**	**2.00**	**mg/L**	1	28-Jun-2018 14:15
CHEMICAL OXYGEN DEMAND BY E410.4		**Method:E410.4**						Analyst: AJH
Chemical Oxygen Demand	**66.0**		**5.00**	**5.00**	**15.0**	**mg/L**	1	27-Jun-2018 12:30
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**427**		**1.00**	**2.50**	**2.50**	**mg/L**	5	25-Jun-2018 19:02
Sulfate	**7.17**		**0.200**	**0.500**	**0.500**	**mg/L**	1	25-Jun-2018 19:48
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2018 16:39

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Sample ID: Trip Blank
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061039
Lab ID:HS18061039-02
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	27-Jun-2018 16:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 16:31
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	27-Jun-2018 16:31
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	27-Jun-2018 16:31
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 16:31
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	27-Jun-2018 16:31
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Sample ID: Trip Blank
Collection Date: 20-Jun-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18061039
Lab ID:HS18061039-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	27-Jun-2018 16:31
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	27-Jun-2018 16:31
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	27-Jun-2018 16:31
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	27-Jun-2018 16:31
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*81-118*	*%REC*	*1*	*27-Jun-2018 16:31*
Surr: 4-Bromofluorobenzene	*99.8*			**0**	*85-114*	*%REC*	*1*	*27-Jun-2018 16:31*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*1*	*27-Jun-2018 16:31*
Surr: Toluene-d8	*98.9*			**0**	*89-112*	*%REC*	*1*	*27-Jun-2018 16:31*

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

ALS Group Houston, Corp

Date: 11-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

Batch ID: 129659 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061039-01	1	1000	1 (mL)	0.001

Batch ID: 129863 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061039-01	1	10	10 (mL)	1

Batch ID: 129991 **Method:** MERCURY BY SW7470A **Prep:** HG_WPR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18061039-01	1	10 (mL)	10 (mL)	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 129659	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00		21 Jun 2018 10:00	25 Jun 2018 17:55	10
Batch ID 129863	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00		27 Jun 2018 12:52	28 Jun 2018 15:47	1
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00		27 Jun 2018 12:52	28 Jun 2018 15:39	10
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00		27 Jun 2018 12:52	28 Jun 2018 14:17	1
Batch ID 129991	**Test Name :** MERCURY BY SW7470A			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00		29 Jun 2018 19:17	30 Jun 2018 14:20	1
Batch ID R318752	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00			25 Jun 2018 19:48	1
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00			25 Jun 2018 19:02	5
Batch ID R318763	**Test Name :** CHEMICAL OXYGEN DEMAND BY E410.4			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00			27 Jun 2018 12:30	1
Batch ID R318780	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00			27 Jun 2018 16:55	1
HS18061039-02	Trip Blank	20 Jun 2018 14:00			27 Jun 2018 16:31	1
Batch ID R318885	**Test Name :** OIL & GREASE (HEM) BY E1664A			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00			28 Jun 2018 14:15	1
Batch ID R319293	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18061039-01	LH18/24_SP650_062018	20 Jun 2018 14:00			06 Jul 2018 16:39	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 14:11**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629417** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004584	0.0100								J
Antimony	0.00100	0.00200								U
Arsenic	0.00100	0.00200								U
Barium	0.00250	0.00400								U
Beryllium	0.00100	0.00200								U
Cadmium	0.00100	0.00200								U
Calcium	0.100	0.500								U
Chromium	0.00100	0.00400								U
Cobalt	0.00100	0.00500								U
Iron	0.100	0.200								U
Magnesium	0.01223	0.200								J
Manganese	0.00100	0.00500								U
Nickel	0.00100	0.00200								U
Potassium	0.04625	0.200								J
Silver	0.00100	0.00200								U
Sodium	0.09338	0.200								J
Thallium	0.00100	0.00200								U
Vanadium	0.00100	0.00500								U
Zinc	0.00250	0.00400								U

MBLK Sample ID: **MBLK-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 15:35**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629703** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.00100	0.00200								U
Selenium	0.00200	0.00200								U

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

LCS Sample ID: **LCS-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 14:13**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629418** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09554	0.0100	0.1	0	95.5	80 - 120				
Antimony	0.04608	0.00200	0.05	0	92.2	80 - 120				
Arsenic	0.04772	0.00200	0.05	0	95.4	80 - 120				
Barium	0.04474	0.00400	0.05	0	89.5	80 - 120				
Beryllium	0.04665	0.00200	0.05	0	93.3	80 - 120				
Cadmium	0.04513	0.00200	0.05	0	90.3	80 - 120				
Calcium	4.46	0.500	5	0	89.2	80 - 120				
Chromium	0.04598	0.00400	0.05	0	92.0	80 - 120				
Cobalt	0.0477	0.00500	0.05	0	95.4	80 - 120				
Iron	4.547	0.200	5	0	90.9	80 - 120				
Magnesium	4.62	0.200	5	0	92.4	80 - 120				
Manganese	0.04681	0.00500	0.05	0	93.6	80 - 120				
Nickel	0.04683	0.00200	0.05	0	93.7	80 - 120				
Potassium	4.675	0.200	5	0	93.5	80 - 120				
Selenium	0.05137	0.00200	0.05	0	103	80 - 120				
Silver	0.04446	0.00200	0.05	0	88.9	80 - 120				
Sodium	4.819	0.200	5	0	96.4	80 - 120				
Thallium	0.04118	0.00200	0.05	0	82.4	80 - 120				
Vanadium	0.04549	0.00500	0.05	0	91.0	80 - 120				
Zinc	0.0471	0.00400	0.05	0	94.2	80 - 120				

LCS Sample ID: **LCS-129863** Units: **mg/L** Analysis Date: **28-Jun-2018 15:31**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629701** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0492	0.00200	0.05	0	98.4	80 - 120				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:25**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629424** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1159	0.0100	0.1	0.01811	97.8	80 - 120				
Antimony	0.04647	0.00200	0.05	0.000166	92.6	80 - 120				
Arsenic	0.05012	0.00200	0.05	0.000942	98.4	80 - 120				
Barium	0.9189	0.00400	0.05	0.8762	85.2	80 - 120				O
Beryllium	0.05133	0.00200	0.05	0.000058	103	80 - 120				
Cadmium	0.04673	0.00200	0.05	0.000135	93.2	80 - 120				
Calcium	25.49	0.500	5	21.67	76.4	80 - 120				SO
Chromium	0.0461	0.00400	0.05	0.000398	91.4	80 - 120				
Cobalt	0.04756	0.00500	0.05	0.001732	91.6	80 - 120				
Iron	48.58	0.200	5	43.7	97.6	80 - 120				O
Magnesium	13.7	0.200	5	9.403	85.9	80 - 120				
Manganese	0.7838	0.00500	0.05	0.76	47.6	80 - 120				SO
Nickel	0.04588	0.00200	0.05	0.001762	88.2	80 - 120				
Potassium	7.682	0.200	5	3.253	88.6	80 - 120				
Selenium	0.0512	0.00200	0.05	0.000787	101	80 - 120				
Silver	0.0439	0.00200	0.05	0.000004	87.8	80 - 120				
Sodium	169.5	0.200	5	167.9	31.9	80 - 120				SO
Thallium	0.0407	0.00200	0.05	-0.000001	81.4	80 - 120				
Vanadium	0.04581	0.00500	0.05	-0.000169	92.0	80 - 120				
Zinc	0.05591	0.00400	0.05	0.006966	97.9	80 - 120				

MS Sample ID: **HS18061144-03MS** Units: **mg/L** Analysis Date: **28-Jun-2018 15:59**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629715** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04461	0.00200	0.05	0.000218	88.8	80 - 120				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **28-Jun-2018 14:27**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629425** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1158	0.0100	0.1	0.01811	97.6	80 - 120	0.1159	0.167	20	
Antimony	0.04778	0.00200	0.05	0.000166	95.2	80 - 120	0.04647	2.78	20	
Arsenic	0.05144	0.00200	0.05	0.000942	101	80 - 120	0.05012	2.61	20	
Barium	0.9105	0.00400	0.05	0.8762	68.5	80 - 120	0.9189	0.915	20	SO
Beryllium	0.05152	0.00200	0.05	0.000058	103	80 - 120	0.05133	0.358	20	
Cadmium	0.04696	0.00200	0.05	0.000135	93.7	80 - 120	0.04673	0.491	20	
Calcium	26.19	0.500	5	21.67	90.5	80 - 120	25.49	2.73	20	O
Chromium	0.04584	0.00400	0.05	0.000398	90.9	80 - 120	0.0461	0.572	20	
Cobalt	0.0495	0.00500	0.05	0.001732	95.5	80 - 120	0.04756	4.01	20	
Iron	49.99	0.200	5	43.7	126	80 - 120	48.58	2.84	20	SO
Magnesium	14.26	0.200	5	9.403	97.1	80 - 120	13.7	4	20	
Manganese	0.8212	0.00500	0.05	0.76	122	80 - 120	0.7838	4.65	20	SO
Nickel	0.04932	0.00200	0.05	0.001762	95.1	80 - 120	0.04588	7.23	20	
Potassium	7.833	0.200	5	3.253	91.6	80 - 120	7.682	1.94	20	
Selenium	0.05266	0.00200	0.05	0.000787	104	80 - 120	0.0512	2.82	20	
Silver	0.04311	0.00200	0.05	0.000004	86.2	80 - 120	0.0439	1.8	20	
Sodium	178.1	0.200	5	167.9	204	80 - 120	169.5	4.96	20	SO
Thallium	0.04314	0.00200	0.05	-0.000001	86.3	80 - 120	0.0407	5.82	20	
Vanadium	0.04641	0.00500	0.05	-0.000169	93.2	80 - 120	0.04581	1.29	20	
Zinc	0.05601	0.00400	0.05	0.006966	98.1	80 - 120	0.05591	0.175	20	

MSD Sample ID: **HS18061144-03MSD** Units: **mg/L** Analysis Date: **28-Jun-2018 16:01**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629716** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0461	0.00200	0.05	0.000218	91.8	80 - 120	0.04461	3.28	20	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18061144-03PDS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:29**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629426** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Aluminum	0.1056	0.0100	0.1	0.01811	87.5	75 - 125			
Antimony	0.08158	0.00200	0.1	0.000166	81.4	75 - 125			
Arsenic	0.09628	0.00200	0.1	0.000942	95.3	75 - 125			
Barium	0.9026	0.00400	0.1	0.8762	26.3	75 - 125			SO
Beryllium	0.1004	0.00200	0.1	0.000058	100	75 - 125			
Cadmium	0.09053	0.00200	0.1	0.000135	90.4	75 - 125			
Calcium	28.58	0.500	10	21.67	69.1	75 - 125			S
Chromium	0.08566	0.00400	0.1	0.000398	85.3	75 - 125			
Cobalt	0.0919	0.00500	0.1	0.001732	90.2	75 - 125			
Iron	49.07	0.200	10	43.7	53.7	75 - 125			SO
Magnesium	17.44	0.200	10	9.403	80.3	75 - 125			
Manganese	0.7728	0.00500	0.1	0.76	12.8	75 - 125			SO
Nickel	0.09047	0.00200	0.1	0.001762	88.7	75 - 125			
Potassium	11.81	0.200	10	3.253	85.5	75 - 125			
Selenium	0.1001	0.00200	0.1	0.000787	99.4	75 - 125			
Silver	0.08301	0.00200	0.1	0.000004	83.0	75 - 125			
Sodium	165.4	0.200	10	167.9	-24.2	75 - 125			SO
Thallium	0.08666	0.00200	0.1	-0.000001	86.7	75 - 125			
Vanadium	0.08879	0.00500	0.1	-0.000169	89.0	75 - 125			
Zinc	0.1003	0.00400	0.1	0.006966	93.3	75 - 125			

PDS Sample ID: **HS18061144-03PDS** Units: **mg/L** Analysis Date: **28-Jun-2018 16:03**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629717** PrepDate: **27-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Lead	0.08799	0.00200	0.1	0.000218	87.8	75 - 125			

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129863 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18061144-03SD** Units: **mg/L** Analysis Date: **28-Jun-2018 14:23**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629423** PrepDate: **27-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Aluminum	0.02585	0.0500					0.01811	0	10	J
Antimony	0.00500	0.0100					0.000166	0	10	U
Arsenic	0.00500	0.0100					0.000942	0	10	U
Barium	0.8204	0.0200					0.8762	6.37	10	
Beryllium	0.00500	0.0100					0.000058	0	10	U
Cadmium	0.00500	0.0100					0.000135	0	10	U
Calcium	21.85	2.50					21.67	0.846	10	
Chromium	0.00500	0.0200					0.000398	0	10	U
Cobalt	0.001628	0.0250					0.001732	0	10	J
Iron	45.43	1.00					43.7	3.95	10	
Magnesium	9.874	1.00					9.403	5	10	
Manganese	0.7468	0.0250					0.76	1.74	10	
Nickel	0.00500	0.0100					0.001762	0	10	U
Potassium	3.485	1.00					3.253	7.13	10	
Selenium	0.0100	0.0100					0.000787	0	10	U
Silver	0.00500	0.0100					0.000004	0	10	U
Sodium	174.1	1.00					167.9	3.74	10	
Thallium	0.00500	0.0100					-0.000001	0	10	U
Vanadium	0.00500	0.0250					-0.000169	0	10	U
Zinc	0.01108	0.0200					0.006966	0	10	J

SD Sample ID: **HS18061144-03SD** Units: **mg/L** Analysis Date: **28-Jun-2018 15:57**
Client ID: Run ID: **ICPMS05_318820** SeqNo: **4629714** PrepDate: **27-Jun-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Lead	0.00500	0.0100					0.000218	0	10	U

The following samples were analyzed in this batch: HS18061039-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129991 **Instrument: HG03** **Method: SW7470**

MBLK Sample ID: **MBLK-129991** Units: **mg/L** Analysis Date: **30-Jun-2018 13:53**
Client ID: Run ID: **HG03_319005** SeqNo: **4632370** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0000500	0.000200								U

LCS Sample ID: **LCS-129991** Units: **mg/L** Analysis Date: **30-Jun-2018 13:55**
Client ID: Run ID: **HG03_319005** SeqNo: **4632371** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0047	0.000200	0.005	0	94.0	80 - 120				

MS Sample ID: **HS18060981-08MS** Units: **mg/L** Analysis Date: **30-Jun-2018 14:03**
Client ID: Run ID: **HG03_319005** SeqNo: **4632376** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00464	0.000200	0.005	-0.000051	93.8	75 - 125				

MSD Sample ID: **HS18060981-08MSD** Units: **mg/L** Analysis Date: **30-Jun-2018 14:10**
Client ID: Run ID: **HG03_319005** SeqNo: **4632377** PrepDate: **29-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00473	0.000200	0.005	-0.000051	95.6	75 - 125	0.00464	1.92	20	

The following samples were analyzed in this batch: HS18061039-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: 129659 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 10:54**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625531** PrepDate: **21-Jun-2018** 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	*0.1011*	*0*	*0.08*	*0*	*126*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06319*	*0*	*0.08*	*0*	*79.0*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.05838*	*0*	*0.08*	*0*	*73.0*	*40 - 140*				

LCS Sample ID: **LCS-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:14**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625532** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07838	0.010	0.08	0	98.0	40 - 140				
Surr: 2-Fluorobiphenyl	*0.08025*	*0*	*0.08*	*0*	*100*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06393*	*0*	*0.08*	*0*	*79.9*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.0471*	*0*	*0.08*	*0*	*58.9*	*40 - 140*				

LCSD Sample ID: **LCSD-129659** Units: **ug/L** Analysis Date: **21-Jun-2018 11:35**
Client ID: Run ID: **SV-5_318674** SeqNo: **4625533** PrepDate: **21-Jun-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.07178	0.010	0.08	0	89.7	40 - 140	0.07838	8.79	20	
Surr: 2-Fluorobiphenyl	*0.1005*	*0*	*0.08*	*0*	*126*	*40 - 140*	*0.08025*	*22.4*	*20*	R
Surr: 4-Terphenyl-d14	*0.06624*	*0*	*0.08*	*0*	*82.8*	*40 - 140*	*0.06393*	*3.56*	*20*	
Surr: Nitrobenzene-d5	*0.057*	*0*	*0.08*	*0*	*71.2*	*40 - 140*	*0.0471*	*19*	*20*	

The following samples were analyzed in this batch: HS18061039-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** 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

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 11:35**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627709** 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	*45.16*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.39*	*1.0*	*50*	*0*	*98.8*	*85 - 114*				
Surr: Dibromofluoromethane	*44.55*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** 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	49.63	1.0	50	0	99.3	78 - 124				
1,1,1-Trichloroethane	52.25	1.0	50	0	105	74 - 131				
1,1,2,2-Tetrachloroethane	61.69	1.0	50	0	123	71 - 121				S
1,1,2-Trichloroethane	51.91	1.0	50	0	104	80 - 119				
1,1-Dichloroethane	54.56	1.0	50	0	109	77 - 125				
1,1-Dichloroethene	50.53	1.0	50	0	101	71 - 131				
1,1-Dichloropropene	50.78	1.0	50	0	102	78 - 125				
1,2,3-Trichlorobenzene	58.64	1.0	50	0	117	69 - 129				
1,2,3-Trichloropropane	58.46	1.0	50	0	117	73 - 122				
1,2,4-Trichlorobenzene	57.09	1.0	50	0	114	69 - 130				
1,2,4-Trimethylbenzene	56.94	1.0	50	0	114	76 - 124				
1,2-Dibromo-3-chloropropane	63.01	1.0	50	0	126	62 - 128				
1,2-Dibromoethane	52.75	1.0	50	0	105	77 - 121				
1,2-Dichlorobenzene	56.91	1.0	50	0	114	80 - 119				
1,2-Dichloroethane	50.51	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	50.69	1.0	50	0	101	78 - 122				
1,3,5-Trimethylbenzene	56.18	1.0	50	0	112	75 - 124				
1,3-Dichlorobenzene	55.69	1.0	50	0	111	80 - 119				
1,3-Dichloropropane	56.26	1.0	50	0	113	80 - 119				
1,4-Dichlorobenzene	56.02	1.0	50	0	112	79 - 118				
2,2-Dichloropropane	56.07	1.0	50	0	112	60 - 139				
2-Butanone	113.6	2.0	100	0	114	56 - 143				
2-Chlorotoluene	56.12	1.0	50	0	112	79 - 122				
2-Hexanone	117	2.0	100	0	117	57 - 139				
4-Chlorotoluene	56.45	1.0	50	0	113	78 - 122				
4-Isopropyltoluene	52.74	1.0	50	0	105	77 - 127				
4-Methyl-2-pentanone	111.7	2.0	100	0	112	67 - 130				
Acetone	112.2	2.0	100	0	112	39 - 160				
Benzene	49.05	1.0	50	0	98.1	79 - 120				
Bromobenzene	55.92	1.0	50	0	112	80 - 120				
Bromochloromethane	48.11	1.0	50	0	96.2	78 - 123				
Bromodichloromethane	49.44	1.0	50	0	98.9	79 - 125				
Bromoform	56.08	1.0	50	0	112	66 - 130				
Bromomethane	48.56	1.0	50	0	97.1	53 - 141				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-180627** Units: **ug/L** Analysis Date: **27-Jun-2018 10:22**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627708** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	95.91	2.0	100	0	95.9	64 - 133				
Carbon tetrachloride	49.55	1.0	50	0	99.1	72 - 136				
Chlorobenzene	50.24	1.0	50	0	100	82 - 118				
Chloroethane	58.38	1.0	50	0	117	60 - 138				
Chloroform	47.91	1.0	50	0	95.8	79 - 124				
Chloromethane	48.81	1.0	50	0	97.6	50 - 139				
cis-1,2-Dichloroethene	49.08	1.0	50	0	98.2	78 - 123				
cis-1,3-Dichloropropene	51.5	1.0	50	0	103	75 - 124				
Dibromochloromethane	55.72	1.0	50	0	111	74 - 126				
Dibromomethane	53.82	1.0	50	0	108	79 - 123				
Dichlorodifluoromethane	46.69	1.0	50	0	93.4	32 - 152				
Ethylbenzene	51.51	1.0	50	0	103	79 - 121				
Hexachlorobutadiene	59.72	1.0	50	0	119	66 - 134				
Isopropylbenzene	50.24	1.0	50	0	100	72 - 131				
m,p-Xylene	100.6	2.0	100	0	101	80 - 121				
Methylene chloride	52.17	2.0	50	0	104	74 - 124				
Naphthalene	66.13	1.0	50	0	132	61 - 128				S
n-Butylbenzene	58.75	1.0	50	0	117	75 - 128				
n-Propylbenzene	51.37	1.0	50	0	103	76 - 126				
o-Xylene	50.8	1.0	50	0	102	78 - 122				
sec-Butylbenzene	56.63	1.0	50	0	113	77 - 126				
Styrene	51.06	1.0	50	0	102	78 - 123				
tert-Butylbenzene	56.44	1.0	50	0	113	78 - 124				
Tetrachloroethene	50.96	1.0	50	0	102	74 - 129				
Toluene	50.72	1.0	50	0	101	80 - 121				
trans-1,2-Dichloroethene	49.08	1.0	50	0	98.2	75 - 124				
trans-1,3-Dichloropropene	52.99	1.0	50	0	106	73 - 127				
Trichloroethene	49.36	1.0	50	0	98.7	79 - 123				
Trichlorofluoromethane	55.66	1.0	50	0	111	65 - 141				
Vinyl chloride	53.46	1.0	50	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.71*	*1.0*	*50*	*0*	*91.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.92*	*1.0*	*50*	*0*	*97.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.47*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*49.03*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627715** 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	44.36	1.0	50	0	88.7	78 - 124				
1,1,1-Trichloroethane	41.39	1.0	50	0	82.8	74 - 131				
1,1,2,2-Tetrachloroethane	55.33	1.0	50	0	111	71 - 121				
1,1,2-Trichloroethane	47.78	1.0	50	0	95.6	80 - 119				
1,1-Dichloroethane	45.19	1.0	50	0	90.4	77 - 125				
1,1-Dichloroethene	39.64	1.0	50	0	79.3	71 - 131				
1,1-Dichloropropene	40.63	1.0	50	0	81.3	78 - 125				
1,2,3-Trichlorobenzene	45.93	1.0	50	0	91.9	69 - 129				
1,2,3-Trichloropropane	53.44	1.0	50	0	107	73 - 122				
1,2,4-Trichlorobenzene	45.91	1.0	50	0	91.8	69 - 130				
1,2,4-Trimethylbenzene	45.91	1.0	50	0	91.8	76 - 124				
1,2-Dibromo-3-chloropropane	56.05	1.0	50	0	112	62 - 128				
1,2-Dibromoethane	48.06	1.0	50	0	96.1	77 - 121				
1,2-Dichlorobenzene	47.72	1.0	50	0	95.4	80 - 119				
1,2-Dichloroethane	45.56	1.0	50	0	91.1	73 - 128				
1,2-Dichloropropane	44.84	1.0	50	0	89.7	78 - 122				
1,3,5-Trimethylbenzene	45.1	1.0	50	0	90.2	75 - 124				
1,3-Dichlorobenzene	46.2	1.0	50	0	92.4	80 - 119				
1,3-Dichloropropane	52.26	1.0	50	0	105	80 - 119				
1,4-Dichlorobenzene	46.34	1.0	50	0	92.7	79 - 118				
2,2-Dichloropropane	45.31	1.0	50	0	90.6	60 - 139				
2-Butanone	108	2.0	100	0	108	56 - 143				
2-Chlorotoluene	45.67	1.0	50	0	91.3	79 - 122				
2-Hexanone	115.1	2.0	100	0	115	57 - 139				
4-Chlorotoluene	46.56	1.0	50	0	93.1	78 - 122				
4-Isopropyltoluene	42.35	1.0	50	0	84.7	77 - 127				
4-Methyl-2-pentanone	109.5	2.0	100	0	110	67 - 130				
Acetone	102.3	2.0	100	0	102	39 - 160				
Benzene	42.2	1.0	50	0	84.4	79 - 120				
Bromobenzene	47.75	1.0	50	0	95.5	80 - 120				
Bromochloromethane	42.96	1.0	50	0	85.9	78 - 123				
Bromodichloromethane	43.52	1.0	50	0	87.0	79 - 125				
Bromoform	52.35	1.0	50	0	105	66 - 130				
Bromomethane	36.21	1.0	50	0	72.4	53 - 141				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS18061144-03MS** Units: **ug/L** Analysis Date: **27-Jun-2018 14:02**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627715** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	77.28	2.0	100	0	77.3	64 - 133				
Carbon tetrachloride	38.56	1.0	50	0	77.1	72 - 136				
Chlorobenzene	44.44	1.0	50	0	88.9	82 - 118				
Chloroethane	47.7	1.0	50	0	95.4	60 - 138				
Chloroform	42.28	1.0	50	0	84.6	79 - 124				
Chloromethane	41.46	1.0	50	0	82.9	50 - 139				
cis-1,2-Dichloroethene	43.05	1.0	50	0	86.1	78 - 123				
cis-1,3-Dichloropropene	45.15	1.0	50	0	90.3	75 - 124				
Dibromochloromethane	50.95	1.0	50	0	102	74 - 126				
Dibromomethane	49.44	1.0	50	0	98.9	79 - 123				
Dichlorodifluoromethane	28.8	1.0	50	0	57.6	32 - 152				
Ethylbenzene	43.86	1.0	50	0	87.7	79 - 121				
Hexachlorobutadiene	54.45	1.0	50	0	109	66 - 134				
Isopropylbenzene	41.98	1.0	50	0	84.0	72 - 131				
m,p-Xylene	85.62	2.0	100	0	85.6	80 - 121				
Methylene chloride	48.15	2.0	50	0	96.3	74 - 124				
Naphthalene	51.8	1.0	50	0	104	61 - 128				
n-Butylbenzene	47.44	1.0	50	0	94.9	75 - 128				
n-Propylbenzene	41.77	1.0	50	0	83.5	76 - 126				
o-Xylene	44.48	1.0	50	0	89.0	78 - 122				
sec-Butylbenzene	44.82	1.0	50	0	89.6	77 - 126				
Styrene	44.87	1.0	50	0	89.7	78 - 123				
tert-Butylbenzene	45.07	1.0	50	0	90.1	78 - 124				
Tetrachloroethene	41.69	1.0	50	0	83.4	74 - 129				
Toluene	44.47	1.0	50	0	88.9	80 - 121				
trans-1,2-Dichloroethene	41.61	1.0	50	0	83.2	75 - 124				
trans-1,3-Dichloropropene	46.88	1.0	50	0	93.8	73 - 127				
Trichloroethene	42.4	1.0	50	0	84.8	79 - 123				
Trichlorofluoromethane	40.57	1.0	50	0	81.1	65 - 141				
Vinyl chloride	40.79	1.0	50	0	81.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.37*	*1.0*	*50*	*0*	*90.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.82*	*1.0*	*50*	*0*	*99.6*	*85 - 114*				
Surr: Dibromofluoromethane	*44.95*	*1.0*	*50*	*0*	*89.9*	*80 - 119*				
Surr: Toluene-d8	*50.08*	*1.0*	*50*	*0*	*100*	*89 - 112*				

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627716** 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	44.96	1.0	50	0	89.9	78 - 124	44.36	1.35	20	
1,1,1-Trichloroethane	45.72	1.0	50	0	91.4	74 - 131	41.39	9.94	20	
1,1,2,2-Tetrachloroethane	55.86	1.0	50	0	112	71 - 121	55.33	0.961	20	
1,1,2-Trichloroethane	46.67	1.0	50	0	93.3	80 - 119	47.78	2.36	20	
1,1-Dichloroethane	46.47	1.0	50	0	92.9	77 - 125	45.19	2.78	20	
1,1-Dichloroethene	44.11	1.0	50	0	88.2	71 - 131	39.64	10.7	20	
1,1-Dichloropropene	45.31	1.0	50	0	90.6	78 - 125	40.63	10.9	20	
1,2,3-Trichlorobenzene	50.83	1.0	50	0	102	69 - 129	45.93	10.1	20	
1,2,3-Trichloropropane	52.87	1.0	50	0	106	73 - 122	53.44	1.08	20	
1,2,4-Trichlorobenzene	49.53	1.0	50	0	99.1	69 - 130	45.91	7.59	20	
1,2,4-Trimethylbenzene	49.06	1.0	50	0	98.1	76 - 124	45.91	6.63	20	
1,2-Dibromo-3-chloropropane	60.11	1.0	50	0	120	62 - 128	56.05	6.99	20	
1,2-Dibromoethane	47.57	1.0	50	0	95.1	77 - 121	48.06	1.04	20	
1,2-Dichlorobenzene	49.79	1.0	50	0	99.6	80 - 119	47.72	4.25	20	
1,2-Dichloroethane	45.7	1.0	50	0	91.4	73 - 128	45.56	0.302	20	
1,2-Dichloropropane	45.22	1.0	50	0	90.4	78 - 122	44.84	0.843	20	
1,3,5-Trimethylbenzene	49.36	1.0	50	0	98.7	75 - 124	45.1	9.02	20	
1,3-Dichlorobenzene	48.9	1.0	50	0	97.8	80 - 119	46.2	5.68	20	
1,3-Dichloropropane	50.84	1.0	50	0	102	80 - 119	52.26	2.76	20	
1,4-Dichlorobenzene	49.15	1.0	50	0	98.3	79 - 118	46.34	5.89	20	
2,2-Dichloropropane	48.38	1.0	50	0	96.8	60 - 139	45.31	6.54	20	
2-Butanone	105	2.0	100	0	105	56 - 143	108	2.8	20	
2-Chlorotoluene	49.08	1.0	50	0	98.2	79 - 122	45.67	7.2	20	
2-Hexanone	112	2.0	100	0	112	57 - 139	115.1	2.72	20	
4-Chlorotoluene	49.3	1.0	50	0	98.6	78 - 122	46.56	5.72	20	
4-Isopropyltoluene	45.96	1.0	50	0	91.9	77 - 127	42.35	8.19	20	
4-Methyl-2-pentanone	106.9	2.0	100	0	107	67 - 130	109.5	2.46	20	
Acetone	97.77	2.0	100	0	97.8	39 - 160	102.3	4.56	20	
Benzene	43.14	1.0	50	0	86.3	79 - 120	42.2	2.22	20	
Bromobenzene	48.77	1.0	50	0	97.5	80 - 120	47.75	2.11	20	
Bromochloromethane	42.11	1.0	50	0	84.2	78 - 123	42.96	2	20	
Bromodichloromethane	43.54	1.0	50	0	87.1	79 - 125	43.52	0.0489	20	
Bromoform	51.02	1.0	50	0	102	66 - 130	52.35	2.57	20	
Bromomethane	42.91	1.0	50	0	85.8	53 - 141	36.21	16.9	20	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318780 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS18061144-03MSD** Units: **ug/L** Analysis Date: **27-Jun-2018 14:27**
Client ID: Run ID: **VOA6_318780** SeqNo: **4627716** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	84.92	2.0	100	0	84.9	64 - 133	77.28	9.43	20	
Carbon tetrachloride	43.9	1.0	50	0	87.8	72 - 136	38.56	12.9	20	
Chlorobenzene	45.07	1.0	50	0	90.1	82 - 118	44.44	1.39	20	
Chloroethane	50.16	1.0	50	0	100	60 - 138	47.7	5.01	20	
Chloroform	42.66	1.0	50	0	85.3	79 - 124	42.28	0.896	20	
Chloromethane	40.92	1.0	50	0	81.8	50 - 139	41.46	1.31	20	
cis-1,2-Dichloroethene	43.77	1.0	50	0	87.5	78 - 123	43.05	1.67	20	
cis-1,3-Dichloropropene	44.63	1.0	50	0	89.3	75 - 124	45.15	1.15	20	
Dibromochloromethane	50	1.0	50	0	100	74 - 126	50.95	1.87	20	
Dibromomethane	48.15	1.0	50	0	96.3	79 - 123	49.44	2.64	20	
Dichlorodifluoromethane	33.92	1.0	50	0	67.8	32 - 152	28.8	16.3	20	
Ethylbenzene	45.92	1.0	50	0	91.8	79 - 121	43.86	4.59	20	
Hexachlorobutadiene	45.99	1.0	50	0	92.0	66 - 134	54.45	16.9	20	
Isopropylbenzene	45.52	1.0	50	0	91.0	72 - 131	41.98	8.11	20	
m,p-Xylene	90.42	2.0	100	0	90.4	80 - 121	85.62	5.45	20	
Methylene chloride	47.86	2.0	50	0	95.7	74 - 124	48.15	0.596	20	
Naphthalene	59.42	1.0	50	0	119	61 - 128	51.8	13.7	20	
n-Butylbenzene	49.5	1.0	50	0	99.0	75 - 128	47.44	4.27	20	
n-Propylbenzene	45.97	1.0	50	0	91.9	76 - 126	41.77	9.57	20	
o-Xylene	45.29	1.0	50	0	90.6	78 - 122	44.48	1.82	20	
sec-Butylbenzene	48.84	1.0	50	0	97.7	77 - 126	44.82	8.57	20	
Styrene	45.49	1.0	50	0	91.0	78 - 123	44.87	1.37	20	
tert-Butylbenzene	49.44	1.0	50	0	98.9	78 - 124	45.07	9.23	20	
Tetrachloroethene	45.74	1.0	50	0	91.5	74 - 129	41.69	9.26	20	
Toluene	45.82	1.0	50	0	91.6	80 - 121	44.47	2.98	20	
trans-1,2-Dichloroethene	43.22	1.0	50	0	86.4	75 - 124	41.61	3.8	20	
trans-1,3-Dichloropropene	46.5	1.0	50	0	93.0	73 - 127	46.88	0.814	20	
Trichloroethene	43.84	1.0	50	0	87.7	79 - 123	42.4	3.34	20	
Trichlorofluoromethane	47.69	1.0	50	0	95.4	65 - 141	40.57	16.1	20	
Vinyl chloride	44.71	1.0	50	0	89.4	58 - 137	40.79	9.17	20	
Surr: 1,2-Dichloroethane-d4	*45.09*	*1.0*	*50*	*0*	*90.2*	*81 - 118*	*45.37*	*0.614*	*20*	
Surr: 4-Bromofluorobenzene	*49.22*	*1.0*	*50*	*0*	*98.4*	*85 - 114*	*49.82*	*1.22*	*20*	
Surr: Dibromofluoromethane	*45.19*	*1.0*	*50*	*0*	*90.4*	*80 - 119*	*44.95*	*0.55*	*20*	
Surr: Toluene-d8	*49.71*	*1.0*	*50*	*0*	*99.4*	*89 - 112*	*50.08*	*0.737*	*20*	

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

ALS Group Houston, Corp Date: 11-Jul-18

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP/GWTP Quarterly Effluent
WorkOrder:	HS18061039

QC BATCH REPORT

Batch ID:	**R318780**	**Instrument:**	**VOA6**	**Method:**	**SW8260**

The following samples were analyzed in this batch:	HS18061039-01	HS18061039-02

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318752 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-062518** Units: **mg/L** Analysis Date: **25-Jun-2018 14:12**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627144** 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: **WLCSW1-062518** Units: **mg/L** Analysis Date: **25-Jun-2018 14:26**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627145** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.73	0.500	20	0	104	80 - 120				
Sulfate	20.76	0.500	20	0	104	80 - 120				

LCSD Sample ID: **WLCSDW1-062518** Units: **mg/L** Analysis Date: **25-Jun-2018 15:11**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627146** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.04	0.500	20	0	105	80 - 120	20.73	1.47	20	
Sulfate	21.25	0.500	20	0	106	80 - 120	20.76	2.35	20	

MS Sample ID: **HS18060751-01MS** Units: **mg/L** Analysis Date: **25-Jun-2018 16:09**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627148** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	569.4	5.00	100	472.9	96.4	80 - 120				O
Sulfate	143.1	5.00	100	40.22	103	80 - 120				

MSD Sample ID: **HS18060751-01MSD** Units: **mg/L** Analysis Date: **25-Jun-2018 16:24**
Client ID: Run ID: **ICS2100_318752** SeqNo: **4627149** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	573	5.00	100	472.9	100	80 - 120	569.4	0.641	20	O
Sulfate	143.3	5.00	100	40.22	103	80 - 120	143.1	0.111	20	

The following samples were analyzed in this batch: HS18061039-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318763 **Instrument: WetChem_HS** **Method: E410.4**

MBLK Sample ID: **MBLK-R318763** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627379** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	5.00	15.0								U

LCS Sample ID: **LCS-R318763** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627378** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	90	15.0	100	0	90.0	85 - 115				

MS Sample ID: **HS18061195-01MS** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627380** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	101	15.0	50	45	112	80 - 120				

DUP Sample ID: **HS18061195-01DUP** Units: **mg/L** Analysis Date: **27-Jun-2018 12:30**
Client ID: Run ID: **WetChem_HS_318763** SeqNo: **4627381** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chemical Oxygen Demand	49	15.0					45	8.51	20	

The following samples were analyzed in this batch: HS18061039-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: HS18061039

QC BATCH REPORT

Batch ID: R318885 **Instrument: Balance1** **Method: E1664A**

MBLK Sample ID: **WBLKW-062818** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629783** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	1.20	2.00								U

LCS Sample ID: **WLCSW-062818** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629785** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	40.8	2.00	40	0	102	78 - 114				

LCSD Sample ID: **WLCSDW-062818** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629784** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	39.6	2.00	40	0	99.0	78 - 114	40.8	2.99	18	

MS Sample ID: **HS18061025-01MS** Units: **mg/L** Analysis Date: **28-Jun-2018 14:15**
Client ID: Run ID: **Balance1_318885** SeqNo: **4629769** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	37.2	2.00	40	0.8	91.0	78 - 114				

The following samples were analyzed in this batch: HS18061039-01

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
WorkOrder: **HS18061039**

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 Group Houston, Corp Date: 11-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/GWTP Quarterly Effluent
Work Order: HS18061039

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	Sub
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	WET210
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	EXT040
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	WET210
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	WET210
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	MET017
HS18061039-01	LH18/24_SP650_062018	Login	6/21/2018 3:17:42 PM	PMG	VOA185
HS18061039-02	Trip Blank	Login	6/21/2018 3:17:42 PM	PMG	VOA185

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Date: 11-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Date/Time Received: **21-Jun-2018 08:45**
Work Order: HS18061039
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 21-Jun-2018 Date
Reviewed by: *RJ Modashia* eSignature — 21-Jun-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	2.4c/2.0c U/C	IR30	
Cooler(s)/Kit(s):	43651		
Date/Time sample(s) sent to storage:	6/21/18 15:30		
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: O&G received in a neat 1lt Amber bottle

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00904077

bhate
ENVIRONMENTAL ASSOCIATES, INC.

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP Quarterly 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 (1)	Sample Number (5)	Sample Matrix (4)	Number of containers	VOC	TOTAL METALS	O.L 3 GLASS	COD	CHLORIDE & SULFATE	PERCHLORATE	1,4-DIOXANE	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LH18/24-SP6SD_062018		6/20/18	1400	-	N		W	9	X	X	X	X	X	X	X				
TRIP BLANK		6/20/18		-	TB		W	2	X										
				-															
				-															
				-															
				-															
				-															
				-															
				-															
				-															
				-															
				-															

HS18061039
Bhate Environmental Associates, Inc.
LHAAP/GWTP Quarterly Effluent

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/20/18	1430	1. R Cigo	6/21/18	08:45
2.			2.		
3.			3.		

Sample Deliver Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped

Method of Shipment: ____

Fed Ex ____ Airbill

Airbill No.: 7376 9751 2724

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time: R Cigo 6/21/18 08:45

coolers # 43651
Temp 2.4c IR30
CF - 0.4

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

43651

CUSTODY SEAL

Date: 6/20/18 Time: 1430

Name: Scott Beesinger

Company: ALS

Seal Broken By:

Date: 06/21/18

43651 JUN 21 2018

CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-SW

RMA:

FedEx Express

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 7376 9751 2724

THU - 21 JUN 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817359; 1817361; 1817362; 1817365; 1817368

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2114 (218216)

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: The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 608585) was less than 1/2 the CRDL. The recovery for the LCS (608586) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1817359001 (Client ID: 18WW19_061918). 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. Manual Integrations was performed for datafiles 05JULD20.

Thomas Bosch July 07, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 06, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817368**
Project ID: HS18061039 062018
Purchase Order: HS18061039
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24_SP650_062018	1817368001	06/20/18	06/22/18	

ANALYTICAL REPORT

Workorder: 34-1817368
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24_SP650_062018**	Sampling Site: NA	Collected: 06/20/2018
Lab ID: 1817368001	Media: 125 mL Nalgene	Received: 06/22/2018
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/2114 (HBN: 218216)	**Percent Solid:** NA
	Analyzed: 07/05/2018 14:55	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**15**	1.0	2.0	4.0	1	

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 218216)**

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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 07/06/2018 11:40	/S/ Stephen Brose 07/06/2018 13:50

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: 34-1817368
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1817368

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 608585
Analyzed: 07/05/2018 09:23
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 608586
Analyzed: 07/05/2018 09:52
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.79	5.00	95.9	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1817359001	**MS:** 608587	**MSD:** 608588
Analyzed: 07/05/2018 10:38	**Analyzed:** 07/05/2018 10:10	**Analyzed:** 07/05/2018 10:24
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	6.14	5	123	78.8	123.8	6.18	124	0.51	0.0	20.0

Continuing Calibration Verification

CCV: 608582	**CCV:** 608589	**CCV:** 608591
Analyzed: 07/05/2018 08:52	**Analyzed:** 07/05/2018 13:01	**Analyzed:** 07/05/2018 15:09
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.3	25.0	105	27.1	25.0	108	26.7	25.0	107

Interference Check Sample

ICSA: 608584
Analyzed: 07/05/2018 09:38
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.861	1.00	86.1

Limit of Detection Verification

LODV: 608583	**LODV:** 608590	**LODV:** 608592
Analyzed: 07/05/2018 09:09	**Analyzed:** 07/05/2018 13:15	**Analyzed:** 07/05/2018 15:23
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.970	1.00	97.0	0.988	1.00	98.8

Quality Control Sample Batch Report

Analysis Information

Workorder: 1817368

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2114 (HBN: 218216)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Comments

The following samples were analyzed and reported at various dilutions. 1817395005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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
07/06/2018 11:40	07/06/2018 13:49

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

00904086

W 1817368

18698/#2

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

COC ID: 9327

1817368

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:	HS18061039
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18061039-01**	**LH18/24_SP650_062018**	**Water**	**20 Jun 2018 14:00**
	SUB_Perch-6850			29 Jun 2018

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: 6/21/18 1800

Received By: _____ Date/Time: 06-22-18 9:40

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

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ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18061039	Split:	Workorder ID: 1817368	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	06/20/2018 14:00	LH18/24_SP650_062018	1817368001		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	06/22/2018 09:40	ALS Sample Receiving	Sample Login
Julie Warath 6/22/18 1410 R.33.1	7.3.18/08.45	5B T. Bush	storage 6850

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

Fri, 06/22/18 2:06 PM

ALSCOCV3.1

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

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston
Project/Task/Site: 1817368
Date/Time of Receipt: 06-22-18 9:40
Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA tt 06-22-18	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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8668	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tamilan Tassell (Signature) Tamilan Tassell (Printed Name) 06-22-18 (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: _____

00904089



ALS

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

SHIP DATE: 21JUN18
ACTWGT: 19.60 LB
CAD: 300130/CAFE3111
DIMS: 19x16x13 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18060769/1031/1036/1039-RJ

FedEx Express

E

J171016102001uv

TRK# 0201 4[illegible]0 9530 2543

FRI - 22 JUN 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US SLC

Part # 159469-434 RIT2 EXP 03/19

546C2/93DF/53C1

Batch Worklist

Batch: ELMS/ 2114 Created: 7/5/2018 08:36 Instrument: HBN: 218216

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

Workorder: 1817359 [ENV_LVL4]
Workorder: 1817361 [ENV_LVL4]
Workorder: 1817362 [ENV_LVL4]
Workorder: 1817365 [ENV_LVL4]
Workorder: 1817368 [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	608582	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
2	608583	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
3	608584	ICS for HBN 218216 [ELMS/2114]				ICS	3		E6850..D3Q	5311		7/5/2018	
4	608585	LMB for HBN 218216 [ELMS/2114]				LMB	3		E6850Q413Q	5311		7/5/2018	
5	608586	LCS for HBN 218216 [ELMS/2114]				LCS	3		E6850Q413Q	5311		7/5/2018	
6	1817359001	18WW19_061918				SAMPLE	3	1817359001-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
7	608587	18WW19_061918(1817359001MS)				MS	3		E6850Q413Q	5311		7/5/2018	
8	608588	18WW19_061918(1817359001MSD)				MSD	3		E6850Q413Q	5311		7/5/2018	
9	1817359002	18WW19_061918-a				SAMPLE	3	1817359002-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
10	1817359003	18WW20_061918				SAMPLE	3	1817359003-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
11	1817359004	AWD4_061918				SAMPLE	3	1817359004-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
12	1817359005	18WW06_061918				SAMPLE	3	1817359005-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
13	1817359006	18WW02_061918				SAMPLE	3	1817359006-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
14	1817359007	18WW14_061918				SAMPLE	3	1817359007-A	E6850Q41.3	5480	7/17/2018	7/5/2018	
15	1817361001	AWD3_061818				SAMPLE	3	1817361001-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
16	1817361002	MW7_061818				SAMPLE	3	1817361002-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
17	1817361003	18CPTMW12DW_061818				SAMPLE	3	1817361003-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
18	608589	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
19	608590	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	
20	1817361004	18CPTMW12SW_061818				SAMPLE	3	1817361004-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
21	1817361005	MW13_061818				SAMPLE	3	1817361005-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
22	1817361006	C02_061818				SAMPLE	3	1817361006-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
23	1817361007	MW17_061818				SAMPLE	3	1817361007-A	E6850Q41.3	5480	7/16/2018	7/5/2018	
24	1817362001	LH18/24_SP650_062018				SAMPLE	3	1817362001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
25	1817365001	LH18/24_SP140_062018				SAMPLE	3	1817365001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	

Batch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
26	1817368001	LH18/24_SP650_062018				SAMPLE	3	1817368001-A	E6850Q41.3	5480	7/18/2018	7/6/2018	
27	608591	CCV for HBN 218216 [ELMS/2114]				CCV	3		E685041C3Q	5311		7/5/2018	
28	608592	LODV for HBN 218216 [ELMS/2114				LODV	3		E6850..D3Q	5311		7/5/2018	



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817359 (001-07); 1817361 9001-07); 1817362 (001); 1817365 (001); 1817368 (001) ELMS Batch/HBN ID: 2114 (218216)
Prep Date: 07/03/2018 Analysis Date: 07/05/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\05JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 608586; Target = 5.0µg/L. ASTM type II water was used for LMB 608585.

MS/MSD: MS/MSD was performed on sample 1817359001 (Client ID: 18WW19_061918). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. The following samples were analyzed and reported at various dilutions. 1817359005 – 100; 1817361001 – 10; 1817361002/1817365001 – 1,000. 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\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 05JULP20.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218216-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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.

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

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

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

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

WorkOrder: HS18061367

LHAAP /GWTP

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

11-Jul-2018

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

July 11, 2018

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

Work Order: **HS18061367**

Laboratory Results for: **LHAAP /GWTP**

Dear Marcia,

ALS Environmental received 1 sample(s) on Jun 27, 2018 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 Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP /GWTP
Work Order: HS18061367

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061367-01	LH18/24_SP650_062618	Water		26-Jun-2018 13:00	27-Jun-2018 10:15	☐

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP /GWTP
Work Order: HS18061367

CASE NARRATIVE

Work Order Comments

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP /GWTP
Sample ID: LH18/24_SP650_062618
Collection Date: 26-Jun-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18061367
Lab ID:HS18061367-01
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		NA	1	11-Jul-2018 09:39

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

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP /GWTP
WorkOrder: HS18061367

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R319488	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)	**Matrix:** Water				
HS18061367-01	LH18/24_SP650_062618	26 Jun 2018 13:00			11 Jul 2018 09:39	1

ALS Group Houston, Corp Date: 11-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: LHAAP /GWTP
WorkOrder: **HS18061367**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

bhate

18698/#3

Page: _____ of _____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4090
Fax: 205-918-4050

Chain of Custody and Analytical Request

Project/Phase No: NWO1312.0150

COC Number(s): _____

UMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested [2] | Quality Assurance Samples [3]

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 [4]	Sample Number [5]	Sample Matrix [4]	Number of containers	Perchlorate									Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LHAAP-SP650	062618	6/26/18	1300	-	N		W	1	X												
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	
				-																	

HS18061367
Bhate Environmental Associates, Inc.
LHAAP GWTP

COMMENTS: 24 HR. TAT

Custody Transference to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/26/18	1330	1.	6/27/18	1015
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 Stanfill Rd, Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONJA 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 (-t) Sample, FD = Field Duplicate (-u) Samples, FR = Field Replicate (-r) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-a)

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), SB = 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 101099-01 in the Equipment Blank Lot Control

ALS-Salt Lake City-Related Information Report (CRIR)

Cooler or Container Information Checklist (Fill In or Circle)

Client Name: bhate

Project/Task/Site:

Date/Time of Receipt: 06 7 18 10:15

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:	Cooler/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	C18 86864	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) Thomas Russell (Printed Name) 06-7-18 (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:

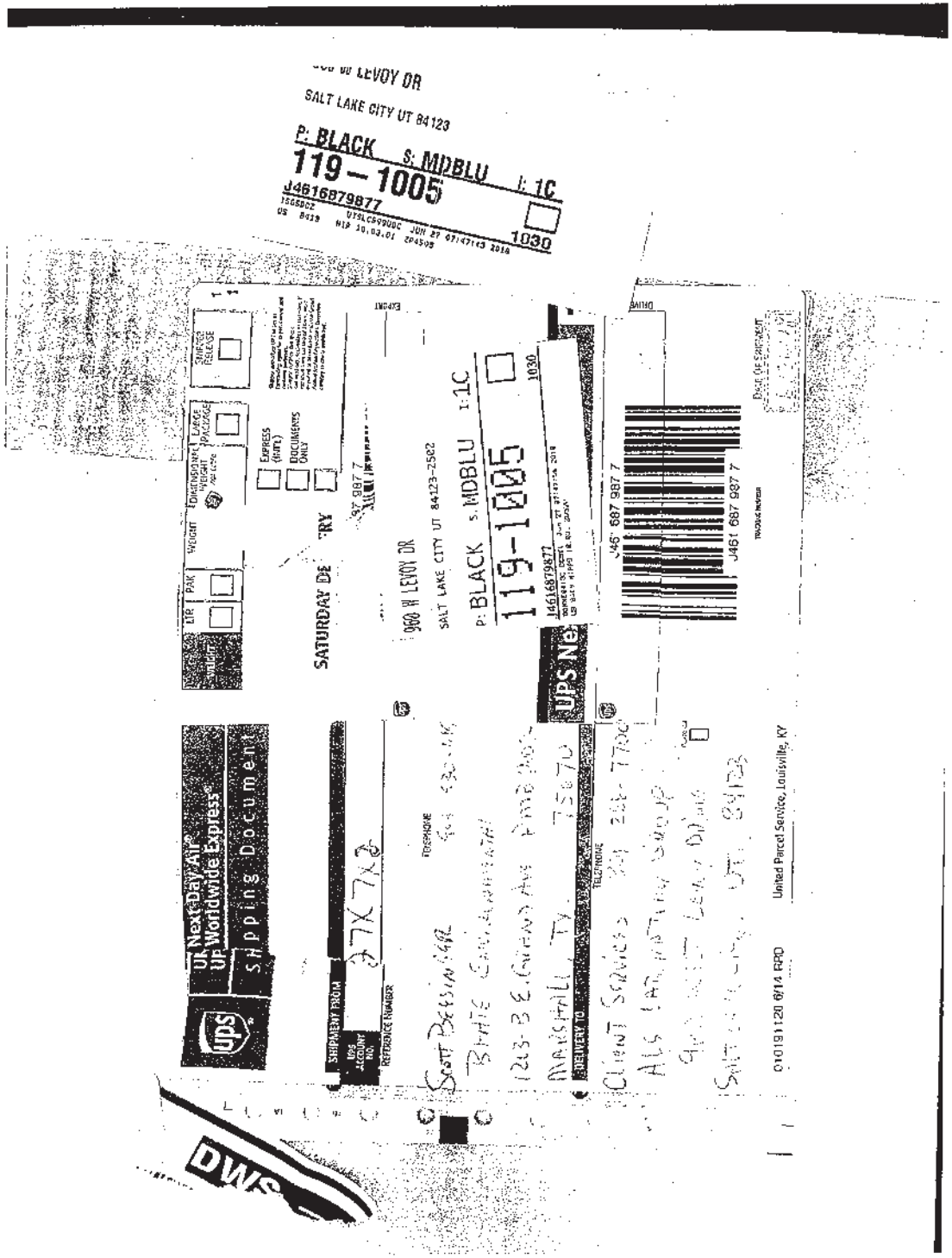
Client Notified? Yes ☐ No ☐

Response Required Within 24 Hours

Project Management

Project Manager Comments:

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


LEVOY DR
SALT LAKE CITY UT 84123
P: BLACK S: MDBLU I: 1C
119 – 1005
J4616879877
1030
SATURDAY DE
960 W LEVOY DR
SALT LAKE CITY UT 84123-2502
P: BLACK S: MDBLU I: 1C
119-1005
J4616879877
J461 687 987 7
UPS Next Day Air
UPS Worldwide Express
Shipping Document
SHIPMENT FROM
REFERENCE NUMBER
TELEPHONE
DELIVERY TO
TRACKING NUMBER
DATE OF SHIPMENT
United Parcel Service, Louisville, KY
0101911 20 6/14 RPD

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1817847

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2111 (217704)

General Set Information: There was one field sample in this Work Order. The sample was 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: The sample failed the 50-150% method requirement for ISTD recoveries so it was re-analyzed and reported from 1:5 dilution. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 607516) was less than 1/2 the CRDL. The recovery for the LCS (607517) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on parent sample 1817847001 (Client ID: LH18/24_SP650_062618). The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.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. Manual Integrations was performed for datafiles 28JUN18P006/010.

Stephen Brose July 10, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 10, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1817847**
Project ID: LHAAP/GWTP HS18061367
Purchase Order: NWO1312.0150
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24_SP650_062618	1817847001	06/26/18	06/27/18	LHAAP

ANALYTICAL REPORT

Workorder: 34-1817847
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24_SP650_062618**	Sampling Site: LHAAP	Collected: 06/26/2018
Lab ID: 1817847001	Media: 125 mL Nalgene	Received: 06/27/2018
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/2111 (HBN: 217704)	**Percent Solid:** NA
	Analyzed: 06/28/2018 13:40	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 217704)**

The sample failed the 50-150% method requirement for ISTD recoveries so it was re-analyzed and reported from 1:5 dilution. 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/ Stephen Brose 07/10/2018 13:38	/S/ Thomas Bosch 07/10/2018 14:25

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: 34-1817847
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1817847

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2111 (HBN: 217704)
		Prepared By:	NA	**Analyzed By:**	Stephen Brose

Blank

LMB: 607516
Analyzed: 06/28/2018 13:12
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 607517
Analyzed: 06/28/2018 13:26
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.71	5.00	94.2	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	1817847001	**MS:**	607518				**MSD:**	607519			
Analyzed:	06/28/2018 13:40	**Analyzed:**	06/28/2018 14:23				**Analyzed:**	06/28/2018 14:38			
Dilution:	5	**Dilution:**	5				**Dilution:**	5			
Units:	ug/L	**Units:**	ug/L				**Units:**	ug/L			

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	27.9	25	112	78.8	123.8	28.7	115	2.68	0.0	20.0

Continuing Calibration Verification

CCV:	607513			**CCV:**	607520	
Analyzed:	06/28/2018 12:30			**Analyzed:**	06/28/2018 14:52	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 15%			**Criteria:**	± 15%	

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	24.7	25.0	98.8	25.3	25.0	101

Interference Check Sample

ICSA: 607515
Analyzed: 06/28/2018 12:58
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.895	1.00	89.5

Limit of Detection Verification

LODV:	607514			**LODV:**	607521	
Analyzed:	06/28/2018 12:44			**Analyzed:**	06/28/2018 15:06	
Units:	ug/L			**Units:**	ug/L	
Criteria:	± 50%			**Criteria:**	± 50%	

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.918	1.00	91.8	0.933	1.00	93.3

Quality Control Sample Batch Report

Analysis Information

Workorder: 1817847

Limits:	Client SOW/Contract Specified	**Preparation:**	NA
Basis:	DoD QSM	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850		
Batch:	ELMS/2111 (HBN: 217704)		
Analyzed By:	Stephen Brose		

Comments

The sample failed the 50-150% method requirement for ISTD recoveries so it was re-analyzed and reported from 1:5 dilution. 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/ Stephen Brose	/S/ Thomas Bosch
07/10/2018 13:38	07/10/2018 14:25

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

00904126

bhate ENVIRONMENTAL CONSTRUCTION

1817847

18698/#3

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

1817847

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / GWTP

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	PERCHLORATE										Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
LH18/24_SP650	062618	6/26/18	1300	-	N		W	1	X													
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		
				-																		

19 of 89

COMMENTS: 24 HR. TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
Scott Beesinger	6/26/18	1330	1.		
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 Stanciff 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

1817847

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

COC ID: 9357

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:	HS18061367
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18061367-01**	**LH18/24_SP650_062618**	**Water**	**26 Jun 2018 13:00**
	SUB_Perch-6850			29 Jun 2018

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: _____

Received By: _____ Date/Time: _____

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

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

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

1817847

Client Name: bhate

Project/Task/Site:

Date/Time of Receipt: 06-27-18 10:15

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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 81684	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Tanner Russell (Signature) Tanner Russell (Printed Name) 06-27-18 (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: _____

CRIR.doc

Revised 01/01/2018



UPS Next Day Air® Worldwide Express®

Shipping Document

WEIGHT | LTR | PAK | WEIGHT | DIMENSIONAL WEIGHT applicable | LARGE PACKAGE | SHIPPER RELEASE

EXPRESS (INT'L)

DOCUMENTS ONLY

Shipper authorizes UPS to act as forwarding agent for export control and customs purposes. Shipper certifies that these commodities, technology or software, if exported from the United States, were exported in accordance with the Export Administration Regulations. Diversion contrary to law is prohibited.

SATURDAY DE[illegible]RY

SHIPMENT FROM

UPS ACCOUNT NO. 27X7X2

REFERENCE NUMBER

TELEPHONE

Scott Beesinger 903 930-[illegible]

BHATE Environmental

1203-B E. Grand Ave. PMB 202

Marshall, Tx. 75670

DELIVERY TO

TELEPHONE

Client Services 801 266-7700

ALS Laboratory Group

960 West Levoy Drive

Salt Lake City, UT. 84123

Reference

010191120 6/14 RRD United Parcel Service, Louisville, KY

960 W LEVOY DR

SALT LAKE CITY UT 84123-2502

P: BLACK S: MDBLU I: 1C

119-1005

1030

J4616879877

BONNE8413C DEST1 Jun 27 07:47:56 2018

US 8419 HIPPS 18.03. 29520

UPS Ne[illegible]

J46[illegible] 687 987 7

J461 687 987 7

TRACKING NUMBER

DATE OF SHIPMENT

6/26/18

960 W LEVOY DR

SALT LAKE CITY UT 84123

P: BLACK S: MDBLU I: 1C

119-1005

J4616879877

TS05DC2 UTSLC699UDC JUN 27 07:47:43 2018

US 8413 HIP 18.03.01 2P4508

1030

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: NWO1312.0150	Split:	Workorder ID: 1817847	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	EPA 6850, DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis
1	06/26/2018 13:00	LH18/24_SP650_062618	1817847001		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	06/27/2018 10:15	ALS Sample Receiving	Sample Login
Julie Warath	6/27/18 1300	15B	storage
15B	06/27/18 14:00	[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

atch Worklist

Batch: ELMS/ 2111 **Created:** 6/27/2018 16:17 **Instrument:** **HBN:** 217704

Rule: EPA 6850, DoD QSM Water **Analyst:** S. Brose **Status:** WP

Workorder: 1817847 [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	607513	CCV for HBN 217704 [ELMS/2111]				CCV	3		E685041C3Q	6214		6/29/2018	
2	607514	LODV for HBN 217704 [ELMS/2111				LODV	3		E6850..D3Q	6214		6/29/2018	
3	607515	ICS for HBN 217704 [ELMS/2111]				ICS	3		E6850..D3Q	6214		6/29/2018	
4	607516	LMB for HBN 217704 [ELMS/2111]				LMB	3		E6850Q413Q	6214		6/29/2018	
5	607517	LCS for HBN 217704 [ELMS/2111]				LCS	3		E6850Q413Q	6214		6/29/2018	
6	1817847001	LH18/24_SP650_062618				SAMPLE	3	1817847001-A	E6850Q41.3	5480	7/24/2018	6/29/2018	
7	607518	LH18/24_SP650...(1817847001MS)				MS	3		E6850Q413Q	6214		6/29/2018	
8	607519	LH18/24_SP65...(1817847001MSD)				MSD	3		E6850Q413Q	6214		6/29/2018	
9	607520	CCV for HBN 217704 [ELMS/2111]				CCV	3		E685041C3Q	6214		6/29/2018	
10	607521	LODV for HBN 217704 [ELMS/2111				LODV	3		E6850..D3Q	6214		6/29/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1817847(001)
ELMS Batch/HBN ID: 2111(217704)
Prep Date: 06/28/2018 Analysis Date:06/28/2018 Analyst: S.Brose
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\28JUN18P.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by SAB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 607517; Target = 5.0µg/L. ASTM type II water was used for LMB 607516.

MS/MSD: The matrix spike and matrix spike duplicate (MS/MSD) was performed on parent sample 1817847001 (Client ID: LH18/24_SP650_062618). The parent sample and the MS/MSD were analyzed at 1:5 dilutions. The effective spike target was 25.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits. The MS/SD failed the 50-150% requirement for internal standard recovery.

COMMENTS:

1) The sample failed the 50-150% method requirement for ISTD recoveries so it was re-analyzed and reported from 1:5 dilution. 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\2018\JUN\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for datafiles 28JUN18P006/010.
5) Notebook: \\alsltws013\ORGANIC\BROSE\NotebookLCMS\Perchlorates\Waters\2018\217704-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: **41829**
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermdt AccStd 10.ug/mL
Standard: 41828	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 10/04/2018
MFG Lot: TNB: 05/09/2018		Usable: Yes
Pipette ID: Not Provided		Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK	Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

GHS

Signal Word: Warning

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

ALS

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\28JUN18P.B

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

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

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	607513	CCV@25	Vial 71	1	Control	1	9.70189e5	9.718	24.71006
*	607514	LODV@1.	Vial 72	1	Control	2	3.51978e4	9.656	9.17485e-1
*	607515	ICS@1.0	Vial 73	1	Control	3	3.37247e4	9.571	8.95324e-1
*	607516	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	607517	QC@5.0	Vial 75	1	Control	5	1.79037e5	9.596	4.71110
*	1817847001	5X	Vial 76	1	Sample	6	6769.17383	10.329	1.43379
*	607518	178471S	Vial 77	1	Sample	7	7.47274e4	10.262	27.90209
*	607519	178471D	Vial 78	1	Sample	8	7.37853e4	10.285	28.65867
*	607520	CCV@25	Vial 71	1	Control	9	9.88703e5	9.760	25.27507
*	607521	LODV@1.	Vial 72	1	Control	10	3.42251e4	9.759	9.32883e-1

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	607513	CCV@25	Vial 71	1	Control	1	1.78222e5	9.739	5.00000
*	607514	LODV@1.	Vial 72	1	Control	2	1.81494e5	9.667	5.00000
*	607515	ICS@1.0	Vial 73	1	Control	3	1.78025e5	9.584	5.00000
*	607516	LMB	Vial 74	1	Control	4	2.10798e5	9.708	5.00000
*	607517	QC@5.0	Vial 75	1	Control	5	1.83775e5	9.617	5.00000
*	1817847001	5X	Vial 76	1	Sample	6	1.02113e5	10.313	25.00000
*	607518	178471S	Vial 77	1	Sample	7	6.46399e4	10.287	25.00000
*	607519	178471D	Vial 78	1	Sample	8	6.21180e4	10.308	25.00000
*	607520	CCV@25	Vial 71	1	Control	9	1.77229e5	9.781	5.00000
*	607521	LODV@1.	Vial 72	1	Control	10	1.73681e5	9.768	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	607513	CCV@25	Vial 71	1	Control	1	3.14871e5	9.734	24.03767
*	607514	LODV@1.	Vial 72	1	Control	2	1.26475e4	9.651	8.54139e-1
*	607515	ICS@1.0	Vial 73	1	Control	3	1.39275e4	9.584	9.80445e-1
*	607516	LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	607517	QC@5.0	Vial 75	1	Control	5	6.05405e4	9.611	4.64296
*	1817847001	5X	Vial 76	1	Sample	6	4099.20898	10.316	2.08380
*	607518	178471S	Vial 77	1	Sample	7	2.61648e4	10.279	28.61847
*	607519	178471D	Vial 78	1	Sample	8	2.44631e4	10.302	27.83488
*	607520	CCV@25	Vial 71	1	Control	9	3.16179e5	9.776	24.25694
*	607521	LODV@1.	Vial 72	1	Control	10	1.28162e4	9.770	9.14820e-1

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\28JUN18P.S

Sequence Table:

Method and Injection Info Part:

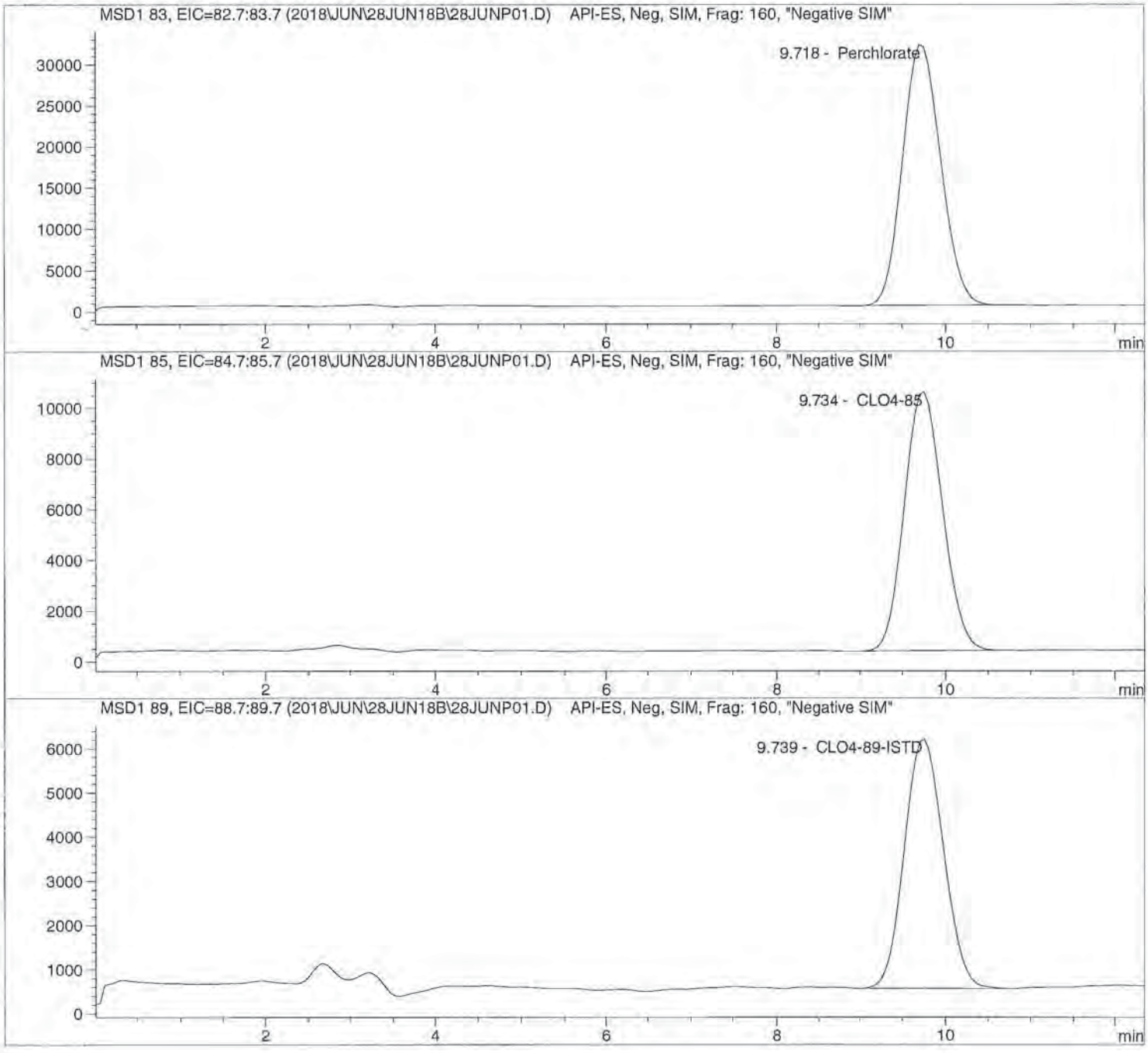
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	607513 CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	607514 LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	607515 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	607516 LMB	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	607517 QC@5.0	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	1817847001 5X	CLO4-DOD	1	Sample		
7	Vial 77	607518 178471S	CLO4-DOD	1	Sample		
8	Vial 78	607519 178471D	CLO4-DOD	1	Sample		
9	Vial 71	607520 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 72	607521 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607513 CCV@25

Injection Date:	6/28/2018 12:30:05	Seq Line:	1
Sample Name:	607513 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607513 CCV@25

Injection Date:	6/28/2018 12:30:05	Seq Line:	1
Sample Name:	607513 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.718	PBA	970189.2	24.7101	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.734	PBA	314871.0	24.0377	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.739	PBA	178222.2	5.0000	CLO4-89-ISTD

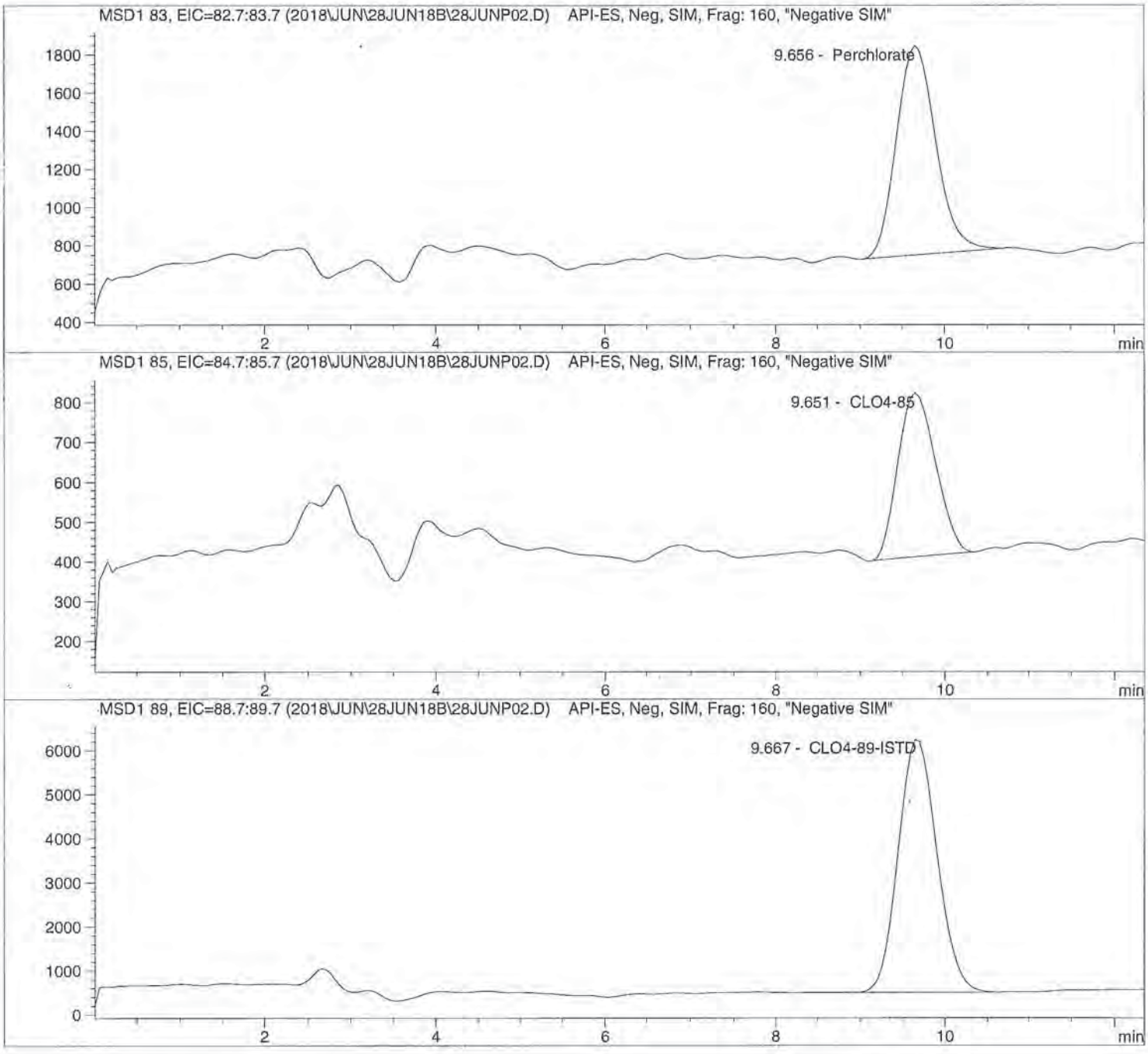
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607514 LODV@1.

Injection Date:	6/28/2018 12:44:12	Seq Line:	2
Sample Name:	607514 LODV@1.	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607514 LODV@1.

Injection Date:	6/28/2018 12:44:12	Seq Line:	2
Sample Name:	607514 LODV@1.	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.656	PBA	35197.8	0.9175	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.651	PBA	12647.5	0.8541	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.667	PBA	181494.0	5.0000	CLO4-89-ISTD

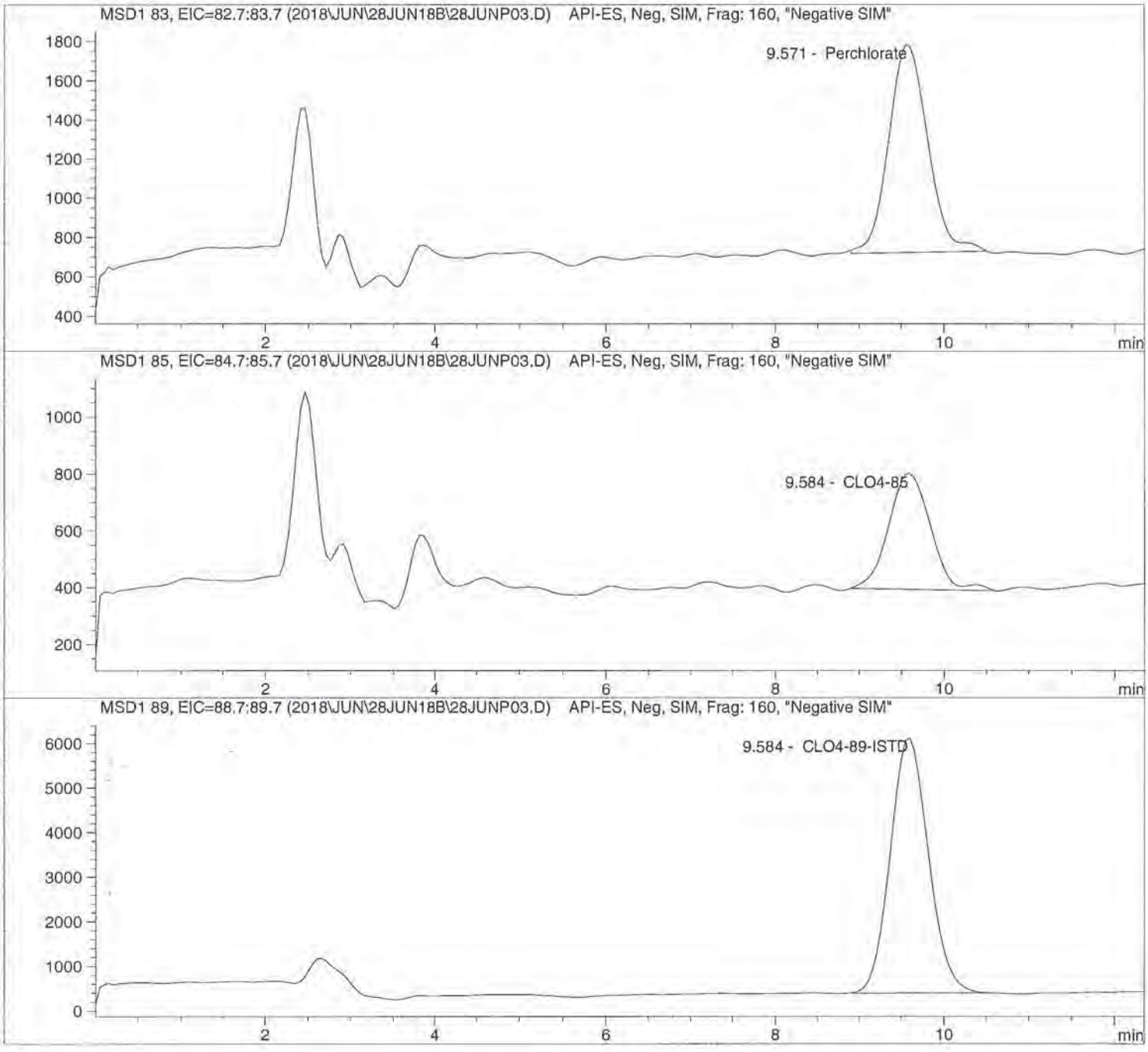
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607515 ICS@1.0

Injection Date:	6/28/2018 12:58:20	Seq Line:	3
Sample Name:	607515 ICS@1.0	Location:	Vial 73
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607515 ICS@1.0

Injection Date:	6/28/2018 12:58:20	Seq Line:	3
Sample Name:	607515 ICS@1.0	Location:	Vial 73
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.571	BBA	33724.7	0.8953	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.584	BBA	13927.5	0.9804	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.584	BBA	178024.6	5.0000	CLO4-89-ISTD

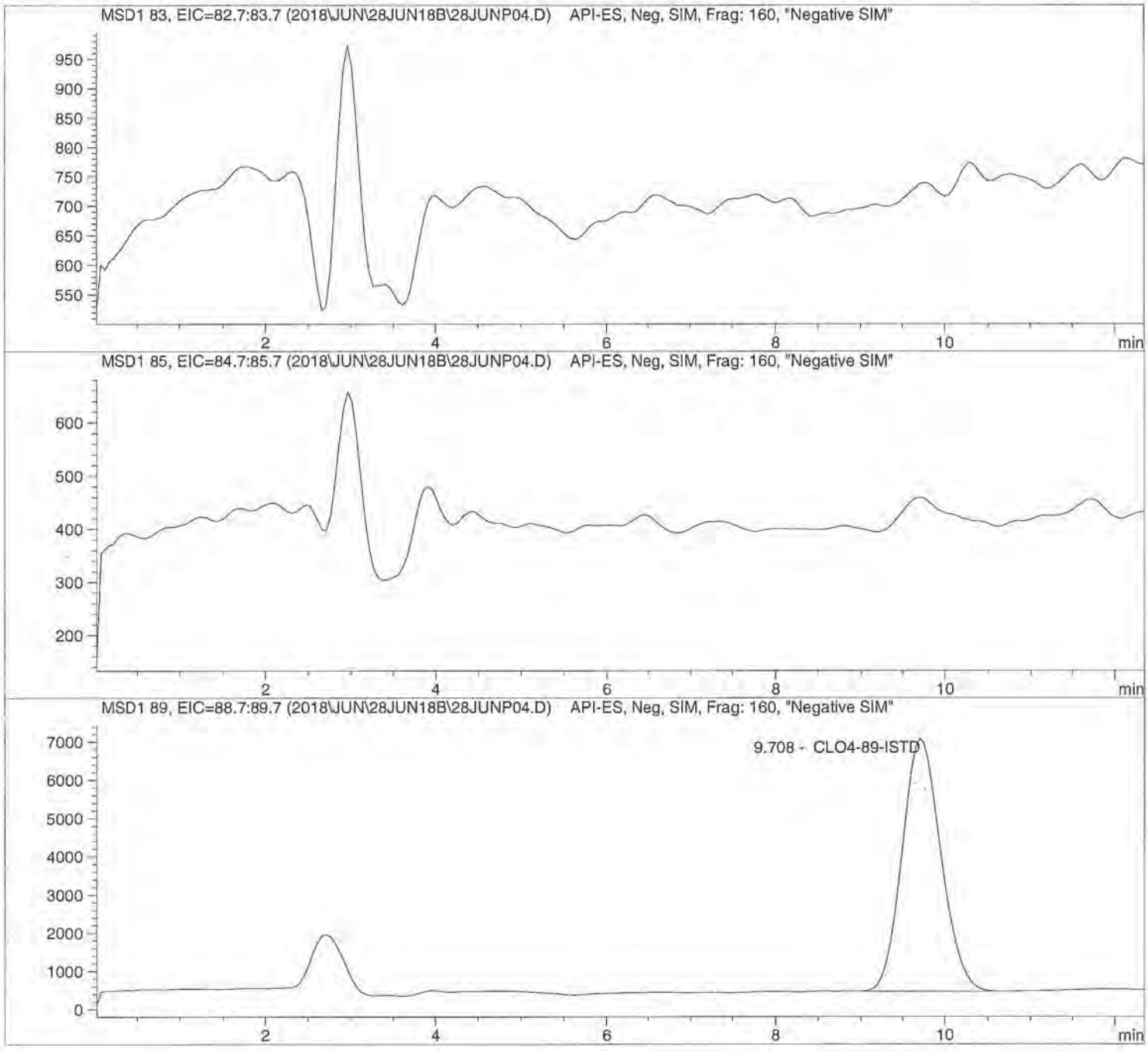
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607516 LMB

Injection Date:	6/28/2018 13:12:33	Seq Line:	4
Sample Name:	607516 LMB	Location:	Vial 74
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607516 LMB

Injection Date:	6/28/2018 13:12:33	Seq Line:	4
Sample Name:	607516 LMB	Location:	Vial 74
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.708	BBA	210797.8	5.0000	CLO4-89-ISTD

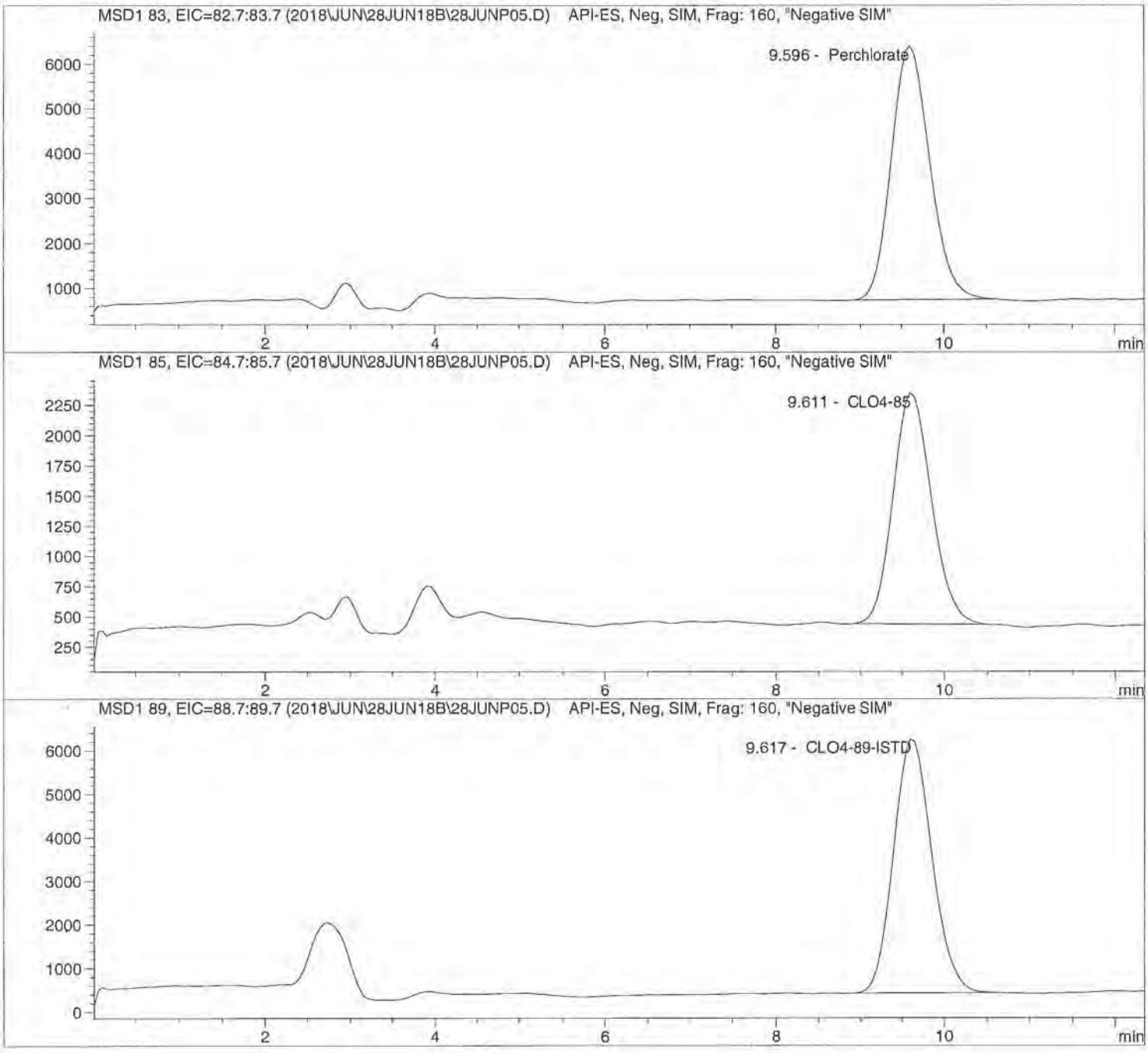
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607517 QC@5.0

Injection Date:	6/28/2018 13:26:41	Seq Line:	5
Sample Name:	607517 QC@5.0	Location:	Vial 75
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607517 QC@5.0

Injection Date:	6/28/2018 13:26:41	Seq Line:	5
Sample Name:	607517 QC@5.0	Location:	Vial 75
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.596	BBA	179037.0	4.7111	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.611	PBA	60540.5	4.6430	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.617	BBA	183774.8	5.0000	CLO4-89-ISTD

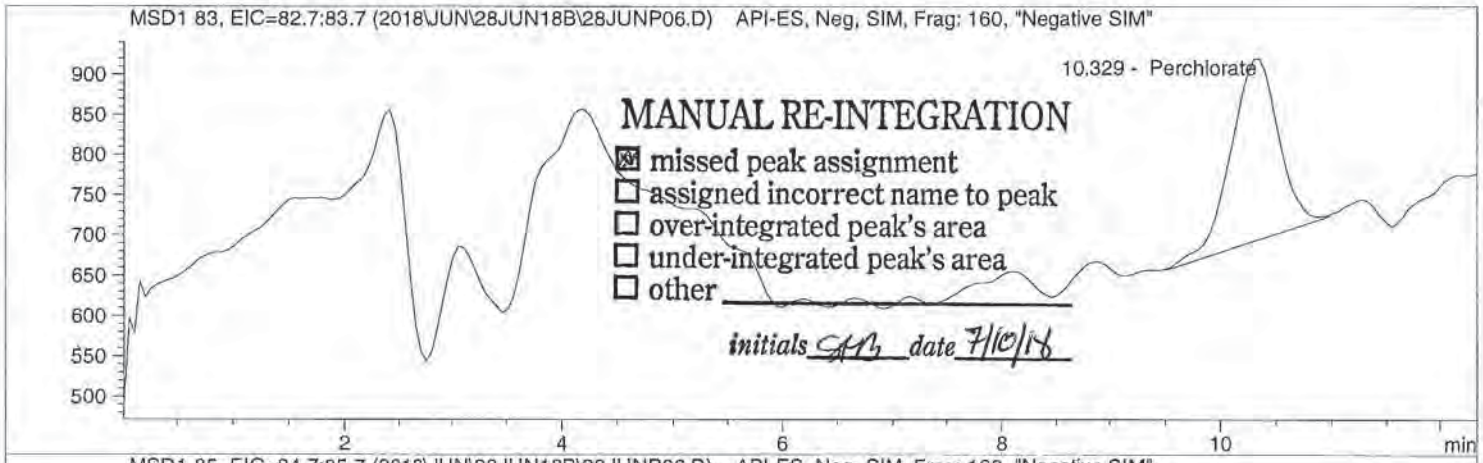
*** End of Report ***

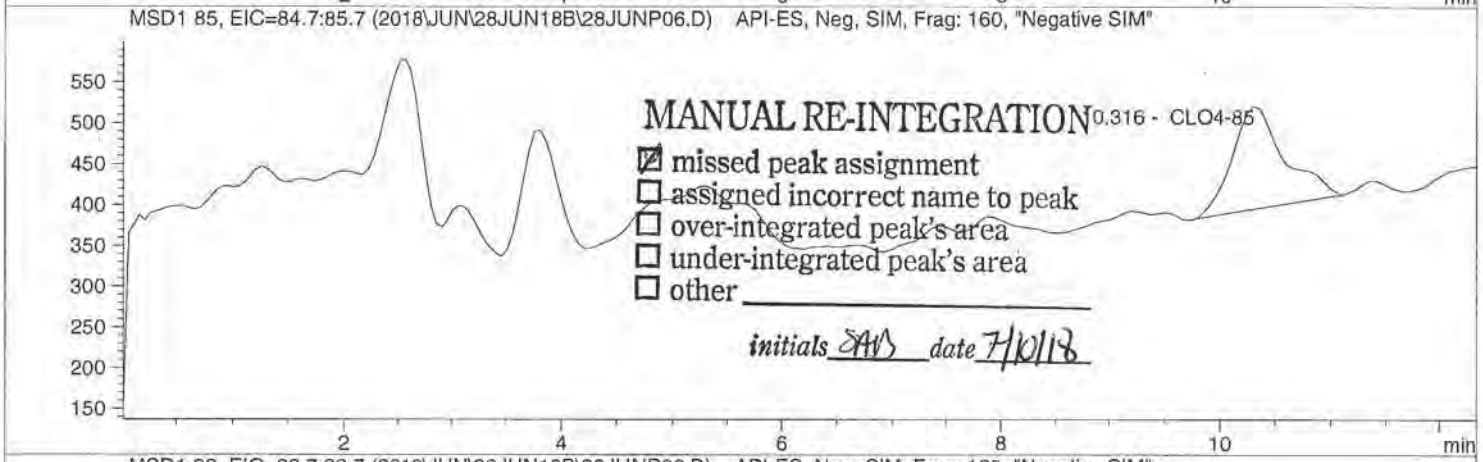
Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 1817847001 5X

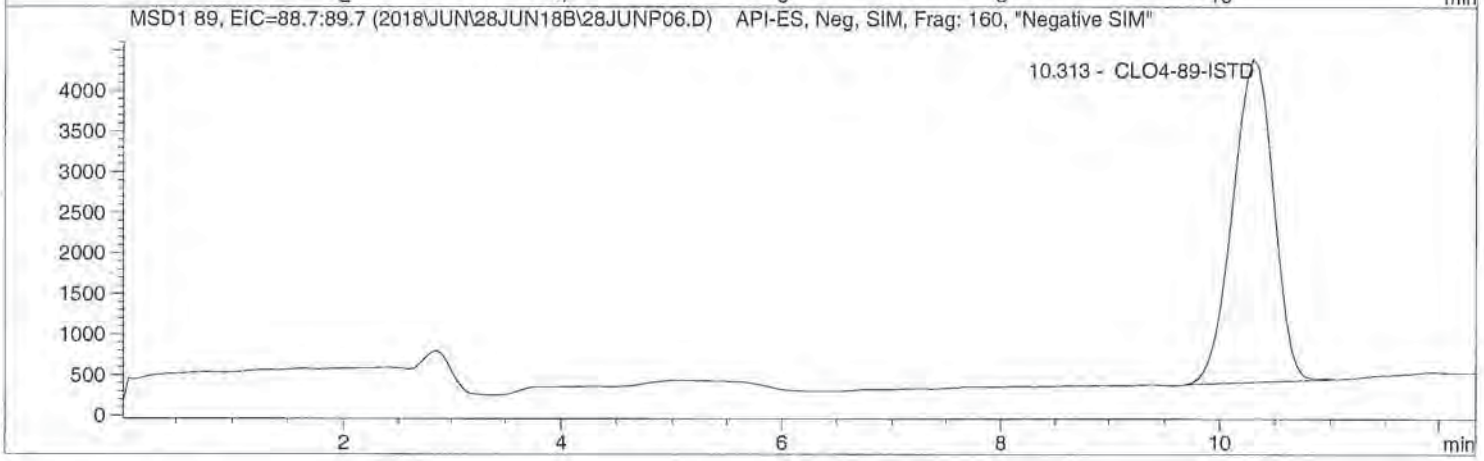
Injection Date:	6/28/2018 13:40:51	Seq Line:	6
Sample Name:	1817847001 5X	Location:	Vial 76
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 1817847001 5X

Injection Date:	6/28/2018 13:40:51	Seq Line:	6
Sample Name:	1817847001 5X	Location:	Vial 76
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.329	MM	6769.2	1.4338	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.316	MM	4099.2	2.0838	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.313	PBA	102112.9	25.0000	CLO4-89-ISTD

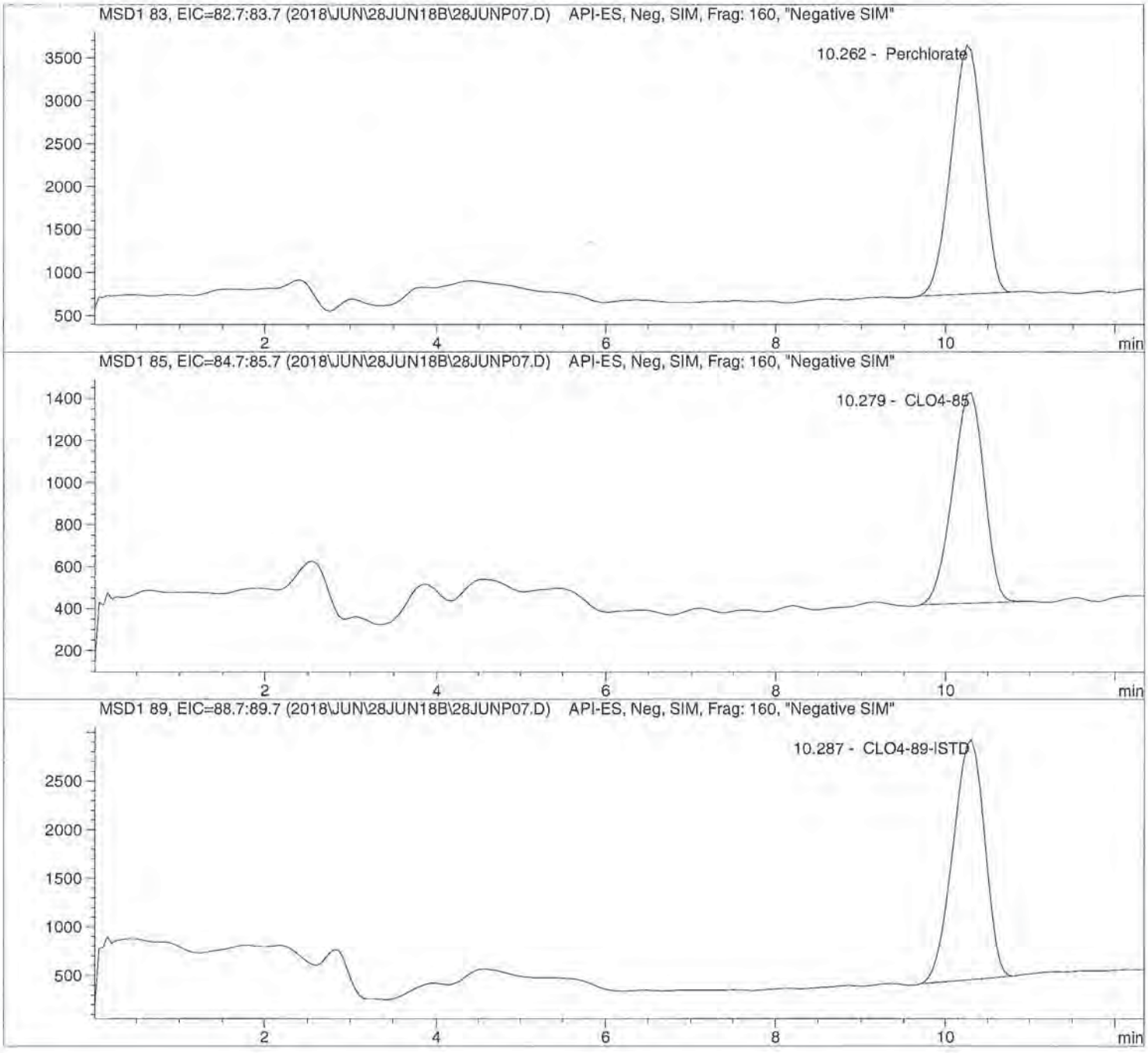
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607518 178471S

Injection Date:	6/28/2018 14:23:59	Seq Line:	7
Sample Name:	607518 178471S	Location:	Vial 77
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607518 178471S

Injection Date:	6/28/2018 14:23:59	Seq Line:	7
Sample Name:	607518 178471S	Location:	Vial 77
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.262	PBA	74727.4	27.9021	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.279	PBA	26164.8	28.6185	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.287	PBA	64639.9	25.0000	CLO4-89-ISTD

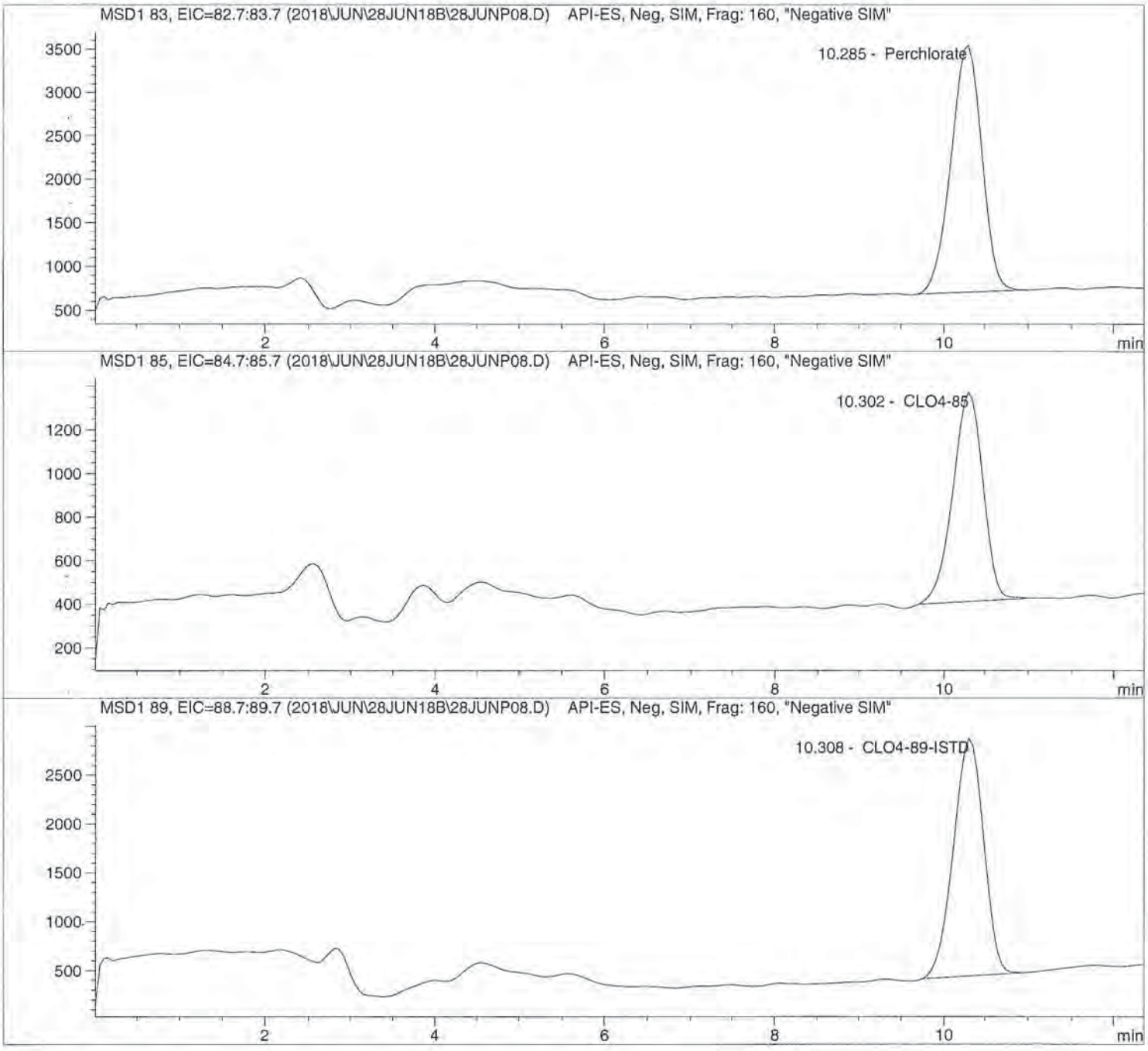
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607519 178471D

Injection Date:	6/28/2018 14:38:10	Seq Line:	8
Sample Name:	607519 178471D	Location:	Vial 78
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607519 178471D

Injection Date:	6/28/2018 14:38:10	Seq Line:	8
Sample Name:	607519 178471D	Location:	Vial 78
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.285	PBA	73785.3	28.6587	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.302	PBA	24463.1	27.8349	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.308	PBA	62118.0	25.0000	CLO4-89-ISTD

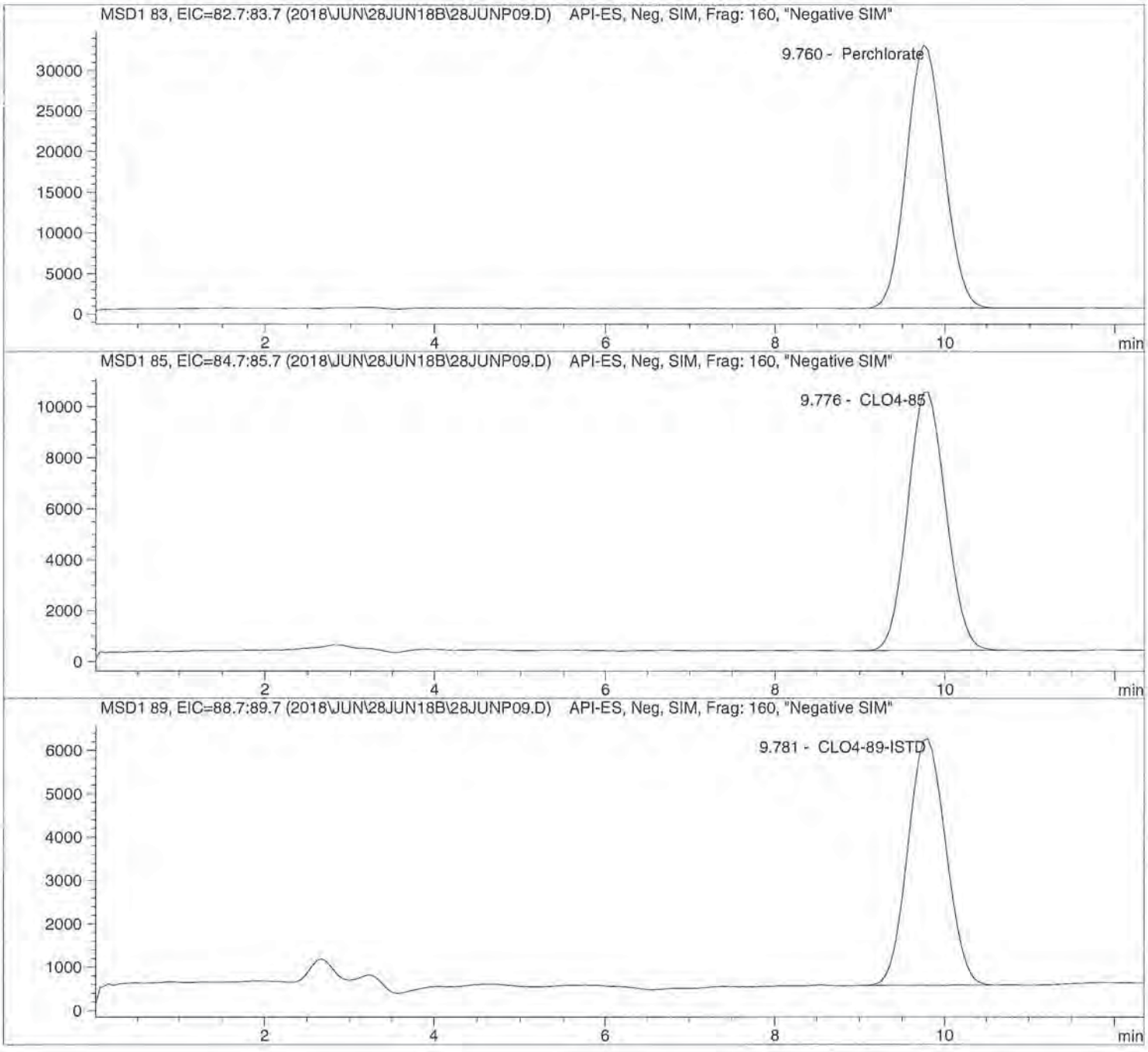
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607520 CCV@25

Injection Date:	6/28/2018 14:52:22	Seq Line:	9
Sample Name:	607520 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607520 CCV@25

Injection Date:	6/28/2018 14:52:22	Seq Line:	9
Sample Name:	607520 CCV@25	Location:	Vial 71
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.760	PBA	988703.4	25.2751	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.776	PBA	316179.2	24.2569	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.781	BBA	177229.3	5.0000	CLO4-89-ISTD

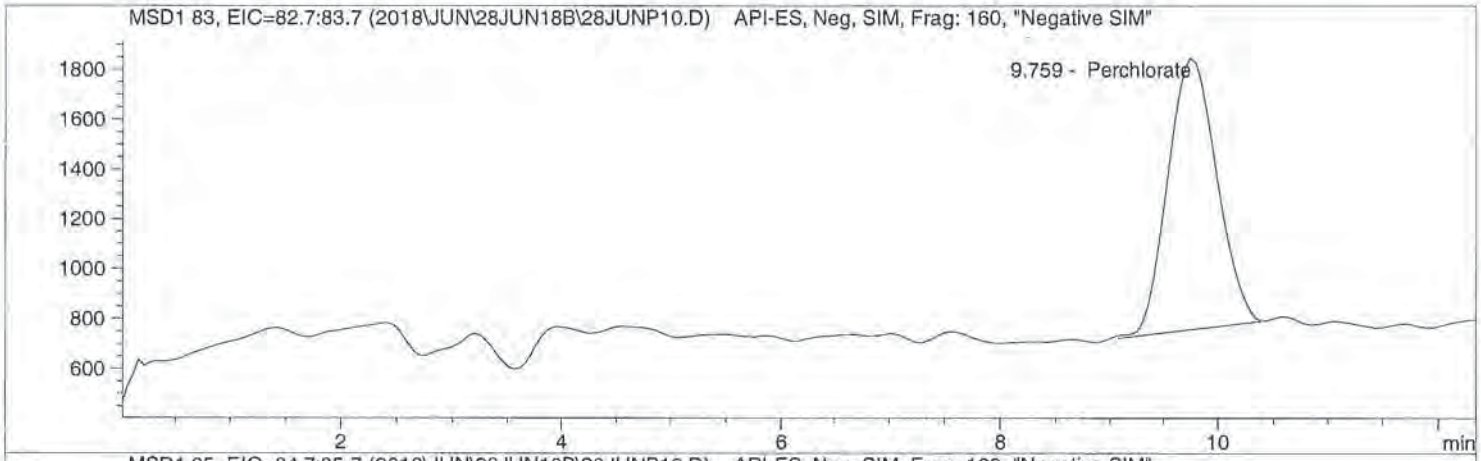
*** End of Report ***

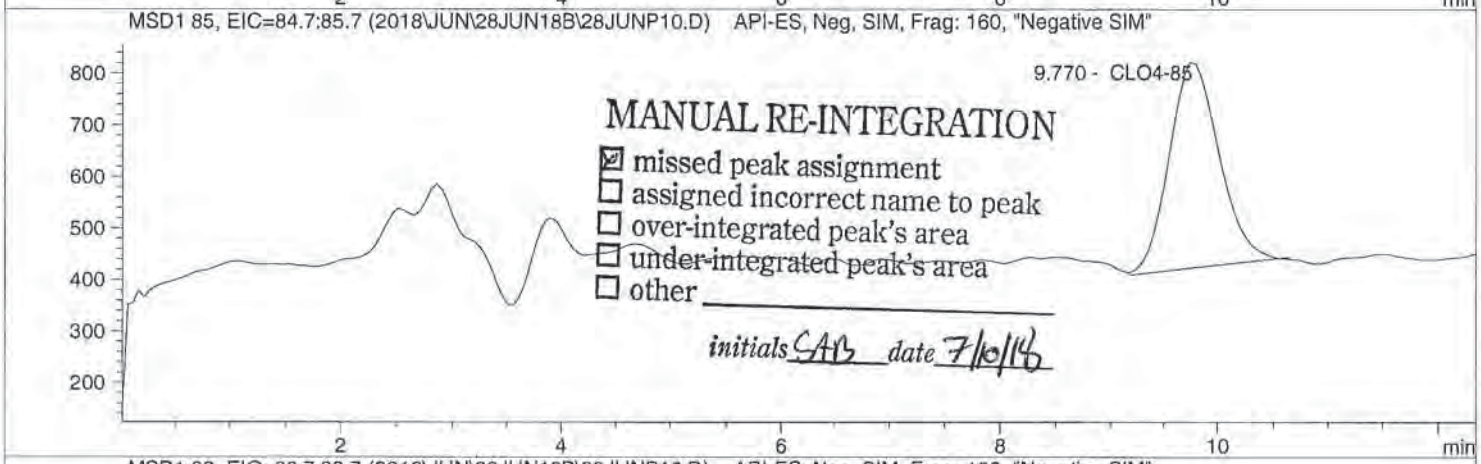
Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607521 LODV@1.

Injection Date:	6/28/2018 15:06:30	Seq Line:	10
Sample Name:	607521 LODV@1.	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

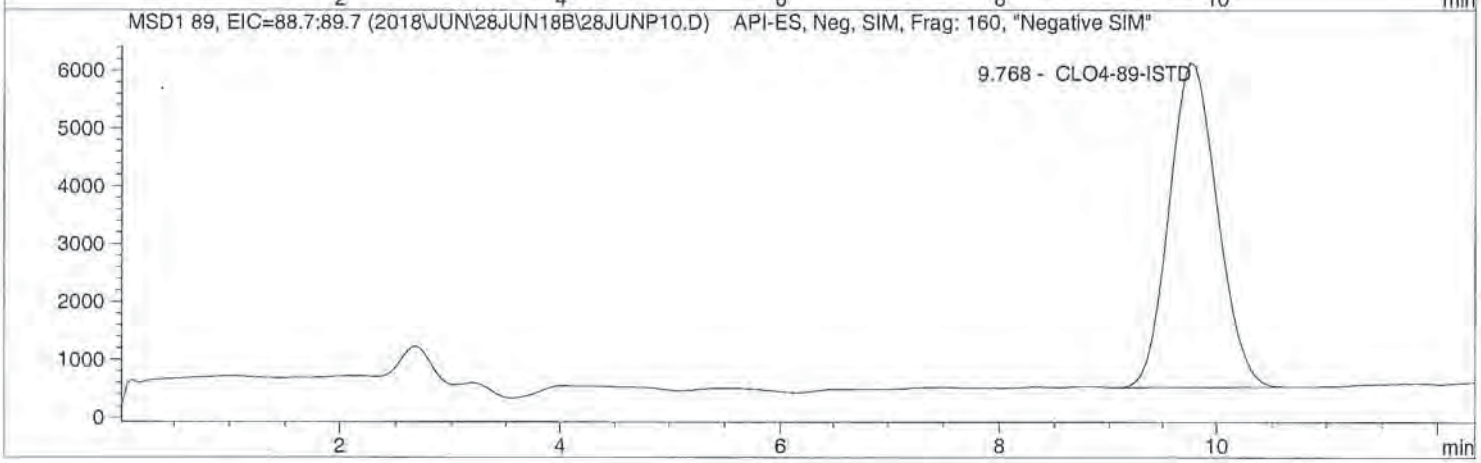
Perchlorate analysis





MANUAL RE-INTEGRATION
☑ missed peak assignment
☐ assigned incorrect name to peak
☐ over-integrated peak's area
☐ under-integrated peak's area
☐ other _____

initials SAB *date* 7/10/18



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607521 LODV@1.

Injection Date:	6/28/2018 15:06:30	Seq Line:	10
Sample Name:	607521 LODV@1.	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.759	PBA	34225.1	0.9329	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.770	MM	12816.2	0.9148	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.768	PBA	173680.8	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-DPR.M

Calibration Table

Perchlorate

Calib. Data Modified : 6/18/2018 11:33:52 AM

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
9.970	1	1	1.00000	5.39328e4	1.85416e-5		1	Perchlorate
		2	2.00000	7.74447e4	2.58249e-5			
		3	5.00000	1.73718e5	2.87823e-5			
		4	10.00000	3.76746e5	2.65431e-5			
		5	25.00000	9.93283e5	2.51691e-5			
		6	50.00000	1.86489e6	2.68113e-5			
		7	75.00000	2.98097e6	2.51596e-5			
9.988	3	1	5.00000	2.52736e5	1.97835e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.82947e5	2.73304e-5			
		3	5.00000	1.74071e5	2.87238e-5			
		4	5.00000	1.82351e5	2.74196e-5			
		5	5.00000	1.76434e5	2.83393e-5			
		6	5.00000	1.57107e5	3.18255e-5			
		7	5.00000	1.54056e5	3.24558e-5			
9.988	2	1	1.00000	1.91282e4	5.22790e-5		1	CLO4-85
		2	2.00000	2.81496e4	7.10489e-5			
		3	5.00000	6.23358e4	8.02108e-5			
		4	10.00000	1.28536e5	7.77995e-5			
		5	25.00000	3.30100e5	7.57346e-5			
		6	50.00000	6.13931e5	8.14424e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	75.00000	9.91567e5	7.56379e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 7.880 min To 11.880 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 7.881 min To 11.866 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

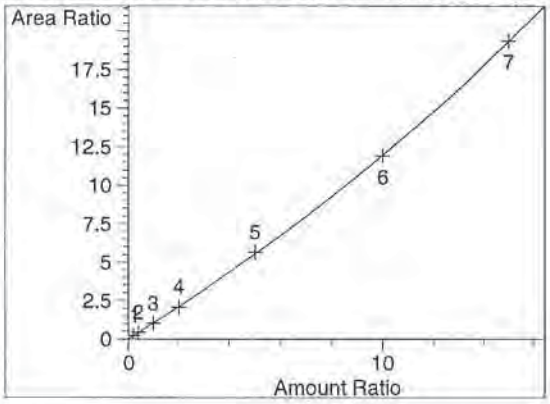
Compound: CLO4-85
- Time Window : From 7.882 min To 11.882 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Peak Sum Table

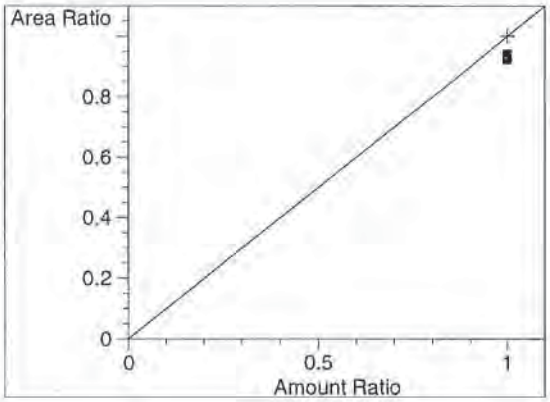
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

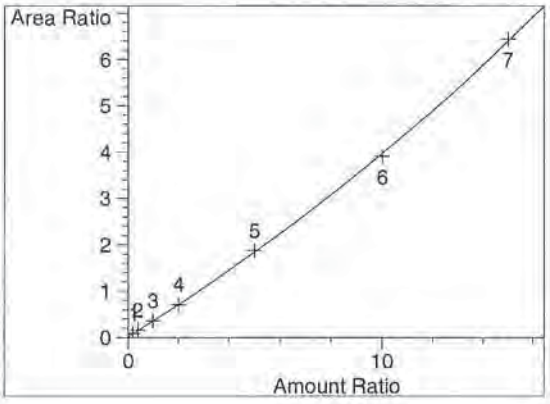
Calibration Curves



Perchlorate at exp. RT: 9.970
MSD1 83, EIC=82.7:83.7
Correlation: 0.99994
Residual Std. Dev.: 0.06841
Formula: $y = ax^2 + bx + c$
a: 1.87050e-2
b: 1.00736
c: 8.45547e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 9.988
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1



CLO4-85 at exp. RT: 9.988
MSD1 85, EIC=84.7:85.7
Correlation: 0.99991
Residual Std. Dev.: 0.03544
Formula: $y = ax^2 + bx + c$
a: 5.98841e-3
b: 3.36190e-1
c: 1.20802e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\JUN\18JUN18D.S

Sequence Table:

Method and Injection Info Part:

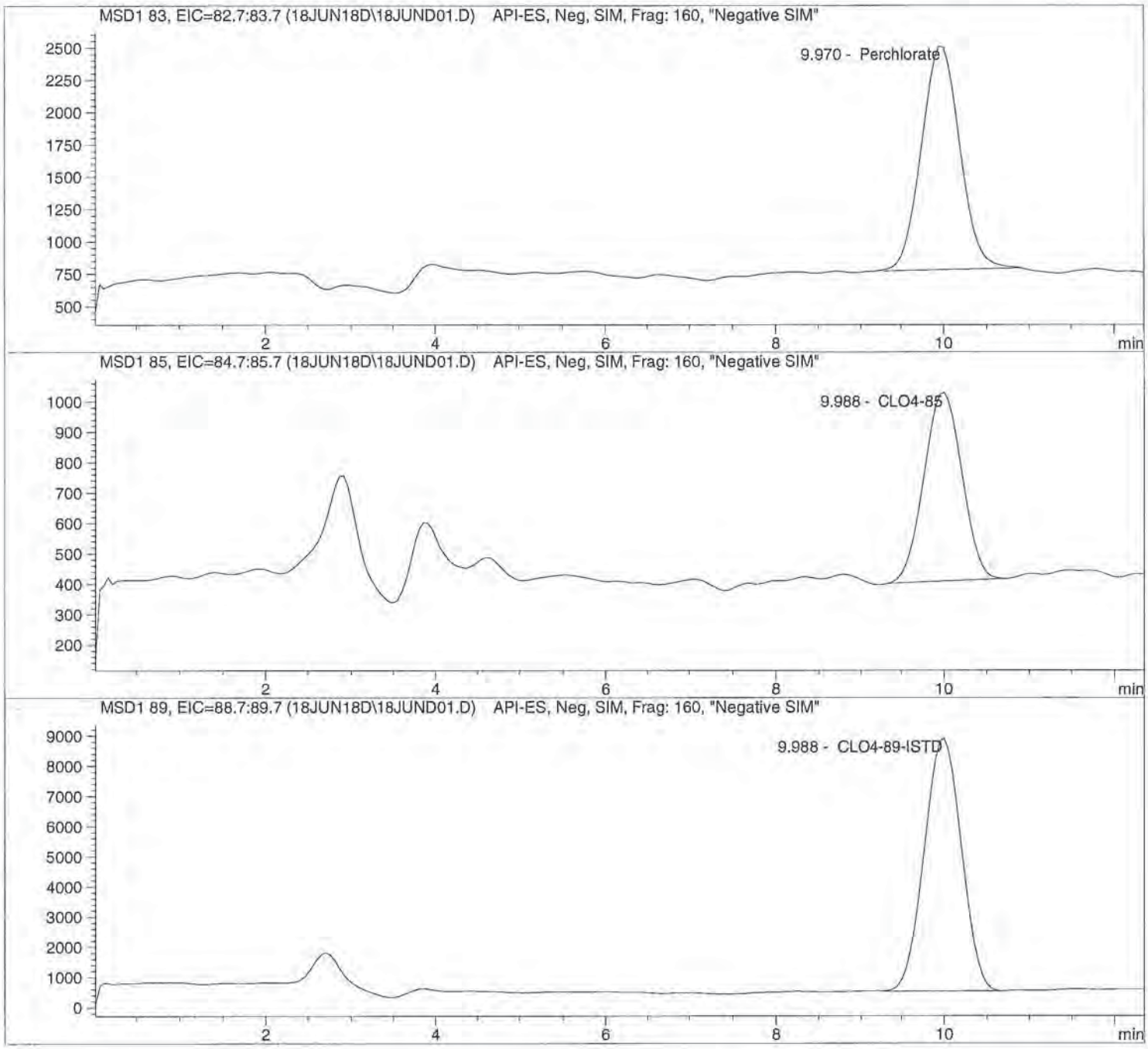
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		
9	Vial 75	605571 CCV@25	CLO4-DOD	1	Ctrl Samp		
10	Vial 71	605572 LODV@1.	CLO4-DOD	1	Ctrl Samp		
11	Vial 81	605573 ICS@1.0	CLO4-DOD	1	Ctrl Samp		
12	Vial 82	605574 LMB	CLO4-DOD	1	Ctrl Samp		
13	Vial 83	605575 QC@5.0	CLO4-DOD	1	Ctrl Samp		
14	Vial 84	1815995001	CLO4-DOD	1	Sample		
15	Vial 85	1815995002	CLO4-DOD	1	Sample		
16	Vial 86	1815995003	CLO4-DOD	1	Sample		
17	Vial 87	1815995004 10X	CLO4-DOD	1	Sample		
18	Vial 88	1815995005 10X	CLO4-DOD	1	Sample		
19	Vial 89	1815995006	CLO4-DOD	1	Sample		
20	Vial 90	1815995007 100	CLO4-DOD	1	Sample		
21	Vial 91	1815995008	CLO4-DOD	1	Sample		
22	Vial 61	1816211001	CLO4-DOD	1	Sample		
23	Vial 62	1816211002 10X	CLO4-DOD	1	Sample		
24	Vial 75	605576 CCV@25	CLO4-DOD	1	Ctrl Samp		
25	Vial 71	605577 LODV@1.	CLO4-DOD	1	Ctrl Samp		
26	Vial 63	1816211003 10X	CLO4-DOD	1	Sample		
27	Vial 64	1816211004	CLO4-DOD	1	Sample		
28	Vial 65	1816211005 10X	CLO4-DOD	1	Sample		
29	Vial 66	1816211006 MS	CLO4-DOD	1	Sample		
30	Vial 67	1816211007 MSD	CLO4-DOD	1	Sample		
31	Vial 68	1816211008	CLO4-DOD	1	Sample		
32	Vial 69	1816211009 10X	CLO4-DOD	1	Sample		
33	Vial 70	1816211010	CLO4-DOD	1	Sample		
34	Vial 92	1815995007 1K	CLO4-DOD	1	Sample		
35	Vial 75	605578 CCV@25	CLO4-DOD	1	Ctrl Samp		
36	Vial 71	605579 LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	6/18/2018 08:51:01	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.970	BBA	53932.8	1.0134	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	PBA	19128.2	0.9428	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.988	BBA	252736.1	5.0000	CLO4-89-ISTD

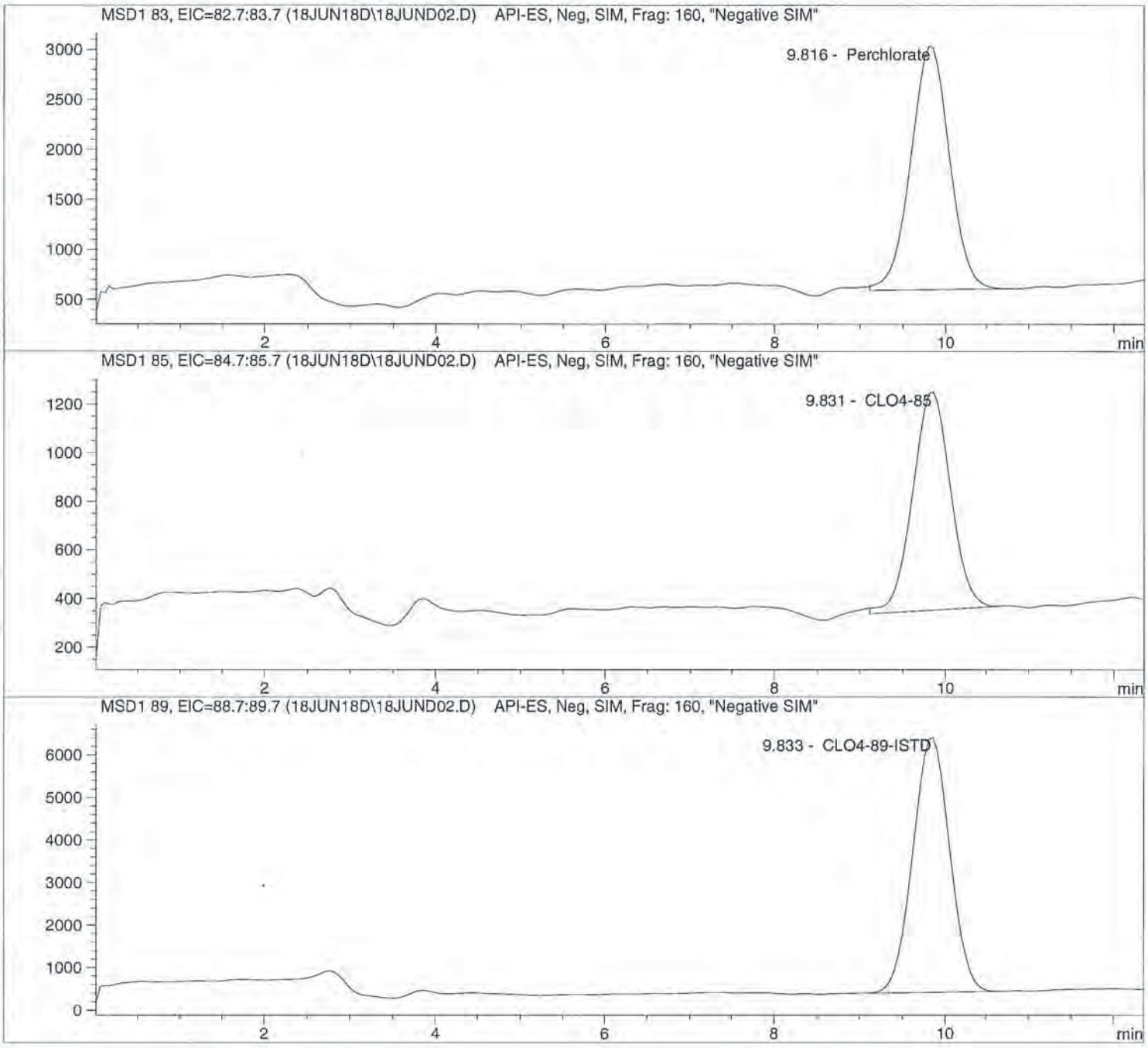
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	6/18/2018 09:05:11	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.816	BBA	77444.7	2.0436	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.831	BBA	28149.6	2.0931	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.833	BBA	182946.7	5.0000	CLO4-89-ISTD

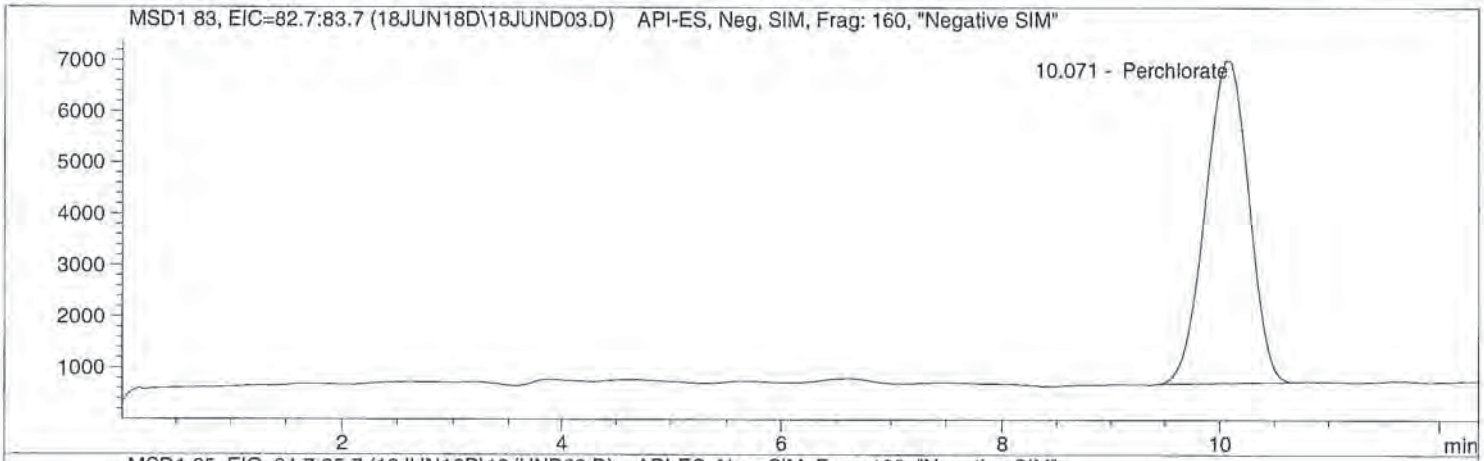
*** End of Report ***

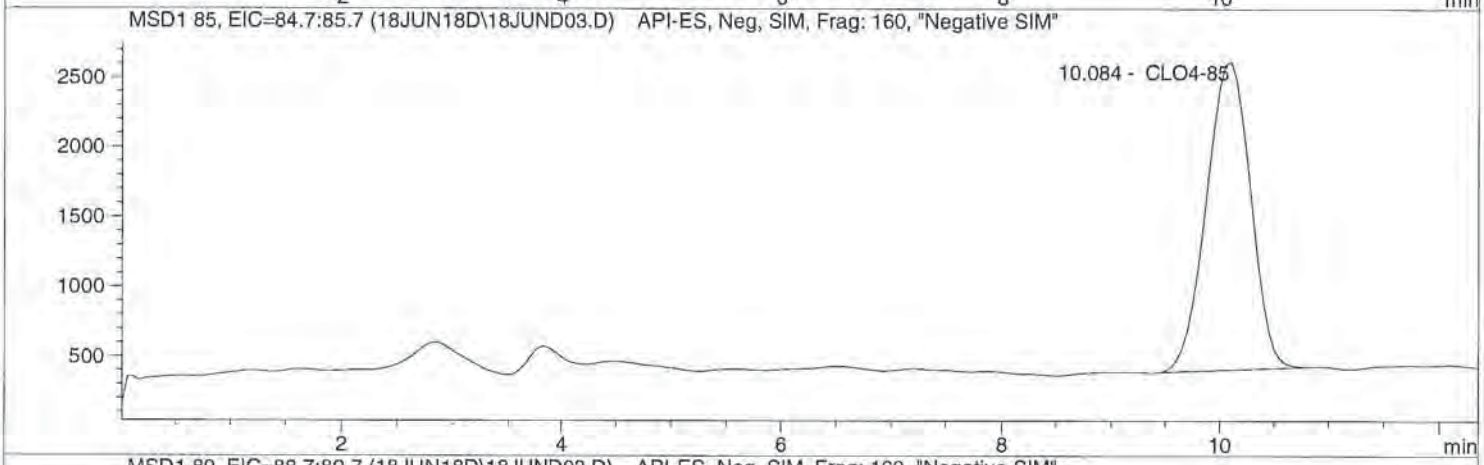
Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

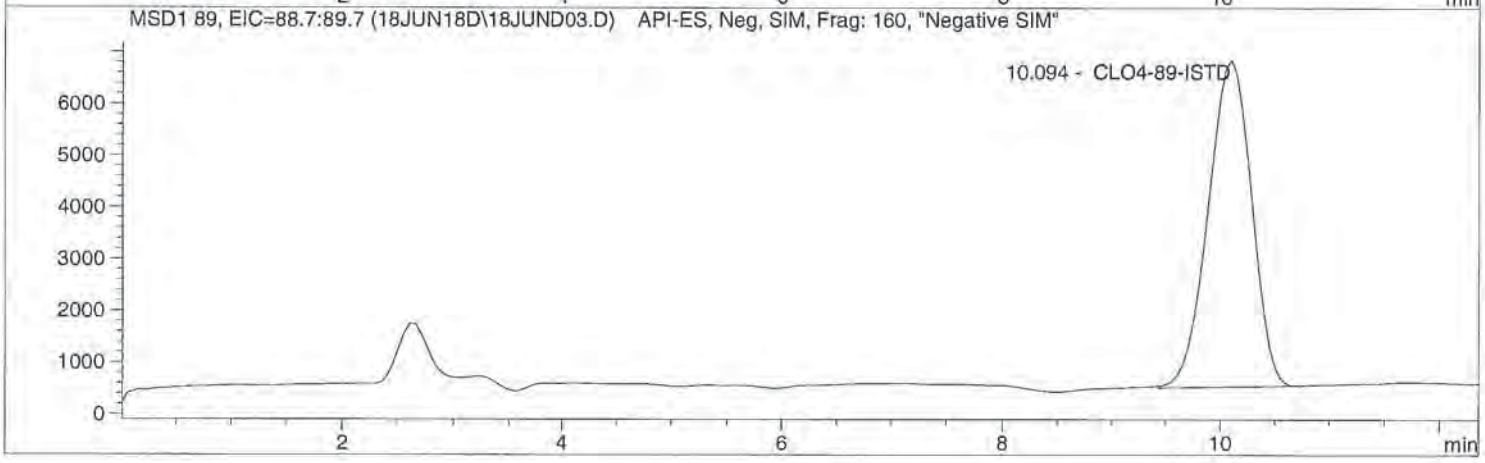
Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	6/18/2018 09:19:25	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
10.071	PBA	173717.8	4.8249	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.084	PBA	62335.8	5.0552	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
10.094	BBA	174071.5	5.0000	CLO4-89-ISTD

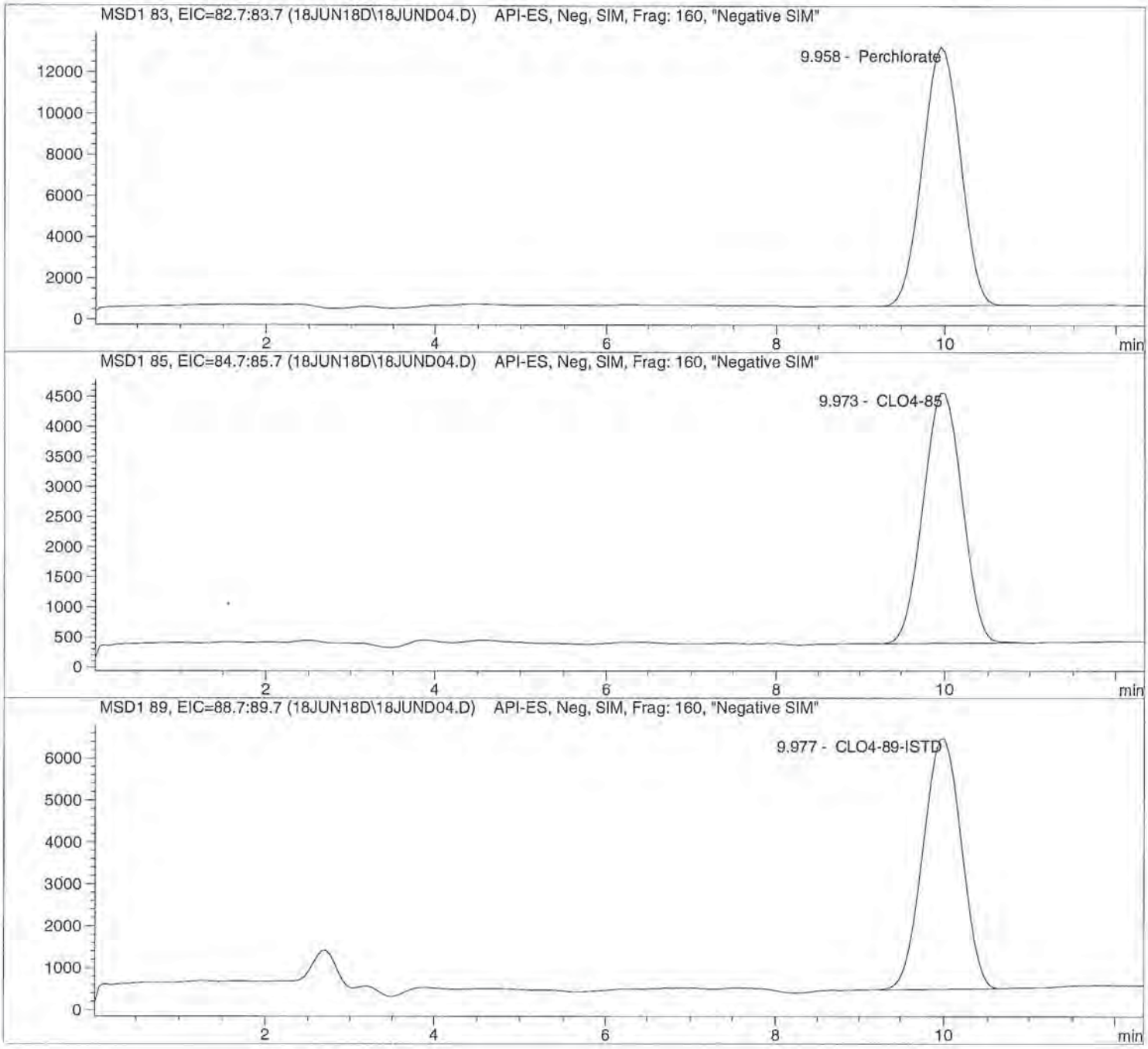
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	6/18/2018 09:33:38	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.958	PBA	376746.4	9.8523	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.973	PBA	128535.5	9.9509	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.977	BBA	182351.5	5.0000	CLO4-89-ISTD

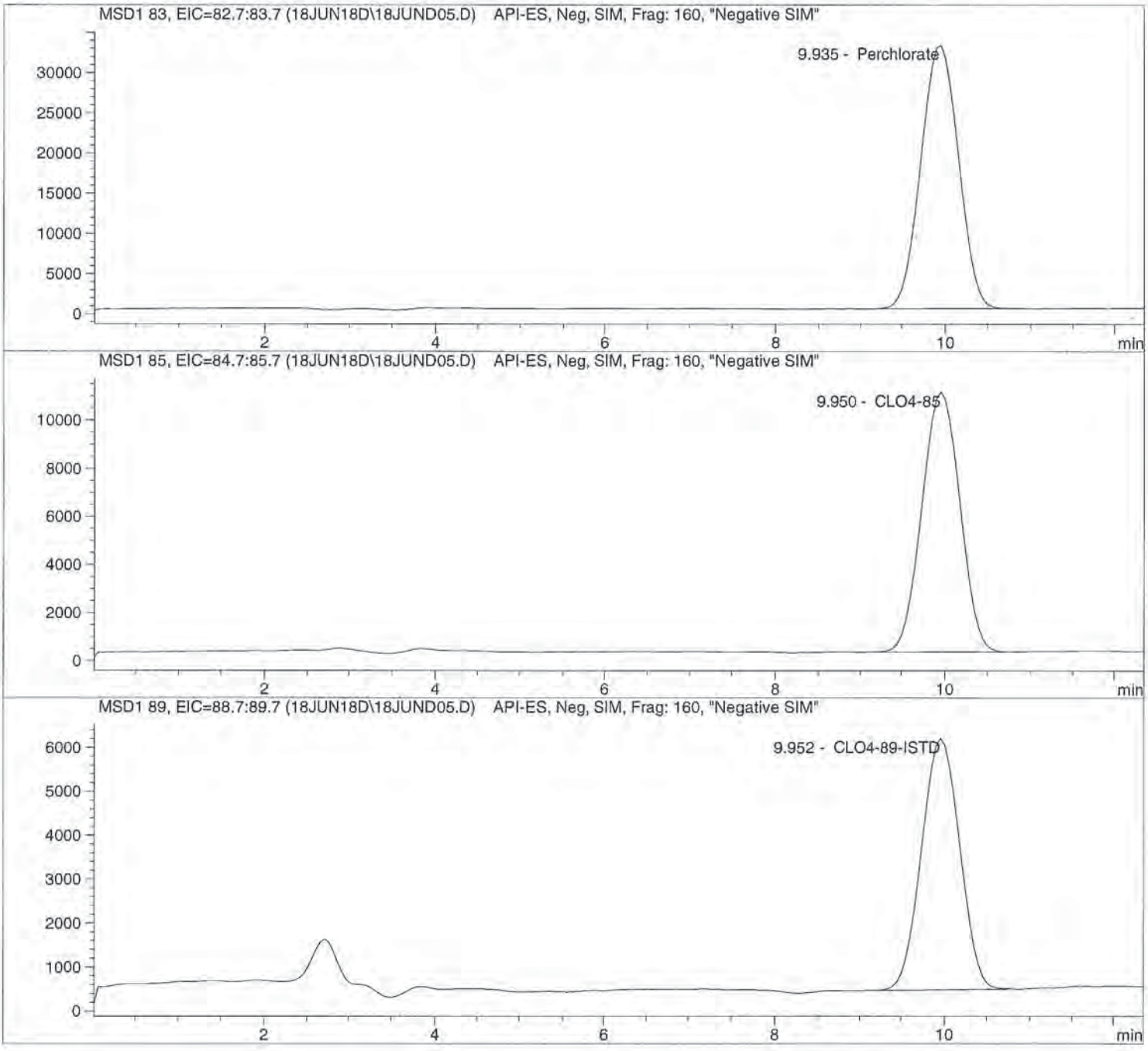
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	6/18/2018 09:47:49	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.935	BBA	993282.6	25.4885	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.950	BBA	330100.2	25.3558	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.952	BBA	176433.5	5.0000	CLO4-89-ISTD

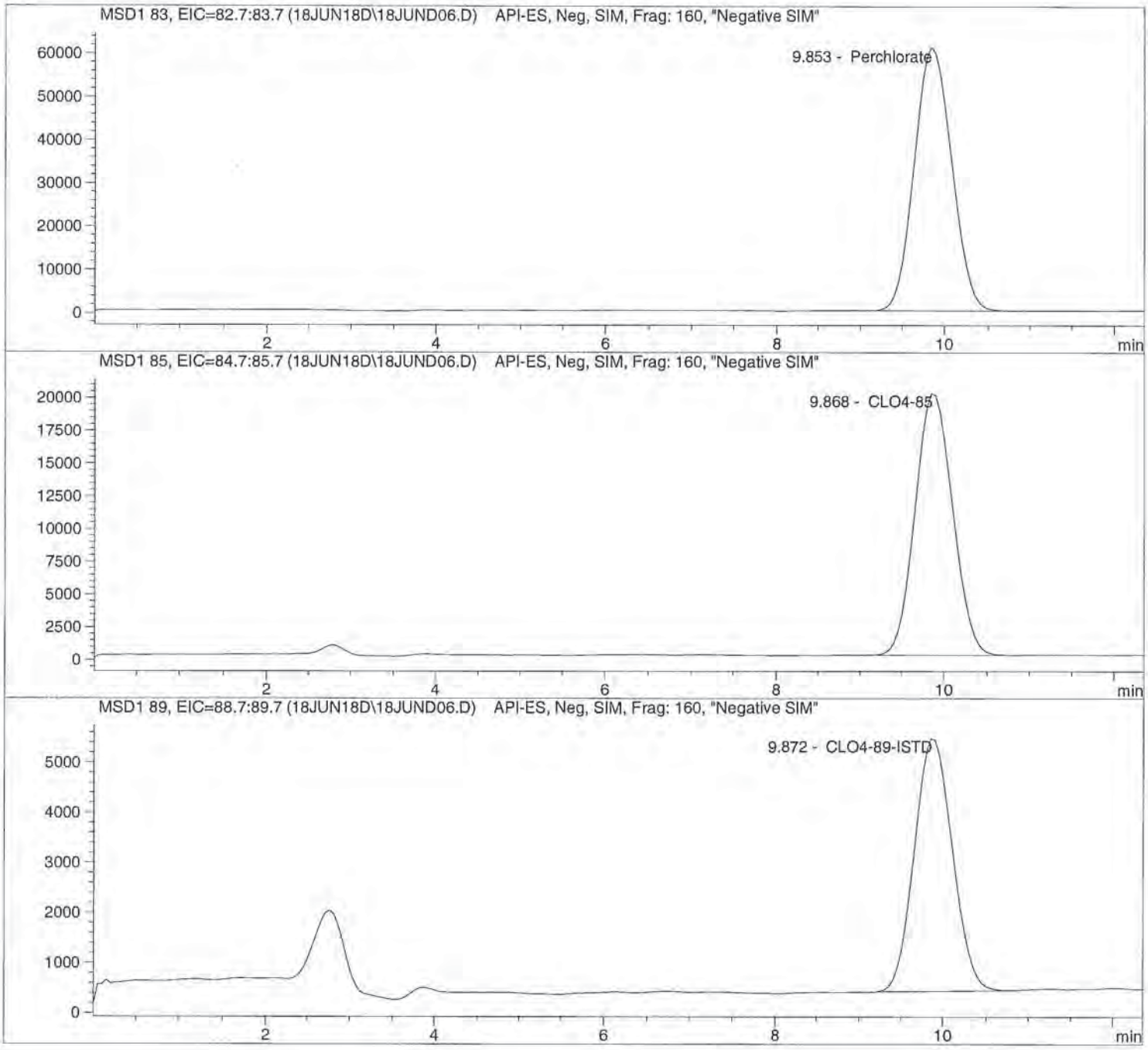
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	6/18/2018 10:02:02	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.853	BBA	1864888.3	49.7015	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.868	BBA	613930.9	49.2848	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.872	PBA	157106.9	5.0000	CLO4-89-ISTD

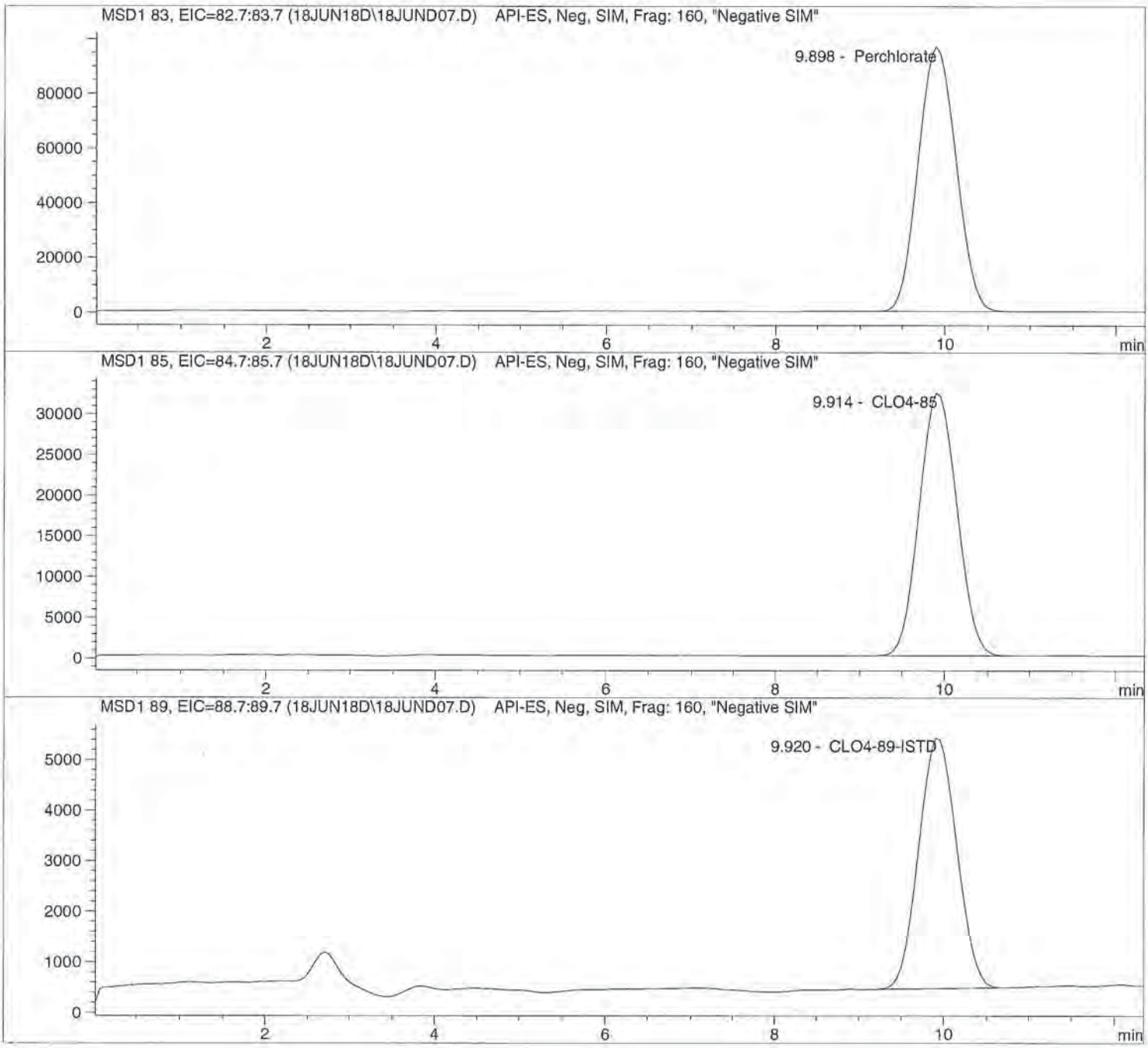
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	6/18/2018 10:16:15	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.898	PBA	2980974.0	75.0714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.914	BBA	991566.9	75.3302	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.920	PBA	154055.8	5.0000	CLO4-89-ISTD

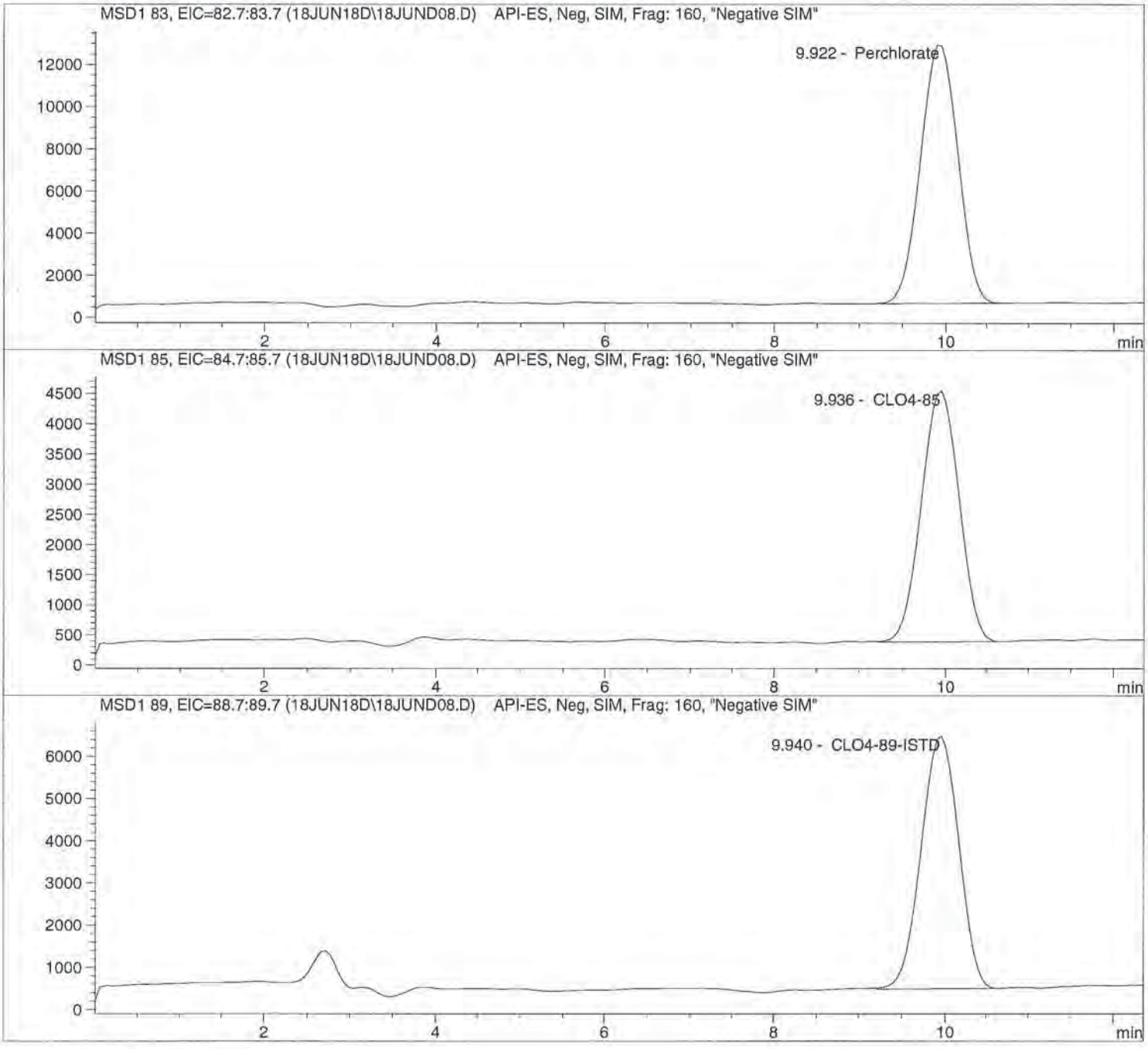
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\18JUN18D\18JUND08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	6/18/2018 10:30:26	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.922	BBA	376863.7	9.6854	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.936	BBA	129075.8	9.8174	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.940	BBA	185649.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

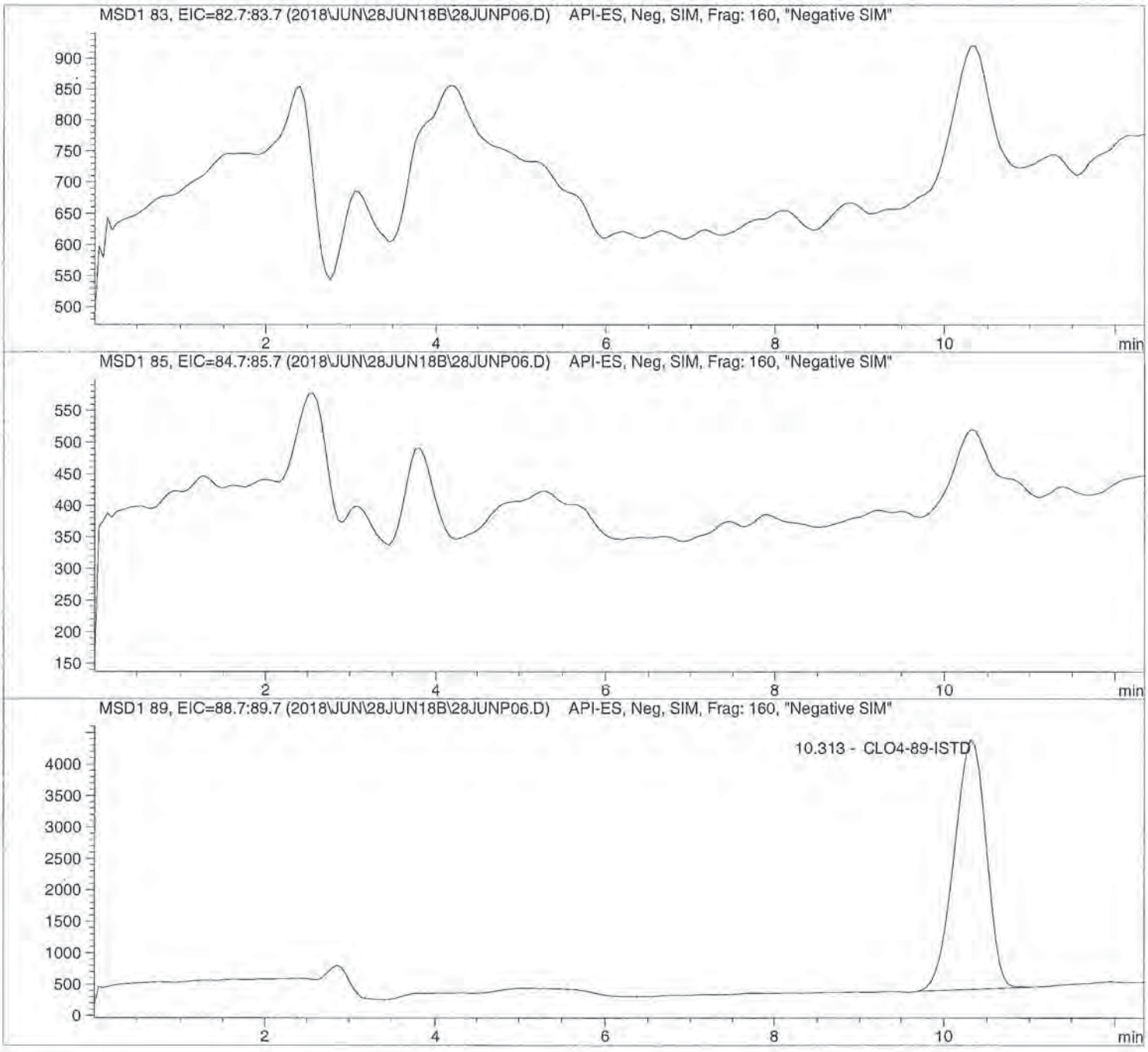
Unmodified

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 1817847001 5X

Injection Date:	6/28/2018 13:40:51	Seq Line:	6
Sample Name:	1817847001 5X	Location:	Vial 76
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 1817847001 5X

Injection Date:	6/28/2018 13:40:51	Seq Line:	6
Sample Name:	1817847001 5X	Location:	Vial 76
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
Multiplier:	1.000000
Dilution:	5.000000
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
10.313	PBA	102112.9	25.0000	CLO4-89-ISTD

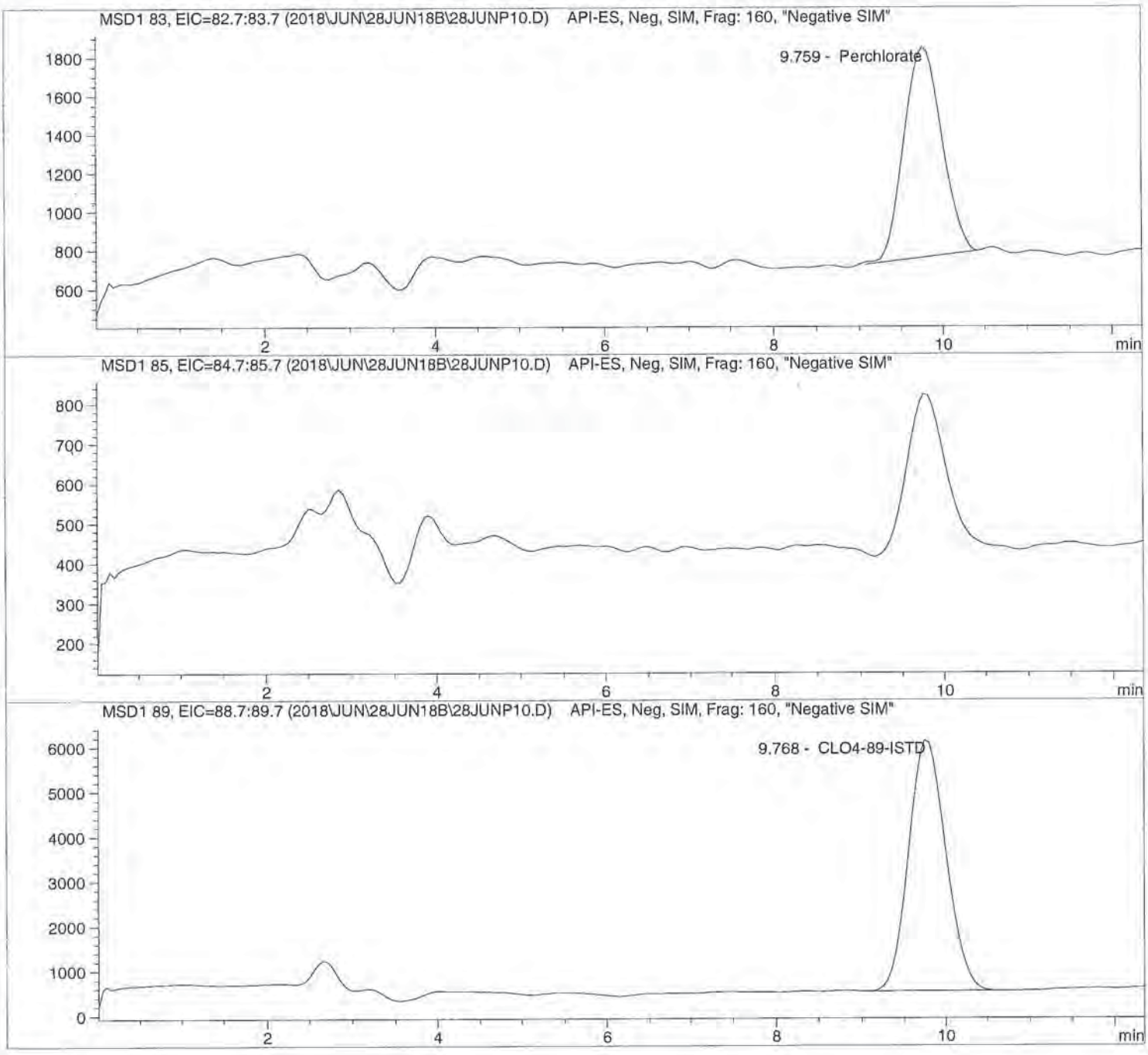
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607521 LODV@1.

Injection Date:	6/28/2018 15:06:30	Seq Line:	10
Sample Name:	607521 LODV@1.	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\2018\JUN\28JUN18B\ -> Sample Name: 607521 LODV@1.

Injection Date:	6/28/2018 15:06:30	Seq Line:	10
Sample Name:	607521 LODV@1.	Location:	Vial 72
Acq Operator:	SAB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 6/18/2018 11:35:22

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 18. Jun. 2018,11:33:52 am
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
9.759	PBA	34225.1	0.9329	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
9.768	PBA	173680.8	5.0000	CLO4-89-ISTD

*** End of Report ***

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

July 16, 2018

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

Work Order: **HS18061423**

Laboratory Results for: **Longhorn GW Treatment Plant Weekly Samples**

Dear Marcia,

ALS Environmental received 1 sample(s) on Jun 28, 2018 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 Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18061423

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18061423-01	LH18/24-SP650_062718	Water		27-Jun-2018 14:00	28-Jun-2018 08:40	☐

ALS Group Houston, Corp Date: 16-Jul-18

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

CASE NARRATIVE

Wet Chemistry by Method E365.3

Batch ID: R318951

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

WetChemistry by Method E350.3

Batch ID: R319366

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

WetChemistry by Method E415.1

Batch ID: R319064

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

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder:HS18061423
Sample ID: LH18/24-SP650_062718
Lab ID:HS18061423-01
Collection Date: 27-Jun-2018 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)	**12**		**0.20**	**0.20**	**0.20**	**mg/L**	1	09-Jul-2018 14:00
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**2.84**		**0.100**	**0.100**	**0.250**	**mg/L**	10	29-Jun-2018 12:10
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**34.0**		**0.500**	**0.600**	**1.00**	**mg/L**	1	30-Jun-2018 16:24

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

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18061423

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R318951	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18061423-01	LH18/24-SP650_062718	27 Jun 2018 14:00			29 Jun 2018 12:10	10
Batch ID R319064	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18061423-01	LH18/24-SP650_062718	27 Jun 2018 14:00			30 Jun 2018 16:24	1
Batch ID R319366	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18061423-01	LH18/24-SP650_062718	27 Jun 2018 14:00			09 Jul 2018 14:00	1

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18061423

QC BATCH REPORT

Batch ID: R318951 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-318951** Units: **mg/L** Analysis Date: **29-Jun-2018 12:10**
Client ID: Run ID: **UV-2450_318951** SeqNo: **4631235** 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)	0.0100	0.0250								U

LCS Sample ID: **LCS-318951** Units: **mg/L** Analysis Date: **29-Jun-2018 12:10**
Client ID: Run ID: **UV-2450_318951** SeqNo: **4631236** 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)	0.238	0.0250	0.25	0	95.2	85 - 115				

MS Sample ID: **HS18061423-01MS** Units: **mg/L** Analysis Date: **29-Jun-2018 12:10**
Client ID: **LH18/24-SP650_062718** Run ID: **UV-2450_318951** SeqNo: **4631238** 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)	5.13	0.250	2.5	2.84	91.6	80 - 120				

MSD Sample ID: **HS18061423-01MSD** Units: **mg/L** Analysis Date: **29-Jun-2018 12:10**
Client ID: **LH18/24-SP650_062718** Run ID: **UV-2450_318951** SeqNo: **4631239** 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)	5.05	0.250	2.5	2.84	88.4	80 - 120	5.13	1.57	20	

The following samples were analyzed in this batch: HS18061423-01

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

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18061423

QC BATCH REPORT

Batch ID: R319064 **Instrument: TOC_02** **Method: E415.1**

MBLK	Sample ID: **WBLKW1-180630**			Units: **mg/L**		Analysis Date: **30-Jun-2018 15:31**				
Client ID:		Run ID: **TOC_02_319064**		SeqNo: **4633591**		PrepDate:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U
LCS	Sample ID: **WLCSW1-180630**			Units: **mg/L**		Analysis Date: **30-Jun-2018 15:45**				
Client ID:		Run ID: **TOC_02_319064**		SeqNo: **4633592**		PrepDate:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.04	1.00	10	0	100	80 - 120				
LCSD	Sample ID: **WLCSDW1-180630**			Units: **mg/L**		Analysis Date: **30-Jun-2018 15:58**				
Client ID:		Run ID: **TOC_02_319064**		SeqNo: **4633593**		PrepDate:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.05	1.00	10	0	100	80 - 120	10.04	0.0996	20	
MS	Sample ID: **HS18061521-01MS**			Units: **mg/L**		Analysis Date: **30-Jun-2018 17:06**				
Client ID:		Run ID: **TOC_02_319064**		SeqNo: **4633598**		PrepDate:		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	23.17	1.00	10	12.58	106	80 - 120				

The following samples were analyzed in this batch: HS18061423-01

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

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18061423

QC BATCH REPORT

Batch ID: R319366 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-319366** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640832** 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)	0.20	0.20								U

LCS Sample ID: **LCS-319366** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640833** 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)	10.04	0.20	10	0	100	80 - 120				

MS Sample ID: **HS18070083-01MS** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640836** 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)	9.221	0.20	10	0.4008	88.2	80 - 120				

MSD Sample ID: **HS18070083-01MSD** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640837** 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	0.4008	96.2	80 - 120	9.221	8.31	20	

The following samples were analyzed in this batch: HS18061423-01

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

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: **HS18061423**

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 Group Houston, Corp Date: 16-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

ALS Group Houston, Corp Date: 16-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18061423

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18061423-01	LH18/24-SP650_062718	Login	6/28/2018 12:07:54 PM	JRM	WET160
HS18061423-01	LH18/24-SP650_062718	Login	6/28/2018 12:07:54 PM	JRM	WET160
HS18061423-01	LH18/24-SP650_062718	Login	6/28/2018 12:07:54 PM	JRM	WET160

Date: 16-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18061423
Date/Time Received: **28-Jun-2018 08:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature — 28-Jun-2018 Date
Reviewed by: *RJ Modashia* eSignature — 28-Jun-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	1.9c/1.3c UC/C	IR25	
Cooler(s)/Kit(s):	43305		
Date/Time sample(s) sent to storage:	06/28/2018 12:12		
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: SONIA WEST

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_062718	Water	06/27/18 / 14:00		2	X	X			H2SO4	
LH18/24-SP650_062718	Water	06/27/18 / 14:00		1			X		NONE	

HS18061423

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Weekly Samples

Additional Remarks: **Standard TAT on all parameters**

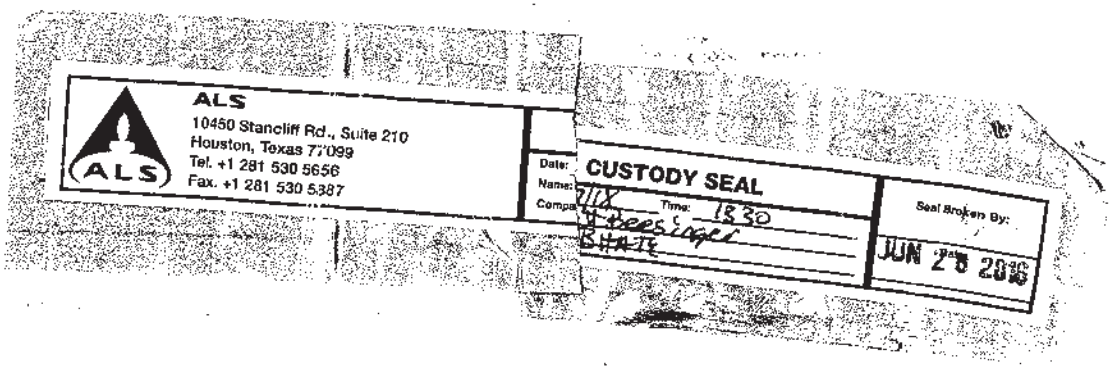
Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	06/27/18	14:30									

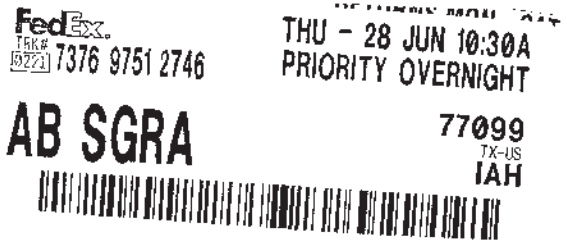
For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
JM	6/28/18	08:40							

Remarks: Cooler - 43305 IR25
Temp 1.9 CF-0.6

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


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5387
CUSTODY SEAL
Time: 1530
Seal Broken By:
JUN 2


FedEx
TRK# 7376 9751 2746
THU - 28 JUN 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: HS18050220

Longhorn GW Treatment Plant Weekly Samples

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

01-Jun-2018

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

May 21, 2018

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

Work Order: **HS18050220**

Laboratory Results for: **Longhorn GW Treatment Plant Weekly Samples**

Dear Marcia,

ALS Environmental received 1 sample(s) on May 04, 2018 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 Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18050220

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050220-01	LH18/24-SP650_050318	Water		03-May-2018 14:00	04-May-2018 08:35	☐

ALS Group Houston, Corp Date: 01-Jun-18

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

Work Order Comments

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

WetChemistry by Method E415.1

Batch ID: R316295

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

WetChemistry by Method E365.3

Batch ID: R315762

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

WetChemistry by Method E350.3

Batch ID: R315758

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

ALS Group Houston, Corp Date: 21-May-18

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

Project: Longhorn GW Treatment Plant Weekly Samples WorkOrder:HS18050220

Sample ID: LH18/24-SP650_050318 Lab ID:HS18050220-01

Collection Date: 03-May-2018 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)	**22**		**0.20**	**0.20**	**0.20**	**mg/L**	1	07-May-2018 16:05
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**3.78**		**0.100**	**0.100**	**0.250**	**mg/L**	10	04-May-2018 14:35
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**87.6**		**1.00**	**1.20**	**2.00**	**mg/L**	2	16-May-2018 07:36
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: JML
Subcontract Analysis	See Attached		0	0		NA	1	18-May-2018 14:32

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

ALS Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050220

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R315758	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18050220-01	LH18/24-SP650_050318	03 May 2018 14:00			07 May 2018 16:05	1
Batch ID R315762	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18050220-01	LH18/24-SP650_050318	03 May 2018 14:00			04 May 2018 14:35	10
Batch ID R316295	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18050220-01	LH18/24-SP650_050318	03 May 2018 14:00			16 May 2018 07:36	2
Batch ID R316500	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18050220-01	LH18/24-SP650_050318	03 May 2018 14:00			18 May 2018 14:32	1

ALS Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050220

QC BATCH REPORT

Batch ID: R315758 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-315758** Units: **mg/L** Analysis Date: **07-May-2018 16:05**
Client ID: Run ID: **WetChem_HS_315758** SeqNo: **4550174** 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)	0.20	0.20								U

LCS Sample ID: **LCS-315758** Units: **mg/L** Analysis Date: **07-May-2018 16:05**
Client ID: Run ID: **WetChem_HS_315758** SeqNo: **4550175** 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	100	80 - 120				

MS Sample ID: **HS18050179-01MS** Units: **mg/L** Analysis Date: **07-May-2018 16:05**
Client ID: Run ID: **WetChem_HS_315758** SeqNo: **4550178** 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)	10.73	0.20	10	0.03113	107	80 - 120				

MSD Sample ID: **HS18050179-01MSD** Units: **mg/L** Analysis Date: **07-May-2018 16:05**
Client ID: Run ID: **WetChem_HS_315758** SeqNo: **4550179** 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)	10.84	0.20	10	0.03113	108	80 - 120	10.73	1.02	20	

The following samples were analyzed in this batch: HS18050220-01

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

ALS Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050220

QC BATCH REPORT

Batch ID: R315762 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-315762** Units: **mg/L** Analysis Date: **04-May-2018 14:35**
Client ID: Run ID: **UV-2450_315762** SeqNo: **4550266** 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)	0.0100	0.0250								U

LCS Sample ID: **LCS-315762** Units: **mg/L** Analysis Date: **04-May-2018 14:35**
Client ID: Run ID: **UV-2450_315762** SeqNo: **4550267** 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)	0.245	0.0250	0.25	0	98.0	85 - 115				

MS Sample ID: **HS18050220-01MS** Units: **mg/L** Analysis Date: **04-May-2018 14:35**
Client ID: **LH18/24-SP650_050318** Run ID: **UV-2450_315762** SeqNo: **4550269** 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)	6.24	0.250	2.5	3.78	98.4	80 - 120				

MSD Sample ID: **HS18050220-01MSD** Units: **mg/L** Analysis Date: **04-May-2018 14:35**
Client ID: **LH18/24-SP650_050318** Run ID: **UV-2450_315762** SeqNo: **4550270** 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)	6.22	0.250	2.5	3.78	97.6	80 - 120	6.24	0.321	20	

The following samples were analyzed in this batch: HS18050220-01

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

ALS Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050220

QC BATCH REPORT

Batch ID: R316295 **Instrument: TOC_02** **Method: E415.1**

MBLK Sample ID: **WBLKW3-051518** Units: **mg/L** Analysis Date: **16-May-2018 04:50**
Client ID: Run ID: **TOC_02_316295** SeqNo: **4563290** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW3-051518** Units: **mg/L** Analysis Date: **16-May-2018 05:03**
Client ID: Run ID: **TOC_02_316295** SeqNo: **4563291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.905	1.00	10	0	99.0	80 - 120				

LCSD Sample ID: **WLCSDW3-051518** Units: **mg/L** Analysis Date: **16-May-2018 05:16**
Client ID: Run ID: **TOC_02_316295** SeqNo: **4563292** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.04	1.00	10	0	100	80 - 120	9.905	1.35	20	

MS Sample ID: **HS18050442-05MS** Units: **mg/L** Analysis Date: **16-May-2018 05:45**
Client ID: Run ID: **TOC_02_316295** SeqNo: **4563294** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.12	1.00	10	2.228	98.9	80 - 120				

MSD Sample ID: **HS18050442-05MSD** Units: **mg/L** Analysis Date: **16-May-2018 05:58**
Client ID: Run ID: **TOC_02_316295** SeqNo: **4563295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.58	1.00	10	2.228	104	80 - 120	12.12	3.72	20	

The following samples were analyzed in this batch: HS18050220-01

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

ALS Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: **HS18050220**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231	30-Apr-2019

ALS Group Houston, Corp Date: 21-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18050220

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18050220-01	LH18/24-SP650_050318	Login	5/4/2018 10:17:33 AM	PMG	Sub
HS18050220-01	LH18/24-SP650_050318	Login	5/4/2018 10:17:33 AM	PMG	WET386
HS18050220-01	LH18/24-SP650_050318	Login	5/4/2018 10:17:33 AM	PMG	WET386
HS18050220-01	LH18/24-SP650_050318	Login	5/4/2018 10:17:33 AM	PMG	WET386

Date: 21-May-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**04-May-2018 08:35**
Work Order:	HS18050220	Received by:	**RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 4-May-2018 Date

Reviewed by: *RJ Modashia* eSignature — 4-May-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	1.1c/0.7c U/c	IR30	
Cooler(s)/Kit(s):	3106		
Date/Time sample(s) sent to storage:	5/4/18 10:40		
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: SONIA WEST

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

HS18050220
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_050318	Water	05/03/18 / 14:00		2	X	X									H2SO4	
LH18/24-SP650_050318	Water	05/03/18 / 14:00		2			X	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	05/03/18	14:30	R Cugen	5/4/18	0:35						

For Lab Use Only

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

Remarks: cooler # 3106 IR 30 CF -0.4
temp 1.1c.

(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

3106

CUSTODY SEAL
Date: 5/3/18 Time: 1430
Name: Scott Beesinger
Company: BHATZ

Seal Broken By: [illegible]
Date: 05/04/18

3106 MAY 04 2019

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: ADDITIONAL COOLERS – RJ

3106

RMA:

FedEx Express

E

RETURNS MON – SAT
FRI – 04 MAY 10:30A
PRIORITY OVERNIGHT

FedEx
TRK# 0221 4380 9528 6326

AB SGRA

77099
TX-US
IAH

FID 162705 03MAY18 GGSA 546C27702E/BCBA

Wet Chemistry Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
WEEKLY SAMPLES
ALS WO# HS18050220

HSI80 50 220
NIT-AMN-W-ISE

ALS Laboratory Group

Logbook **30611**

Ion Selective Electrode Logbook

Analyst: MD			Date: 05/07/2018
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F			
Probe Calibration Date: 05/07/2018	Cal Std ID: 30606 26(03-07)		Probe ID: SR15190
Std Level	mV	Conc., mg/L:	Sodium Thiosulfate ID:
STD 1 (mg/L): 0.2	121.2	0.2010	Std Level / mV / Conc., mg/L:
STD 2 (mg/L): 1	80.7	1.083	STD 4 (mg/L): 10 / 20.1 / 10.05
STD 3 (mg/L): 5	60.7	5.011	STD 5 (mg/L): 50 / -18.7 / 50.02
LSC / MS Spike ID: 2970205919			ICAL Date & Slope: 95.8% / -56.5 mV
ICV Cal STD ID: 30606705			
DPD Reagent ID: 2970204302			

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/-)	Comments
ICV		5ml	5ml		10.10			
CCB					0.02475			
MBLK					0.02464			
LCS					10.05			
HSI805 0027-01					0.1412		-ve	
HSI80500 35-01					2.5201		-ve	
HSI80501 00-01					0.9699		-ve	
-02					0.1919		-ve	
-03		5ml	5ml	10X	15.10		-ve	
-04		5ml	5ml	10X	2.018		-ve	
-05		5ml	5ml		0.1294		-ve	
-06		↓	↓		0.5426		+ve	
CCV		5ml	5ml		10.06			
CCB		↓	↓		0.02390			
HSI80501 00-07		5ml	5ml		2.938		-ve	
-08					1.0143		-ve	
-09					0.04872		-ve	
-10					0.03862		-ve	
-11					0.03147		-ve	
HSI80501 79-01					0.03113		-ve	
-01 MS					10.73			
-01 (MSD)					10.84			
-02					0.03345		-ve	
-03					0.01461		-ve	
CCV					10.20			

Batch ID: 350.3 315758 / 315761 | Reported By: MD | Reviewed By:

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ALS Laboratory Group

Logbook **30611**

Ion Selective Electrode Logbook

Analyst: MD	Date: 05/07/2018
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F	

Probe Calibration Date: 05/07/2018		Cal Std ID: 306066(03-07)		Probe ID: SR15190			
Std Level		mV	Conc., mg/L:	Sodium Thiosulfate ID:			
STD 1 (mg/L):	0.2	121.7	0.2010	Std Level		mV	Conc., mg/L:
STD 2 (mg/L):	1	50.7	1.053	STD 4 (mg/L):	10	20.1	10.05
STD 3 (mg/L):	5	10.7	5.211	STD 5 (mg/L):	50	-18.7	50.2
LSC / MS Spike ID: 297020 5919				ICAL Date & Slope:			
ICV Cal STD ID: 306067205				95.84 / -56.5mV			
DPD Reagent ID: 297020 4302							

WO # / SX #	Bottle #	Initial g or ml	Final Vol. ml	Dilution Factor	Initial Conc. mg/L	Final Conc. mg/L	Chlorine Check (+/ –)	Comments
CCB		50ml	50ml		0.02615			
HS1805 0179-04		5ml	50ml	10x	36.01		-ve	
HS1805 0220-01		50ml	50ml		21.86		-ve	
HS1805 0259-01		1ml	1	50X	1.668		+ve	High in salt +ve hydrous sample
HS1805 0261-01		1ml	1	50X	2.977		+ve	+
CCV		50ml	50ml		10.10			
CCB		1	1		0.02412			

Batch ID:	Reported By	Reviewed By:
315758	MD	MD

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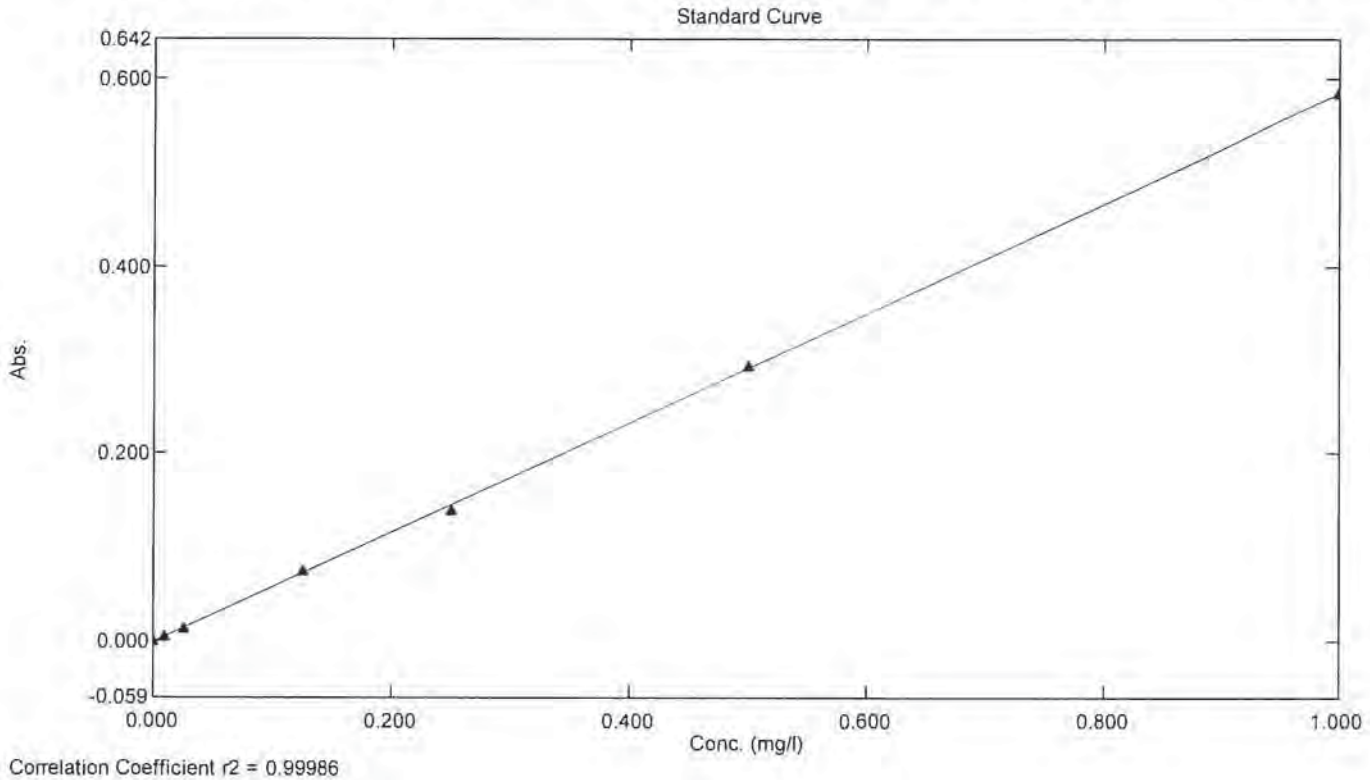
H5180502 20

Standard Table Report

05/23/2018 12:14:05 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180504_P_ORTH



Correlation Coefficient r2 = 0.99986

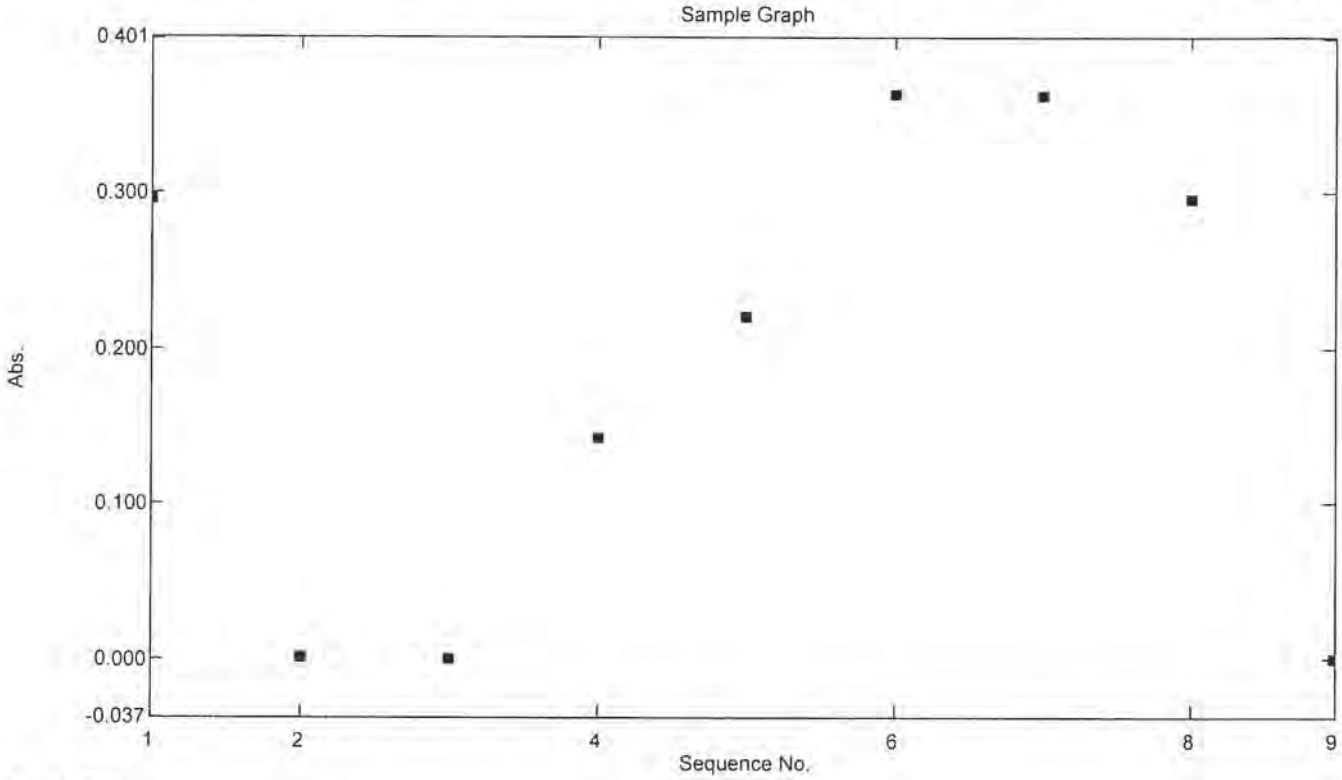
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.000	1.000	
2	STD2	Standard		0.010	0.006	1.000	
3	STD3	Standard		0.025	0.014	1.000	
4	STD4	Standard		0.125	0.075	1.000	
5	STD5	Standard		0.250	0.140	1.000	
6	STD6	Standard		0.500	0.294	1.000	
7	STD7	Standard		1.000	0.584	1.000	
8							

Sample Table Report

05/23/2018 12:14:07 PM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180504_P_ORT



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.509	0.297	
2	CCB	Unknown		0.003	0.001	
3	MBLK	Unknown		0.000	-0.000	
4	LCS	Unknown		0.245	0.143	
5	18050220.01	Unknown		0.378	0.220	FILTER,PF:10X,2:35PM
6	18050220.01MS	Unknown		0.624	0.364	10X
7	18050220.01MSD	Unknown		0.622	0.363	10X
8	CCV2	Unknown		0.508	0.296	
9	CCB2	Unknown		0.002	0.000	
10						

HS1805U220

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time
1	U	NPOC	CCV	306.068.202	TC_W_9060.me	NPOC:23.78mg/L	Completed	5/15/2018 8:32:32 PM
2	U	NPOC	CCB	TC_9060	TC_W_9060.me	NPOC:0.07822mg/	Completed	5/15/2018 8:43:40 PM
3	U	NPOC	WBLKW1-051518	TC_9060	TC_W_9060.me	NPOC:0.1267mg/L	Completed	5/15/2018 8:54:48 PM
4	U	NPOC	WLCSW1-051518	TC_9060	TC_W_9060.me	NPOC:10.28mg/L	Completed	5/15/2018 9:08:57 PM
5	U	NPOC	WLCSDW1-051518	TC_9060	TC_W_9060.me	NPOC:10.16mg/L	Completed	5/15/2018 9:20:25 PM
6	U	NPOC	HS18050072-01DF5	TC_9060	TC_W_9060.me	NPOC:66.83mg/L	Completed	5/15/2018 9:31:42 PM
7	U	NPOC	HS18050072-02DF5	TC_9060	TC_W_9060.me	NPOC:65.04mg/L	Completed	5/15/2018 9:42:50 PM
8	U	NPOC	HS18050072-03DF5	TC_9060	TC_W_9060.me	NPOC:43.72mg/L	Completed	5/15/2018 9:53:58 PM
9	U	NPOC	HS18050072-03MSDF5	TC_9060	TC_W_9060.me	NPOC:53.47mg/L	Completed	5/15/2018 10:05:24 PM
10	U	NPOC	HS18050072-03MSDDF5	TC_9060	TC_W_9060.me	NPOC:53.24mg/L	Completed	5/15/2018 10:16:33 PM
11	U	NPOC	CCV	TC_9060	TC_W_9060.me	NPOC:24.64mg/L	Completed	5/15/2018 10:27:41 PM
12	U	NPOC	CCB	TC_9060	TC_W_9060.me	NPOC:0.1895mg/L	Completed	5/15/2018 10:40:54 PM
13	U	NPOC	CCV	306.068.202	TOC_W_9060.	NPOC:24.60mg/L	Completed	5/15/2018 10:56:27 PM
14	U	NPOC	CCB	TOC_W 9060	TOC_W_9060.	NPOC:0.06154mg/	Completed	5/15/2018 11:13:49 PM
15	U	NPOC	WBLKW1-051518	TOC_W 9060	TOC_W_9060.	NPOC:0.1384mg/L	Completed	5/15/2018 11:31:06 PM
16	U	NPOC	WLCSW2-051518	TOC_W 9060	TOC_W_9060.	NPOC:9.636mg/L	Completed	5/15/2018 11:46:39 PM
17	U	NPOC	WLCSDW2-051518	TOC_W 9060	TOC_W_9060.	NPOC:9.675mg/L	Completed	5/16/2018 12:01:56 AM
18	U	NPOC	HS18050072-01	TOC_W 9060	TOC_W_9060.	NPOC:3.074mg/L	Completed	5/16/2018 12:19:18 AM
19	U	NPOC	HS18050072-02	TOC_W 9060	TOC_W_9060.	NPOC:3.175mg/L	Completed	5/16/2018 12:36:35 AM
20	U	NPOC	HS18050072-03	TOC_W 9060	TOC_W_9060.	NPOC:4.142mg/L	Completed	5/16/2018 12:53:52 AM
21	U	NPOC	HS18050072-03MS	TOC_W 9060	TOC_W_9060.	NPOC:13.85mg/L	Completed	5/16/2018 1:09:04 AM
22	U	NPOC	HS18050072-03MSD	TOC_W 9060	TOC_W_9060.	NPOC:14.01mg/L	Completed	5/16/2018 1:24:32 AM
23	U	NPOC	HS18050471-02	TOC_W 9060	TOC_W_9060.	NPOC:1.689mg/L	Completed	5/16/2018 1:41:54 AM
24	U	NPOC	HS18050471-03	TOC_W 9060	TOC_W_9060.	NPOC:1.732mg/L	Completed	5/16/2018 1:59:11 AM
25	U	NPOC	CCV	TOC_W 9060	TOC_W_9060.	NPOC:25.95mg/L	Completed	5/16/2018 2:14:39 AM
26	U	NPOC	CCB	TOC_W 9060	TOC_W_9060.	NPOC:0.1581mg/L	Completed	5/16/2018 2:32:03 AM
27	U	NPOC	HS18050471-01	TOC_W 9060	TOC_W_9060.	NPOC:1.260mg/L	Completed	5/16/2018 2:49:21 AM
28	U	NPOC	HS18050471-01MS	TOC_W 9060	TOC_W_9060.	NPOC:11.36mg/L	Completed	5/16/2018 3:04:34 AM
29	U	NPOC	HS18050471-01MSD	TOC_W 9060	TOC_W_9060.	NPOC:11.26mg/L	Completed	5/16/2018 3:21:57 AM
30	U	NPOC	HS18050473-06	TOC_W 9060	TOC_W_9060.	NPOC:1.967mg/L	Completed	5/16/2018 3:39:15 AM
31	U	NPOC	CCV	TOC_W 9060	TOC_W_9060.	NPOC:25.99mg/L	Completed	5/16/2018 3:54:54 AM
32	U	NPOC	CCB	TOC_W 9060	TOC_W_9060.	NPOC:0.1748mg/L	Completed	5/16/2018 4:12:17 AM
33	U	NPOC	CCV	306.068.202	05-08-2018_W.	NPOC:25.33mg/L	Completed	5/16/2018 4:25:46 AM
34	U	NPOC	CCB	Untitled	05-08-2018_W.	NPOC:0.1300mg/L	Completed	5/16/2018 4:41:05 AM
35	U	NPOC	WBLKW3-051518	TOC_W	05-08-2018_W.	NPOC:0.06188mg/	Completed	5/16/2018 4:54:14 AM
36	U	NPOC	WLCSW3-051518	Untitled	05-08-2018_W.	NPOC:9.905mg/L	Completed	5/16/2018 5:07:28 AM
37	U	NPOC	WLCSDW3-051518	Untitled	05-08-2018_W.	NPOC:10.04mg/L	Completed	5/16/2018 5:20:42 AM
38	U	NPOC	HS18050442-05	1/2	05-08-2018_W.	NPOC:2.228mg/L	Completed	5/16/2018 5:36:01 AM
39	U	NPOC	HS18050442-05MS	1/2	05-08-2018_W.	NPOC:12.12mg/L	Completed	5/16/2018 5:49:24 AM
40	U	NPOC	HS18050442-05MSD	2/2	05-08-2018_W.	NPOC:12.58mg/L	Completed	5/16/2018 6:03:07 AM
41	U	NPOC	HS18050442-06DF2	1/2	05-08-2018_W.	NPOC:49.35mg/L	Completed	5/16/2018 6:16:21 AM
42	U	NPOC	HS18050442-07DF2	1/2	05-08-2018_W.	NPOC:48.76mg/L	Completed	5/16/2018 6:29:35 AM
43	U	NPOC	HS18050458-01	1/2	05-08-2018_W.	NPOC:13.15mg/L	Completed	5/16/2018 6:42:49 AM
44	U	NPOC	HS18050507-01	1/2	05-08-2018_W.	NPOC:10.53mg/L	Completed	5/16/2018 6:56:11 AM
45	U	NPOC	CCV	Untitled	05-08-2018_W.	NPOC:25.76mg/L	Completed	5/16/2018 7:11:49 AM
46	U	NPOC	CCB	Untitled	05-08-2018_W.	NPOC:0.2394mg/L	Completed	5/16/2018 7:27:03 AM
47	U	NPOC	HS18050220-01DF2	1/1	05-08-2018_W.	NPOC:43.80mg/L	Completed	5/16/2018 7:40:30 AM
48	U	NPOC	HS18050534-01	1/2	05-08-2018_W.	NPOC:13.91mg/L	Completed	5/16/2018 7:55:50 AM
49	U	NPOC	HS18050744-01	1/2	05-08-2018_W.	NPOC:4.047mg/L	Completed	5/16/2018 8:11:14 AM
50	U	NPOC	HS18050750-01	1/2	05-08-2018_W.	NPOC:14.72mg/L	Completed	5/16/2018 8:25:00 AM
51	U	NPOC	CCV	Untitled	05-08-2018_W.	NPOC:25.66mg/L	Completed	5/16/2018 8:38:23 AM

	Vial
1	1
2	2
3	3
4	4
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7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
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45	45
46	46
47	47
48	48
49	49
50	50
51	51

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time
52	U	NPOC	CCB	Untitled	05-08-2018_W.	NPOC:0.1716mg/L	Completed	5/16/2018 8:53:43 AM
53	U	NPOC	CCV	TC_9060	TC_W_9060.me	NPOC:24.02mg/L	Completed	5/16/2018 12:39:22 PM
54	U	NPOC	CCB	TC_9060	TC_W_9060.me	NPOC:0.1416mg/L	Completed	5/16/2018 12:56:15 PM
55	U	NPOC	WBLKW1-051518	TC_9060	TC_W_9060.me	NPOC:0.2268mg/L	Completed	5/16/2018 1:07:23 PM
56	U	NPOC	WLCSW1-051518	TC_9060	TC_W_9060.me	NPOC:10.52mg/L	Completed	5/16/2018 1:18:31 PM
57	U	NPOC	HS18050072-01DF10	TC_9060	TC_W_9060.me	NPOC:33.95mg/L	Completed	5/16/2018 1:29:43 PM
58	U	NPOC	HS18050072-02DF10	TC_9060	TC_W_9060.me	NPOC:35.49mg/L	Completed	5/16/2018 1:40:52 PM
59	U	NPOC	HS18050072-03DF10	TC_9060	TC_W_9060.me	NPOC:15.05mg/L	Completed	5/16/2018 1:52:00 PM
60	U	NPOC	HS18050072-03MSDF10	TC_9060	TC_W_9060.me	NPOC:25.23mg/L	Completed	5/16/2018 2:03:08 PM
61	U	NPOC	HS18050072-03MSDDF10	TC_9060	TC_W_9060.me	NPOC:25.00mg/L	Completed	5/16/2018 2:14:16 PM
62	U	NPOC	CCV	TC_9060	TC_W_9060.me	NPOC:24.19mg/L	Completed	5/16/2018 2:26:37 PM
63	U	NPOC	CCB	TC_9060	TC_W_9060.me	NPOC:0.1419mg/L	Completed	5/16/2018 2:39:50 PM

	Vial
52	52
53	1
54	2
55	3
56	4
57	5
58	6
59	7
60	8
61	9
62	10
63	11

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
1	S	NPOC	CAL	306.067:504-509	05-08-2018_W.		Completed	5/8/2018 6:22:07 PM	1, 2,
2	U	NPOC	ICV	306.067.601	05-08-2018_W.	NPOC:9.923mg/L	Completed	5/8/2018 6:35:35 PM	7
3	U	NPOC	ICB	Untitled	05-08-2018_W.	NPOC:0.09481mg/	Completed	5/8/2018 6:48:48 PM	8
4	U	NPOC	WBLKW1-180508	TOC_W	05-08-2018_W.	NPOC:0.1325mg/L	Completed	5/8/2018 8:34:22 PM	9
5	U	NPOC	WLCSW1-180508	Untitled	05-08-2018_W.	NPOC:9.801mg/L	Completed	5/8/2018 8:47:46 PM	10
6	U	NPOC	WLCSDW1-180508	Untitled	05-08-2018_W.	NPOC:9.775mg/L	Completed	5/8/2018 9:00:59 PM	11
7	U	NPOC	HS18041331-01	1/1	05-08-2018_W.	NPOC:44.32mg/L	Completed	5/8/2018 9:14:44 PM	12
8	U	NPOC	HS18050220-01	1/1 OFF	05-08-2018_W.	NPOC:86.84mg/L	Completed	5/8/2018 9:27:57 PM	13
9	U	NPOC	HS18050237-01	1/2	05-08-2018_W.	NPOC:3.882mg/L	Completed	5/8/2018 9:43:15 PM	14
10	U	NPOC	HS18050237-01MS	1/2	05-08-2018_W.	NPOC:13.65mg/L	Completed	5/8/2018 9:56:24 PM	15
11	U	NPOC	CCV	Untitled	05-08-2018_W.	NPOC:24.60mg/L	Completed	5/8/2018 10:09:37 PM	16
12	U	NPOC	CCB	Untitled	05-08-2018_W.	NPOC:0.08446mg/	Completed	5/8/2018 10:24:55 PM	17

Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit
Catalyst	Regular Sensitivity

Cal. Curve

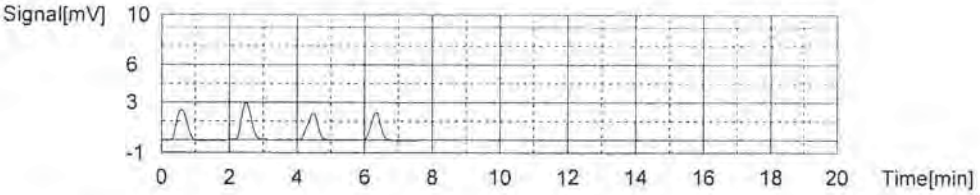
Sample Name:	CAL
Sample ID:	306.067:504-509
Cal. Curve:	05-08-2018_W.2018_05_08_16_59_08.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	5.281	50uL	1	*******		5/8/2018 5:07:52 PM
2	5.767	50uL	1	*******	E	5/8/2018 5:09:57 PM
3	4.377	50uL	1	*******		5/8/2018 5:12:02 PM
4	4.321	50uL	1	*******		5/8/2018 5:14:07 PM

Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 4.660



Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	8.552	50uL	1	*******	E	5/8/2018 5:23:05 PM
2	7.956	50uL	1	*******		5/8/2018 5:25:10 PM
3	7.917	50uL	1	*******		5/8/2018 5:27:15 PM
4	7.981	50uL	1	*******		5/8/2018 5:29:20 PM

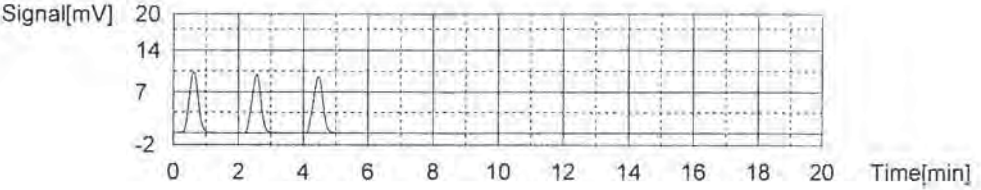
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 7.951



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	19.68	50uL	1	*******		5/8/2018 5:38:18 PM
2	19.11	50uL	1	*******		5/8/2018 5:40:23 PM
3	19.32	50uL	1	*******		5/8/2018 5:42:28 PM

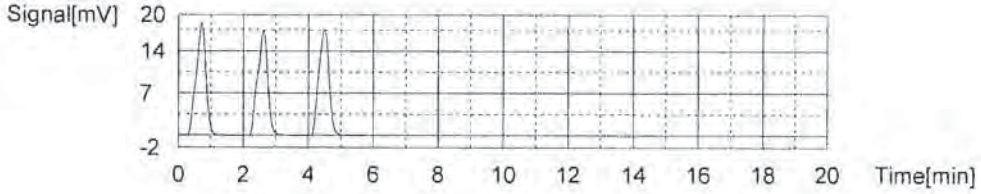
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 19.37



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	38.73	50uL	1	*******		5/8/2018 5:51:31 PM
2	37.61	50uL	1	*******		5/8/2018 5:53:36 PM
3	38.22	50uL	1	*******		5/8/2018 5:55:41 PM

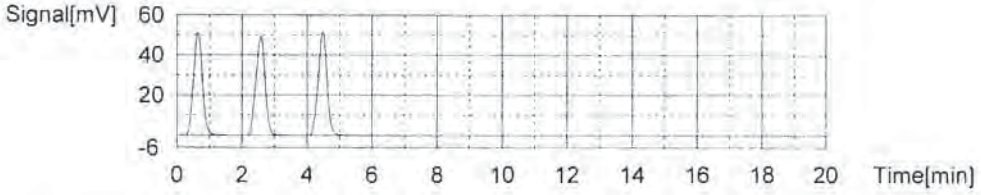
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 38.19



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	97.00	50uL	1	*******		5/8/2018 6:04:44 PM
2	96.71	50uL	1	*******		5/8/2018 6:06:49 PM
3	96.75	50uL	1	*******		5/8/2018 6:08:54 PM

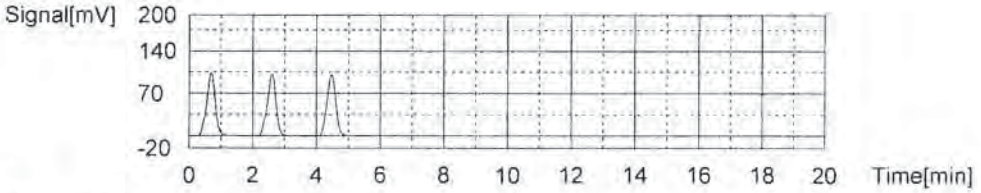
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 96.82



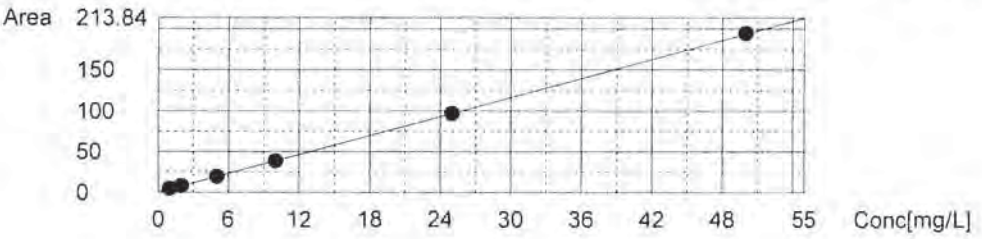
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	195.4	50uL	1	*******		5/8/2018 6:17:57 PM
2	193.7	50uL	1	*******		5/8/2018 6:20:02 PM
3	194.1	50uL	1	*******		5/8/2018 6:22:07 PM

Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 194.4



Slope: 3.881
Intercept 0.07512
r^2 1.0000
r 1.0000
Zero Shift No



Sample

Sample Name: ICV
Sample ID: 306.067.601
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

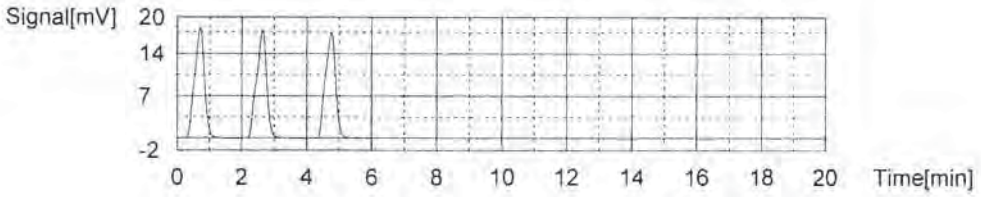
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.923mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.63	9.934mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:31:10 PM
2	38.67	9.944mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:33:30 PM
3	38.46	9.890mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:35:35 PM

Mean Area 38.59
Mean Conc. 9.923mg/L



Sample

Sample Name: ICB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

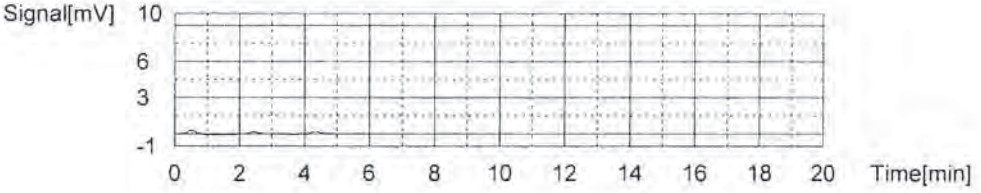
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09481mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4983	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:44:38 PM
2	0.3330	0.06645mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:46:43 PM
3	0.4980	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:48:48 PM

Mean Area 0.4431
Mean Conc. 0.09481mg/L



Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Sample

Sample Name:	CCV
Sample ID:	306.068.202
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

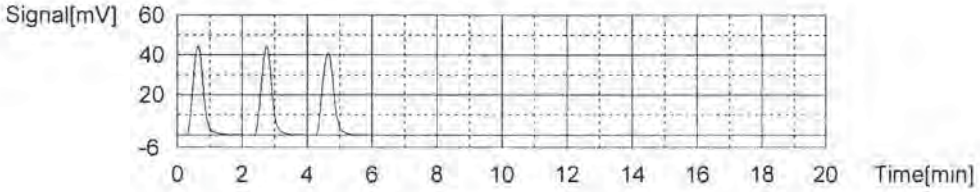
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.33mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	98.27	25.30mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:21:27 AM
2	97.71	25.16mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:23:32 AM
3	99.22	25.55mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:25:46 AM

Mean Area 98.40
Mean Conc. 25.33mg/L



Sample

Sample Name:	CCB
Sample ID:	Untitled
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

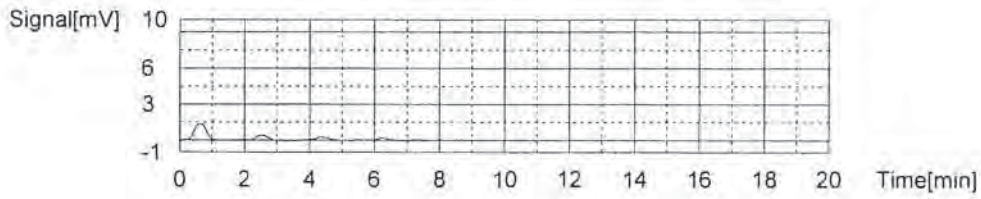
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1300mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.179	0.7998mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:34:50 AM
2	0.9167	0.2168mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:36:55 AM
3	0.4691	0.1015mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:39:00 AM
4	0.3532	0.07165mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:41:05 AM

Mean Area 0.5797
Mean Conc. 0.1300mg/L



Sample

Sample Name: WBLKW3-051518
Sample ID: TOC_W
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

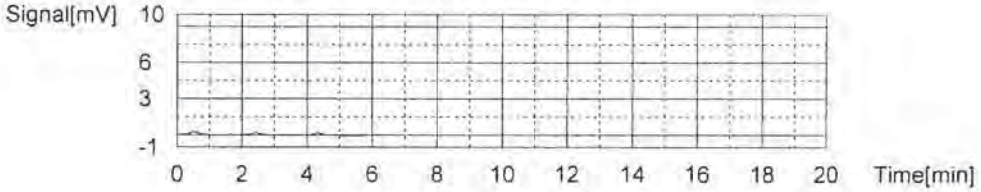
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.06188mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3933	0.08198mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:50:04 AM
2	0.2512	0.04537mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:52:09 AM
3	0.3013	0.05828mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 4:54:14 AM

Mean Area 0.3153
Mean Conc. 0.06188mg/L



Sample

Sample Name: WLCSW3-051518
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

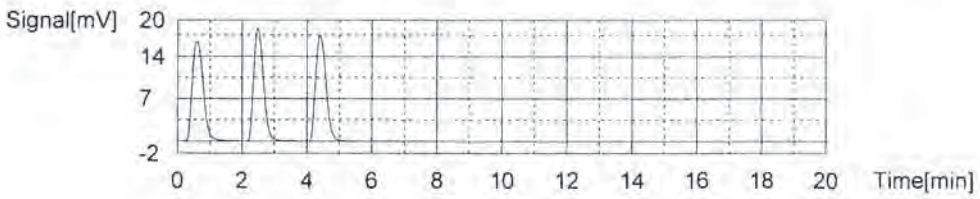
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.905mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.23	9.831mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:03:18 AM
2	38.62	9.932mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:05:23 AM
3	38.70	9.952mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:07:28 AM

Mean Area 38.52
Mean Conc. 9.905mg/L



Sample

Sample Name: WLCSDW3-051518
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

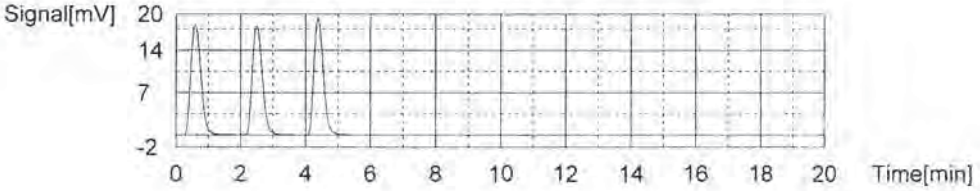
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.04mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	39.56	10.17mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:16:32 AM
2	38.50	9.901mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:18:37 AM
3	39.09	10.05mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:20:42 AM

Mean Area 39.05
Mean Conc. 10.04mg/L



Sample

Sample Name: HS18050442-05
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

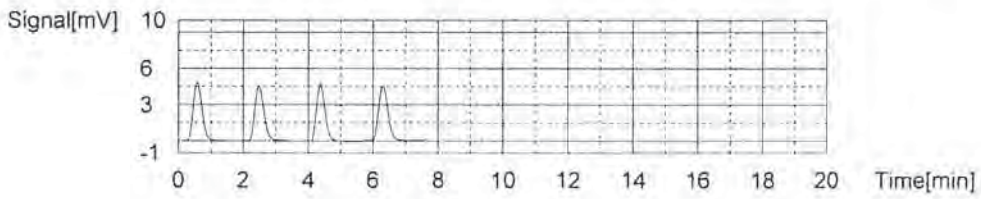
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:2.228mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.056	2.314mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:29:46 AM
2	8.587	2.193mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:31:51 AM
3	8.618	2.201mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:33:56 AM
4	8.963	2.290mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:36:01 AM

Mean Area 8.723
Mean Conc. 2.228mg/L



Sample

Sample Name: HS18050442-05MS
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

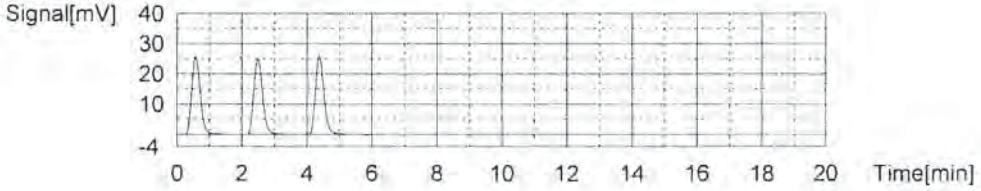
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:12.12mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	47.37	12.19mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:45:00 AM
2	46.74	12.02mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:47:05 AM
3	47.27	12.16mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:49:24 AM

Mean Area 47.13
Mean Conc. 12.12mg/L



Sample

Sample Name: HS18050442-05MSD
Sample ID: 2/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

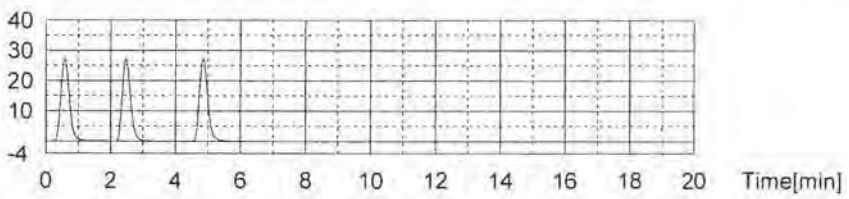
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:12.58mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	49.40	12.71mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 5:58:28 AM
2	48.70	12.53mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 6:01:02 AM
3	48.62	12.51mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 6:03:07 AM

Mean Area 48.91
Mean Conc. 12.58mg/L



Sample

Sample Name: CCV
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

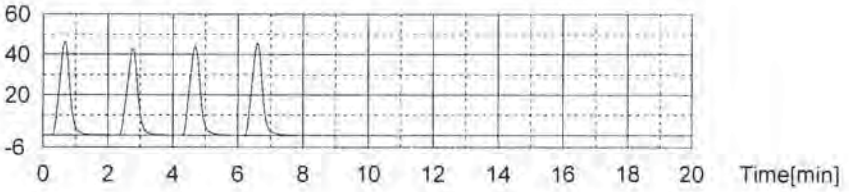
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.76mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	101.0	26.00mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:05:25 AM
2	96.33	24.80mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:07:33 AM
3	98.41	25.34mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:09:38 AM
4	100.8	25.95mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:11:49 AM

Mean Area 100.1
Mean Conc. 25.76mg/L



Sample

Sample Name: CCB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

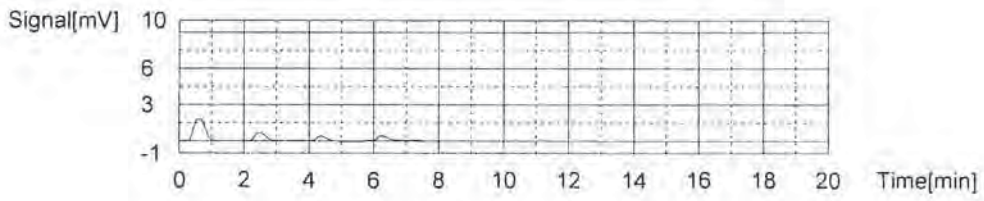
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2394mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.348	1.101mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:20:48 AM
2	1.429	0.3488mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:22:53 AM
3	0.7918	0.1847mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:24:58 AM
4	0.7917	0.1846mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:27:03 AM

Mean Area 1.004
Mean Conc. 0.2394mg/L



Sample

Sample Name: HS18050220-01DF2
Sample ID: 1/1
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

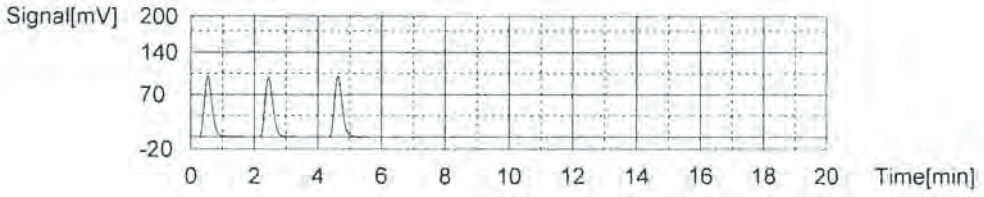
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:43.80mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	169.0	43.53mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:36:03 AM
2	170.0	43.78mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:38:25 AM
3	171.2	44.09mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 7:40:30 AM

Mean Area 170.1
Mean Conc. 43.80mg/L



Sample

Sample Name: CCV
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

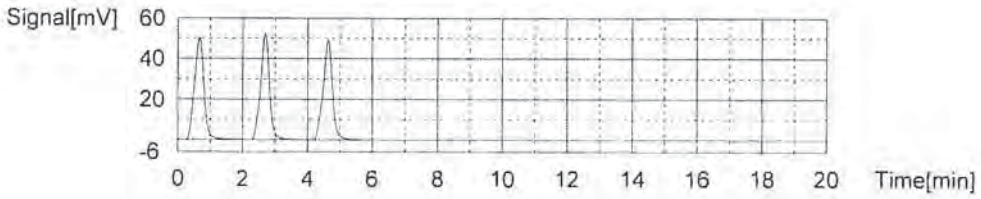
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.66mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	101.4	26.11mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:34:11 AM
2	98.85	25.45mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:36:17 AM
3	98.69	25.41mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:38:23 AM

Mean Area 99.65
Mean Conc. 25.66mg/L



Sample

Sample Name: CCB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

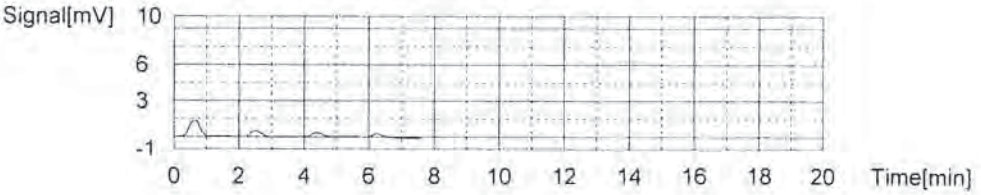
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1716mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.987	0.7503mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:47:28 AM
2	1.029	0.2458mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:49:33 AM
3	0.6147	0.1390mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:51:38 AM
4	0.5802	0.1301mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/16/2018 8:53:43 AM

Mean Area 0.7413
Mean Conc. 0.1716mg/L



Sub Contract Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
WEEKLY SAMPLES
ALS WO# HS18050220

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1812807; 1813193; 1813195; 1813197; 1813198

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2093 (214684)

General Set Information: There were sixteen 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: Samples 1813197006 and 1813198001-03 were analyzed and reported at 1:10 dilutions. Samples 1813195003/05 were analyzed and reported at 1:100 dilutions. Samples 1813198004/05 were analyzed and reported at 1:10,000 dilutions. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 600645) was less than 1/2 the CRDL. The recovery for the LCS (600646) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on samples 1813198002/03 (Client ID: HS18050471-01 50WW08-180508). The Matrix Spike and duplicate failed QC acceptance criteria for percent recoveries, biased high. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
The relative percent difference (RPD) was 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. Manual Integrations was performed for datafile 02APRD01/02 along with datafiles 14MAYD08/11/23/24.

Thomas Bosch May 17, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: May 17, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1812807**
Project ID: HS18050220 050318
Purchase Order: HS18050220
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_050318	1812807001	05/03/18	05/05/18	

ANALYTICAL REPORT

Workorder: 34-1812807
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_050318**	Sampling Site: NA	Collected: 05/03/2018
Lab ID: 1812807001	Media: 125 mL Nalgene	Received: 05/05/2018
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/2093 (HBN: 214684)	**Percent Solid:** NA
	Analyzed: 05/14/2018 10:33	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**4.9**	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 05/16/2018 11:54	/S/ Stephen Brose 05/17/2018 12:55

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: 34-1812807
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1812807

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2093 (HBN: 214684)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 600645
Analyzed: 05/14/2018 10:01
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 600646
Analyzed: 05/14/2018 10:15
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.09	5.00	102	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

	Sample: 1813198001	MS: 1813198002	MSD: 1813198003
	Analyzed: 05/14/2018 17:00	Analyzed: 05/14/2018 17:42	Analyzed: 05/14/2018 17:28
	Dilution: 10	Dilution: 10	Dilution: 10
	Units: ug/L	Units: ug/L	Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	140	202	50	# 129	78.8	123.8	207	# 139	2.47	0.0	20.0

Continuing Calibration Verification

	CCV: 600642	CCV: 600647	CCV: 600649
	Analyzed: 05/14/2018 09:19	Analyzed: 05/14/2018 12:54	Analyzed: 05/14/2018 16:03
	Units: ug/L	Units: ug/L	Units: ug/L
	Criteria: ± 15%	Criteria: ± 15%	Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	26.6	25.0	106	25.3	25.0	101	26.6	25.0	106

CCV: 600744
Analyzed: 05/14/2018 18:39
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.
Perchlorate	26.9	25.0	108

Interference Check Sample

ICSA: 600644
Analyzed: 05/14/2018 09:47
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.17	1.00	117

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1812807

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2093 (HBN: 214684)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Limit of Detection Verification

	LODV: 600643 Analyzed: 05/14/2018 09:33 Units: ug/L Criteria: ± 50%			LODV: 600648 Analyzed: 05/14/2018 13:09 Units: ug/L Criteria: ± 50%			LODV: 600650 Analyzed: 05/14/2018 16:17 Units: ug/L Criteria: ± 50%		
Analyte	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**	**Result**	**Target**	**% Rec.**
Perchlorate	0.860	1.00	86.0	0.905	1.00	90.5	1.03	1.00	103

LODV: 600745 Analyzed: 05/14/2018 18:53 Units: ug/L Criteria: ± 50%			
Analyte	**Result**	**Target**	**% Rec.**
Perchlorate	0.978	1.00	97.8

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

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
05/16/2018 11:54	05/17/2018 12:55

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

18698/#2

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1812807

Subcontract Chain of Custody

COC ID: 9065

1812807

SUBCONTRACT TO:

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Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

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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:	HS18050220
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18050220-01**	**LH18/24-SP650_050318**	**Water**	**03 May 2018 14:00**
	SUB_Perch-6850			18 May 2018

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. Musachia Date/Time: 5/4/18 18:00

Received By: Date/Time: 5/5/18 915

Cooler ID(s): 8494 Temperature(s): 2

00904255

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18050220	Split:	Workorder ID: 1812807	Level: ENV_LVL4
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	Requested Analysis: EPA 6850, DoD QSM
1	05/03/2018 14:00	LH18/24-SP650_050318	1812807001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

45 of 184

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	05/05/2018 09:05	ALS Sample Receiving	Sample Login
Julie Warath 5/8/18 0830		4B	storage
R.33.1 5.14.13/08:10		T. Bush	6850

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: 1812807

Date/Time of Receipt: 5/5/18 905 — 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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: _____ (Signature) _____ (Printed Name) 5/5/18 (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: _____

CRIR.doc — Revised 01/01/2018

00904257

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: 04MAY18
ACTWGT: 10.70 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18050220 RJ

FedEx Express

TRK# 0201 4380 9528 9093

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BTFA

84123
UT-US SLC

FedEx Express

FedEx® Saturday Delivery

SDI

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Seal Broken By:
Date:

Batch Worklist

Batch: ELMS/ 2093 **Created:** 5/14/2018 08:56 **Instrument:** **HBN:** 214684
Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1812807 [ENV_LVL4]
Workorder: 1813193 [ENV_LVL4]
Workorder: 1813195 [ENV_LVL4]
Workorder: 1813197 [ENV_LVL4]
Workorder: 1813198 [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	600642	CCV for HBN 214684 [ELMS/2093]				CCV	3		E685041C3Q	5311		5/18/2018	
2	600643	LODV for HBN 214684 [ELMS/2093				LODV	3		E6850..D3Q	5311		5/18/2018	
3	600644	ICS for HBN 214684 [ELMS/2093]				ICS	3		E6850..D3Q	5311		5/18/2018	
4	600645	LMB for HBN 214684 [ELMS/2093]				LMB	3		E6850Q413Q	5311		5/18/2018	
5	600646	LCS for HBN 214684 [ELMS/2093]				LCS	3		E6850Q413Q	5311		5/18/2018	
6	1812807001	LH18/24-SP650_050318				SAMPLE	3	1812807001-A	E6850Q41.3	5480	5/31/2018	5/18/2018	
7	1813193001	HS18050515-01 17WW20-180508				SAMPLE	3	1813193001-A	E6850Q41.3	5480	6/5/2018	5/24/2018	
8	1813195001	HS18050521-01 50WW22-180509				SAMPLE	3	1813195001-A	E6850Q41.3	5480	6/6/2018	5/24/2018	
9	1813195002	HS18050521-02 50WW16-180509				SAMPLE	3	1813195002-A	E6850Q41.3	5480	6/6/2018	5/24/2018	
10	1813195003	HS18050521-03 50WW11-180509				SAMPLE	3	1813195003-A	E6850Q41.3	5480	6/6/2018	5/24/2018	
11	1813195004	HS18050521-04 50WW14-180509				SAMPLE	3	1813195004-A	E6850Q41.3	5480	6/6/2018	5/24/2018	
12	1813195005	HS18050521-05 50WW13-180509				SAMPLE	3	1813195005-A	E6850Q41.3	5480	6/6/2018	5/24/2018	
13	1813197001	HS18050473-01 50WW27-180507				SAMPLE	3	1813197001-A	E6850Q41.3	5480	6/4/2018	5/24/2018	
14	1813197002	HS18050473-02 50WW15-180507				SAMPLE	3	1813197002-A	E6850Q41.3	5480	6/4/2018	5/24/2018	
15	1813197003	HS18050473-03 50WW18-180507				SAMPLE	3	1813197003-A	E6850Q41.3	5480	6/4/2018	5/24/2018	
16	600647	CCV for HBN 214684 [ELMS/2093]				CCV	3		E685041C3Q	5311		5/18/2018	
17	600648	LODV for HBN 214684 [ELMS/2093				LODV	3		E6850..D3Q	5311		5/18/2018	
18	1813197004	HS18050473-04 50WW21-180507				SAMPLE	3	1813197004-A	E6850Q41.3	5480	6/4/2018	5/24/2018	
19	1813197005	HS18050473-05 50WW24-180507				SAMPLE	3	1813197005-A	E6850Q41.3	5480	6/4/2018	5/24/2018	
20	1813197006	HS18050473-06 50WW06-180508				SAMPLE	3	1813197006-A	E6850Q41.3	5480	6/5/2018	5/24/2018	
21	1813198001	HS18050471-01 50WW08-180508				SAMPLE	3	1813198001-A	E6850Q41.3	5480	6/5/2018	5/24/2018	
22	1813198002	HS18050471-01 50WW08-180508MS				MS	3	1813198002-A	E6850Q413Q	5480		5/18/2018	
23	1813198003	HS18050471-01 50WW08-180508MSD				MSD	3	1813198003-A	E6850Q413Q	5480		5/18/2018	
24	1813198004	HS18050471-02 50WW12-180508				SAMPLE	3	1813198004-A	E6850Q41.3	5480	6/5/2018	5/24/2018	

tch Worklist

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
25	1813198005	HS18050471-03 50WW12-180508-FD				FLDDUP	3	1813198005-A	E6850Q41.3	5480	6/5/2018	5/24/2018	
26	600649	CCV for HBN 214684 [ELMS/2093]				CCV	3		E685041C3Q	5311		5/18/2018	
27	600650	LODV for HBN 214684 [ELMS/2093				LODV	3		E6850..D3Q	5311		5/18/2018	
28	600744	CCV for HBN 214684 [ELMS/2093]				CCV	3		E685041C3Q	5311		5/18/2018	
29	600745	LODV for HBN 214684 [ELMS/2093				LODV	3		E6850..D3Q	5311		5/18/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1812807 (001); 1813193 (001); 1813195 (001-05); 1813197 (001-06); 1813198 (001-05) ELMS Batch/HBN ID: 2093 (214684)
Prep Date: 05/14/2018 Analysis Date: 05/14/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\APR\1418D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 04/02/2018, sequence 02APR18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 600646; Target = 5.0µg/L. ASTM type II water was used for LMB 600645.

MS/MSD: MS/MSD was performed on samples 1813198002/03 (Client ID: HS18050471-01 50WW08-180508). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L. The parent sample and the MS/MSD were analyzed at 1:10 dilutions. The effective spike target was 50.µg/L.

COMMENTS:

1) Results reported in µg/L. Samples 1813197006 and 1813198001-03 were analyzed and reported at 1:10 dilutions. Samples 1813195003/05 were analyzed and reported at 1:100 dilutions. Samples 1813198004/05 were analyzed and reported at 1:10,000 dilutions. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The Matrix Spike and duplicate failed QC acceptance criteria for percent recoveries, biased high. 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\2018\MAY\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 02APRD01/02 along with datafiles 14MAYD08/11/23/24.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\214684-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — Description - Perchlorate ISTD Wrk 1,000ug/L

Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ALS

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

OR-ORG/IND-001
Rev. 5/16

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\14MAY18D\14MAY18D.B

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

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

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	600642 CCV@25	Vial 71	1	Control	1	9.69810e5	8.874	26.56688
*	600643 LODV@1.	Vial 72	1	Control	2	3.98185e4	8.910	8.60168e-1
*	600644 ICS@1.0	Vial 73	1	Control	3	3.51587e4	8.690	1.17141
*	600645 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	600646 QC@5	Vial 75	1	Control	5	1.71173e5	8.786	5.09426
*	1812807001	Vial 76	1	Sample	6	1.04601e5	9.729	4.86615
*	1813193001	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	1813195001	Vial 78	1	Sample	8	2.51884e4	8.458	1.09271
*	1813195002	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1813195003 1K	Vial 80	1	Sample	10	5.18920e4	9.019	1680.70523 RE
*	1813195004	Vial 81	1	Sample	11	1.86212e4	8.550	7.47600e-1 RE
*	1813195005 1K	Vial 82	1	Sample	12	3.05786e4	8.994	987.33368 RE
*	1813197001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1813197002	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	1813197003	Vial 85	1	Sample	15	0.00000	0.000	0.00000
*	600647 CCV@25	Vial 71	1	Control	16	8.26446e5	8.994	25.34577
*	600648 LODV@1.	Vial 72	1	Control	17	3.91964e4	9.004	9.04634e-1
*	1813197004	Vial 86	1	Sample	18	0.00000	0.000	0.00000
*	1813197005	Vial 87	1	Sample	19	0.00000	0.000	0.00000
*	1813197006 10K	Vial 88	1	Sample	20	0.00000	0.000	0.00000 RE
*	1813198001	Vial 89	1	Sample	21	4.14783e6	8.496	110.26539 RE
*	1813198004	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	1813198005	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	Rinse	Vial 61	1	Sample	25	0.00000	0.000	0.00000
*	1813197006	Vial 94	1	Sample	26	6.08897e6	8.677	142.36301 RE
*	1813195003 100	Vial 95	1	Sample	27	2.63388e5	9.014	998.60641 ✓
*	1813195005 100	Vial 96	1	Sample	28	1.65623e5	9.007	638.28016 ✓
*	600649 CCV@25	Vial 71	1	Control	29	8.06835e5	9.057	26.58202
*	600650 LODV@1.	Vial 72	1	Control	30	4.05349e4	9.072	1.03417
*	1813198004 1K	Vial 62	1	Sample	31	2.88012e6	9.021	7.78073e4 RE
*	1813198005 1K	Vial 63	1	Sample	32	2.79897e6	9.019	7.71644e4 RE
*	1813198001 10X	Vial 97	1	Sample	33	4.00251e5	8.788	137.61891 ✓
*	1813198003 MSD	Vial 99	1	Sample	35	6.27182e5	8.797	206.92228 ✓
*	1813198002 MS	Vial 98	1	Sample	36	6.04798e5	8.782	201.87431 ✓
*	1813197006 10X	Vial 64	1	Sample	37	6.92197e5	8.979	217.23299 ✓
*	1813198004 10K	Vial 65	1	Sample	38	2.75522e5	9.065	9.13592e4 ✓
*	1813198005 10K	Vial 66	1	Sample	39	2.62391e5	9.049	8.89863e4 ✓
*	600744 CCV@25	Vial 71	1	Control	40	9.02531e5	9.023	26.91539 ✓
*	600745 LODV@1.	Vial 72	1	Control	41	4.18226e4	9.054	9.77695e-1

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	600642 CCV@25	Vial 71	1	Control	1	3.14656e5	8.891	27.64363
*	600643 LODV@1.	Vial 72	1	Control	2	1.50133e4	8.934	8.99204e-1
*	600644 ICS@1.0	Vial 73	1	Control	3	1.35248e4	8.715	1.29534
*	600645 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	600646 QC@5	Vial 75	1	Control	5	5.90434e4	8.799	5.40306
*	1812807001	Vial 76	1	Sample	6	3.59954e4	9.745	5.14225
*	1813193001	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	1813195001	Vial 78	1	Sample	8	8533.53711	8.482	1.03812
*	1813195002	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	1813195003 1K	Vial 80	1	Sample	10	1.95045e4	9.029	1861.44495
*	1813195004	Vial 81	1	Sample	11	7184.97070	8.564	7.88158e-1
*	1813195005 1K	Vial 82	1	Sample	12	1.19770e4	9.011	1096.24938
*	1813197001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1813197002	Vial 84	1	Sample	14	0.00000	0.000	0.00000

Batch Report: C:\HPCHEM\1\DATA\14MAY18D\14MAY18D.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	1813197003	Vial 85	1	Sample	15	0.00000	0.000	0.00000
*	600647 CCV@25	Vial 71	1	Control	16	2.71043e5	9.009	26.59613
*	600648 LODV@1.	Vial 72	1	Control	17	1.40026e4	9.020	8.93095e-1
*	1813197004	Vial 86	1	Sample	18	0.00000	0.000	0.00000
*	1813197005	Vial 87	1	Sample	19	0.00000	0.000	0.00000
*	1813197006 10K	Vial 88	1	Sample	20	0.00000	0.000	0.00000
*	1813198001	Vial 89	1	Sample	21	1.36703e6	8.510	121.58405
*	1813198004	Vial 92	1	Sample	23	0.00000	8.239	0.00000
*	1813198005	Vial 93	1	Sample	24	0.00000	8.043	0.00000
*	Rinse	Vial 61	1	Sample	25	0.00000	0.000	0.00000
*	1813197006	Vial 94	1	Sample	26	2.05634e6	8.695	160.95044
*	1813195003 100	Vial 95	1	Sample	27	8.70362e4	9.030	1032.01934
*	1813195005 100	Vial 96	1	Sample	28	5.60779e4	9.024	668.45460
*	600649 CCV@25	Vial 71	1	Control	29	2.59768e5	9.074	27.46837
*	600650 LODV@1.	Vial 72	1	Control	30	1.50854e4	9.091	1.08809
*	1813198004 1K	Vial 62	1	Sample	31	9.37896e5	9.037	8.40406e4
*	1813198005 1K	Vial 63	1	Sample	32	9.07245e5	9.035	8.30212e4
*	1813198001 10X	Vial 97	1	Sample	33	1.30820e5	8.803	141.78254
*	1813198003 MSD	Vial 99	1	Sample	35	2.03448e5	8.814	213.82014
*	1813198002 MS	Vial 98	1	Sample	36	1.94864e5	8.799	207.16971
*	1813197006 10X	Vial 64	1	Sample	37	2.20928e5	8.997	221.43897
*	1813198004 10K	Vial 65	1	Sample	38	9.19742e4	9.081	9.51576e4
*	1813198005 10K	Vial 66	1	Sample	39	8.58760e4	9.070	9.08587e4
*	600744 CCV@25	Vial 71	1	Control	40	2.84796e5	9.039	27.32357
*	600745 LODV@1.	Vial 72	1	Control	41	1.62658e4	9.070	1.07567

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	600642 CCV@25	Vial 71	1	Control	1	1.48196e5	8.896	5.00000
*	600643 LODV@1.	Vial 72	1	Control	2	2.07465e5	8.937	5.00000
*	600644 ICS@1.0	Vial 73	1	Control	3	1.36084e5	8.712	5.00000
*	600645 LMB	Vial 74	1	Control	4	1.64232e5	8.768	5.00000
*	600646 QC@5	Vial 75	1	Control	5	1.53151e5	8.809	5.00000
*	1812807001	Vial 76	1	Sample	6	9.80709e4	9.752	5.00000
*	1813193001	Vial 77	1	Sample	7	1.06705e5	8.560	5.00000
*	1813195001	Vial 78	1	Sample	8	1.04284e5	8.481	5.00000
*	1813195002	Vial 79	1	Sample	9	1.07521e5	8.797	5.00000
*	1813195003 1K	Vial 80	1	Sample	10	1.41157e5	9.036	5000.00000
*	1813195004	Vial 81	1	Sample	11	1.10863e5	8.567	5.00000
*	1813195005 1K	Vial 82	1	Sample	12	1.39603e5	9.016	5000.00000
*	1813197001	Vial 83	1	Sample	13	1.19457e5	8.601	5.00000
*	1813197002	Vial 84	1	Sample	14	1.16201e5	8.582	5.00000
*	1813197003	Vial 85	1	Sample	15	1.20044e5	8.551	5.00000
*	600647 CCV@25	Vial 71	1	Control	16	1.33239e5	9.013	5.00000
*	600648 LODV@1.	Vial 72	1	Control	17	1.94616e5	9.029	5.00000
*	1813197004	Vial 86	1	Sample	18	8.85100e4	8.464	5.00000
*	1813197005	Vial 87	1	Sample	19	1.02708e5	8.624	5.00000
*	1813197006 10K	Vial 88	1	Sample	20	1.31046e5	9.026	5.00000e4
*	1813198001	Vial 89	1	Sample	21	1.05372e5	8.516	5.00000
*	1813198004	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	1813198005	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	Rinse	Vial 61	1	Sample	25	0.00000	0.000	0.00000
*	1813197006	Vial 94	1	Sample	26	1.07056e5	8.697	5.00000
*	1813195003 100	Vial 95	1	Sample	27	1.17249e5	9.038	500.00000
*	1813195005 100	Vial 96	1	Sample	28	1.17561e5	9.028	500.00000
*	600649 CCV@25	Vial 71	1	Control	29	1.23212e5	9.080	5.00000
*	600650 LODV@1.	Vial 72	1	Control	30	1.76981e5	9.091	5.00000
*	1813198004 1K	Vial 62	1	Sample	31	1.17884e5	9.041	5000.00000
*	1813198005 1K	Vial 63	1	Sample	32	1.15831e5	9.037	5000.00000
*	1813198001 10X	Vial 97	1	Sample	33	1.26622e5	8.806	50.00000
*	1813198003 MSD	Vial 99	1	Sample	35	1.27010e5	8.820	50.00000
*	1813198002 MS	Vial 98	1	Sample	36	1.25887e5	8.799	50.00000

Batch Report: C:\HPCHEM\1\DATA\14MAY18D\14MAY18D.B

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
	*	1813197006	10X	Vial 64	1	Sample	37	1.32775e5	8.996	50.00000
	*	1813198004	10K	Vial 65	1	Sample	38	1.34685e5	9.088	5.00000e4
	*	1813198005	10K	Vial 66	1	Sample	39	1.31855e5	9.074	5.00000e4
	*	600744	CCV@25	Vial 71	1	Control	40	1.35877e5	9.045	5.00000
	*	600745	LODV@1.	Vial 72	1	Control	41	1.92745e5	9.068	5.00000

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\MAY\14MAY18D.S

Sequence Table:

Method and Injection Info Part:

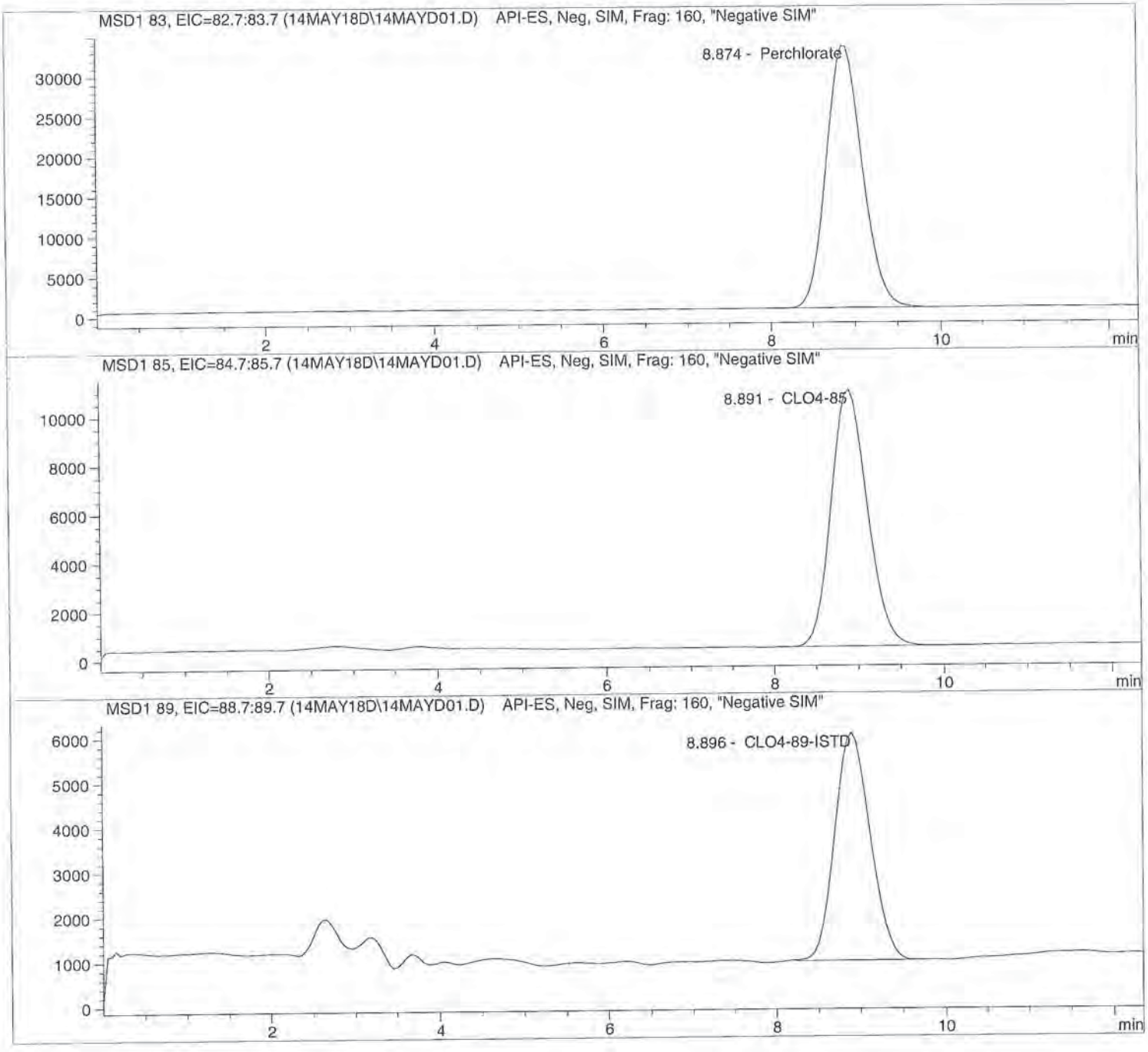
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	600642	CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	600643	LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	600644	ICS@1.0	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	600645	LMB	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	600646	QC@5	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	1812807001		CLO4-DOD	1	Sample		
7	Vial 77	1813193001		CLO4-DOD	1	Sample		
8	Vial 78	1813195001		CLO4-DOD	1	Sample		
9	Vial 79	1813195002		CLO4-DOD	1	Sample		
10	Vial 80	1813195003	1K	CLO4-DOD	1	Sample		
11	Vial 81	1813195004		CLO4-DOD	1	Sample		
12	Vial 82	1813195005	1K	CLO4-DOD	1	Sample		
13	Vial 83	1813197001		CLO4-DOD	1	Sample		
14	Vial 84	1813197002		CLO4-DOD	1	Sample		
15	Vial 85	1813197003		CLO4-DOD	1	Sample		
16	Vial 71	600647	CCV@25	CLO4-DOD	1	Ctrl Samp		
17	Vial 72	600648	LODV@1.	CLO4-DOD	1	Ctrl Samp		
18	Vial 86	1813197004		CLO4-DOD	1	Sample		
19	Vial 87	1813197005		CLO4-DOD	1	Sample		
20	Vial 88	1813197006	10K	CLO4-DOD	1	Sample		
21	Vial 89	1813198001		CLO4-DOD	1	Sample		
22	Vial 90	1813198002	MS	CLO4-DOD	1	Sample		
23	Vial 92	1813198004		CLO4-DOD	1	Sample		
24	Vial 93	1813198005		CLO4-DOD	1	Sample		
25	Vial 61	Rinse		CLO4-DOD	1	Sample		
26	Vial 94	1813197006		CLO4-DOD	1	Sample		
27	Vial 95	1813195003	100	CLO4-DOD	1	Sample		
28	Vial 96	1813195005	100	CLO4-DOD	1	Sample		
29	Vial 71	600649	CCV@25	CLO4-DOD	1	Ctrl Samp		
30	Vial 72	600650	LODV@1.	CLO4-DOD	1	Ctrl Samp		
31	Vial 62	1813198004	1K	CLO4-DOD	1	Sample		
32	Vial 63	1813198005	1K	CLO4-DOD	1	Sample		
33	Vial 97	1813198001	10X	CLO4-DOD	1	Sample		
34	Vial 98	1813198002	MS	CLO4-DOD	1	Sample		
35	Vial 99	1813198003	MSD	CLO4-DOD	1	Sample		
36	Vial 98	1813198002	MS	CLO4-DOD	1	Sample		
37	Vial 64	1813197006	10X	CLO4-DOD	1	Sample		
38	Vial 65	1813198004	10K	CLO4-DOD	1	Sample		
39	Vial 66	1813198005	10K	CLO4-DOD	1	Sample		
40	Vial 71	600744	CCV@25	CLO4-DOD	1	Ctrl Samp		
41	Vial 72	600745	LODV@1.	CLO4-DOD	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD01.D Sample Name: 600642 CCV@25

Injection Date:	5/14/2018 09:19:15	Seq Line:	1
Sample Name:	600642 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD01.D Sample Name: 600642 CCV@25

Injection Date:	5/14/2018 09:19:15	Seq Line:	1
Sample Name:	600642 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.874	PBA	969810.0	26.5669	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.891	PBA	314656.3	27.6436	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.896	BBA	148195.9	5.0000	CLO4-89-ISTD

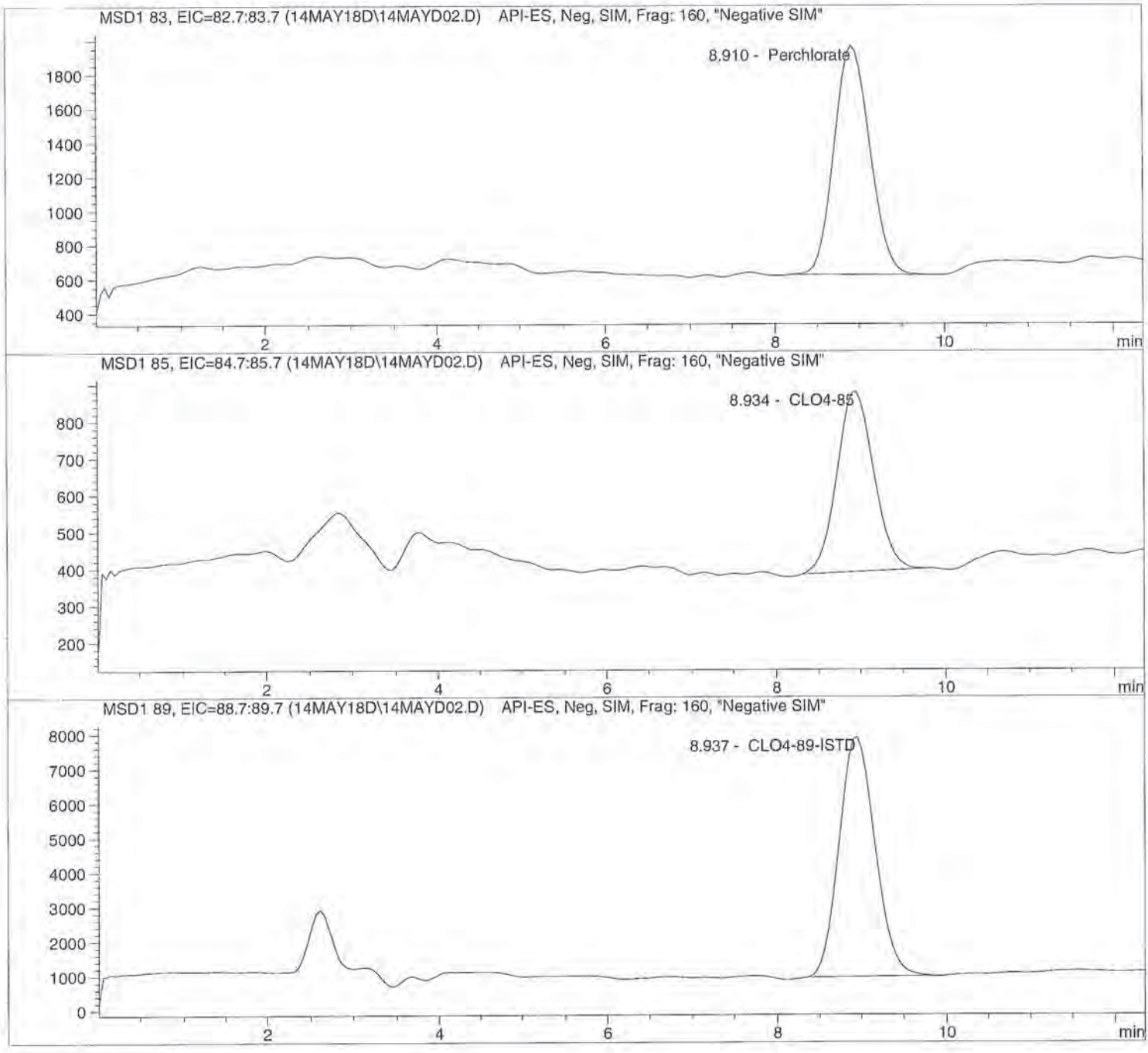
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD02.D Sample Name: 600643 LODV@1.

Injection Date:	5/14/2018 09:33:22	Seq Line:	2
Sample Name:	600643 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD02.D Sample Name: 600643 LODV@1.

Injection Date:	5/14/2018 09:33:22	Seq Line:	2
Sample Name:	600643 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.910	PBA	39818.5	0.8602	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.934	PBA	15013.3	0.8992	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.937	PBA	207464.8	5.0000	CLO4-89-ISTD

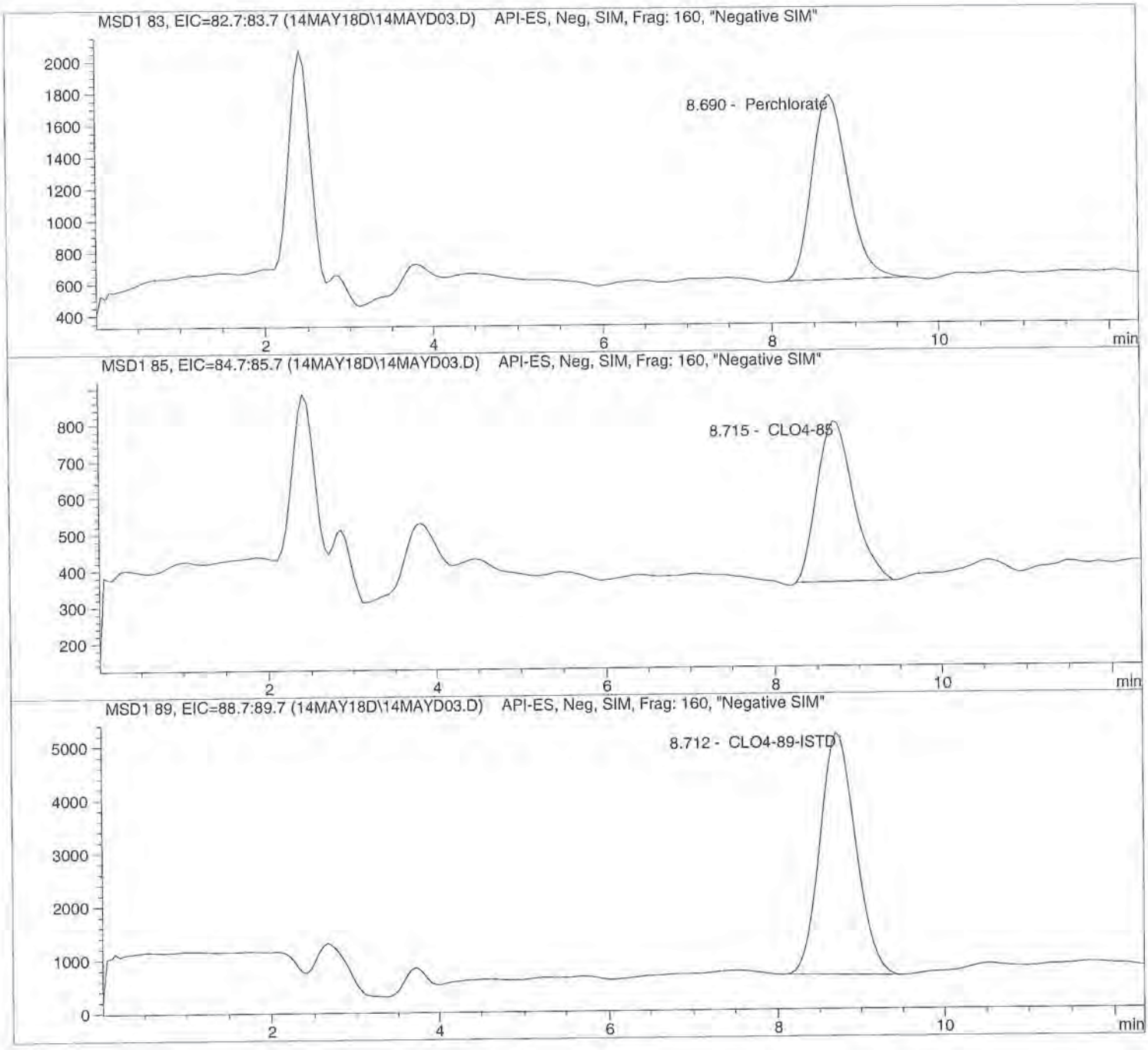
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD03.D Sample Name: 600644 ICS@1.0

Injection Date:	5/14/2018 09:47:30	Seq Line:	3
Sample Name:	600644 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD03.D Sample Name: 600644 ICS@1.0

Injection Date:	5/14/2018 09:47:30	Seq Line:	3
Sample Name:	600644 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.690	PBA	35158.7	1.1714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.715	PBA	13524.8	1.2953	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.712	PBA	136083.5	5.0000	CLO4-89-ISTD

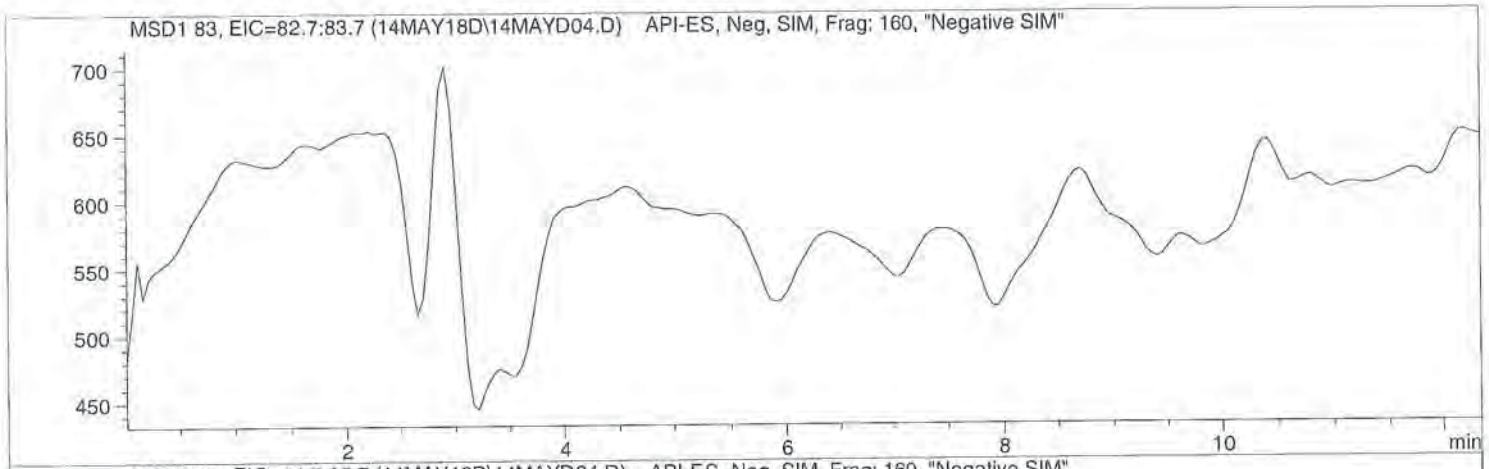
*** End of Report ***

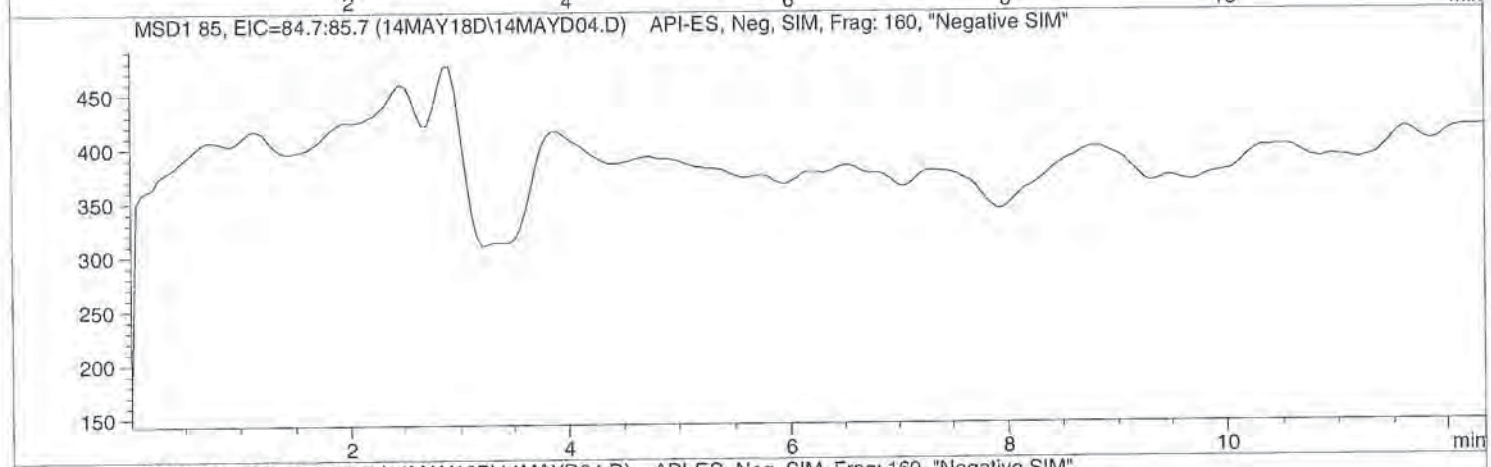
Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD04.D Sample Name: 600645 LMB

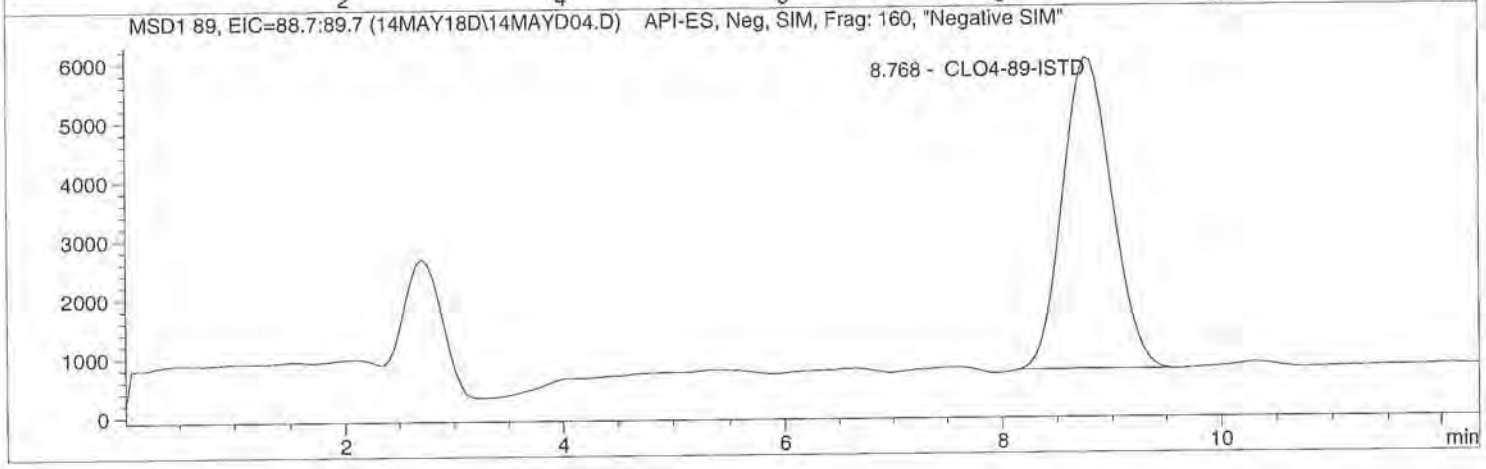
Injection Date:	5/14/2018 10:01:44	Seq Line:	4
Sample Name:	600645 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD04.D Sample Name: 600645 LMB

Injection Date:	5/14/2018 10:01:44	Seq Line:	4
Sample Name:	600645 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.768	PBA	164231.9	5.0000	CLO4-89-ISTD

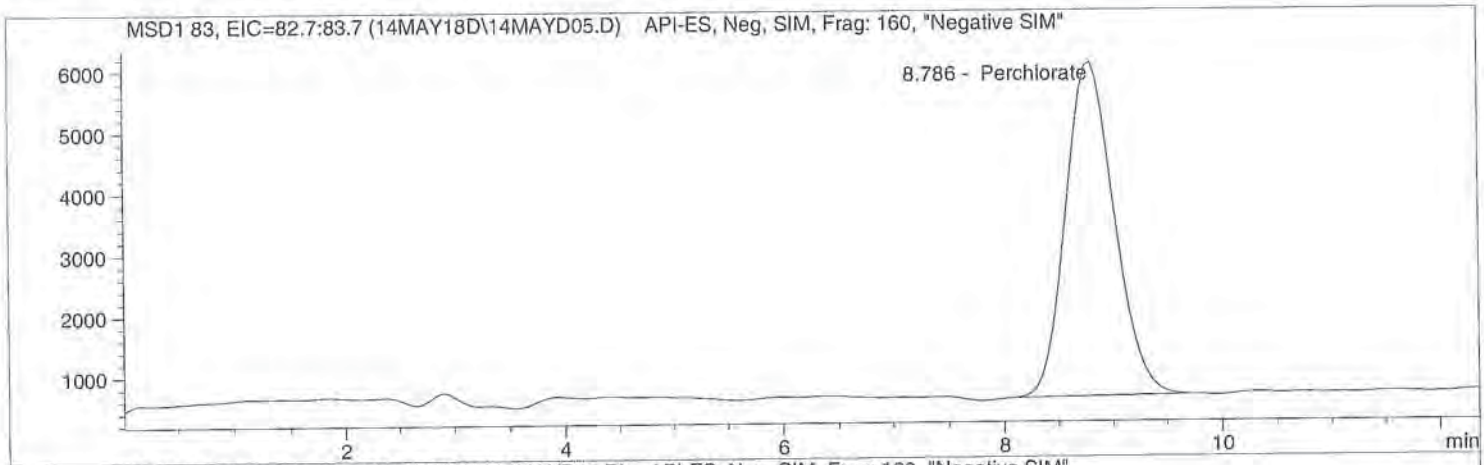
*** End of Report ***

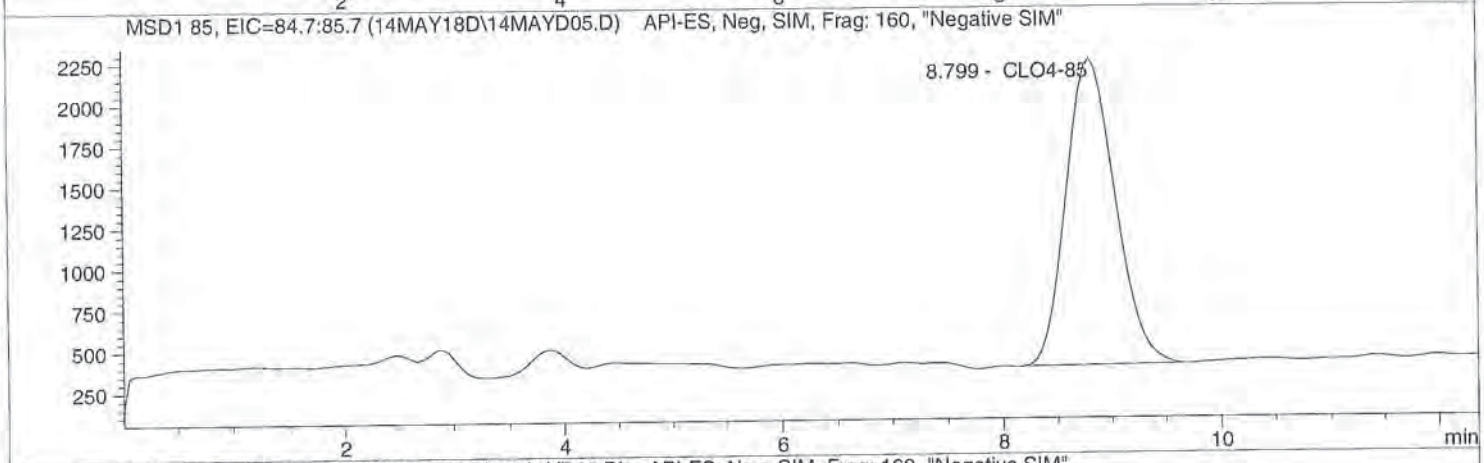
Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD05.D Sample Name: 600646 QC@5

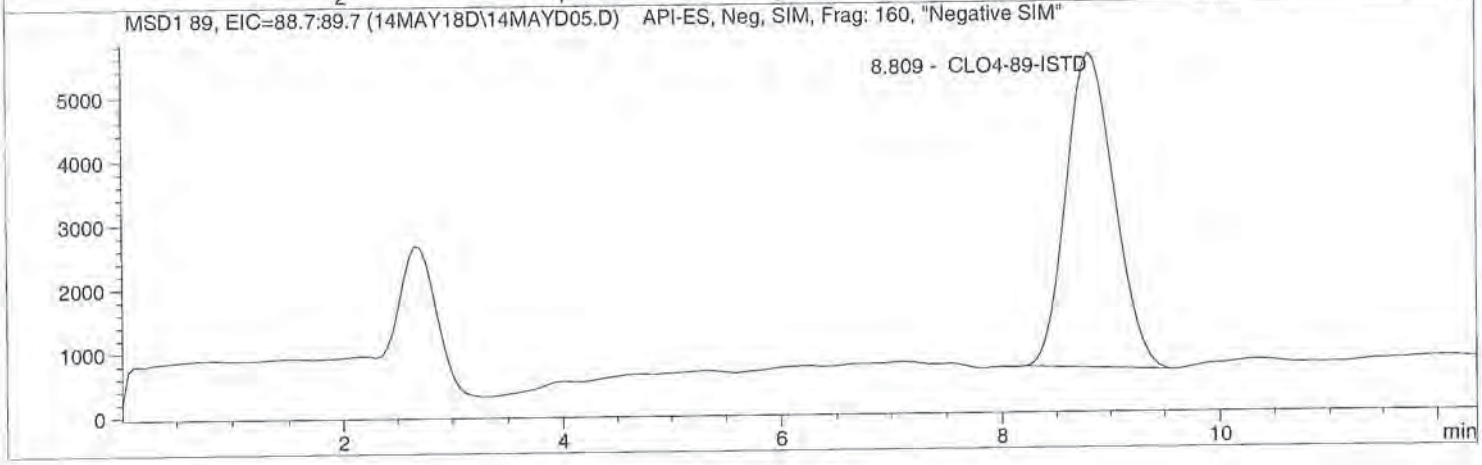
Injection Date:	5/14/2018 10:15:58	Seq Line:	5
Sample Name:	600646 QC@5	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD05.D Sample Name: 600646 QC@5

Injection Date:	5/14/2018 10:15:58	Seq Line:	5
Sample Name:	600646 QC@5	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.786	BBA	171172.5	5.0943	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.799	PBA	59043.4	5.4031	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.809	PBA	153151.0	5.0000	CLO4-89-ISTD

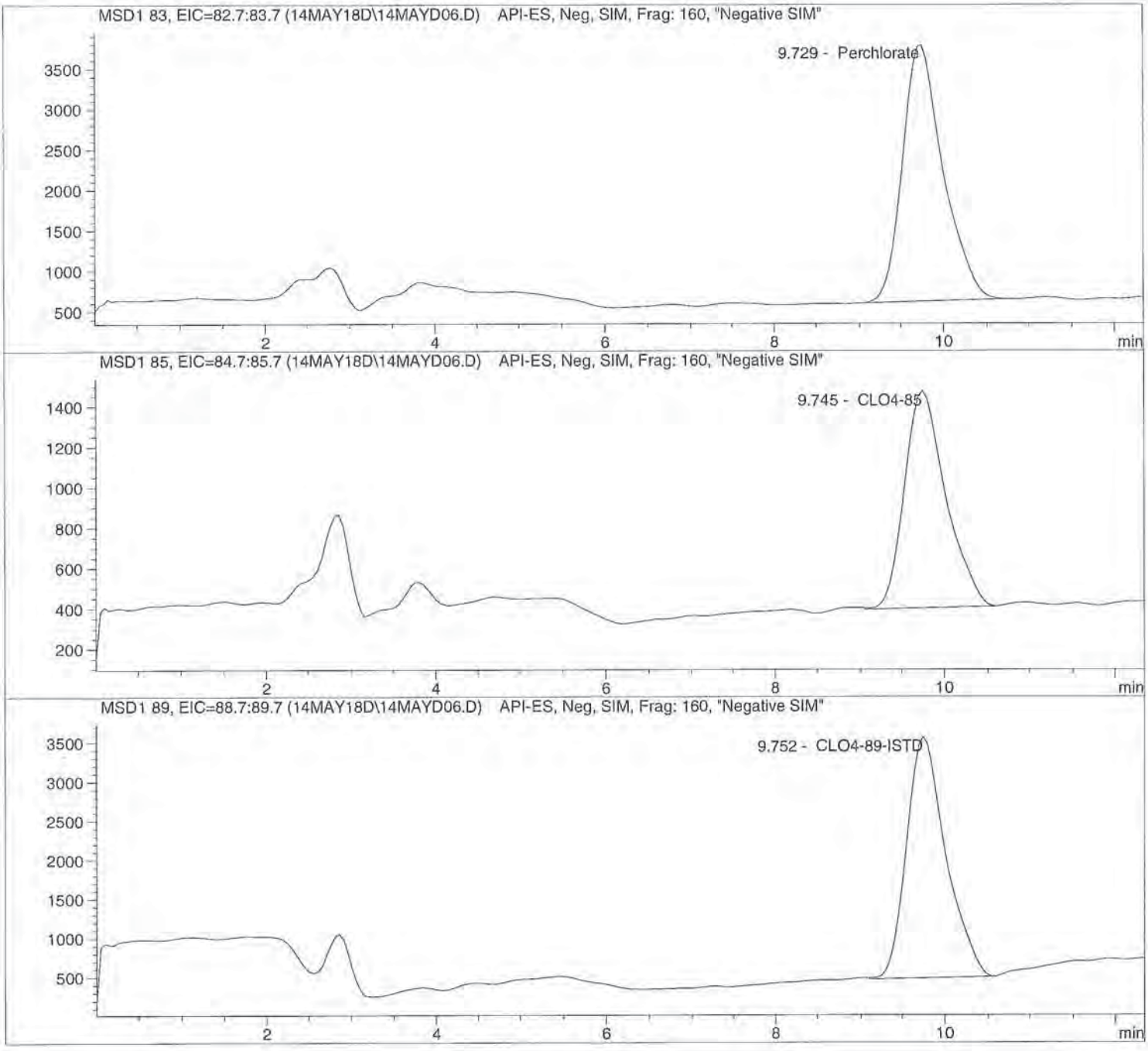
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD06.D Sample Name: 1812807001

Injection Date:	5/14/2018 10:33:01	Seq Line:	6
Sample Name:	1812807001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD06.D Sample Name: 1812807001

Injection Date:	5/14/2018 10:33:01	Seq Line:	6
Sample Name:	1812807001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.729	PBA	104601.0	4.8662	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.745	BBA	35995.4	5.1423	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.752	BBA	98070.9	5.0000	CLO4-89-ISTD

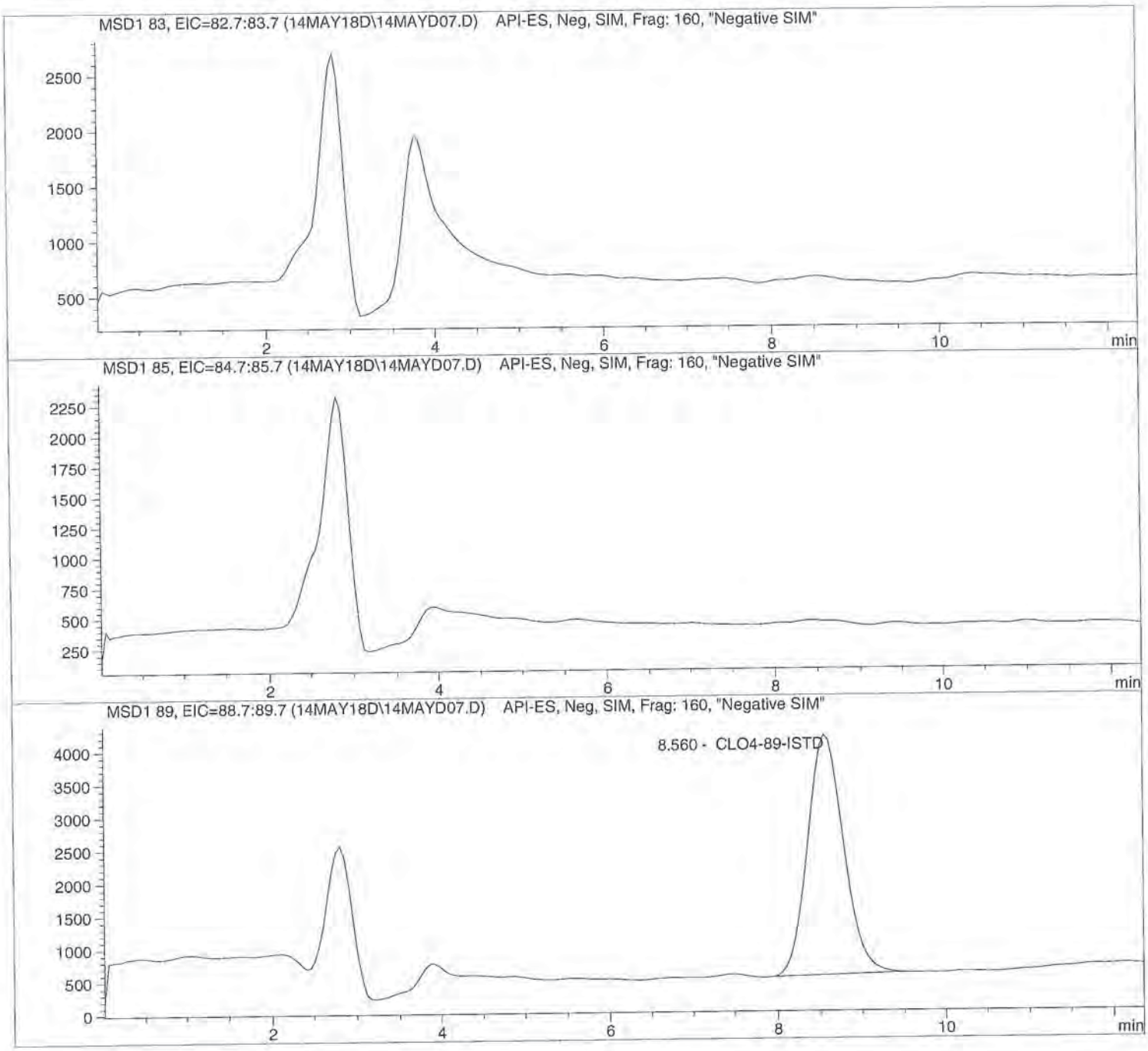
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD07.D Sample Name: 1813193001

Injection Date:	5/14/2018 10:47:12	Seq Line:	7
Sample Name:	1813193001	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD07.D Sample Name: 1813193001

Injection Date:	5/14/2018 10:47:12	Seq Line:	7
Sample Name:	1813193001	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.560	PBA	106704.8	5.0000	CLO4-89-ISTD

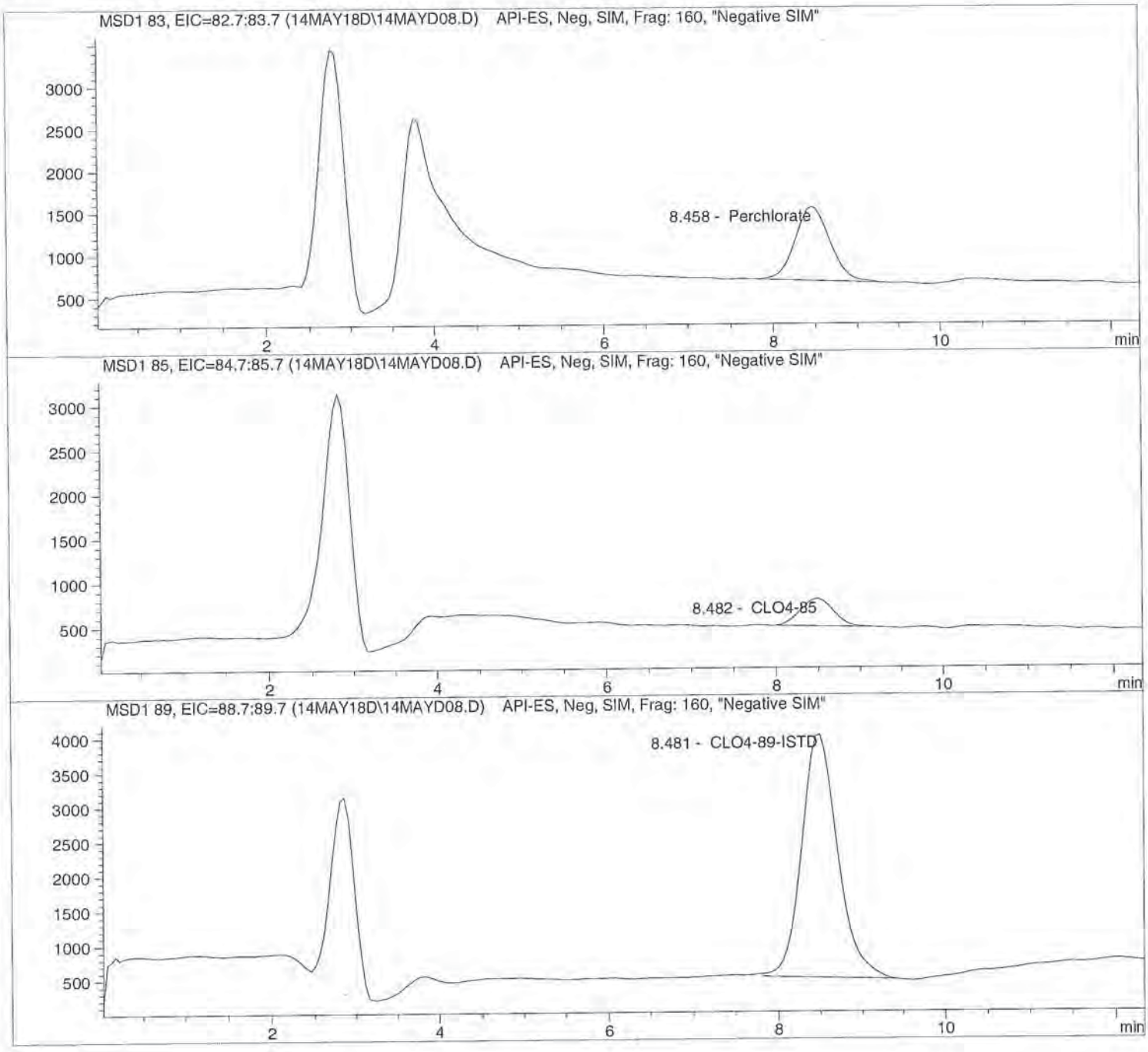
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD08.D Sample Name: 1813195001

Injection Date:	5/14/2018 11:01:22	Seq Line:	8
Sample Name:	1813195001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD08.D Sample Name: 1813195001

Injection Date:	5/14/2018 11:01:22	Seq Line:	8
Sample Name:	1813195001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.458	BBA	25188.4	1.0927	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.482	MM	8533.5	1.0381	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.481	BBA	104283.8	5.0000	CLO4-89-ISTD

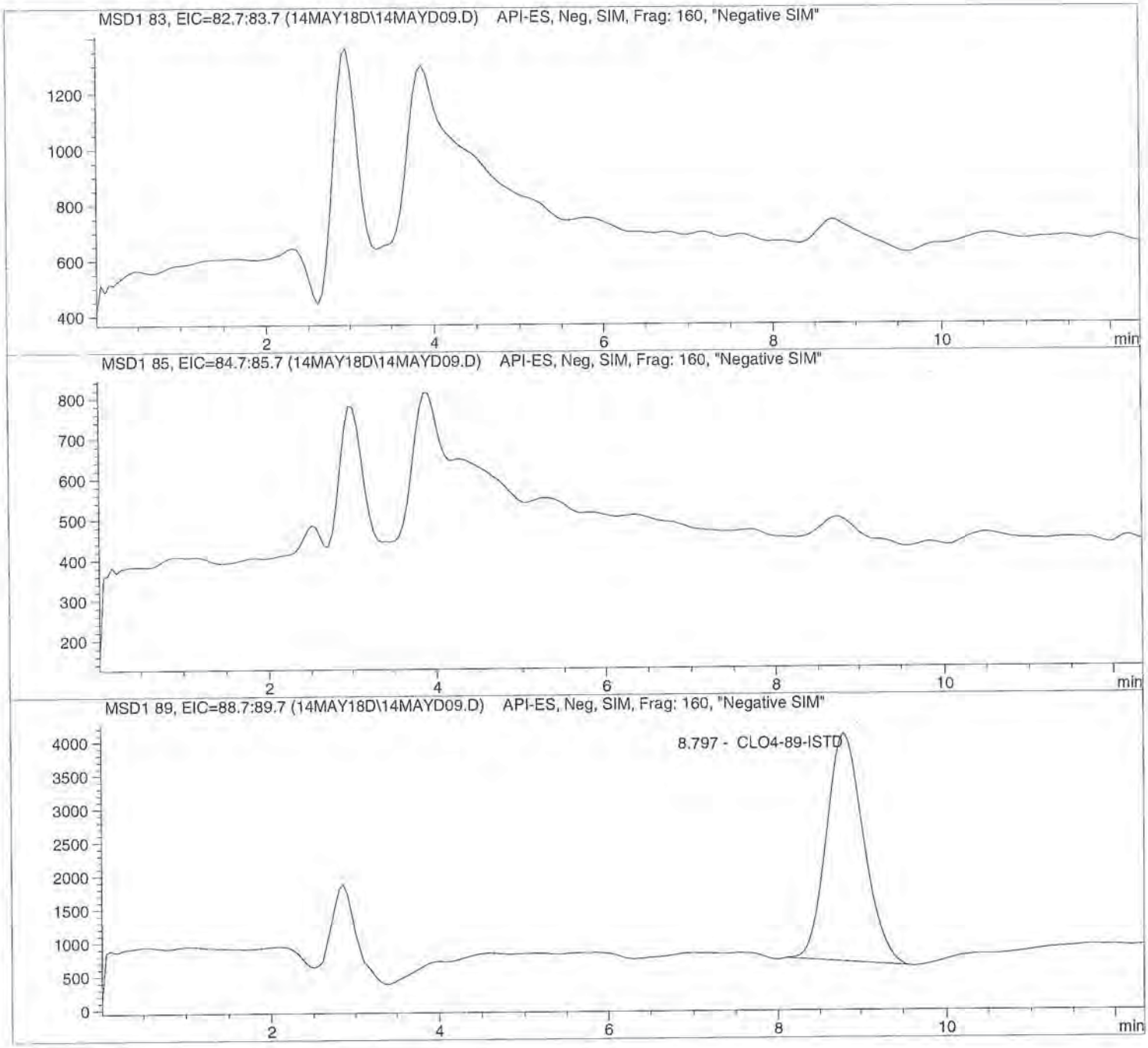
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD09.D Sample Name: 1813195002

Injection Date:	5/14/2018 11:15:33	Seq Line:	9
Sample Name:	1813195002	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD09.D Sample Name: 1813195002

Injection Date:	5/14/2018 11:15:33	Seq Line:	9
Sample Name:	1813195002	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.797	PBA	107520.9	5.0000	CLO4-89-ISTD

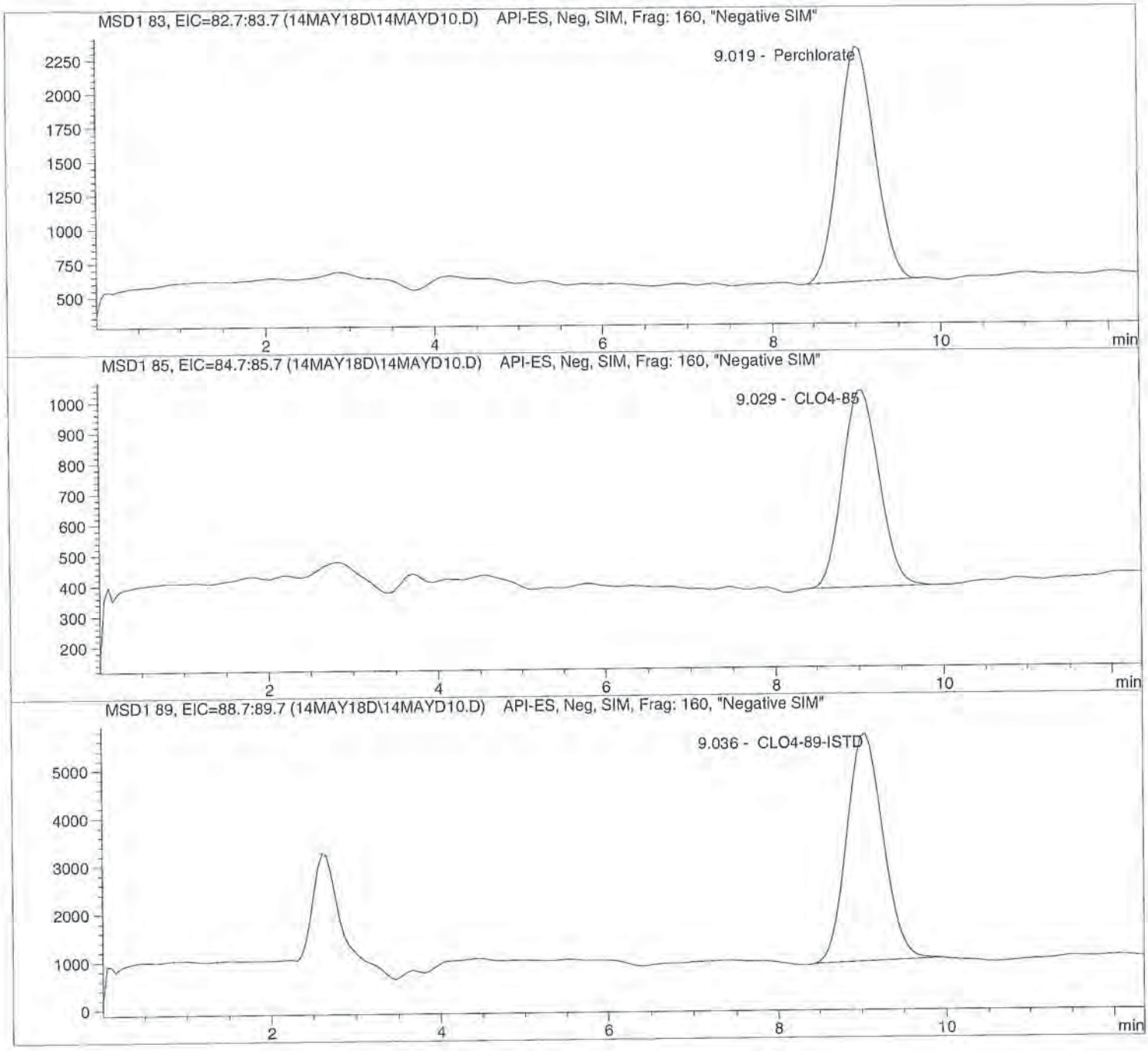
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD10.D Sample Name: 1813195003 1K

Injection Date:	5/14/2018 11:29:47	Seq Line:	10
Sample Name:	1813195003 1K	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD10.D Sample Name: 1813195003 1K

Injection Date:	5/14/2018 11:29:47	Seq Line:	10
Sample Name:	1813195003 1K	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.019	PBA	51892.0	1680.7052	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.029	PBA	19504.5	1861.4449	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.036	PBA	141157.3	5000.0000	CLO4-89-ISTD

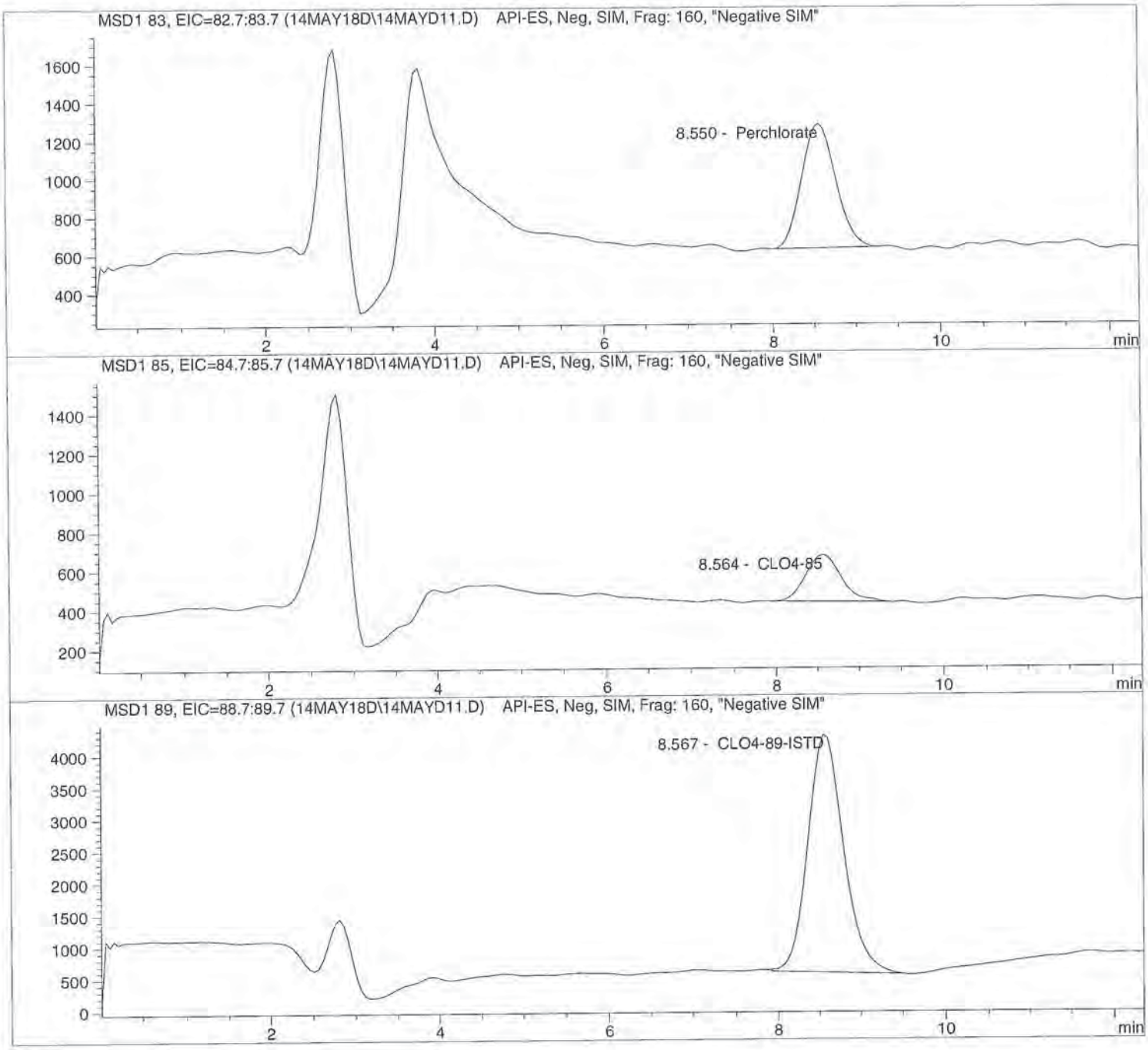
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD11.D Sample Name: 1813195004

Injection Date:	5/14/2018 11:43:58	Seq Line:	11
Sample Name:	1813195004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD11.D Sample Name: 1813195004

Injection Date:	5/14/2018 11:43:58	Seq Line:	11
Sample Name:	1813195004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.550	PBA	18621.2	0.7476	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.564	MM	7185.0	0.7882	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.567	BBA	110863.1	5.0000	CLO4-89-ISTD

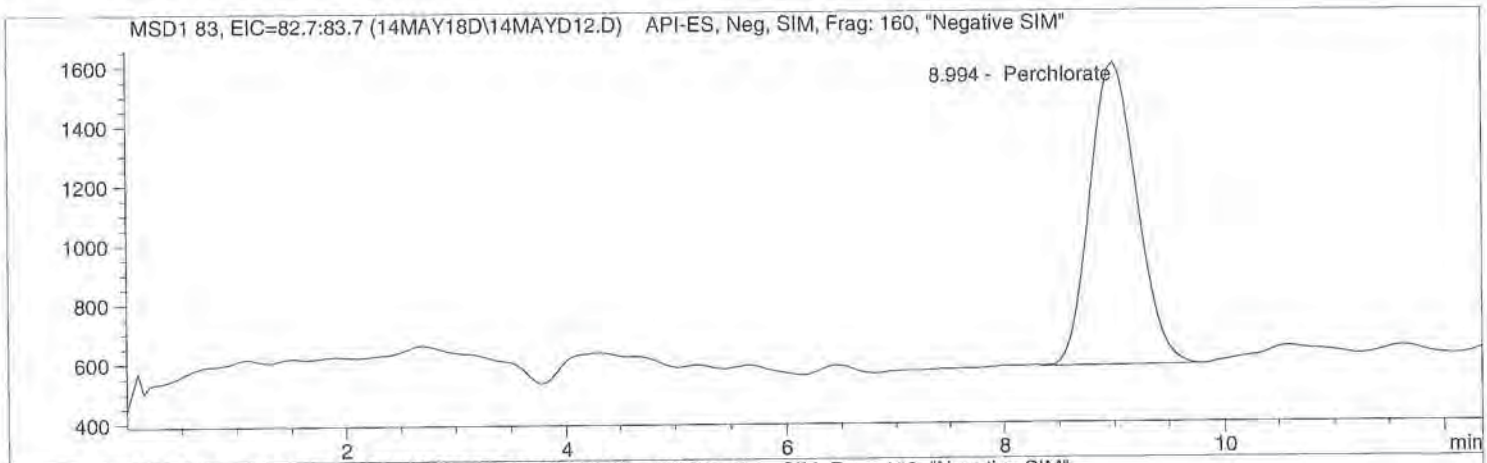
*** End of Report ***

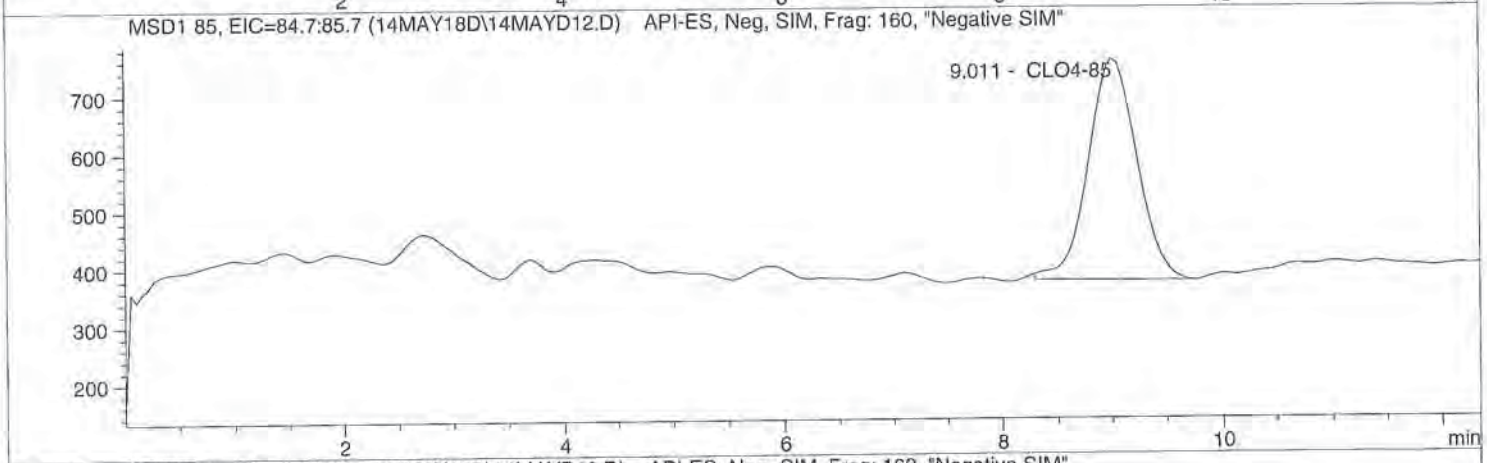
Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD12.D Sample Name: 1813195005 1K

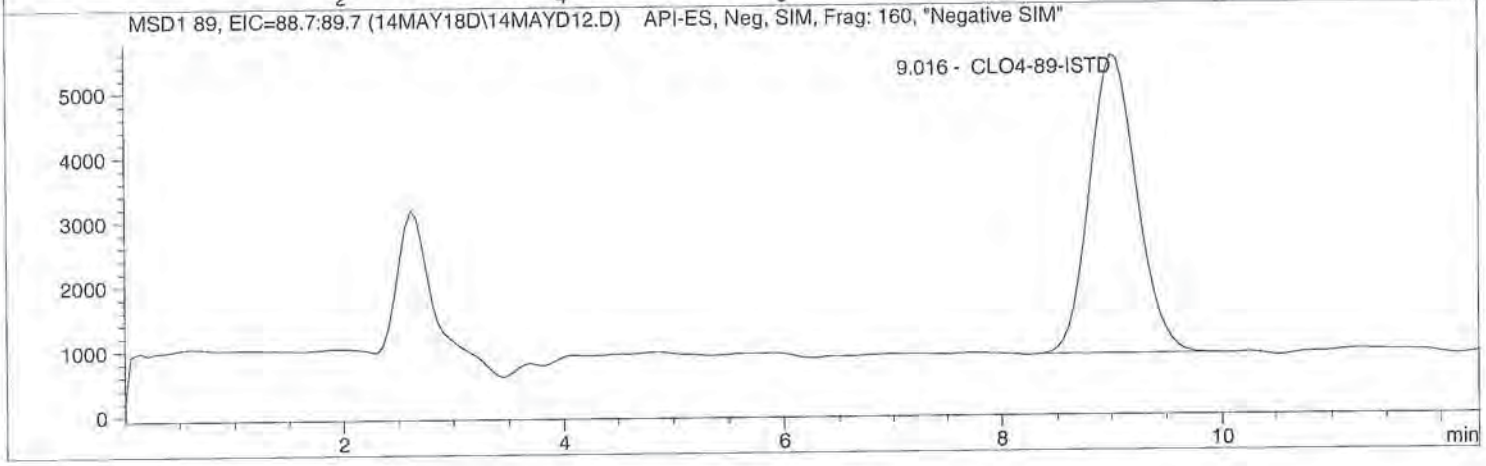
Injection Date:	5/14/2018 11:58:07	Seq Line:	12
Sample Name:	1813195005 1K	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD12.D Sample Name: 1813195005 1K

Injection Date:	5/14/2018 11:58:07	Seq Line:	12
Sample Name:	1813195005 1K	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.994	BBA	30578.6	987.3337	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.011	BBA	11977.0	1096.2494	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.016	PBA	139602.6	5000.0000	CLO4-89-ISTD

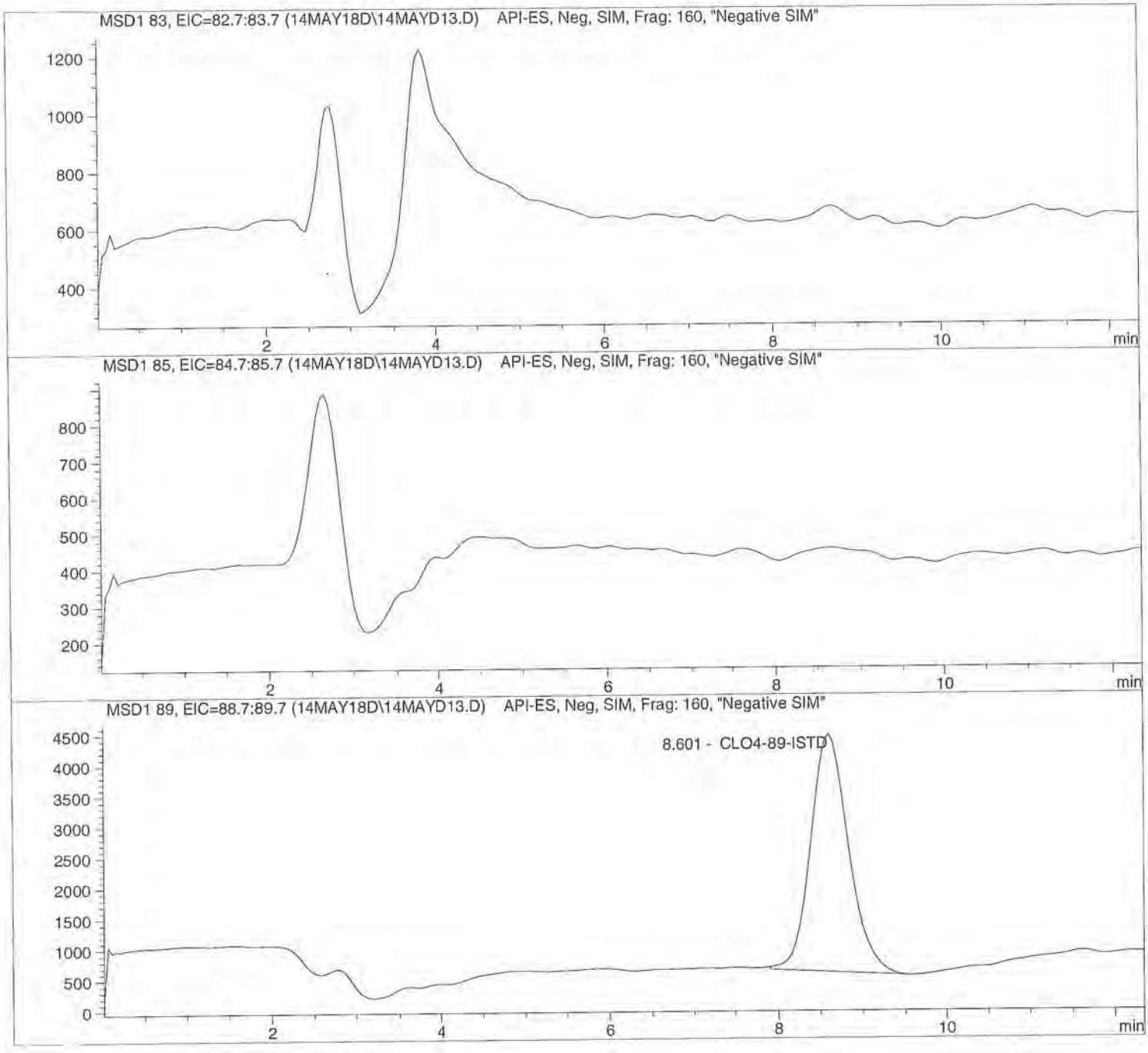
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD13.D Sample Name: 1813197001

Injection Date:	5/14/2018 12:12:18	Seq Line:	13
Sample Name:	1813197001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD13.D Sample Name: 1813197001

Injection Date:	5/14/2018 12:12:18	Seq Line:	13
Sample Name:	1813197001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.601	BBA	119456.7	5.0000	CLO4-89-ISTD

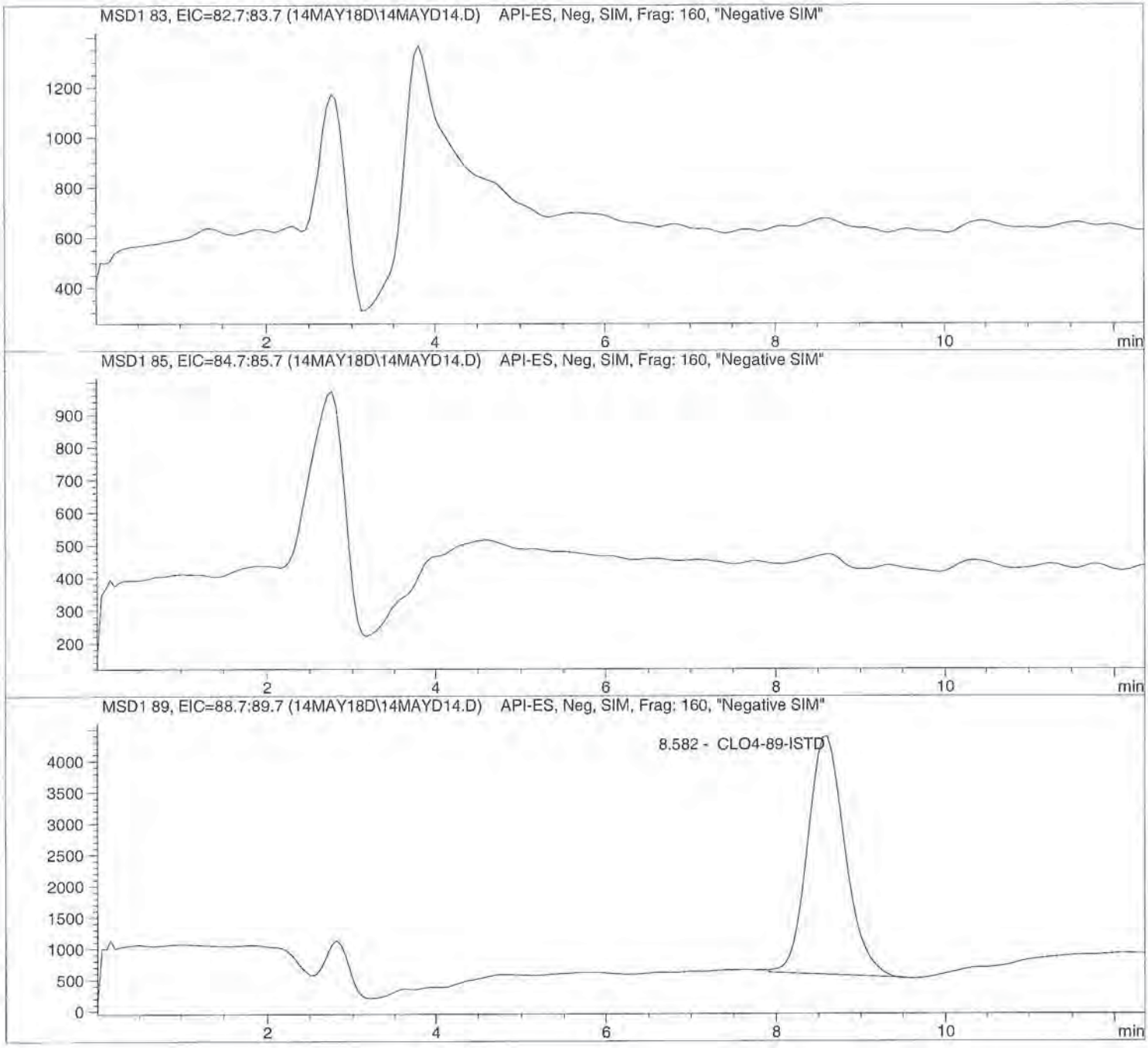
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD14.D Sample Name: 1813197002

Injection Date:	5/14/2018 12:26:32	Seq Line:	14
Sample Name:	1813197002	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD14.D Sample Name: 1813197002

Injection Date:	5/14/2018 12:26:32	Seq Line:	14
Sample Name:	1813197002	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.582	BBA	116200.9	5.0000	CLO4-89-ISTD

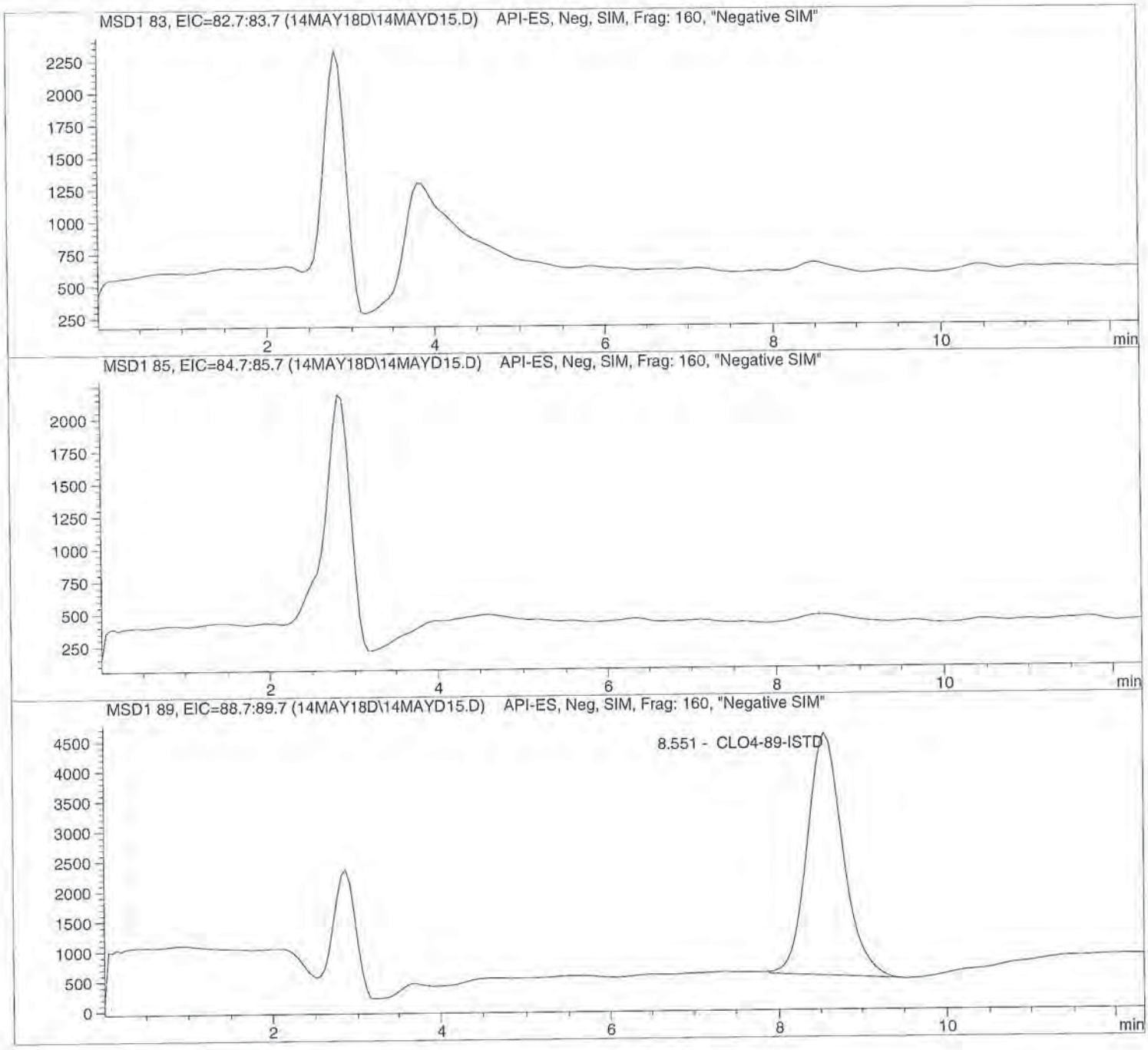
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD15.D Sample Name: 1813197003

Injection Date:	5/14/2018 12:40:42	Seq Line:	15
Sample Name:	1813197003	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD15.D Sample Name: 1813197003

Injection Date:	5/14/2018 12:40:42	Seq Line:	15
Sample Name:	1813197003	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.551	BBA	120044.3	5.0000	CLO4-89-ISTD

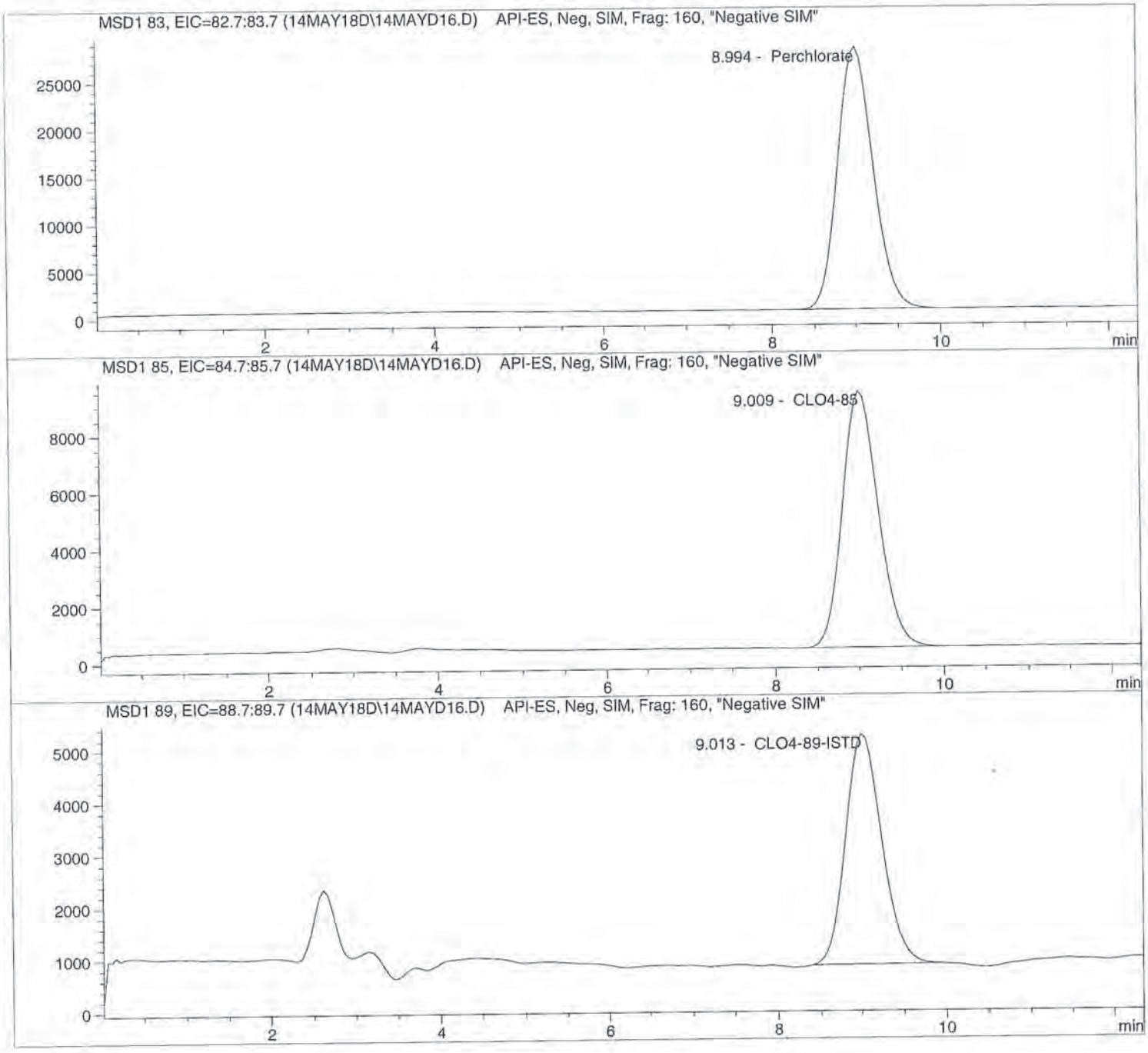
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD16.D Sample Name: 600647 CCV@25

Injection Date:	5/14/2018 12:54:52	Seq Line:	16
Sample Name:	600647 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD16.D Sample Name: 600647 CCV@25

Injection Date:	5/14/2018 12:54:52	Seq Line:	16
Sample Name:	600647 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.994	PBA	826446.3	25.3458	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.009	PBA	271042.8	26.5961	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.013	BBA	133238.9	5.0000	CLO4-89-ISTD

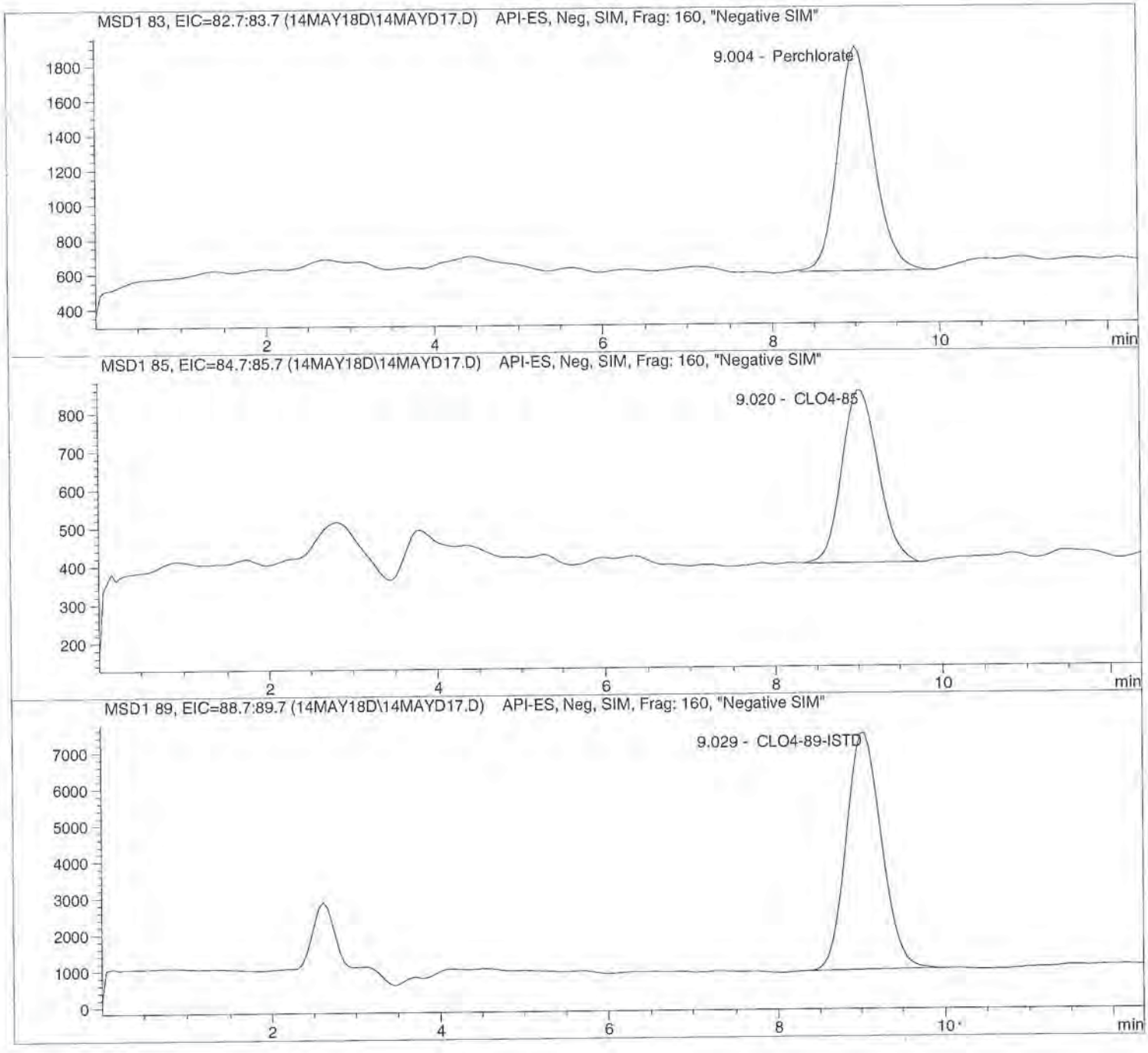
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD17.D Sample Name: 600648 LODV@1.

Injection Date:	5/14/2018 13:09:01	Seq Line:	17
Sample Name:	600648 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD17.D Sample Name: 600648 LODV@1.

Injection Date:	5/14/2018 13:09:01	Seq Line:	17
Sample Name:	600648 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.004	BBA	39196.4	0.9046	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.020	BBA	14002.6	0.8931	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.029	BBA	194615.7	5.0000	CLO4-89-ISTD

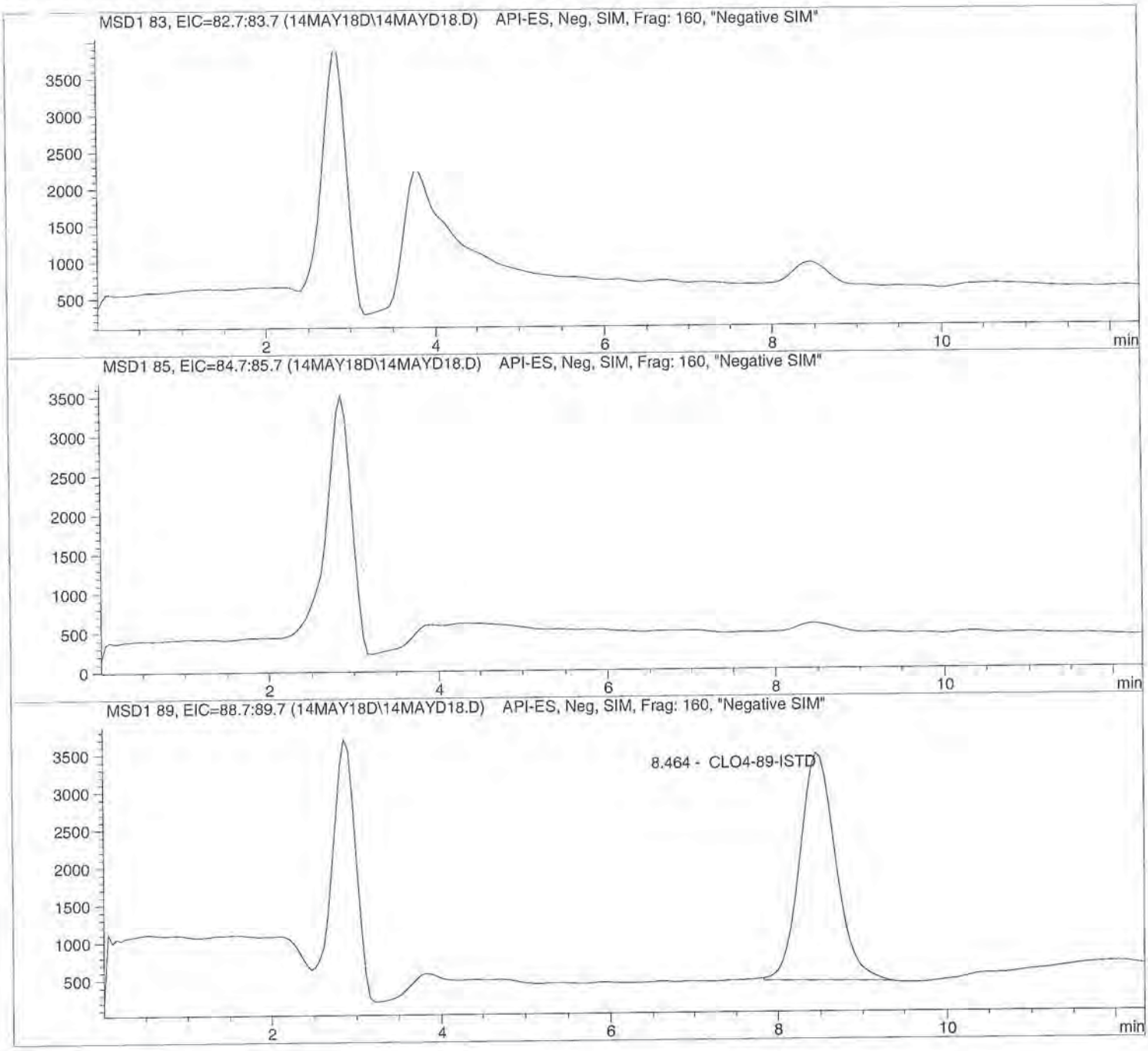
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD18.D Sample Name: 1813197004

Injection Date:	5/14/2018 13:23:12	Seq Line:	18
Sample Name:	1813197004	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD18.D Sample Name: 1813197004

Injection Date:	5/14/2018 13:23:12	Seq Line:	18
Sample Name:	1813197004	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.464	BBA	88510.0	5.0000	CLO4-89-ISTD

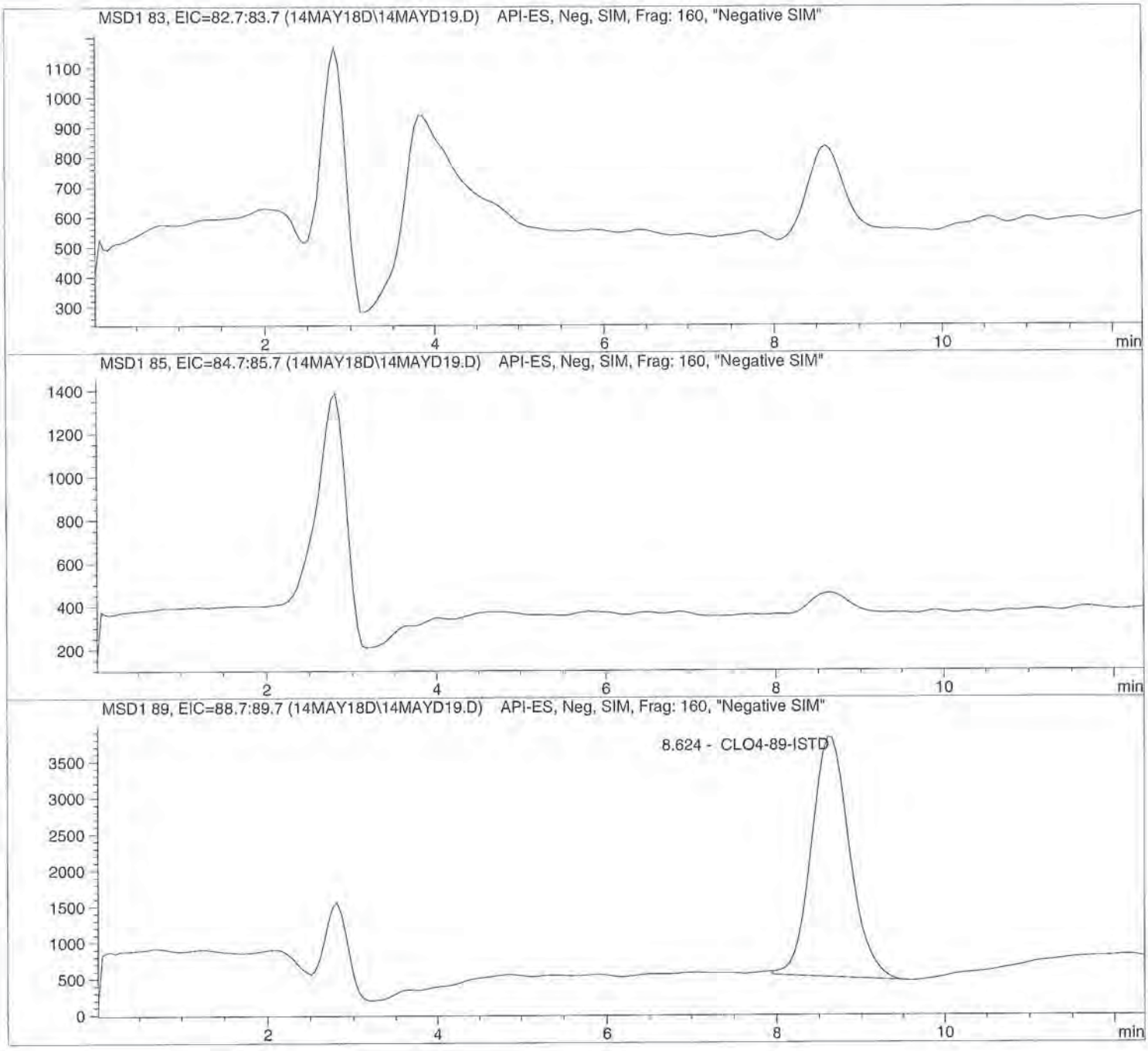
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD19.D Sample Name: 1813197005

Injection Date:	5/14/2018 13:37:22	Seq Line:	19
Sample Name:	1813197005	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD19.D Sample Name: 1813197005

Injection Date:	5/14/2018 13:37:22	Seq Line:	19
Sample Name:	1813197005	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.624	BBA	102707.7	5.0000	CLO4-89-ISTD

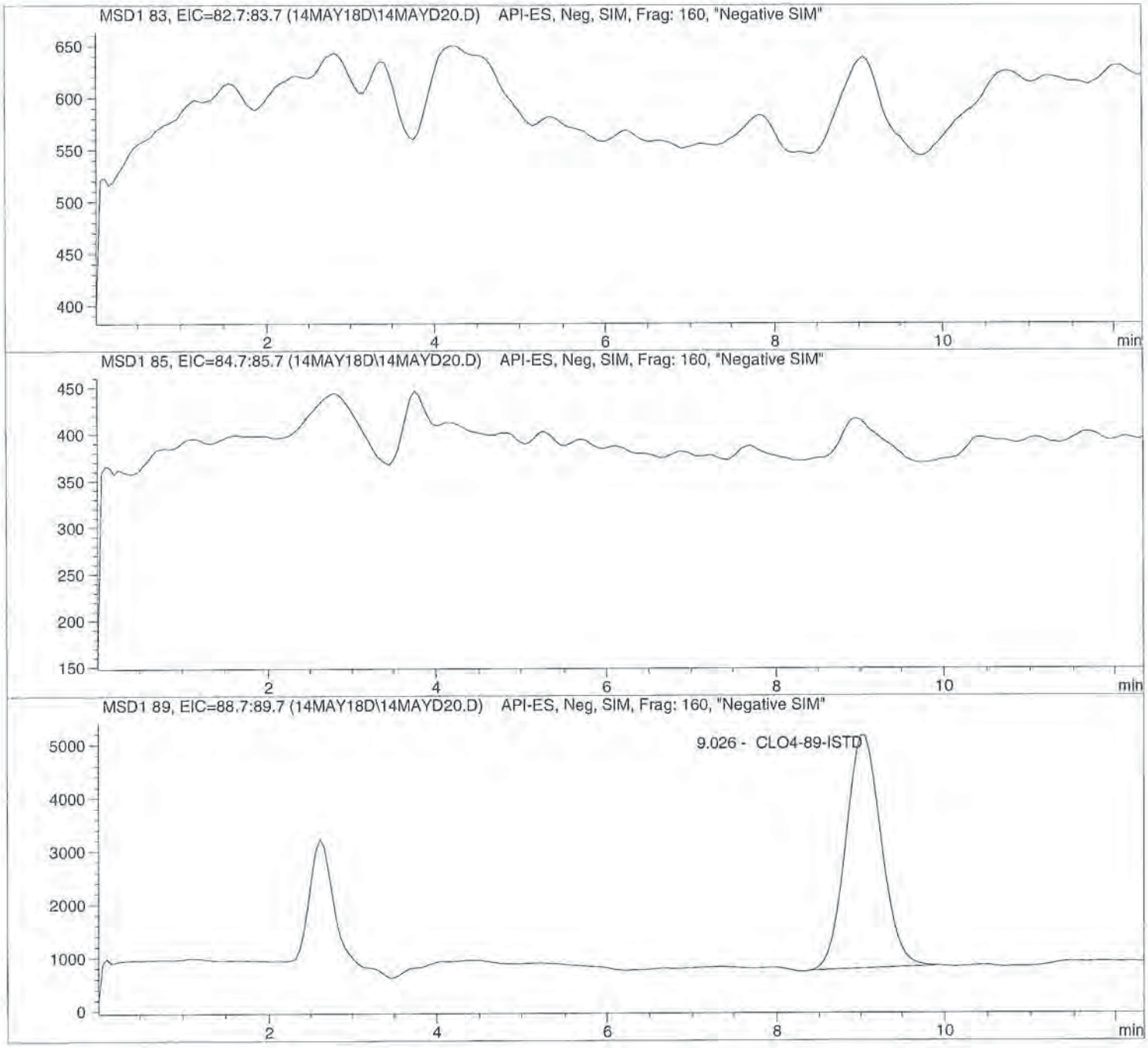
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD20.D Sample Name: 1813197006 10K

Injection Date:	5/14/2018 13:51:33	Seq Line:	20
Sample Name:	1813197006 10K	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD20.D Sample Name: 1813197006 10K

Injection Date:	5/14/2018 13:51:33	Seq Line:	20
Sample Name:	1813197006 10K	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	10000.000000
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
9.026	PBA	131046.0	50000.0000	CLO4-89-ISTD

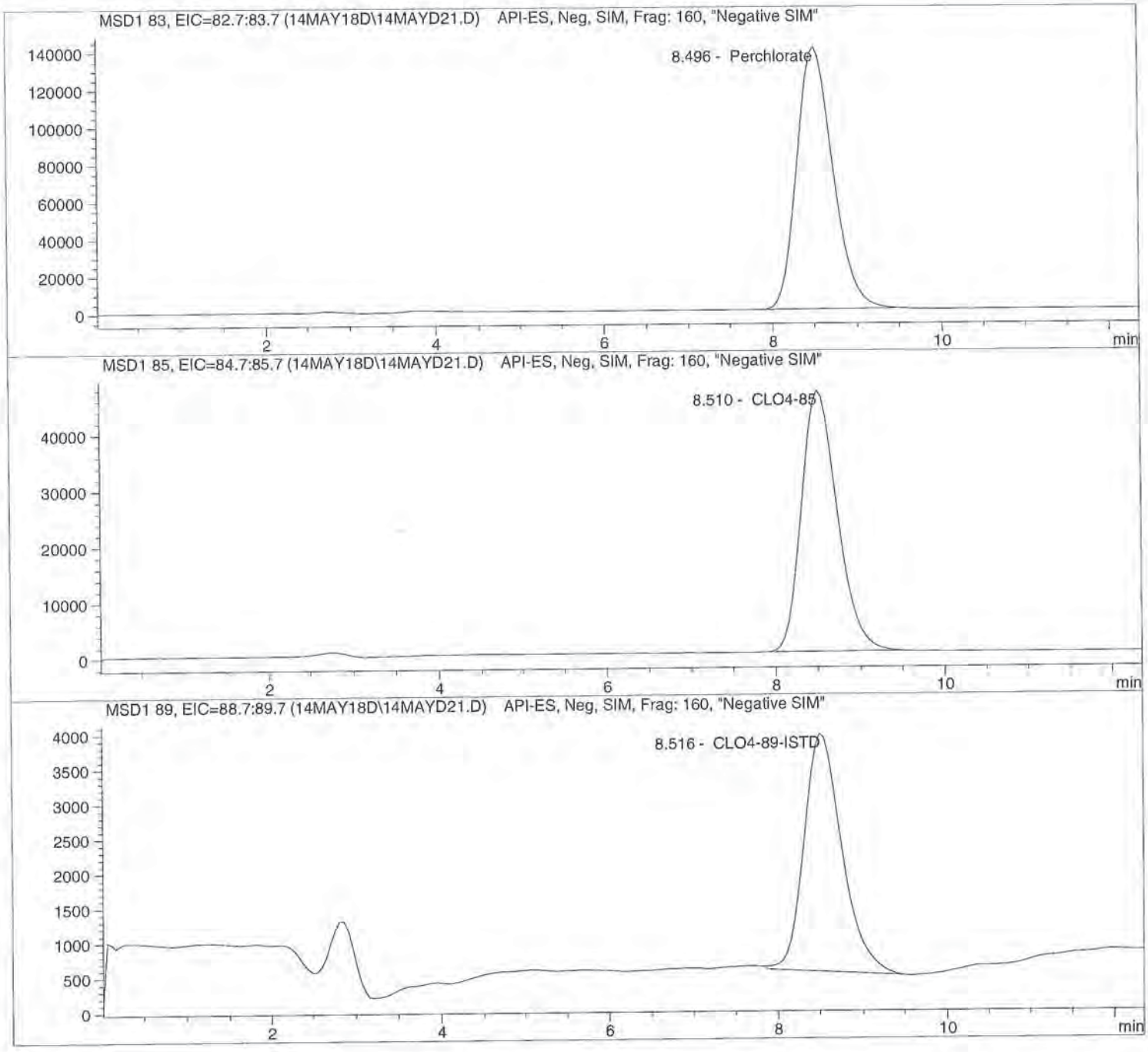
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD21.D Sample Name: 1813198001

Injection Date:	5/14/2018 14:05:45	Seq Line:	21
Sample Name:	1813198001	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD21.D Sample Name: 1813198001

Injection Date:	5/14/2018 14:05:45	Seq Line:	21
Sample Name:	1813198001	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.496	PBA	4147835.0	110.2654	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.510	PBA	1367027.8	121.5841	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.516	BBA	105371.7	5.0000	CLO4-89-ISTD

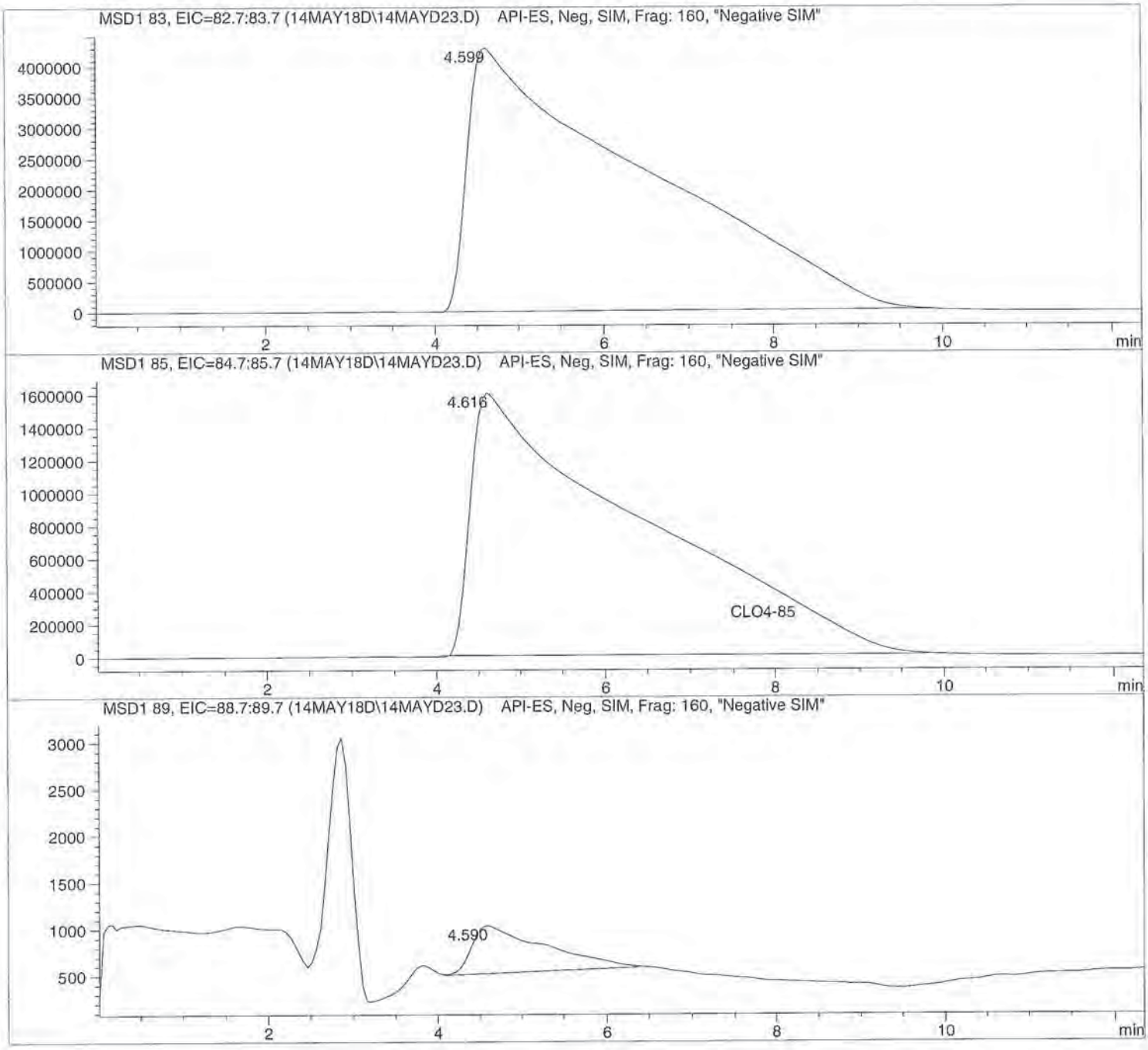
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD23.D Sample Name: 1813198004

Injection Date:	5/14/2018 14:36:12	Seq Line:	23
Sample Name:	1813198004	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD23.D Sample Name: 1813198004

Injection Date:	5/14/2018 14:36:12	Seq Line:	23
Sample Name:	1813198004	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
4.599	MM	618439040.0	0.0000	
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
4.616	MM	221683744.0	0.0000	
6.087	Rsho	0.0	0.0000	
6.708	Rsho	0.0	0.0000	
7.224	Rsho	0.0	0.0000	
7.673	Rsho	0.0	0.0000	
8.239	Rsho	0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
4.590	MM	30765.0	0.0000	
0.000		0.0	0.0000	CLO4-89-ISTD

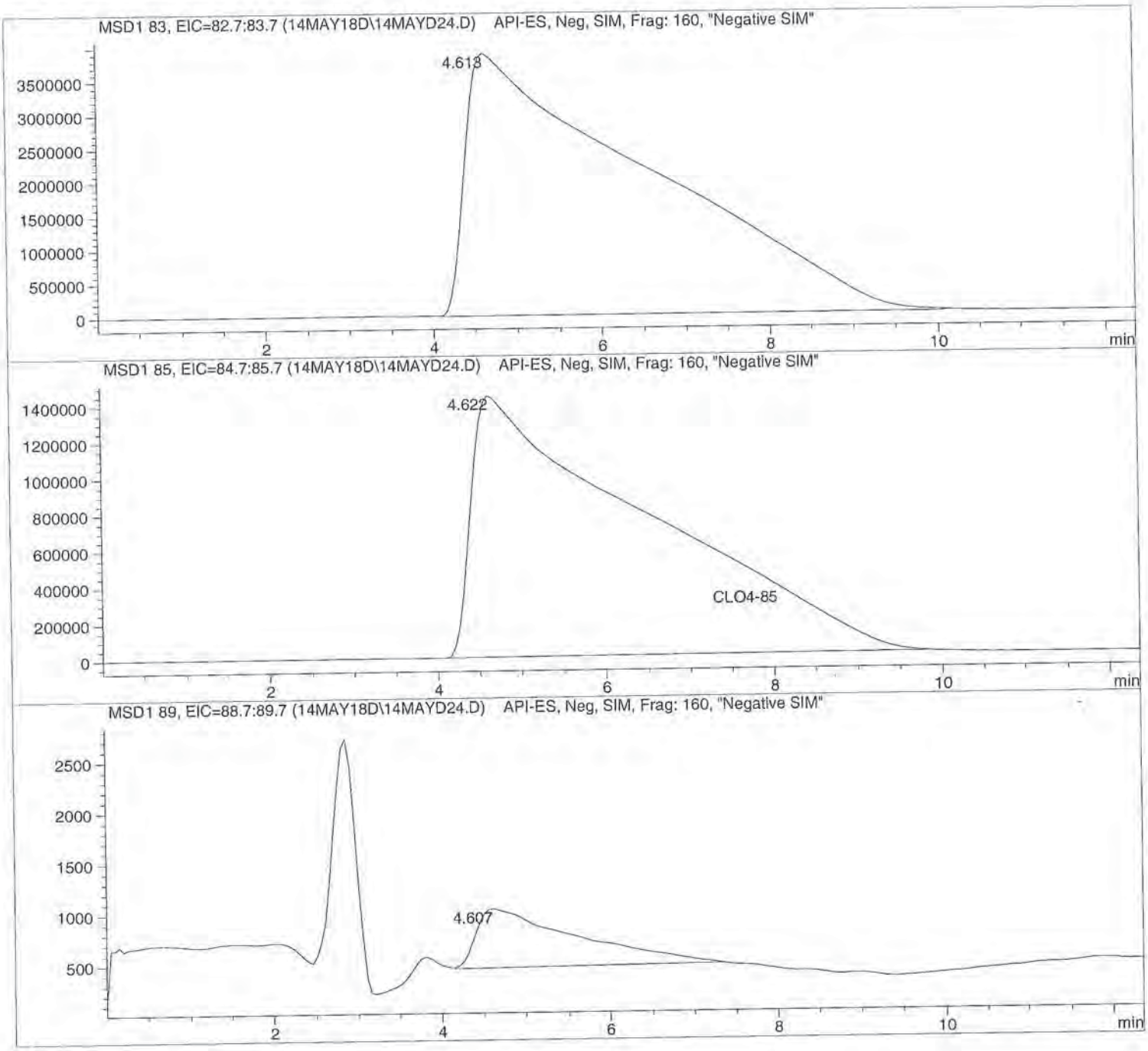
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD24.D Sample Name: 1813198005

Injection Date:	5/14/2018 14:50:21	Seq Line:	24
Sample Name:	1813198005	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD24.D Sample Name: 1813198005

Injection Date:	5/14/2018 14:50:21	Seq Line:	24
Sample Name:	1813198005	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
4.613	MM	592694016.0	0.0000	
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
4.622	MM	208859888.0	0.0000	
5.728	Rsho	0.0	0.0000	
6.258	Rsho	0.0	0.0000	
6.607	Rsho	0.0	0.0000	
6.874	Rsho	0.0	0.0000	
8.043	Rsho	0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
4.607	MM	47374.5	0.0000	
0.000		0.0	0.0000	CLO4-89-ISTD

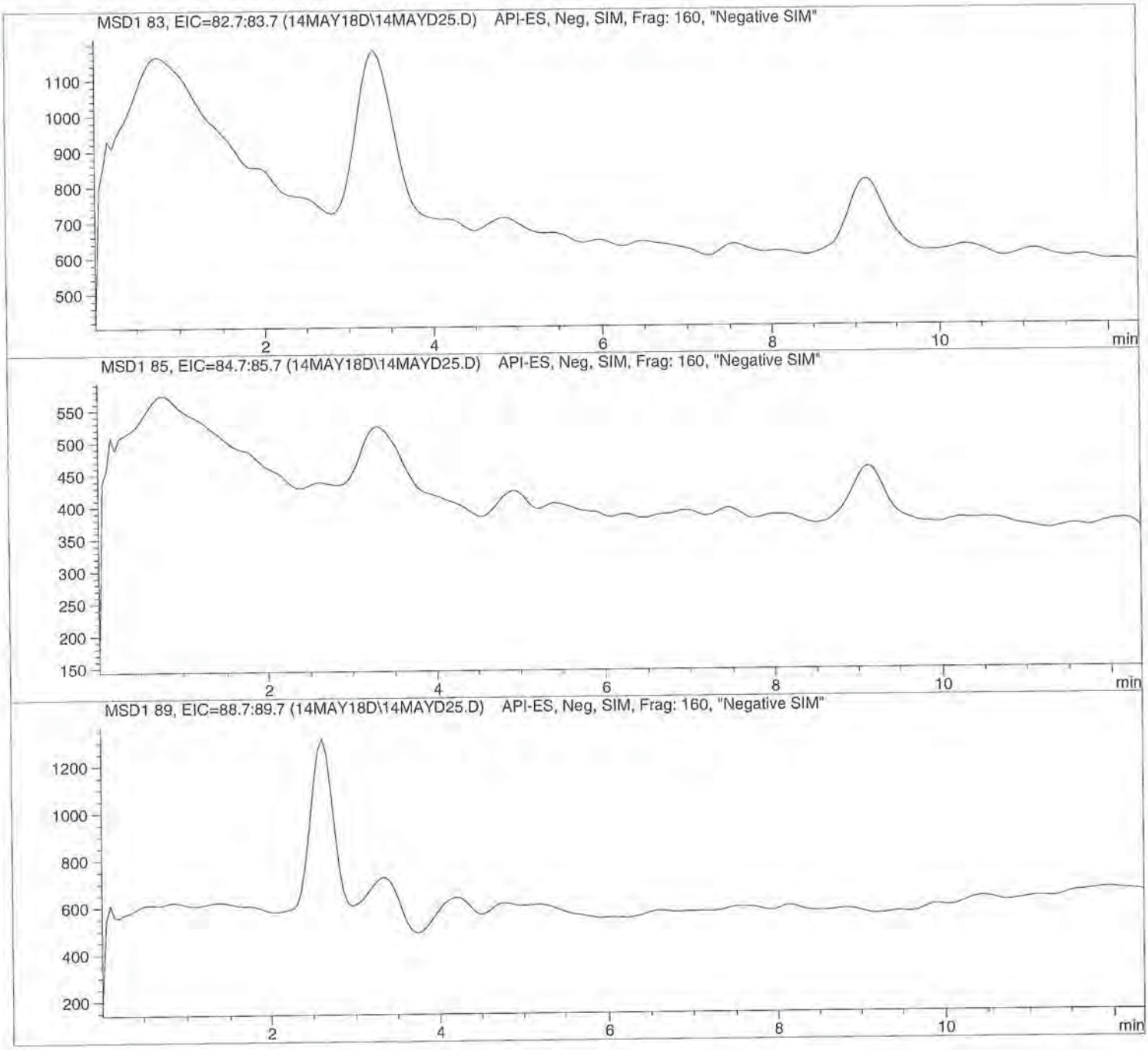
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD25.D Sample Name: Rinse

Injection Date:	5/14/2018 15:04:34	Seq Line:	25
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD25.D Sample Name: Rinse

Injection Date:	5/14/2018 15:04:34	Seq Line:	25
Sample Name:	Rinse	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
0.000		0.0	0.0000	CLO4-89-ISTD

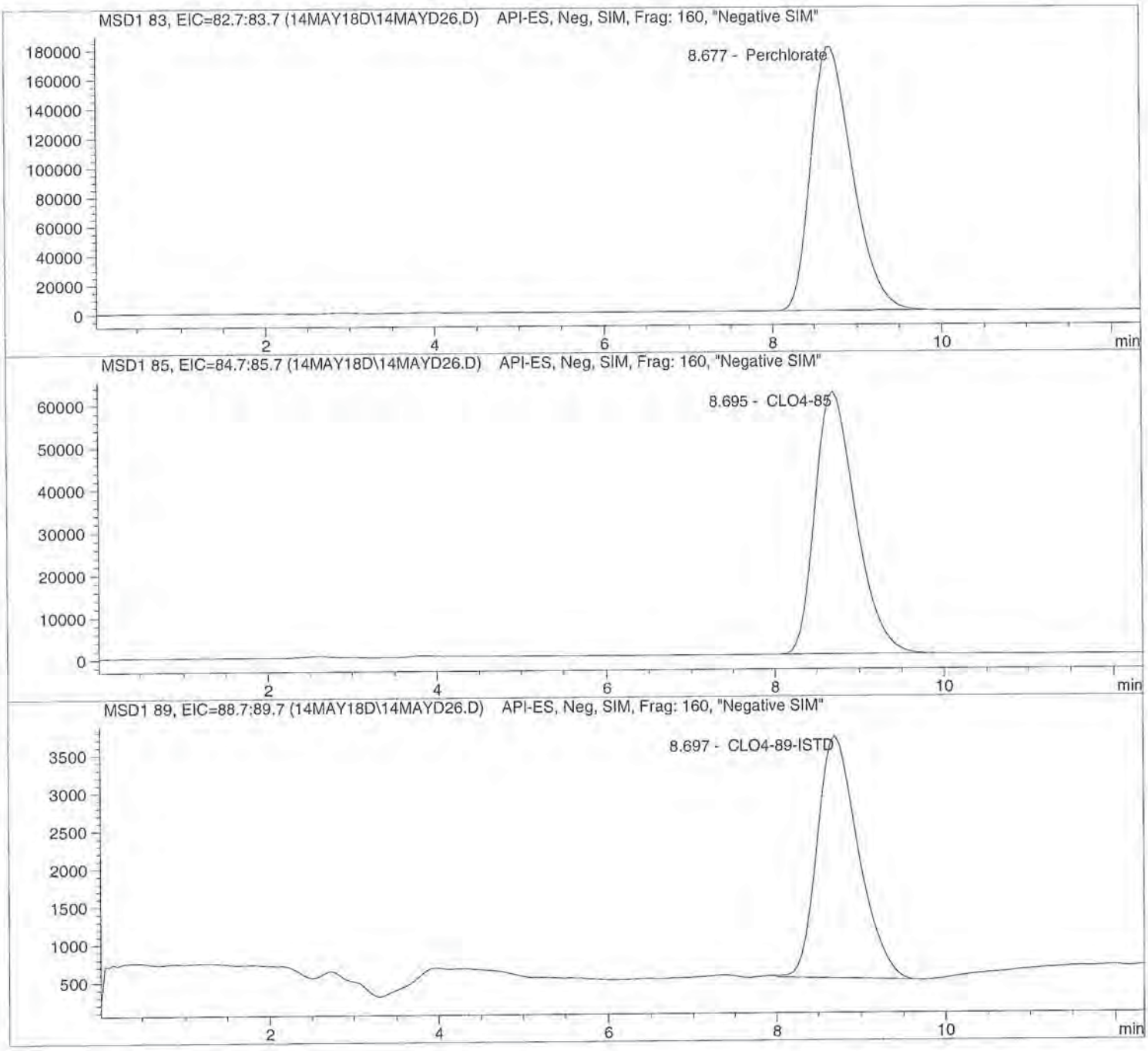
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD26.D Sample Name: 1813197006

Injection Date:	5/14/2018 15:20:50	Seq Line:	26
Sample Name:	1813197006	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD26.D Sample Name: 1813197006

Injection Date:	5/14/2018 15:20:50	Seq Line:	26
Sample Name:	1813197006	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.677	PBA	6088971.5	142.3630	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.695	PBA	2056338.9	160.9504	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.697	BBA	107056.1	5.0000	CLO4-89-ISTD

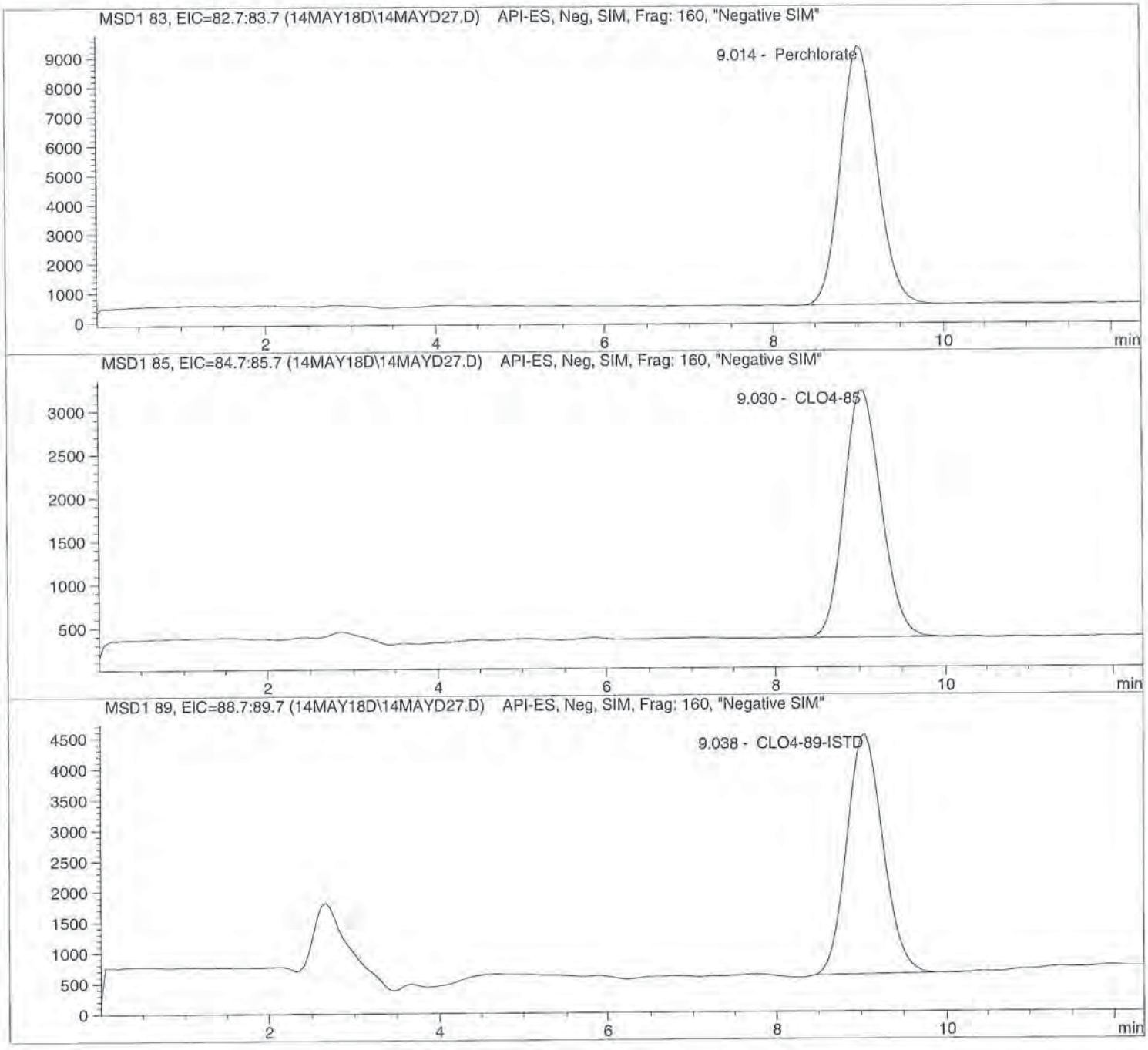
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD27.D Sample Name: 1813195003 100

Injection Date:	5/14/2018 15:35:03	Seq Line:	27
Sample Name:	1813195003 100	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD27.D Sample Name: 1813195003 100

Injection Date:	5/14/2018 15:35:03	Seq Line:	27
Sample Name:	1813195003 100	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.014	PBA	263387.6	998.6064	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.030	BBA	87036.2	1032.0193	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.038	PBA	117249.3	500.0000	CLO4-89-ISTD

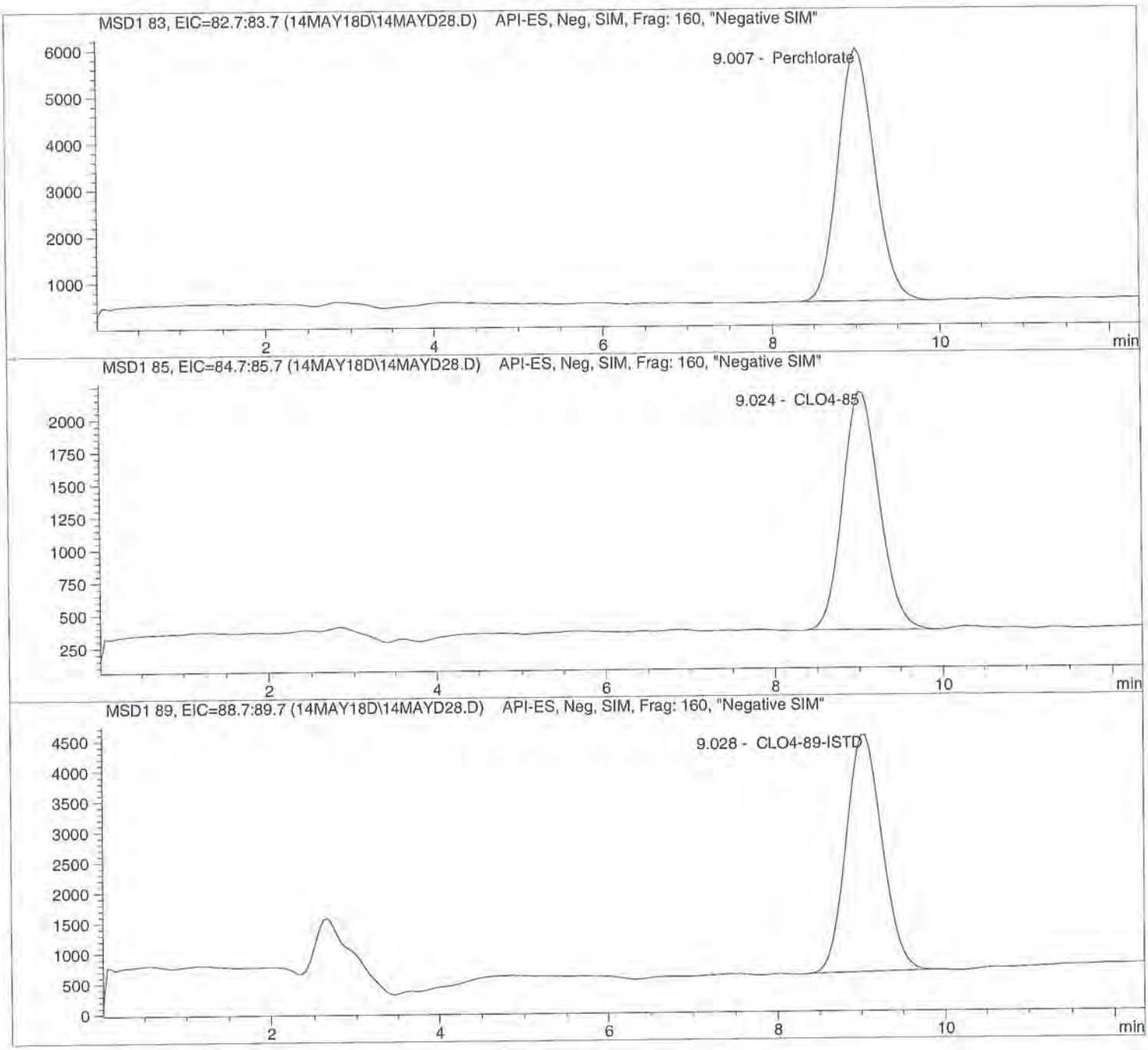
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD28.D Sample Name: 1813195005 100

Injection Date:	5/14/2018 15:49:15	Seq Line:	28
Sample Name:	1813195005 100	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD28.D Sample Name: 1813195005 100

Injection Date:	5/14/2018 15:49:15	Seq Line:	28
Sample Name:	1813195005 100	Location:	Vial 96
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.007	BBA	165623.3	638.2802	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.024	PBA	56077.9	668.4546	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.028	PBA	117560.8	500.0000	CLO4-89-ISTD

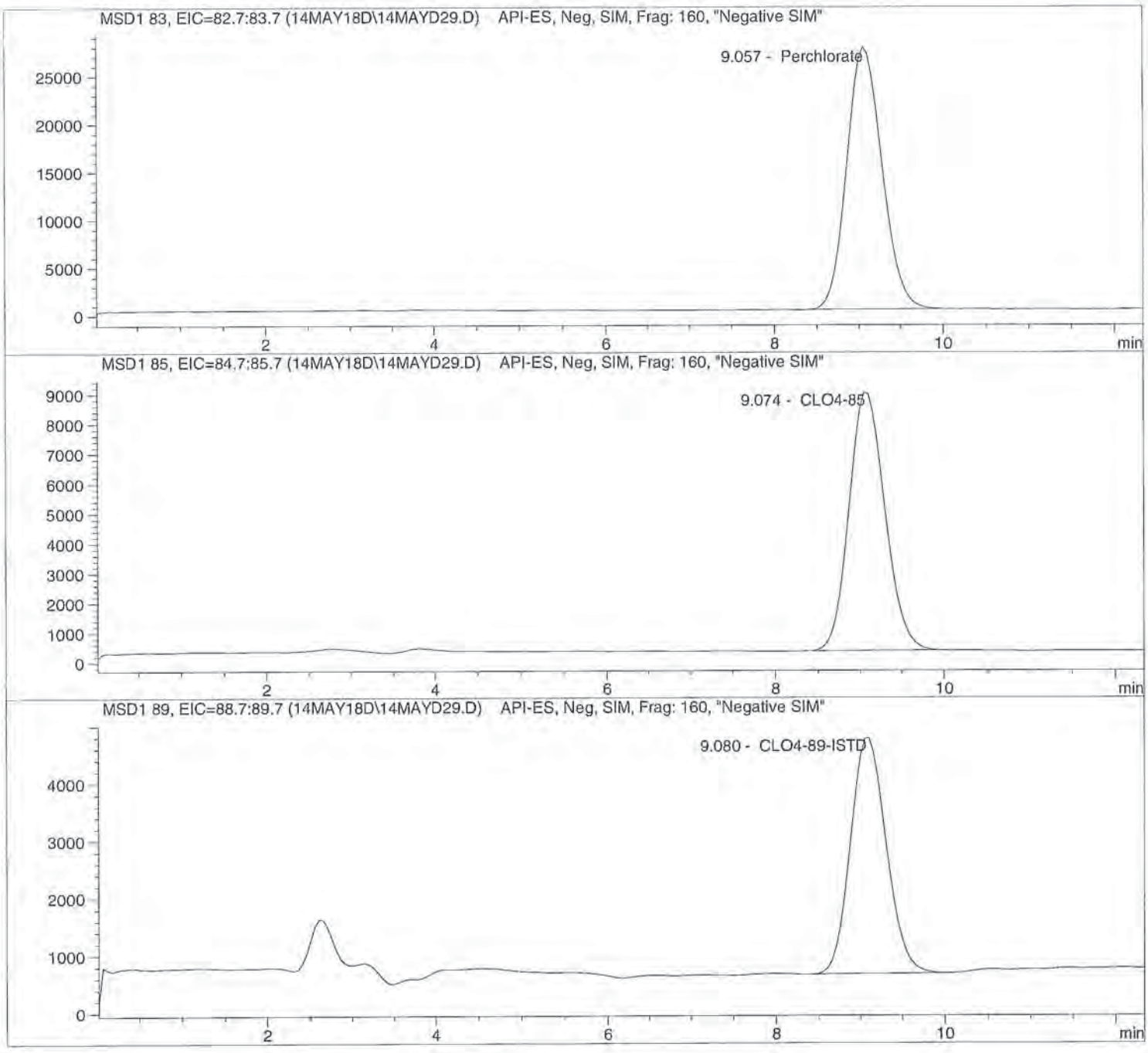
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD29.D Sample Name: 600649 CCV@25

Injection Date:	5/14/2018 16:03:27	Seq Line:	29
Sample Name:	600649 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD29.D Sample Name: 600649 CCV@25

Injection Date:	5/14/2018 16:03:27	Seq Line:	29
Sample Name:	600649 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.057	PBA	806835.4	26.5820	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.074	PBA	259768.2	27.4684	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.080	PBA	123211.7	5.0000	CLO4-89-ISTD

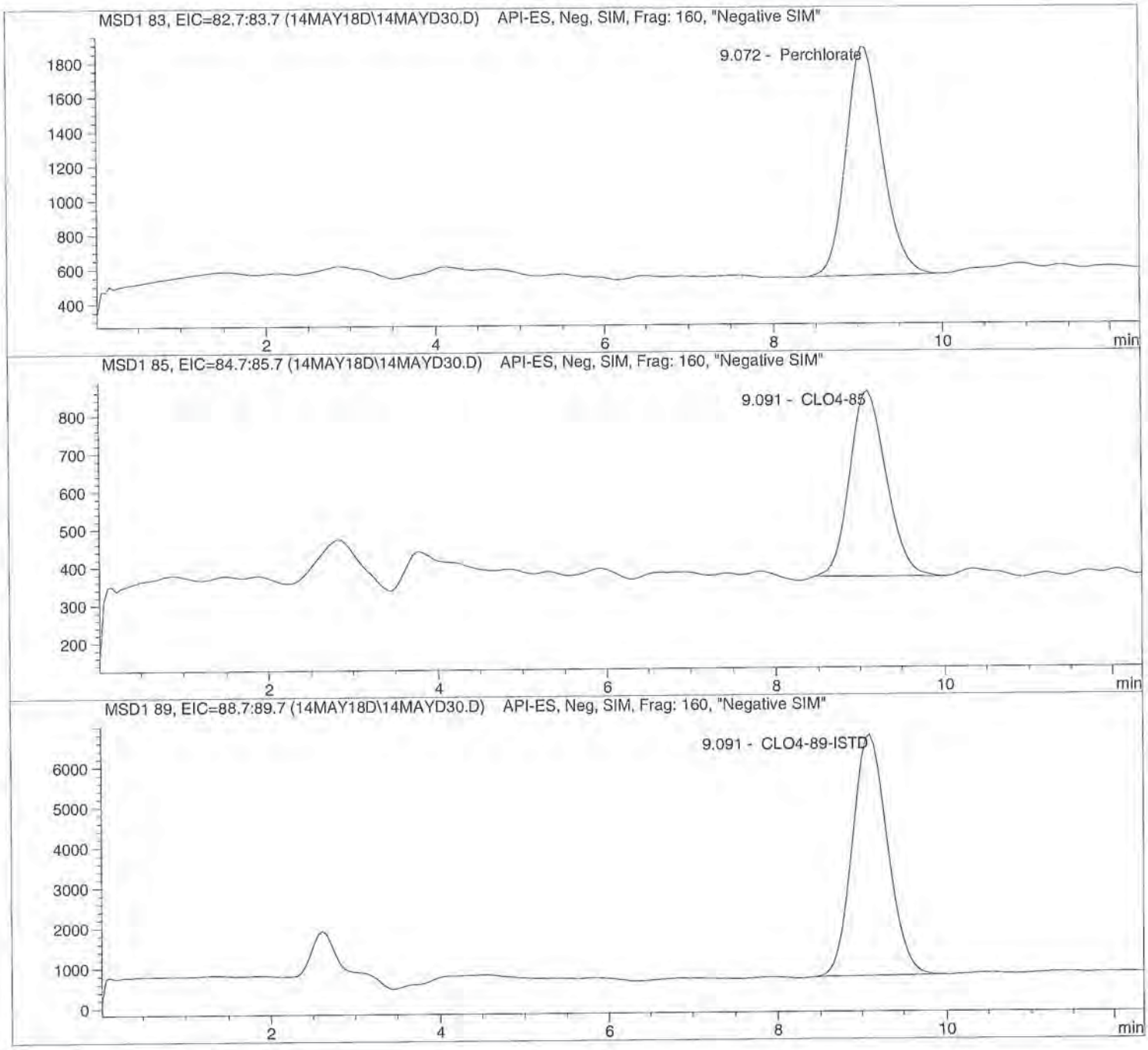
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD30.D Sample Name: 600650 LODV@1.

Injection Date:	5/14/2018 16:17:37	Seq Line:	30
Sample Name:	600650 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD30.D Sample Name: 600650 LODV@1.

Injection Date:	5/14/2018 16:17:37	Seq Line:	30
Sample Name:	600650 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.072	PBA	40534.9	1.0342	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.091	PBA	15085.4	1.0881	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.091	BBA	176980.5	5.0000	CLO4-89-ISTD

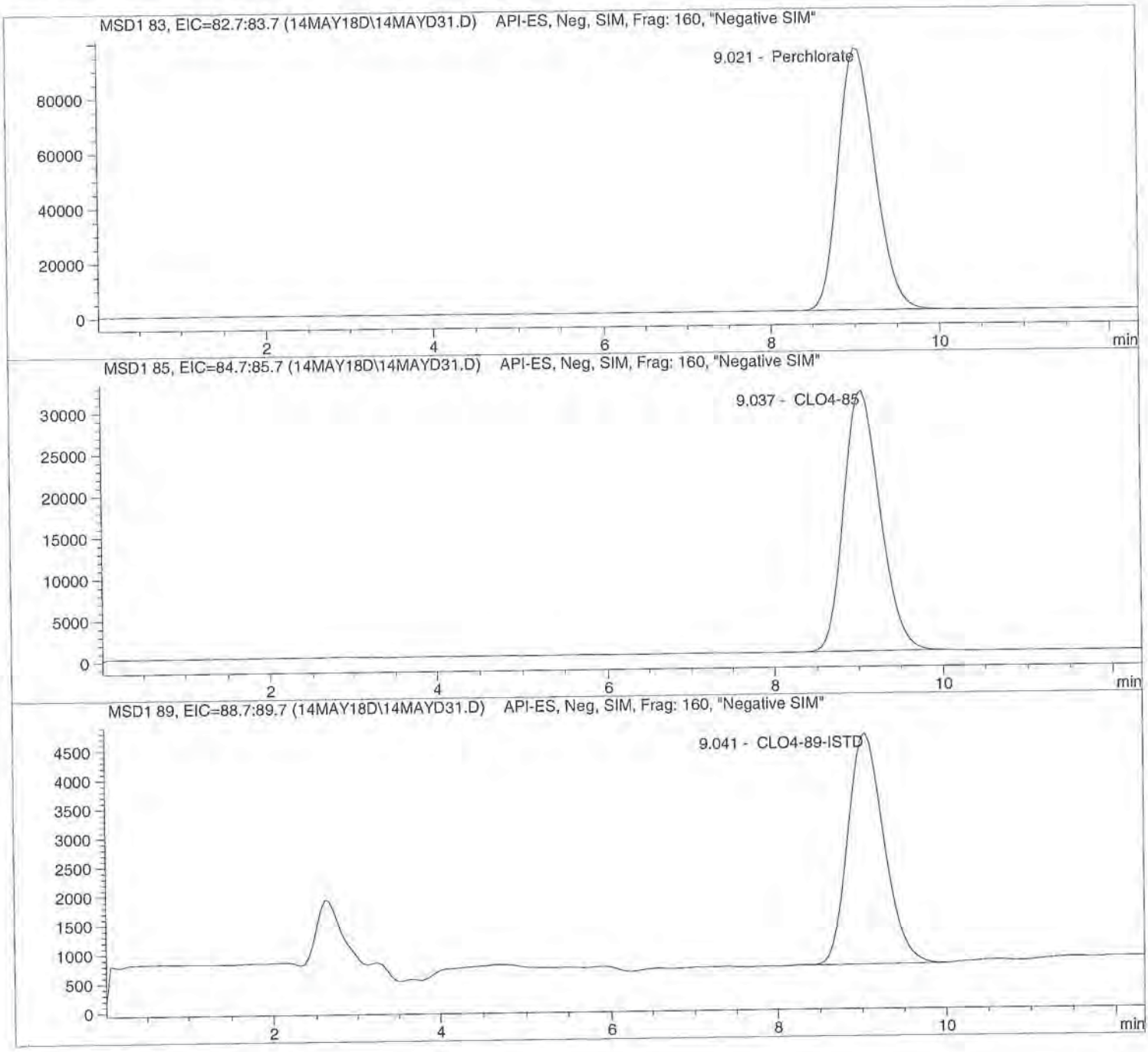
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD31.D Sample Name: 1813198004 1K

Injection Date:	5/14/2018 16:31:51	Seq Line:	31
Sample Name:	1813198004 1K	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD31.D Sample Name: 1813198004 1K

Injection Date:	5/14/2018 16:31:51	Seq Line:	31
Sample Name:	1813198004 1K	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.021	PBA	2880122.0	77807.2905	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.037	PBA	937896.1	84040.6337	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.041	BBA	117883.7	5000.0000	CLO4-89-ISTD

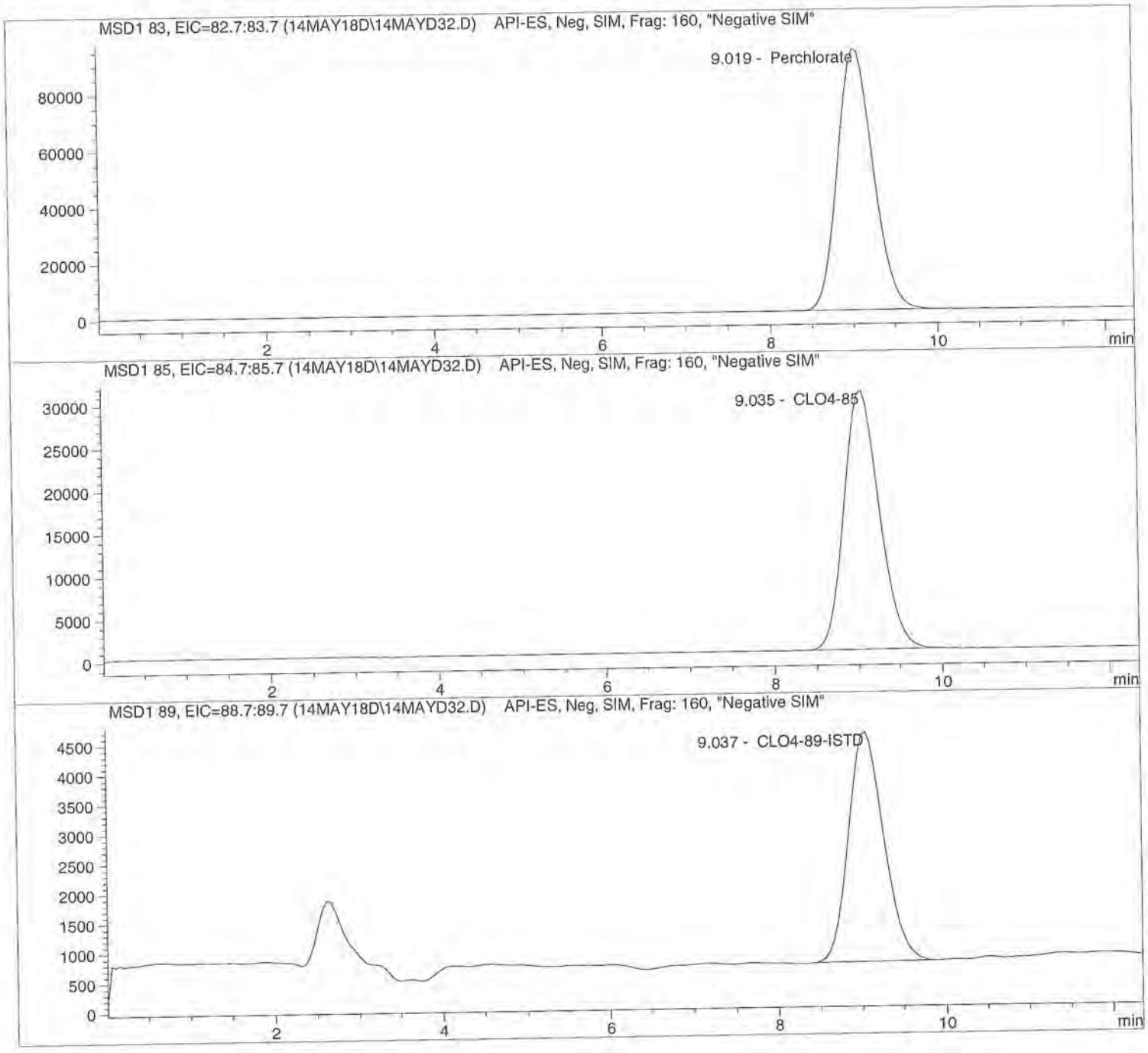
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD32.D Sample Name: 1813198005 1K

Injection Date:	5/14/2018 16:46:03	Seq Line:	32
Sample Name:	1813198005 1K	Location:	Vial 63
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD32.D Sample Name: 1813198005 1K

Injection Date:	5/14/2018 16:46:03	Seq Line:	32
Sample Name:	1813198005 1K	Location:	Vial 63
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.019	PBA	2798969.8	77164.3910	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.035	PBA	907244.8	83021.1532	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.037	PBA	115830.6	5000.0000	CLO4-89-ISTD

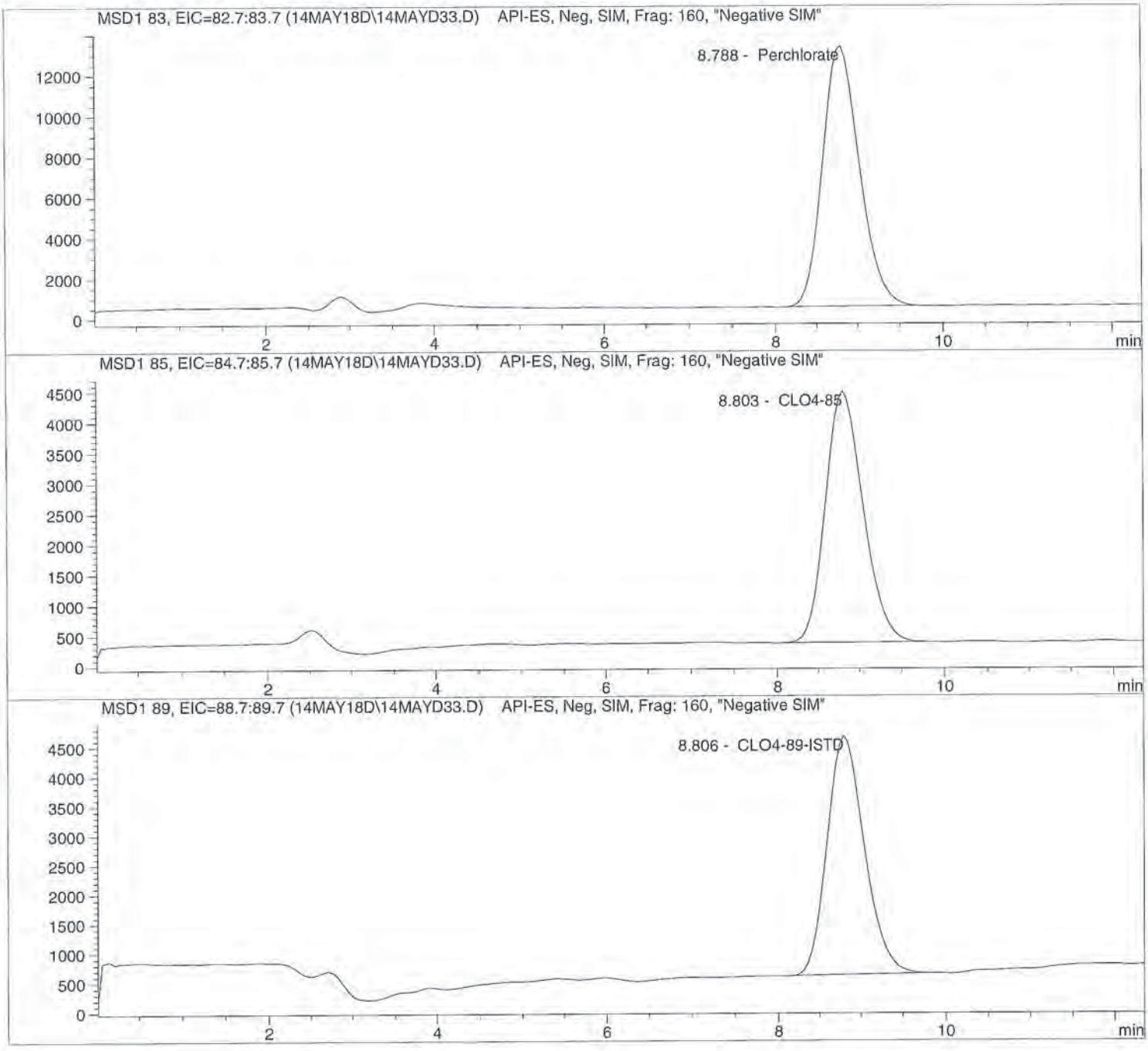
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD33.D Sample Name: 1813198001 10X

Injection Date:	5/14/2018 17:00:17	Seq Line:	33
Sample Name:	1813198001 10X	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD33.D Sample Name: 1813198001 10X

Injection Date:	5/14/2018 17:00:17	Seq Line:	33
Sample Name:	1813198001 10X	Location:	Vial 97
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.788	PBA	400251.2	137.6189	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.803	PBA	130819.9	141.7825	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.806	PBA	126622.1	50.0000	CLO4-89-ISTD

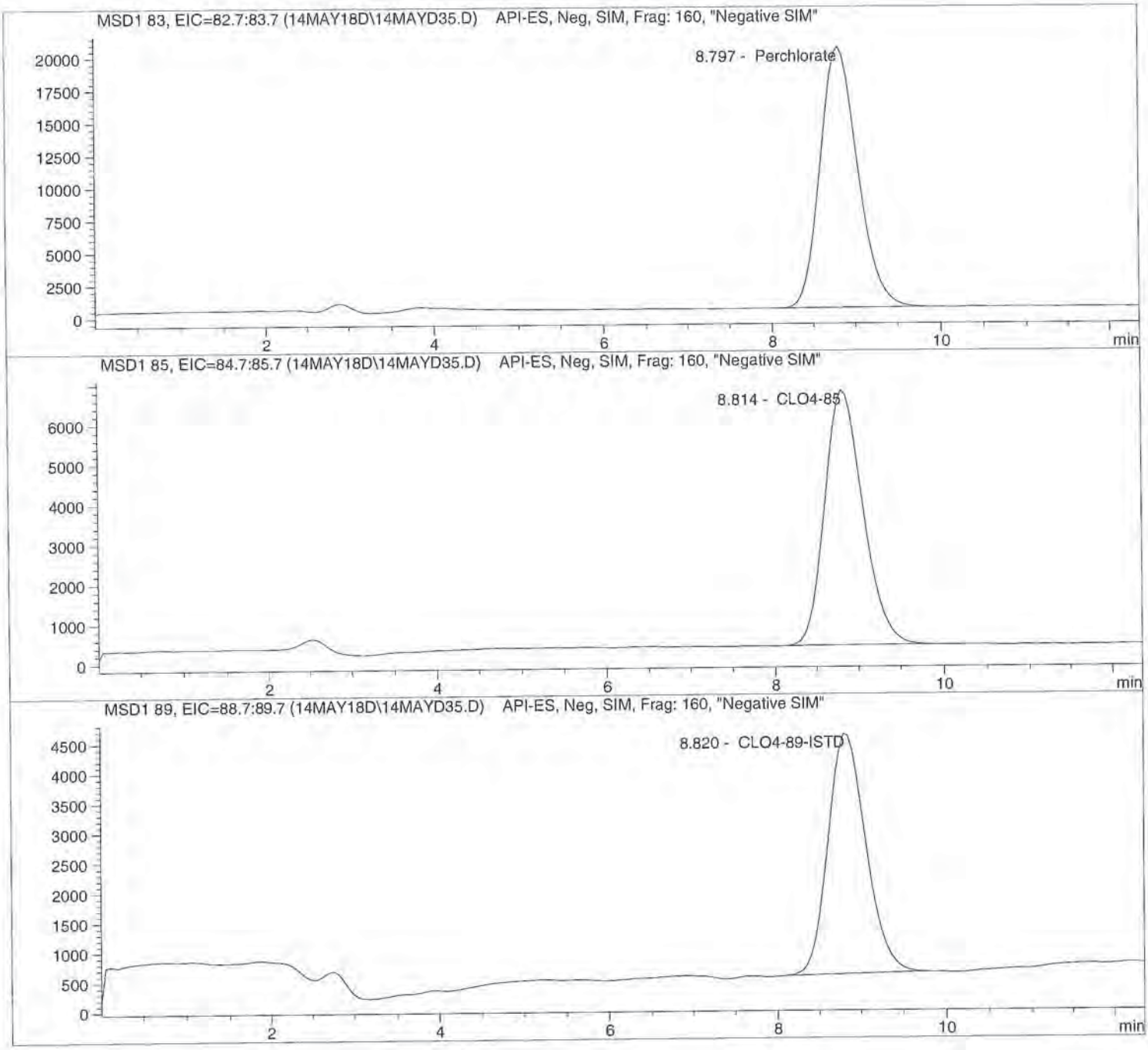
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD35.D Sample Name: 1813198003 MSD

Injection Date:	5/14/2018 17:28:42	Seq Line:	35
Sample Name:	1813198003 MSD	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD35.D Sample Name: 1813198003 MSD

Injection Date:	5/14/2018 17:28:42	Seq Line:	35
Sample Name:	1813198003 MSD	Location:	Vial 99
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.797	PBA	627182.1	206.9223	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.814	BBA	203448.5	213.8201	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.820	BBA	127010.3	50.0000	CLO4-89-ISTD

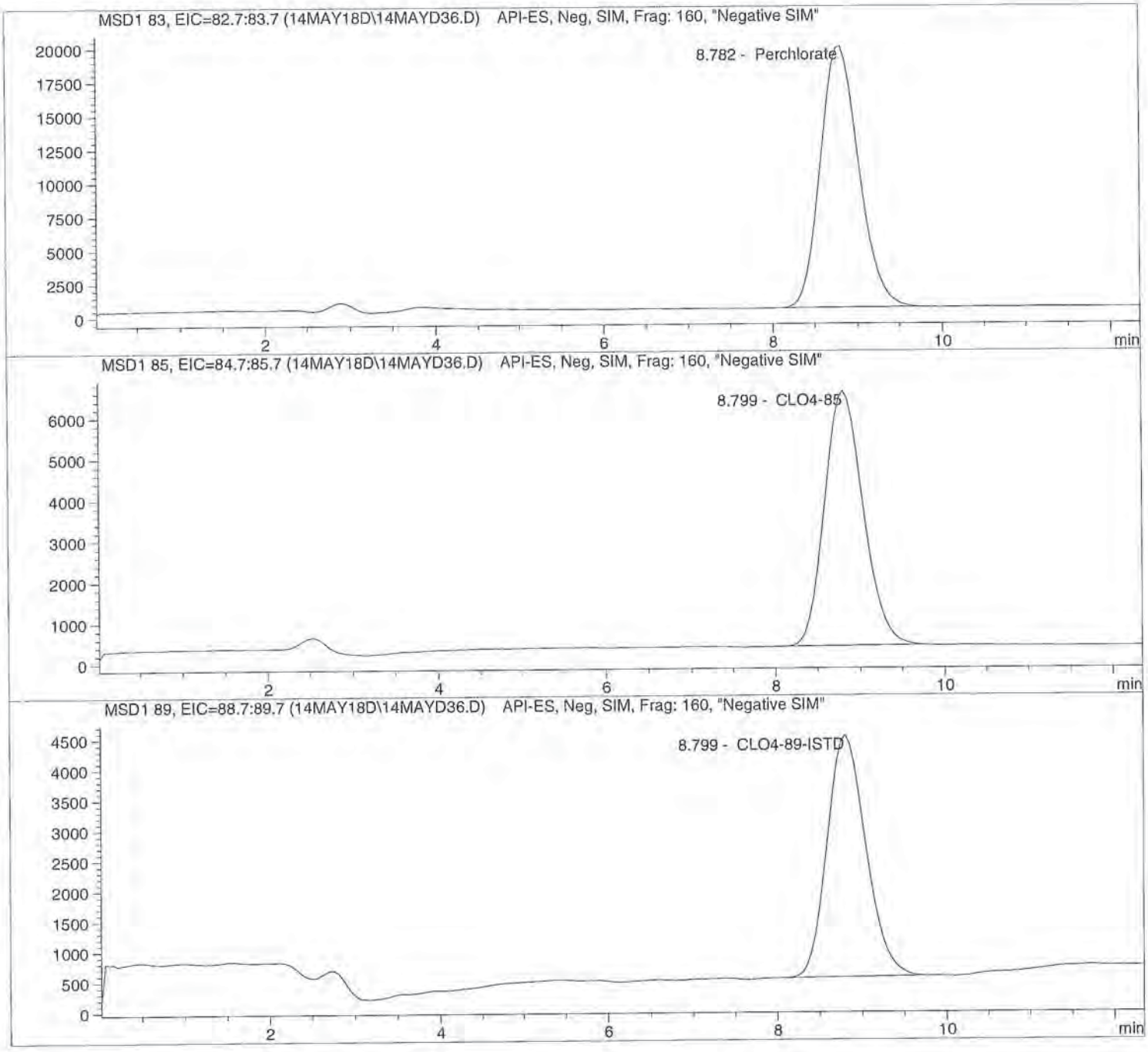
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD36.D Sample Name: 1813198002 MS

Injection Date:	5/14/2018 17:42:54	Seq Line:	36
Sample Name:	1813198002 MS	Location:	Vial 98
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD36.D Sample Name: 1813198002 MS

Injection Date:	5/14/2018 17:42:54	Seq Line:	36
Sample Name:	1813198002 MS	Location:	Vial 98
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.782	PBA	604797.8	201.8743	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.799	BBA	194863.6	207.1697	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.799	BBA	125886.7	50.0000	CLO4-89-ISTD

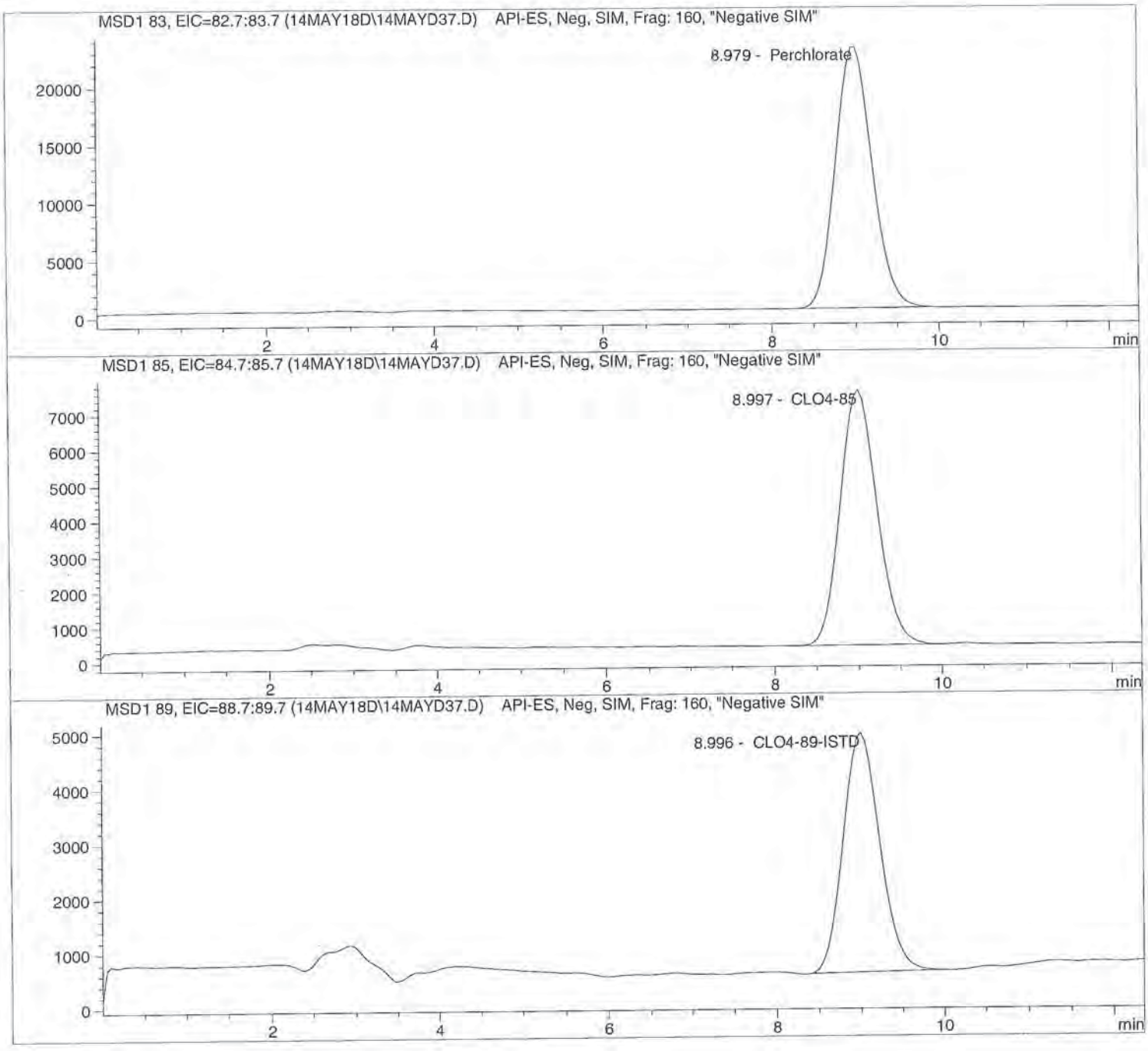
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD37.D Sample Name: 1813197006 10X

Injection Date:	5/14/2018 17:57:06	Seq Line:	37
Sample Name:	1813197006 10X	Location:	Vial 64
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD37.D Sample Name: 1813197006 10X

Injection Date:	5/14/2018 17:57:06	Seq Line:	37
Sample Name:	1813197006 10X	Location:	Vial 64
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.979	PBA	692197.1	217.2330	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.997	PBA	220927.5	221.4390	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.996	PBA	132775.1	50.0000	CLO4-89-ISTD

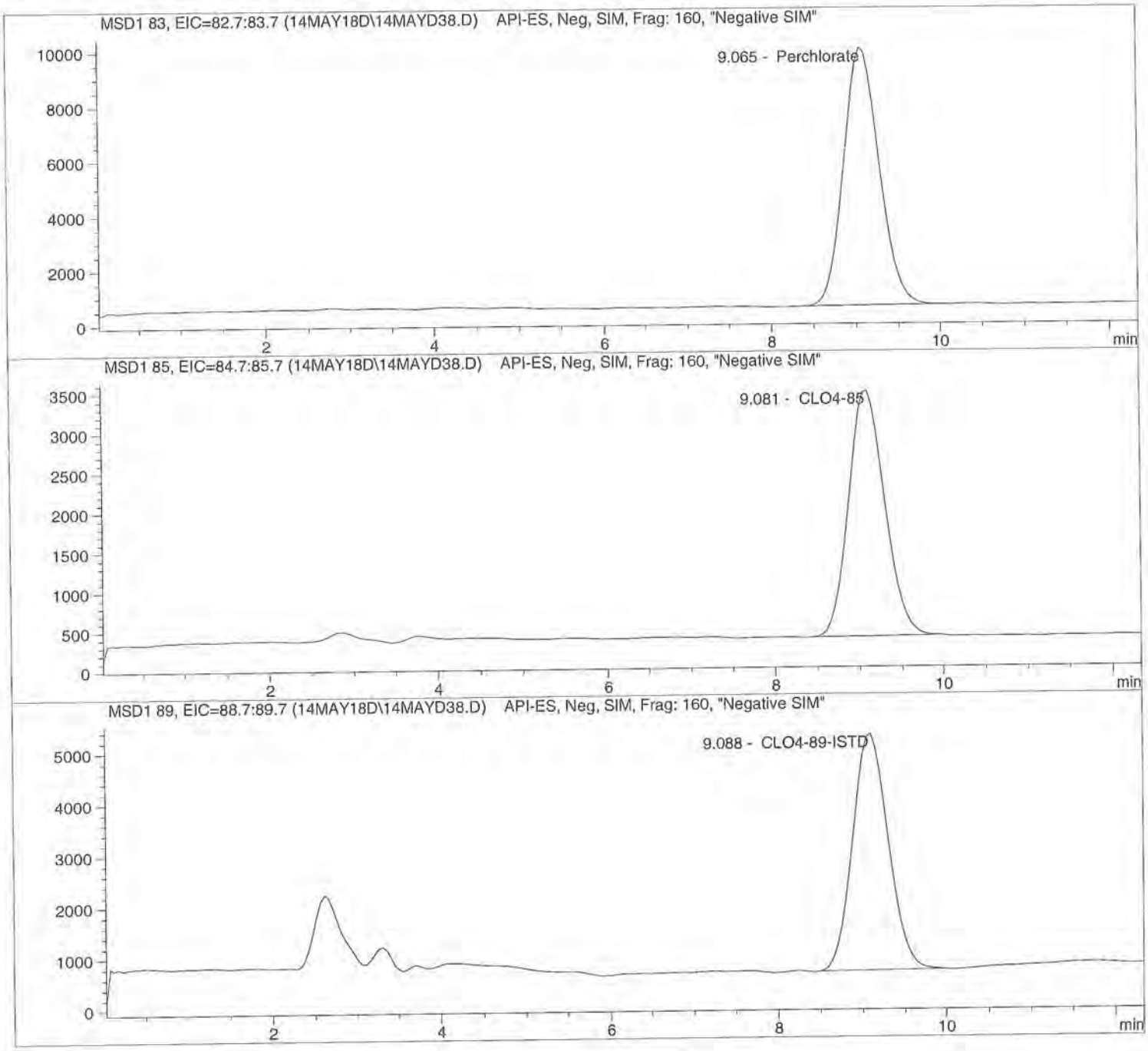
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD38.D Sample Name: 1813198004 10K

Injection Date:	5/14/2018 18:11:19	Seq Line:	38
Sample Name:	1813198004 10K	Location:	Vial 65
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD38.D Sample Name: 1813198004 10K

Injection Date:	5/14/2018 18:11:19	Seq Line:	38
Sample Name:	1813198004 10K	Location:	Vial 65
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.065	PBA	275522.2	91359.2052	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.081	PBA	91974.2	95157.6481	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.088	PBA	134685.2	50000.0000	CLO4-89-ISTD

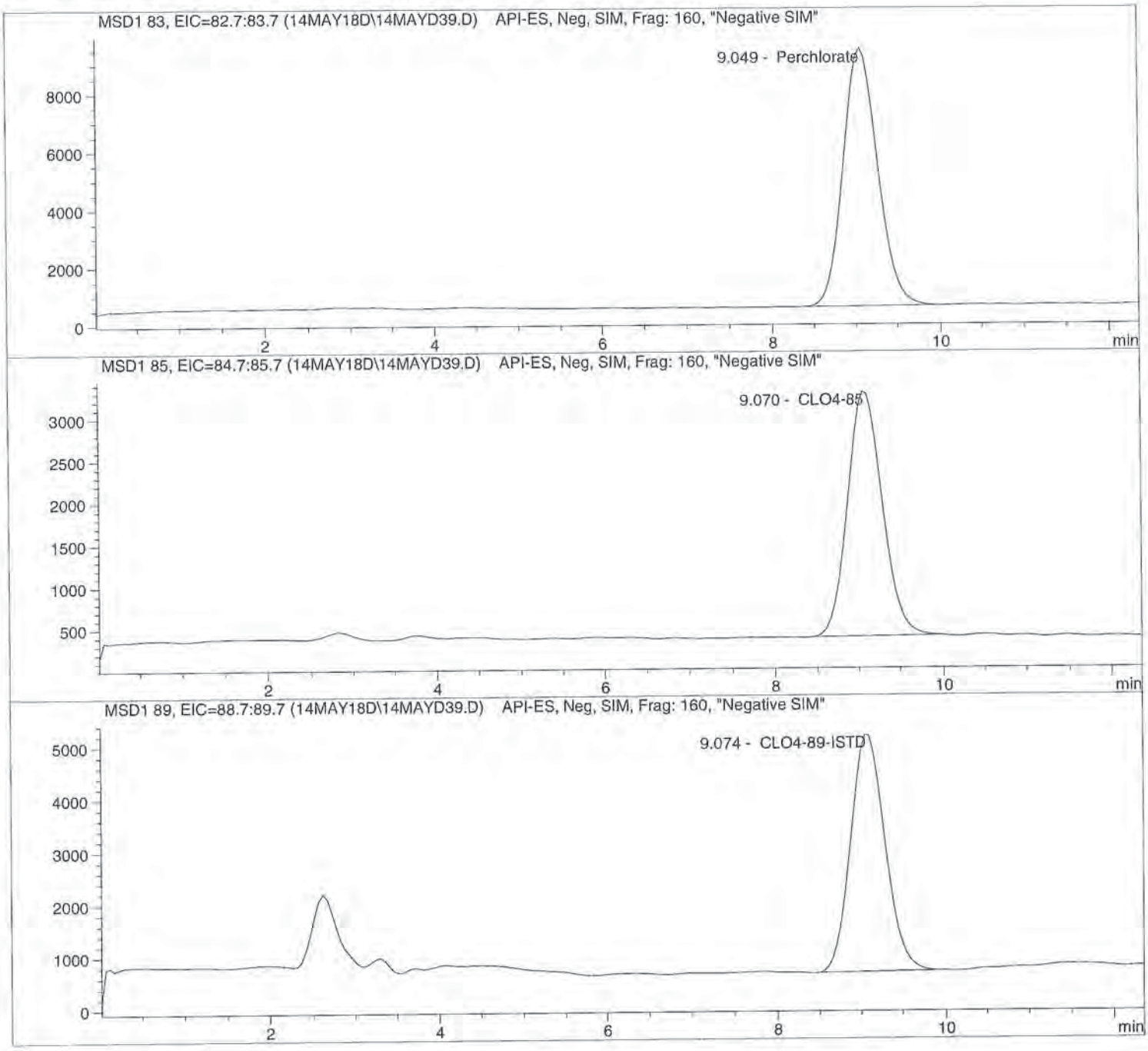
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD39.D Sample Name: 1813198005 10K

Injection Date:	5/14/2018 18:25:29	Seq Line:	39
Sample Name:	1813198005 10K	Location:	Vial 66
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD39.D Sample Name: 1813198005 10K

Injection Date:	5/14/2018 18:25:29	Seq Line:	39
Sample Name:	1813198005 10K	Location:	Vial 66
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
Multiplier:	1.000000
Dilution:	10000.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.049	BBA	262390.8	88986.3387	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.070	PBA	85876.0	90858.7173	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.074	PBA	131855.0	50000.0000	CLO4-89-ISTD

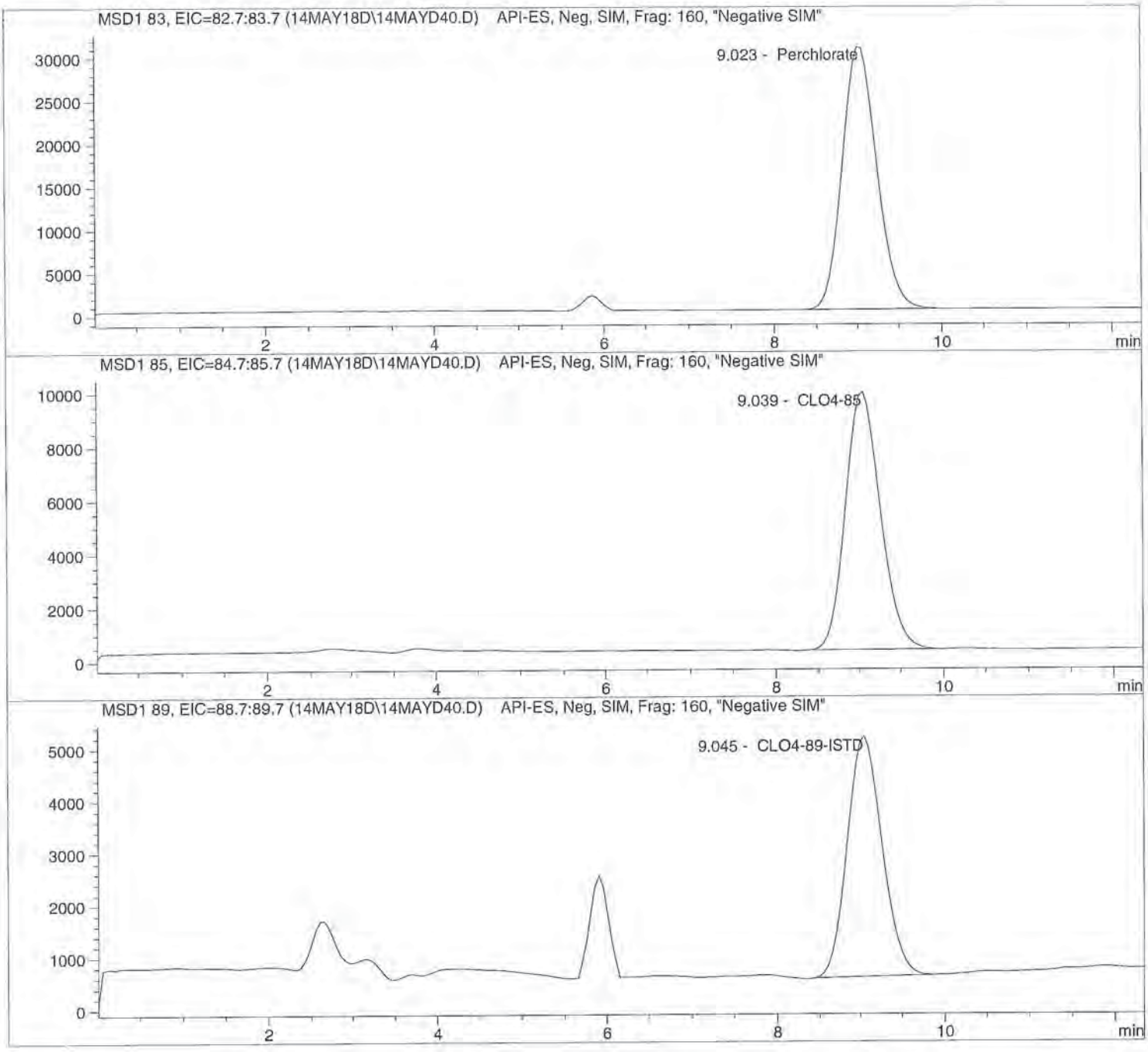
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD40.D Sample Name: 600744 CCV@25

Injection Date:	5/14/2018 18:39:41	Seq Line:	40
Sample Name:	600744 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD40.D Sample Name: 600744 CCV@25

Injection Date:	5/14/2018 18:39:41	Seq Line:	40
Sample Name:	600744 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.023	PBA	902530.6	26.9154	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.039	PBA	284795.7	27.3236	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.045	PBA	135877.0	5.0000	CLO4-89-ISTD

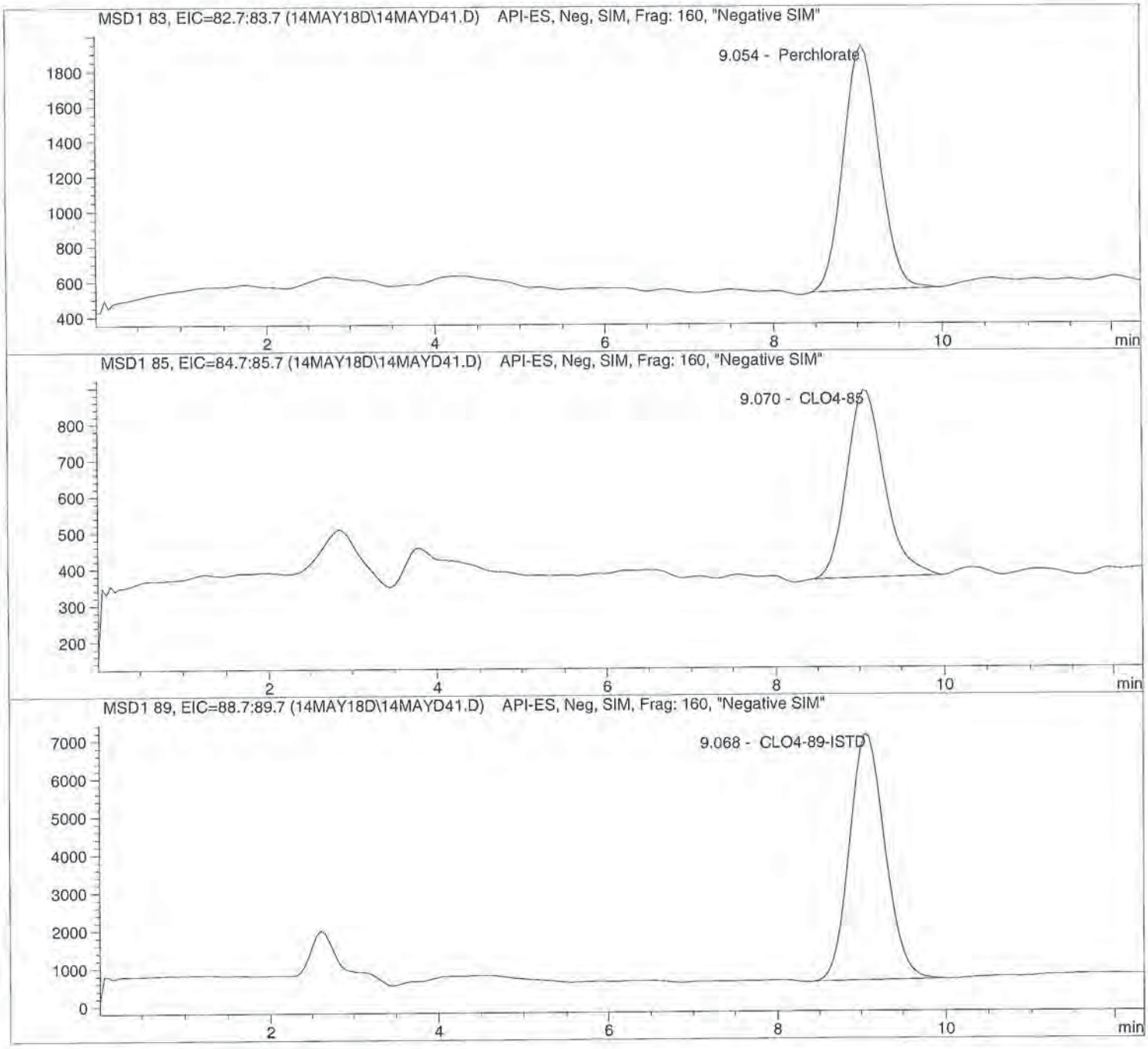
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD41.D Sample Name: 600745 LODV@1.

Injection Date:	5/14/2018 18:53:49	Seq Line:	41
Sample Name:	600745 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD41.D Sample Name: 600745 LODV@1.

Injection Date:	5/14/2018 18:53:49	Seq Line:	41
Sample Name:	600745 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.054	PBA	41822.6	0.9777	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.070	PBA	16265.8	1.0757	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
9.068	PBA	192745.2	5.0000	CLO4-89-ISTD

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\MAY\14MAY18D.S

Sequence Table:

Method and Injection Info Part:

Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	600642	CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	600643	LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	600644	ICS@1.0	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	600645	LMB	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	600646	QC@5	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	1812807001		CLO4-DOD	1	Sample		
7	Vial 77	1813193001		CLO4-DOD	1	Sample		
8	Vial 78	1813195001		CLO4-DOD	1	Sample		
9	Vial 79	1813195002		CLO4-DOD	1	Sample		
10	Vial 80	1813195003	1K	CLO4-DOD	1	Sample		
11	Vial 81	1813195004		CLO4-DOD	1	Sample		
12	Vial 82	1813195005	1K	CLO4-DOD	1	Sample		
13	Vial 83	1813197001		CLO4-DOD	1	Sample		
14	Vial 84	1813197002		CLO4-DOD	1	Sample		
15	Vial 85	1813197003		CLO4-DOD	1	Sample		
16	Vial 71	600647	CCV@25	CLO4-DOD	1	Ctrl Samp		
17	Vial 72	600648	LODV@1.	CLO4-DOD	1	Ctrl Samp		
18	Vial 86	1813197004		CLO4-DOD	1	Sample		
19	Vial 87	1813197005		CLO4-DOD	1	Sample		
20	Vial 88	1813197006	10K	CLO4-DOD	1	Sample		
21	Vial 89	1813198001		CLO4-DOD	1	Sample		
22	Vial 90	1813198002	MS	CLO4-DOD	1	Sample		
23	Vial 92	1813198004		CLO4-DOD	1	Sample		
24	Vial 93	1813198005		CLO4-DOD	1	Sample		
25	Vial 61	Rinse		CLO4-DOD	1	Sample		
26	Vial 94	1813197006		CLO4-DOD	1	Sample		
27	Vial 95	1813195003	100	CLO4-DOD	1	Sample		
28	Vial 96	1813195005	100	CLO4-DOD	1	Sample		
29	Vial 71	600649	CCV@25	CLO4-DOD	1	Ctrl Samp		
30	Vial 72	600650	LODV@1.	CLO4-DOD	1	Ctrl Samp		
31	Vial 62	1813198004	1K	CLO4-DOD	1	Sample		
32	Vial 63	1813198005	1K	CLO4-DOD	1	Sample		
33	Vial 97	1813198001	10X	CLO4-DOD	1	Sample		
34	Vial 98	1813198002	MS	CLO4-DOD	1	Sample		
35	Vial 99	1813198003	MSD	CLO4-DOD	1	Sample		
36	Vial 98	1813198002	MS	CLO4-DOD	1	Sample		
37	Vial 64	1813197006	10X	CLO4-DOD	1	Sample		
38	Vial 65	1813198004	10K	CLO4-DOD	1	Sample		
39	Vial 66	1813198005	10K	CLO4-DOD	1	Sample		
40	Vial 71	600744	CCV@25	CLO4-DOD	1	Ctrl Samp		
41	Vial 72	600745	LODV@1.	CLO4-DOD	1	Ctrl Samp		

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Batch Report: C:\HPCHEM\1\DATA\02APR18D\02APR18I.B

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

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

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	ICAL1@ 1.0ug/L	Vial 71	1	Control	1	4.75217e4	8.805	1.04383
*	ICAL2@ 2.0ug/L	Vial 72	1	Control	2	7.57673e4	8.842	1.88584
*	ICAL3@ 5.0ug/L	Vial 73	1	Control	3	1.87507e5	8.869	5.06681
*	ICAL4@ 10.ug/L	Vial 74	1	Control	4	4.00349e5	8.838	9.89695
*	ICAL5@ 25.ug/L	Vial 75	1	Control	5	1.13339e6	8.844	25.44483
*	ICAL6@ 50.ug/L	Vial 76	1	Control	6	2.22347e6	8.787	49.47140
*	ICAL7@ 75.ug/L	Vial 77	1	Control	7	3.56432e6	8.816	75.20096
*	ICAL Verf@10ug/L	Vial 78	1	Control	8	3.99588e5	8.826	10.16984

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	ICAL1@ 1.0ug/L	Vial 71	1	Control	1	1.48071e4	8.787	8.93940e-1
*	ICAL2@ 2.0ug/L	Vial 72	1	Control	2	2.78914e4	8.863	2.05665
*	ICAL3@ 5.0ug/L	Vial 73	1	Control	3	6.40466e4	8.880	5.32040
*	ICAL4@ 10.ug/L	Vial 74	1	Control	4	1.32002e5	8.855	10.20400
*	ICAL5@ 25.ug/L	Vial 75	1	Control	5	3.49808e5	8.856	25.27336
*	ICAL6@ 50.ug/L	Vial 76	1	Control	6	6.58628e5	8.801	48.60374
*	ICAL7@ 75.ug/L	Vial 77	1	Control	7	1.06294e6	8.833	75.70015
*	ICAL Verf@10ug/L	Vial 78	1	Control	8	1.27530e5	8.845	10.16575

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	ICAL1@ 1.0ug/L	Vial 71	1	Control	1	2.05633e5	8.818	5.00000
*	ICAL2@ 2.0ug/L	Vial 72	1	Control	2	1.83981e5	8.862	5.00000
*	ICAL3@ 5.0ug/L	Vial 73	1	Control	3	1.68695e5	8.888	5.00000
*	ICAL4@ 10.ug/L	Vial 74	1	Control	4	1.79911e5	8.861	5.00000
*	ICAL5@ 25.ug/L	Vial 75	1	Control	5	1.81917e5	8.865	5.00000
*	ICAL6@ 50.ug/L	Vial 76	1	Control	6	1.62538e5	8.808	5.00000
*	ICAL7@ 75.ug/L	Vial 77	1	Control	7	1.52621e5	8.841	5.00000
*	ICAL Verf@10ug/L	Vial 78	1	Control	8	1.74490e5	8.846	5.00000

*** End of Report ***

Calibration Table

Perchlorate

Calib. Data Modified : 4/2/2018 11:32:41 AM

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
8.740	1	1	1.00000	4.75217e4	2.10430e-5		1	Perchlorate
		2	2.00000	7.57673e4	2.63966e-5			
		3	5.00000	1.87507e5	2.66656e-5			
		4	10.00000	4.00349e5	2.49782e-5			
		5	25.00000	1.13339e6	2.20577e-5			
		6	50.00000	2.22347e6	2.24874e-5			
		7	75.00000	3.56432e6	2.10419e-5			
8.787	2	1	1.00000	1.48071e4	6.75351e-5		1	CLO4-85
		2	2.00000	2.78914e4	7.17068e-5			
		3	5.00000	6.40466e4	7.80681e-5			
		4	10.00000	1.32002e5	7.57564e-5			
		5	25.00000	3.49808e5	7.14678e-5			
		6	50.00000	6.58628e5	7.59154e-5			
		7	75.00000	1.06294e6	7.05587e-5			
8.818	3	1	5.00000	2.05633e5	2.43151e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.83981e5	2.71766e-5			
		3	5.00000	1.68695e5	2.96393e-5			
		4	5.00000	1.79911e5	2.77915e-5			
		5	5.00000	1.81917e5	2.74851e-5			
		6	5.00000	1.62538e5	3.07621e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	5.00000	1.52621e5	3.27608e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 6.650 min To 10.650 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

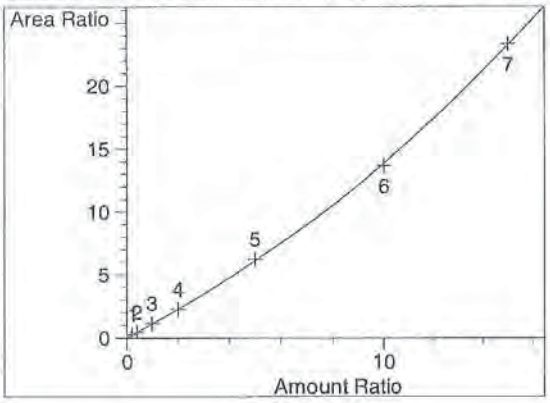
Compound: CLO4-85
- Time Window : From 6.682 min To 10.682 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 6.711 min To 10.711 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

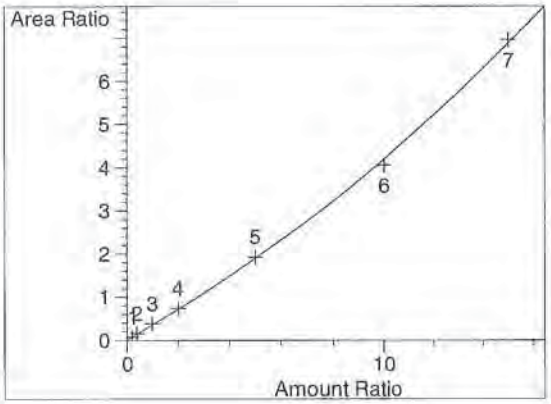
Peak Sum Table

No Entries in table

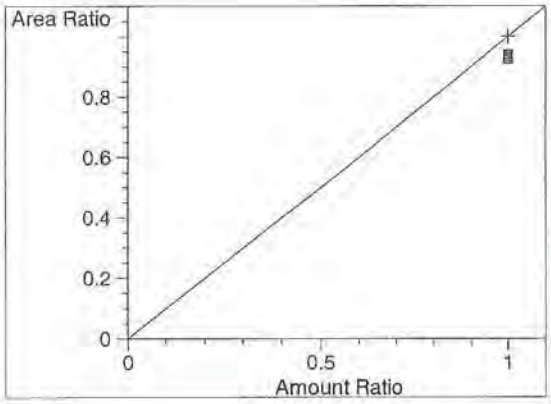
Calibration Curves



Perchlorate at exp. RT: 8.740
MSD1 83, EIC=82.7:83.7
Correlation: 0.99992
Residual Std. Dev.: 0.10616
Formula: $y = ax^2 + bx + c$
a: 3.31374e-2
b: 1.05374
c: 9.66975e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-85 at exp. RT: 8.787
MSD1 85, EIC=84.7:85.7
Correlation: 0.99968
Residual Std. Dev.: 0.07365
Formula: $y = ax^2 + bx + c$
a: 8.04074e-3
b: 3.37521e-1
c: 1.14057e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 8.818
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\APR\02APR18D.S

Sequence Table:

Method and Injection Info Part:

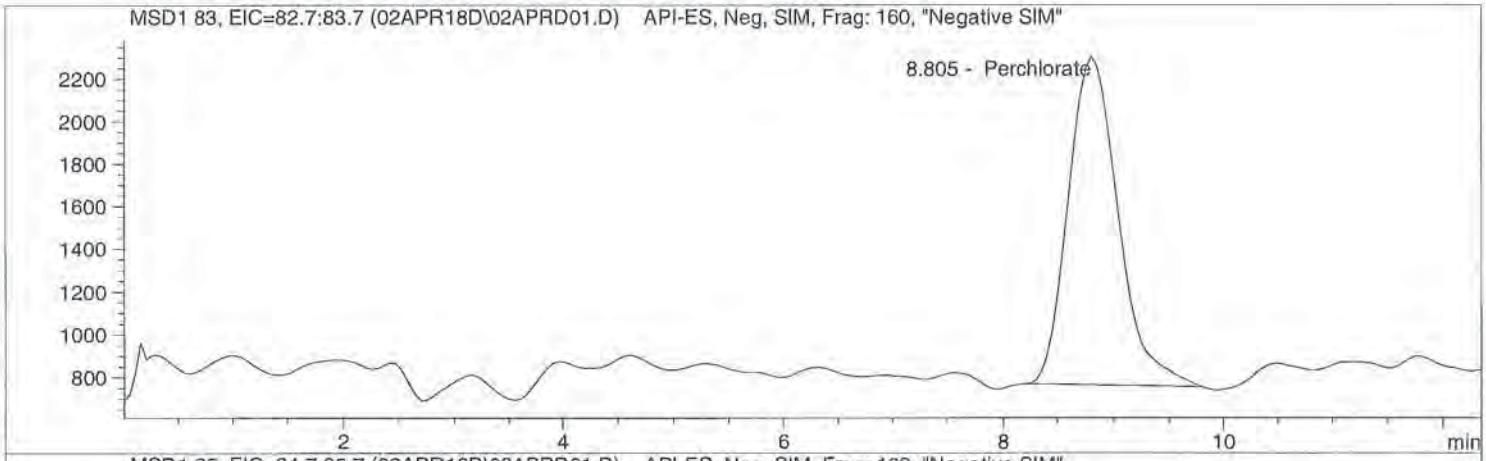
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		

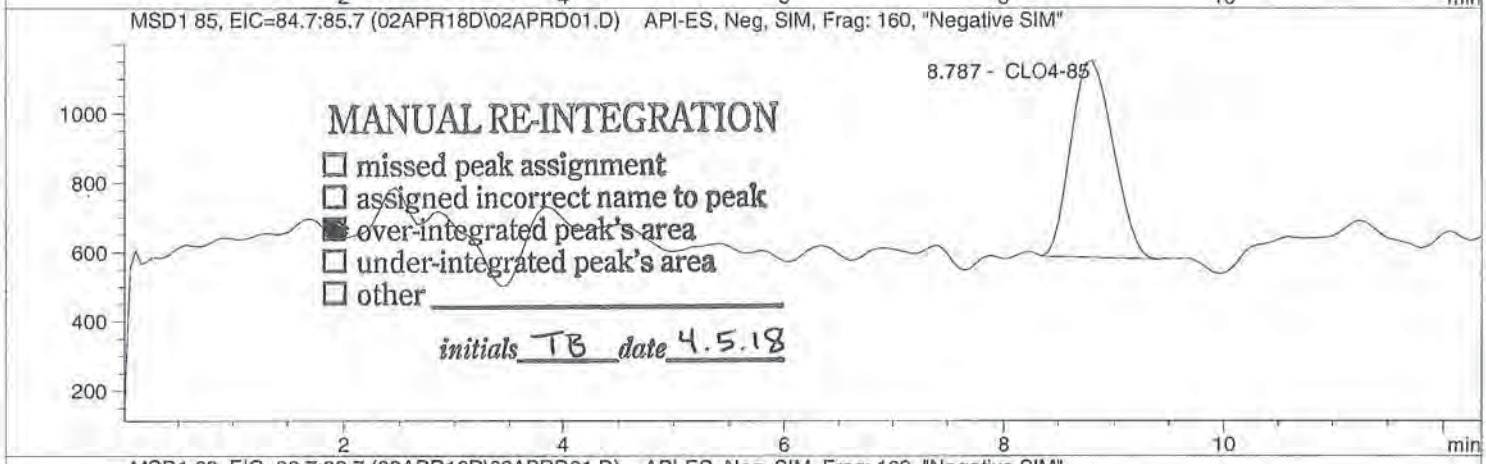
Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

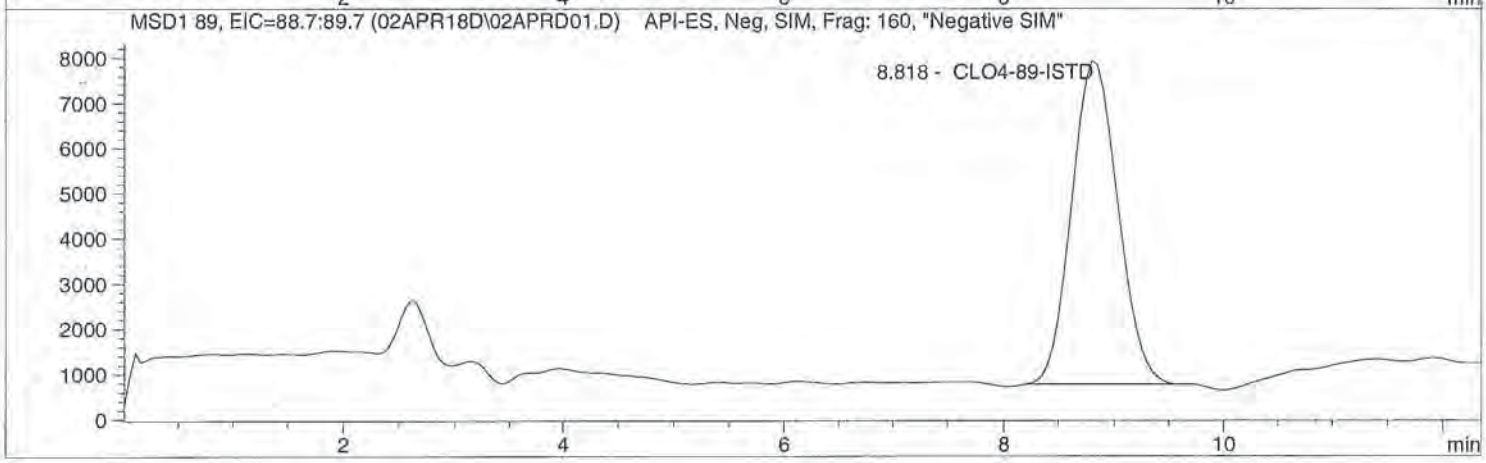




MANUAL RE-INTEGRATION

- ☐ missed peak assignment
- ☐ assigned incorrect name to peak
- ☒ over-integrated peak's area
- ☐ under-integrated peak's area
- ☐ other _____

initials TB *date* 4.5.18



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 2. Apr. 2018, 11:32:41 am
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
8.805	PBA	47521.7	1.0438	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.787	MM	14807.1	0.8939	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.818	PBA	205633.2	5.0000	CLO4-89-ISTD

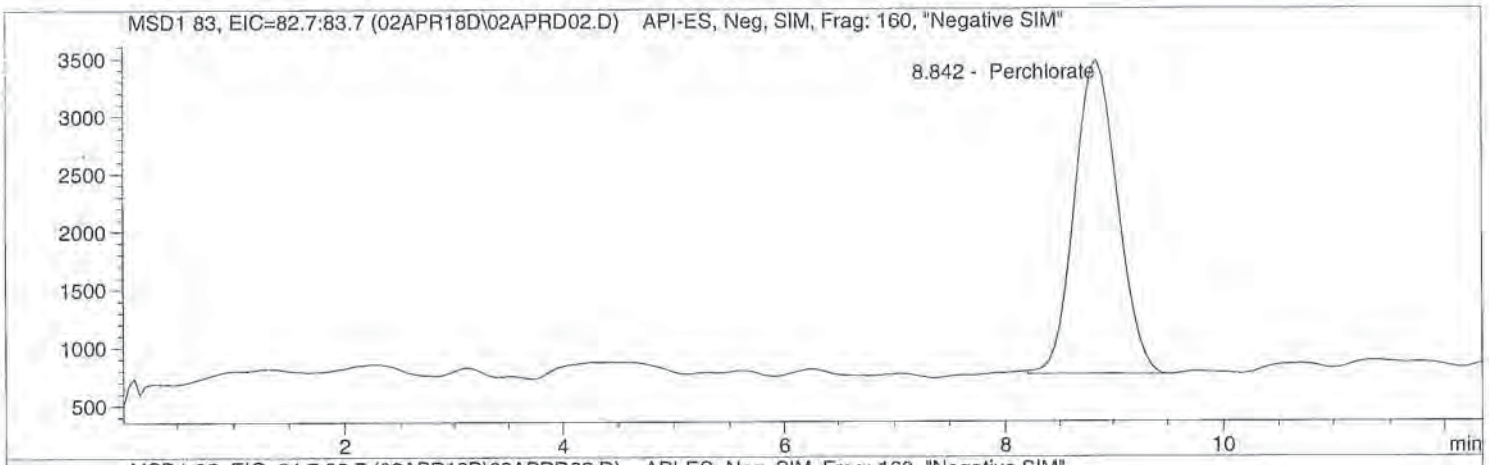
*** End of Report ***

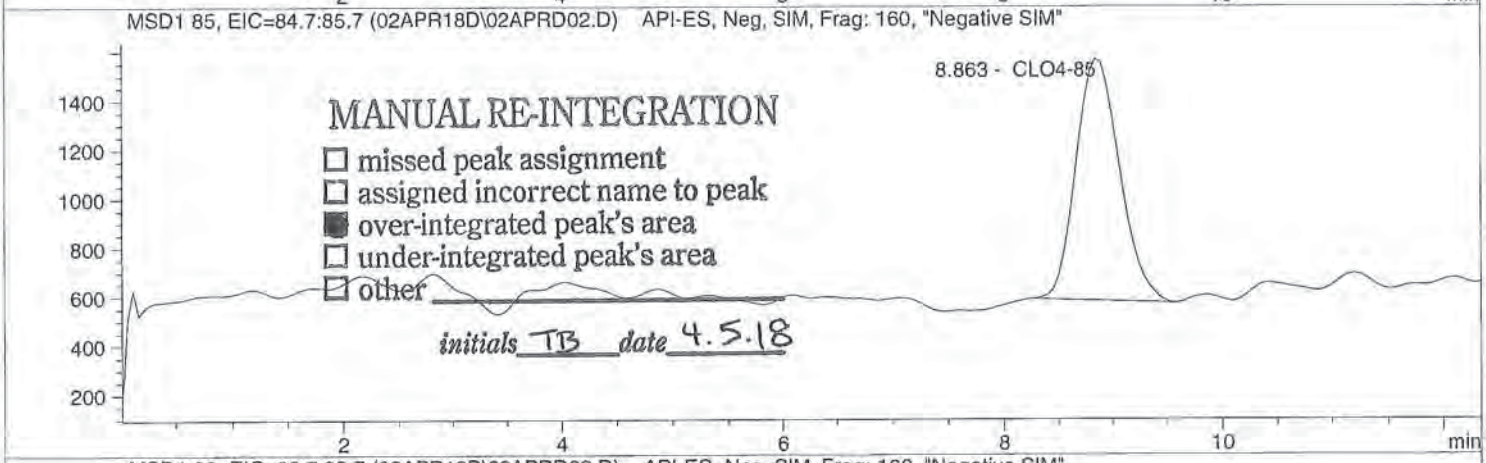
Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

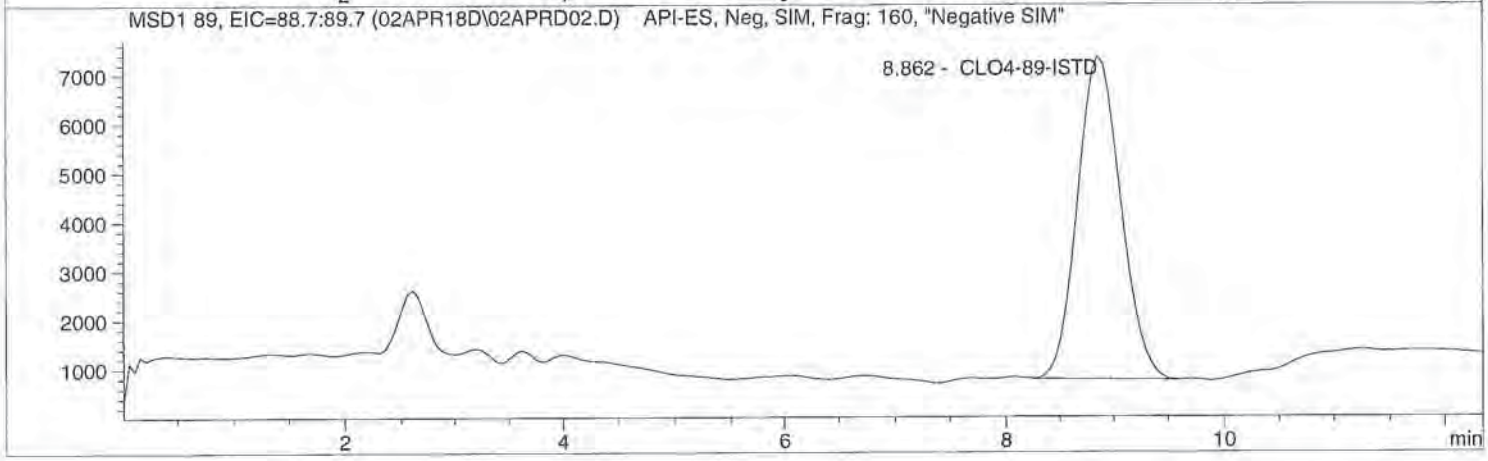
Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

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 TB *date* 4.5.18



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.842	BBA	75767.3	1.8858	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.863	MM	27891.4	2.0567	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.862	BBA	183981.5	5.0000	CLO4-89-ISTD

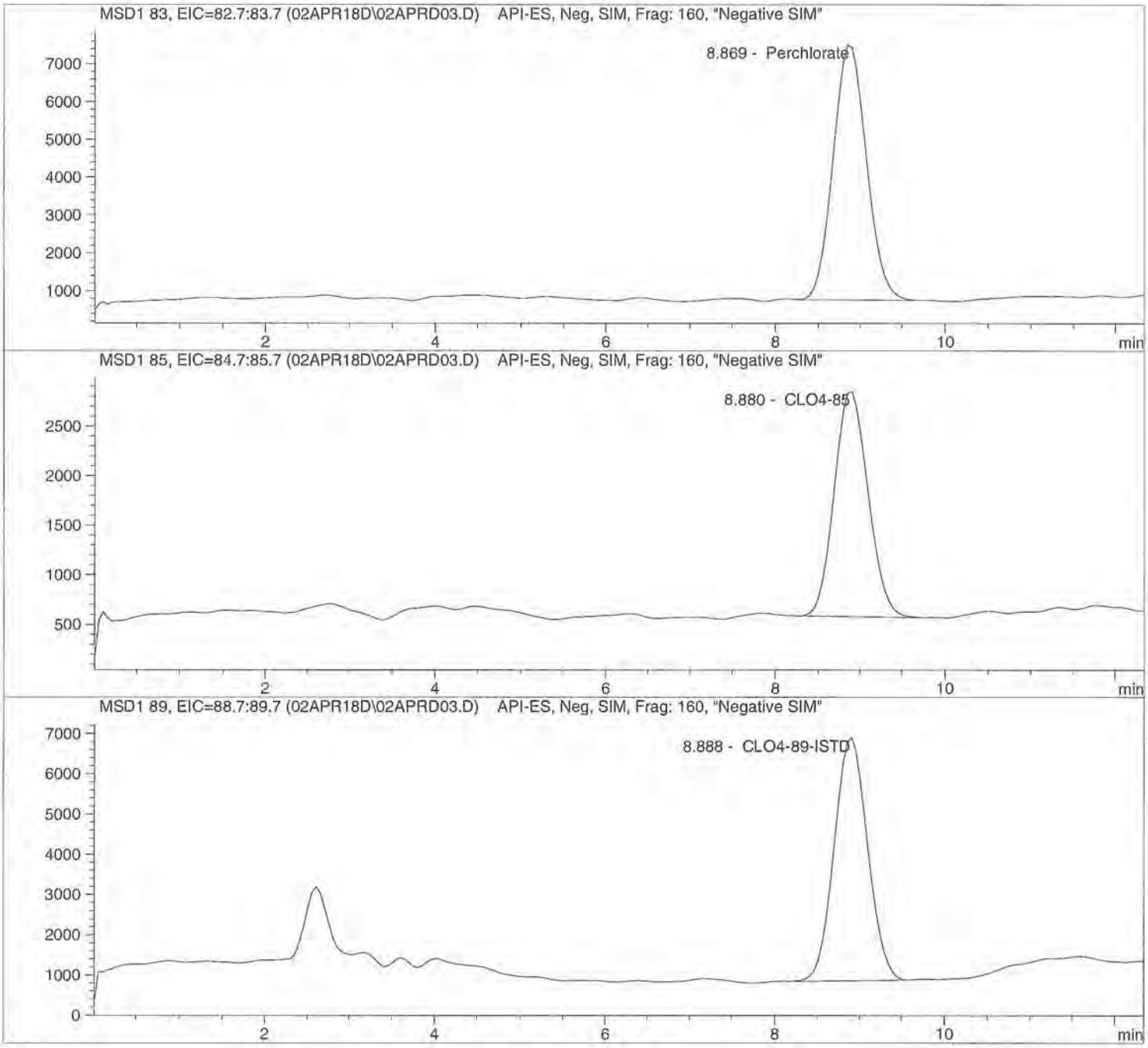
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	4/02/2018 09:36:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	4/02/2018 09:36:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.869	BBA	187507.2	5.0668	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.880	PBA	64046.6	5.3204	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.888	BBA	168695.0	5.0000	CLO4-89-ISTD

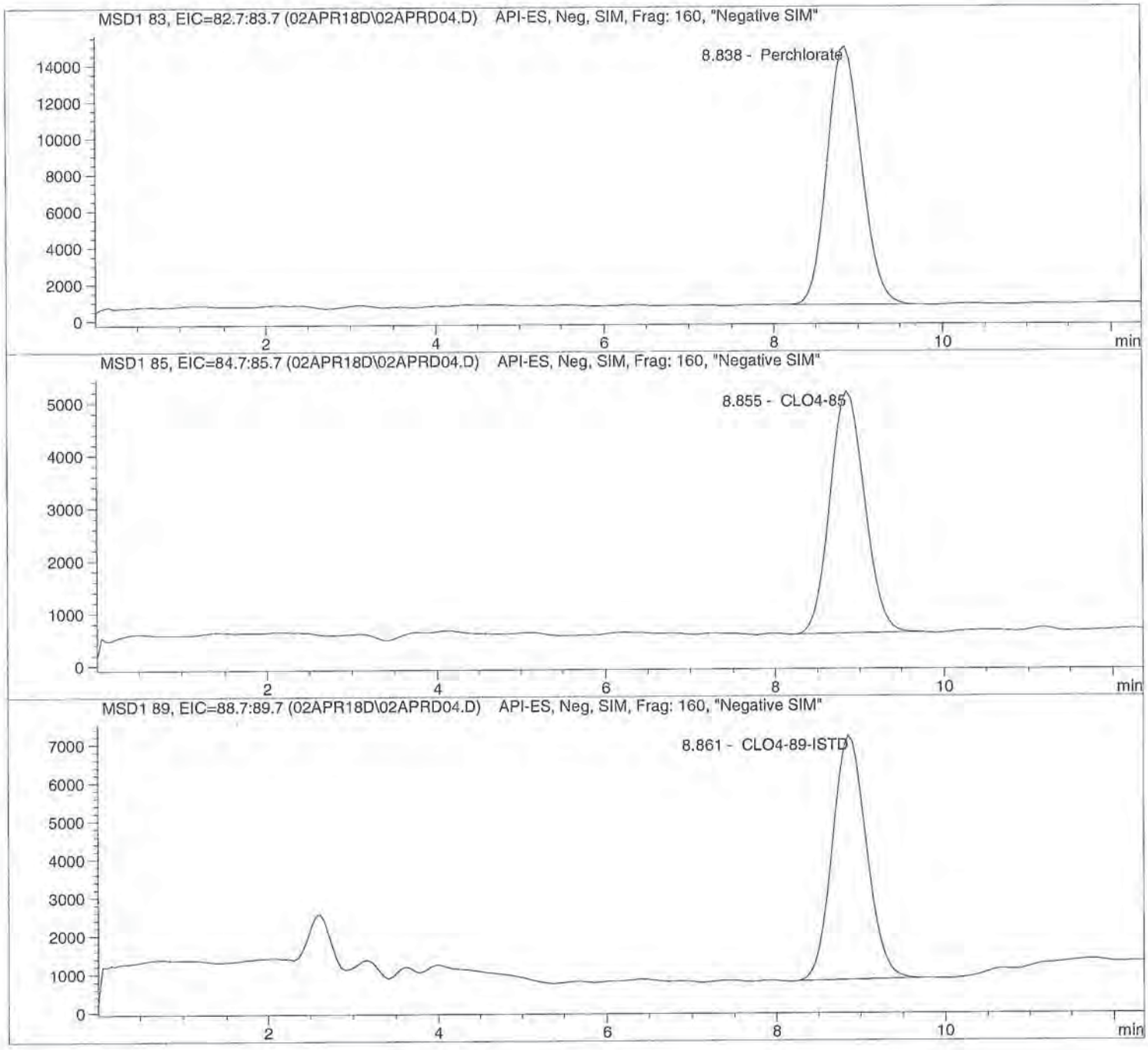
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	4/02/2018 09:50:54	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	4/02/2018 09:50:54	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.838	BBA	400349.0	9.8969	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.855	PBA	132002.1	10.2040	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.861	PBA	179911.2	5.0000	CLO4-89-ISTD

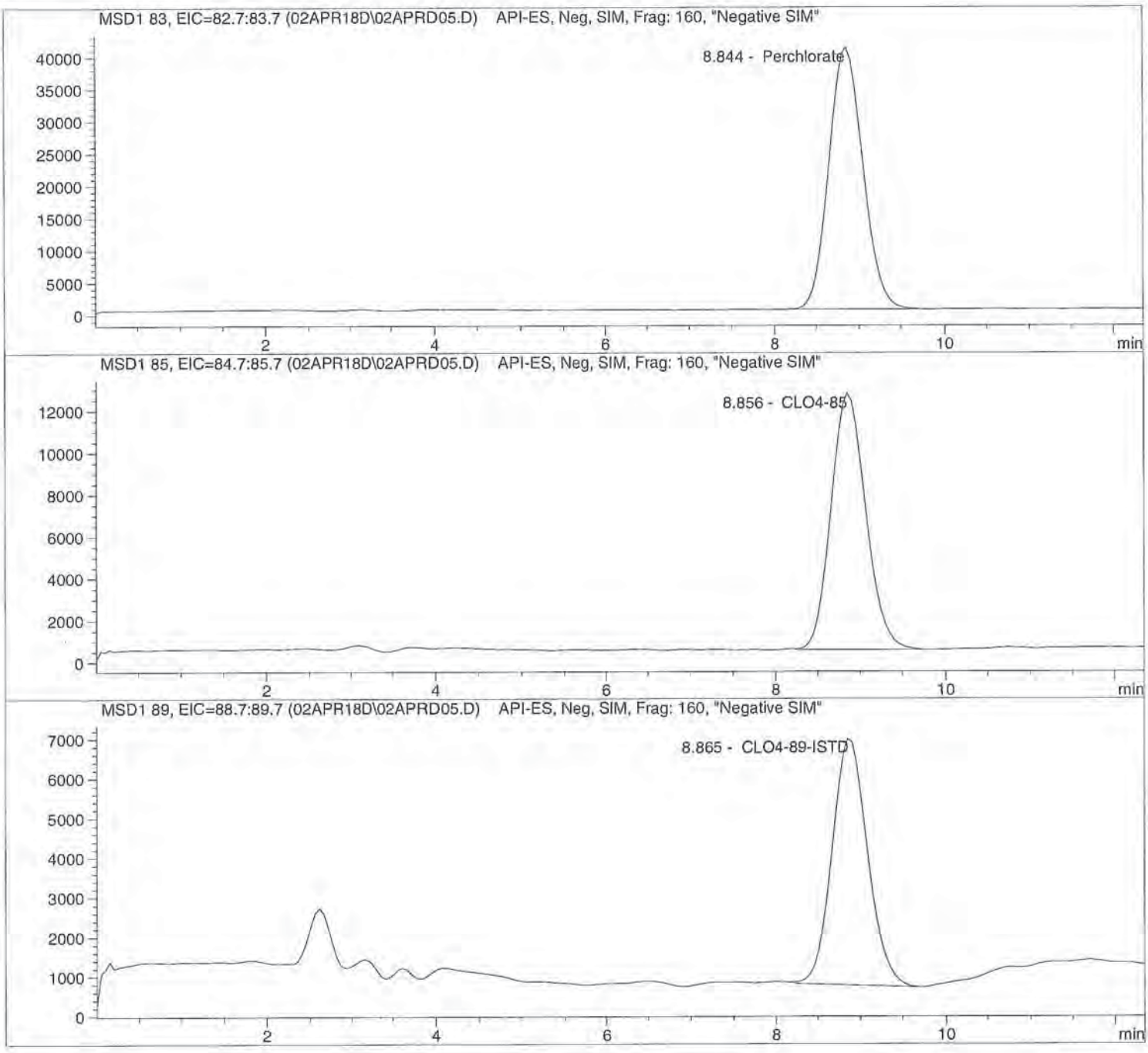
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	4/02/2018 10:05:03	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	4/02/2018 10:05:03	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.844	BBA	1133393.5	25.4448	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.856	BBA	349808.1	25.2734	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.865	BBA	181916.8	5.0000	CLO4-89-ISTD

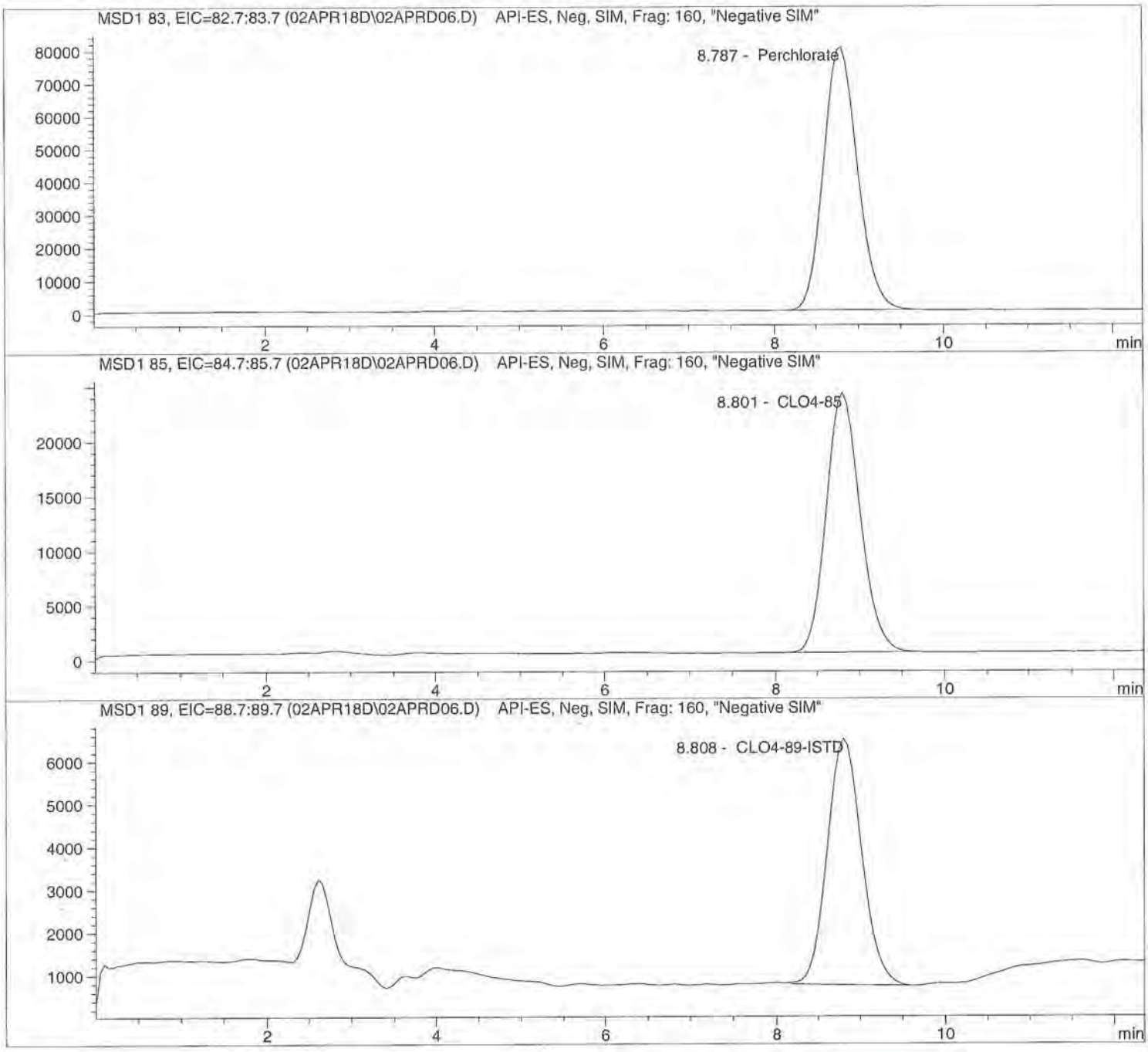
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	4/02/2018 10:19:12	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	4/02/2018 10:19:12	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.787	BBA	2223467.0	49.4714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.801	BBA	658628.2	48.6037	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.808	BBA	162537.8	5.0000	CLO4-89-ISTD

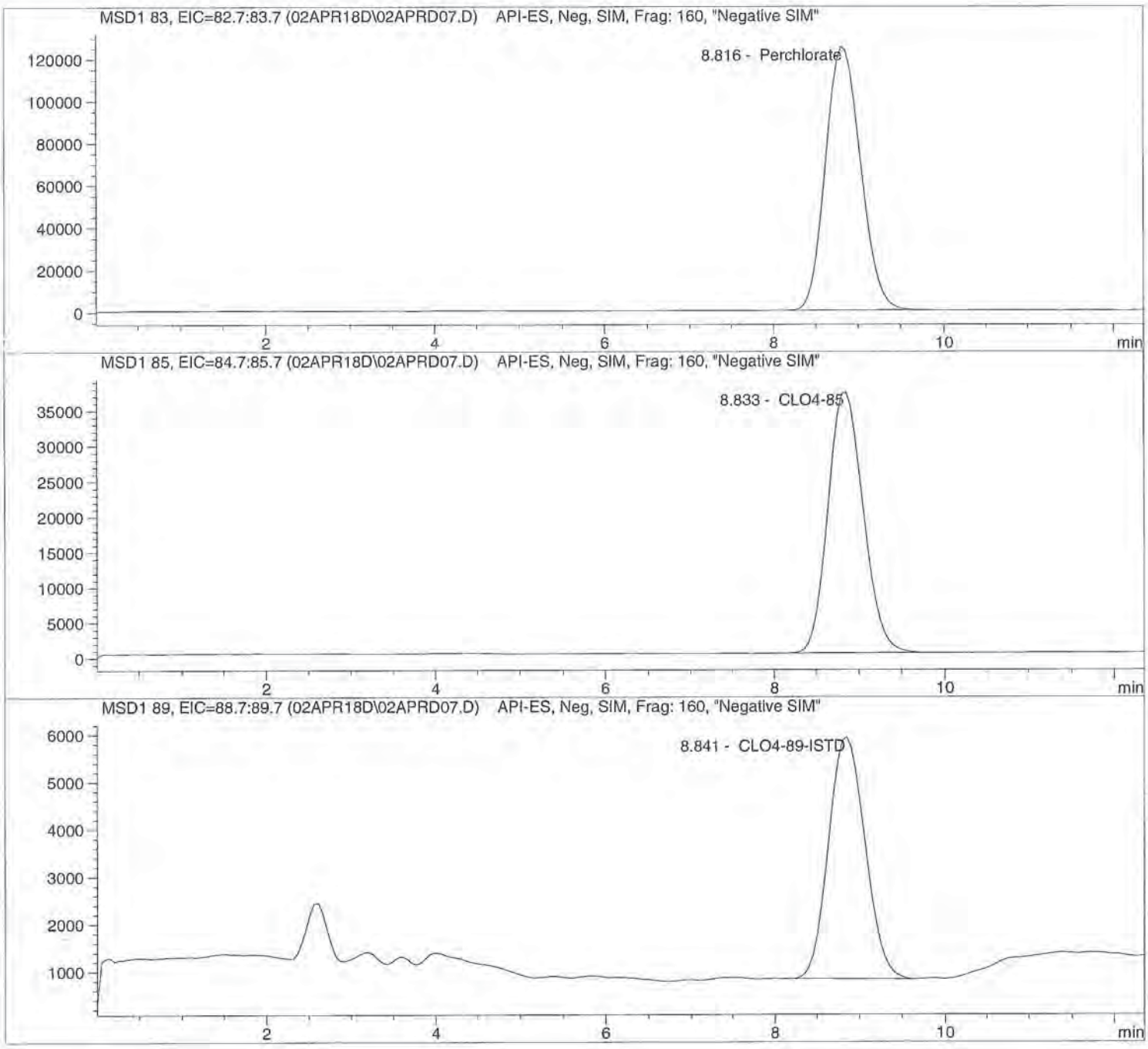
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	4/02/2018 10:33:24	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	4/02/2018 10:33:24	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.816	PBA	3564322.2	75.2010	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.833	BBA	1062944.2	75.7001	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.841	PBA	152621.4	5.0000	CLO4-89-ISTD

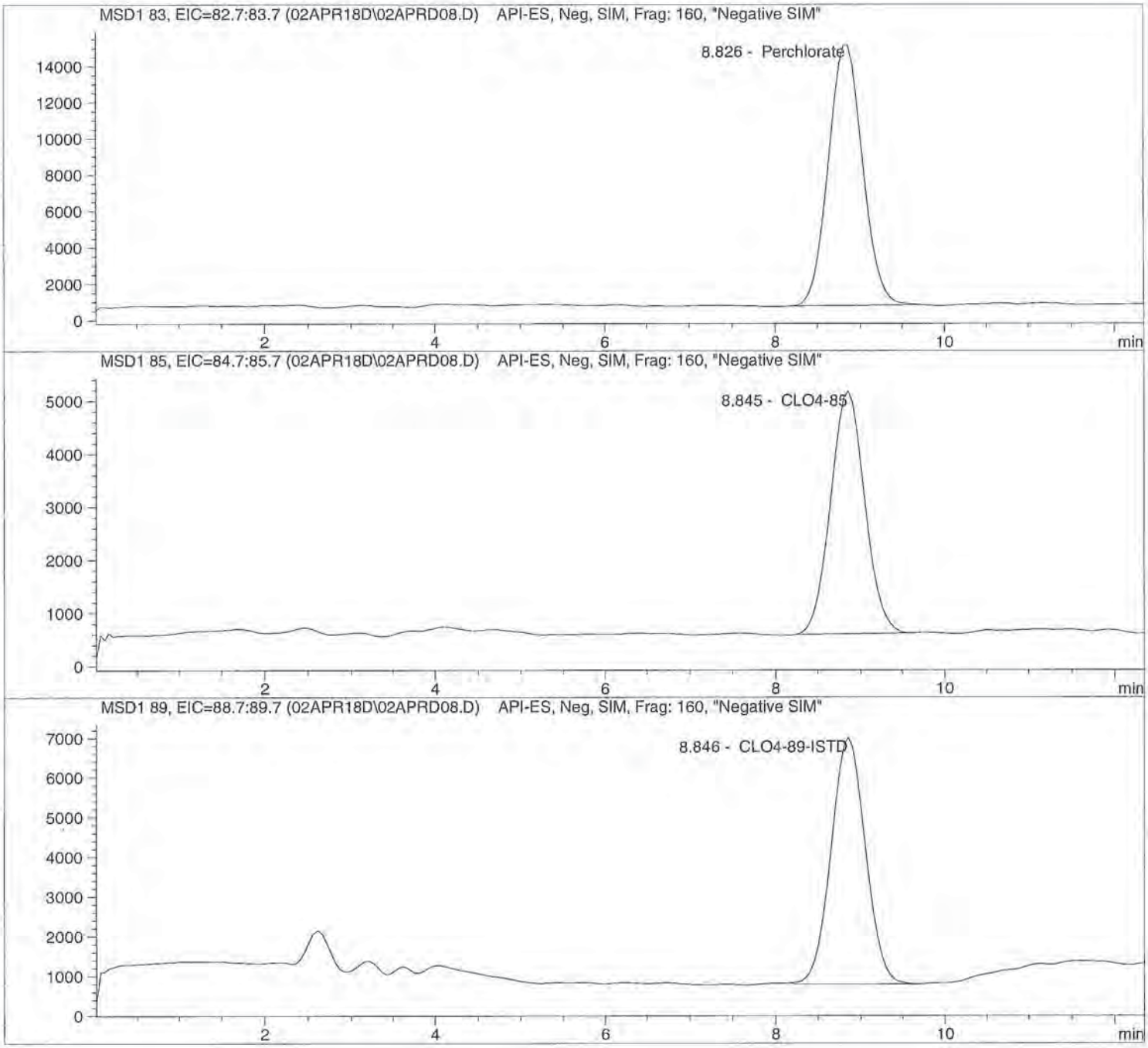
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	4/02/2018 10:47:33	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	4/02/2018 10:47:33	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.826	BBA	399587.8	10.1698	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.845	PBA	127530.4	10.1657	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.846	BBA	174490.2	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

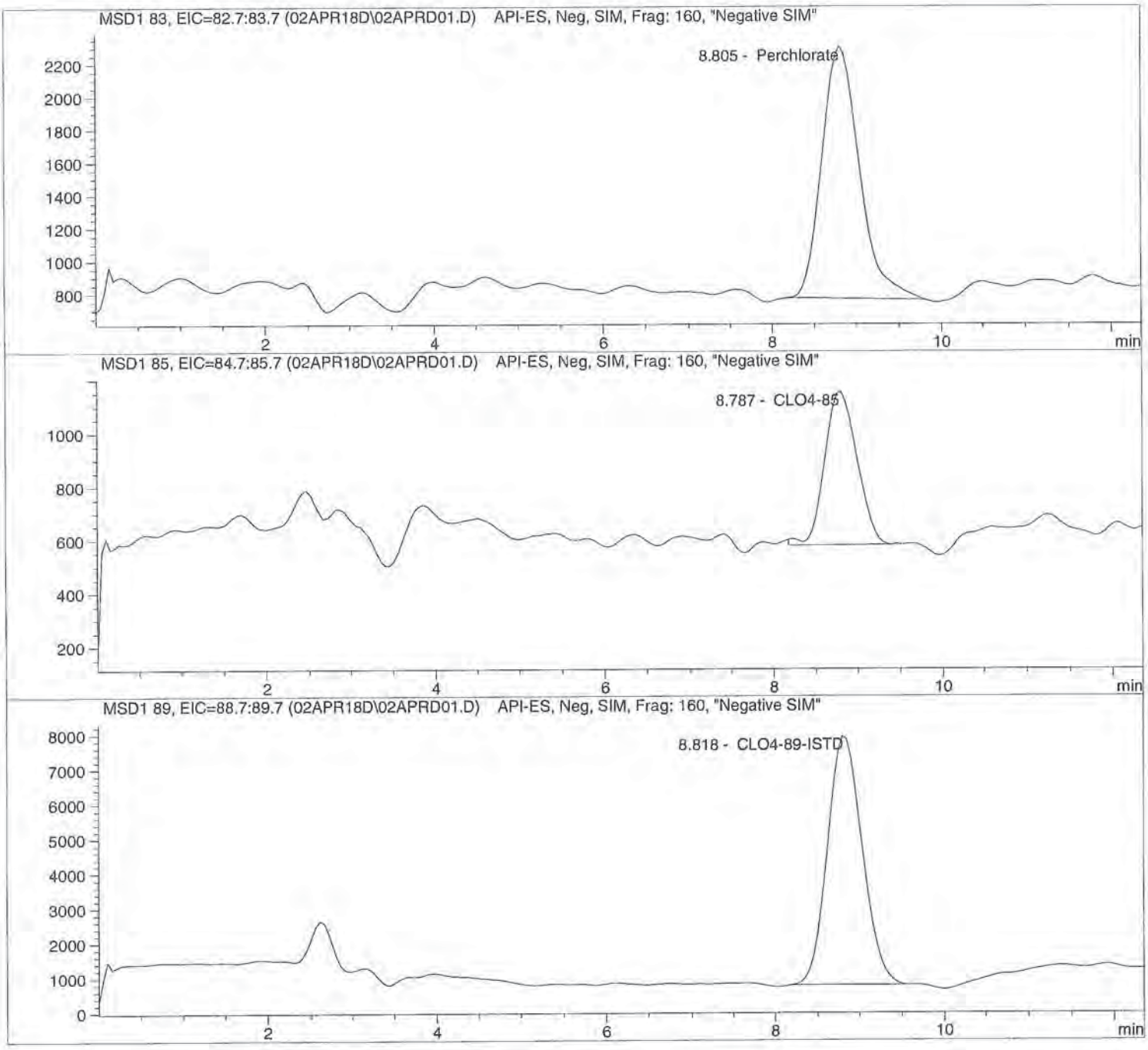
Unmodified

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.805	PBA	47521.7	1.0438	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.787	BBA	15364.8	0.9338	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.818	PBA	205633.2	5.0000	CLO4-89-ISTD

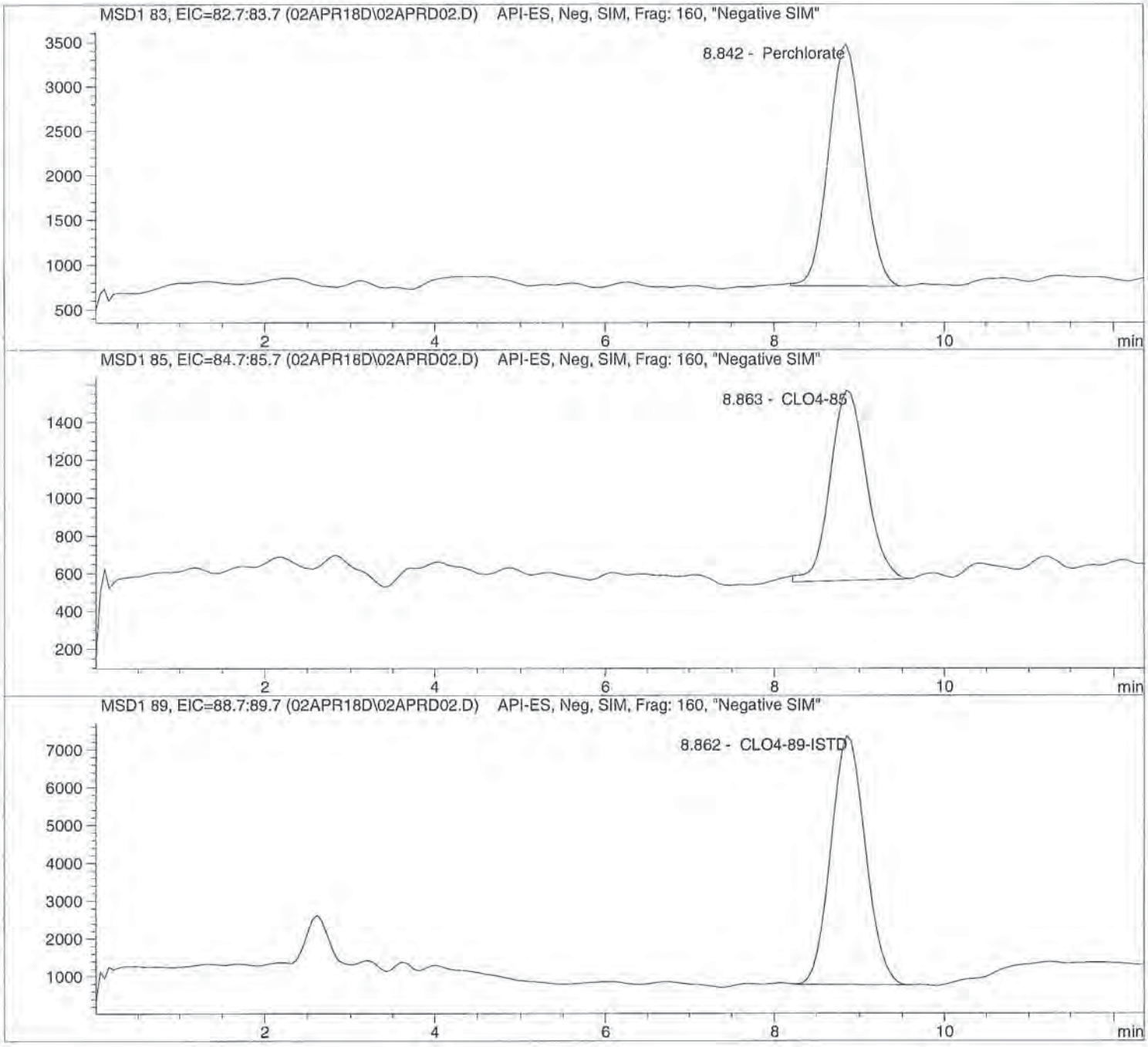
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.842	BBA	75767.3	1.8858	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.863	BBA	29265.6	2.1651	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.862	BBA	183981.5	5.0000	CLO4-89-ISTD

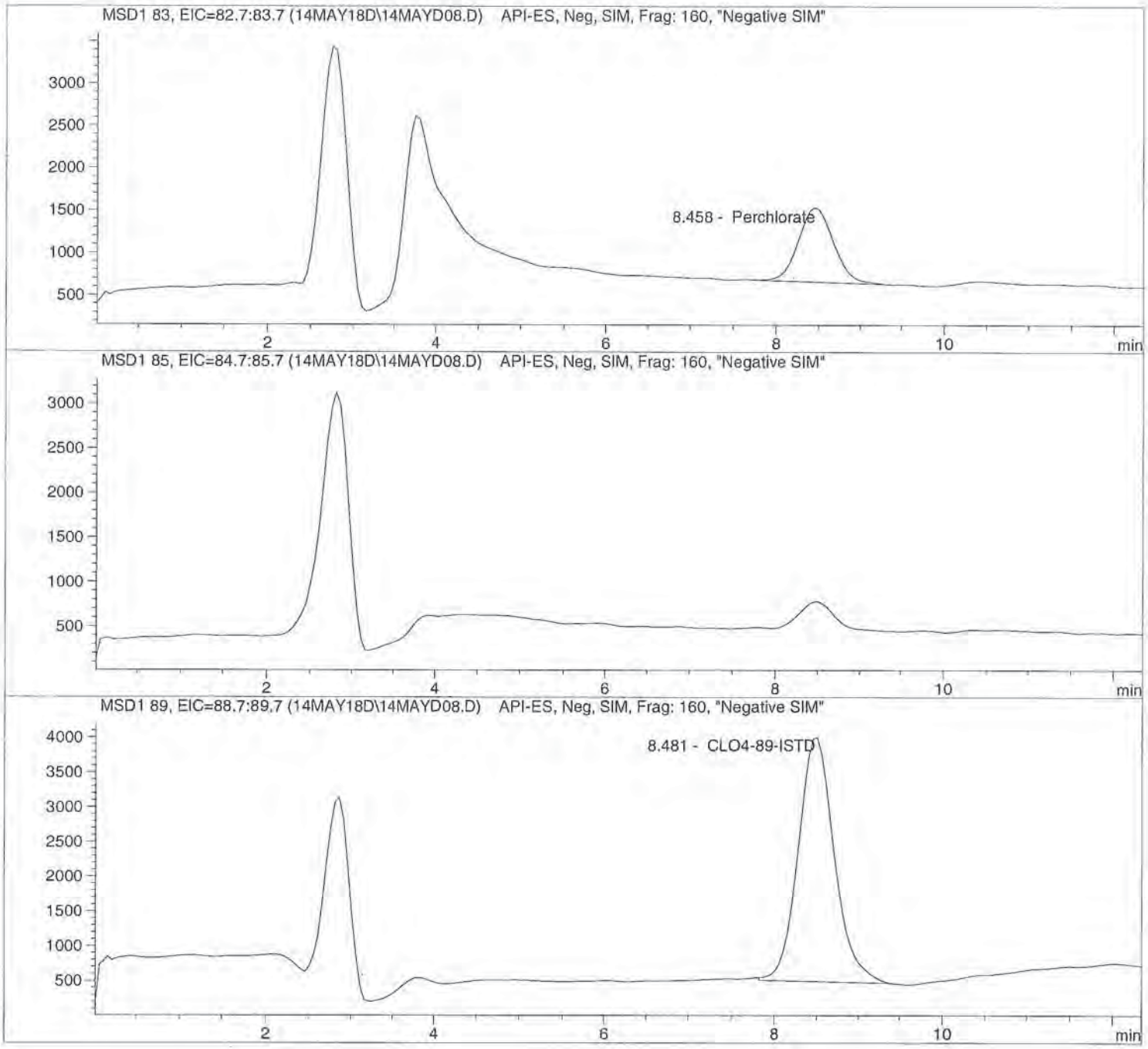
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD08.D Sample Name: 1813195001

Injection Date:	5/14/2018 11:01:22	Seq Line:	8
Sample Name:	1813195001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD08.D Sample Name: 1813195001

Injection Date:	5/14/2018 11:01:22	Seq Line:	8
Sample Name:	1813195001	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.458	BBA	25188.4	1.0927	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
8.481	BBA	104283.8	5.0000	CLO4-89-ISTD

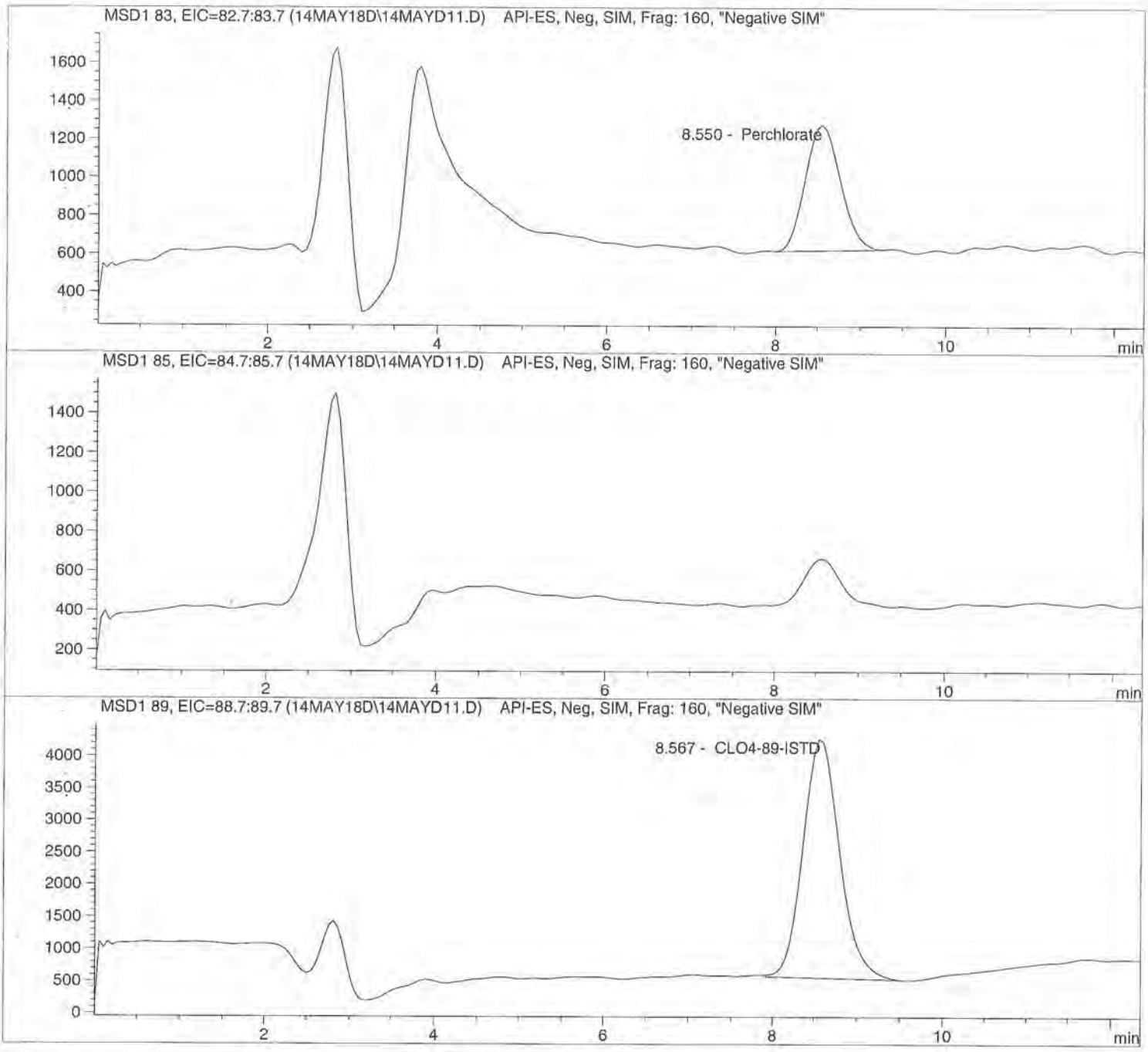
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD11.D Sample Name: 1813195004

Injection Date:	5/14/2018 11:43:58	Seq Line:	11
Sample Name:	1813195004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD11.D Sample Name: 1813195004

Injection Date:	5/14/2018 11:43:58	Seq Line:	11
Sample Name:	1813195004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.550	PBA	18621.2	0.7476	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
8.567	BBA	110863.1	5.0000	CLO4-89-ISTD

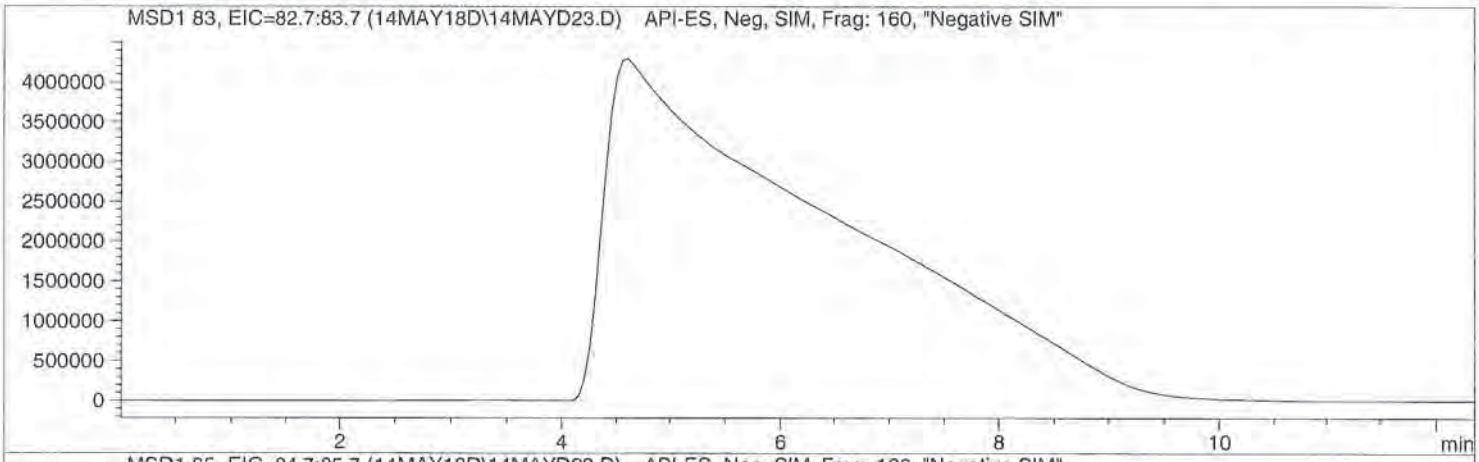
*** End of Report ***

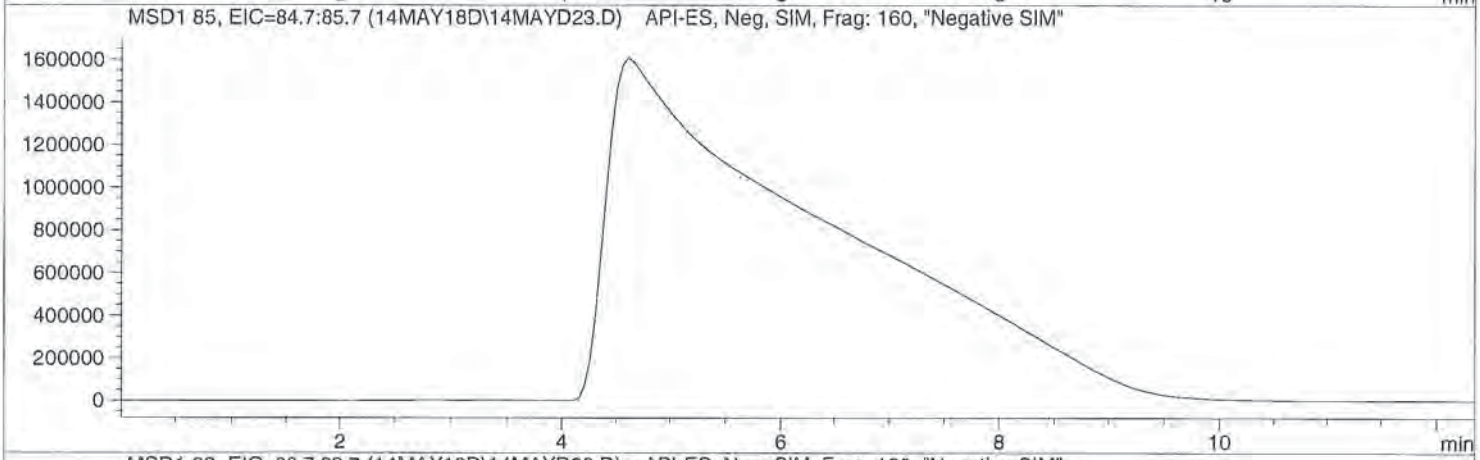
Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD23.D Sample Name: 1813198004

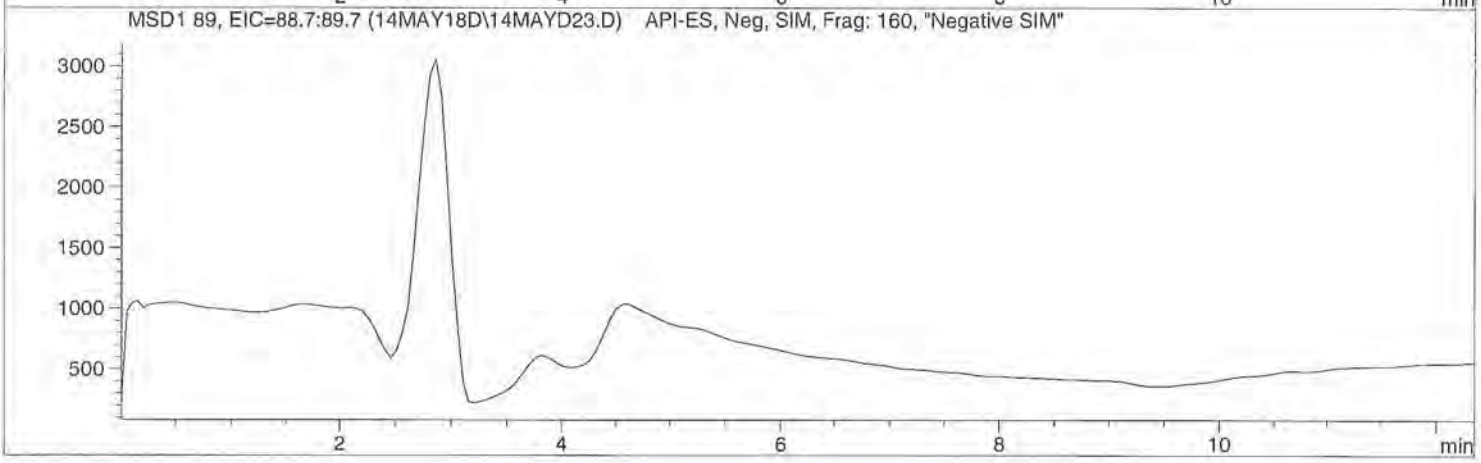
Injection Date:	5/14/2018 14:36:12	Seq Line:	23
Sample Name:	1813198004	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD23.D Sample Name: 1813198004

Injection Date:	5/14/2018 14:36:12	Seq Line:	23
Sample Name:	1813198004	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
0.000		0.0	0.0000	CLO4-89-ISTD

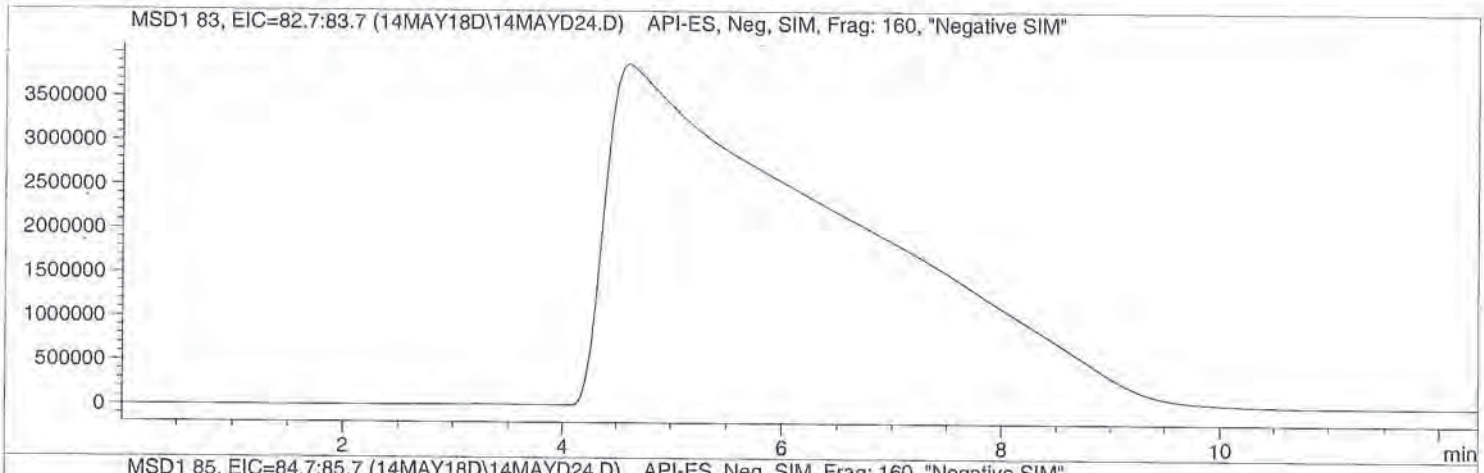
*** End of Report ***

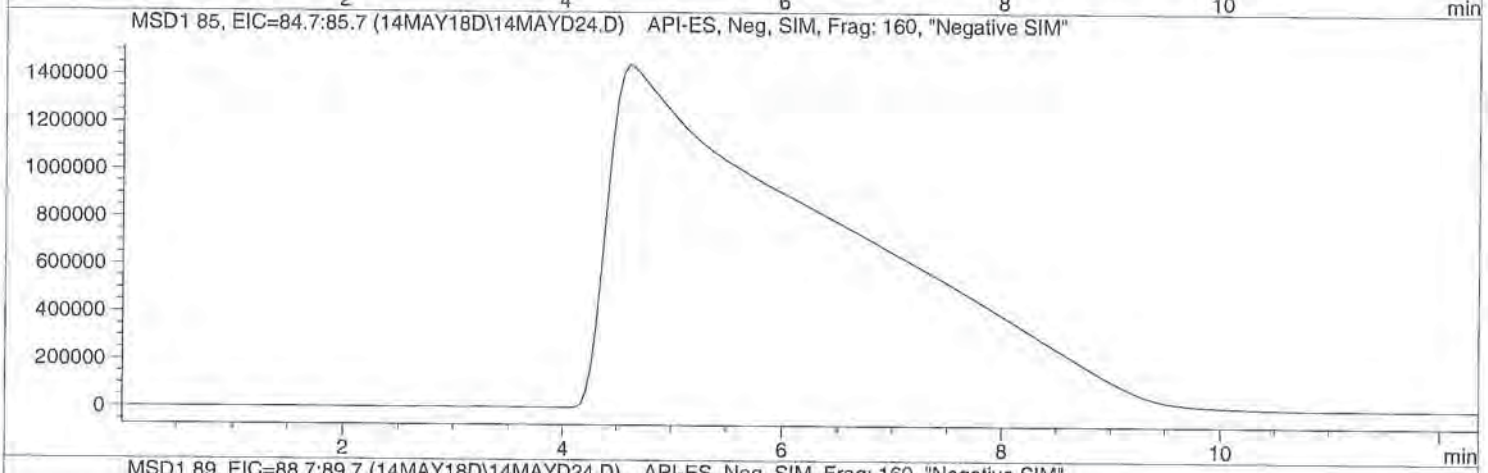
Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD24.D Sample Name: 1813198005

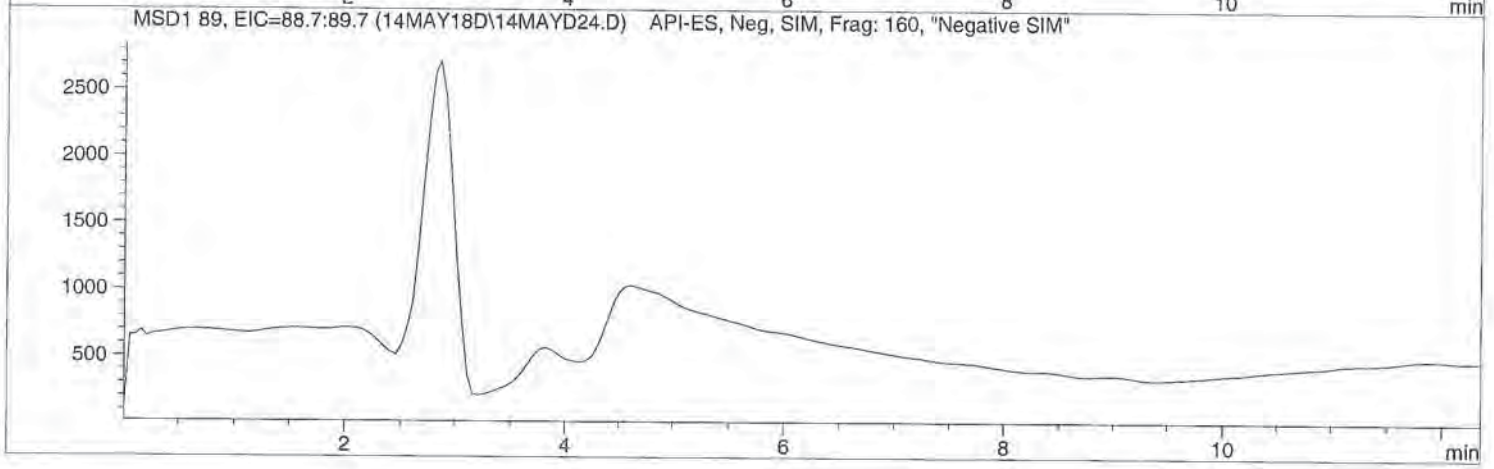
Injection Date:	5/14/2018 14:50:21	Seq Line:	24
Sample Name:	1813198005	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\14MAY18D\14MAYD24.D Sample Name: 1813198005

Injection Date:	5/14/2018 14:50:21	Seq Line:	24
Sample Name:	1813198005	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 2. Apr. 2018, 11:32:41 am
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
0.000		0.0	0.0000	CLO4-89-ISTD

*** End of Report ***

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Houston, TX 77099
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WorkOrder: HS18050260

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

01-Jun-2018

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

May 14, 2018

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

Work Order: **HS18050260**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 2 sample(s) on May 04, 2018 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 Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18050260

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050260-01	LH18/24-SP650_050318	Water		03-May-2018 14:00	04-May-2018 08:35	☐
HS18050260-02	Trip Blank	Water	ALS-041918-57	03-May-2018 00:00	04-May-2018 08:35	☐

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18050260

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R315769

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

WetChemistry by Method SW9056

Batch ID: R316100

Sample ID: HS18050618-07MS

- MS and MSD are for an unrelated sample (Chloride,Sulfate)

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_050318
Collection Date: 03-May-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18050260
Lab ID:HS18050260-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 14:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 14:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
2-Butanone	**6.1**		**0.50**	**1.0**	**2.0**	**ug/L**	1	07-May-2018 14:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 14:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 14:23
Acetone	**11**		**0.40**	**1.0**	**2.0**	**ug/L**	1	07-May-2018 14:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 14:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 14:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_050318
Collection Date: 03-May-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18050260
Lab ID:HS18050260-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
cis-1,2-Dichloroethene	**3.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 14:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 14:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 14:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 14:23
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	07-May-2018 14:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 14:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Toluene	**0.32**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 14:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Trichloroethene	**2.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 14:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 14:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 14:23
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*1*	*07-May-2018 14:23*
Surr: 4-Bromofluorobenzene	*111*			**0**	*85-114*	*%REC*	*1*	*07-May-2018 14:23*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*1*	*07-May-2018 14:23*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*07-May-2018 14:23*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**429**		**2.00**	**5.00**	**5.00**	**mg/L**	10	13-May-2018 05:25
Sulfate	**116**		**2.00**	**5.00**	**5.00**	**mg/L**	10	13-May-2018 05:25

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 03-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050260
Lab ID:HS18050260-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 12:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 12:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 12:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 12:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 12:45
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	07-May-2018 12:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 12:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 12:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 03-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050260
Lab ID:HS18050260-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 12:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 12:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 12:45
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	07-May-2018 12:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 12:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 12:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 12:45
Surr: 1,2-Dichloroethane-d4	*99.8*			**0**	*81-118*	*%REC*	*1*	*07-May-2018 12:45*
Surr: 4-Bromofluorobenzene	*110*			**0**	*85-114*	*%REC*	*1*	*07-May-2018 12:45*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*1*	*07-May-2018 12:45*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*07-May-2018 12:45*

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R315769	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18050260-01	LH18/24-SP650_050318	03 May 2018 14:00			07 May 2018 14:23	1
HS18050260-02	Trip Blank	03 May 2018 00:00			07 May 2018 12:45	1
Batch ID R316100	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18050260-01	LH18/24-SP650_050318	03 May 2018 14:00			13 May 2018 05:25	10

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315769** SeqNo: **4550438** 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

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315769** SeqNo: **4550438** 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	*49.64*	*1.0*	*50*	*0*	*99.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.48*	*1.0*	*50*	*0*	*109*	*85 - 114*				
Surr: Dibromofluoromethane	*53.42*	*1.0*	*50*	*0*	*107*	*80 - 119*				
Surr: Toluene-d8	*53.94*	*1.0*	*50*	*0*	*108*	*89 - 112*				

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315769** SeqNo: **4550436** 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	51.87	1.0	50	0	104	78 - 124				
1,1,1-Trichloroethane	50.92	1.0	50	0	102	74 - 131				
1,1,2,2-Tetrachloroethane	46.43	1.0	50	0	92.9	71 - 121				
1,1,2-Trichloroethane	50.55	1.0	50	0	101	80 - 119				
1,1-Dichloroethane	50.35	1.0	50	0	101	77 - 125				
1,1-Dichloroethene	52.91	1.0	50	0	106	71 - 131				
1,1-Dichloropropene	44.3	1.0	50	0	88.6	78 - 125				
1,2,3-Trichlorobenzene	48.03	1.0	50	0	96.1	69 - 129				
1,2,3-Trichloropropane	53.86	1.0	50	0	108	73 - 122				
1,2,4-Trichlorobenzene	49.24	1.0	50	0	98.5	69 - 130				
1,2,4-Trimethylbenzene	54.24	1.0	50	0	108	76 - 124				
1,2-Dibromo-3-chloropropane	52.55	1.0	50	0	105	62 - 128				
1,2-Dibromoethane	52.71	1.0	50	0	105	77 - 121				
1,2-Dichlorobenzene	47.93	1.0	50	0	95.9	80 - 119				
1,2-Dichloroethane	50.42	1.0	50	0	101	73 - 128				
1,2-Dichloropropane	49.3	1.0	50	0	98.6	78 - 122				
1,3,5-Trimethylbenzene	45.23	1.0	50	0	90.5	75 - 124				
1,3-Dichlorobenzene	47.09	1.0	50	0	94.2	80 - 119				
1,3-Dichloropropane	50.58	1.0	50	0	101	80 - 119				
1,4-Dichlorobenzene	46.62	1.0	50	0	93.2	79 - 118				
2,2-Dichloropropane	52.93	1.0	50	0	106	60 - 139				
2-Butanone	104.9	2.0	100	0	105	56 - 143				
2-Chlorotoluene	54.24	1.0	50	0	108	79 - 122				
2-Hexanone	100.9	2.0	100	0	101	57 - 139				
4-Chlorotoluene	54.41	1.0	50	0	109	78 - 122				
4-Isopropyltoluene	46.28	1.0	50	0	92.6	77 - 127				
4-Methyl-2-pentanone	96.83	2.0	100	0	96.8	67 - 130				
Acetone	103.8	2.0	100	0	104	39 - 160				
Benzene	48.99	1.0	50	0	98.0	79 - 120				
Bromobenzene	47.64	1.0	50	0	95.3	80 - 120				
Bromochloromethane	54.29	1.0	50	0	109	78 - 123				
Bromodichloromethane	51.64	1.0	50	0	103	79 - 125				
Bromoform	53.6	1.0	50	0	107	66 - 130				
Bromomethane	44.04	1.0	50	0	88.1	53 - 141				

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315769** SeqNo: **4550436** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	100.5	2.0	100	0	101	64 - 133				
Carbon tetrachloride	46.4	1.0	50	0	92.8	72 - 136				
Chlorobenzene	48.77	1.0	50	0	97.5	82 - 118				
Chloroethane	55.58	1.0	50	0	111	60 - 138				
Chloroform	49.98	1.0	50	0	100.0	79 - 124				
Chloromethane	56.51	1.0	50	0	113	50 - 139				
cis-1,2-Dichloroethene	51.9	1.0	50	0	104	78 - 123				
cis-1,3-Dichloropropene	54.69	1.0	50	0	109	75 - 124				
Dibromochloromethane	52.72	1.0	50	0	105	74 - 126				
Dibromomethane	53.92	1.0	50	0	108	79 - 123				
Dichlorodifluoromethane	53.98	1.0	50	0	108	32 - 152				
Ethylbenzene	47.39	1.0	50	0	94.8	79 - 121				
Hexachlorobutadiene	46.75	1.0	50	0	93.5	66 - 134				
Isopropylbenzene	48.7	1.0	50	0	97.4	72 - 131				
m,p-Xylene	115.6	2.0	100	0	116	80 - 121				
Methylene chloride	46.96	2.0	50	0	93.9	74 - 124				
Naphthalene	49.21	1.0	50	0	98.4	61 - 128				
n-Butylbenzene	48.48	1.0	50	0	97.0	75 - 128				
n-Propylbenzene	45.69	1.0	50	0	91.4	76 - 126				
o-Xylene	48.94	1.0	50	0	97.9	78 - 122				
sec-Butylbenzene	46.71	1.0	50	0	93.4	77 - 126				
Styrene	50.64	1.0	50	0	101	78 - 123				
tert-Butylbenzene	45.12	1.0	50	0	90.2	78 - 124				
Tetrachloroethene	48.02	1.0	50	0	96.0	74 - 129				
Toluene	47.45	1.0	50	0	94.9	80 - 121				
trans-1,2-Dichloroethene	54.65	1.0	50	0	109	75 - 124				
trans-1,3-Dichloropropene	56.91	1.0	50	0	114	73 - 127				
Trichloroethene	51.48	1.0	50	0	103	79 - 123				
Trichlorofluoromethane	53.39	1.0	50	0	107	65 - 141				
Vinyl chloride	50.83	1.0	50	0	102	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.05*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.96*	*1.0*	*50*	*0*	*114*	*85 - 114*				
Surr: Dibromofluoromethane	*50.21*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*51.58*	*1.0*	*50*	*0*	*103*	*89 - 112*				

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: **LH18/24-SP650_050318** Run ID: **VOA2_315769** SeqNo: **4550798** 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	48.07	1.0	50	0	96.1	78 - 124				
1,1,1-Trichloroethane	53.93	1.0	50	0	108	74 - 131				
1,1,2,2-Tetrachloroethane	42.99	1.0	50	0	86.0	71 - 121				
1,1,2-Trichloroethane	47.09	1.0	50	0	94.2	80 - 119				
1,1-Dichloroethane	49.21	1.0	50	0	98.4	77 - 125				
1,1-Dichloroethene	57	1.0	50	0	114	71 - 131				
1,1-Dichloropropene	47.16	1.0	50	0	94.3	78 - 125				
1,2,3-Trichlorobenzene	39.17	1.0	50	0	78.3	69 - 129				
1,2,3-Trichloropropane	52.41	1.0	50	0	105	73 - 122				
1,2,4-Trichlorobenzene	38.68	1.0	50	0	77.4	69 - 130				
1,2,4-Trimethylbenzene	51.55	1.0	50	0	103	76 - 124				
1,2-Dibromo-3-chloropropane	46.7	1.0	50	0	93.4	62 - 128				
1,2-Dibromoethane	49.09	1.0	50	0	98.2	77 - 121				
1,2-Dichlorobenzene	43.23	1.0	50	0	86.5	80 - 119				
1,2-Dichloroethane	50.24	1.0	50	0	100	73 - 128				
1,2-Dichloropropane	48.36	1.0	50	0	96.7	78 - 122				
1,3,5-Trimethylbenzene	43.58	1.0	50	0	87.2	75 - 124				
1,3-Dichlorobenzene	42.12	1.0	50	0	84.2	80 - 119				
1,3-Dichloropropane	47.93	1.0	50	0	95.9	80 - 119				
1,4-Dichlorobenzene	40.56	1.0	50	0	81.1	79 - 118				
2,2-Dichloropropane	54.15	1.0	50	0	108	60 - 139				
2-Butanone	95.33	2.0	100	6.139	89.2	56 - 143				
2-Chlorotoluene	50.57	1.0	50	0	101	79 - 122				
2-Hexanone	104.3	2.0	100	0	104	57 - 139				
4-Chlorotoluene	50.38	1.0	50	0	101	78 - 122				
4-Isopropyltoluene	45.88	1.0	50	0	91.8	77 - 127				
4-Methyl-2-pentanone	101.9	2.0	100	0	102	67 - 130				
Acetone	98	2.0	100	11.45	86.6	39 - 160				
Benzene	48.28	1.0	50	0	96.6	79 - 120				
Bromobenzene	43.82	1.0	50	0	87.6	80 - 120				
Bromochloromethane	52.49	1.0	50	0	105	78 - 123				
Bromodichloromethane	49.34	1.0	50	0	98.7	79 - 125				
Bromoform	48.34	1.0	50	0	96.7	66 - 130				
Bromomethane	27.84	1.0	50	0	55.7	53 - 141				

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: **LH18/24-SP650_050318** Run ID: **VOA2_315769** SeqNo: **4550798** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	106.4	2.0	100	0	106	64 - 133				
Carbon tetrachloride	50.16	1.0	50	0	100	72 - 136				
Chlorobenzene	46.19	1.0	50	0	92.4	82 - 118				
Chloroethane	49.99	1.0	50	0	100.0	60 - 138				
Chloroform	48.69	1.0	50	0	97.4	79 - 124				
Chloromethane	48.23	1.0	50	0	96.5	50 - 139				
cis-1,2-Dichloroethene	54.02	1.0	50	3.843	100	78 - 123				
cis-1,3-Dichloropropene	51.99	1.0	50	0	104	75 - 124				
Dibromochloromethane	49.03	1.0	50	0	98.1	74 - 126				
Dibromomethane	51.26	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	53.77	1.0	50	0	108	32 - 152				
Ethylbenzene	47.26	1.0	50	0	94.5	79 - 121				
Hexachlorobutadiene	41.83	1.0	50	0	83.7	66 - 134				
Isopropylbenzene	49.52	1.0	50	0	99.0	72 - 131				
m,p-Xylene	113.8	2.0	100	0	114	80 - 121				
Methylene chloride	45.95	2.0	50	0	91.9	74 - 124				
Naphthalene	42.51	1.0	50	0	85.0	61 - 128				
n-Butylbenzene	46.03	1.0	50	0	92.1	75 - 128				
n-Propylbenzene	44.77	1.0	50	0	89.5	76 - 126				
o-Xylene	47.58	1.0	50	0	95.2	78 - 122				
sec-Butylbenzene	46.61	1.0	50	0	93.2	77 - 126				
Styrene	46.55	1.0	50	0	93.1	78 - 123				
tert-Butylbenzene	46.42	1.0	50	0	92.8	78 - 124				
Tetrachloroethene	49.74	1.0	50	0	99.5	74 - 129				
Toluene	46.9	1.0	50	0.3202	93.2	80 - 121				
trans-1,2-Dichloroethene	55.8	1.0	50	0	112	75 - 124				
trans-1,3-Dichloropropene	52.22	1.0	50	0	104	73 - 127				
Trichloroethene	54.64	1.0	50	2.291	105	79 - 123				
Trichlorofluoromethane	56.7	1.0	50	0	113	65 - 141				
Vinyl chloride	53.38	1.0	50	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.66*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.63*	*1.0*	*50*	*0*	*113*	*85 - 114*				
Surr: Dibromofluoromethane	*50.76*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*51.44*	*1.0*	*50*	*0*	*103*	*89 - 112*				

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: **LH18/24-SP650_050318** Run ID: **VOA2_315769** SeqNo: **4550799** 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	48.39	1.0	50	0	96.8	78 - 124	48.07	0.649	20	
1,1,1-Trichloroethane	53.9	1.0	50	0	108	74 - 131	53.93	0.0482	20	
1,1,2,2-Tetrachloroethane	44.05	1.0	50	0	88.1	71 - 121	42.99	2.43	20	
1,1,2-Trichloroethane	48.01	1.0	50	0	96.0	80 - 119	47.09	1.92	20	
1,1-Dichloroethane	49.44	1.0	50	0	98.9	77 - 125	49.21	0.46	20	
1,1-Dichloroethene	56.19	1.0	50	0	112	71 - 131	57	1.43	20	
1,1-Dichloropropene	46.98	1.0	50	0	94.0	78 - 125	47.16	0.366	20	
1,2,3-Trichlorobenzene	40.13	1.0	50	0	80.3	69 - 129	39.17	2.43	20	
1,2,3-Trichloropropane	52.55	1.0	50	0	105	73 - 122	52.41	0.269	20	
1,2,4-Trichlorobenzene	38.58	1.0	50	0	77.2	69 - 130	38.68	0.269	20	
1,2,4-Trimethylbenzene	52.13	1.0	50	0	104	76 - 124	51.55	1.13	20	
1,2-Dibromo-3-chloropropane	48.78	1.0	50	0	97.6	62 - 128	46.7	4.34	20	
1,2-Dibromoethane	50.31	1.0	50	0	101	77 - 121	49.09	2.45	20	
1,2-Dichlorobenzene	43.39	1.0	50	0	86.8	80 - 119	43.23	0.356	20	
1,2-Dichloroethane	49.16	1.0	50	0	98.3	73 - 128	50.24	2.17	20	
1,2-Dichloropropane	47.68	1.0	50	0	95.4	78 - 122	48.36	1.4	20	
1,3,5-Trimethylbenzene	43.95	1.0	50	0	87.9	75 - 124	43.58	0.852	20	
1,3-Dichlorobenzene	41.83	1.0	50	0	83.7	80 - 119	42.12	0.709	20	
1,3-Dichloropropane	48.75	1.0	50	0	97.5	80 - 119	47.93	1.68	20	
1,4-Dichlorobenzene	40.71	1.0	50	0	81.4	79 - 118	40.56	0.37	20	
2,2-Dichloropropane	53.15	1.0	50	0	106	60 - 139	54.15	1.87	20	
2-Butanone	97.63	2.0	100	6.139	91.5	56 - 143	95.33	2.38	20	
2-Chlorotoluene	50.47	1.0	50	0	101	79 - 122	50.57	0.203	20	
2-Hexanone	108.8	2.0	100	0	109	57 - 139	104.3	4.28	20	
4-Chlorotoluene	49.72	1.0	50	0	99.4	78 - 122	50.38	1.32	20	
4-Isopropyltoluene	45.8	1.0	50	0	91.6	77 - 127	45.88	0.18	20	
4-Methyl-2-pentanone	106.2	2.0	100	0	106	67 - 130	101.9	4.14	20	
Acetone	100.1	2.0	100	11.45	88.7	39 - 160	98	2.13	20	
Benzene	48.17	1.0	50	0	96.3	79 - 120	48.28	0.229	20	
Bromobenzene	43.62	1.0	50	0	87.2	80 - 120	43.82	0.452	20	
Bromochloromethane	51.79	1.0	50	0	104	78 - 123	52.49	1.34	20	
Bromodichloromethane	48.76	1.0	50	0	97.5	79 - 125	49.34	1.2	20	
Bromoform	48.94	1.0	50	0	97.9	66 - 130	48.34	1.24	20	
Bromomethane	27.99	1.0	50	0	56.0	53 - 141	27.84	0.544	20	

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R315769 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: **LH18/24-SP650_050318** Run ID: **VOA2_315769** SeqNo: **4550799** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	105.5	2.0	100	0	105	64 - 133	106.4	0.885	20	
Carbon tetrachloride	49.89	1.0	50	0	99.8	72 - 136	50.16	0.535	20	
Chlorobenzene	46.46	1.0	50	0	92.9	82 - 118	46.19	0.575	20	
Chloroethane	49.3	1.0	50	0	98.6	60 - 138	49.99	1.4	20	
Chloroform	48.7	1.0	50	0	97.4	79 - 124	48.69	0.0111	20	
Chloromethane	46.37	1.0	50	0	92.7	50 - 139	48.23	3.93	20	
cis-1,2-Dichloroethene	54.35	1.0	50	3.843	101	78 - 123	54.02	0.601	20	
cis-1,3-Dichloropropene	50.92	1.0	50	0	102	75 - 124	51.99	2.07	20	
Dibromochloromethane	49.39	1.0	50	0	98.8	74 - 126	49.03	0.743	20	
Dibromomethane	51.84	1.0	50	0	104	79 - 123	51.26	1.12	20	
Dichlorodifluoromethane	52.97	1.0	50	0	106	32 - 152	53.77	1.49	20	
Ethylbenzene	46.59	1.0	50	0	93.2	79 - 121	47.26	1.42	20	
Hexachlorobutadiene	43.05	1.0	50	0	86.1	66 - 134	41.83	2.86	20	
Isopropylbenzene	49.1	1.0	50	0	98.2	72 - 131	49.52	0.852	20	
m,p-Xylene	113	2.0	100	0	113	80 - 121	113.8	0.749	20	
Methylene chloride	46.42	2.0	50	0	92.8	74 - 124	45.95	1.02	20	
Naphthalene	44.27	1.0	50	0	88.5	61 - 128	42.51	4.06	20	
n-Butylbenzene	45.99	1.0	50	0	92.0	75 - 128	46.03	0.0724	20	
n-Propylbenzene	44.76	1.0	50	0	89.5	76 - 126	44.77	0.0215	20	
o-Xylene	47.66	1.0	50	0	95.3	78 - 122	47.58	0.168	20	
sec-Butylbenzene	46.4	1.0	50	0	92.8	77 - 126	46.61	0.46	20	
Styrene	46.34	1.0	50	0	92.7	78 - 123	46.55	0.461	20	
tert-Butylbenzene	46.44	1.0	50	0	92.9	78 - 124	46.42	0.035	20	
Tetrachloroethene	50.15	1.0	50	0	100	74 - 129	49.74	0.815	20	
Toluene	46.89	1.0	50	0.3202	93.1	80 - 121	46.9	0.0175	20	
trans-1,2-Dichloroethene	53.97	1.0	50	0	108	75 - 124	55.8	3.34	20	
trans-1,3-Dichloropropene	52.61	1.0	50	0	105	73 - 127	52.22	0.741	20	
Trichloroethene	54.54	1.0	50	2.291	105	79 - 123	54.64	0.176	20	
Trichlorofluoromethane	56.92	1.0	50	0	114	65 - 141	56.7	0.395	20	
Vinyl chloride	52.38	1.0	50	0	105	58 - 137	53.38	1.88	20	
Surr: 1,2-Dichloroethane-d4	*53.35*	*1.0*	*50*	*0*	*107*	*81 - 118*	*52.66*	*1.3*	*20*	
Surr: 4-Bromofluorobenzene	*56.96*	*1.0*	*50*	*0*	*114*	*85 - 114*	*56.63*	*0.584*	*20*	
Surr: Dibromofluoromethane	*50.54*	*1.0*	*50*	*0*	*101*	*80 - 119*	*50.76*	*0.447*	*20*	
Surr: Toluene-d8	*51.37*	*1.0*	*50*	*0*	*103*	*89 - 112*	*51.44*	*0.129*	*20*	

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

ALS Group Houston, Corp Date: 14-May-18

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant
WorkOrder:	HS18050260

QC BATCH REPORT

Batch ID:	**R315769**	**Instrument:**	**VOA2**	**Method:**	**SW8260**

The following samples were analyzed in this batch: HS18050260-01 HS18050260-02

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050260

QC BATCH REPORT

Batch ID: R316100 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW3-051118** Units: **mg/L** Analysis Date: **12-May-2018 18:45**
Client ID: Run ID: **ICS2100_316100** SeqNo: **4558390** 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: **WLCSW3-051118** Units: **mg/L** Analysis Date: **12-May-2018 19:00**
Client ID: Run ID: **ICS2100_316100** SeqNo: **4558391** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.7	0.500	20	0	109	80 - 120				
Sulfate	21.02	0.500	20	0	105	80 - 120				

LCSD Sample ID: **WLCSDW3-051118** Units: **mg/L** Analysis Date: **12-May-2018 19:14**
Client ID: Run ID: **ICS2100_316100** SeqNo: **4558392** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.02	0.500	20	0	100	80 - 120	21.7	8.08	20	
Sulfate	19.54	0.500	20	0	97.7	80 - 120	21.02	7.26	20	

MS Sample ID: **HS18050618-07MS** Units: **mg/L** Analysis Date: **12-May-2018 20:13**
Client ID: Run ID: **ICS2100_316100** SeqNo: **4558396** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	125.4	0.500	10	118	74.1	80 - 120				SEO
Sulfate	97.34	0.500	10	89.5	78.5	80 - 120				SO

MSD Sample ID: **HS18050618-07MSD** Units: **mg/L** Analysis Date: **12-May-2018 20:27**
Client ID: Run ID: **ICS2100_316100** SeqNo: **4558397** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	132.4	0.500	10	118	145	80 - 120	125.4	5.5	20	SEO
Sulfate	102.9	0.500	10	89.5	134	80 - 120	97.34	5.59	20	SEO

The following samples were analyzed in this batch: HS18050260-01

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

ALS Group Houston, Corp Date: 14-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18050260**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018

Date: 14-May-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**04-May-2018 08:35**
Work Order:	HS18050260	Received by:	**RPG**

Checklist completed by:	*Pablo Marinez* eSignature	4-May-2018 Date	Reviewed by:	*RJ Modashia* eSignature	7-May-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	1.1C/0.7C UC/C	IR # 30	
Cooler(s)/Kit(s):	3106		
Date/Time sample(s) sent to storage:	5/4/2018 18:10		
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:

HS18050260

CHAIN OF CUSTODY

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210, Houston, Tx. 77099 ATTN: SONIA WEST

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_050318	Water	05/03/18 / 14:00		3	3		HCL	
LH18/24-SP650_050318	Water	05/03/18 / 14:00		1		1	NONE	
Trip Blank	Water	05/03/18		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	05/03/18	14:30	R Cigo	5/4/18	08:35						

9For Lab Use Only

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

Remarks: cooler # 3106 IR# 35 CF - 0.4. Temp 1.1c

(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

3106

CUSTODY SEAL
Date: 5/3/18 Time: 1430
Name: Scott Beesinger
Company: ALS

Seal Broken By:
Date: 05/04/18

3106 MAY 0 4 2018

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656

3106

REF: ADDITIONAL COOLERS - RJ
RMA:

FedEx Express

FedEx
TRK# 9221 4380 9528 6326

RETURNS MON - SAT
FRI - 04 MAY 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID 162385 03MAY18 G6GA 549C2/7B2B/8C6A

Volatile Organics Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18050260

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (DCE) #	OTHER #	TOT OUT
01	VLCSW-180507	100	103	104	114	0
02	VBLKW-180507	107	108	99	109	0
03	HS18050260-02	107	107	100	110	0
04	HS18050260-01	107	107	103	111	0
05	HS18050260-01	102	103	105	113	0
06	HS18050260-01	101	103	107	114	0
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		QC LIMITS
SMC1	= Dibromofluoromethane	(85-115)
SMC2 (TOL)	= Toluene-d8	(85-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-120)
OTHER	= 4-Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.00	53.10	106	80-120
1,2-Dichloroethylene (t	100.00	104.13	104	80-120
Chloromethane	50.00	53.68	107	80-120
Vinyl Chloride	50.00	51.64	103	80-120
Bromomethane	50.00	41.07	82	80-120
Chloroethane	50.00	53.92	108	80-120
Trichlorofluoromethane	50.00	54.87	110	80-120
Acetone	100.00	102.09	102	80-120
1,1-Dichloroethene	50.00	52.72	105	80-120
Methylene Chloride	50.00	46.67	93	80-120
Methyl tert-butyl ether	50.00	48.16	96	80-120
Carbon Disulfide	100.00	100.30	100	80-120
trans-1,2-Dichloroethen	50.00	54.01	108	80-120
1,1-Dichloroethane	50.00	48.95	98	80-120
2-Butanone	100.00	100.51	100	80-120
2,2-Dichloropropane	50.00	51.46	103	80-120
cis-1,2-Dichloroethene	50.00	50.11	100	80-120
Chloroform	50.00	48.73	97	80-120
Bromochloromethane	50.00	52.79	106	80-120
1,1,1-Trichloroethane	50.00	51.43	103	80-120
1,1-Dichloropropene	50.00	45.16	90	80-120
1,2-Dichloroethane	50.00	49.32	99	80-120
Carbon Tetrachloride	50.00	48.06	96	80-120
Benzene	50.00	46.61	93	80-120
Trichloroethene	50.00	50.16	100	80-120
Bromodichloromethane	50.00	48.33	97	80-120
1,2-Dichloropropane	50.00	46.53	93	80-120
Dibromomethane	50.00	50.99	102	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
4-Methyl-2-Pentanone	100.00	92.91	93	80-120
cis-1,3-Dichloropropene	50.00	51.55	103	80-120
Toluene	50.00	45.47	91	80-120
trans-1,3-Dichloroprope	50.00	54.22	108	80-120
2-Hexanone	100.00	97.97	98	80-120
1,1,2-Trichloroethane	50.00	47.82	96	80-120
1,3-Dichloropropane	50.00	48.02	96	80-120
Dibromochloromethane	50.00	49.92	100	80-120
Tetrachloroethene	50.00	49.00	98	80-120
1,2-Dibromoethane	50.00	50.23	100	80-120
1-Chlorohexane	50.00	54.93	110	80-120
Chlorobenzene	50.00	46.33	93	80-120
1,1,1,2-Tetrachloroetha	50.00	48.27	96	80-120
Ethylbenzene	50.00	47.18	94	80-120
m,p-Xylenes	100.00	112.80	113	80-120
o-Xylene	50.00	47.82	96	80-120
Styrene	50.00	49.10	98	80-120
Bromoform	50.00	50.99	102	80-120
Isopropylbenzene	50.00	48.27	96	80-120
1,1,2,2-Tetrachloroetha	50.00	45.64	91	80-120
1,2,3-Trichloropropane	50.00	52.24	104	80-120
n-Propylbenzene	50.00	47.44	95	80-120
Bromobenzene	50.00	48.25	96	80-120
1,3,5-Trimethylbenzene	50.00	46.77	94	80-120
2-Chlorotoluene	50.00	54.60	109	80-120
4-Chlorotoluene	50.00	55.63	111	80-120
tert-Butylbenzene	50.00	47.99	96	80-120
1,2,4-Trimethylbenzene	50.00	56.40	113	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
sec-Butylbenzene	50.00	50.01	100	80-120
p-Isopropyltoluene	50.00	49.43	99	80-120
1,3-Dichlorobenzene	50.00	48.13	96	80-120
1,4-Dichlorobenzene	50.00	47.22	94	80-120
n-Butylbenzene	50.00	51.85	104	80-120
1,2-Dichlorobenzene	50.00	48.27	96	80-120
1,2-Dibromo-3-Chloropro	50.00	52.00	104	80-120
1,2,4-Trichlorobenzene	50.00	52.35	105	80-120
Hexachlorobutadiene	50.00	52.20	104	80-120
Naphthalene	50.00	51.79	104	80-120
1,2,3-Trichlorobenzene	50.00	49.83	100	80-120
Methyl acetate	50.00	47.14	94	80-120
Freon TF	50.00	54.31	109	80-120
Methylcyclohexane	50.00	49.74	99	80-120
Cyclohexane	50.00	53.79	108	80-120
Xylenes (total)	150.00	160.63	107	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

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FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Lab File ID: D050401 BFB Injection Date: 05/04/18

Instrument ID: VOA2 BFB Injection Time: 1455

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.5
75	30.0 - 60.0% of mass 95	48.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.5
175	5.0 - 9.0% of mass 174	7.0 (8.4)1
176	95.0 - 101.0% of mass 174	79.9 (95.7)1
177	5.0 - 9.0% of mass 176	5.9 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD00.5	VSTD00.5	D050402	05/04/18	1519
02	VSTD001	VSTD001	D050403	05/04/18	1543
03	VSTD002	VSTD002	D050404	05/04/18	1608
04	VSTD005	VSTD005	D050405	05/04/18	1632
05	VSTD010	VSTD010	D050406	05/04/18	1656
06	VSTD020	VSTD020	D050407	05/04/18	1721
07	VSTD050	VSTD050	D050408	05/04/18	1745
08	VSTD100	VSTD100	D050409	05/04/18	1809
09	VSTD200	VSTD200	D050410	05/04/18	1834
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FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
Iodomethane	908	1852	4199	13424	36689	95749
Dichlorodifluoromethane	811	2981	7390	16634	34343	71401
1,2-Dichloroethylene (total)	0.477	0.480	0.437	0.495	0.326	0.514
Chloromethane	4673	8950	15710	36344	63352	130241
tert-Amyl alcohol	0.040	0.041	0.038	0.043	0.038	0.044
Vinyl Chloride	0.566	0.640	0.620	0.642	0.631	0.702
Bromomethane	0.422	0.420	0.385	0.409	0.351	0.354
Chloroethane	826	2325	6397	11400	24091	55952
tert-Butyl ethyl ether	0.793	0.830	0.754	0.854	0.754	0.875
Trichlorofluoromethane	0.409	0.581	0.574	0.589	0.609	0.697
Acrolein	526	1199	3349	8739	16945	33060
Acetone	3867	5388	7902	14626	26679	49743
1,1-Dichloroethene	0.321	0.368	0.348	0.415	0.387	0.404
Isobutyl Alcohol	60	176	300	1867	3536	7038
Acetonitrile	0.067	0.070	0.066	0.055	0.058	0.064
Allyl Chloride	1.724	1.875	1.637	1.454	1.404	1.663
Acrylonitrile	0.168	0.218	0.216	0.267	0.175	0.236
Methylene Chloride	0.622	0.641	0.544	0.540	0.464	0.516
Methyl tert-butyl ether	1.528	1.675	1.388	1.520	1.347	1.508
Carbon Disulfide	0.923	0.899	0.845	0.877	0.821	0.915
trans-1,2-Dichloroethene	1429	3416	6251	16439	14477	65763
Vinyl Acetate	0.672	0.766	0.622	0.717	0.591	0.695
1,1-Dichloroethane	1.020	1.096	0.952	1.090	0.958	1.053
2-Butanone	0.234	0.264	0.225	0.283	0.250	0.286
Methacrylonitrile	0.672	0.668	0.554	0.668	0.583	0.650
2,2-Dichloropropane	0.565	0.670	0.691	0.723	0.665	0.754
cis-1,2-Dichloroethene	0.580	0.509	0.492	0.544	0.462	0.557
Chloroform	0.908	0.906	0.890	0.933	0.828	0.906
Bromochloromethane	0.240	0.241	0.216	0.275	0.242	0.266
tert-Amyl methyl ether	1.717	1.817	1.607	1.788	1.607	1.722
1,1,1-Trichloroethane	0.677	0.720	0.714	0.759	0.711	0.800
1,1-Dichloropropene	0.576	0.569	0.417	0.418	0.390	0.410
1,2-Dichloroethane	0.502	0.553	0.412	0.517	0.463	0.490
Carbon Tetrachloride	0.553	0.435	0.449	0.459	0.413	0.448
3,3-Dimethyl-1-butanol	0.034	0.033	0.028	0.032	0.031	0.036
Benzene	1.454	1.456	1.303	1.404	1.188	1.292
Trichloroethene	0.338	0.339	0.325	0.344	0.314	0.350
Bromodichloromethane	0.500	0.510	0.449	0.498	0.438	0.482
Methyl Methacrylate	0.603	0.596	0.549	0.618	0.561	0.641
2-Chloroethylvinyl ether	0.065	0.059	0.057	0.064	0.054	0.059
1,2-Dichloropropane	0.426	0.420	0.385	0.428	0.358	0.396
tert-Butyl formate	0.938	0.952	0.880	0.940	0.830	0.921
Dibromomethane	0.173	0.194	0.181	0.211	0.185	0.202
4-Methyl-2-Pentanone	0.521	0.508	0.461	0.493	0.425	0.478

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
cis-1,3-Dichloropropene	0.512	0.502	0.478	0.572	0.499	0.554
1,3,5-Trichlorobenzene	1.173	1.011	0.942	1.305	0.993	1.155
Ethyl Methacrylate	4038	6033	11086	28787	50649	104310
Toluene	1.873	1.750	1.559	1.678	1.440	1.537
trans-1,3-Dichloropropene	0.348	0.431	0.378	0.479	0.408	0.461
2-Hexanone	0.309	0.302	0.275	0.310	0.262	0.301
1,1,2-Trichloroethane	0.294	0.328	0.291	0.316	0.274	0.289
1,3-Dichloropropane	0.616	0.619	0.562	0.621	0.551	0.587
Dibromochloromethane	0.432	0.432	0.405	0.465	0.402	0.437
Tetrachloroethene	0.363	0.305	0.311	0.312	0.290	0.315
1,2-Dibromoethane	0.366	0.367	0.341	0.396	0.336	0.378
1-Chlorohexane	7042	8884	5291	23114	41316	79441
Chlorobenzene	1.221	1.062	0.956	1.037	0.875	0.954
1,1,1,2-Tetrachloroethane	0.391	0.406	0.375	0.430	0.367	0.388
Ethylbenzene	0.662	0.572	0.505	0.558	0.477	0.514
m,p-Xylenes	8714	14801	28486	70246	125344	249353
o-Xylene	0.770	0.691	0.652	0.721	0.619	0.654
Styrene	1.154	1.060	1.058	1.186	1.007	1.086
Bromoform	0.270	0.321	0.286	0.321	0.285	0.320
Isopropylbenzene	1.809	1.752	1.516	1.680	1.496	1.636
1,1,2,2-Tetrachloroethane	1.249	1.257	1.127	1.254	1.030	1.134
Ethanol	0.050	0.054	0.032	0.044	0.042	0.047
1,2,3-Trichloropropane	5517	4425	6121	12511	23472	44805
trans-1,4-Dichloro-2-butene	308	721	2058	5862	10789	23370
n-Propylbenzene	4.670	4.367	3.905	4.332	3.679	3.989
Bromobenzene	1.148	1.054	1.034	1.135	0.926	1.009
1,3,5-Trimethylbenzene	3.665	3.191	2.986	3.384	2.789	3.016
2-Chlorotoluene	7021	12620	24838	60449	108687	221609
4-Chlorotoluene	7552	13276	25669	66016	121891	243997
tert-Butylbenzene	3.007	2.534	2.277	2.752	2.289	2.511
1,2,4-Trimethylbenzene	8310	14136	27909	72111	127826	260489
sec-Butylbenzene	3.744	3.179	3.083	3.717	3.162	3.452
p-Isopropyltoluene	3.256	2.780	2.637	3.168	2.640	2.896
1,3-Dichlorobenzene	2.147	1.820	1.698	1.838	1.549	1.710
1,4-Dichlorobenzene	2.214	1.797	1.579	1.719	1.481	1.607
n-Butylbenzene	2.358	1.972	1.802	2.510	1.995	2.221
1,2-Dichlorobenzene	1.792	1.720	1.603	1.806	1.534	1.673
1,2-Dibromo-3-Chloropropane	0.158	0.152	0.162	0.191	0.173	0.192
1,2,4-Trichlorobenzene	643	1481	4916	18861	35798	79809
Hexachlorobutadiene	1253	1556	3032	10646	16436	35809
Naphthalene	1615	1823	4856	35272	83218	198251
1,2,3-Trichlorobenzene	411	946	3702	16133	30812	66775
Methyl acetate	0.627	0.677	0.595	0.665	0.529	0.596
Freon TF	1062	2610	4698	13149	30530	61420

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
1,2,3-Trimethylbenzene	3.625	2.970	2.800	3.095	2.586	2.862
Methylcyclohexane	0.494	0.445	0.404	0.436	0.435	0.477
1,4-Dioxane	113	690	1405	3801	6381	13691
n-Butanol	0.021	0.023	0.015	0.019	0.016	0.019
Methyl Acrylate	0.740	0.808	0.754	0.858	0.836	0.940
Ethyl Acrylate	1.553	1.469	1.439	1.524	1.503	1.659
n-Hexane	0.522	0.576	0.555	0.552	0.588	0.672
Cyclohexane	0.786	0.777	0.816	0.752	0.848	0.957
Isopropyl alcohol	0.042	0.041	0.037	0.040	0.035	0.038
Tert-butyl alcohol	0.063	0.066	0.048	0.063	0.053	0.064
Xylenes (total)	0.743	0.646	0.588	0.643	0.543	0.577
Propionitrile	0.178	0.183	0.167	0.170	0.157	0.184
2-Nitropropane	1.339	1.318	1.220	1.324	1.167	1.340
Ethyl Acetate	1.334	1.378	1.196	1.196	1.179	1.324
Diethyl ether	0.801	1.023	0.886	0.962	0.876	0.949
Tetrahydrofuran	0.181	0.230	0.200	0.219	0.192	0.212
4-Methyl-2-pentanol	0.100	0.101	0.091	0.105	0.090	0.106
Diisopropyl ether	2.277	2.461	1.971	2.288	2.021	2.230
2-Methylnaphthalene	948	734	1017	2313	4532	17472
Dichlorofluoromethane	0.956	1.036	0.892	0.964	0.856	0.983
1-Methylnaphthalene	844	914	1005	2396	4903	22016
Isobutylene		0.441	0.446	0.518	0.499	0.596
Dibromofluoromethane		4558	7916	18421	34934	66765
Toluene-d8		23273	34734	74973	138297	257970
1,2-Dichloroethane-d4	4399	5880	9916	23445	43519	86791
4-Bromofluorobenzene	11709	9609	13070	28190	50489	96704

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
Iodomethane	287361	593037	1249302
Dichlorodifluoromethane	187813	343934	702772
1,2-Dichloroethylene (total)	0.511	0.443	0.441
Chloromethane	317456	602360	1207423
tert-Amyl alcohol	0.044	0.042	0.039
Vinyl Chloride	0.679	0.566	0.565
Bromomethane	0.339	0.273	
Chloroethane	136214	254833	499449
tert-Butyl ethyl ether	0.886	0.838	0.786
Trichlorofluoromethane	0.706	0.571	0.576
Acrolein	84761	191202	381410
Acetone	125590	250202	492850
1,1-Dichloroethene	0.432	0.360	0.363
Isobutyl Alcohol	17826	39310	
Acetonitrile	0.068	0.063	0.062
Allyl Chloride	1.762	1.566	1.557
Acrylonitrile	0.259	0.227	0.231
Methylene Chloride	0.522	0.458	0.448
Methyl tert-butyl ether	1.474	1.287	1.250
Carbon Disulfide	0.924	0.784	0.792
trans-1,2-Dichloroethene	164665	314877	630396
Vinyl Acetate	0.634	0.556	0.539
1,1-Dichloroethane	1.049	0.914	0.903
2-Butanone	0.284	0.263	0.250
Methacrylonitrile	0.641	0.581	0.556
2,2-Dichloropropane	0.758	0.643	0.643
cis-1,2-Dichloroethene	0.552	0.480	0.474
Chloroform	0.897	0.774	0.754
Bromochloromethane	0.278	0.246	0.241
tert-Amyl methyl ether	1.690	1.498	1.416
1,1,1-Trichloroethane	0.812	0.679	0.672
1,1-Dichloropropene	0.411	0.347	0.342
1,2-Dichloroethane	0.475	0.419	0.413
Carbon Tetrachloride	0.436	0.371	0.379
3,3-Dimethyl-1-butanol	0.038	0.034	0.032
Benzene	1.272	1.064	1.004
Trichloroethene	0.353	0.303	0.292
Bromodichloromethane	0.474	0.409	0.394
Methyl Methacrylate	0.636	0.566	0.544
2-Chloroethylvinyl ether	0.057	0.049	0.049
1,2-Dichloropropane	0.381	0.323	0.315
tert-Butyl formate	0.883	0.767	0.769
Dibromomethane	0.208	0.181	0.178
4-Methyl-2-Pentanone	0.459	0.403	0.381

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
cis-1,3-Dichloropropene	0.563	0.488	0.466
1,3,5-Trichlorobenzene	1.148	1.040	1.026
Ethyl Methacrylate	266010	516544	982185
Toluene	1.488	1.249	1.171
trans-1,3-Dichloropropene	0.488	0.433	0.420
2-Hexanone	0.300	0.269	0.258
1,1,2-Trichloroethane	0.293	0.252	0.246
1,3-Dichloropropane	0.572	0.507	0.490
Dibromochloromethane	0.438	0.388	0.381
Tetrachloroethene	0.317	0.267	0.266
1,2-Dibromoethane	0.374	0.336	0.329
1-Chlorohexane	198340	370336	722126
Chlorobenzene	0.936	0.806	0.755
1,1,1,2-Tetrachloroethane	0.389	0.340	0.329
Ethylbenzene	0.508	0.441	0.422
m,p-Xylenes	611125	1138513	2087186
o-Xylene	0.654	0.562	0.531
Styrene	1.062	0.910	0.854
Bromoform	0.318	0.286	0.279
Isopropylbenzene	1.619	1.346	1.238
1,1,2,2-Tetrachloroethane	1.072	0.933	0.915
Ethanol	0.046	0.041	0.038
1,2,3-Trichloropropane	109708	210995	405365
trans-1,4-Dichloro-2-butene	64084	133141	273122
n-Propylbenzene	3.914	3.290	3.150
Bromobenzene	1.002	0.870	0.854
1,3,5-Trimethylbenzene	2.913	2.437	2.300
2-Chlorotoluene	552517	1043252	1946835
4-Chlorotoluene	609251	1137519	2097579
tert-Butylbenzene	2.532	2.100	2.047
1,2,4-Trimethylbenzene	648084	1208466	2216630
sec-Butylbenzene	3.424	2.872	2.768
p-Isopropyltoluene	2.883	2.450	2.371
1,3-Dichlorobenzene	1.699	1.485	1.449
1,4-Dichlorobenzene	1.625	1.438	1.419
n-Butylbenzene	2.281	1.950	1.932
1,2-Dichlorobenzene	1.604	1.381	1.332
1,2-Dibromo-3-Chloropropane	0.199	0.189	0.194
1,2,4-Trichlorobenzene	211499	444824	861637
Hexachlorobutadiene	92968	187228	376631
Naphthalene	525810	1071893	2071564
1,2,3-Trichlorobenzene	177731	381509	758156
Methyl acetate	0.605	0.556	0.543
Freon TF	150866	279713	561005

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
1,2,3-Trimethylbenzene	2.788	2.383	2.294
Methylcyclohexane	0.477	0.392	0.391
1,4-Dioxane	35743	71709	138351
n-Butanol	0.018	0.016	0.016
Methyl Acrylate	0.947	0.848	0.816
Ethyl Acrylate	1.654	1.435	1.404
n-Hexane	0.708	0.594	0.612
Cyclohexane	0.956	0.794	0.793
Isopropyl alcohol	0.038	0.035	0.036
Tert-butyl alcohol	0.065	0.059	0.056
Xylenes (total)	0.568	0.474	
Propionitrile	0.190	0.169	0.160
2-Nitropropane	1.297	1.135	1.062
Ethyl Acetate	1.291	1.113	1.078
Diethyl ether	0.913	0.806	0.775
Tetrahydrofuran	0.209	0.183	0.177
4-Methyl-2-pentanol	0.105	0.088	0.078
Diisopropyl ether	2.179	1.888	1.812
2-Methylnaphthalene	147779	411151	895104
Dichlorofluoromethane	0.968	0.820	0.798
1-Methylnaphthalene	162419	403943	838915
Isobutylene	0.544	0.423	0.405
Dibromofluoromethane	161085	308649	584635
Toluene-d8	611504	1145767	
1,2-Dichloroethane-d4	212338	423867	804250
4-Bromofluorobenzene	235072	459019	852556

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Iodomethane	LINR	8.189e-002	2.46335476		0.9991102	0.9900000
Dichlorodifluoromethane	LINR	-1.92e-002	2.19991391		0.9977154	0.9900000
1,2-Dichloroethylene (total)	AVRG		0.45816206		12.572	15.000
Chloromethane	LINR	-3.53e-002	1.28409200		0.9984324	0.9900000
tert-Amyl alcohol	AVRG		4.095e-002		6.040	20.000
Vinyl Chloride	AVRG		0.62359143		8.051	15.000
Bromomethane	AVRG		0.36929500		13.707	15.000
Chloroethane	LINR	-3.23e-002	3.07923819		0.9973153	0.9900000
tert-Butyl ethyl ether	AVRG		0.81895199		6.040	20.000
Trichlorofluoromethane	AVRG		0.59017758		14.561	15.000
Acrolein	LINR	-7.83e-003	8.11796688		0.9995181	0.9900000
Acetone	LINR	-7.42e-002	6.29263964		0.9993250	0.9900000
1,1-Dichloroethene	AVRG		0.37751366		9.310	15.000
Isobutyl Alcohol	LINR	0.22430274	391.223339		0.9998638	0.9900000
Acetonitrile	AVRG		6.383e-002		7.570	15.000
Allyl Chloride	AVRG		1.62703303		9.186	15.000
Acrylonitrile	AVRG		0.22187087		14.951	15.000
Methylene Chloride	AVRG		0.52836197		12.945	15.000
Methyl tert-butyl ether	AVRG		1.44180586		9.364	15.000
Carbon Disulfide	AVRG		0.86450338		6.448	15.000
trans-1,2-Dichloroethene	LINR	-6.6e-003	2.43638553		0.9974880	0.9900000
Vinyl Acetate	AVRG		0.64364705		11.757	15.000
1,1-Dichloroethane	AVRG		1.00417451		7.347	15.000
2-Butanone	AVRG		0.25994514		8.409	15.000
Methacrylonitrile	AVRG		0.61913674		8.056	15.000
2,2-Dichloropropane	AVRG		0.67900374		9.012	15.000
cis-1,2-Dichloroethene	AVRG		0.51662595		8.236	15.000
Chloroform	AVRG		0.86628053		7.472	15.000
Bromochloromethane	AVRG		0.24932446		7.949	15.000
tert-Amyl methyl ether	AVRG		1.65126939		8.010	20.000
1,1,1-Trichloroethane	AVRG		0.72725901		7.172	15.000
1,1-Dichloropropene	AVRG		0.43095089		19.750	15.000
1,2-Dichloroethane	AVRG		0.47160607		10.508	15.000
Carbon Tetrachloride	AVRG		0.43824169		12.077	15.000
3,3-Dimethyl-1-butanol	AVRG		3.327e-002		8.454	20.000
Benzene	AVRG		1.27097369		12.689	15.000
Trichloroethene	AVRG		0.32898077		6.578	15.000
Bromodichloromethane	AVRG		0.46161921		8.953	15.000
Methyl Methacrylate	AVRG		0.59079374		6.249	15.000
2-Chloroethylvinyl ether	AVRG		5.706e-002		9.715	15.000
1,2-Dichloropropane	AVRG		0.38141520		11.039	15.000
tert-Butyl formate	AVRG		0.87542044		8.216	20.000
Dibromomethane	AVRG		0.19042867		7.347	15.000
4-Methyl-2-Pentanone	AVRG		0.45881731		10.380	15.000

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.51508472		7.544	15.000
1,3,5-Trichlorobenzene	AVRG		1.08812993		10.523	20.000
Ethyl Methacrylate	LINR	-4.54e-002	2.48619322		0.9973218	0.9900000
Toluene	AVRG		1.52725800		14.767	15.000
trans-1,3-Dichloropropene	AVRG		0.42746512		10.662	15.000
2-Hexanone	AVRG		0.28750947		7.279	15.000
1,1,2-Trichloroethane	AVRG		0.28686074		9.303	15.000
1,3-Dichloropropane	AVRG		0.56948690		8.359	15.000
Dibromochloromethane	AVRG		0.42004436		6.527	15.000
Tetrachloroethene	AVRG		0.30523513		9.588	15.000
1,2-Dibromoethane	AVRG		0.35811597		6.487	15.000
1-Chlorohexane	LINR	-5.88e-002	3.40929522		0.9971719	0.9900000
Chlorobenzene	AVRG		0.95571951		14.713	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.37945450		8.252	15.000
Ethylbenzene	AVRG		0.51791421		14.064	15.000
m,p-Xylenes	LINR	-0.1344974	2.04592126		0.9954426	0.9900000
o-Xylene	AVRG		0.65039936		11.401	15.000
Styrene	AVRG		1.04192927		10.200	15.000
Bromoform	AVRG		0.29840970		7.039	15.000
Isopropylbenzene	AVRG		1.56586944		11.898	15.000
1,1,2,2-Tetrachloroethane	AVRG		1.10788977		11.932	15.000
Ethanol	AVRG		4.38e-002		14.407	15.000
1,2,3-Trichloropropane	LINR	-5.21e-002	2.29870153		0.9990095	0.9900000
trans-1,4-Dichloro-2-butene	LINR	1.543e-002	7.89416251		0.9995944	0.9900000
n-Propylbenzene	AVRG		3.92184130		12.699	15.000
Bromobenzene	AVRG		1.00360302		10.434	15.000
1,3,5-Trimethylbenzene	AVRG		2.96468255		14.482	15.000
2-Chlorotoluene	LINR	-4.73e-002	0.47352840		0.9978258	0.9900000
4-Chlorotoluene	LINR	-5.33e-002	0.43852809		0.9971166	0.9900000
tert-Butylbenzene	AVRG		2.44993705		12.577	15.000
1,2,4-Trimethylbenzene	LINR	-5.59e-002	0.41467645		0.9968763	0.9900000
sec-Butylbenzene	AVRG		3.26693980		10.529	15.000
p-Isopropyltoluene	AVRG		2.78673905		10.739	15.000
1,3-Dichlorobenzene	AVRG		1.71066117		12.475	15.000
1,4-Dichlorobenzene	AVRG		1.65308224		14.795	15.000
n-Butylbenzene	AVRG		2.11326574		11.193	15.000
1,2-Dichlorobenzene	AVRG		1.60513122		10.398	15.000
1,2-Dibromo-3-Chloropropane	AVRG		0.17885592		9.980	15.000
1,2,4-Trichlorobenzene	LINR	8.689e-003	1.06786014		0.9998126	0.9900000
Hexachlorobutadiene	LINR	-5.59e-004	2.46565106		0.9992458	0.9900000
Naphthalene	LINR	1.026e-002	0.44283851		0.9994513	0.9900000
1,2,3-Trichlorobenzene	LINR	2.046e-002	1.21724769		0.9997504	0.9900000
Methyl acetate	AVRG		0.59921227		8.570	15.000
Freon TF	LINR	-2.9e-002	2.75277887		0.9976496	0.9900000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,2,3-Trimethylbenzene	AVRG		2.82248193		14.128	15.000
Methylcyclohexane	AVRG		0.43895621		8.674	15.000
1,4-Dioxane	LINR	-0.4032007	221.786386		0.9987196	0.9900000
n-Butanol	AVRG		1.823e-002		14.617	15.000
Methyl Acrylate	AVRG		0.83874099		8.510	15.000
Ethyl Acrylate	AVRG		1.51559692		6.104	15.000
n-Hexane	AVRG		0.59755237		9.898	15.000
Cyclohexane	AVRG		0.83108987		9.102	15.000
Isopropyl alcohol	AVRG		3.801e-002		6.909	15.000
Tert-butyl alcohol	AVRG		5.976e-002		10.202	15.000
Xylenes (total)	AVRG		0.59780977		13.452	15.000
Propionitrile	AVRG		0.17328970		6.503	15.000
2-Nitropropane	AVRG		1.24476677		8.241	15.000
Ethyl Acetate	AVRG		1.23229311		8.458	15.000
Diethyl ether	AVRG		0.88790529		9.365	15.000
Tetrahydrofuran	AVRG		0.20038573		9.298	15.000
4-Methyl-2-pentanol	AVRG		9.614e-002		10.060	15.000
Diisopropyl ether	AVRG		2.12537869		10.061	15.000
2-Methylnaphthalene	2ORDR	0.10631846	1.25517173	-6.55e-002	0.9948166	0.9900000
Dichlorofluoromethane	AVRG		0.91934791		8.824	15.000
1-Methylnaphthalene	2ORDR	9.678e-002	1.22233030	-4.15e-002	0.9959842	0.9900000
Isobutylene	AVRG		0.48384642		13.701	15.000
Dibromofluoromethane	2ORDR	-1.57e-002	2.22255691	0.28885730	0.9993429	0.9900000
Toluene-d8	2ORDR	2.428e-003	0.64565832	0.14421290	0.9996227	0.9900000
1,2-Dichloroethane-d4	LINR	-4.11e-002	1.91112683		0.9982824	0.9900000
4-Bromofluorobenzene	2ORDR	-2.62e-002	2.14770503	0.25219752	0.9996603	0.9900000

FORM VI VOA

MSVOA02 -Logbook

Batch: 31755 **Analyst:** Anjana Poluri

Date: 05-04-2018 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-04-2018 02:55 pm	1.00	50 mL	50 mL	D050401.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD00.5	ICAL1	05-04-2018 03:19 pm	1.00	50 mL	50 mL	D050402.D	Liquid	Y	NA
	0.5 uL cal std/250 ml DI									
3	VSTD001	ICAL2	05-04-2018 03:43 pm	1.00	50 mL	50 mL	D050403.D	Liquid	Y	NA
	1 uL cal std/250 ml DI									
4	VSTD002	ICAL3	05-04-2018 04:08 pm	1.00	50 mL	50 mL	D050404.D	Liquid	Y	NA
	2 uL cal std/250 ml DI									
5	VSTD005	ICAL4	05-04-2018 04:32 pm	1.00	50 mL	50 mL	D050405.D	Liquid	Y	NA
	5 uL cal std/250 ml DI									
6	VSTD010	ICAL5	05-04-2018 04:56 pm	1.00	50 mL	50 mL	D050406.D	Liquid	Y	NA
	2 uL cal std/50 ml DI									
7	VSTD020	ICAL6	05-04-2018 05:21 pm	1.00	50 mL	50 mL	D050407.D	Liquid	Y	NA
	4 uL cal std/50 ml DI									
8	VSTD050	ICAL7	05-04-2018 05:45 pm	1.00	50 mL	50 mL	D050408.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
9	VSTD100	ICAL8	05-04-2018 06:09 pm	1.00	50 mL	50 mL	D050409.D	Liquid	Y	NA
	20 uL cal std/50 ml DI									
10	VSTD200	ICAL9	05-04-2018 06:34 pm	1.00	50 mL	50 mL	D050410.D	Liquid	Y	NA
	40 uL cal std/50 ml DI									
11	BLK	SAMP	05-04-2018 06:58 pm	1.00	50 mL	50 mL	D050411.D	Liquid	Y	NA
12	VSTD-ICV	ICV	05-04-2018 07:22 pm	1.00	50 mL	50 mL	D050412.D	Liquid	Y	NA
	10 uL ICV std/50 ml DI									
13	BFB	TUNE	05-04-2018 08:11 pm	1.00	50 mL	50 mL	E050401.D	Liquid	Y	NA
14	CCV	CCV	05-04-2018 08:35 pm	1.00	50 mL	50 mL	E050402.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
15	CCV	CCV	05-04-2018 09:00 pm	1.00	50 mL	50 mL	E050403.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
16	CCB	SAMP	05-04-2018 09:24 pm	1.00	50 mL	50 mL	E050404.D	Liquid	Y	NA
	CCB									
17	VLCSW-180504	LCS	05-04-2018 09:48 pm	1.00	50 mL	50 mL	E050405.D	Liquid	Y	NA
18	VBLKM-180504	SAMP	05-04-2018 10:12 pm	50.00	1 mL	50 mL	E050406.D	Liquid	Y	NA
19	VBLKW-180504	MBLK	05-04-2018 10:38 pm	1.00	50 mL	50 mL	E050407.D	Liquid	Y	NA
20	VBLKW-180504	MBLK	05-04-2018 11:01 pm	1.00	50 mL	50 mL	E050408.D	Liquid	Y	NA
21	HS18050238-01	SAMP	05-04-2018 11:25 pm	1.00	50 mL	50 mL	E050409.D	Liquid	Y	NA
22	HS18041008-05	SAMP	05-04-2018 11:49 pm	1.00	50 mL	50 mL	E050410.D	Liquid	Y	NA
23	HS18050153-15	SAMP	05-05-2018 12:14 am	1.00	50 mL	50 mL	E050411.D	Liquid	Y	<2
24	HS18050153-15MS	MS	05-05-2018 12:38 am	1.00	50 mL	50 mL	E050412.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
25	HS18050153-15MSD	MSD	05-05-2018 01:02 am	1.00	50 mL	50 mL	E050413.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
26	HS18050153-18	SAMP	05-05-2018 01:27 am	1.00	50 mL	50 mL	E050414.D	Liquid	Y	<2
27	HS18050153-01	SAMP	05-05-2018 01:51 am	1.00	50 mL	50 mL	E050415.D	Liquid	Y	<2
28	HS18050153-02	SAMP	05-05-2018 02:16 am	1.00	50 mL	50 mL	E050416.D	Liquid	Y	<2
29	HS18050153-03	SAMP	05-05-2018 02:40 am	1.00	50 mL	50 mL	E050417.D	Liquid	Y	<2
30	HS18050153-04	SAMP	05-05-2018 03:04 am	1.00	50 mL	50 mL	E050418.D	Liquid	Y	<2
31	HS18050153-05	SAMP	05-05-2018 03:29 am	1.00	50 mL	50 mL	E050419.D	Liquid	Y	<2
32	HS18050153-06	SAMP	05-05-2018 03:53 am	1.00	50 mL	50 mL	E050420.D	Liquid	Y	<2
33	HS18050153-07	SAMP	05-05-2018 04:17 am	1.00	50 mL	50 mL	E050421.D	Liquid	Y	<2

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
34	HS18050153-08	SAMP	05-05-2018 04:42 am	1.00	50 mL	50 mL	E050422.D	Liquid	Y	<2
35	HS18050153-09	SAMP	05-05-2018 05:06 am	1.00	50 mL	50 mL	E050423.D	Liquid	Y	<2
36	HS18050153-10	SAMP	05-05-2018 05:31 am	1.00	50 mL	50 mL	E050424.D	Liquid	Y	<2
37	HS18050153-11	SAMP	05-05-2018 05:55 am	1.00	50 mL	50 mL	E050425.D	Liquid	Y	<2
38	HS18050153-12	SAMP	05-05-2018 06:19 am	1.00	50 mL	50 mL	E050426.D	Liquid	Y	<2
39	HS18050153-13	SAMP	05-05-2018 06:44 am	1.00	50 mL	50 mL	E050427.D	Liquid	Y	<2
40	HS18050153-14	SAMP	05-05-2018 07:08 am	1.00	50 mL	50 mL	E050428.D	Liquid	Y	<2
41	HS18050153-16	SAMP	05-05-2018 07:33 am	1.00	50 mL	50 mL	E050429.D	Liquid	Y	<2
42	HS18050153-17	SAMP	05-05-2018 07:57 am	1.00	50 mL	50 mL	E050430.D	Liquid	Y	<2

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30603-16-02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

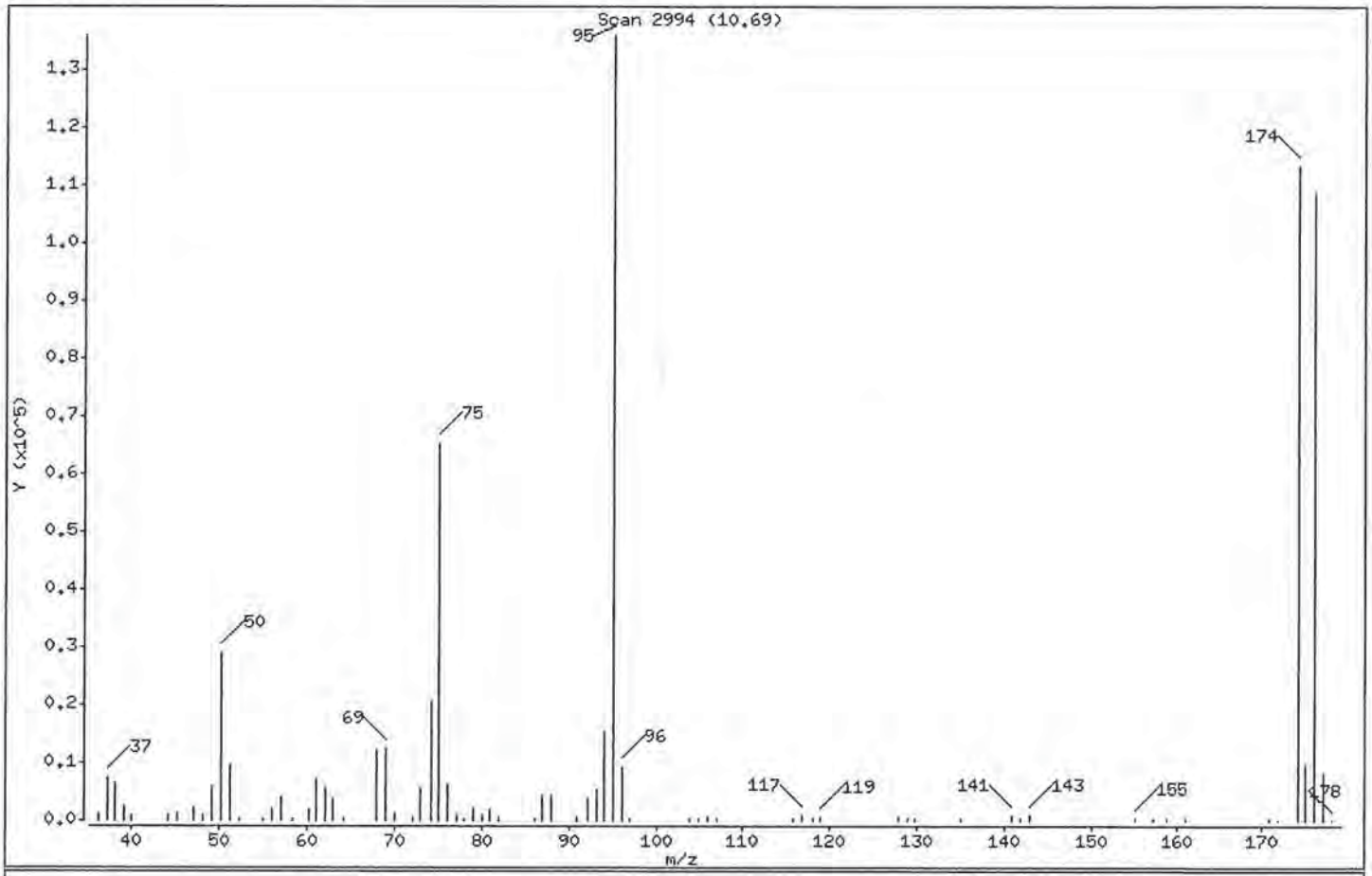
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.47
75	30.00 - 60.00% of mass 95	47.97
96	5.00 - 9.00% of mass 95	6.97
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.53
175	5.00 - 9.00% of mass 174	7.02 (8.41)
176	95.00 - 101.00% of mass 174	79.92 (95.68)
177	5.00 - 9.00% of mass 176	5.87 (7.34)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

Data File: D050401.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 72

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	1405	62.10	5772	88.00	4497	134.90	157
37.10	7380	63.00	3785	91.00	496	140.90	862
38.10	6551	64.20	300	92.10	3889	141.80	209
39.10	2452	68.00	12134	93.10	5254	142.90	1014
40.00	890	69.00	12441	94.10	15326	155.00	301
44.00	831	70.10	1157	95.10	136064	157.10	297
45.10	1152	72.00	775	96.10	9482	158.80	217
47.10	2317	73.00	5765	97.00	198	161.10	265
48.00	869	74.10	20544	103.90	271	170.80	158
49.10	5957	75.10	65272	105.00	231	171.70	156
50.10	29216	76.10	6197	105.90	665	174.00	113648
51.10	9780	77.10	877	106.90	352	175.00	9558
52.20	327	78.00	385	115.70	233	176.00	108736
54.90	456	78.90	2155	116.90	930	177.00	7985
56.00	2046	80.00	818	118.00	451	178.10	152
57.10	3950	80.90	1942	118.90	697		
58.20	221	81.90	642	127.90	534		
60.10	1857	86.00	290	128.90	225		
61.10	7253	87.00	4446	129.80	309		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

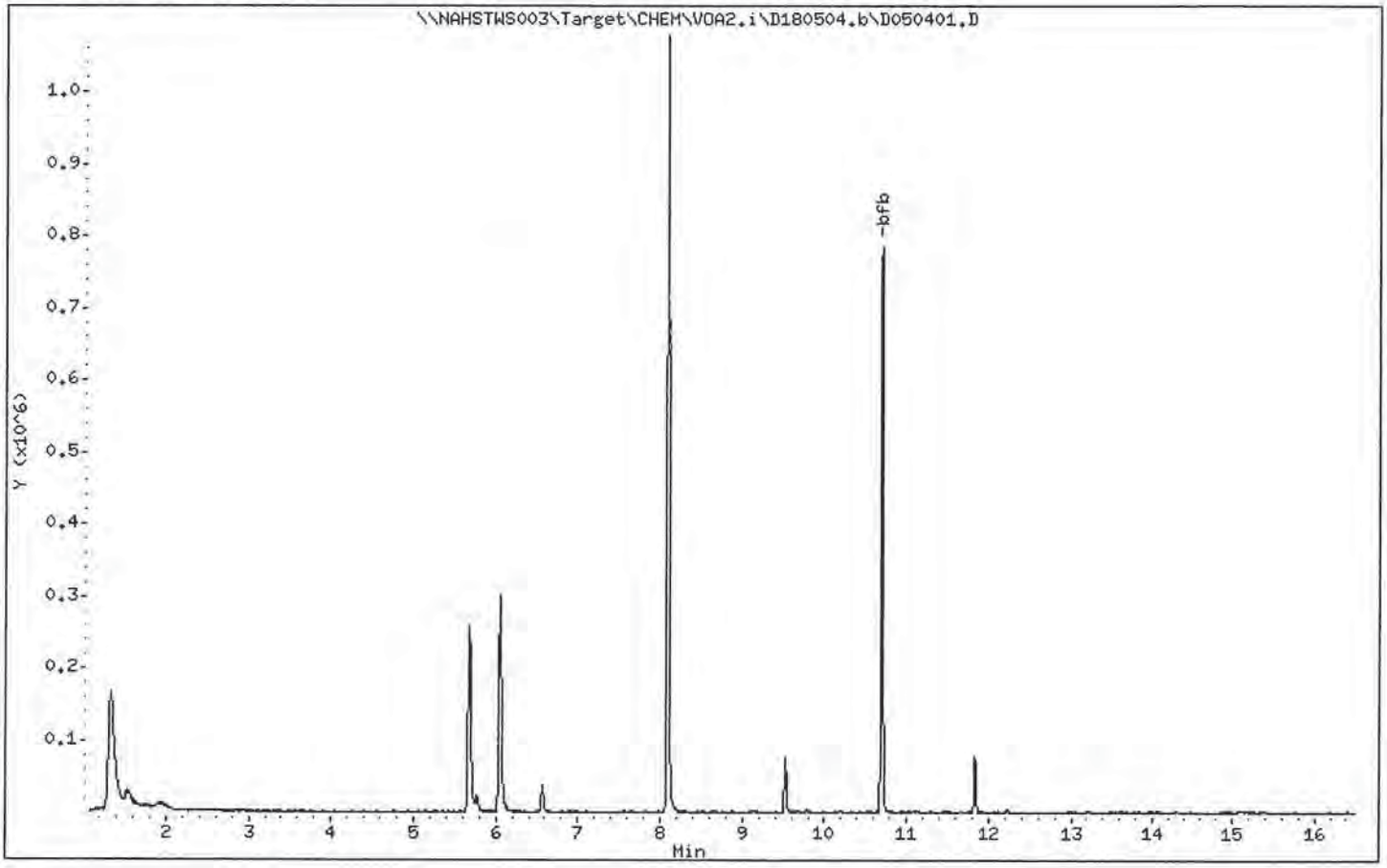
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D
Lab Smp Id: VSTD00.5 Client Smp ID: VSTD00.5
Inj Date : 04-MAY-2018 15:19
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD00.5;VSTD00.5;1;1;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 18:34 Cal File: D050410.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	382189	50.0000	
186 Isobutylene	56	1.646	1.646	(0.285)	1409	0.50000	0.38 (aAM)
4 Propionitrile	54	5.246	5.246	(0.909)	6824	5.00000	5.15 (aM)
5 Vinyl Chloride	62	1.678	1.678	(0.291)	2163	0.50000	0.45 (aM)
6 Bromomethane	94	1.938	1.938	(0.336)	1615	0.50000	0.57 (aM)
159 Dichlorofluoromethane	67	2.211	2.211	(0.383)	3654	0.50000	0.51 (aM)
12 Isobutyl Alcohol	74	6.231	6.231	(1.079)	60	10.0000	14.28 (TM)
13 Acetonitrile	39	3.164	3.164	(0.548)	2548	5.00000	5.22 (aM)
14 Allyl Chloride	41	3.151	3.151	(0.546)	6589	0.50000	0.52 (aM)
15 Iodomethane	142	2.894	2.894	(0.501)	908	1.00000	4.38 (M)
16 Acrylonitrile	53	3.725	3.725	(0.645)	1284	1.00000	0.75 (aM)
17 Methylene Chloride	84	3.327	3.327	(0.576)	2378	0.50000	0.58 (aM)
18 Methyl tert-butyl ether	73	3.684	3.684	(0.638)	5840	0.50000	0.52 (aM)
19 Carbon Disulfide	76	2.936	2.936	(0.508)	7054	1.00000	1.06 (aM)
21 Vinyl Acetate	43	5.246	5.246	(0.909)	5235	1.00000	1.04 (M)
22 1,1-Dichloroethane	63	4.255	4.255	(0.737)	3900	0.50000	0.50 (aM)
24 2-Butanone	43	5.166	5.166	(0.895)	1793	1.00000	0.90 (aM)
25 Methacrylonitrile	41	5.413	5.413	(0.938)	2568	0.50000	0.54 (aM)
26 2,2-Dichloropropane	77	5.034	5.034	(0.872)	2158	0.50000	0.41 (aM)
27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.878)	2217	0.50000	0.56 (aM)
28 Chloroform	83	5.490	5.490	(0.951)	3472	0.50000	0.52 (aM)

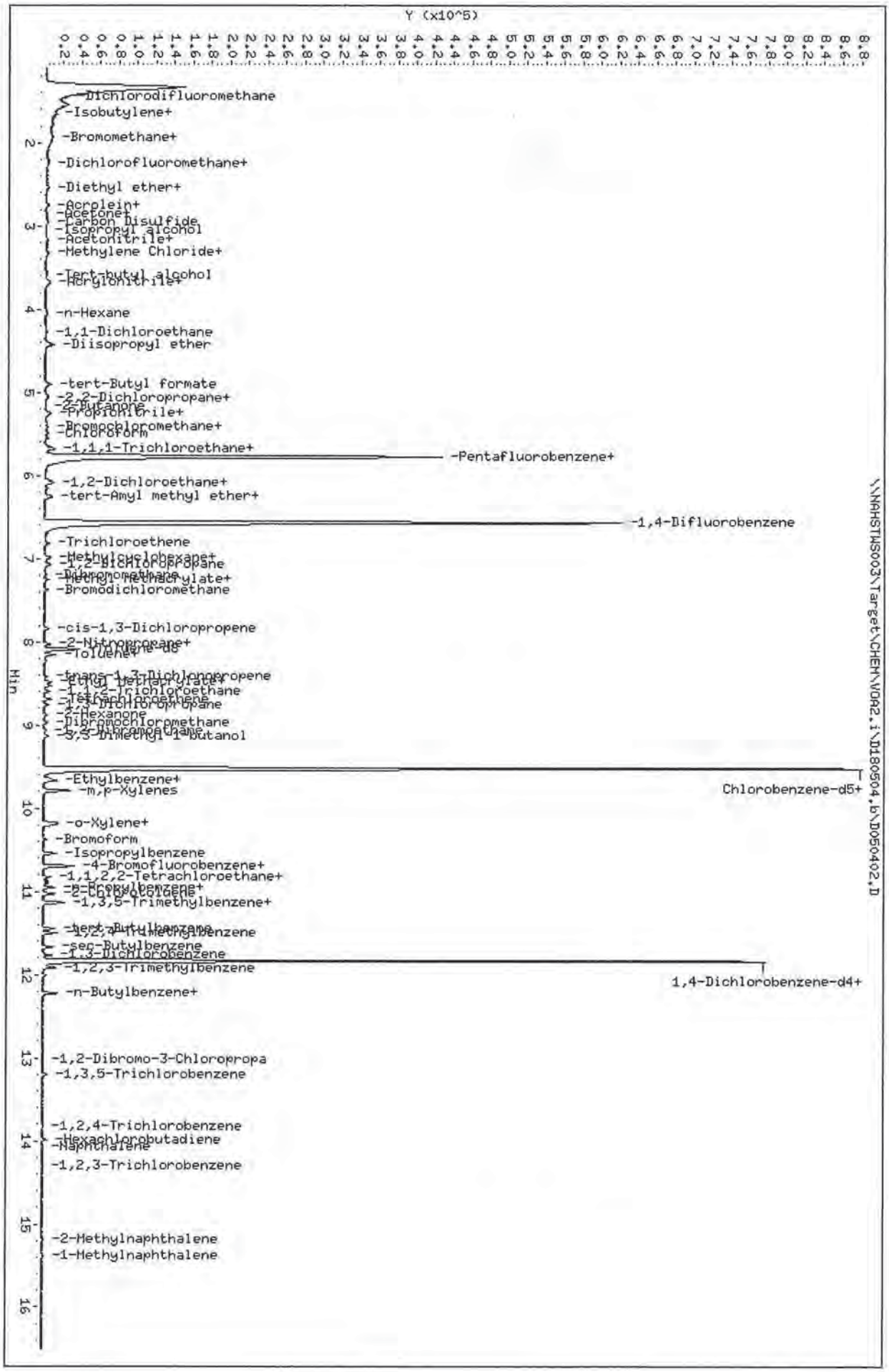
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D Page 2
Report Date: 15-May-2018 14:56

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	29	Bromochloromethane	128	5.352	5.352	(0.927)	916	0.50000	0.48 (aM)
$	30	Dibromofluoromethane	113	5.676	5.676	(0.983)	4661	0.50000	0.57 (aM)
	31	1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	2588	0.50000	0.46 (a)
	32	1,1-Dichloropropene	75	5.850	5.850	(0.994)	3227	0.50000	0.66 (aM)
	33	1,2-Dichloroethane	62	6.145	6.145	(0.936)	2814	0.50000	0.53 (Ta)
	34	Carbon Tetrachloride	117	5.827	5.827	(0.888)	3099	0.50000	0.63 (aM)
$	35	1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	4399	0.50000	(Ta)
*	36	1,4-Difluorobenzene	114	6.565	6.565	(1.000)	560342	50.0000	
	37	Benzene	78	6.093	6.093	(0.928)	8149	0.50000	0.57 (Ta)
	38	Trichloroethene	130	6.812	6.812	(1.038)	1897	0.50000	0.51 (aM)
	39	Bromodichloromethane	83	7.367	7.367	(1.122)	2801	0.50000	0.54 (aM)
	40	Methyl Methacrylate	41	7.249	7.249	(1.256)	2305	0.50000	0.51 (aM)
	41	2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	732	1.00000	1.14 (aM)
	42	1,2-Dichloropropane	63	7.059	7.059	(1.075)	2387	0.50000	0.55 (aM)
	43	2-Nitropropane	43	8.032	8.032	(1.391)	5117	0.50000	0.53 (aM)
	44	Dibromomethane	93	7.194	7.194	(1.096)	969	0.50000	0.45 (aM)
	45	4-Methyl-2-Pentanone	43	8.032	8.032	(0.843)	5117	1.00000	1.13 (aM)
	46	cis-1,3-Dichloropropene	75	7.846	7.846	(1.195)	2872	0.50000	0.49 (aM)
*	47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	490857	50.0000	
$	48	Toluene-d8	98	8.089	8.089	(0.849)	25814	0.50000	1.83
	50	Toluene	91	8.150	8.150	(0.856)	9194	0.50000	0.61 (Ta)
	51	trans-1,3-Dichloropropene	75	8.413	8.413	(1.282)	1951	0.50000	0.40 (aM)
	52	2-Hexanone	43	8.872	8.872	(0.932)	3032	1.00000	1.07 (aM)
	53	1,1,2-Trichloroethane	83	8.596	8.596	(0.903)	1442	0.50000	0.51 (aM)
	54	1,3-Dichloropropane	76	8.754	8.754	(0.919)	3026	0.50000	0.54 (aM)
	55	Dibromochloromethane	129	8.965	8.965	(0.941)	2123	0.50000	0.51 (aM)
	56	Tetrachloroethene	164	8.686	8.686	(0.912)	1784	0.50000	0.59 (aM)
	57	1,2-Dibromoethane	107	9.071	9.071	(0.952)	1798	0.50000	0.51 (aM)
	59	Chlorobenzene	112	9.553	9.553	(1.003)	5995	0.50000	0.63 (Ta)
	60	1,1,1,2-Tetrachloroethane	131	9.642	9.642	(1.012)	1919	0.50000	0.51 (aM)
	61	Ethylbenzene	106	9.665	9.665	(1.015)	3251	0.50000	0.63 (a)
	63	o-Xylene	106	10.175	10.175	(1.068)	3780	0.50000	0.59 (a)
	64	Styrene	104	10.194	10.194	(1.070)	5663	0.50000	0.55 (a)
	66	Bromoform	173	10.377	10.377	(1.090)	1328	0.50000	0.45 (aM)
	67	Isopropylbenzene	105	10.544	10.544	(1.107)	8878	0.50000	0.57 (aM)
	68	1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	2473	0.50000	0.56 (aM)
$	69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	11709	0.50000	1.25
*	70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	197955	50.0000	
	71	1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	5517	0.50000	0.59 (Ta)
	72	trans-1,4-Dichloro-2-butene	53	10.945	10.945	(1.149)	308	0.50000	1.01 (M)
	73	n-Propylbenzene	91	10.955	10.955	(0.926)	9244	0.50000	0.59 (Ta)
	74	Bromobenzene	156	10.827	10.827	(0.915)	2273	0.50000	0.57 (aM)
	75	1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	7256	0.50000	0.61 (a)
	78	tert-Butylbenzene	119	11.446	11.446	(0.967)	5952	0.50000	0.61 (Ta)
	81	sec-Butylbenzene	105	11.667	11.667	(0.986)	7412	0.50000	0.57 (aM)
	82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	6445	0.50000	0.58 (aM)
	83	1,3-Dichlorobenzene	146	11.770	11.770	(0.995)	4250	0.50000	0.62 (a)
	84	1,4-Dichlorobenzene	146	11.853	11.853	(1.002)	4382	0.50000	0.66 (a)
	87	n-Butylbenzene	91	12.229	12.229	(1.033)	4668	0.50000	0.55 (Ta)
	88	1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	3547	0.50000	0.55 (a)
	90	1,2,4-Trichlorobenzene	180	13.820	13.820	(1.168)	643	0.50000	0.60 (aM)
	92	Naphthalene	128	14.068	14.068	(1.189)	1615	0.50000	0.69 (aM)
	93	1,2,3-Trichlorobenzene	182	14.305	14.305	(1.209)	411	0.50000	1.14 (M)
	146	Methyl acetate	43	3.244	3.244	(0.562)	2398	0.50000	0.52 (aM)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
139 Diethyl ether	59	2.535	2.535	(0.439)	3060	0.50000	0.45 (aM)
147 Methylcyclohexane	83	6.976	6.976	(1.063)	2766	0.50000	0.56 (Ta)
131 Methyl Acrylate	55	5.272	5.272	(0.913)	2829	0.50000	0.44 (aM)
133 Ethyl Acrylate	55	7.018	7.018	(1.216)	5935	0.50000	0.51 (aM)
141 Cyclohexane	56	5.683	5.683	(0.984)	3004	0.50000	0.47 (aM)
142 Tetrahydrofuran	42	5.426	5.426	(0.940)	1382	1.00000	0.90 (aM)
148 Tert-butyl alcohol	59	3.574	3.574	(0.619)	4807	10.0000	10.52 (M)
149 Isopropyl alcohol	45	3.074	3.074	(0.533)	3252	10.0000	11.19 (aM)
151 4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	9850	10.0000	10.43 (aM)
166 1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	7176	0.50000	0.64 (Ta)
170 1,3,5-Trichlorobenzene	180	13.211	13.211	(1.116)	2323	0.50000	0.53 (aM)
175 tert-Butyl ethyl ether	59	6.244	6.244	(1.082)	3031	0.50000	0.48 (Ta)
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	948	0.50000	5.61 (M)
156 Diisopropyl ether	45	4.425	4.425	(0.767)	8702	0.50000	0.53 (aM)
171 1-Methylnaphthalene	142	15.390	15.390	(1.300)	844	0.50000	5.09 (M)
130 Ethyl Acetate	43	5.246	5.246	(0.909)	5100	0.50000	0.54 (aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D
Date : 04-MAY-2018 15:19
Client ID: VSTD00.5
Sample Info: VSTD00.5;VSTD00.5;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D Page 1
Report Date: 15-May-2018 14:56

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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 04-MAY-2018 15:43
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD001;VSTD001;1;2;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	

Cpnd Variable Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	378806	50.0000	
186	Isobutylene	56	1.656	1.656	(0.287)	3339	1.00000	0.91(aAM)
4	Propionitrile	54	5.240	5.240	(0.908)	13838	10.0000	10.54(M)
5	Vinyl Chloride	62	1.669	1.669	(0.289)	4852	1.00000	1.02(M)
6	Bromomethane	94	1.938	1.938	(0.336)	3182	1.00000	1.13(M)
159	Dichlorofluoromethane	67	2.220	2.220	(0.385)	7851	1.00000	1.12(M)
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	4402	1.00000	0.98(TaM)
11	1,1-Dichloroethene	96	2.744	2.744	(0.475)	2789	1.00000	0.97(aM)
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	176	20.0000	20.30(M)
13	Acetonitrile	39	3.170	3.170	(0.549)	5343	10.0000	11.04(M)
14	Allyl Chloride	41	3.164	3.164	(0.548)	14206	1.00000	1.15(M)
15	Iodomethane	142	2.901	2.901	(0.503)	1852	2.00000	4.69(M)
16	Acrylonitrile	53	3.700	3.700	(0.641)	3300	2.00000	1.96(aM)
17	Methylene Chloride	84	3.318	3.318	(0.575)	4855	1.00000	1.21(aM)
18	Methyl tert-butyl ether	73	3.668	3.668	(0.635)	12688	1.00000	1.16(M)
19	Carbon Disulfide	76	2.946	2.946	(0.510)	13619	2.00000	2.07(M)
20	trans-1,2-Dichloroethene	96	3.658	3.658	(0.634)	3416	1.00000	0.76(aM)
21	Vinyl Acetate	43	5.243	5.243	(0.908)	11611	2.00000	2.38(M)
22	1,1-Dichloroethane	63	4.274	4.274	(0.740)	8304	1.00000	1.09(M)
24	2-Butanone	43	5.150	5.150	(0.892)	3998	2.00000	2.03(M)
25	Methacrylonitrile	41	5.407	5.407	(0.937)	5060	1.00000	1.07(aM)

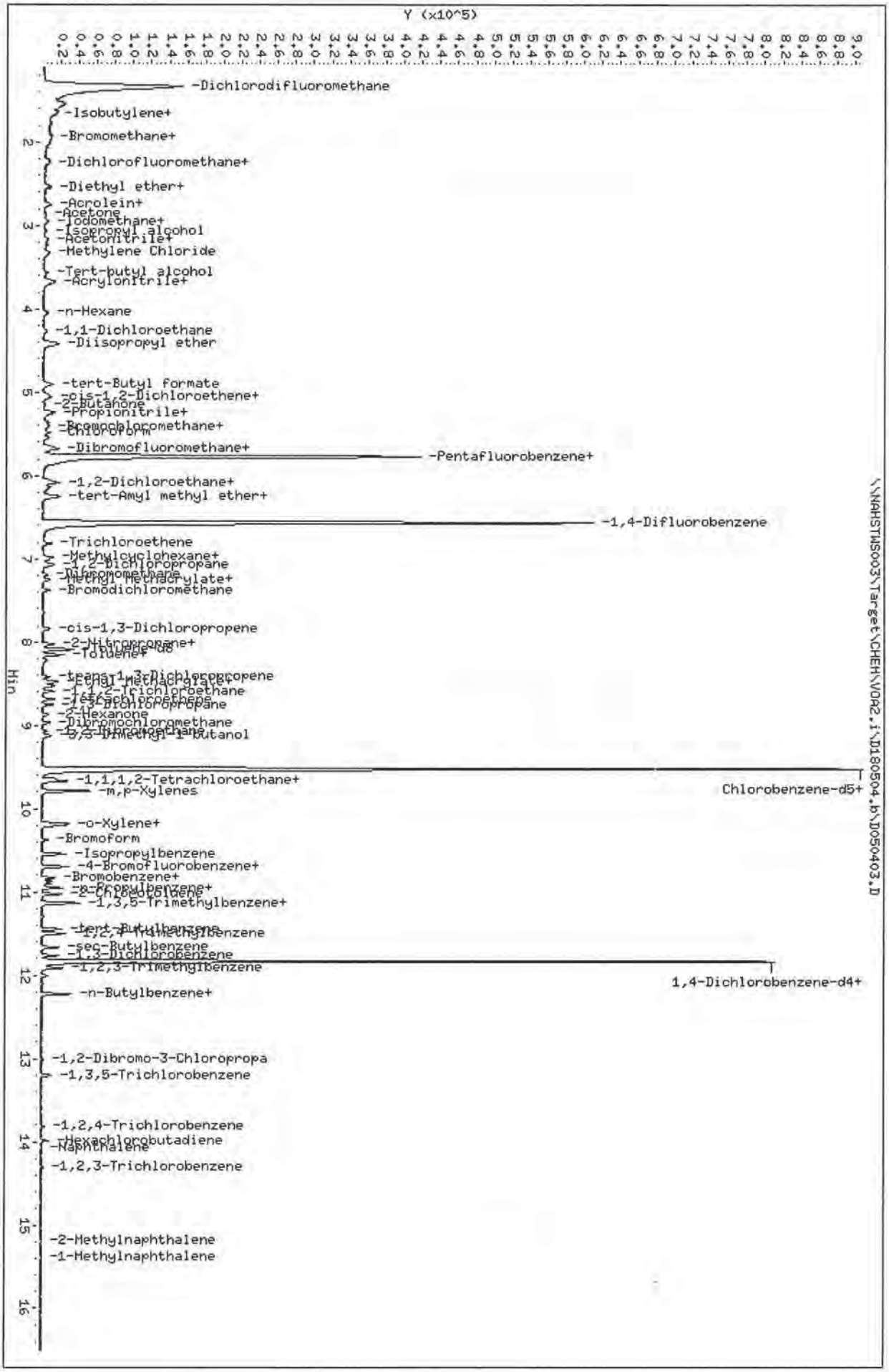
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D Page 2
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
26	2,2-Dichloropropane	77	5.038	5.038	(0.873)	5075	1.00000	0.98(aM)
27	cis-1,2-Dichloroethene	96	5.067	5.067	(0.878)	3857	1.00000	0.98(a)
28	Chloroform	83	5.490	5.490	(0.951)	6867	1.00000	1.04(T)
29	Bromochloromethane	128	5.365	5.365	(0.929)	1825	1.00000	0.96(aM)
$ 30	Dibromofluoromethane	113	5.680	5.680	(0.984)	4558	1.00000	0.55(a)
31	1,1,1-Trichloroethane	97	5.651	5.651	(0.979)	5457	1.00000	0.99(a)
32	1,1-Dichloropropene	75	5.843	5.843	(0.890)	6332	1.00000	1.31(M)
33	1,2-Dichloroethane	62	6.145	6.145	(0.936)	6154	1.00000	1.17
34	Carbon Tetrachloride	117	5.824	5.824	(0.887)	4846	1.00000	0.99(Ta)
$ 35	1,2-Dichloroethane-d4	65	6.062	6.062	(1.050)	5880	1.00000	(aM)
* 36	1,4-Difluorobenzene	114	6.565	6.565	(1.000)	556696	50.0000	
37	Benzene	78	6.084	6.084	(0.927)	16213	1.00000	1.14
38	Trichloroethene	130	6.812	6.812	(1.038)	3776	1.00000	1.03(M)
39	Bromodichloromethane	83	7.374	7.374	(1.123)	5674	1.00000	1.10(T)
40	Methyl Methacrylate	41	7.246	7.246	(1.255)	4518	1.00000	1.00(Ta)
41	2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	1312	2.00000	2.06(aM)
42	1,2-Dichloropropane	63	7.063	7.063	(1.076)	4675	1.00000	1.10(M)
43	2-Nitropropane	43	8.029	8.029	(1.391)	9984	1.00000	1.05(Ta)
44	Dibromomethane	93	7.191	7.191	(1.095)	2157	1.00000	1.01(M)
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	9984	2.00000	2.21
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	5594	1.00000	0.97(aM)
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	491624	50.0000	
$ 48	Toluene-d8	98	8.090	8.090	(0.849)	23273	1.00000	1.66(M)
50	Toluene	91	8.154	8.154	(0.856)	17211	1.00000	1.14(T)
51	trans-1,3-Dichloropropene	75	8.420	8.420	(1.282)	4796	1.00000	1.00(M)
52	2-Hexanone	43	8.869	8.869	(0.931)	5938	2.00000	2.10
53	1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	3223	1.00000	1.14
54	1,3-Dichloropropane	76	8.754	8.754	(0.919)	6083	1.00000	1.08(M)
55	Dibromochloromethane	129	8.966	8.966	(0.941)	4243	1.00000	1.02(T)
56	Tetrachloroethene	164	8.680	8.680	(0.911)	2998	1.00000	0.99(a)
57	1,2-Dibromoethane	107	9.065	9.065	(0.952)	3611	1.00000	1.02(T)
59	Chlorobenzene	112	9.553	9.553	(1.003)	10439	1.00000	1.11
60	1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	3990	1.00000	1.06
61	Ethylbenzene	106	9.668	9.668	(1.015)	5630	1.00000	1.10
63	o-Xylene	106	10.172	10.172	(1.068)	6791	1.00000	1.06
64	Styrene	104	10.201	10.201	(1.071)	10422	1.00000	1.01
66	Bromoform	173	10.371	10.371	(1.089)	3153	1.00000	1.07(M)
67	Isopropylbenzene	105	10.548	10.548	(1.107)	17227	1.00000	1.11
68	1,1,2,2-Tetrachloroethane	83	10.868	10.868	(0.918)	5176	1.00000	1.13(M)
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	9609	1.00000	0.79(a)
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	205822	50.0000	
72	trans-1,4-Dichloro-2-butene	53	10.933	10.933	(1.148)	721	1.00000	1.35(M)
73	n-Propylbenzene	91	10.952	10.952	(0.925)	17978	1.00000	1.11(T)
74	Bromobenzene	156	10.830	10.830	(0.915)	4337	1.00000	1.04
75	1,3,5-Trimethylbenzene	105	11.128	11.128	(0.940)	13135	1.00000	1.07
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	10431	1.00000	1.03
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	13088	1.00000	0.97(a)
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	11443	1.00000	0.99(a)
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	7494	1.00000	1.06
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	7397	1.00000	1.08
87	n-Butylbenzene	91	12.219	12.219	(1.033)	8116	1.00000	0.93(a)
88	1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	7081	1.00000	1.07
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	627	1.00000	0.85(aM)
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	1481	1.00000	0.81(aM)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
92 Naphthalene	128	14.065	14.065	(1.188)	1823	1.00000	0.70 (aM)
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	946	1.00000	1.30 (M)
146 Methyl acetate	43	3.241	3.241	(0.561)	5130	1.00000	1.13 (aM)
139 Diethyl ether	59	2.535	2.535	(0.439)	7750	1.00000	1.15 (M)
147 Methylcyclohexane	83	6.989	6.989	(1.065)	4954	1.00000	1.01 (T)
132 n-Butanol	56	6.995	6.995	(1.212)	3492	20.0000	25.28 (M)
131 Methyl Acrylate	55	5.272	5.272	(0.913)	6121	1.00000	0.96 (TaM)
133 Ethyl Acrylate	55	7.011	7.011	(1.215)	11130	1.00000	0.96 (aM)
136 n-Hexane	57	4.046	4.046	(0.701)	4365	1.00000	0.96 (aM)
141 Cyclohexane	56	5.686	5.686	(0.985)	5885	1.00000	0.93 (aH)
142 Tetrahydrofuran	42	5.423	5.423	(0.939)	3484	2.00000	2.29 (M)
148 Tert-butyl alcohol	59	3.562	3.562	(0.617)	9997	20.0000	22.08 (TM)
149 Isopropyl alcohol	45	3.071	3.071	(0.532)	6200	20.0000	21.53 (M)
151 4-Methyl-2-pentanol	45	8.475	8.475	(0.890)	19907	20.0000	21.05
166 1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	12224	1.00000	1.05 (T)
167 Ethanol	45	2.529	2.529	(0.438)	8147	20.0000	24.55 (TM)
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	4162	1.00000	0.92 (Ta)
172 tert-Butyl formate	59	4.900	4.900	(0.349)	14427	2.00000	2.17
173 3,3-Dimethyl-1-butanol	57	9.123	9.123	(0.958)	6570	20.0000	20.08
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	13767	1.00000	1.10 (T)
175 tert-Butyl ethyl ether	59	6.238	6.238	(1.081)	6285	1.00000	1.01 (T)
176 tert-Amyl alcohol	59	6.238	6.238	(1.081)	6285	20.0000	20.25
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	734	1.00000	5.53 (M)
156 Diisopropyl ether	45	4.412	4.412	(0.764)	18648	1.00000	1.15 (M)
171 1-Methylnaphthalene	142	15.393	15.393	(1.301)	914	1.00000	5.11 (M)
130 Ethyl Acetate	43	5.243	5.243	(0.908)	10442	1.00000	1.11 (aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
-Dichlorodifluoromethane
-Isobutylene+
-Bromomethane+
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone
-Iodomethane+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-cis-1,2-Dichloroethene+
-2-Butanone
-Propionitrile+
-Bromochloromethane+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,2-Dichloroethane+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene+
-trans-1,3-Dichloropropene
-Ethyl Methacrylate+
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane
-3,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-BromoForm
-Isopropylbenzene
-4-Bromofluorobenzene+
-Bromobenzene+
-n-Propylbenzene+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
Min
\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D
Date : 04-MAY-2018 15:43
Client ID: VSTD001
Instrument: VOA2.i
Sample Info: VSTD001,VSTD001,1,2,
Operator: AP
Purge Volume: 5.0
Column diameter: 0.18
Column phase: DB624

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050404.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 04-MAY-2018 16:08
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD002;VSTD002;1;3;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:43 Cal File: D050403.D
Als bottle: 4 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

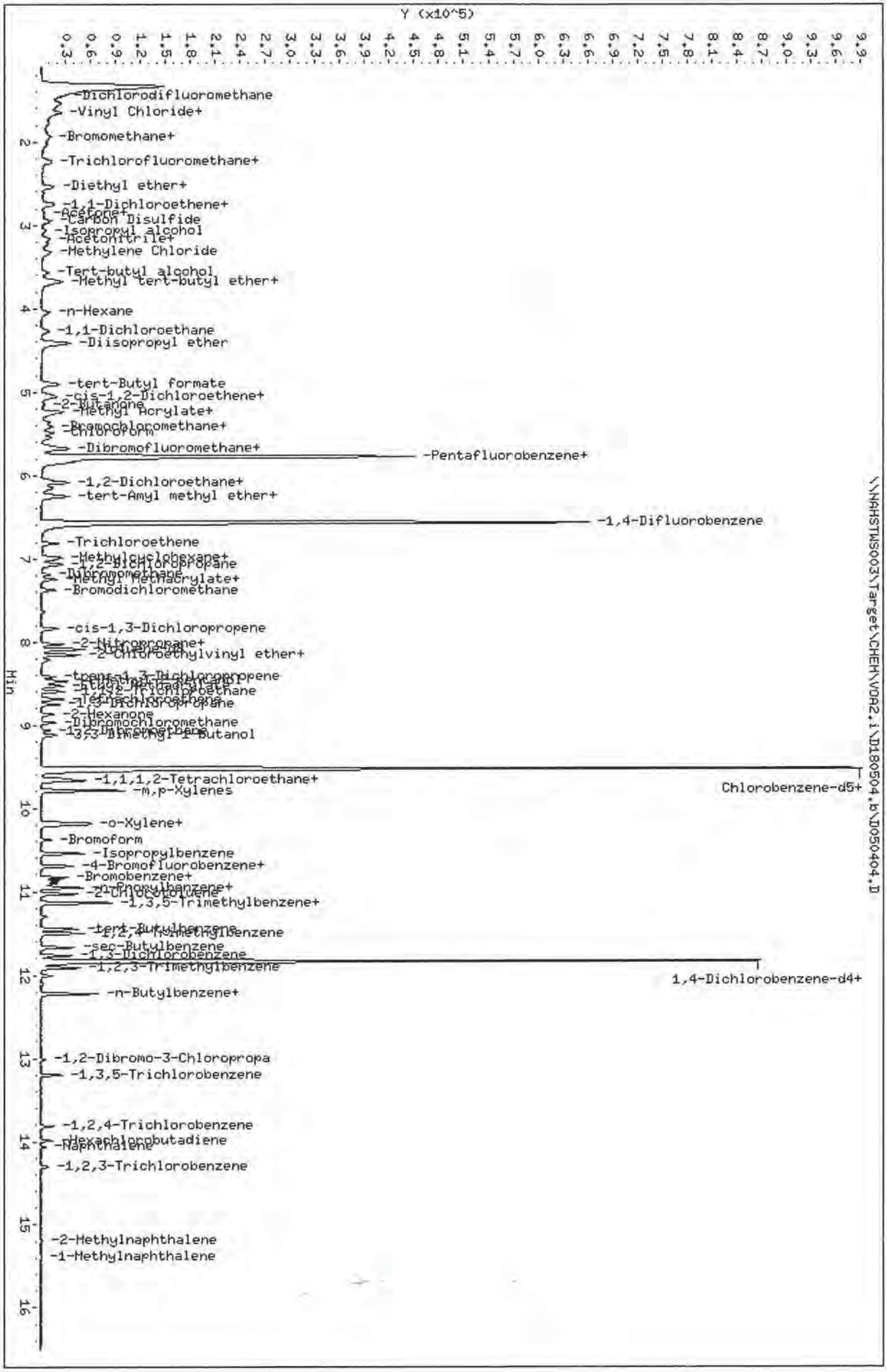
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.770	5.770	(1.000)	408537	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	7390	2.00000	1.02(M)
186	Isobutylene	56	1.640	1.640	(0.284)	7283	2.00000	1.84(aAM)
3	Chloromethane	50	1.585	1.585	(0.275)	15710	2.00000	0.70(aM)
4	Propionitrile	54	5.227	5.227	(0.906)	27267	20.0000	19.25(M)
5	Vinyl Chloride	62	1.675	1.675	(0.290)	10131	2.00000	1.98
6	Bromomethane	94	1.941	1.941	(0.337)	6295	2.00000	2.08(TM)
7	Chloroethane	64	2.031	2.031	(0.352)	6397	2.00000	0.79(aM)
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	14585	2.00000	1.94(M)
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	9388	2.00000	1.94(T)
9	Acrolein	56	2.692	2.692	(0.467)	3349	4.00000	2.93(M)
10	Acetone	43	2.853	2.853	(0.494)	7902	4.00000	2.37(M)
11	1,1-Dichloroethene	96	2.744	2.744	(0.476)	5688	2.00000	1.84
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	300	40.0000	25.57(M)
13	Acetonitrile	39	3.158	3.158	(0.547)	10786	20.0000	20.68(M)
14	Allyl Chloride	41	3.158	3.158	(0.547)	26751	2.00000	2.01(TM)
15	Iodomethane	142	2.895	2.895	(0.502)	4199	4.00000	5.36(M)
16	Acrylonitrile	53	3.716	3.716	(0.644)	7073	4.00000	3.90(M)
17	Methylene Chloride	84	3.328	3.328	(0.577)	8887	2.00000	2.05(M)
18	Methyl tert-butyl ether	73	3.671	3.671	(0.636)	22687	2.00000	1.92(T)
19	Carbon Disulfide	76	2.939	2.939	(0.510)	27610	4.00000	3.90(M)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.634)	6251	2.00000	1.53
	21 Vinyl Acetate	43	5.237	5.237	(0.908)	20320	4.00000	3.86(M)
	22 1,1-Dichloroethane	63	4.278	4.278	(0.741)	15565	2.00000	1.89(TM)
	24 2-Butanone	43	5.147	5.147	(0.892)	7364	4.00000	3.46(M)
	25 Methacrylonitrile	41	5.407	5.407	(0.937)	9046	2.00000	1.78(aH)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	11289	2.00000	2.03(M)
	27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.879)	8037	2.00000	1.90
	28 Chloroform	83	5.481	5.481	(0.950)	14540	2.00000	2.05
	29 Bromochloromethane	128	5.359	5.359	(0.929)	3530	2.00000	1.73
$	30 Dibromofluoromethane	113	5.683	5.683	(0.985)	7916	2.00000	1.37
	31 1,1,1-Trichloroethane	97	5.638	5.638	(0.977)	11672	2.00000	1.96
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	10081	2.00000	1.93(M)
	33 1,2-Dichloroethane	62	6.136	6.136	(0.934)	9963	2.00000	1.74
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	10845	2.00000	2.04(M)
$	35 1,2-Dichloroethane-d4	65	6.059	6.059	(1.050)	9916	2.00000	0.26(Ta)
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	603837	50.0000	
	37 Benzene	78	6.084	6.084	(0.926)	31478	2.00000	2.05
	38 Trichloroethene	130	6.813	6.813	(1.037)	7059	2.00000	1.97
	39 Bromodichloromethane	83	7.371	7.371	(1.122)	10838	2.00000	1.94(T)
	40 Methyl Methacrylate	41	7.246	7.246	(1.256)	8977	2.00000	1.85(Ta)
	41 2-Chloroethylvinyl ether	63	8.151	8.151	(1.241)	2748	4.00000	3.98(Ta)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	9305	2.00000	2.02(M)
	43 2-Nitropropane	43	8.032	8.032	(1.392)	19944	2.00000	1.96(Ta)
	44 Dibromomethane	93	7.191	7.191	(1.095)	4373	2.00000	1.90
	45 4-Methyl-2-Pentanone	43	8.032	8.032	(0.843)	19944	4.00000	4.02
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	11552	2.00000	1.85
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	540359	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	34734	2.00000	2.22
	50 Toluene	91	8.154	8.154	(0.856)	33700	2.00000	2.04
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	9140	2.00000	1.77
	52 2-Hexanone	43	8.870	8.870	(0.931)	11905	4.00000	3.83
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	6288	2.00000	2.02
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	12138	2.00000	1.97
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	8759	2.00000	1.92(T)
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	6719	2.00000	2.03
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	7371	2.00000	1.90(T)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	20671	2.00000	2.00
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	8097	2.00000	1.97
	61 Ethylbenzene	106	9.665	9.665	(1.015)	10915	2.00000	1.95
	63 o-Xylene	106	10.176	10.176	(1.069)	14102	2.00000	2.00
	64 Styrene	104	10.198	10.198	(1.071)	22878	2.00000	2.03
	66 Bromoform	173	10.375	10.375	(1.089)	6171	2.00000	1.91(T)
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	32768	2.00000	1.93
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	10142	2.00000	2.03(M)
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	13070	2.00000	1.29
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	225031	50.0000	
	71 1,2,3-Trichloropropane	75	10.699	10.699	(0.904)	6121	2.00000	0.52(a)
	72 trans-1,4-Dichloro-2-butene	53	10.933	10.933	(1.148)	2058	2.00000	2.27(M)
	73 n-Propylbenzene	91	10.949	10.949	(0.925)	35151	2.00000	1.99
	74 Bromobenzene	156	10.827	10.827	(0.915)	9306	2.00000	2.06
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	26879	2.00000	2.01
	78 tert-Butylbenzene	119	11.450	11.450	(0.967)	20496	2.00000	1.85
	81 sec-Butylbenzene	105	11.661	11.661	(0.985)	27748	2.00000	1.88
	82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	23739	2.00000	1.89

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	15281	2.00000	1.98
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	14210	2.00000	1.90
87	n-Butylbenzene	91	12.223	12.223	(1.033)	16217	2.00000	1.70
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	14433	2.00000	1.99
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	1454	2.00000	1.80(M)
90	1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	4916	2.00000	1.60(T)
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	3032	2.00000	1.63(M)
92	Naphthalene	128	14.058	14.058	(1.188)	4856	2.00000	0.99(a)
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	3702	2.00000	2.02(T)
146	Methyl acetate	43	3.228	3.228	(0.560)	9717	2.00000	1.98(aM)
139	Diethyl ether	59	2.532	2.532	(0.439)	14477	2.00000	1.99
147	Methylcyclohexane	83	6.983	6.983	(1.063)	9765	2.00000	1.84
132	n-Butanol	56	6.983	6.983	(1.210)	5000	40.0000	33.57
131	Methyl Acrylate	55	5.260	5.260	(0.912)	12328	2.00000	1.79(a)
133	Ethyl Acrylate	55	7.015	7.015	(1.216)	23518	2.00000	1.89(M)
136	n-Hexane	57	4.040	4.040	(0.700)	9072	2.00000	1.85
141	Cyclohexane	56	5.683	5.683	(0.985)	13340	2.00000	1.96(aH)
142	Tetrahydrofuran	42	5.423	5.423	(0.940)	6546	4.00000	3.99(M)
148	Tert-butyl alcohol	59	3.559	3.559	(0.617)	15804	40.0000	32.36
149	Isopropyl alcohol	45	3.065	3.065	(0.531)	12046	40.0000	38.79(M)
151	4-Methyl-2-pentanol	45	8.472	8.472	(0.889)	39442	40.0000	37.96
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	25205	2.00000	1.98
167	Ethanol	45	2.535	2.535	(0.439)	10631	40.0000	29.70(T)
170	1,3,5-Trichlorobenzene	180	13.205	13.205	(1.116)	8475	2.00000	1.73(T)
172	tert-Butyl formate	59	4.903	4.903	(0.850)	28750	4.00000	4.01
173	3,3-Dimethyl-1-butanol	57	9.117	9.117	(0.957)	12313	40.0000	34.24
174	tert-Amyl methyl ether	73	6.251	6.251	(1.083)	26257	2.00000	1.94
175	tert-Butyl ethyl ether	59	6.238	6.238	(1.081)	12322	2.00000	1.84
176	tert-Amyl alcohol	59	6.238	6.238	(1.081)	12322	40.0000	36.82
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	1017	2.00000	5.59(M)
156	Diisopropyl ether	45	4.409	4.409	(0.764)	32209	2.00000	1.85(T)
171	1-Methylnaphthalene	142	15.384	15.384	(1.300)	1005	2.00000	5.11(M)
130	Ethyl Acetate	43	5.237	5.237	(0.908)	19554	2.00000	1.94(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050404.D
Date : 04-MAY-2018 16:08
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;3;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 04-MAY-2018 16:32
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD005;VSTD005;1;4;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:08 Cal File: D050404.D
Als bottle: 5 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	368815	50.0000	
2	Dichlorodifluoromethane	85	1.444	1.444	(0.250)	16634	5.00000	3.99(T)
186	Isobutylene	56	1.643	1.643	(0.285)	19089	5.00000	5.34(AM)
3	Chloromethane	50	1.592	1.592	(0.276)	36344	5.00000	4.56(Ta)
4	Propionitrile	54	5.231	5.231	(0.906)	62776	50.0000	49.11
5	Vinyl Chloride	62	1.669	1.669	(0.289)	23697	5.00000	5.15
6	Bromomethane	94	1.935	1.935	(0.335)	15086	5.00000	5.53(M)
7	Chloroethane	64	2.034	2.034	(0.352)	11400	5.00000	3.14
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	35542	5.00000	5.24
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	21717	5.00000	4.98(T)
9	Acrolein	56	2.683	2.683	(0.465)	8739	10.0000	9.22
10	Acetone	43	2.853	2.853	(0.494)	14626	10.0000	8.76
11	1,1-Dichloroethene	96	2.744	2.744	(0.475)	15301	5.00000	5.49
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	1867	100.000	110.23(AM)
13	Acetonitrile	39	3.161	3.161	(0.548)	20400	50.0000	43.32
14	Allyl Chloride	41	3.167	3.167	(0.549)	53628	5.00000	4.46
15	Iodomethane	142	2.894	2.894	(0.501)	13424	10.0000	8.57(T)
16	Acrylonitrile	53	3.684	3.684	(0.638)	19689	10.0000	12.03(M)
17	Methylene Chloride	84	3.312	3.312	(0.574)	19899	5.00000	5.10
18	Methyl tert-butyl ether	73	3.681	3.681	(0.638)	56045	5.00000	5.26(T)
19	Carbon Disulfide	76	2.949	2.949	(0.511)	64712	10.0000	10.14

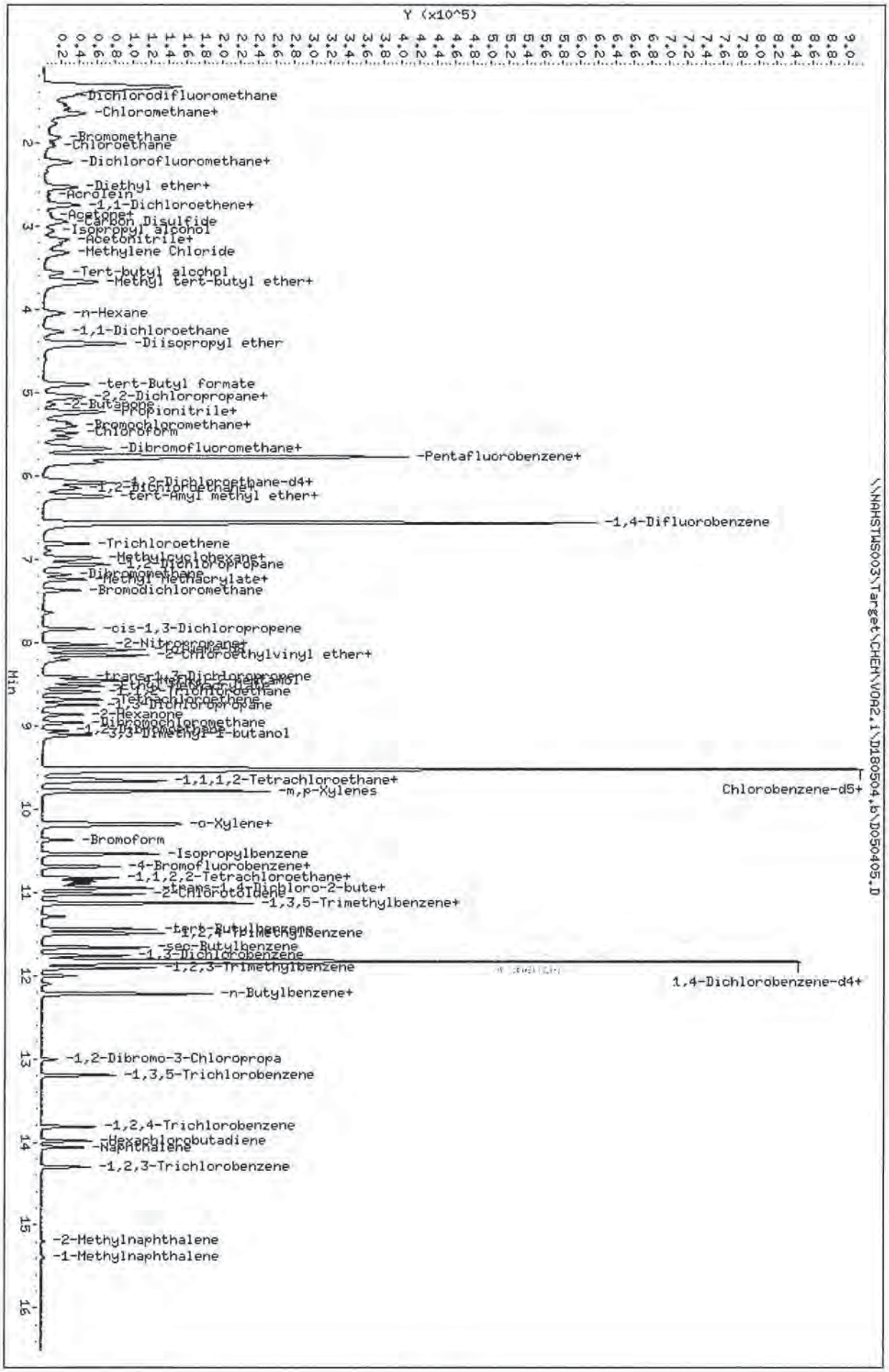
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D Page 2
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	16439	5.00000	5.09
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	52898	10.0000	11.14(M)
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	40191	5.00000	5.42(T)
	24 2-Butanone	43	5.144	5.144	(0.891)	20865	10.0000	10.88
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	24625	5.00000	5.39(H)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	26675	5.00000	5.32
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	20047	5.00000	5.26
	28 Chloroform	83	5.484	5.484	(0.950)	34425	5.00000	5.38
	29 Bromochloromethane	128	5.365	5.365	(0.929)	10128	5.00000	5.50
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	18421	5.00000	4.80
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	27980	5.00000	5.21
	32 1,1-Dichloropropene	75	5.843	5.843	(0.890)	22939	5.00000	4.84
	33 1,2-Dichloroethane	62	6.132	6.132	(0.934)	28375	5.00000	5.47
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	25192	5.00000	5.23(M)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	23445	5.00000	4.01
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	549263	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	77141	5.00000	5.52
	38 Trichloroethene	130	6.816	6.816	(1.038)	18924	5.00000	5.23
	39 Bromodichloromethane	83	7.377	7.377	(1.124)	27353	5.00000	5.39(T)
	40 Methyl Methacrylate	41	7.243	7.243	(1.255)	22802	5.00000	5.23
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	6981	10.0000	11.13(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	23531	5.00000	5.61(M)
	43 2-Nitropropane	43	8.026	8.026	(1.390)	48813	5.00000	5.31(T)
	44 Dibromomethane	93	7.191	7.191	(1.095)	11613	5.00000	5.55
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	48813	10.0000	10.75
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	31441	5.00000	5.55
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	494726	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	74973	5.00000	5.17
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	28787	5.00000	4.24
	50 Toluene	91	8.157	8.157	(0.856)	83038	5.00000	5.49
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	26311	5.00000	5.60
	52 2-Hexanone	43	8.866	8.866	(0.931)	30707	10.0000	10.79
	53 1,1,2-Trichloroethane	83	8.587	8.587	(0.902)	15628	5.00000	5.50
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	30718	5.00000	5.45
	55 Dibromochloromethane	129	8.963	8.963	(0.941)	23010	5.00000	5.53
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	15423	5.00000	5.10
	57 1,2-Dibromoethane	107	9.062	9.062	(0.951)	19577	5.00000	5.52
	58 1-Chlorohexane	55	9.547	9.547	(1.454)	23114	5.00000	4.23
	59 Chlorobenzene	112	9.553	9.553	(1.003)	51312	5.00000	5.42
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	21297	5.00000	5.67
	61 Ethylbenzene	106	9.668	9.668	(1.015)	27630	5.00000	5.39
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	70246	10.0000	7.80
	63 o-Xylene	106	10.172	10.172	(1.068)	35661	5.00000	5.54
	64 Styrene	104	10.195	10.195	(1.070)	58682	5.00000	5.69
	66 Bromoform	173	10.374	10.374	(1.089)	15879	5.00000	5.37(T)
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	83116	5.00000	5.36
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	26404	5.00000	5.65
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	28190	5.00000	4.84
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	210568	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	12511	5.00000	4.22
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	5862	5.00000	5.44
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	91215	5.00000	5.52
	74 Bromobenzene	156	10.833	10.833	(0.915)	23897	5.00000	5.65
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	71255	5.00000	5.70

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	60449	5.00000	4.43
77	4-Chlorotoluene	91	11.135	11.135	(0.941)	66016	5.00000	4.21
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	57950	5.00000	5.61
79	1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	72111	5.00000	4.30
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	78275	5.00000	5.68
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	66698	5.00000	5.68
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	38711	5.00000	5.37
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	36191	5.00000	5.19
87	n-Butylbenzene	91	12.223	12.223	(1.033)	52844	5.00000	5.93
88	1,2-Dichlorobenzene	146	12.220	12.220	(1.033)	38032	5.00000	5.62
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	4014	5.00000	5.32
90	1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	18861	5.00000	5.21
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	10646	5.00000	6.20
92	Naphthalene	128	14.061	14.061	(1.188)	35272	5.00000	4.22
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	16133	5.00000	5.68
146	Methyl acetate	43	3.225	3.225	(0.559)	24517	5.00000	5.54
138	Freon TF	101	2.756	2.756	(0.478)	13149	5.00000	3.45
139	Diethyl ether	59	2.535	2.535	(0.439)	35484	5.00000	5.41
147	Methylcyclohexane	83	6.983	6.983	(1.064)	23938	5.00000	4.96
135	1,4-Dioxane	88	7.239	7.239	(1.254)	3801	100.000	94.12
132	n-Butanol	56	6.986	6.986	(1.210)	14101	100.000	104.88(T)
131	Methyl Acrylate	55	5.256	5.256	(0.911)	31657	5.00000	5.11(T)
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	56205	5.00000	5.02(M)
136	n-Hexane	57	4.050	4.050	(0.702)	20349	5.00000	4.61
141	Cyclohexane	56	5.680	5.680	(0.984)	27757	5.00000	4.52(aH)
142	Tetrahydrofuran	42	5.420	5.420	(0.939)	16181	10.0000	10.94
148	Tert-butyl alcohol	59	3.556	3.556	(0.616)	46267	100.000	104.95(T)
149	Isopropyl alcohol	45	3.055	3.055	(0.529)	29228	100.000	104.25(M)
151	4-Methyl-2-pentanol	45	8.459	8.459	(0.888)	104204	100.000	109.54
166	1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	65165	5.00000	5.48
167	Ethanol	45	2.532	2.532	(0.439)	32609	100.000	100.93(T)
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	27478	5.00000	5.99
172	tert-Butyl formate	59	4.906	4.906	(0.850)	69303	10.0000	10.73
173	3,3-Dimethyl-1-butanol	57	9.113	9.113	(0.957)	31712	100.000	96.32
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	65931	5.00000	5.41
175	tert-Butyl ethyl ether	59	6.235	6.235	(1.080)	31493	5.00000	5.21
176	tert-Amyl alcohol	59	6.235	6.235	(1.080)	31493	100.000	104.26
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	2313	5.00000	6.00(M)
156	Diisopropyl ether	45	4.412	4.412	(0.764)	84402	5.00000	5.38(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	2396	5.00000	5.53(M)
130	Ethyl Acetate	43	5.231	5.231	(0.906)	44132	5.00000	4.85(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D
Date : 04-MAY-2018 16:32
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;4;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D Page 1
Report Date: 15-May-2018 14:56

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D
Lab Smp Id: VSTD010 Client Smp ID: VSTD010
Inj Date : 04-MAY-2018 16:56
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD010;VSTD010;1;5;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:32 Cal File: D050405.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	382417	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	34343	10.0000	8.91
186	Isobutylene	56	1.646	1.646	(0.285)	38157	10.0000	10.31(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	63352	10.0000	8.87(T)
4	Propionitrile	54	5.231	5.231	(0.906)	120091	100.000	90.60
5	Vinyl Chloride	62	1.672	1.672	(0.290)	48240	10.0000	10.11
6	Bromomethane	94	1.941	1.941	(0.336)	26816	10.0000	9.49(M)
7	Chloroethane	64	2.025	2.025	(0.351)	24091	10.0000	8.08
159	Dichlorofluoromethane	67	2.221	2.221	(0.385)	65485	10.0000	9.31
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	46559	10.0000	10.31
9	Acrolein	56	2.680	2.680	(0.464)	16945	10.0000	17.59
10	Acetone	43	2.853	2.853	(0.494)	26679	20.0000	18.23
11	1,1-Dichloroethene	96	2.744	2.744	(0.475)	29578	10.0000	10.24
12	Isobutyl Alcohol	74	6.158	6.158	(1.067)	3536	200.000	192.08(AM)
13	Acetonitrile	39	3.158	3.158	(0.547)	44568	100.000	91.29
14	Allyl Chloride	41	3.164	3.164	(0.548)	107425	10.0000	8.63
15	Iodomethane	142	2.891	2.891	(0.501)	36689	20.0000	15.91
16	Acrylonitrile	53	3.690	3.690	(0.639)	26809	20.0000	15.79
17	Methylene Chloride	84	3.321	3.321	(0.575)	35507	10.0000	8.78
18	Methyl tert-butyl ether	73	3.671	3.671	(0.636)	103031	10.0000	9.34
19	Carbon Disulfide	76	2.943	2.943	(0.510)	125648	20.0000	19.00

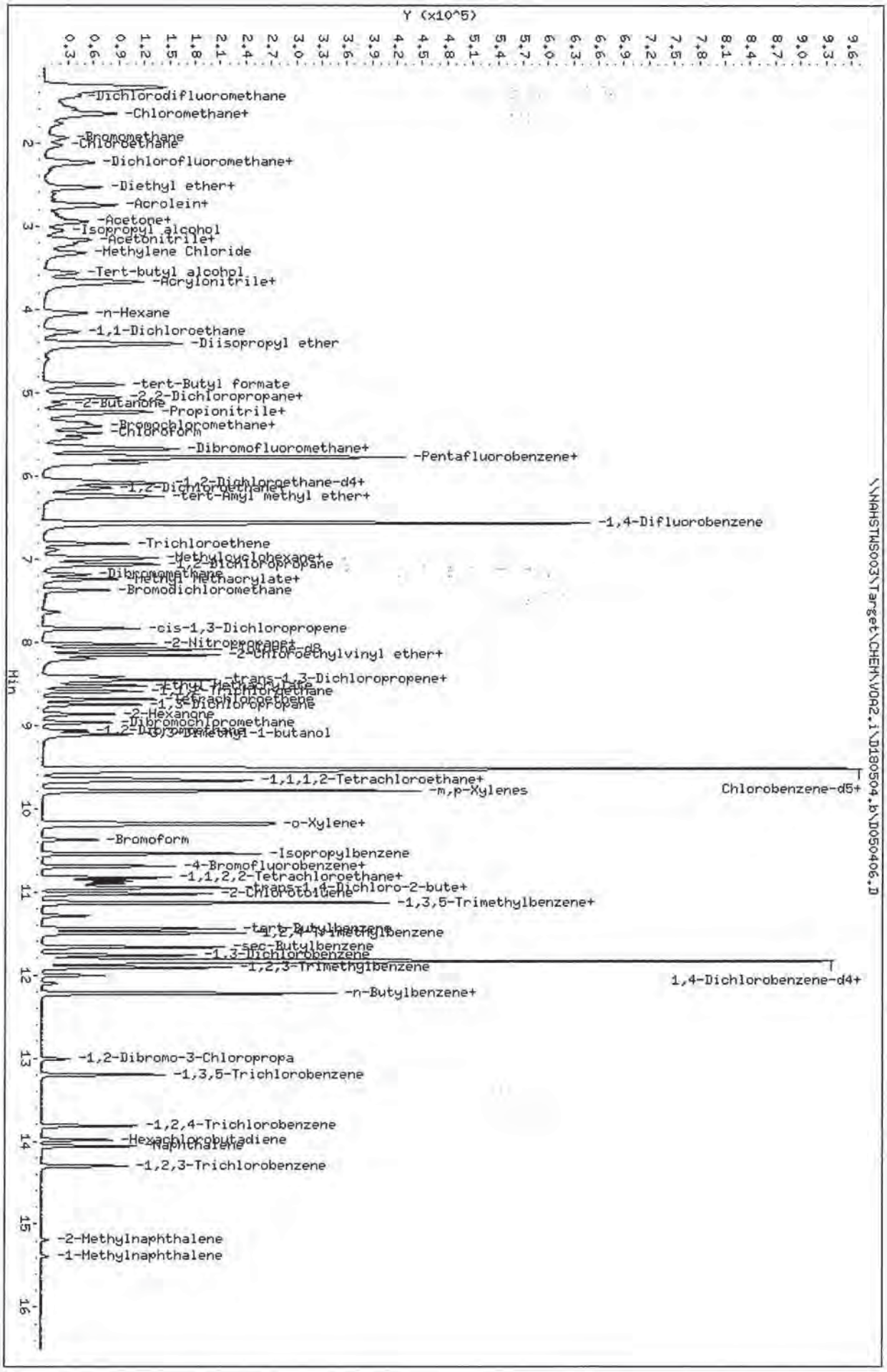
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D Page 2
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	14477	10.0000	4.28
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	90381	20.0000	18.35(M)
	22 1,1-Dichloroethane	63	4.271	4.271	(0.740)	73301	10.0000	9.54
	24 2-Butanone	43	5.138	5.138	(0.890)	38309	20.0000	19.26
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	44608	10.0000	9.42(H)
	26 2,2-Dichloropropane	77	5.028	5.028	(0.871)	50840	10.0000	9.78
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	35362	10.0000	8.94
	28 Chloroform	83	5.484	5.484	(0.950)	63334	10.0000	9.55
	29 Bromochloromethane	128	5.362	5.362	(0.929)	18517	10.0000	9.71
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	34934	10.0000	9.48
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.979)	54412	10.0000	9.78
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	45588	10.0000	9.05
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	54107	10.0000	9.81
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	48322	10.0000	9.43(M)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	43519	10.0000	8.81
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	584344	50.0000	
	37 Benzene	78	6.084	6.084	(0.926)	138877	10.0000	9.34
	38 Trichloroethene	130	6.816	6.816	(1.038)	36754	10.0000	9.55
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	51244	10.0000	9.49
	40 Methyl Methacrylate	41	7.239	7.239	(1.254)	42920	10.0000	9.49
	41 2-Chloroethylvinyl ether	63	8.148	8.148	(1.240)	12708	20.0000	19.05(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	41828	10.0000	9.38(M)
	43 2-Nitropropane	43	8.022	8.022	(1.390)	89256	10.0000	9.37
	44 Dibromomethane	93	7.191	7.191	(1.095)	21661	10.0000	9.73
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	89256	20.0000	18.52
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	58307	10.0000	9.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	525130	50.0000	
$	48 Toluene-d8	98	8.087	8.087	(0.849)	138297	10.0000	9.12
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	50649	10.0000	8.50
	50 Toluene	91	8.154	8.154	(0.856)	151189	10.0000	9.42
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	47668	10.0000	9.54
	52 2-Hexanone	43	8.866	8.866	(0.931)	55066	20.0000	18.23
	53 1,1,2-Trichloroethane	83	8.594	8.594	(0.902)	28779	10.0000	9.55
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	57901	10.0000	9.68
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	42245	10.0000	9.57
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	30503	10.0000	9.51
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	35307	10.0000	9.38
	58 1-Chlorohexane	55	9.547	9.547	(1.453)	41316	10.0000	9.11
	59 Chlorobenzene	112	9.553	9.553	(1.003)	91882	10.0000	9.15
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	38571	10.0000	9.67
	61 Ethylbenzene	106	9.669	9.669	(1.015)	50060	10.0000	9.20
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	125344	20.0000	17.69
	63 o-Xylene	106	10.176	10.176	(1.068)	64974	10.0000	9.51
	64 Styrene	104	10.195	10.195	(1.070)	105799	10.0000	9.66
	66 Bromoform	173	10.374	10.374	(1.089)	29901	10.0000	9.54
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	157147	10.0000	9.55
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	47008	10.0000	9.29
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	50489	10.0000	9.13
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.831	(1.000)	228196	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	23472	10.0000	9.21
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	10789	10.0000	8.88
	73 n-Propylbenzene	91	10.952	10.952	(0.926)	167906	10.0000	9.38
	74 Bromobenzene	156	10.830	10.830	(0.915)	42282	10.0000	9.23
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	127283	10.0000	9.40

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	108687	10.0000	8.91
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	121891	10.0000	9.04
78	tert-Butylbenzene	119	11.446	11.446	(0.967)	104486	10.0000	9.34
79	1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	127826	10.0000	8.82
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	144328	10.0000	9.67
82	p-Isopropyltoluene	119	11.815	11.815	(0.999)	120510	10.0000	9.47
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	70713	10.0000	9.05
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	67589	10.0000	8.95
87	n-Butylbenzene	91	12.223	12.223	(1.033)	91053	10.0000	9.44
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	70001	10.0000	9.55
89	1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	7903	10.0000	9.68
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	35798	10.0000	8.81
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	16436	10.0000	8.85
92	Naphthalene	128	14.062	14.062	(1.188)	83218	10.0000	8.58
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.209)	30812	10.0000	9.24
146	Methyl acetate	43	3.222	3.222	(0.558)	40480	10.0000	8.83
138	Freon TF	101	2.760	2.760	(0.478)	30530	10.0000	9.53
139	Diethyl ether	59	2.532	2.532	(0.439)	67010	10.0000	9.86
147	Methylcyclohexane	83	6.986	6.986	(1.064)	50863	10.0000	9.91
135	1,4-Dioxane	88	7.239	7.239	(1.254)	6381	200.000	164.87
132	n-Butanol	56	6.979	6.979	(1.209)	25115	200.000	180.16
131	Methyl Acrylate	55	5.259	5.259	(0.911)	63965	10.0000	9.97
133	Ethyl Acrylate	55	7.008	7.008	(1.214)	114943	10.0000	9.91
136	n-Hexane	57	4.043	4.043	(0.700)	44987	10.0000	9.84
141	Cyclohexane	56	5.683	5.683	(0.984)	64836	10.0000	10.20(H)
142	Tetrahydrofuran	42	5.414	5.414	(0.938)	29323	20.0000	19.13
148	Tert-butyl alcohol	59	3.562	3.562	(0.617)	81132	200.000	177.50
149	Isopropyl alcohol	45	3.049	3.049	(0.528)	53396	200.000	183.69(M)
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	189165	200.000	187.33
166	1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	118022	10.0000	9.16
167	Ethanol	45	2.532	2.532	(0.439)	63839	200.000	190.56
170	1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	45331	10.0000	9.12
172	tert-Butyl formate	59	4.903	4.903	(0.849)	126914	20.0000	18.95
173	3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.957)	65672	200.000	187.92
174	tert-Amyl methyl ether	73	6.251	6.251	(1.083)	122900	10.0000	9.73
175	tert-Butyl ethyl ether	59	6.229	6.229	(1.079)	57687	10.0000	9.20
176	tert-Amyl alcohol	59	6.229	6.229	(1.079)	57687	200.000	184.19
157	2-Methylnaphthalene	142	15.194	15.194	(1.284)	4532	10.0000	6.56(T)
156	Diisopropyl ether	45	4.412	4.412	(0.764)	154561	10.0000	9.50(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.301)	4903	10.0000	6.15(T)
130	Ethyl Acetate	43	5.231	5.231	(0.906)	90208	10.0000	9.57

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D
Date : 04-MAY-2018 16:56
Client ID: VSTD010
Sample Info: VSTD010;VSTD010;1;5;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D Page 1
Report Date: 15-May-2018 14:56

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 04-MAY-2018 17:21
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:56 Cal File: D050406.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.772	5.772	(1.000)	349139	50.0000	
2	Dichlorodifluoromethane	85	1.437	1.437	(0.249)	71401	20.0000	21.53
186	Isobutylene	56	1.646	1.646	(0.285)	83233	20.0000	24.63(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	130241	20.0000	22.18
4	Propionitrile	54	5.224	5.224	(0.905)	257578	200.000	212.86
5	Vinyl Chloride	62	1.671	1.671	(0.290)	98115	20.0000	22.53
6	Bromomethane	94	1.938	1.938	(0.336)	49519	20.0000	19.20
7	Chloroethane	64	2.031	2.031	(0.352)	55952	20.0000	23.06
159	Dichlorofluoromethane	67	2.220	2.220	(0.385)	137229	20.0000	21.37
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	97406	20.0000	23.63
9	Acrolein	56	2.676	2.676	(0.464)	33060	40.0000	38.04
10	Acetone	43	2.846	2.846	(0.493)	49743	40.0000	41.11
11	1,1-Dichloroethene	96	2.750	2.750	(0.476)	56471	20.0000	21.42
12	Isobutyl Alcohol	74	6.157	6.157	(1.067)	7038	400.000	405.53(AM)
13	Acetonitrile	39	3.170	3.170	(0.549)	90061	200.000	202.06
14	Allyl Chloride	41	3.167	3.167	(0.549)	232316	20.0000	20.44
15	Iodomethane	142	2.904	2.904	(0.503)	95749	40.0000	37.87
16	Acrylonitrile	53	3.687	3.687	(0.639)	65793	40.0000	42.46
17	Methylene Chloride	84	3.327	3.327	(0.576)	72041	20.0000	19.52
18	Methyl tert-butyl ether	73	3.680	3.680	(0.638)	210597	20.0000	20.91
19	Carbon Disulfide	76	2.942	2.942	(0.510)	255686	40.0000	42.35

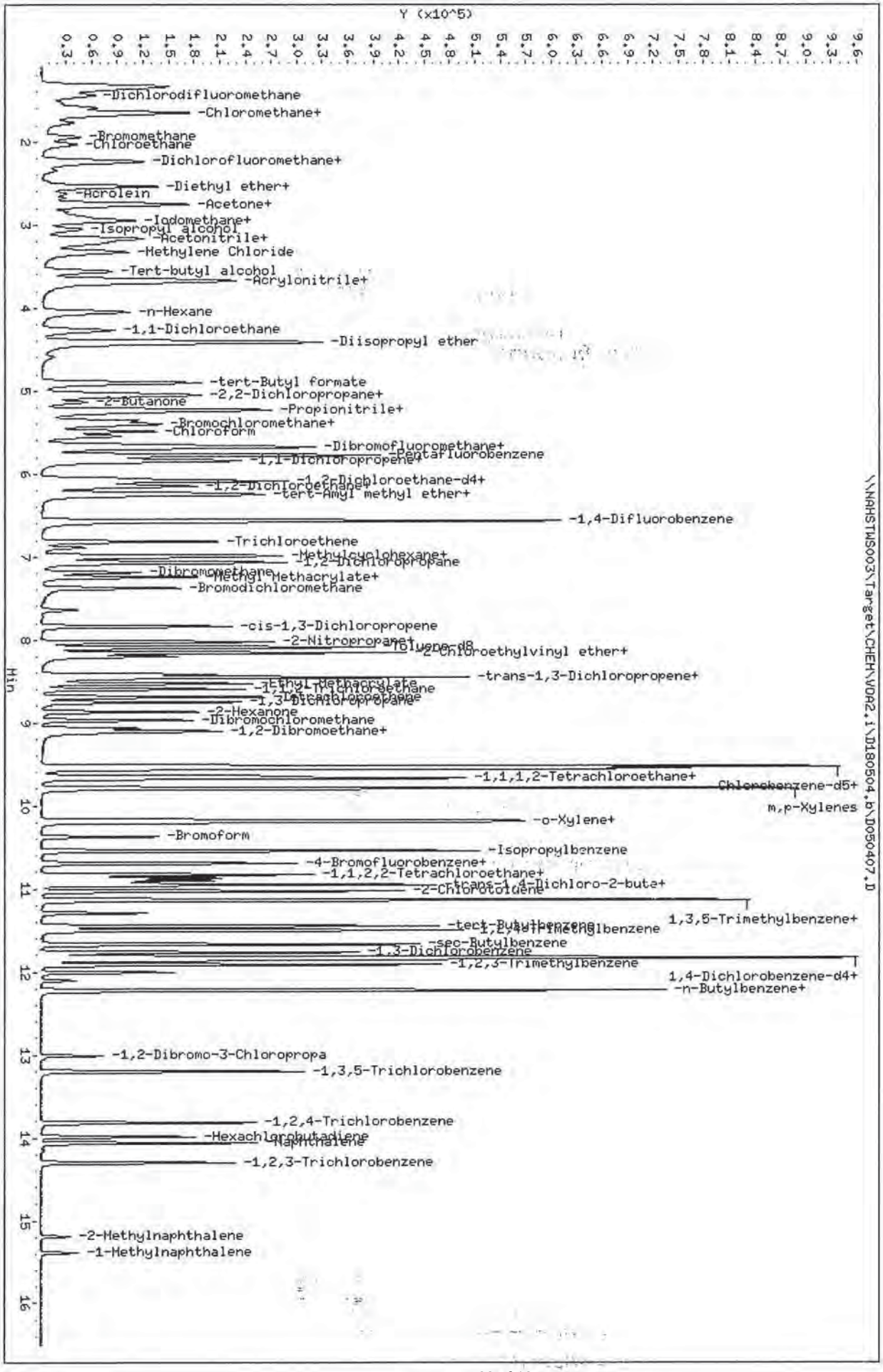
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D Page 2
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	65763	20.0000	22.61
	21 Vinyl Acetate	43	5.233	5.233	(0.907)	194220	40.0000	43.21(M)
	22 1,1-Dichloroethane	63	4.267	4.267	(0.739)	147120	20.0000	20.98
	24 2-Butanone	43	5.134	5.134	(0.889)	79772	40.0000	43.94
	25 Methacrylonitrile	41	5.394	5.394	(0.934)	90721	20.0000	20.98(H)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.873)	105239	20.0000	22.19
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	77848	20.0000	21.57
	28 Chloroform	83	5.490	5.490	(0.951)	126506	20.0000	20.91
	29 Bromochloromethane	128	5.362	5.362	(0.929)	37197	20.0000	21.36
$	30 Dibromofluoromethane	113	5.679	5.679	(0.984)	66765	20.0000	20.99
	31 1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	111797	20.0000	22.01
	32 1,1-Dichloropropene	75	5.849	5.849	(0.991)	89289	20.0000	19.00
	33 1,2-Dichloroethane	62	6.138	6.138	(0.935)	106949	20.0000	20.80
	34 Carbon Tetrachloride	117	5.830	5.830	(0.888)	97675	20.0000	20.44(MH)
$	35 1,2-Dichloroethane-d4	65	6.048	6.048	(1.048)	86791	20.0000	21.69
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	545071	50.0000	
	37 Benzene	78	6.090	6.090	(0.928)	281645	20.0000	20.32
	38 Trichloroethene	130	6.815	6.815	(1.038)	76419	20.0000	21.30
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	105096	20.0000	20.88
	40 Methyl Methacrylate	41	7.245	7.245	(1.255)	89556	20.0000	21.70
	41 2-Chloroethylvinyl ether	63	8.153	8.153	(1.242)	25768	40.0000	41.42(T)
	42 1,2-Dichloropropane	63	7.059	7.059	(1.075)	86252	20.0000	20.74
	43 2-Nitropropane	43	8.022	8.022	(1.390)	187193	20.0000	21.53
	44 Dibromomethane	93	7.184	7.184	(1.094)	44155	20.0000	21.26
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	187193	40.0000	41.64
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	120790	20.0000	21.51
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	489834	50.0000	
$	48 Toluene-d8	98	8.086	8.086	(0.849)	257970	20.0000	19.12
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	104310	20.0000	21.51
	50 Toluene	91	8.153	8.153	(0.856)	301116	20.0000	20.12
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.282)	100604	20.0000	21.58
	52 2-Hexanone	43	8.863	8.863	(0.931)	117912	40.0000	41.86
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	56618	20.0000	20.14
	54 1,3-Dichloropropane	76	8.747	8.747	(0.918)	114958	20.0000	20.60
	55 Dibromochloromethane	129	8.968	8.968	(0.942)	85643	20.0000	20.81
	56 Tetrachloroethene	164	8.689	8.689	(0.912)	61687	20.0000	20.62
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	74048	20.0000	21.10
	58 1-Chlorohexane	55	9.549	9.549	(1.455)	79441	20.0000	21.90
	59 Chlorobenzene	112	9.553	9.553	(1.003)	186888	20.0000	19.96
	60 1,1,1,2-Tetrachloroethane	131	9.642	9.642	(1.012)	76030	20.0000	20.45
	61 Ethylbenzene	106	9.668	9.668	(1.015)	100751	20.0000	19.85
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	249353	40.0000	45.34
	63 o-Xylene	106	10.175	10.175	(1.068)	128206	20.0000	20.12
	64 Styrene	104	10.197	10.197	(1.071)	212786	20.0000	20.84
	66 Bromoform	173	10.374	10.374	(1.089)	62785	20.0000	21.47
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	320662	20.0000	20.90
	68 1,1,2,2-Tetrachloroethane	83	10.871	10.871	(0.919)	97153	20.0000	20.46
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	96704	20.0000	20.38
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	214276	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	44805	20.0000	21.42
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	23370	20.0000	19.60
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	341924	20.0000	20.34
	74 Bromobenzene	156	10.833	10.833	(0.915)	86488	20.0000	20.10
	75 1,3,5-Trimethylbenzene	105	11.128	11.128	(0.940)	258546	20.0000	20.34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
76	2-Chlorotoluene	91	11.025	11.025	(0.932)	221609	20.0000	22.12
77	4-Chlorotoluene	91	11.134	11.134	(0.941)	243997	20.0000	22.30
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	215240	20.0000	20.50
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	260489	20.0000	22.41
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	295848	20.0000	21.13
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	248221	20.0000	20.78
83	1,3-Dichlorobenzene	146	11.763	11.763	(0.994)	146530	20.0000	19.98
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	137777	20.0000	19.44
87	n-Butylbenzene	91	12.222	12.222	(1.033)	190336	20.0000	21.01
88	1,2-Dichlorobenzene	146	12.222	12.222	(1.033)	143392	20.0000	20.84
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	16482	20.0000	21.50
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	79809	20.0000	20.32
91	Hexachlorobutadiene	225	13.987	13.987	(1.182)	35809	20.0000	20.57
92	Naphthalene	128	14.061	14.061	(1.188)	198251	20.0000	20.99
93	1,2,3-Trichlorobenzene	182	14.298	14.298	(1.208)	66775	20.0000	19.98
146	Methyl acetate	43	3.221	3.221	(0.558)	83175	20.0000	19.87
138	Freon TF	101	2.753	2.753	(0.477)	61420	20.0000	22.76
139	Diethyl ether	59	2.531	2.531	(0.439)	132597	20.0000	21.38
147	Methylcyclohexane	83	6.985	6.985	(1.064)	103943	20.0000	21.72
135	1,4-Dioxane	88	7.236	7.236	(1.253)	13691	400.000	414.69
132	n-Butanol	56	6.982	6.982	(1.210)	53244	400.000	418.35
131	Methyl Acrylate	55	5.259	5.259	(0.911)	131269	20.0000	22.41
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	231736	20.0000	21.89
136	n-Hexane	57	4.049	4.049	(0.702)	93793	20.0000	22.47
141	Cyclohexane	56	5.683	5.683	(0.984)	133600	20.0000	23.02(H)
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	59334	40.0000	42.40
148	Tert-butyl alcohol	59	3.555	3.555	(0.616)	179831	400.000	430.94
149	Isopropyl alcohol	45	3.048	3.048	(0.528)	107029	400.000	403.30(M)
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	414823	400.000	440.42
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	245288	20.0000	20.27
167	Ethanol	45	2.535	2.535	(0.439)	131873	400.000	431.17
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	98974	20.0000	21.22
172	tert-Butyl formate	59	4.906	4.906	(0.850)	257312	40.0000	42.09
173	3,3-Dimethyl-1-butanol	57	9.100	9.100	(0.956)	142103	400.000	435.94
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	240484	20.0000	20.85
175	tert-Butyl ethyl ether	59	6.225	6.225	(1.078)	122247	20.0000	21.37
176	tert-Amyl alcohol	59	6.225	6.225	(1.078)	122247	400.000	427.54
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	17472	20.0000	10.41
156	Diisopropyl ether	45	4.418	4.418	(0.765)	311485	20.0000	20.98(T)
171	1-Methylnaphthalene	142	15.390	15.390	(1.300)	22016	20.0000	11.09
130	Ethyl Acetate	43	5.233	5.233	(0.907)	184870	20.0000	21.48

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D
Date : 04-MAY-2018 17:21
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D Page 1
Report Date: 15-May-2018 14:56

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 04-MAY-2018 17:45
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 17:21 Cal File: D050407.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	350686	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	187813	50.0000	57.94
186	Isobutylene	56	1.646	1.646	(0.285)	190723	50.0000	56.20(AM)
3	Chloromethane	50	1.588	1.588	(0.275)	317456	50.0000	56.35
4	Propionitrile	54	5.230	5.230	(0.906)	666410	500.000	548.30
5	Vinyl Chloride	62	1.672	1.672	(0.289)	238278	50.0000	54.47
6	Bromomethane	94	1.938	1.938	(0.336)	118894	50.0000	45.90
7	Chloroethane	64	2.025	2.025	(0.351)	136214	50.0000	58.18
159	Dichlorofluoromethane	67	2.221	2.221	(0.384)	339623	50.0000	52.67
8	Trichlorofluoromethane	101	2.243	2.243	(0.388)	247524	50.0000	59.79
9	Acrolein	56	2.670	2.670	(0.462)	84761	100.000	97.71
10	Acetone	43	2.843	2.843	(0.492)	125590	100.000	108.96
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	151526	50.0000	57.22
12	Isobutyl Alcohol	74	6.158	6.158	(1.066)	17826	1000.00	1005.54(AM)
13	Acetonitrile	39	3.161	3.161	(0.547)	239911	500.000	535.88
14	Allyl Chloride	41	3.167	3.167	(0.548)	617975	50.0000	54.15
15	Iodomethane	142	2.898	2.898	(0.502)	287361	100.000	105.02
16	Acrylonitrile	53	3.687	3.687	(0.638)	181398	100.000	116.56
17	Methylene Chloride	84	3.328	3.328	(0.576)	183050	50.0000	49.39
18	Methyl tert-butyl ether	73	3.677	3.677	(0.637)	516807	50.0000	51.10
19	Carbon Disulfide	76	2.946	2.946	(0.510)	648043	100.000	106.87

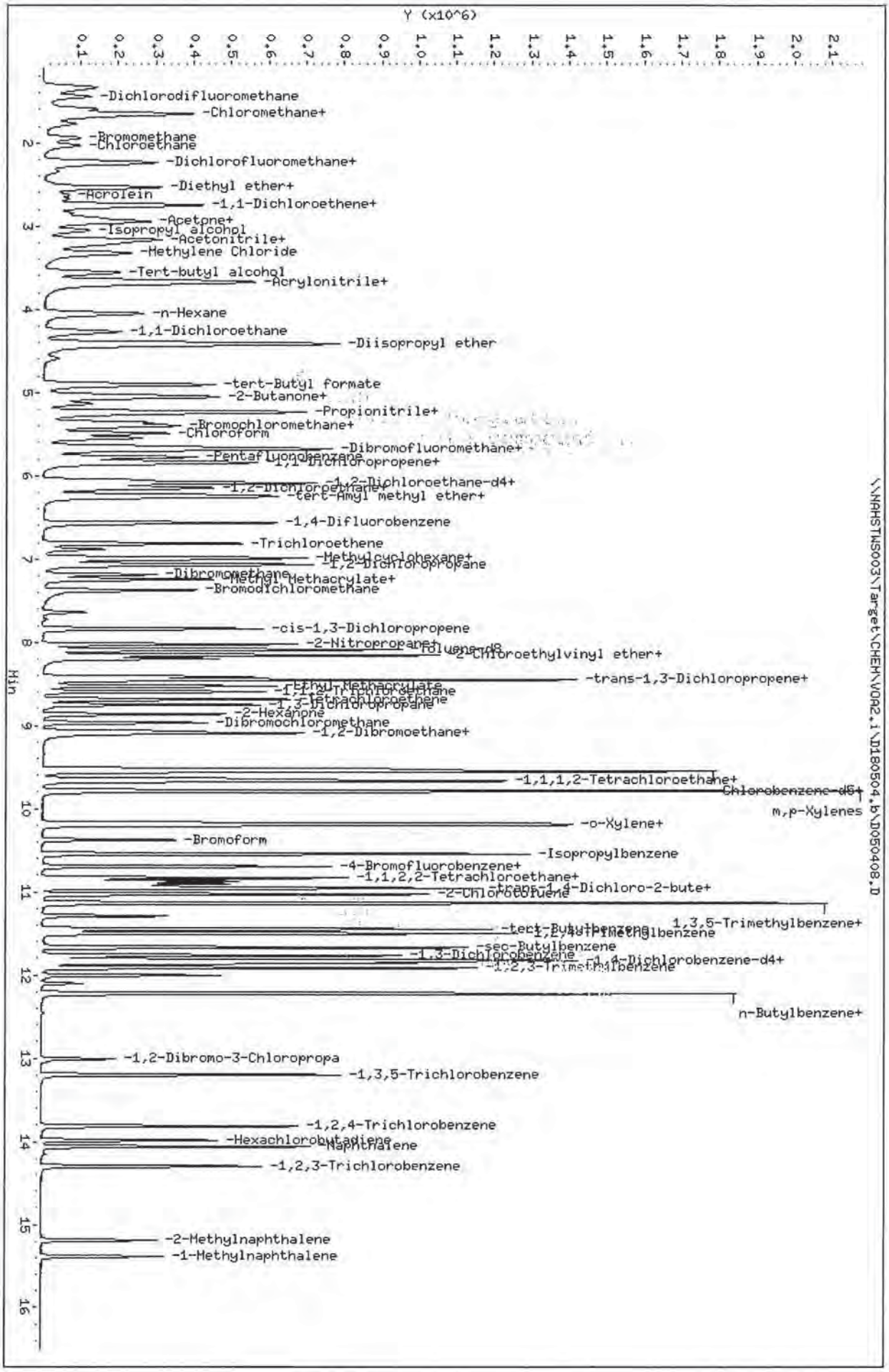
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D Page 2
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	164665	50.0000	56.87
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	444824	100.000	98.53
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	368035	50.0000	52.25
	24 2-Butanone	43	5.134	5.134	(0.889)	199091	100.000	109.19
	25 Methacrylonitrile	41	5.401	5.401	(0.935)	224737	50.0000	51.75(H)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.872)	265984	50.0000	55.85
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	193540	50.0000	53.41
	28 Chloroform	83	5.490	5.490	(0.951)	314451	50.0000	51.75
	29 Bromochloromethane	128	5.359	5.359	(0.928)	97371	50.0000	55.68
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	161085	50.0000	53.31
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	284593	50.0000	55.79
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	225428	50.0000	47.68
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	260346	50.0000	50.32
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	239306	50.0000	49.77(H)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	212338	50.0000	55.80
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	548473	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	697898	50.0000	50.05
	38 Trichloroethene	130	6.816	6.816	(1.038)	193685	50.0000	53.67
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	260198	50.0000	51.38
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	223241	50.0000	53.87
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	62277	100.000	99.50(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	208974	50.0000	49.94
	43 2-Nitropropane	43	8.025	8.025	(1.389)	454901	50.0000	52.10
	44 Dibromomethane	93	7.188	7.188	(1.094)	113995	50.0000	54.57
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	454901	100.000	100.03
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	308972	50.0000	54.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	495545	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	611504	50.0000	50.93
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	266010	50.0000	58.02
	50 Toluene	91	8.154	8.154	(0.856)	737279	50.0000	48.70
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	267533	50.0000	57.05
	52 2-Hexanone	43	8.863	8.863	(0.931)	297754	100.000	104.49
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	145070	50.0000	51.02
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	283622	50.0000	50.25
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	216917	50.0000	52.10
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	157120	50.0000	51.93
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	185246	50.0000	52.19
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	198340	50.0000	58.70
	59 Chlorobenzene	112	9.553	9.553	(1.003)	463607	50.0000	48.94
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	192645	50.0000	51.22
	61 Ethylbenzene	106	9.668	9.668	(1.015)	251848	50.0000	49.06
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	611125	100.000	119.43
	63 o-Xylene	106	10.175	10.175	(1.068)	323883	50.0000	50.24
	64 Styrene	104	10.195	10.195	(1.070)	526444	50.0000	50.98
	66 Bromoform	173	10.374	10.374	(1.089)	157552	50.0000	53.27
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	802370	50.0000	51.70
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	234466	50.0000	48.38
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	235072	50.0000	52.46
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	218685	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	109708	50.0000	55.05
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	64084	50.0000	51.81
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	855905	50.0000	49.89
	74 Bromobenzene	156	10.833	10.833	(0.915)	219152	50.0000	49.92
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	637021	50.0000	49.12

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	552517	50.0000	57.45
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	609251	50.0000	58.42
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	553745	50.0000	51.67
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	648084	50.0000	58.65
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	748824	50.0000	52.40
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	630469	50.0000	51.72
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	371616	50.0000	49.66
84	1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	355327	50.0000	49.14
87	n-Butylbenzene	91	12.219	12.219	(1.033)	498858	50.0000	53.97
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	350866	50.0000	49.97
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	43462	50.0000	55.55
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	211499	50.0000	52.07
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	92968	50.0000	52.38
92	Naphthalene	128	14.061	14.061	(1.188)	525810	50.0000	53.75
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	177731	50.0000	50.48
146	Methyl acetate	43	3.218	3.218	(0.557)	212044	50.0000	50.45
138	Freon TF	101	2.753	2.753	(0.477)	150866	50.0000	57.76
139	Diethyl ether	59	2.532	2.532	(0.438)	320037	50.0000	51.39
147	Methylcyclohexane	83	6.986	6.986	(1.064)	261508	50.0000	54.30
135	1,4-Dioxane	88	7.233	7.233	(1.252)	35743	1000.00	1110.09
132	n-Butanol	56	6.992	6.992	(1.211)	125296	1000.00	980.14
131	Methyl Acrylate	55	5.253	5.253	(0.909)	332179	50.0000	56.46
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	580097	50.0000	54.57
136	n-Hexane	57	4.053	4.053	(0.702)	248185	50.0000	59.21
141	Cyclohexane	56	5.683	5.683	(0.984)	335256	50.0000	57.51(H)
142	Tetrahydrofuran	42	5.410	5.410	(0.937)	146733	100.000	104.40
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	458271	1000.00	1093.35
149	Isopropyl alcohol	45	3.045	3.045	(0.527)	265448	1000.00	995.83(T)
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1040452	1000.00	1091.92
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	609823	50.0000	49.39
167	Ethanol	45	2.529	2.529	(0.438)	319345	1000.00	1039.53
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	251018	50.0000	52.74
172	tert-Butyl formate	59	4.903	4.903	(0.849)	619085	100.000	100.82
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	375304	1000.00	1138.10
174	tert-Amyl methyl ether	73	6.251	6.251	(1.082)	592618	50.0000	51.16
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	310903	50.0000	54.12
176	tert-Amyl alcohol	59	6.228	6.228	(1.078)	310903	1000.00	1082.55
157	2-Methylnaphthalene	142	15.188	15.188	(1.283)	147779	50.0000	46.22
156	Diisopropyl ether	45	4.415	4.415	(0.764)	764306	50.0000	51.27(T)
171	1-Methylnaphthalene	142	15.383	15.383	(1.300)	162419	50.0000	49.08
130	Ethyl Acetate	43	5.237	5.237	(0.907)	452615	50.0000	52.36

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D
Date : 04-MAY-2018 17:45
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050409.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 04-MAY-2018 18:09
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 17:45 Cal File: D050408.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	387338	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	343934	100.000	96.70
186	Isobutylene	56	1.640	1.640	(0.284)	327597	100.000	87.40(AM)
3	Chloromethane	50	1.585	1.585	(0.274)	602360	100.000	98.08
4	Propionitrile	54	5.240	5.240	(0.907)	1312512	1000.00	977.71
5	Vinyl Chloride	62	1.669	1.669	(0.289)	438115	100.000	90.69
6	Bromomethane	94	1.928	1.928	(0.334)	211727	100.000	74.00
7	Chloroethane	64	2.025	2.025	(0.351)	254833	100.000	99.68
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	635538	100.000	89.23
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	442242	100.000	96.72
9	Acrolein	56	2.676	2.676	(0.463)	191202	200.000	199.97
10	Acetone	43	2.840	2.840	(0.492)	250202	200.000	199.52
11	1,1-Dichloroethene	96	2.740	2.740	(0.474)	278753	100.000	95.31
12	Isobutyl Alcohol	74	6.164	6.164	(1.067)	39310	2000.00	1996.43(AM)
13	Acetonitrile	39	3.157	3.157	(0.547)	485819	1000.00	982.48
14	Allyl Chloride	41	3.164	3.164	(0.548)	1213192	100.000	96.25
15	Iodomethane	142	2.898	2.898	(0.502)	593037	200.000	192.67
16	Acrylonitrile	53	3.681	3.681	(0.637)	352303	200.000	204.97
17	Methylene Chloride	84	3.324	3.324	(0.576)	355236	100.000	86.78
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	997217	100.000	89.28
19	Carbon Disulfide	76	2.942	2.942	(0.509)	1214197	200.000	181.30

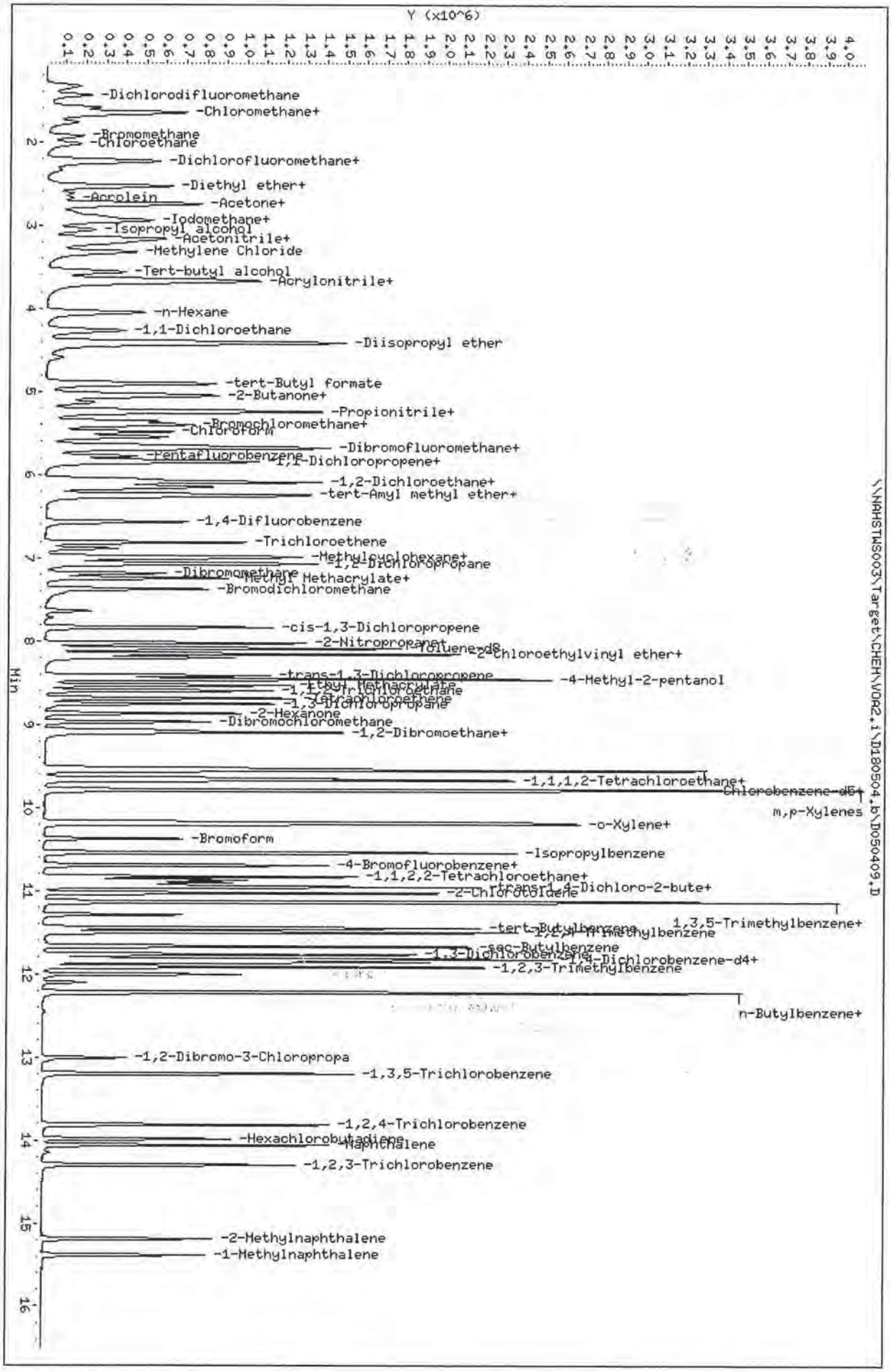
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050409.D Page 2
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	314877	100.000	98.69
	21 Vinyl Acetate	43	5.243	5.243	(0.908)	862066	200.000	172.89
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	708167	100.000	91.03
	24 2-Butanone	43	5.134	5.134	(0.889)	408035	200.000	202.62
	25 Methacrylonitrile	41	5.397	5.397	(0.934)	450364	100.000	93.89(M)
	26 2,2-Dichloropropane	77	5.031	5.031	(0.871)	498071	100.000	94.68
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.876)	371650	100.000	92.86
	28 Chloroform	83	5.487	5.487	(0.950)	599403	100.000	89.31
	29 Bromochloromethane	128	5.362	5.362	(0.928)	190373	100.000	98.56
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	308649	100.000	96.93
	31 1,1,1-Trichloroethane	97	5.644	5.644	(0.977)	526141	100.000	93.38
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	427075	100.000	80.47
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	516083	100.000	88.86
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	457167	100.000	84.71(H)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	423867	100.000	102.51
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	615694	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	1309865	100.000	83.69
	38 Trichloroethene	130	6.812	6.812	(1.038)	373414	100.000	92.17
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	504183	100.000	88.69
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	438915	100.000	95.90
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	121413	200.000	172.81(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	398256	100.000	84.79
	43 2-Nitropropane	43	8.029	8.029	(1.390)	879605	100.000	91.21
	44 Dibromomethane	93	7.185	7.185	(1.094)	223210	100.000	95.18
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	879605	200.000	175.72
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	601144	100.000	94.77
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	545483	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	1145767	100.000	99.74
	49 Ethyl Methacrylate	69	8.532	8.532	(1.300)	516544	100.000	102.02
	50 Toluene	91	8.157	8.157	(0.856)	1362659	100.000	81.78
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	533443	100.000	101.34
	52 2-Hexanone	43	8.866	8.866	(0.931)	587124	200.000	187.18
	53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	274614	100.000	87.74
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	553206	100.000	89.04
	55 Dibromochloromethane	129	8.969	8.969	(0.941)	423304	100.000	92.37
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	291588	100.000	87.56
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	366099	100.000	93.70
	58 1-Chlorohexane	55	9.553	9.553	(1.455)	370336	100.000	99.59
	59 Chlorobenzene	112	9.553	9.553	(1.003)	879204	100.000	84.32
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	370903	100.000	89.59
	61 Ethylbenzene	106	9.672	9.672	(1.015)	481450	100.000	85.20
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	1138513	200.000	206.78
	63 o-Xylene	106	10.179	10.179	(1.068)	612664	100.000	86.34
	64 Styrene	104	10.198	10.198	(1.070)	992298	100.000	87.29
	66 Bromoform	173	10.374	10.374	(1.089)	311532	100.000	95.69
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	1468464	100.000	85.96
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	448846	100.000	84.19
$	69 4-Bromofluorobenzene	95	10.698	10.698	(1.123)	459019	100.000	97.98
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	240587	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.903)	210995	100.000	98.19
	72 trans-1,4-Dichloro-2-butene	53	10.929	10.929	(1.147)	133141	100.000	97.11
	73 n-Propylbenzene	91	10.958	10.958	(0.926)	1583226	100.000	83.89
	74 Bromobenzene	156	10.833	10.833	(0.915)	418632	100.000	86.68
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.940)	1172773	100.000	82.21

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
76	2-Chlorotoluene	91	11.032	11.032	(0.932)	1043252	100.000	100.30
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	1137519	100.000	101.00
78	tert-Butylbenzene	119	11.453	11.453	(0.967)	1010400	100.000	85.71
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	1208466	100.000	101.35
81	sec-Butylbenzene	105	11.671	11.671	(0.986)	1381860	100.000	87.90
82	p-Isopropyltoluene	119	11.822	11.822	(0.999)	1178802	100.000	87.91
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	714434	100.000	86.79
84	1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	691697	100.000	86.95
87	n-Butylbenzene	91	12.223	12.223	(1.033)	938234	100.000	92.26
88	1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	664542	100.000	86.04
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	90887	100.000	105.60
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	444824	100.000	99.15
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	187228	100.000	95.91
92	Naphthalene	128	14.061	14.061	(1.188)	1071893	100.000	99.16
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	381509	100.000	97.53
146	Methyl acetate	43	3.218	3.218	(0.557)	430908	100.000	92.82
138	Freon TF	101	2.753	2.753	(0.477)	279713	100.000	97.94
139	Diethyl ether	59	2.529	2.529	(0.438)	624845	100.000	90.84
147	Methylcyclohexane	83	6.986	6.986	(1.064)	482683	100.000	89.29
135	1,4-Dioxane	88	7.236	7.236	(1.253)	71709	2000.00	2032.83
132	n-Butanol	56	6.989	6.989	(1.210)	246373	2000.00	1744.92
131	Methyl Acrylate	55	5.259	5.259	(0.911)	656838	100.000	101.09
133	Ethyl Acrylate	55	7.008	7.008	(1.213)	1111716	100.000	94.68
136	n-Hexane	57	4.053	4.053	(0.702)	459982	100.000	99.36
141	Cyclohexane	56	5.680	5.680	(0.983)	615427	100.000	95.58
142	Tetrahydrofuran	42	5.410	5.410	(0.937)	283688	200.000	182.74
148	Tert-butyl alcohol	59	3.559	3.559	(0.616)	910410	2000.00	1966.53
149	Isopropyl alcohol	45	3.052	3.052	(0.528)	549951	2000.00	1867.93(T)
151	4-Methyl-2-pentanol	45	8.462	8.462	(0.888)	1921741	2000.00	1832.17
166	1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	1146469	100.000	84.41
167	Ethanol	45	2.529	2.529	(0.438)	631759	2000.00	1861.91
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.115)	500662	100.000	95.62
172	tert-Butyl formate	59	4.906	4.906	(0.849)	1187774	200.000	175.14
173	3,3-Dimethyl-1-butanol	57	9.097	9.097	(0.955)	743085	2000.00	2047.10
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	1160484	100.000	90.71
175	tert-Butyl ethyl ether	59	6.235	6.235	(1.079)	648877	100.000	102.27
176	tert-Amyl alcohol	59	6.235	6.235	(1.079)	648877	2000.00	2045.56
157	2-Methylnaphthalene	142	15.191	15.191	(1.283)	411151	100.000	103.00(M)
156	Diisopropyl ether	45	4.415	4.415	(0.764)	1462659	100.000	88.83
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	403943	100.000	101.60
130	Ethyl Acetate	43	5.243	5.243	(0.908)	862066	100.000	90.30

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050409.D
Date : 04-MAY-2018 18:09
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050409.D

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 04-MAY-2018 14:55
Operator : AP Inst ID: VOA2.i
Smp Info : BFB;BFB;3;;BFB
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\bfb.m
Meth Date : 14-May-2018 17:09 Cesar.Lira Quant Type: ISTD
Cal Date : Cal File:
Als bottle: 1 QC Sample: BFB
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14 Sample Matrix: WATER

Concentration Formula: Amt * DF * Uf * Vf * Vi * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vf	1.000	Volumetric correction factor
Vi	2.000	Injection Volume
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COL	CONCENTRATIONS FINAL		
RT	EXP RT	REL RT	MASS	RESPONSE	(ug/L)	(ug/l)	TARGET RANGE	RATIO
1 bfb						CAS #: 460-00-4		
10.695	10.696	(0.000)	95	136064			0.00- 100.00	100.00
10.695	10.696	(0.000)	50	29216			15.00- 40.00	21.47
10.695	10.696	(0.000)	75	65272			30.00- 60.00	47.97
10.695	10.696	(0.000)	96	9482			5.00- 9.00	6.97
10.695	10.696	(0.000)	173	0	0.0	0.0	0.00- 2.00	0.00
10.695	10.696	(0.000)	174	113648			50.00- 0.00	83.53
10.695	10.696	(0.000)	175	9558			5.00- 9.00	8.41
10.695	10.696	(0.000)	176	108736			95.00- 101.00	95.68
10.695	10.696	(0.000)	177	7985			5.00- 9.00	7.34

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 04-MAY-2018 18:34
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD200;VSTD200;1;9;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 15-May-2018 14:56 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 18:09 Cal File: D050409.D
Als bottle: 10 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	386220	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	702772	200.000	199.18
186	Isobutylene	56	1.643	1.643	(0.284)	625943	200.000	167.47(AM)
3	Chloromethane	50	1.585	1.585	(0.274)	1207423	200.000	198.95(A)
4	Propionitrile	54	5.266	5.266	(0.911)	2478374	2000.00	1851.52
5	Vinyl Chloride	62	1.669	1.669	(0.289)	873139	200.000	181.26
6	Bromomethane	94	1.929	1.929	(0.334)	369198	200.000	129.42
7	Chloroethane	64	2.015	2.015	(0.349)	499449	200.000	197.48
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	1232681	200.000	173.58(A)
8	Trichlorofluoromethane	101	2.237	2.237	(0.387)	889267	200.000	195.06
9	Acrolein	56	2.676	2.676	(0.463)	381410	400.000	400.45(A)
10	Acetone	43	2.859	2.859	(0.495)	492850	400.000	397.78
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	560434	200.000	192.18
12	Isobutyl Alcohol	74	6.177	6.177	(1.069)	67493	4000.00	3429.58(AM)
13	Acetonitrile	39	3.158	3.158	(0.546)	959063	2000.00	1945.16
14	Allyl Chloride	41	3.170	3.170	(0.549)	2405098	200.000	191.36
15	Iodomethane	142	2.898	2.898	(0.501)	1249302	400.000	402.50(A)
16	Acrylonitrile	53	3.690	3.690	(0.639)	713421	400.000	416.27(A)
17	Methylene Chloride	84	3.325	3.325	(0.575)	692452	200.000	169.66
18	Methyl tert-butyl ether	73	3.677	3.677	(0.636)	1930364	200.000	173.32
19	Carbon Disulfide	76	2.949	2.949	(0.510)	2448110	400.000	366.60

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D Page 2
Report Date: 15-May-2018 14:56

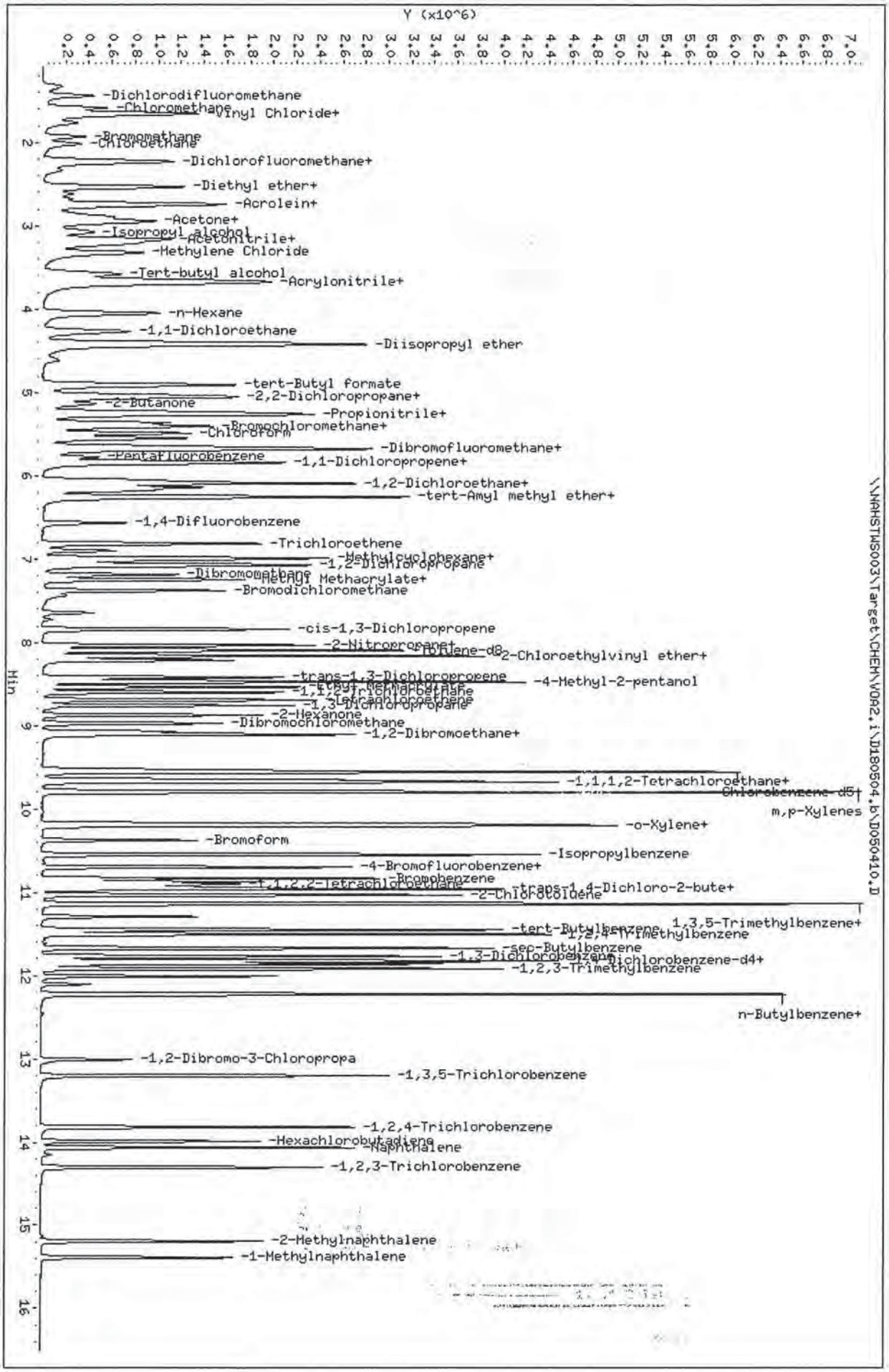
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	630396	200.000	198.50
	21 Vinyl Acetate	43	5.247	5.247	(0.908)	1665534	400.000	334.99(A)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	1395618	200.000	179.92
	24 2-Butanone	43	5.138	5.138	(0.889)	771325	400.000	384.14
	25 Methacrylonitrile	41	5.407	5.407	(0.936)	859160	200.000	179.64(M)
	26 2,2-Dichloropropane	77	5.035	5.035	(0.871)	992977	200.000	189.32
	27 cis-1,2-Dichloroethene	96	5.061	5.061	(0.876)	731765	200.000	183.37
	28 Chloroform	83	5.491	5.491	(0.950)	1165117	200.000	174.11
	29 Bromochloromethane	128	5.369	5.369	(0.929)	372129	200.000	193.22
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	584635	200.000	200.52(A)
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	1038682	200.000	184.89
	32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	839177	200.000	158.48
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	1015284	200.000	175.21
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	931768	200.000	173.04
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	804250	200.000	196.92
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	614331	50.0000	
	37 Benzene	78	6.094	6.094	(0.928)	2467969	200.000	158.04
	38 Trichloroethene	130	6.819	6.819	(1.038)	717187	200.000	177.43
	39 Bromodichloromethane	83	7.377	7.377	(1.123)	968251	200.000	170.71
	40 Methyl Methacrylate	41	7.249	7.249	(1.254)	841202	200.000	184.33
	41 2-Chloroethylvinyl ether	63	8.160	8.160	(1.242)	242260	400.000	345.58(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	774714	200.000	165.31
	43 2-Nitropropane	43	8.035	8.035	(1.390)	1641027	200.000	170.67
	44 Dibromomethane	93	7.188	7.188	(1.094)	436776	200.000	186.67
	45 4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	1641027	400.000	332.14
	46 cis-1,3-Dichloropropene	75	7.843	7.843	(1.194)	1144272	200.000	180.80
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	538415	50.0000	
$	48 Toluene-d8	98	8.096	8.096	(0.850)	2114605	200.000	238.13(A)
	49 Ethyl Methacrylate	69	8.536	8.536	(1.299)	982185	200.000	196.47
	50 Toluene	91	8.164	8.164	(0.857)	2521971	200.000	153.34
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	1033374	200.000	196.75
	52 2-Hexanone	43	8.873	8.873	(0.931)	1113325	400.000	359.60
	53 1,1,2-Trichloroethane	83	8.600	8.600	(0.903)	529641	200.000	171.46
	54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	1055986	200.000	172.19
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	820409	200.000	181.37
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	574051	200.000	174.65
	57 1,2-Dibromoethane	107	9.072	9.072	(0.952)	709119	200.000	183.88
	58 1-Chlorohexane	55	9.556	9.556	(1.455)	722126	200.000	197.43
	59 Chlorobenzene	112	9.556	9.556	(1.003)	1625569	200.000	157.95
	60 1,1,1,2-Tetrachloroethane	131	9.649	9.649	(1.013)	709047	200.000	173.52
	61 Ethylbenzene	106	9.678	9.678	(1.016)	909838	200.000	163.13
	62 m,p-Xylenes	106	9.800	9.800	(1.029)	2087186	400.000	389.82(M)
	63 o-Xylene	106	10.182	10.182	(1.069)	1144526	200.000	163.41
	64 Styrene	104	10.204	10.204	(1.071)	1838822	200.000	163.89
	66 Bromoform	173	10.378	10.378	(1.089)	601655	200.000	187.23
	67 Isopropylbenzene	105	10.551	10.551	(1.107)	2666209	200.000	158.12
	68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	844339	200.000	165.21
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	852556	200.000	200.34(A)
*	70 1,4-Dichlorobenzene-d4	152	11.841	11.841	(1.000)	230646	50.0000	
	71 1,2,3-Trichloropropane	75	10.699	10.699	(0.904)	405365	200.000	199.39
	72 trans-1,4-Dichloro-2-butene	53	10.936	10.936	(1.148)	273122	200.000	200.99(A)
	73 n-Propylbenzene	91	10.962	10.962	(0.926)	2906123	200.000	160.63
	74 Bromobenzene	156	10.837	10.837	(0.915)	788067	200.000	170.22
	75 1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	2121973	200.000	155.16

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D Page 3
Report Date: 15-May-2018 14:56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.036	11.036	(0.932)	1946835	200.000	197.48
77	4-Chlorotoluene	91	11.145	11.145	(0.941)	2097579	200.000	196.74
78	tert-Butylbenzene	119	11.456	11.456	(0.967)	1888477	200.000	167.10
79	1,2,4-Trimethylbenzene	105	11.507	11.507	(0.972)	2216630	200.000	196.46
81	sec-Butylbenzene	105	11.674	11.674	(0.986)	2554233	200.000	169.48
82	p-Isopropyltoluene	119	11.825	11.825	(0.999)	2187279	200.000	170.15
83	1,3-Dichlorobenzene	146	11.774	11.774	(0.994)	1337147	200.000	169.44
84	1,4-Dichlorobenzene	146	11.867	11.867	(1.002)	1309141	200.000	171.67
87	n-Butylbenzene	91	12.226	12.226	(1.033)	1782095	200.000	182.81
88	1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	1229142	200.000	166.00
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	179466	200.000	217.52(A)
90	1,2,4-Trichlorobenzene	180	13.821	13.821	(1.167)	861637	200.000	199.89
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	376631	200.000	201.28(A)
92	Naphthalene	128	14.065	14.065	(1.188)	2071564	200.000	199.38
93	1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	758156	200.000	201.08(A)
146	Methyl acetate	43	3.222	3.222	(0.558)	839236	200.000	181.31(A)
138	Freon TF	101	2.753	2.753	(0.476)	561005	200.000	198.47
139	Diethyl ether	59	2.532	2.532	(0.438)	1196889	200.000	174.51
147	Methylcyclohexane	83	6.989	6.989	(1.064)	961284	200.000	178.23
135	1,4-Dioxane	88	7.246	7.246	(1.254)	138351	4000.00	3952.23
132	n-Butanol	56	6.989	6.989	(1.209)	494053	4000.00	3509.22
131	Methyl Acrylate	55	5.276	5.276	(0.913)	1261234	200.000	194.67
133	Ethyl Acrylate	55	7.015	7.015	(1.214)	2168785	200.000	185.25
136	n-Hexane	57	4.050	4.050	(0.701)	944930	200.000	204.71(A)
141	Cyclohexane	56	5.683	5.683	(0.983)	1225578	200.000	190.90(A)
142	Tetrahydrofuran	42	5.417	5.417	(0.937)	545809	400.000	352.62
148	Tert-butyl alcohol	59	3.581	3.581	(0.620)	1741948	4000.00	3773.60
149	Isopropyl alcohol	45	3.077	3.077	(0.533)	1097936	4000.00	3739.97
151	4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	3368065	4000.00	3253.24
166	1,2,3-Trimethylbenzene	105	11.921	11.921	(1.007)	2116203	200.000	162.53
167	Ethanol	45	2.529	2.529	(0.438)	1192097	4000.00	3523.50
170	1,3,5-Trichlorobenzene	180	13.205	13.205	(1.115)	946359	200.000	188.53
172	tert-Butyl formate	59	4.910	4.910	(0.850)	2375854	400.000	351.34
173	3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.956)	1361525	4000.00	3800.05
174	tert-Amyl methyl ether	73	6.261	6.261	(1.083)	2186944	200.000	171.45
175	tert-Butyl ethyl ether	59	6.251	6.251	(1.082)	1214646	200.000	192.01
176	tert-Amyl alcohol	59	6.251	6.251	(1.082)	1214646	4000.00	3840.22
157	2-Methylnaphthalene	142	15.191	15.191	(1.283)	895104	200.000	199.53(M)
156	Diisopropyl ether	45	4.422	4.422	(0.765)	2799123	200.000	170.49
171	1-Methylnaphthalene	142	15.390	15.390	(1.300)	838915	200.000	199.70
130	Ethyl Acetate	43	5.247	5.247	(0.908)	1665534	200.000	174.97

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D
Date : 04-MAY-2018 18:34
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;9;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D Page 1
Report Date: 23-May-2018 12:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D
Lab Smp Id: VSTD-ICV Client Smp ID: VSTD-ICV
Inj Date : 04-MAY-2018 19:22
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 23-May-2018 12:15 Cesar.Lira Quant Type: ISTD
Cal Date : 04-MAY-2018 18:34 Cal File: D050410.D
Als bottle: 12 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.779	(1.000)	357022	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	175501	53.1092	53.10
3	Chloromethane	50	1.585	1.585	(0.275)	308312	53.6814	53.68
4	Propionitrile	54	5.227	5.266	(0.906)	609889	492.893	492.89
5	Vinyl Chloride	62	1.675	1.669	(0.290)	229971	51.6473	51.64
6	Bromomethane	94	1.938	1.929	(0.336)	108319	41.0777	41.07
7	Chloroethane	64	2.031	2.015	(0.352)	128783	53.9236	53.92
159	Dichlorofluoromethane	67	2.221	2.217	(0.385)	319863	48.7258	48.72
8	Trichlorofluoromethane	101	2.240	2.237	(0.388)	231238	54.8721	54.87
9	Acrolein	56	2.676	2.676	(0.464)	81061	91.7670	91.76
10	Acetone	43	2.846	2.859	(0.493)	120061	102.094	102.09
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	142132	52.7271	52.72
12	Isobutyl Alcohol	74	6.248	6.177	(1.082)	29392	1621.60	1621.59(A)
13	Acetonitrile	39	3.154	3.158	(0.546)	229961	504.548	504.54
14	Allyl Chloride	41	3.164	3.170	(0.548)	584685	50.3269	50.32
15	Iodomethane	142	2.901	2.898	(0.503)	243781	88.1954	88.19
16	Acrylonitrile	53	3.677	3.690	(0.637)	165242	104.303	104.30
17	Methylene Chloride	84	3.328	3.325	(0.576)	176083	46.6725	46.67
18	Methyl tert-butyl ether	73	3.671	3.677	(0.636)	495877	48.1662	48.16
19	Carbon Disulfide	76	2.939	2.949	(0.509)	619148	100.300	100.30
20	trans-1,2-Dichloroethene	96	3.658	3.652	(0.634)	159266	54.0129	54.01

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D Page 2
Report Date: 23-May-2018 12:20

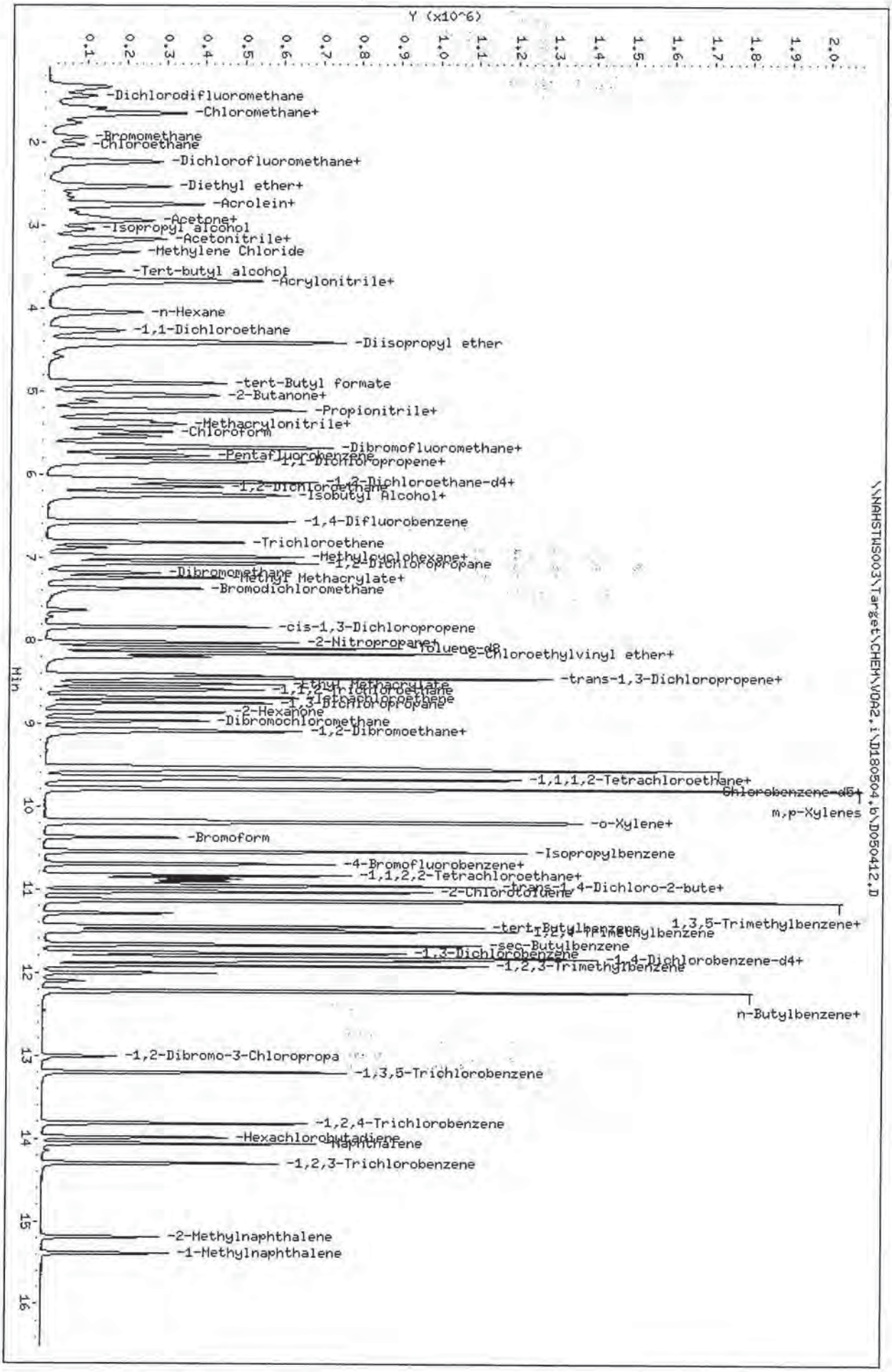
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	21 Vinyl Acetate	43	5.234	5.247	(0.907)	412309	89.7119	89.71
	22 1,1-Dichloroethane	63	4.271	4.268	(0.740)	351016	48.9545	48.95
	24 2-Butanone	43	5.134	5.138	(0.889)	186570	100.516	100.51
	25 Methacrylonitrile	41	5.394	5.407	(0.934)	215324	48.7058	48.70
	26 2,2-Dichloropropane	77	5.032	5.035	(0.872)	249512	51.4629	51.46
	27 cis-1,2-Dichloroethene	96	5.057	5.061	(0.876)	184886	50.1191	50.11
	28 Chloroform	83	5.484	5.491	(0.950)	301427	48.7302	48.73
	29 Bromochloromethane	128	5.356	5.369	(0.928)	93985	52.7921	52.79
$	30 Dibromofluoromethane	113	5.677	5.683	(0.983)	154230	49.9185	49.91
	31 1,1,1-Trichloroethane	97	5.644	5.651	(0.978)	267082	51.4317	51.43
	32 1,1-Dichloropropene	75	5.850	5.853	(0.891)	217794	45.1688	45.16
	33 1,2-Dichloroethane	62	6.139	6.142	(0.935)	260249	49.3208	49.32
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	235694	48.0679	48.06
$	35 1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	207851	53.5738	53.57
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	559435	50.0000	
	37 Benzene	78	6.090	6.094	(0.927)	662907	46.6162	46.61
	38 Trichloroethene	130	6.816	6.819	(1.038)	184669	50.1700	50.16
	39 Bromodichloromethane	83	7.374	7.377	(1.123)	249639	48.3336	48.33
	40 Methyl Methacrylate	41	7.242	7.249	(1.255)	212832	50.4517	50.45
	41 2-Chloroethylvinyl ether	63	8.154	8.160	(1.241)	61489	96.3209	96.32(T)
	42 1,2-Dichloropropane	63	7.063	7.066	(1.075)	198603	46.5381	46.53
	43 2-Nitropropane	43	8.025	8.035	(1.390)	428521	48.2124	48.21
	44 Dibromomethane	93	7.188	7.188	(1.094)	108649	50.9934	50.99
	45 4-Methyl-2-Pentanone	43	8.025	8.035	(0.843)	428521	92.9156	92.91
	46 cis-1,3-Dichloropropene	75	7.836	7.843	(1.193)	297131	51.5572	51.55
*	47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	502590	50.0000	
$	48 Toluene-d8	98	8.090	8.096	(0.849)	587310	47.6926	47.69
	49 Ethyl Methacrylate	69	8.529	8.536	(1.298)	255620	54.5302	54.53
	50 Toluene	91	8.154	8.164	(0.856)	698058	45.4711	45.47
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.281)	259340	54.2237	54.22
	52 2-Hexanone	43	8.863	8.873	(0.931)	283151	97.9765	97.97
	53 1,1,2-Trichloroethane	83	8.590	8.600	(0.902)	137900	47.8244	47.82
	54 1,3-Dichloropropane	76	8.751	8.757	(0.919)	274941	48.0299	48.02
	55 Dibromochloromethane	129	8.966	8.972	(0.941)	210780	49.9218	49.92
	56 Tetrachloroethene	164	8.686	8.693	(0.912)	150367	49.0088	49.00
	57 1,2-Dibromoethane	107	9.065	9.072	(0.952)	180829	50.2343	50.23
	58 1-Chlorohexane	55	9.550	9.556	(1.454)	189935	54.9327	54.93
	59 Chlorobenzene	112	9.553	9.556	(1.003)	445152	46.3377	46.33
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.649	(1.012)	184136	48.2764	48.27
	61 Ethylbenzene	106	9.668	9.678	(1.015)	245621	47.1806	47.18
	62 m,p-Xylenes	106	9.790	9.800	(1.028)	587270	112.807	112.80
	63 o-Xylene	106	10.175	10.182	(1.068)	312674	47.8264	47.82
	64 Styrene	104	10.198	10.204	(1.071)	514288	49.1048	49.10
	66 Bromoform	173	10.374	10.378	(1.089)	152964	50.9956	50.99
	67 Isopropylbenzene	105	10.544	10.551	(1.107)	759849	48.2756	48.27
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.878	(0.919)	223836	45.6497	45.64
$	69 4-Bromofluorobenzene	95	10.695	10.699	(1.123)	231019	50.7138	50.71
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.841	(1.000)	221292	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.699	(0.904)	105613	52.2487	52.24
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.936	(1.147)	61863	49.3556	49.35
	73 n-Propylbenzene	91	10.952	10.962	(0.925)	823548	47.4464	47.44
	74 Bromobenzene	156	10.830	10.837	(0.915)	214332	48.2536	48.25
	75 1,3,5-Trimethylbenzene	105	11.132	11.138	(0.941)	613753	46.7756	46.77
	76 2-Chlorotoluene	91	11.029	11.036	(0.932)	532531	54.6098	54.60

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D Page 3
Report Date: 23-May-2018 12:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
77	4-Chlorotoluene	91	11.138	11.145	(0.941)	588388	55.6363	55.63
78	tert-Butylbenzene	119	11.446	11.456	(0.967)	520459	47.9994	47.99
79	1,2,4-Trimethylbenzene	105	11.501	11.507	(0.972)	631820	56.4046	56.40
81	sec-Butylbenzene	105	11.668	11.674	(0.986)	723210	50.0181	50.01
82	p-Isopropyltoluene	119	11.818	11.825	(0.999)	609665	49.4310	49.43
83	1,3-Dichlorobenzene	146	11.767	11.774	(0.994)	364428	48.1340	48.13
84	1,4-Dichlorobenzene	146	11.857	11.867	(1.002)	345513	47.2252	47.22
87	n-Butylbenzene	91	12.219	12.226	(1.033)	485020	51.8573	51.85
88	1,2-Dichlorobenzene	146	12.223	12.229	(1.033)	342980	48.2795	48.27
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	41165	52.0031	52.00
90	1,2,4-Trichlorobenzene	180	13.818	13.821	(1.168)	215174	52.3513	52.35
91	Hexachlorobutadiene	225	13.988	13.991	(1.182)	93757	52.2044	52.20
92	Naphthalene	128	14.061	14.065	(1.188)	512528	51.7954	51.79
93	1,2,3-Trichlorobenzene	182	14.299	14.305	(1.208)	177489	49.8383	49.83
146	Methyl acetate	43	3.215	3.222	(0.557)	201705	47.1423	47.14
138	Freon TF	101	2.753	2.753	(0.477)	144639	54.3103	54.31
139	Diethyl ether	59	2.532	2.532	(0.439)	321139	50.6526	50.65
147	Methylcyclohexane	83	6.986	6.989	(1.064)	244328	49.7476	49.74
135	1,4-Dioxane	88	7.239	7.246	(1.254)	32183	979.463	979.46
132	n-Butanol	56	6.986	6.989	(1.210)	122610	942.115	942.11
131	Methyl Acrylate	55	5.259	5.276	(0.911)	318487	53.1788	53.17
133	Ethyl Acrylate	55	7.002	7.015	(1.213)	546872	50.5332	50.53
136	n-Hexane	57	4.046	4.050	(0.701)	223778	52.4465	52.44
141	Cyclohexane	56	5.683	5.683	(0.984)	319251	53.7972	53.79
142	Tetrahydrofuran	42	5.407	5.417	(0.937)	136501	95.3991	95.39
148	Tert-butyl alcohol	59	3.555	3.581	(0.616)	417806	979.118	979.11
149	Isopropyl alcohol	45	3.045	3.077	(0.528)	245359	904.137	904.13
151	4-Methyl-2-pentanol	45	8.449	8.478	(0.887)	977046	1011.01	1011.00
166	1,2,3-Trimethylbenzene	105	11.915	11.921	(1.007)	594057	47.5556	47.55
167	Ethanol	45	2.525	2.529	(0.438)	299751	958.439	958.43
170	1,3,5-Trichlorobenzene	180	13.201	13.205	(1.116)	248529	51.6060	51.60
172	tert-Butyl formate	59	4.900	4.910	(0.849)	627330	100.359	100.35
173	3,3-Dimethyl-1-butanol	57	9.094	9.110	(0.955)	355019	1061.50	1061.49
174	tert-Amyl methyl ether	73	6.251	6.261	(1.083)	598324	50.7450	50.74
175	tert-Butyl ethyl ether	59	6.228	6.251	(1.079)	301447	51.5499	51.54
176	tert-Amyl alcohol	59	6.228	6.251	(1.079)	301447	1031.00	1030.99
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	145628	45.1975	45.19
156	Diisopropyl ether	45	4.412	4.422	(0.764)	733521	48.3338	48.33(T)
171	1-Methylnaphthalene	142	15.387	15.390	(1.300)	160032	47.9522	47.95
130	Ethyl Acetate	43	5.234	5.247	(0.907)	412309	46.8580	46.85
M 94	1,2-Dichloroethylene (total)	96				344152	104.132	104.13
M 95	Xylenes (total)	106				899944	160.633	160.63

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D
Date : 04-MAY-2018 19:22
Client ID: VSTD-ICV
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Lab File ID: D050701 BFB Injection Date: 05/07/18

Instrument ID: VOA2 BFB Injection Time: 0906

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.9
75	30.0 - 60.0% of mass 95	48.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.8
175	5.0 - 9.0% of mass 174	6.3 (7.5)1
176	95.0 - 101.0% of mass 174	80.3 (95.7)1
177	5.0 - 9.0% of mass 176	6.0 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	D050703	05/07/18	0954
02	VLCSW-180507	VLCSW-180507	D050705	05/07/18	1043
03	VBLKW-180507	VBLKW-180507	D050707	05/07/18	1132
04	HS18050260-0	HS18050260-02	D050710	05/07/18	1245
05	HS18050260-0	HS18050260-01	D050714	05/07/18	1423
06	HS18050260-0	HS18050260-01M	D050715	05/07/18	1447
07	HS18050260-0	HS18050260-01M	D050716	05/07/18	1512
08	CCV_END	CCV_END	D050729	05/07/18	2030
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

D050703
D050705
D050710
D050714

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 0954

Lab File ID: D050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	97.845177	100.00000	0.3805822	0.1	-2.15	20.00	LINR
Dichlorodifluoromethane	56.125210	50.000000	0.5189884	0.1	12.25	20.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4842350	0.4842350	0.1	5.73	20.00	AVRG
Chloromethane	56.875817	50.000000	0.9133201	0.1	13.75	20.00	LINR
tert-Amyl alcohol	4.1e-002	3.89e-002	3.89e-002	0.005	-5.12	20.00	AVRG
Vinyl Chloride	0.6230000	0.6443472	0.6443472	0.1	3.43	20.00	AVRG
Bromomethane	0.3690000	0.3241877	0.3241877	0.1	-12.14	20.00	AVRG
Chloroethane	55.756605	50.000000	0.3726201	0.1	11.51	20.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7773509	0.7773509	0.1	-5.08	20.00	AVRG
Trichlorofluoromethane	0.5900000	0.6342356	0.6342356	0.1	7.50	20.00	AVRG
Acrolein	88.977021	100.00000	0.1100870	0.01	-11.02	20.00	LINR
Acetone	98.025814	100.00000	0.1616781	0.1	-1.97	20.00	LINR
1,1-Dichloroethene	0.3780000	0.3905853	0.3905853	0.1	3.33	20.00	AVRG
Isobutyl Alcohol	806.19668	1000.0000	2.03e-003	0.001	-19.38	20.00	LINR
Acetonitrile	6.4e-002	6.66e-002	6.66e-002	0.01	4.06	20.00	AVRG
Allyl Chloride	1.6270000	1.6359918	1.6359918	0.05	0.55	20.00	AVRG
Acrylonitrile	0.2220000	0.2176018	0.2176018	0.05	-1.98	20.00	AVRG
Methylene Chloride	0.5280000	0.4966736	0.4966736	0.1	-5.93	20.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3618179	1.3618179	0.1	-5.56	20.00	AVRG
Carbon Disulfide	0.8640000	0.8702029	0.8702029	0.1	0.72	20.00	AVRG
trans-1,2-Dichloroethene	53.027048	50.000000	0.4380028	0.1	6.05	20.00	LINR
Vinyl Acetate	0.6440000	0.5803344	0.5803344	0.1	-9.88	20.00	AVRG
1,1-Dichloroethane	1.0040000	1.0180018	1.0180018	0.2	1.39	20.00	AVRG
2-Butanone	0.2600000	0.2565146	0.2565146	0.1	-1.34	20.00	AVRG
Methacrylonitrile	0.6190000	0.5923122	0.5923122	0.01	-4.31	20.00	AVRG
2,2-Dichloropropane	0.6790000	0.7372090	0.7372090	0.1	8.57	20.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5304672	0.5304672	0.1	2.60	20.00	AVRG
Chloroform	0.8660000	0.8687920	0.8687920	0.2	0.32	20.00	AVRG
Bromochloromethane	0.2490000	0.2722824	0.2722824	0.1	9.35	20.00	AVRG
tert-Amyl methyl ether	1.6510000	1.6423936	1.6423936	0.05	-0.52	20.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7428469	0.7428469	0.1	2.18	20.00	AVRG
1,1-Dichloropropene	0.4310000	0.3798184	0.3798184	0.1	-11.88	20.00	AVRG
1,2-Dichloroethane	0.4720000	0.4911881	0.4911881	0.1	4.06	20.00	AVRG
Carbon Tetrachloride	0.4380000	0.4130581	0.4130581	0.1	-5.69	20.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.26e-002	3.26e-002	0.005	-1.21	20.00	AVRG
Benzene	1.2710000	1.2549023	1.2549023	0.5	-1.27	20.00	AVRG
Trichloroethene	0.3290000	0.3423013	0.3423013	0.2	4.04	20.00	AVRG
Bromodichloromethane	0.4620000	0.4798758	0.4798758	0.2	3.87	20.00	AVRG
Methyl Methacrylate	0.5900000	0.5940345	0.5940345	0.05	0.68	20.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.64e-002	5.64e-002	0.05	-1.05	20.00	AVRG
1,2-Dichloropropane	0.3810000	0.3805886	0.3805886	0.1	-0.11	20.00	AVRG
tert-Butyl formate	0.8760000	0.8901822	0.8901822	0.1	1.62	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 0954

Lab File ID: D050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.2087593	0.2087593	0.1	9.87	20.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4346801	0.4346801	0.1	-5.30	20.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5676487	0.5676487	0.2	10.22	20.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0816598	1.0816598	0.1	-0.58	20.00	AVRG
Ethyl Methacrylate	54.709898	50.000000	0.4583710	0.01	9.42	20.00	LINR
Toluene	1.5270000	1.4634978	1.4634978	0.4	-4.16	20.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4925697	0.4925697	0.1	15.36	20.00	AVRG
2-Hexanone	0.2870000	0.2826958	0.2826958	0.1	-1.50	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2883062	0.2883062	0.1	0.46	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5683119	0.5683119	0.1	-0.12	20.00	AVRG
Dibromochloromethane	0.4200000	0.4369811	0.4369811	0.1	4.04	20.00	AVRG
Tetrachloroethene	0.3050000	0.3015791	0.3015791	0.2	-1.12	20.00	AVRG
1,2-Dibromoethane	0.3580000	0.3675588	0.3675588	0.1	2.67	20.00	AVRG
1-Chlorohexane	54.895988	50.000000	0.3392970	0.1	9.79	20.00	LINR
Chlorobenzene	0.9560000	0.9337248	0.9337248	0.5	-2.33	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3871883	0.3871883	0.1	2.16	20.00	AVRG
Ethylbenzene	0.5180000	0.4969289	0.4969289	0.1	-4.07	20.00	AVRG
m,p-Xylenes	117.33065	100.00000	0.6063553	0.1	17.33	20.00	LINR
o-Xylene	0.6500000	0.6474542	0.6474542	0.3	-0.39	20.00	AVRG
Styrene	1.0420000	1.0652574	1.0652574	0.3	2.23	20.00	AVRG
Bromoform	0.2980000	0.3121962	0.3121962	0.1	4.76	20.00	AVRG
Isopropylbenzene	1.5660000	1.5545831	1.5545831	0.1	-0.73	20.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9780312	0.9780312	0.3	-11.73	20.00	AVRG
Ethanol	4.4e-002	4.36e-002	4.36e-002	0.001	-0.91	20.00	AVRG
1,2,3-Trichloropropane	54.004932	50.000000	0.4925364	0.1	8.01	20.00	LINR
trans-1,4-Dichloro-2-butene	50.882098	50.000000	0.1269557	0.05	1.76	20.00	LINR
n-Propylbenzene	3.9220000	3.6269314	3.6269314	0.1	-7.52	20.00	AVRG
Bromobenzene	1.0040000	0.9487318	0.9487318	0.1	-5.50	20.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.6875477	2.6875477	0.1	-9.33	20.00	AVRG
2-Chlorotoluene	54.310078	50.000000	2.3938052	0.1	8.62	20.00	LINR
4-Chlorotoluene	55.401976	50.000000	2.6481870	0.1	10.80	20.00	LINR
tert-Butylbenzene	2.4500000	2.2663299	2.2663299	0.1	-7.50	20.00	AVRG
1,2,4-Trimethylbenzene	55.259732	50.000000	2.7999242	0.1	10.52	20.00	LINR
sec-Butylbenzene	3.2670000	3.0932243	3.0932243	0.1	-5.32	20.00	AVRG
p-Isopropyltoluene	2.7870000	2.6266380	2.6266380	0.1	-5.75	20.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.6316889	1.6316889	0.6	-4.58	20.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.5523041	1.5523041	0.4	-6.09	20.00	AVRG
n-Butylbenzene	2.1130000	2.0905701	2.0905701	0.05	-1.06	20.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.5155569	1.5155569	0.4	-5.57	20.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1814292	0.1814292	0.05	1.36	20.00	AVRG
1,2,4-Trichlorobenzene	50.416730	50.000000	0.9361202	0.2	0.83	20.00	LINR
Hexachlorobutadiene	50.450644	50.000000	0.4094547	0.1	0.90	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 0954

Lab File ID: D050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	50.321790	50.000000	2.2495159	0.2	0.64	20.00	LINR
1,2,3-Trichlorobenzene	49.082305	50.000000	0.7896371	0.1	-1.84	20.00	LINR
Methyl acetate	0.5990000	0.5494444	0.5494444	0.1	-8.27	20.00	AVRG
Freon TF	50.988937	50.000000	0.3809952	0.1	1.98	20.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.6434294	2.6434294	0.1	-6.33	20.00	AVRG
Methylcyclohexane	0.4390000	0.4258080	0.4258080	0.1	-3.00	20.00	AVRG
1,4-Dioxane	946.00014	1000.0000	4.36e-003	0.001	-5.40	20.00	LINR
n-Butanol	1.8e-002	1.63e-002	1.63e-002	0.001	-9.44	20.00	AVRG
Methyl Acrylate	0.8380000	0.8632048	0.8632048	0.1	3.01	20.00	AVRG
Ethyl Acrylate	1.5160000	1.4888059	1.4888059	0.1	-1.79	20.00	AVRG
n-Hexane	0.5980000	0.6376634	0.6376634	0.1	6.63	20.00	AVRG
Cyclohexane	0.8310000	0.8141325	0.8141325	0.1	-2.03	20.00	AVRG
Isopropyl alcohol	3.8e-002	3.32e-002	3.32e-002	0.005	-12.63	20.00	AVRG
Tert-butyl alcohol	6.e-002	5.41e-002	5.41e-002	0.005	-9.83	20.00	AVRG
Xylenes (total)	0.5980000	0.5569346	0.5569346	0.1	-6.87	20.00	AVRG
Propionitrile	0.1730000	0.1709056	0.1709056	0.01	-1.21	20.00	AVRG
2-Nitropropane	1.2450000	1.1774332	1.1774332	0.1	-5.43	20.00	AVRG
Ethyl Acetate	1.2320000	1.1606689	1.1606689	0.01	-5.79	20.00	AVRG
Diethyl ether	0.8880000	0.8986024	0.8986024	0.05	1.19	20.00	AVRG
Tetrahydrofuran	0.2000000	0.1894997	0.1894997	0.05	-5.25	20.00	AVRG
4-Methyl-2-pentanol	9.6e-002	9.02e-002	9.02e-002	0.005	-6.04	20.00	AVRG
Diisopropyl ether	2.1250000	2.1353575	2.1353575	0.05	0.49	20.00	AVRG
2-Methylnaphthalene	40.325703	50.000000	0.5751125	0.05	-19.35	20.00	2RDR
Dichlorofluoromethane	0.9190000	0.9111044	0.9111044	0.1	-0.86	20.00	AVRG
1-Methylnaphthalene	42.853584	50.000000	0.6357153	0.1	-14.29	20.00	2RDR
Isobutylene	0.4840000	0.4924255	0.4924255	0.1	1.74	20.00	AVRG
Dibromofluoromethane	50.447631	50.000000	0.4362692	0.1	0.90	20.00	2RDR
Toluene-d8	51.269128	50.000000	1.2405948	0.1	2.54	20.00	2RDR
1,2-Dichloroethane-d4	52.919309	50.000000	0.5753308	0.1	5.84	20.00	LINR
4-Bromofluorobenzene	57.209548	50.000000	0.4798512	0.1	14.42	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2030

Lab File ID: D050729 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	68.310142	100.00000	0.2606846	0.1	-31.69	50.00	LINR
Dichlorodifluoromethane	62.301417	50.000000	0.5751380	0.1	24.60	50.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4872224	0.4872224	0.1	6.38	50.00	AVRG
Chloromethane	50.866801	50.000000	0.8197284	0.1	1.73	50.00	LINR
tert-Amyl alcohol	4.1e-002	3.89e-002	3.89e-002	0.005	-5.12	50.00	AVRG
Vinyl Chloride	0.6230000	0.6767857	0.6767857	0.1	8.63	50.00	AVRG
Bromomethane	0.3690000	0.2864900	0.2864900	0.1	-22.36	50.00	AVRG
Chloroethane	58.396033	50.000000	0.3897635	0.1	16.79	50.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7770912	0.7770912	0.1	-5.12	50.00	AVRG
Trichlorofluoromethane	0.5900000	0.6967404	0.6967404	0.1	18.09	50.00	AVRG
Acrolein	82.084927	100.00000	0.1015971	0.01	-17.92	50.00	LINR
Acetone	98.180506	100.00000	0.1619239	0.1	-1.82	50.00	LINR
1,1-Dichloroethene	0.3780000	0.4268060	0.4268060	0.1	12.91	50.00	AVRG
Isobutyl Alcohol	835.57230	1000.0000	2.11e-003	0.001	-16.44	50.00	LINR
Acetonitrile	6.4e-002	6.56e-002	6.56e-002	0.01	2.50	50.00	AVRG
Allyl Chloride	1.6270000	1.6322711	1.6322711	0.05	0.32	50.00	AVRG
Acrylonitrile	0.2220000	0.2297141	0.2297141	0.05	3.47	50.00	AVRG
Methylene Chloride	0.5280000	0.4765653	0.4765653	0.1	-9.74	50.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3212009	1.3212009	0.1	-8.38	50.00	AVRG
Carbon Disulfide	0.8640000	0.9068181	0.9068181	0.1	4.96	50.00	AVRG
trans-1,2-Dichloroethene	55.686767	50.000000	0.4598362	0.1	11.37	50.00	LINR
Vinyl Acetate	0.6440000	0.5812013	0.5812013	0.1	-9.75	50.00	AVRG
1,1-Dichloroethane	1.0040000	0.9977378	0.9977378	0.2	-0.62	50.00	AVRG
2-Butanone	0.2600000	0.2569268	0.2569268	0.1	-1.18	50.00	AVRG
Methacrylonitrile	0.6190000	0.5776923	0.5776923	0.01	-6.67	50.00	AVRG
2,2-Dichloropropane	0.6790000	0.6725969	0.6725969	0.1	-0.94	50.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5146087	0.5146087	0.1	-0.46	50.00	AVRG
Chloroform	0.8660000	0.8448178	0.8448178	0.2	-2.44	50.00	AVRG
Bromochloromethane	0.2490000	0.2581751	0.2581751	0.1	3.68	50.00	AVRG
tert-Amyl methyl ether	1.6510000	1.4516726	1.4516726	0.05	-12.07	50.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7754626	0.7754626	0.1	6.67	50.00	AVRG
1,1-Dichloropropene	0.4310000	0.4189616	0.4189616	0.1	-2.79	50.00	AVRG
1,2-Dichloroethane	0.4720000	0.4450796	0.4450796	0.1	-5.70	50.00	AVRG
Carbon Tetrachloride	0.4380000	0.4477515	0.4477515	0.1	2.23	50.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.25e-002	3.25e-002	0.005	-1.52	50.00	AVRG
Benzene	1.2710000	1.2390496	1.2390496	0.5	-2.51	50.00	AVRG
Trichloroethene	0.3290000	0.3467698	0.3467698	0.2	5.40	50.00	AVRG
Bromodichloromethane	0.4620000	0.4585084	0.4585084	0.2	-0.76	50.00	AVRG
Methyl Methacrylate	0.5900000	0.5730494	0.5730494	0.05	-2.87	50.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.57e-002	5.57e-002	0.05	-2.28	50.00	AVRG
1,2-Dichloropropane	0.3810000	0.3691728	0.3691728	0.1	-3.10	50.00	AVRG
tert-Butyl formate	0.8760000	0.7741145	0.7741145	0.1	-11.63	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2030

Lab File ID: D050729 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.1957956	0.1957956	0.1	3.05	50.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4208384	0.4208384	0.1	-8.31	50.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5290944	0.5290944	0.2	2.74	50.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0323302	1.0323302	0.1	-5.12	50.00	AVRG
Ethyl Methacrylate	53.383354	50.000000	0.4476997	0.01	6.77	50.00	LINR
Toluene	1.5270000	1.4353523	1.4353523	0.4	-6.00	50.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4538484	0.4538484	0.1	6.29	50.00	AVRG
2-Hexanone	0.2870000	0.2770726	0.2770726	0.1	-3.46	50.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2754105	0.2754105	0.1	-4.04	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5418755	0.5418755	0.1	-4.77	50.00	AVRG
Dibromochloromethane	0.4200000	0.4142220	0.4142220	0.1	-1.38	50.00	AVRG
Tetrachloroethene	0.3050000	0.3076182	0.3076182	0.2	0.86	50.00	AVRG
1,2-Dibromoethane	0.3580000	0.3522567	0.3522567	0.1	-1.60	50.00	AVRG
1-Chlorohexane	58.143307	50.000000	0.3583468	0.1	16.29	50.00	LINR
Chlorobenzene	0.9560000	0.9002925	0.9002925	0.5	-5.83	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3706505	0.3706505	0.1	-2.20	50.00	AVRG
Ethylbenzene	0.5180000	0.4949460	0.4949460	0.1	-4.45	50.00	AVRG
m,p-Xylenes	115.41807	100.00000	0.5970071	0.1	15.42	50.00	LINR
o-Xylene	0.6500000	0.6286219	0.6286219	0.3	-3.29	50.00	AVRG
Styrene	1.0420000	1.0235528	1.0235528	0.3	-1.77	50.00	AVRG
Bromoform	0.2980000	0.2997206	0.2997206	0.1	0.58	50.00	AVRG
Isopropylbenzene	1.5660000	1.5690303	1.5690303	0.1	0.19	50.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9515047	0.9515047	0.3	-14.12	50.00	AVRG
Ethanol	4.4e-002	4.19e-002	4.19e-002	0.001	-4.77	50.00	AVRG
1,2,3-Trichloropropane	52.877390	50.000000	0.4827261	0.1	5.75	50.00	LINR
trans-1,4-Dichloro-2-butene	45.558525	50.000000	0.1134683	0.05	-8.88	50.00	LINR
n-Propylbenzene	3.9220000	3.6320005	3.6320005	0.1	-7.39	50.00	AVRG
Bromobenzene	1.0040000	0.8923450	0.8923450	0.1	-11.12	50.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.6673497	2.6673497	0.1	-10.01	50.00	AVRG
2-Chlorotoluene	52.016581	50.000000	2.2969368	0.1	4.03	50.00	LINR
4-Chlorotoluene	52.529625	50.000000	2.5171874	0.1	5.06	50.00	LINR
tert-Butylbenzene	2.4500000	2.3047644	2.3047644	0.1	-5.93	50.00	AVRG
1,2,4-Trimethylbenzene	52.963475	50.000000	2.6891749	0.1	5.93	50.00	LINR
sec-Butylbenzene	3.2670000	3.1529946	3.1529946	0.1	-3.49	50.00	AVRG
p-Isopropyltoluene	2.7870000	2.6394137	2.6394137	0.1	-5.30	50.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.5433429	1.5433429	0.6	-9.75	50.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.4589566	1.4589566	0.4	-11.74	50.00	AVRG
n-Butylbenzene	2.1130000	2.0901102	2.0901102	0.05	-1.08	50.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.4484834	1.4484834	0.4	-9.75	50.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1743918	0.1743918	0.05	-2.57	50.00	AVRG
1,2,4-Trichlorobenzene	46.629430	50.000000	0.8651877	0.2	-6.74	50.00	LINR
Hexachlorobutadiene	47.754968	50.000000	0.3875889	0.1	-4.49	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805026

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2030

Lab File ID: D050729 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	46.300217	50.000000	2.0678888	0.2	-7.40	50.00	LINR
1,2,3-Trichlorobenzene	45.486577	50.000000	0.7305575	0.1	-9.03	50.00	LINR
Methyl acetate	0.5990000	0.5513388	0.5513388	0.1	-7.96	50.00	AVRG
Freon TF	59.375090	50.000000	0.4419238	0.1	18.75	50.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.5116320	2.5116320	0.1	-11.00	50.00	AVRG
Methylcyclohexane	0.4390000	0.4694208	0.4694208	0.1	6.93	50.00	AVRG
1,4-Dioxane	994.25329	1000.0000	4.57e-003	0.001	-0.57	50.00	LINR
n-Butanol	1.8e-002	1.69e-002	1.69e-002	0.001	-6.11	50.00	AVRG
Methyl Acrylate	0.8380000	0.8528309	0.8528309	0.1	1.77	50.00	AVRG
Ethyl Acrylate	1.5160000	1.5278086	1.5278086	0.1	0.78	50.00	AVRG
n-Hexane	0.5980000	0.6687611	0.6687611	0.1	11.83	50.00	AVRG
Cyclohexane	0.8310000	0.9283016	0.9283016	0.1	11.71	50.00	AVRG
Isopropyl alcohol	3.8e-002	3.31e-002	3.31e-002	0.005	-12.89	50.00	AVRG
Tert-butyl alcohol	6.e-002	5.75e-002	5.75e-002	0.005	-4.17	50.00	AVRG
Xylenes (total)	0.5980000	0.5501400	0.5501400	0.1	-8.00	50.00	AVRG
Propionitrile	0.1730000	0.1701126	0.1701126	0.01	-1.67	50.00	AVRG
2-Nitropropane	1.2450000	1.1477939	1.1477939	0.1	-7.81	50.00	AVRG
Ethyl Acetate	1.2320000	1.0970019	1.0970019	0.01	-10.96	50.00	AVRG
Diethyl ether	0.8880000	0.8657126	0.8657126	0.05	-2.51	50.00	AVRG
Tetrahydrofuran	0.2000000	0.1877987	0.1877987	0.05	-6.10	50.00	AVRG
4-Methyl-2-pentanol	9.6e-002	9.e-002	9.e-002	0.005	-6.25	50.00	AVRG
Diisopropyl ether	2.1250000	1.9900458	1.9900458	0.05	-6.35	50.00	AVRG
2-Methylnaphthalene	35.768874	50.000000	0.4981945	0.05	-28.46	50.00	2RDR
Dichlorofluoromethane	0.9190000	0.9233722	0.9233722	0.1	0.48	50.00	AVRG
1-Methylnaphthalene	39.245507	50.000000	0.5741522	0.1	-21.51	50.00	2RDR
Isobutylene	0.4840000	0.5510582	0.5510582	0.1	13.86	50.00	AVRG
Dibromofluoromethane	50.540602	50.000000	0.4370205	0.1	1.08	50.00	2RDR
Toluene-d8	50.960260	50.000000	1.2344334	0.1	1.92	50.00	2RDR
1,2-Dichloroethane-d4	51.902983	50.000000	0.5646949	0.1	3.80	50.00	LINR
4-Bromofluorobenzene	56.935828	50.000000	0.4776829	0.1	13.87	50.00	LINR

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Lab File ID (Standard): D050703 Date Analyzed: 05/07/18

Instrument ID: VOA2 Time Analyzed: 0954

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	IS1 RT #	IS2(DFB) AREA #	IS2(DFB) RT #	IS3(CBZ) AREA #	IS3(CBZ) RT #
	12 HOUR STD	354742	5.77	534903	6.57	480451	9.52
	UPPER LIMIT	709484	6.27	1069806	7.07	960902	10.02
	LOWER LIMIT	177371	5.27	267452	6.07	240226	9.02
	CLIENT SAMPLE NO.						
01	VLCSW-180507	347741	5.77	528863	6.57	475206	9.52
02	VBLKW-180507	375529	5.77	540197	6.57	483164	9.52
03	HS18050260-02	370766	5.77	534029	6.57	478723	9.52
04	HS18050260-01	363440	5.77	527681	6.57	472030	9.52
05	HS18050260-01	348033	5.77	527693	6.57	477667	9.52
06	HS18050260-01	350410	5.78	534697	6.57	478073	9.52
07							
08							
09							
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11							
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18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050260

Lab File ID (Standard): D050703 Date Analyzed: 05/07/18

Instrument ID: VOA2 Time Analyzed: 0954

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	221541	11.84				
	UPPER LIMIT	443082	12.34				
	LOWER LIMIT	110771	11.34				
	CLIENT SAMPLE NO.						
01	VLCSW-180507	217228	11.83				
02	VBLKW-180507	202074	11.83				
03	HS18050260-02	198077	11.83				
04	HS18050260-01	206277	11.83				
05	HS18050260-01	220780	11.83				
06	HS18050260-01	218628	11.83				
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

MSVOA02 -Logbook

Batch: 31756
Date: 05-07-2018
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-07-2018 09:06 am	1.00	50 mL	50 mL	D050701.D	Liquid	Y	NA
2	*Auto find/purged* CCV	CCV	05-07-2018 09:30 am	1.00	50 mL	50 mL	D050702.D	Liquid	Y	NA
3	*10 uL cal std/50 ml DI* CCV	CCV	05-07-2018 09:54 am	1.00	50 mL	50 mL	D050703.D	Liquid	Y	NA
4	*10 uL cal std/50 ml DI* CCB	SAMP	05-07-2018 10:19 am	1.00	50 mL	50 mL	D050704.D	Liquid	Y	NA
5	*CCB* VLCSW-180507	LCS	05-07-2018 10:43 am	1.00	50 mL	50 mL	D050705.D	Liquid	Y	NA
6	*10 uL cal std/50 ml DI* VBLKM-180507	SAMP	05-07-2018 11:07 am	50.00	1 mL	50 mL	D050706.D	Liquid	Y	NA
7	VBLKW-180507	MBLK	05-07-2018 11:32 am	1.00	50 mL	50 mL	D050707.D	Liquid	Y	NA
8	HS18050259-01	SAMP	05-07-2018 11:56 am	1.00	50 mL	50 mL	D050708.D	Liquid	Y	<2
9	HS18050261-01	SAMP	05-07-2018 12:21 pm	1.00	50 mL	50 mL	D050709.D	Liquid	Y	<2
10	HS18050260-02	SAMP	05-07-2018 12:45 pm	1.00	50 mL	50 mL	D050710.D	Liquid	Y	<2
11	HS18050238-01	SAMP	05-07-2018 01:10 pm	1.00	50 mL	50 mL	D050711.D	Liquid	Y	<2
12	HS18050153-18	SAMP	05-07-2018 01:34 pm	1.00	50 mL	50 mL	D050712.D	Liquid	Y	<2
13	HS18050227-03	SAMP	05-07-2018 01:58 pm	1.00	50 mL	50 mL	D050713.D	Liquid	Y	<2
14	HS18050260-01	SAMP	05-07-2018 02:23 pm	1.00	50 mL	50 mL	D050714.D	Liquid	Y	<2
15	HS18050260-01MS	MS	05-07-2018 02:47 pm	1.00	50 mL	50 mL	D050715.D	Liquid	Y	<2
16	*8 uL cal std/40 ml sample* HS18050260-01MSD	MSD	05-07-2018 03:12 pm	1.00	50 mL	50 mL	D050716.D	Liquid	Y	<2
17	*8 uL cal std/40 ml sample* HS18050254-16	SAMP	05-07-2018 03:36 pm	1.00	50 mL	50 mL	D050717.D	Liquid	Y	<2
18	HS18050286-01	SAMP	05-07-2018 04:01 pm	1.00	50 mL	50 mL	D050718.D	Liquid	Y	<2
19	HS18050286-02	SAMP	05-07-2018 04:25 pm	1.00	50 mL	50 mL	D050719.D	Liquid	Y	<2
20	HS18050286-03	SAMP	05-07-2018 04:50 pm	1.00	50 mL	50 mL	D050720.D	Liquid	Y	<2
21	HS18050286-04	SAMP	05-07-2018 05:14 pm	1.00	50 mL	50 mL	D050721.D	Liquid	Y	<2
22	HS18050286-05	SAMP	05-07-2018 05:39 pm	1.00	50 mL	50 mL	D050722.D	Liquid	Y	<2
23	HS18050286-06	SAMP	05-07-2018 06:03 pm	1.00	50 mL	50 mL	D050723.D	Liquid	Y	<2
24	HS18050286-07	SAMP	05-07-2018 06:28 pm	1.00	50 mL	50 mL	D050724.D	Liquid	Y	<2
25	HS18050286-08	SAMP	05-07-2018 06:52 pm	1.00	50 mL	50 mL	D050725.D	Liquid	Y	<2
26	HS18050286-09	SAMP	05-07-2018 07:16 pm	1.00	50 mL	50 mL	D050726.D	Liquid	Y	<2
27	HS18050286-10	SAMP	05-07-2018 07:41 pm	1.00	50 mL	50 mL	D050727.D	Liquid	Y	<2
28	HS18050286-11	SAMP	05-07-2018 08:05 pm	1.00	50 mL	50 mL	D050728.D	Liquid	Y	<2
29	CCV_END	CCV_END	05-07-2018 08:30 pm	1.00	50 mL	50 mL	D050729.D	Liquid	Y	NA
30	*10 uL cal std/50 ml DI* BFB	TUNE	05-07-2018 08:54 pm	1.00	50 mL	50 mL	E050701.D	Liquid	Y	NA
31	*Auto find/purged* CCV	CCV	05-07-2018 09:19 pm	1.00	50 mL	50 mL	E050702.D	Liquid	Y	NA
32	*10 uL cal std/50 ml DI* CCV	CCV	05-07-2018 09:43 pm	1.00	50 mL	50 mL	E050703.D	Liquid	Y	NA
33	*10 uL cal std/50 ml DI* CCB	SAMP	05-07-2018 10:07 pm	1.00	50 mL	50 mL	E050704.D	Liquid	Y	NA
34	*CCB* VLCSW-180507	LCS	05-07-2018 10:32 pm	1.00	50 mL	50 mL	E050705.D	Liquid	Y	NA
35	VBLKM-180507	SAMP	05-07-2018 10:56 pm	1.00	50 mL	50 mL	E050706.D	Liquid	Y	NA

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
36	VBLKW-180507	MBLK	05-07-2018 11:21 pm	1.00	50 mL	50 mL	E050707.D	Liquid	Y	NA
37	HS18050286-14	SAMP	05-07-2018 11:45 pm	1.00	50 mL	50 mL	E050708.D	Liquid	Y	<2
38	HS18050207-02	SAMP	05-08-2018 12:10 am	1.00	50 mL	50 mL	E050709.D	Liquid	Y	<2
39	HS18050302-08	SAMP	05-08-2018 12:34 am	1.00	50 mL	50 mL	E050710.D	Liquid	Y	<2
40	HS18050287-08	SAMP	05-08-2018 12:58 am	1.00	50 mL	50 mL	E050711.D	Liquid	Y	<2
41	HS18050286-12	SAMP	05-08-2018 01:23 am	1.00	50 mL	50 mL	E050712.D	Liquid	Y	<2
42	HS18050286-12MS	MS	05-08-2018 01:47 am	1.00	50 mL	50 mL	E050713.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
43	HS18050286-12MSD	MSD	05-08-2018 02:11 am	1.00	50 mL	50 mL	E050714.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
44	HS18050264-01	SAMP	05-08-2018 02:36 am	1.00	50 mL	50 mL	E050715.D	Liquid	Y	<2
45	HS18050286-13	SAMP	05-08-2018 03:00 am	1.00	50 mL	50 mL	E050716.D	Liquid	Y	<2
46	HS18050302-01	SAMP	05-08-2018 03:24 am	1.00	50 mL	50 mL	E050717.D	Liquid	Y	<2
47	HS18050302-02	SAMP	05-08-2018 03:49 am	1.00	50 mL	50 mL	E050718.D	Liquid	Y	<2
48	HS18050302-03	SAMP	05-08-2018 04:13 am	1.00	50 mL	50 mL	E050719.D	Liquid	Y	<2
49	HS18050302-04	SAMP	05-08-2018 04:37 am	1.00	50 mL	50 mL	E050720.D	Liquid	Y	<2
50	HS18050302-05	SAMP	05-08-2018 05:02 am	1.00	50 mL	50 mL	E050721.D	Liquid	Y	<2
51	HS18050302-06	SAMP	05-08-2018 05:26 am	1.00	50 mL	50 mL	E050722.D	Liquid	Y	<2
52	HS18050302-07	SAMP	05-08-2018 05:50 am	1.00	50 mL	50 mL	E050723.D	Liquid	Y	<2
53	HS18050257-06	SAMP	05-08-2018 06:15 am	1.00	50 mL	50 mL	E050724.D	Liquid	Y	<2
54	HS18050257-07	SAMP	05-08-2018 06:39 am	1.00	50 mL	50 mL	E050725.D	Liquid	Y	<2
55	HS18050227-02	SAMP	05-08-2018 07:06 am	10.00	5 mL	50 mL	E050726.D	Liquid	Y	<2
56	HS18050227-02	SAMP	05-08-2018 07:33 am	100.0(	500 µL	50 mL	E050727.D	Liquid	Y	<2
57	HS18050227-01	SAMP	05-08-2018 07:58 am	100.0(	500 µL	50 mL	E050728.D	Liquid	Y	<2
58	HS18050227-01	SAMP	05-08-2018 08:25 am	1000.0	50 µL	50 mL	E050729.D	Liquid	Y	<2
59	CCV_END	CCV_END	05-08-2018 08:49 am	1.00	50 mL	50 mL	E050730.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30603-16-02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D

Date : 07-MAY-2018 09:06

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

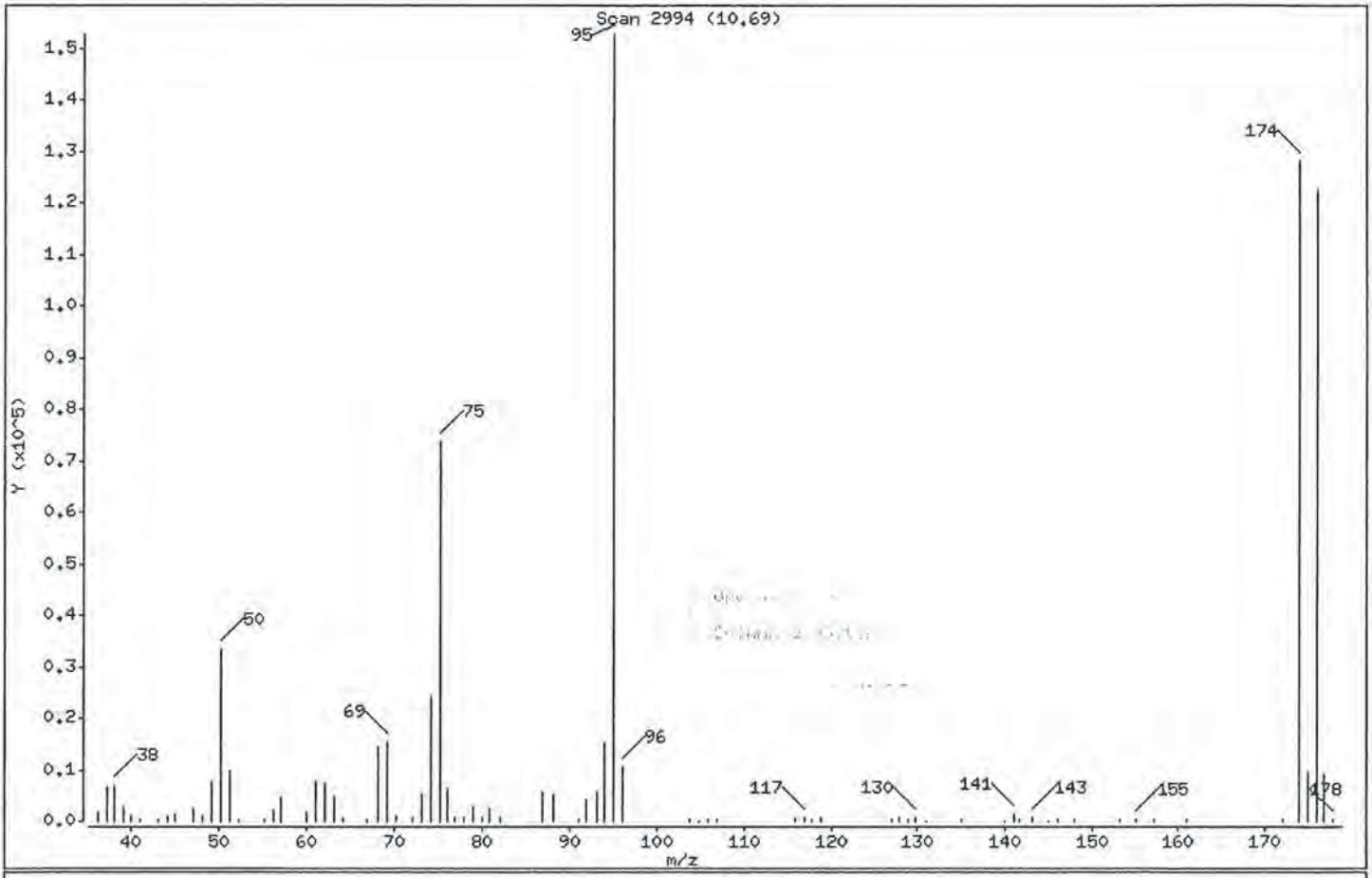
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.85
75	30.00 - 60.00% of mass 95	48.27
96	5.00 - 9.00% of mass 95	6.86
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.84
175	5.00 - 9.00% of mass 174	6.30 (7.51)
176	95.00 - 101.00% of mass 174	80.25 (95.73)
177	5.00 - 9.00% of mass 176	5.99 (7.46)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D

Date : 07-MAY-2018 09:06

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

Data File: D050701.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 77

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	1889	62.10	7351	91.00	430	139.90	152
37.10	6808	63.10	4869	92.00	4091	141.00	1277
38.10	7139	64.10	628	93.10	5756	141.70	347
39.10	2675	66.80	262	94.10	15235	143.00	860
40.00	893	68.10	14240	95.10	152704	145.00	170
41.00	444	69.10	15412	96.10	10476	146.00	246
43.00	433	70.10	1054	103.90	411	147.80	495
44.10	1161	72.10	674	104.90	171	153.00	263
45.00	1434	73.10	5199	106.00	416	154.90	459
47.10	2439	74.10	24056	106.90	451	157.00	419
48.00	905	75.10	73704	116.00	583	161.00	276
49.10	7583	76.10	6244	117.00	684	172.20	408
50.10	33368	76.90	759	117.90	524	174.00	128024
51.10	9666	78.00	736	118.90	587	175.00	9614
52.20	476	79.00	2671	127.00	179	176.00	122552
55.20	337	80.00	660	127.90	626	177.00	9143
56.10	2109	80.90	2589	128.80	271	178.00	289
57.10	4490	82.00	684	129.80	669		
60.00	1793	87.00	5576	130.90	164		
61.10	7706	88.10	5223	134.90	181		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D

Date : 07-MAY-2018 09:06

Client ID: BFB

Instrument: VOA2.i

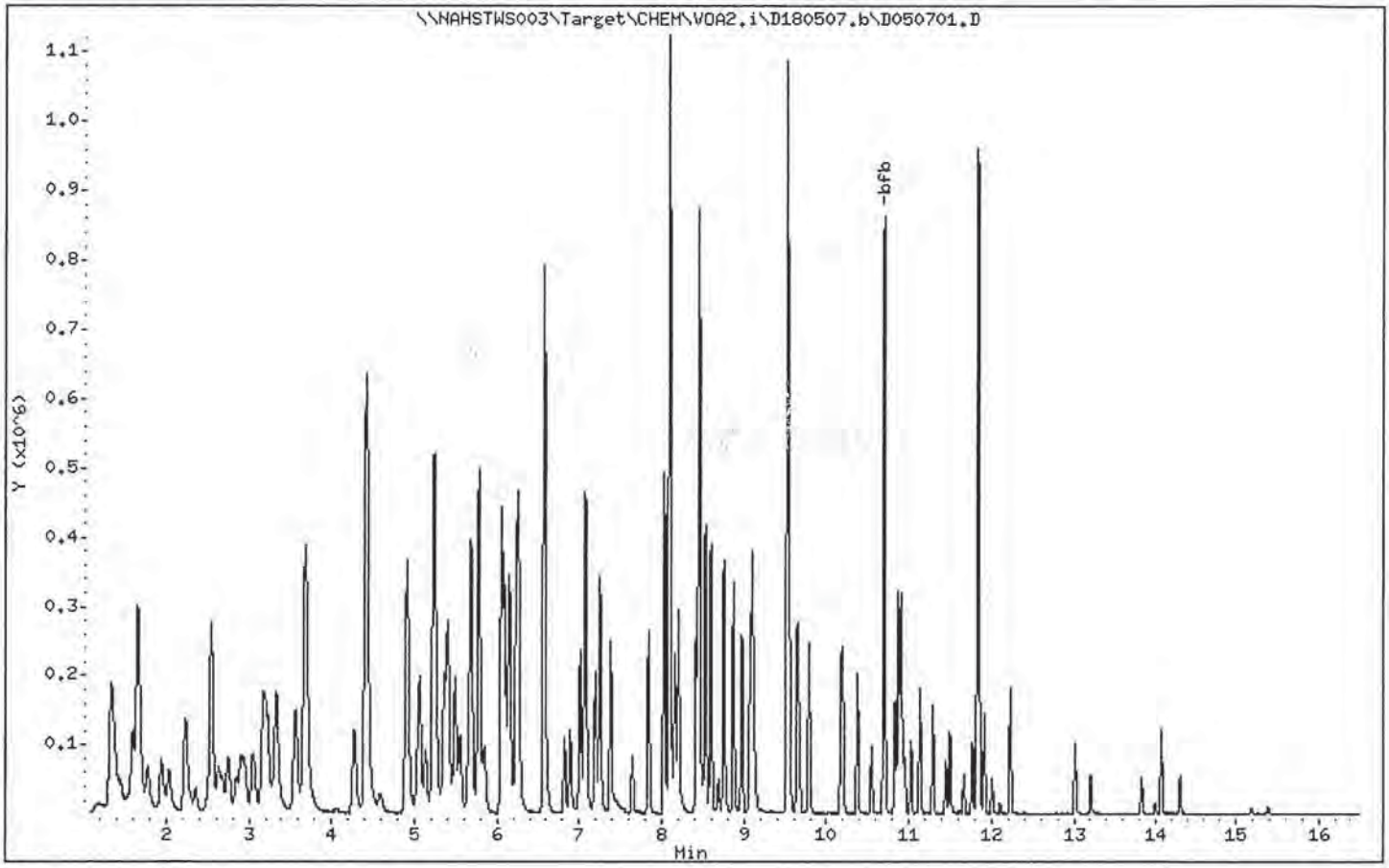
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050703.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 07-MAY-2018 09:54
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	354742	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	184107	50.0000	56.12
186	Isobutylene	56	1.646	1.646	(0.285)	174684	50.0000	50.88(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	323993	50.0000	56.87
4	Propionitrile	54	5.224	5.224	(0.905)	606274	500.000	493.12
5	Vinyl Chloride	62	1.669	1.669	(0.289)	228577	50.0000	51.66
6	Bromomethane	94	1.935	1.935	(0.335)	115003	50.0000	43.89
7	Chloroethane	64	2.028	2.028	(0.351)	132184	50.0000	55.75
159	Dichlorofluoromethane	67	2.221	2.221	(0.385)	323207	50.0000	49.55
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	224990	50.0000	53.73
9	Acrolein	56	2.673	2.673	(0.463)	78105	100.000	88.97
10	Acetone	43	2.840	2.840	(0.492)	114708	100.000	98.02
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	138557	50.0000	51.73
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	14417	1000.00	806.19(AM)
13	Acetonitrile	39	3.158	3.158	(0.547)	236369	500.000	521.94
14	Allyl Chloride	41	3.170	3.170	(0.549)	580355	50.0000	50.27
15	Iodomethane	142	2.898	2.898	(0.502)	270017	100.000	97.84
16	Acrylonitrile	53	3.684	3.684	(0.638)	154385	100.000	98.07
17	Methylene Chloride	84	3.321	3.321	(0.575)	176191	50.0000	47.00
18	Methyl tert-butyl ether	73	3.671	3.671	(0.636)	483094	50.0000	47.22
19	Carbon Disulfide	76	2.946	2.946	(0.510)	617395	100.000	100.65

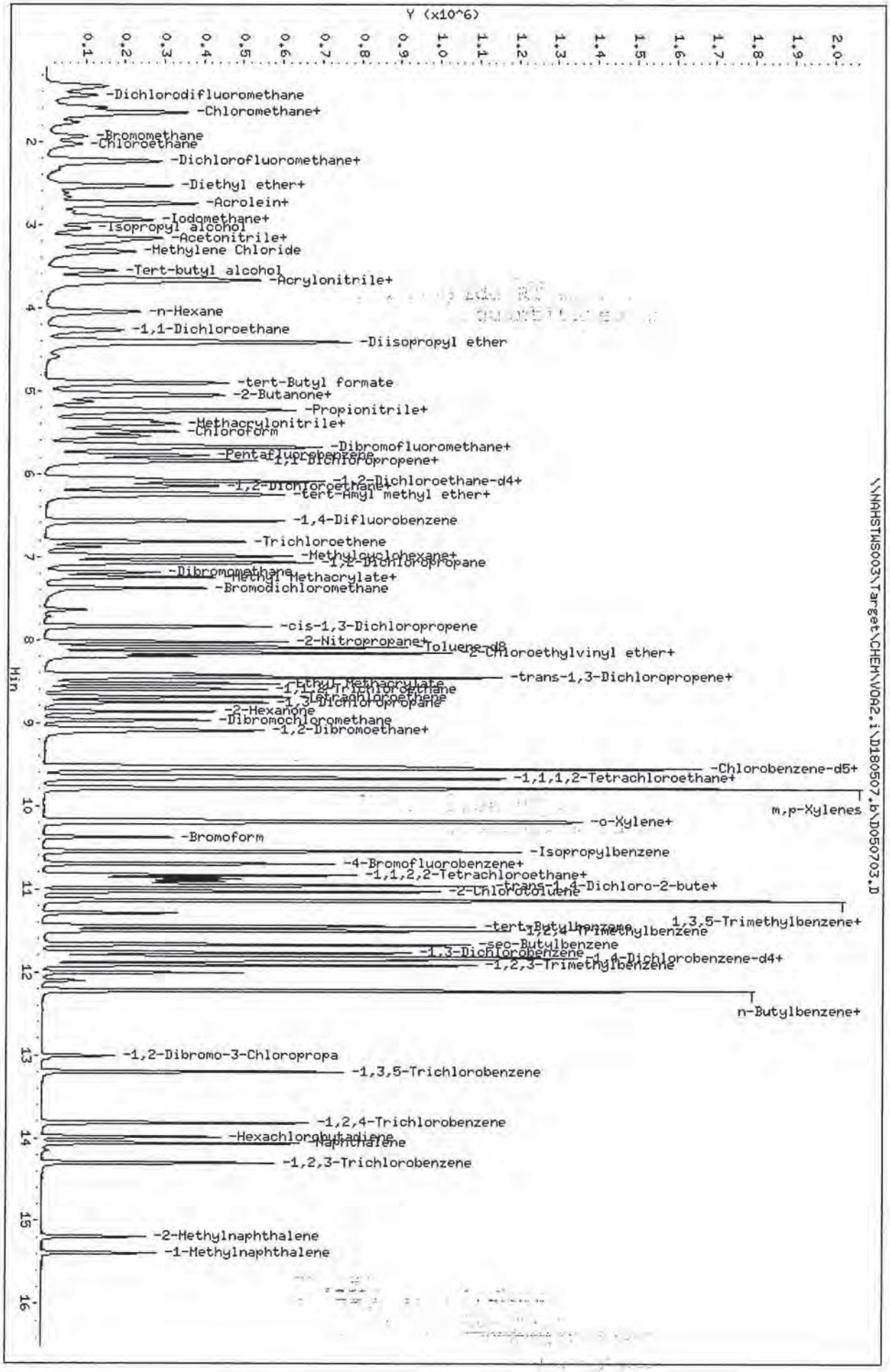
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	155378	50.0000	53.02
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	411738	100.000	90.16
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	361128	50.0000	50.68
	24 2-Butanone	43	5.134	5.134	(0.889)	181993	100.000	98.68
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	210118	50.0000	47.83
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	261519	50.0000	54.28
	27 cis-1,2-Dichloroethene	96	5.061	5.061	(0.877)	188179	50.0000	51.33
	28 Chloroform	83	5.487	5.487	(0.951)	308197	50.0000	50.14
	29 Bromochloromethane	128	5.359	5.359	(0.928)	96590	50.0000	54.60
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	154763	50.0000	50.44
	31 1,1,1-Trichloroethane	97	5.645	5.645	(0.978)	263519	50.0000	51.07
	32 1,1-Dichloropropene	75	5.847	5.847	(0.890)	203166	50.0000	44.06
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	262738	50.0000	52.07
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	220946	50.0000	47.12
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	204094	50.0000	52.91
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	534903	50.0000	
	37 Benzene	78	6.091	6.091	(0.927)	671251	50.0000	49.36
	38 Trichloroethene	130	6.816	6.816	(1.038)	183098	50.0000	52.02
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	256687	50.0000	51.97
	40 Methyl Methacrylate	41	7.243	7.243	(1.255)	210729	50.0000	50.27
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.241)	60312	100.000	98.81(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	203578	50.0000	49.89
	43 2-Nitropropane	43	8.026	8.026	(1.390)	417685	50.0000	47.29
	44 Dibromomethane	93	7.185	7.185	(1.094)	111666	50.0000	54.81
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	417685	100.000	94.73
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	303637	50.0000	55.10
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	480451	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	596045	50.0000	51.26
	49 Ethyl Methacrylate	69	8.526	8.526	(1.298)	245184	50.0000	54.70
	50 Toluene	91	8.154	8.154	(0.856)	703139	50.0000	47.91
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	263477	50.0000	57.61
	52 2-Hexanone	43	8.863	8.863	(0.931)	271643	100.000	98.32
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	138517	50.0000	50.25
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	273046	50.0000	49.89
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	209948	50.0000	52.01
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	144894	50.0000	49.40
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	176594	50.0000	51.31
	58 1-Chlorohexane	55	9.553	9.553	(1.454)	181491	50.0000	54.89
	59 Chlorobenzene	112	9.553	9.553	(1.003)	448609	50.0000	48.84
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	186025	50.0000	51.01
	61 Ethylbenzene	106	9.672	9.672	(1.015)	238750	50.0000	47.97
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	582648	100.000	117.33
	63 o-Xylene	106	10.176	10.176	(1.068)	311070	50.0000	49.77
	64 Styrene	104	10.198	10.198	(1.071)	511804	50.0000	51.11
	66 Bromoform	173	10.374	10.374	(1.089)	149995	50.0000	52.31
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	746901	50.0000	49.63
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	216674	50.0000	44.13
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	230545	50.0000	57.20
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	221541	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	109117	50.0000	54.00
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	60996	50.0000	50.88
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	803514	50.0000	46.24
	74 Bromobenzene	156	10.833	10.833	(0.915)	210183	50.0000	47.26
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	595402	50.0000	45.32

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050703.D Page 3
Report Date: 15-May-2018 14:52

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.029	11.029	(0.932)	530326	50.0000	54.31
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	586682	50.0000	55.40
78 tert-Butylbenzene	119	11.449	11.449	(0.967)	502085	50.0000	46.25
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	620298	50.0000	55.25
81 sec-Butylbenzene	105	11.668	11.668	(0.986)	685276	50.0000	47.34
82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	581908	50.0000	47.12
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	361486	50.0000	47.69
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	343899	50.0000	46.95
87 n-Butylbenzene	91	12.223	12.223	(1.033)	463147	50.0000	49.46
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	335758	50.0000	47.20
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	40194	50.0000	50.71
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	207389	50.0000	50.41
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	90711	50.0000	50.45
92 Naphthalene	128	14.062	14.062	(1.188)	498360	50.0000	50.32
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	174937	50.0000	49.08
146 Methyl acetate	43	3.219	3.219	(0.558)	194911	50.0000	45.84
138 Freon TF	101	2.753	2.753	(0.477)	135155	50.0000	50.98
139 Diethyl ether	59	2.529	2.529	(0.438)	318772	50.0000	50.60
147 Methylcyclohexane	83	6.986	6.986	(1.064)	227766	50.0000	48.50
135 1,4-Dioxane	88	7.230	7.230	(1.252)	30907	1000.00	946.00
132 n-Butanol	56	6.989	6.989	(1.211)	115893	1000.00	896.22
131 Methyl Acrylate	55	5.259	5.259	(0.911)	306215	50.0000	51.45
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	528142	50.0000	49.11
136 n-Hexane	57	4.050	4.050	(0.702)	226206	50.0000	53.35
141 Cyclohexane	56	5.680	5.680	(0.984)	288807	50.0000	48.97
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	134447	100.000	94.56
148 Tert-butyl alcohol	59	3.556	3.556	(0.616)	384133	1000.00	905.99
149 Isopropyl alcohol	45	3.045	3.045	(0.528)	235849	1000.00	874.67
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	866810	1000.00	938.27
166 1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	585628	50.0000	46.82
167 Ethanol	45	2.532	2.532	(0.439)	309314	1000.00	995.37
170 1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	239632	50.0000	49.70
172 tert-Butyl formate	59	4.900	4.900	(0.849)	631570	100.000	101.68
173 3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	313728	1000.00	981.26
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	582626	50.0000	49.73
175 tert-Butyl ethyl ether	59	6.229	6.229	(1.079)	275759	50.0000	47.46
176 tert-Amyl alcohol	59	6.229	6.229	(1.079)	275759	1000.00	949.20
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	127411	50.0000	40.32
156 Diisopropyl ether	45	4.416	4.416	(0.765)	757501	50.0000	50.23(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	140837	50.0000	42.85
130 Ethyl Acetate	43	5.231	5.231	(0.906)	411738	50.0000	47.09

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050703.D
Date : 07-MAY-2018 09:54
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050705.D Page 1
Report Date: 15-May-2018 14:52

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050705.D
Lab Smp Id: VLCSW-180507 Client Smp ID: VLCSW-180507
Inj Date : 07-MAY-2018 10:43
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-180507;VLCSW-180507;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

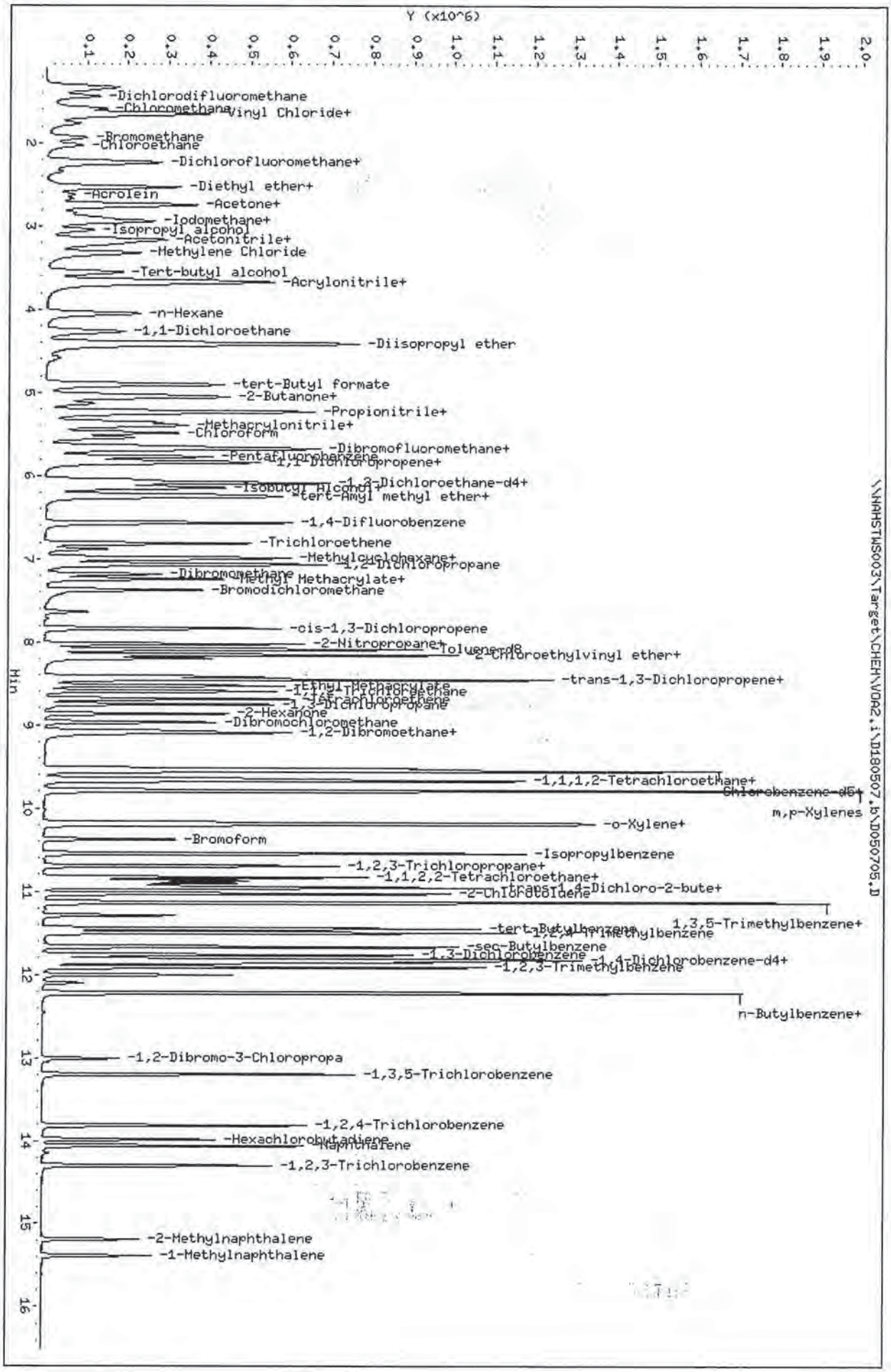
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	347741	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.441	(0.249)	173683	53.9773	53.97
186	Isobutylene	56	1.643	1.646	(0.285)	196942	58.5255	58.52(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	315633	56.5129	56.51
4	Propionitrile	54	5.227	5.224	(0.906)	621674	515.827	515.82
5	Vinyl Chloride	62	1.675	1.669	(0.290)	220457	50.8321	50.83
6	Bromomethane	94	1.932	1.935	(0.335)	113101	44.0359	44.03
7	Chloroethane	64	2.028	2.028	(0.351)	129175	55.5794	55.57
159	Dichlorofluoromethane	67	2.221	2.221	(0.385)	317247	49.6171	49.61
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	219133	53.3875	53.38
9	Acrolein	56	2.673	2.673	(0.463)	78560	91.3074	91.30
10	Acetone	43	2.840	2.840	(0.492)	118837	103.810	103.80
11	1,1-Dichloroethene	96	2.737	2.740	(0.474)	138930	52.9148	52.91
12	Isobutyl Alcohol	74	6.151	6.155	(1.066)	16009	911.755	911.75(A)
13	Acetonitrile	39	3.161	3.158	(0.548)	225269	507.444	507.44
14	Allyl Chloride	41	3.164	3.170	(0.548)	591716	52.2915	52.29
15	Iodomethane	142	2.898	2.898	(0.502)	255126	94.4583	94.45
16	Acrylonitrile	53	3.677	3.684	(0.637)	164420	106.554	106.55
17	Methylene Chloride	84	3.328	3.321	(0.576)	172563	46.9602	46.96
18	Methyl tert-butyl ether	73	3.674	3.671	(0.636)	496097	49.4736	49.47
19	Carbon Disulfide	76	2.943	2.946	(0.510)	604326	100.512	100.51

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.655	(0.633)	156941	54.6488	54.64
	21 Vinyl Acetate	43	5.234	5.231	(0.907)	428767	95.7828	95.78
	22 1,1-Dichloroethane	63	4.271	4.265	(0.740)	351648	50.3516	50.35
	24 2-Butanone	43	5.134	5.134	(0.889)	189688	104.923	104.92
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	213885	49.6716	49.67
	26 2,2-Dichloropropane	77	5.032	5.035	(0.872)	249936	52.9262	52.92
	27 cis-1,2-Dichloroethene	96	5.060	5.061	(0.877)	186481	51.9006	51.90
	28 Chloroform	83	5.484	5.487	(0.950)	301117	49.9794	49.97
	29 Bromochloromethane	128	5.362	5.359	(0.929)	94143	54.2922	54.29
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	151042	50.2105	50.21
	31 1,1,1-Trichloroethane	97	5.648	5.645	(0.978)	257530	50.9158	50.91
	32 1,1-Dichloropropene	75	5.850	5.847	(0.891)	201938	44.3014	44.30
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	251521	50.4222	50.42
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	215093	46.4023	46.40
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	196904	52.0504	52.05
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	528863	50.0000	
	37 Benzene	78	6.091	6.091	(0.927)	658615	48.9916	48.99
	38 Trichloroethene	130	6.813	6.816	(1.037)	179149	51.4838	51.48
	39 Bromodichloromethane	83	7.371	7.374	(1.122)	252162	51.6443	51.64
	40 Methyl Methacrylate	41	7.243	7.243	(1.255)	212450	51.7053	51.70
	41 2-Chloroethylvinyl ether	63	8.157	8.154	(1.242)	58859	97.5310	97.53
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	198902	49.3024	49.30
	43 2-Nitropropane	43	8.025	8.026	(1.390)	422259	48.7759	48.77
	44 Dibromomethane	93	7.185	7.185	(1.094)	108607	53.9203	53.92
	45 4-Methyl-2-Pentanone	43	8.025	8.026	(0.843)	422259	96.8339	96.83
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	297941	54.6863	54.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	475206	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	592490	51.5811	51.58
	49 Ethyl Methacrylate	69	8.529	8.526	(1.298)	250138	56.5251	56.52
	50 Toluene	91	8.154	8.154	(0.856)	688804	47.4538	47.45
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	257307	56.9086	56.90
	52 2-Hexanone	43	8.863	8.863	(0.931)	275631	100.870	100.87
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	137823	50.5520	50.55
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	273751	50.5778	50.57
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	210477	52.7227	52.72
	56 Tetrachloroethene	164	8.683	8.687	(0.912)	139313	48.0225	48.02
	57 1,2-Dibromoethane	107	9.062	9.065	(0.951)	179401	52.7095	52.70
	58 1-Chlorohexane	55	9.550	9.553	(1.454)	173376	52.9409	52.94
	59 Chlorobenzene	112	9.553	9.553	(1.003)	443029	48.7742	48.77
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	187067	51.8711	51.87
	61 Ethylbenzene	106	9.668	9.672	(1.015)	233292	47.3947	47.39
	62 m,p-Xylenes	106	9.787	9.790	(1.028)	568029	115.553	115.55
	63 o-Xylene	106	10.175	10.176	(1.068)	302521	48.9399	48.93
	64 Styrene	104	10.195	10.198	(1.070)	501504	50.6436	50.64
	66 Bromoform	173	10.374	10.374	(1.089)	152012	53.5985	53.59
	67 Isopropylbenzene	105	10.544	10.545	(1.107)	724762	48.6999	48.69
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.872	(0.918)	223504	46.4347	46.43
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	227101	56.9633	56.96(M)
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.835	(1.000)	217228	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.695	(0.903)	106723	53.8622	53.86
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.930	(1.147)	57661	48.6651	48.66
	73 n-Propylbenzene	91	10.952	10.955	(0.925)	778446	45.6870	45.68
	74 Bromobenzene	156	10.830	10.833	(0.915)	207709	47.6373	47.63
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	582635	45.2348	45.23

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	519318	54.2356	54.23
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	565435	54.4102	54.41
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	480291	45.1236	45.12
79	1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	597549	54.2410	54.24
81	sec-Butylbenzene	105	11.664	11.668	(0.986)	663029	46.7138	46.71
82	p-Isopropyltoluene	119	11.818	11.815	(0.999)	560274	46.2763	46.27
83	1,3-Dichlorobenzene	146	11.764	11.767	(0.994)	350011	47.0947	47.09
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	334804	46.6177	46.61
87	n-Butylbenzene	91	12.220	12.223	(1.033)	445147	48.4846	48.48
88	1,2-Dichlorobenzene	146	12.220	12.223	(1.033)	334228	47.9277	47.92
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	40834	52.5500	52.55
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	198561	49.2393	49.23
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	82425	46.7504	46.75
92	Naphthalene	128	14.061	14.062	(1.188)	477780	49.2130	49.21
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.208)	167778	48.0307	48.03
146	Methyl acetate	43	3.219	3.219	(0.558)	202349	48.5551	48.55
138	Freon TF	101	2.756	2.753	(0.478)	131034	50.4136	50.41
139	Diethyl ether	59	2.532	2.529	(0.439)	320281	51.8655	51.86
147	Methylcyclohexane	83	6.986	6.986	(1.064)	218685	47.1004	47.10
135	1,4-Dioxane	88	7.239	7.230	(1.254)	32489	1015.90	1015.90
132	n-Butanol	56	6.989	6.989	(1.211)	113458	895.060	895.06
131	Methyl Acrylate	55	5.259	5.259	(0.911)	317267	54.3890	54.38
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	525097	49.8161	49.81
136	n-Hexane	57	4.056	4.050	(0.703)	204064	49.1026	49.10
141	Cyclohexane	56	5.683	5.680	(0.984)	282054	48.7976	48.79
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	136770	98.1382	98.13
148	Tert-butyl alcohol	59	3.559	3.556	(0.616)	423011	1017.77	1017.77
149	Isopropyl alcohol	45	3.045	3.045	(0.528)	244966	926.781	926.78
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	922629	1009.71	1009.71
166	1,2,3-Trimethylbenzene	105	11.915	11.912	(1.007)	565726	46.1349	46.13
167	Ethanol	45	2.529	2.532	(0.438)	313942	1030.60	1030.60
170	1,3,5-Trichlorobenzene	180	13.201	13.202	(1.116)	232494	49.1796	49.17
172	tert-Butyl formate	59	4.903	4.900	(0.849)	597860	98.1967	98.19
173	3,3-Dimethyl-1-butanol	57	9.091	9.094	(0.955)	332950	1052.88	1052.88
174	tert-Amyl methyl ether	73	6.257	6.254	(1.084)	558387	48.6218	48.62
175	tert-Butyl ethyl ether	59	6.228	6.229	(1.079)	286054	50.2231	50.22
176	tert-Amyl alcohol	59	6.228	6.229	(1.079)	286054	1004.46	1004.46
157	2-Methylnaphthalene	142	15.188	15.191	(1.283)	116172	37.9419	37.94
156	Diisopropyl ether	45	4.415	4.416	(0.765)	736133	49.8005	49.80
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	133054	41.4953	41.49
130	Ethyl Acetate	43	5.234	5.231	(0.907)	428767	50.0290	50.02
M 94	1,2-Dichloroethylene (total)	96				343422	106.549	106.54
M 95	Xylenes (total)	106				870550	164.493	164.49

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180507,b\D050705.D
Date : 07-MAY-2018 10:43
Client ID: VLCSW-180507
Sample Info: VLCSW-180507;VLCSW-180507;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D Page 1
Report Date: 15-May-2018 14:52

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D
Lab Smp Id: VBLKW-180507 Client Smp ID: VBLKW-180507
Inj Date : 07-MAY-2018 11:32
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-180507;VBLKW-180507;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

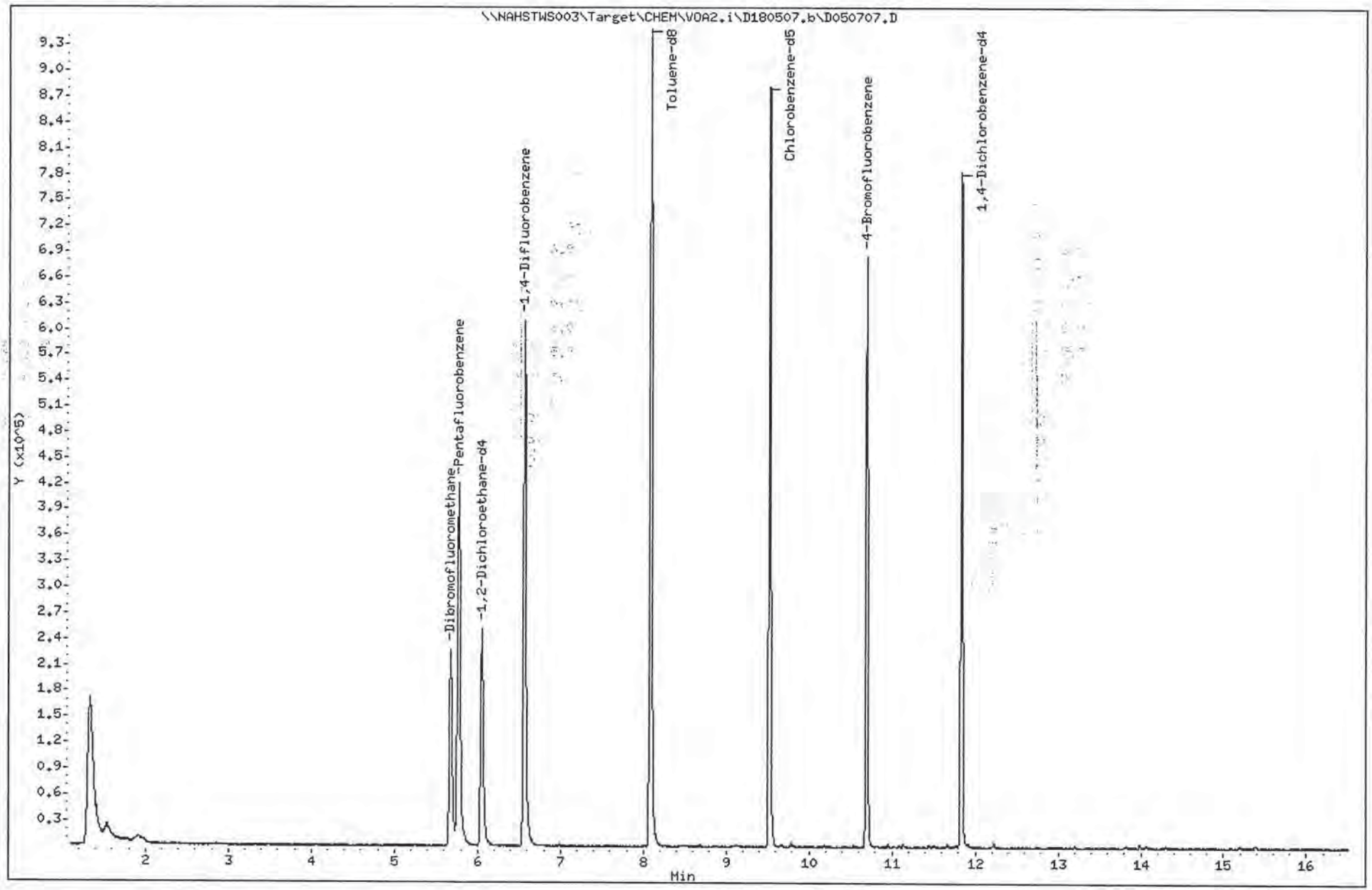
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.770	5.773	(1.000)	375529	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.677	(0.984)	172818	53.4167	53.41
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.049)	203180	49.6436	49.64
* 36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	540197	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	483164	50.0000	
$ 48 Toluene-d8	98	8.087	8.090	(0.849)	624915	53.9377	53.93
$ 69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	221381	54.4752	54.47
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.835	(1.000)	202074	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D
Date : 07-MAY-2018 11:32
Client ID: VBLKW-180507
Sample Info: VBLKW-180507;VBLKW-180507;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050710.D
Lab Smp Id: HS18050260-02 Client Smp ID: HS18050260-02
Inj Date : 07-MAY-2018 12:45
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050260-02;HS18050260-02;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

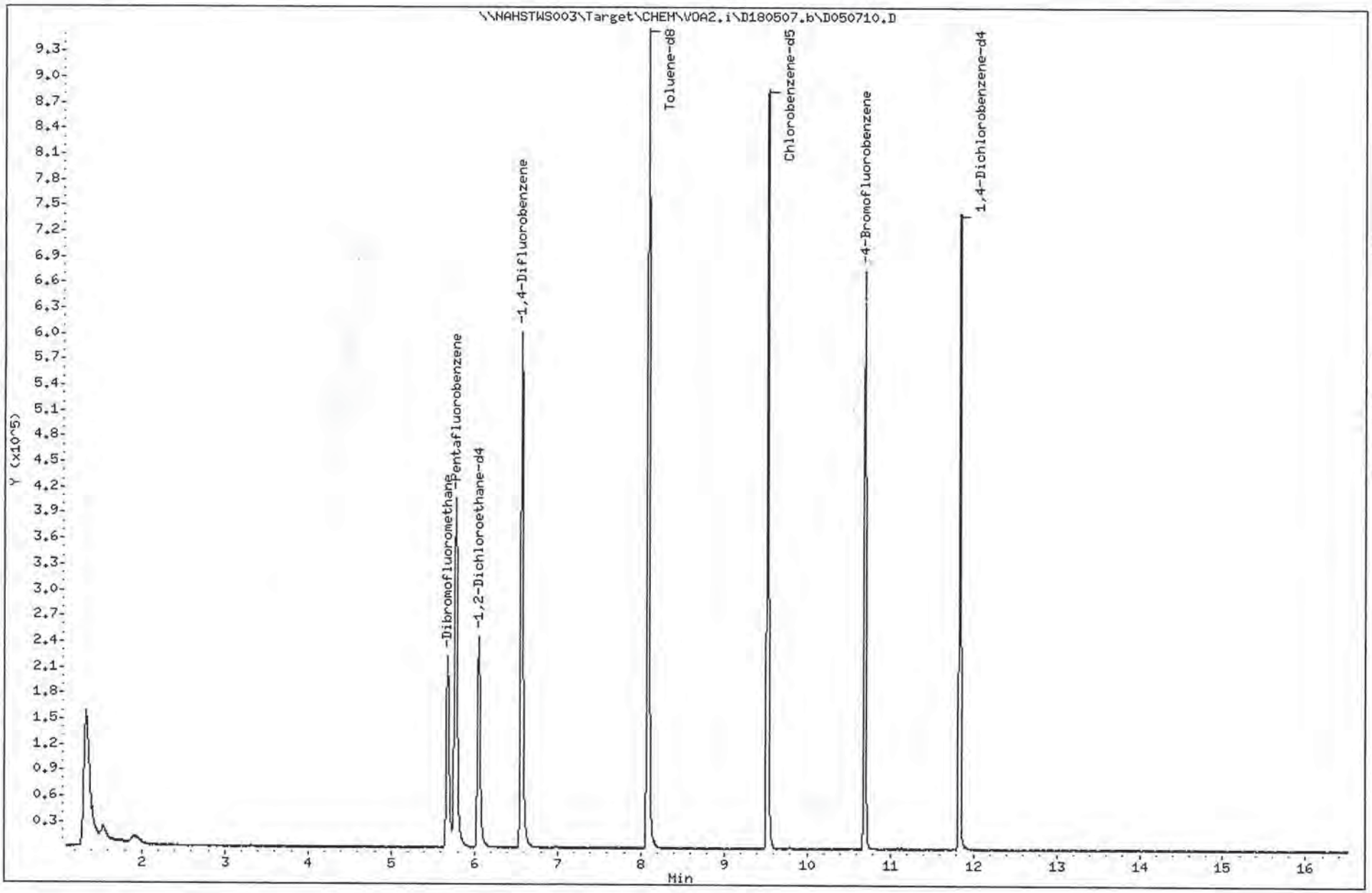
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	370766	50.0000	
$ 30 Dibromofluoromethane	113	5.673	5.677	(0.983)	171135	53.5875	53.58
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	201569	49.8925	49.89
* 36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	534029	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	478723	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	613201	53.3036	53.30
$ 69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	220401	54.7533	54.75
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.835	(1.000)	198077	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050710.D
Date : 07-MAY-2018 12:45
Client ID: HS18050260-02
Sample Info: HS18050260-02;HS18050260-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050714.D Page 1
Report Date: 15-May-2018 14:52

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050714.D
Lab Smp Id: HS18050260-01 Client Smp ID: HS18050260-01
Inj Date : 07-MAY-2018 14:23
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050260-01;HS18050260-01;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 14
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

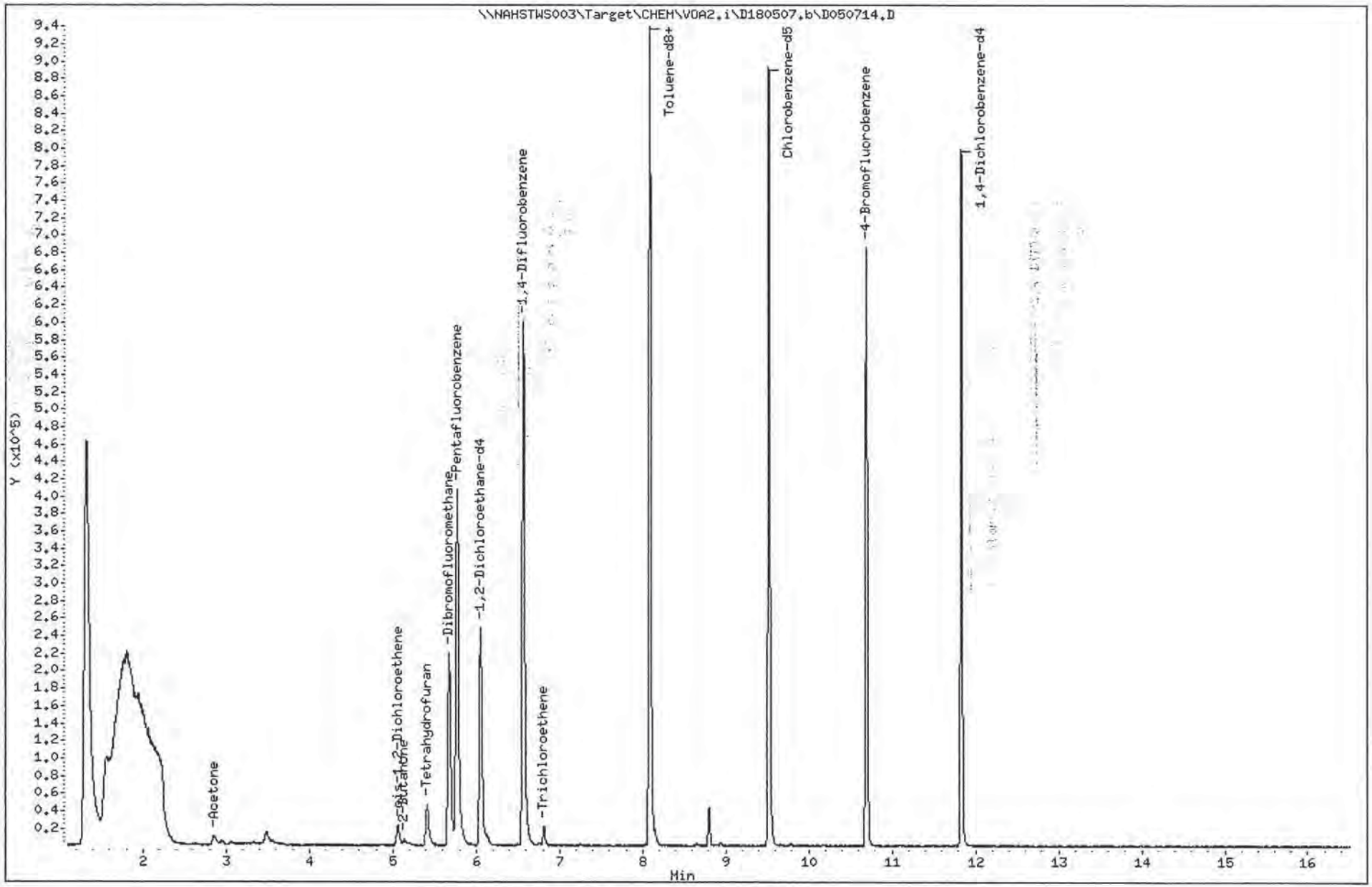
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.773	5.773	(1.000)	363440	50.0000	
	10 Acetone	43	2.846	2.840	(0.493)	17516	11.4513	11.45
	24 2-Butanone	43	5.147	5.134	(0.892)	11600	6.13923	6.13(M)
	27 cis-1,2-Dichloroethene	96	5.067	5.061	(0.878)	14431	3.84289	3.84
$	30 Dibromofluoromethane	113	5.683	5.677	(0.984)	167362	53.4535	53.45
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	203583	51.4692	51.46
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	527681	50.0000	
	38 Trichloroethene	130	6.816	6.816	(1.038)	7953	2.29065	2.29
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	472030	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	608411	53.7109	53.71
	50 Toluene	91	8.154	8.154	(0.856)	4617	0.32022	0.32(a)
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	219868	55.4349	55.43
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.835	(1.000)	206277	50.0000	
	142 Tetrahydrofuran	42	5.413	5.407	(0.938)	43761	30.0440	30.04
M	94 1,2-Dichloroethylene (total)	96				14431	3.84289	3.84(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050714.D
Date : 07-MAY-2018 14:23
Client ID: HS18050260-01
Sample Info: HS18050260-01;HS18050260-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D
Lab Smp Id: HS18050260-01MS Client Smp ID: HS18050260-01MS
Inj Date : 07-MAY-2018 14:47
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050260-01MS;HS18050260-01MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 15 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	348033	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	173182	53.7728	53.77
186	Isobutylene	56	1.643	1.646	(0.285)	101639	30.1788	30.17(AM)
3	Chloromethane	50	1.588	1.585	(0.275)	271014	48.2327	48.23
4	Propionitrile	54	5.224	5.224	(0.905)	548558	454.778	454.77
5	Vinyl Chloride	62	1.675	1.669	(0.290)	231692	53.3778	53.37
6	Bromomethane	94	1.932	1.935	(0.335)	71553	27.8358	27.83
7	Chloroethane	64	2.028	2.028	(0.351)	116651	49.9911	49.99(M)
159	Dichlorofluoromethane	67	2.217	2.221	(0.384)	315482	49.2997	49.29
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	232908	56.6959	56.69
9	Acrolein	56	2.670	2.673	(0.463)	22470	25.8147	25.81
10	Acetone	43	2.837	2.840	(0.491)	112514	98.0036	98.00
11	1,1-Dichloroethene	96	2.744	2.740	(0.475)	149771	56.9960	56.99
12	Isobutyl Alcohol	74	6.151	6.155	(1.066)	13520	771.106	771.10(A)
13	Acetonitrile	39	3.161	3.158	(0.548)	217847	490.314	490.31
14	Allyl Chloride	41	3.170	3.170	(0.549)	533041	47.0667	47.06
15	Iodomethane	142	2.904	2.898	(0.503)	282786	104.171	104.17
16	Acrylonitrile	53	3.684	3.684	(0.638)	146140	94.6277	94.62
17	Methylene Chloride	84	3.331	3.321	(0.577)	169008	45.9542	45.95
18	Methyl tert-butyl ether	73	3.674	3.671	(0.636)	469642	46.7961	46.79
19	Carbon Disulfide	76	2.939	2.946	(0.509)	640253	106.398	106.39

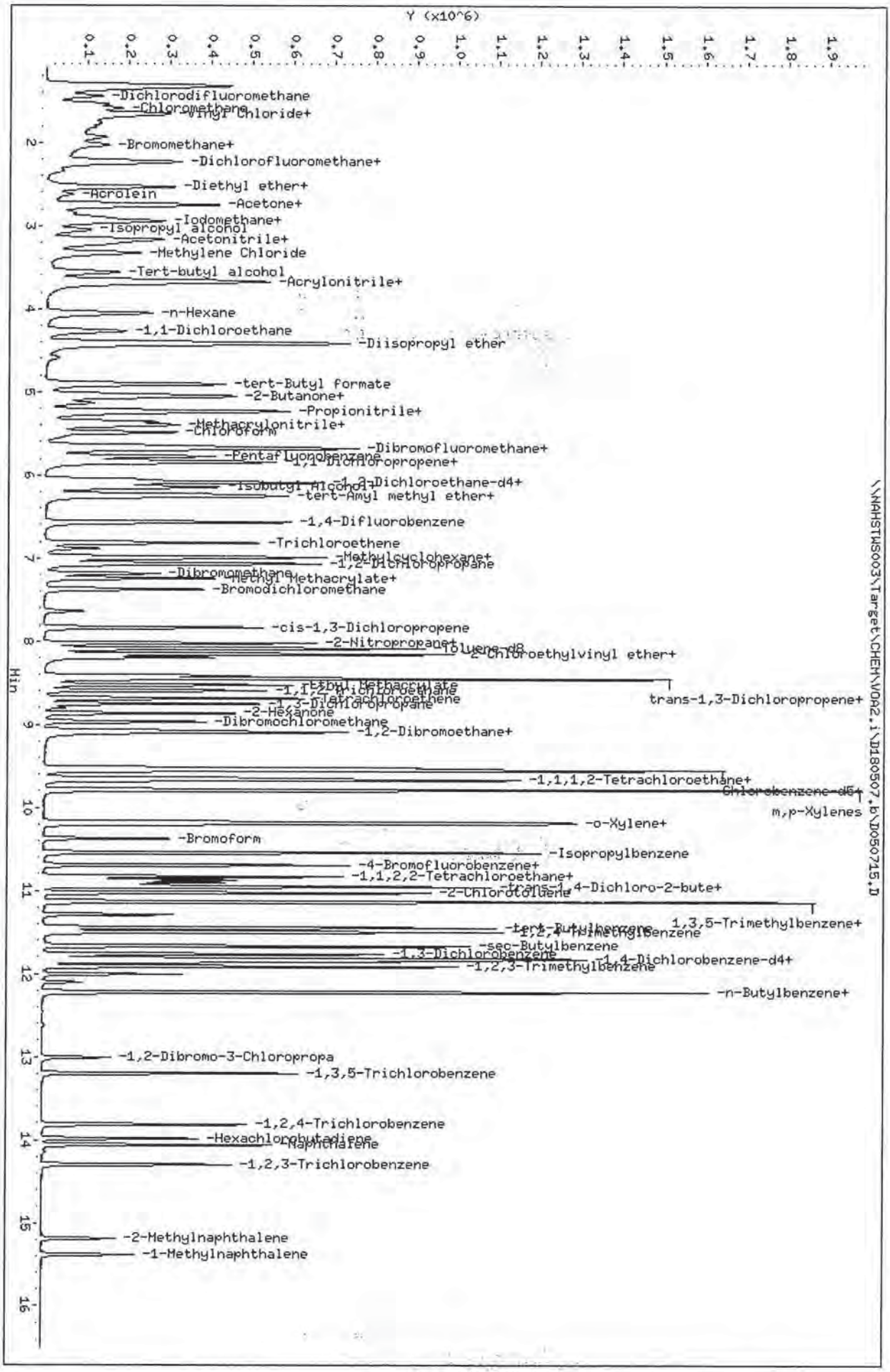
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D Page 2
Report Date: 15-May-2018 14:52

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.655	(0.633)	160373	55.8040	55.80
	21 Vinyl Acetate	43	5.234	5.231	(0.907)	388873	86.7980	86.79(M)
	22 1,1-Dichloroethane	63	4.268	4.265	(0.739)	343986	49.2131	49.21
	24 2-Butanone	43	5.131	5.134	(0.889)	172488	95.3294	95.32
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	202850	47.0693	47.06
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	255933	54.1507	54.15
	27 cis-1,2-Dichloroethene	96	5.057	5.061	(0.876)	194264	54.0214	54.02
	28 Chloroform	83	5.487	5.487	(0.951)	293594	48.6898	48.68
	29 Bromochloromethane	128	5.359	5.359	(0.928)	91101	52.4938	52.49
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	152727	50.7645	50.76
	31 1,1,1-Trichloroethane	97	5.648	5.645	(0.978)	272986	53.9263	53.92
	32 1,1-Dichloropropene	75	5.850	5.847	(0.891)	214473	47.1556	47.15
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	250060	50.2404	50.24
	34 Carbon Tetrachloride	117	5.831	5.827	(0.888)	232006	50.1619	50.16
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	199295	52.6615	52.66
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	527693	50.0000	
	37 Benzene	78	6.090	6.091	(0.928)	647561	48.2762	48.27
	38 Trichloroethene	130	6.816	6.816	(1.038)	189700	54.6368	54.63
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	240402	49.3450	49.34
	40 Methyl Methacrylate	41	7.242	7.243	(1.255)	201778	49.0668	49.06
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	57552	95.5767	95.57
	42 1,2-Dichloropropane	63	7.060	7.063	(1.075)	194654	48.3564	48.35
	43 2-Nitropropane	43	8.022	8.026	(1.390)	446589	51.5430	51.54
	44 Dibromomethane	93	7.185	7.185	(1.094)	103027	51.2634	51.26
	45 4-Methyl-2-Pentanone	43	8.022	8.026	(0.842)	446589	101.886	101.88
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	282612	51.9877	51.98
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	477667	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	594174	51.4355	51.43
	49 Ethyl Methacrylate	69	8.529	8.526	(1.299)	250436	56.7257	56.72
	50 Toluene	91	8.157	8.154	(0.856)	684264	46.8982	46.89
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	235604	52.2241	52.22
	52 2-Hexanone	43	8.866	8.863	(0.931)	286347	104.252	104.25
	53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	129054	47.0918	47.09
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	260790	47.9349	47.93
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	196738	49.0273	49.02
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	145055	49.7443	49.74
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	167953	49.0918	49.09
	58 1-Chlorohexane	55	9.550	9.553	(1.455)	184852	56.7720	56.77
	59 Chlorobenzene	112	9.550	9.553	(1.003)	421724	46.1894	46.18
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	174268	48.0732	48.07
	61 Ethylbenzene	106	9.668	9.672	(1.015)	233836	47.2605	47.26
	62 m,p-Xylenes	106	9.787	9.790	(1.028)	563015	113.849	113.84
	63 o-Xylene	106	10.175	10.176	(1.068)	295618	47.5768	47.57
	64 Styrene	104	10.195	10.198	(1.070)	463387	46.5533	46.55
	66 Bromoform	173	10.374	10.374	(1.089)	137813	48.3417	48.34
	67 Isopropylbenzene	105	10.544	10.545	(1.107)	740751	49.5178	49.51
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	210326	42.9939	42.99
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	227001	56.6260	56.62
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.835	(1.000)	220780	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.695	(0.903)	105686	52.4139	52.41
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	51203	43.0820	43.08
	73 n-Propylbenzene	91	10.952	10.955	(0.925)	775224	44.7659	44.76
	74 Bromobenzene	156	10.830	10.833	(0.915)	194174	43.8167	43.81
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	570505	43.5804	43.58

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.029	(0.932)	493631	50.5703	50.57
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	534091	50.3791	50.37
78	tert-Butylbenzene	119	11.446	11.449	(0.967)	502199	46.4228	46.42
79	1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	578616	51.5454	51.54
81	sec-Butylbenzene	105	11.664	11.668	(0.986)	672408	46.6125	46.61
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	564563	45.8803	45.88
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	318190	42.1243	42.12
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	296055	40.5591	40.55
87	n-Butylbenzene	91	12.223	12.223	(1.033)	429487	46.0263	46.02
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	306406	43.2312	43.23
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	36885	46.7043	46.70
90	1,2,4-Trichlorobenzene	180	13.814	13.818	(1.167)	158153	38.6819	38.68
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	74964	41.8316	41.83
92	Naphthalene	128	14.061	14.062	(1.188)	418771	42.5115	42.51
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.208)	138366	39.1664	39.16
146	Methyl acetate	43	3.215	3.219	(0.557)	176161	42.2356	42.23
138	Freon TF	101	2.753	2.753	(0.477)	155101	59.8880	59.88
139	Diethyl ether	59	2.529	2.529	(0.438)	305208	49.3832	49.38
147	Methylcyclohexane	83	6.986	6.986	(1.064)	247422	53.4079	53.40
135	1,4-Dioxane	88	7.239	7.230	(1.254)	30745	959.463	959.46
132	n-Butanol	56	6.986	6.989	(1.210)	121401	956.918	956.91
131	Methyl Acrylate	55	5.259	5.259	(0.911)	286103	49.0054	49.00
133	Ethyl Acrylate	55	7.002	7.005	(1.213)	536337	50.8398	50.83
136	n-Hexane	57	4.050	4.050	(0.702)	237075	56.9980	56.99
141	Cyclohexane	56	5.683	5.680	(0.984)	326928	56.5137	56.51
142	Tetrahydrofuran	42	5.410	5.407	(0.937)	131384	94.1944	94.19
148	Tert-butyl alcohol	59	3.552	3.556	(0.615)	391108	940.225	940.22
149	Isopropyl alcohol	45	3.052	3.045	(0.529)	232659	879.481	879.48
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1131319	1231.72	1231.72
166	1,2,3-Trimethylbenzene	105	11.911	11.912	(1.007)	533994	42.8465	42.84
167	Ethanol	45	2.529	2.532	(0.438)	297616	976.190	976.19
170	1,3,5-Trichlorobenzene	180	13.201	13.202	(1.116)	190634	39.6762	39.67
172	tert-Butyl formate	59	4.906	4.900	(0.850)	580893	95.3299	95.32
173	3,3-Dimethyl-1-butanol	57	9.091	9.094	(0.955)	390520	1228.57	1228.56
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	547026	47.5926	47.59
175	tert-Butyl ethyl ether	59	6.228	6.229	(1.079)	277279	48.6416	48.64
176	tert-Amyl alcohol	59	6.228	6.229	(1.079)	277279	972.833	972.83
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	88039	29.8209	29.82
156	Diisopropyl ether	45	4.415	4.416	(0.765)	710744	48.0426	48.04
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	108947	34.4927	34.49
130	Ethyl Acetate	43	5.234	5.231	(0.907)	389346	45.3912	45.39
M 94	1,2-Dichloroethylene (total)	96				354637	109.825	109.82
M 95	Xylenes (total)	106				858633	161.426	161.42

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D
Date : 07-MAY-2018 14:47
Client ID: HS18050260-01HS
Sample Info: HS18050260-01HS;HS18050260-01HS;3;;HS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D
Lab Smp Id: HS18050260-01MSD Client Smp ID: HS18050260-01MSD
Inj Date : 07-MAY-2018 15:12
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050260-01MSD;HS18050260-01MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 15 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.773	(1.000)	350410	50.0000	
2 Dichlorodifluoromethane	85	1.444	1.441	(0.250)	171823	52.9749	52.97
186 Isobutylene	56	1.643	1.646	(0.285)	97374	28.7163	28.71(AM)
3 Chloromethane	50	1.592	1.585	(0.276)	262711	46.3722	46.37
4 Propionitrile	54	5.227	5.224	(0.905)	580418	477.927	477.92
5 Vinyl Chloride	62	1.672	1.669	(0.290)	228934	52.3846	52.38
6 Bromomethane	94	1.935	1.935	(0.335)	72435	27.9878	27.98
7 Chloroethane	64	2.028	2.028	(0.351)	115867	49.2965	49.29(M)
159 Dichlorofluoromethane	67	2.221	2.221	(0.385)	315003	48.8909	48.89
8 Trichlorofluoromethane	101	2.240	2.243	(0.388)	235426	56.9200	56.92
9 Acrolein	56	2.679	2.673	(0.464)	22225	25.3531	25.35
10 Acetone	43	2.840	2.840	(0.492)	115632	100.113	100.11
11 1,1-Dichloroethene	96	2.747	2.740	(0.476)	148659	56.1891	56.18
12 Isobutyl Alcohol	74	6.158	6.155	(1.066)	16163	913.493	913.49(A)
13 Acetonitrile	39	3.161	3.158	(0.547)	221799	495.822	495.82
14 Allyl Chloride	41	3.167	3.170	(0.548)	560364	49.1436	49.14
15 Iodomethane	142	2.901	2.898	(0.502)	259929	95.4583	95.45
16 Acrylonitrile	53	3.681	3.684	(0.637)	159830	102.790	102.79
17 Methylene Chloride	84	3.321	3.321	(0.575)	171905	46.4248	46.42
18 Methyl tert-butyl ether	73	3.677	3.671	(0.637)	477630	47.2692	47.26
19 Carbon Disulfide	76	2.946	2.946	(0.510)	638944	105.460	105.46

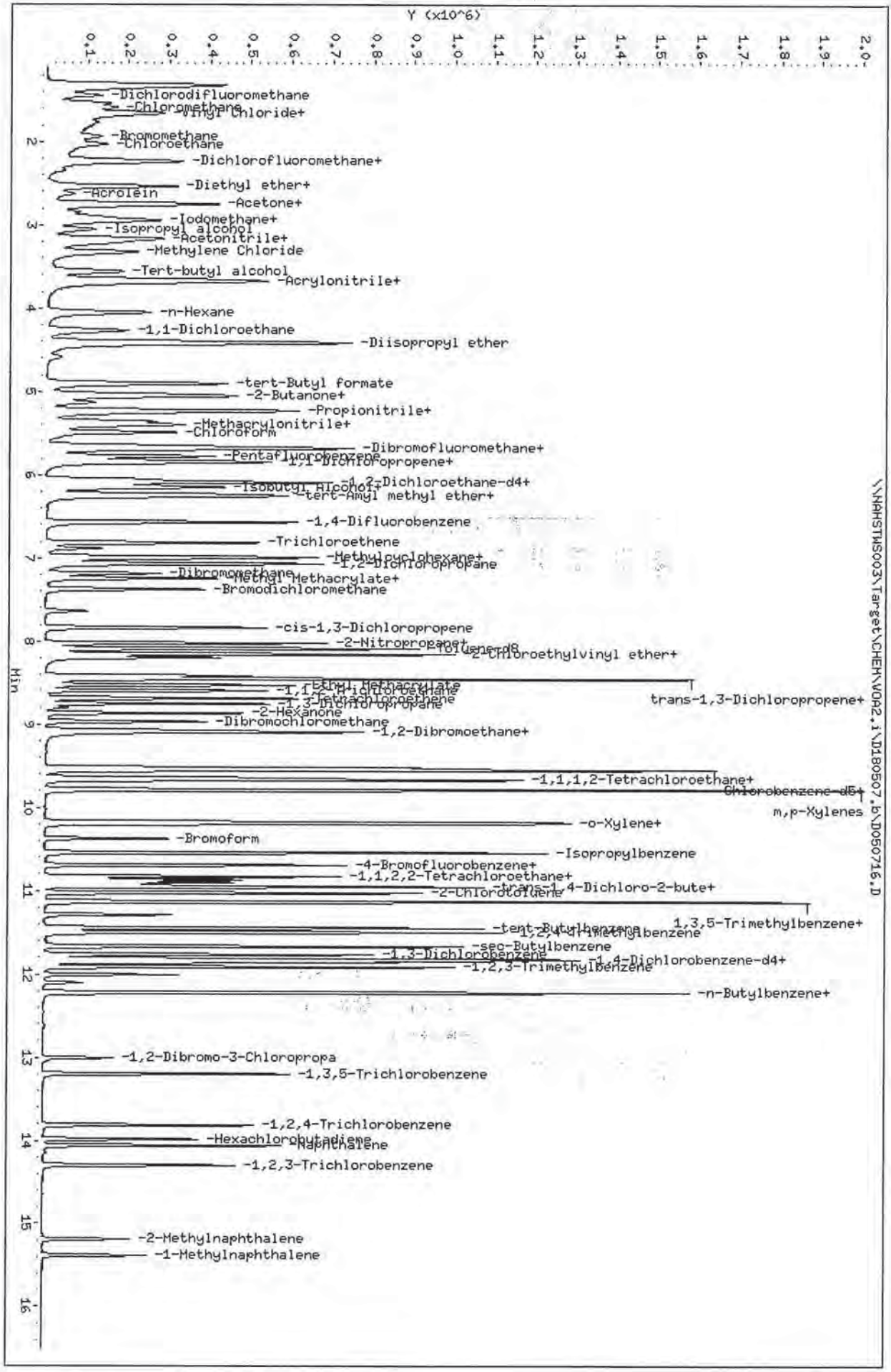
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D Page 2
Report Date: 15-May-2018 14:52

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.655	(0.632)	156193	53.9700	53.97
	21 Vinyl Acetate	43	5.237	5.231	(0.907)	396161	87.8249	87.82
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	347932	49.4400	49.44
	24 2-Butanone	43	5.131	5.134	(0.888)	177852	97.6271	97.62
	25 Methacrylonitrile	41	5.397	5.397	(0.934)	202752	46.7275	46.72
	26 2,2-Dichloropropane	77	5.032	5.035	(0.871)	252905	53.1470	53.14
	27 cis-1,2-Dichloroethene	96	5.057	5.061	(0.876)	196769	54.3468	54.34
	28 Chloroform	83	5.490	5.487	(0.951)	295632	48.6952	48.69
	29 Bromochloromethane	128	5.362	5.359	(0.928)	90502	51.7949	51.79
$	30 Dibromofluoromethane	113	5.680	5.677	(0.983)	153129	50.5380	50.53
	31 1,1,1-Trichloroethane	97	5.651	5.645	(0.978)	274718	53.9003	53.90
	32 1,1-Dichloropropene	75	5.850	5.847	(0.891)	216526	46.9834	46.98
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	247945	49.1630	49.16
	34 Carbon Tetrachloride	117	5.831	5.827	(0.888)	233830	49.8941	49.89
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	203185	53.3511	53.35
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	534697	50.0000	
	37 Benzene	78	6.091	6.091	(0.928)	654652	48.1655	48.16
	38 Trichloroethene	130	6.813	6.816	(1.038)	191880	54.5408	54.54
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	240696	48.7582	48.75
	40 Methyl Methacrylate	41	7.246	7.243	(1.254)	205385	49.6051	49.60
	41 2-Chloroethylvinyl ether	63	8.151	8.154	(1.241)	60822	99.6841	99.68
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	194492	47.6833	47.68
	43 2-Nitropropane	43	8.026	8.026	(1.389)	465871	53.4037	53.40
	44 Dibromomethane	93	7.188	7.185	(1.095)	105570	51.8407	51.84
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	465871	106.194	106.19
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	280502	50.9237	50.92
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	478073	50.0000	
$	48 Toluene-d8	98	8.087	8.090	(0.849)	594047	51.3691	51.36
	49 Ethyl Methacrylate	69	8.529	8.526	(1.299)	257328	57.5552	57.55
	50 Toluene	91	8.154	8.154	(0.856)	684726	46.8900	46.89
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	240506	52.6123	52.61
	52 2-Hexanone	43	8.866	8.863	(0.931)	299115	108.808	108.80
	53 1,1,2-Trichloroethane	83	8.594	8.590	(0.902)	131672	48.0063	48.00
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	265423	48.7451	48.74
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	198374	49.3930	49.39
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	146367	50.1516	50.15
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	172263	50.3088	50.30
	58 1-Chlorohexane	55	9.550	9.553	(1.455)	183324	55.5026	55.50
	59 Chlorobenzene	112	9.550	9.553	(1.003)	424518	46.4560	46.45
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	175552	48.3862	48.38
	61 Ethylbenzene	106	9.668	9.672	(1.015)	230733	46.5938	46.59
	62 m,p-Xylenes	106	9.787	9.790	(1.028)	559524	113.000	112.99
	63 o-Xylene	106	10.176	10.176	(1.068)	296368	47.6570	47.65
	64 Styrene	104	10.195	10.198	(1.070)	461649	46.3393	46.33
	66 Bromoform	173	10.374	10.374	(1.089)	139649	48.9441	48.94
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	735089	49.0976	49.09
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.872	(0.919)	213393	44.0502	44.05
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	228451	56.9579	56.95
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.835	(1.000)	218628	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.695	(0.904)	104924	52.5549	52.55
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.930	(1.147)	50919	42.8116	42.81
	73 n-Propylbenzene	91	10.952	10.955	(0.926)	767503	44.7563	44.75
	74 Bromobenzene	156	10.830	10.833	(0.915)	191415	43.6193	43.61
	75 1,3,5-Trimethylbenzene	105	11.129	11.132	(0.941)	569777	43.9532	43.95

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.029	(0.932)	487873	50.4678	50.46
77	4-Chlorotoluene	91	11.135	11.138	(0.941)	522295	49.7182	49.71
78	tert-Butylbenzene	119	11.449	11.449	(0.968)	497478	46.4390	46.43
79	1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	579155	52.1314	52.13
81	sec-Butylbenzene	105	11.664	11.668	(0.986)	662797	46.3985	46.39
82	p-Isopropyltoluene	119	11.815	11.815	(0.999)	558057	45.7980	45.79
83	1,3-Dichlorobenzene	146	11.764	11.767	(0.994)	312862	41.8266	41.82
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	294255	40.7093	40.70
87	n-Butylbenzene	91	12.220	12.223	(1.033)	424993	45.9930	45.99
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	304502	43.3854	43.38
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	38147	48.7777	48.77
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	156186	38.5780	38.57
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	76386	43.0455	43.04
92	Naphthalene	128	14.058	14.062	(1.188)	432097	44.2745	44.27
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.209)	140478	40.1298	40.12
146	Methyl acetate	43	3.219	3.219	(0.557)	183453	43.6855	43.68
138	Freon TF	101	2.753	2.753	(0.477)	152865	58.5936	58.59
139	Diethyl ether	59	2.535	2.529	(0.439)	304497	48.9339	48.93
147	Methylcyclohexane	83	6.986	6.986	(1.064)	245607	52.3217	52.32
135	1,4-Dioxane	88	7.236	7.230	(1.253)	35210	1094.12	1094.12
132	n-Butanol	56	6.995	6.989	(1.211)	122255	957.113	957.11
131	Methyl Acrylate	55	5.256	5.259	(0.910)	291818	49.6453	49.64
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	539843	50.8250	50.82
136	n-Hexane	57	4.056	4.050	(0.702)	237224	56.6469	56.64
141	Cyclohexane	56	5.683	5.680	(0.984)	322093	55.3002	55.30
142	Tetrahydrofuran	42	5.407	5.407	(0.936)	139997	99.6886	99.68
148	Tert-butyl alcohol	59	3.556	3.556	(0.616)	419354	1001.29	1001.28
149	Isopropyl alcohol	45	3.049	3.045	(0.528)	246102	923.987	923.98
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1193692	1298.53	1298.52
166	1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	525166	42.5529	42.55
167	Ethanol	45	2.535	2.532	(0.439)	301023	980.668	980.66
170	1,3,5-Trichlorobenzene	180	13.198	13.202	(1.116)	186603	39.2195	39.21
172	tert-Butyl formate	59	4.906	4.900	(0.849)	586797	95.6455	95.64
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	410918	1291.64	1291.64
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	563938	48.7312	48.73
175	tert-Butyl ethyl ether	59	6.232	6.229	(1.079)	298562	52.0199	52.01
176	tert-Amyl alcohol	59	6.232	6.229	(1.079)	298562	1040.40	1040.39
157	2-Methylnaphthalene	142	15.188	15.191	(1.284)	98405	32.9001	32.90
156	Diisopropyl ether	45	4.416	4.416	(0.764)	714675	47.9806	47.98
171	1-Methylnaphthalene	142	15.384	15.387	(1.300)	124070	38.8543	38.85
130	Ethyl Acetate	43	5.237	5.231	(0.907)	396161	45.8724	45.87
M 94	1,2-Dichloroethylene (total)	96				352962	108.317	108.31
M 95	Xylenes (total)	106				855892	160.657	160.65

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D
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Client ID: HS18050260-01MSD
Sample Info: HS18050260-01MSD;HS18050260-01MSD;3;;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D
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Inj Date : 07-MAY-2018 20:30
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 15-May-2018 14:52 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 28 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

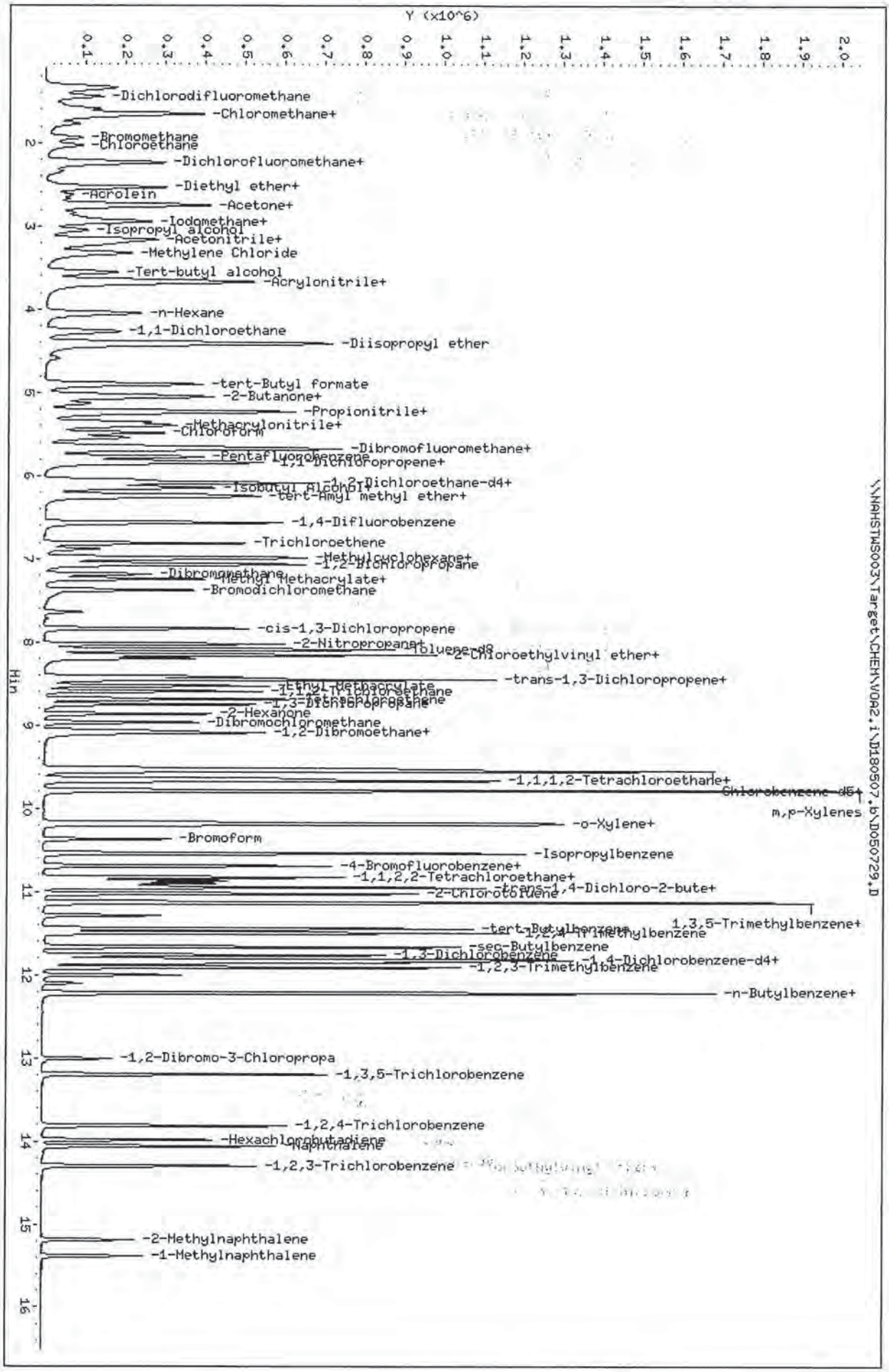
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	345684	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	198816	50.0000	62.30
186	Isobutylene	56	1.643	1.643	(0.285)	190492	50.0000	56.94(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	283367	50.0000	50.86
4	Propionitrile	54	5.227	5.227	(0.906)	588052	500.000	490.83
5	Vinyl Chloride	62	1.672	1.672	(0.290)	233954	50.0000	54.26
6	Bromomethane	94	1.932	1.932	(0.335)	99035	50.0000	38.78
7	Chloroethane	64	2.031	2.031	(0.352)	134735	50.0000	58.39
159	Dichlorofluoromethane	67	2.220	2.220	(0.385)	319195	50.0000	50.21
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	240852	50.0000	59.02
9	Acrolein	56	2.679	2.679	(0.464)	70241	100.000	82.08
10	Acetone	43	2.846	2.846	(0.493)	111949	100.000	98.18
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	147540	50.0000	56.52
12	Isobutyl Alcohol	74	6.158	6.158	(1.067)	14568	1000.00	835.57(A)
13	Acetonitrile	39	3.161	3.161	(0.548)	226608	500.000	513.49
14	Allyl Chloride	41	3.167	3.167	(0.549)	564250	50.0000	50.16
15	Iodomethane	142	2.891	2.891	(0.501)	180229	100.000	68.31
16	Acrylonitrile	53	3.680	3.680	(0.638)	158817	100.000	103.53
17	Methylene Chloride	84	3.324	3.324	(0.576)	164741	50.0000	45.09
18	Methyl tert-butyl ether	73	3.677	3.677	(0.637)	456718	50.0000	45.81
19	Carbon Disulfide	76	2.946	2.946	(0.510)	626945	100.000	104.89

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	158958	50.0000	55.68
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	401824	100.000	90.29(M)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	344902	50.0000	49.67
	24 2-Butanone	43	5.131	5.131	(0.889)	177631	100.000	98.83
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	199699	50.0000	46.65
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	232506	50.0000	49.52
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	177892	50.0000	49.80
	28 Chloroform	83	5.484	5.484	(0.950)	292040	50.0000	48.76
	29 Bromochloromethane	128	5.356	5.356	(0.928)	89247	50.0000	51.77
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	151071	50.0000	50.54
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	268065	50.0000	53.31
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	218111	50.0000	48.60
	33 1,2-Dichloroethane	62	6.135	6.135	(0.935)	231708	50.0000	47.18
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	233099	50.0000	51.08
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	195206	50.0000	51.90
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	520599	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	645048	50.0000	48.74
	38 Trichloroethene	130	6.812	6.812	(1.038)	180528	50.0000	52.70
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	238699	50.0000	49.66
	40 Methyl Methacrylate	41	7.242	7.242	(1.255)	198094	50.0000	48.49
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	58006	100.000	97.64(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	192191	50.0000	48.39
	43 2-Nitropropane	43	8.022	8.022	(1.390)	396774	50.0000	46.10
	44 Dibromomethane	93	7.185	7.185	(1.094)	101931	50.0000	51.40
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	396774	100.000	91.72
	46 cis-1,3-Dichloropropene	75	7.833	7.833	(1.193)	275446	50.0000	51.35
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	471409	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	581923	50.0000	50.96
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	233072	50.0000	53.38
	50 Toluene	91	8.154	8.154	(0.856)	676638	50.0000	46.99
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	236273	50.0000	53.08
	52 2-Hexanone	43	8.863	8.863	(0.931)	261229	100.000	96.36
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	129831	50.0000	48.00
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	255445	50.0000	47.57
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	195268	50.0000	49.30
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	145014	50.0000	50.39
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	166057	50.0000	49.18
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	186555	50.0000	58.14
	59 Chlorobenzene	112	9.550	9.550	(1.003)	424406	50.0000	47.10
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	174728	50.0000	48.83
	61 Ethylbenzene	106	9.668	9.668	(1.015)	233322	50.0000	47.78
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	562869	100.000	115.41
	63 o-Xylene	106	10.175	10.175	(1.068)	296338	50.0000	48.32
	64 Styrene	104	10.195	10.195	(1.070)	482512	50.0000	49.11
	66 Bromoform	173	10.374	10.374	(1.089)	141291	50.0000	50.21
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	739655	50.0000	50.10
	68 1,1,2,2-Tetrachloroethane	83	10.868	10.868	(0.918)	208959	50.0000	42.94
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	225184	50.0000	56.93
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	219609	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	106011	50.0000	52.87
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	53490	50.0000	45.55
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	797620	50.0000	46.30
	74 Bromobenzene	156	10.830	10.830	(0.915)	195967	50.0000	44.45
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	585774	50.0000	44.98

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	504428	50.0000	52.01
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	552797	50.0000	52.52
78 tert-Butylbenzene	119	11.446	11.446	(0.967)	506147	50.0000	47.03
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	590567	50.0000	52.96
81 sec-Butylbenzene	105	11.664	11.664	(0.986)	692426	50.0000	48.25
82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	579639	50.0000	47.35
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	338932	50.0000	45.10
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	320400	50.0000	44.12
87 n-Butylbenzene	91	12.219	12.219	(1.033)	459007	50.0000	49.45
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	318100	50.0000	45.12
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	38298	50.0000	48.75
90 1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	190003	50.0000	46.62
91 Hexachlorobutadiene	225	13.984	13.984	(1.182)	85118	50.0000	47.75
92 Naphthalene	128	14.061	14.061	(1.188)	454127	50.0000	46.30
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	160437	50.0000	45.48
146 Methyl acetate	43	3.218	3.218	(0.558)	190589	50.0000	46.00
138 Freon TF	101	2.753	2.753	(0.477)	152766	50.0000	59.37
139 Diethyl ether	59	2.532	2.532	(0.439)	299263	50.0000	48.75
147 Methylcyclohexane	83	6.982	6.982	(1.064)	244380	50.0000	53.47
135 1,4-Dioxane	88	7.236	7.236	(1.253)	31622	1000.00	994.25
132 n-Butanol	56	6.989	6.989	(1.211)	117162	1000.00	929.78
131 Methyl Acrylate	55	5.256	5.256	(0.911)	294810	50.0000	50.83
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	528139	50.0000	50.40
136 n-Hexane	57	4.053	4.053	(0.702)	231180	50.0000	55.95
141 Cyclohexane	56	5.683	5.683	(0.984)	320899	50.0000	55.84
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	129838	100.000	93.71
148 Tert-butyl alcohol	59	3.552	3.552	(0.615)	397709	1000.00	962.59
149 Isopropyl alcohol	45	3.045	3.045	(0.528)	228507	1000.00	869.65
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	848557	1000.00	936.13
166 1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	551577	50.0000	44.49
167 Ethanol	45	2.535	2.535	(0.439)	289977	1000.00	957.59
170 1,3,5-Trichlorobenzene	180	13.198	13.198	(1.115)	226709	50.0000	47.43
172 tert-Butyl formate	59	4.900	4.900	(0.849)	535198	100.000	88.42
173 3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	306001	1000.00	975.45
174 tert-Amyl methyl ether	73	6.251	6.251	(1.083)	501820	50.0000	43.95
175 tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	268628	50.0000	47.44
176 tert-Amyl alcohol	59	6.228	6.228	(1.079)	268628	1000.00	948.88
157 2-Methylnaphthalene	142	15.188	15.188	(1.283)	109408	50.0000	35.76
156 Diisopropyl ether	45	4.412	4.412	(0.764)	687927	50.0000	46.81(T)
171 1-Methylnaphthalene	142	15.383	15.383	(1.300)	126089	50.0000	39.24
130 Ethyl Acetate	43	5.234	5.234	(0.907)	379216	50.0000	44.51

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D
Date : 07-MAY-2018 20:30
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 07-MAY-2018 09:06
Operator : AP Inst ID: VOA2.i
Smp Info : BFB;BFB;3;;BFB
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\bfb.m
Meth Date : 14-May-2018 17:11 Cesar.Lira Quant Type: ISTD
Cal Date : Cal File:
Als bottle: 1 QC Sample: BFB
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14 Sample Matrix: WATER

Concentration Formula: Amt * DF * Uf * Vf * Vi * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vf	1.000	Volumetric correction factor
Vi	2.000	Injection Volume
Cpnd Variable		Local Compound Variable

RT	EXP RT	REL RT	MASS	RESPONSE	CONCENTRATIONS ON-COL (ug/L)	CONCENTRATIONS FINAL (ug/l)	TARGET RANGE	RATIO
1 bfb						CAS #: 460-00-4		
10.695	10.696	(0.000)	95	152704			0.00- 100.00	100.00
10.695	10.696	(0.000)	50	33368			15.00- 40.00	21.85
10.695	10.696	(0.000)	75	73704			30.00- 60.00	48.27
10.695	10.696	(0.000)	96	10476			5.00- 9.00	6.86
10.695	10.696	(0.000)	173	0	0.0	0.0	0.00- 2.00	0.00
10.695	10.696	(0.000)	174	128024			50.00- 0.00	83.84
10.695	10.696	(0.000)	175	9614			5.00- 9.00	7.51
10.695	10.696	(0.000)	176	122552			95.00- 101.00	95.73
10.695	10.696	(0.000)	177	9143			5.00- 9.00	7.46

Wet Chemistry Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18050260

Sequence: 051118A HS18050260
Operator: ALSHS.NoUser

Printed: 6/1/2018 2:08:36 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157

Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

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1	STD1		Standard	1	1.0000	10.0	1.00	1.00
2	STD2		Standard	2	1.0000	10.0	1.00	1.00
3	STD3		Standard	3	1.0000	10.0	1.00	1.00
4	STD4		Standard	4	1.0000	10.0	1.00	1.00
5	STD5		Standard	5	1.0000	10.0	1.00	1.00
6	STD6		Standard	6	1.0000	10.0	1.00	1.00
7	ICV		Unknown	7	1.0000	10.0	1.00	1.00
8	ICB		Unknown	8	1.0000	10.0	1.00	1.00
9	CCV		Unknown	1	1.0000	10.0	1.00	1.00
10	CCB		Unknown	2	1.0000	10.0	1.00	1.00
11	WBLKW1-051118		Unknown	5	1.0000	10.0	1.00	1.00
12	WLCSW1-051118		Unknown	6	1.0000	10.0	1.00	1.00
13	WLCSDW1-051118		Unknown	7	1.0000	10.0	1.00	1.00
14	HS18050572-20		Unknown	11	1.0000	10.0	1.00	1.00
15	HS18050572-06		Unknown	12	1.0000	10.0	1.00	1.00
16	HS18050572-25		Unknown	13	1.0000	10.0	1.00	1.00
17	HS18050572-27		Unknown	14	1.0000	10.0	1.00	1.00
18	HS18050572-21		Unknown	18	1.0000	10.0	1.00	1.00
19	HS18050572-19		Unknown	19	1.0000	10.0	1.00	1.00
20	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
21	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
22	CCB		Unknown	4	1.0000	10.0	1.00	1.00
23	HS18050572-32		Unknown	15	1.0000	10.0	1.00	1.00
24	HS18050572-32MS		Unknown	16	1.0000	10.0	1.00	1.00
25	HS18050572-32MSD		Unknown	17	1.0000	10.0	1.00	1.00
26	HS18050572-07		Unknown	20	1.0000	10.0	1.00	1.00
27	HS18050572-30		Unknown	21	1.0000	10.0	1.00	1.00
28	HS18050572-31		Unknown	22	1.0000	10.0	1.00	1.00
29	HS18050572-11		Unknown	23	1.0000	10.0	1.00	1.00
30	HS18050572-23		Unknown	24	1.0000	10.0	1.00	1.00
31	HS18050572-23DF10		Unknown	61	10.0000	10.0	1.00	1.00
32	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
33	CCV		Unknown	1	1.0000	10.0	1.00	1.00
34	CCB		Unknown	2	1.0000	10.0	1.00	1.00
35	HS18050572-05		Unknown	25	1.0000	10.0	1.00	1.00
36	HS18050572-29		Unknown	26	1.0000	10.0	1.00	1.00
37	HS18050572-29MS		Unknown	27	1.0000	10.0	1.00	1.00
38	HS18050572-29MSD		Unknown	28	1.0000	10.0	1.00	1.00
39	HS18050572-12		Unknown	29	1.0000	10.0	1.00	1.00
40	HS18050572-24		Unknown	30	1.0000	10.0	1.00	1.00
41	HS18050572-22		Unknown	32	1.0000	10.0	1.00	1.00
42	HS18050572-37		Unknown	33	1.0000	10.0	1.00	1.00

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Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Method	Status	Inj. Date/Time	Program
1	STD1	042618	Finished	4/26/2018 1:23:55 PM	Anions Gradient Program
2	STD2	042618	Finished	4/26/2018 1:38:28 PM	Anions Gradient Program
3	STD3	042618	Finished	4/26/2018 1:53:01 PM	Anions Gradient Program
4	STD4	042618	Finished	4/26/2018 2:07:34 PM	Anions Gradient Program
5	STD5	042618	Finished	4/26/2018 2:22:07 PM	Anions Gradient Program
6	STD6	042618	Finished	4/26/2018 2:36:39 PM	Anions Gradient Program
7	ICV	042618	Finished	4/26/2018 3:55:05 PM	Anions Gradient Program
8	ICB	042618	Finished	4/26/2018 4:09:38 PM	Anions Gradient Program
9	CCV	042618	Finished	5/11/2018 9:11:58 PM	Anions Gradient Program
10	CCB	042618	Finished	5/11/2018 9:26:31 PM	Anions Gradient Program
11	WBLKW1-051118	042618	Finished	5/11/2018 9:49:37 PM	Anions Gradient Program
12	WLCSW1-051118	042618	Finished	5/11/2018 10:04:09 PM	Anions Gradient Program
13	WLCSDW1-051118	042618	Finished	5/11/2018 10:18:42 PM	Anions Gradient Program
14	HS18050572-20	042618	Finished	5/11/2018 10:33:15 PM	Anions Gradient Program
15	HS18050572-06	042618	Finished	5/11/2018 10:47:47 PM	Anions Gradient Program
16	HS18050572-25	042618	Finished	5/11/2018 11:02:20 PM	Anions Gradient Program
17	HS18050572-27	042618	Finished	5/11/2018 11:16:53 PM	Anions Gradient Program
18	HS18050572-21	042618	Finished	5/11/2018 11:31:25 PM	Anions Gradient Program
19	HS18050572-19	042618	Finished	5/11/2018 11:45:58 PM	Anions Gradient Program
20	DI H2O	042618	Finished	5/12/2018 12:00:31 AM	Anions Gradient Program
21	CCV1	042618	Finished	5/12/2018 12:15:03 AM	Anions Gradient Program
22	CCB	042618	Finished	5/12/2018 12:29:36 AM	Anions Gradient Program
23	HS18050572-32	042618	Finished	5/12/2018 12:44:09 AM	Anions Gradient Program
24	HS18050572-32MS	042618	Finished	5/12/2018 12:58:42 AM	Anions Gradient Program
25	HS18050572-32MSD	042618	Finished	5/12/2018 1:13:15 AM	Anions Gradient Program
26	HS18050572-07	042618	Finished	5/12/2018 1:27:47 AM	Anions Gradient Program
27	HS18050572-30	042618	Finished	5/12/2018 1:42:20 AM	Anions Gradient Program
28	HS18050572-31	042618	Finished	5/12/2018 1:56:53 AM	Anions Gradient Program
29	HS18050572-11	042618	Finished	5/12/2018 2:11:26 AM	Anions Gradient Program
30	HS18050572-23	042618	Finished	5/12/2018 2:25:59 AM	Anions Gradient Program
31	HS18050572-23DF10	042618	Finished	5/12/2018 2:40:32 AM	Anions Gradient Program
32	DI H2O	042618	Finished	5/12/2018 2:55:04 AM	Anions Gradient Program
33	CCV	042618	Finished	5/12/2018 3:09:37 AM	Anions Gradient Program
34	CCB	042618	Finished	5/12/2018 3:24:10 AM	Anions Gradient Program
35	HS18050572-05	042618	Finished	5/12/2018 3:38:43 AM	Anions Gradient Program
36	HS18050572-29	042618	Finished	5/12/2018 3:53:15 AM	Anions Gradient Program
37	HS18050572-29MS	042618	Finished	5/12/2018 4:07:48 AM	Anions Gradient Program
38	HS18050572-29MSD	042618	Finished	5/12/2018 4:22:21 AM	Anions Gradient Program
39	HS18050572-12	042618	Finished	5/12/2018 4:36:54 AM	Anions Gradient Program
40	HS18050572-24	042618	Finished	5/12/2018 4:51:27 AM	Anions Gradient Program
41	HS18050572-22	042618	Finished	5/12/2018 5:06:00 AM	Anions Gradient Program
42	HS18050572-37	042618	Finished	5/12/2018 5:20:33 AM	Anions Gradient Program

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Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	GUID
1	STD1	d92b3a74-497e-11e8-b6d9-ac2a724b15e4
2	STD2	e1774668-4980-11e8-b6d9-ac2a724b15e4
3	STD3	e9df5050-4982-11e8-b6d9-ac2a724b15e4
4	STD4	f22134e8-4984-11e8-b6d9-ac2a724b15e4
5	STD5	fa2ea632-4986-11e8-b6d9-ac2a724b15e4
6	STD6	026e2875-4989-11e8-b6d9-ac2a724b15e4
7	ICV	7a1849cd-4993-11e8-b6d9-ac2a724b15e4
8	ICB	ff9ed68c-4995-11e8-b6d9-ac2a724b15e4
9	CCV	3b40f059-5589-11e8-b6d9-ac2a724b15e4
10	CCB	c065bd7b-558b-11e8-b6d9-ac2a724b15e4
11	WBLKW1-051118	7d640bce-558e-11e8-b6d9-ac2a724b15e4
12	WLCSW1-051118	023ef0a5-5591-11e8-b6d9-ac2a724b15e4
13	WLCSDW1-051118	0a669b96-5593-11e8-b6d9-ac2a724b15e4
14	HS18050572-20	12bdf52b-5595-11e8-b6d9-ac2a724b15e4
15	HS18050572-06	1aaeca79-5597-11e8-b6d9-ac2a724b15e4
16	HS18050572-25	23088663-5599-11e8-b6d9-ac2a724b15e4
17	HS18050572-27	2b62424d-559b-11e8-b6d9-ac2a724b15e4
18	HS18050572-21	3357dc45-559d-11e8-b6d9-ac2a724b15e4
19	HS18050572-19	3b903789-559f-11e8-b6d9-ac2a724b15e4
20	DI H2O	43c892cd-55a1-11e8-b6d9-ac2a724b15e4
21	CCV1	4bbe2cc5-55a3-11e8-b6d9-ac2a724b15e4
22	CCB	5407385c-55a5-11e8-b6d9-ac2a724b15e4
23	HS18050572-32	5bfcd254-55a7-11e8-b6d9-ac2a724b15e4
24	HS18050572-32MS	64568e3e-55a9-11e8-b6d9-ac2a724b15e4
25	HS18050572-32MSD	6cc0fa7b-55ab-11e8-b6d9-ac2a724b15e4
26	HS18050572-07	750a0612-55ad-11e8-b6d9-ac2a724b15e4
27	HS18050572-30	7d5311a9-55af-11e8-b6d9-ac2a724b15e4
28	HS18050572-31	858dcf42-55b1-11e8-b6d9-ac2a724b15e4
29	HS18050572-11	8d8106e5-55b3-11e8-b6d9-ac2a724b15e4
30	HS18050572-23	961db272-55b5-11e8-b6d9-ac2a724b15e4
31	HS18050572-23DF10	9e803a28-55b7-11e8-b6d9-ac2a724b15e4
32	DI H2O	a6845204-55b9-11e8-b6d9-ac2a724b15e4
33	CCV	aecd5d9b-55bb-11e8-b6d9-ac2a724b15e4
34	CCB	b6b24740-55bd-11e8-b6d9-ac2a724b15e4
35	HS18050572-05	bf0c032a-55bf-11e8-b6d9-ac2a724b15e4
36	HS18050572-29	c7445e6e-55c1-11e8-b6d9-ac2a724b15e4
37	HS18050572-29MS	cf9bb803-55c3-11e8-b6d9-ac2a724b15e4
38	HS18050572-29MSD	d7e4c39a-55c5-11e8-b6d9-ac2a724b15e4
39	HS18050572-12	e045a683-55c7-11e8-b6d9-ac2a724b15e4
40	HS18050572-24	e87e01c7-55c9-11e8-b6d9-ac2a724b15e4
41	HS18050572-22	f09c2364-55cb-11e8-b6d9-ac2a724b15e4
42	HS18050572-37	f8d47ea8-55cd-11e8-b6d9-ac2a724b15e4

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Inj. Vol.	*Initial_Vol_Wt	*Final_Volume
43	HS18050572-34		Unknown	34	1.0000	10.0	1.00	1.00
44	HS18050572-13		Unknown	38	1.0000	10.0	1.00	1.00
45	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
46	CCB		Unknown	4	1.0000	10.0	1.00	1.00
47	HS18050572-09		Unknown	31	1.0000	10.0	1.00	1.00
48	HS18050572-09MS		Unknown	58	1.0000	10.0	1.00	1.00
49	HS18050572-09MSD		Unknown	59	1.0000	10.0	1.00	1.00
50	HS18050572-17		Unknown	39	1.0000	10.0	1.00	1.00
51	HS18050572-08		Unknown	40	1.0000	10.0	1.00	1.00
52	HS18050572-26		Unknown	41	1.0000	10.0	1.00	1.00
53	HS18050572-01		Unknown	43	1.0000	10.0	1.00	1.00
54	HS18050572-01MS		Unknown	44	1.0000	10.0	1.00	1.00
55	HS18050572-01MSD		Unknown	45	1.0000	10.0	1.00	1.00
56	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
57	CCV		Unknown	1	1.0000	10.0	1.00	1.00
58	CCB		Unknown	2	1.0000	10.0	1.00	1.00
59	HS18050572-28		Unknown	42	1.0000	10.0	1.00	1.00
60	HS18050572-18		Unknown	46	1.0000	10.0	1.00	1.00
61	HS18050572-03		Unknown	47	1.0000	10.0	1.00	1.00
62	HS18050572-33		Unknown	48	1.0000	10.0	1.00	1.00
63	HS18050572-14		Unknown	49	1.0000	10.0	1.00	1.00
64	HS18050572-04		Unknown	50	1.0000	10.0	1.00	1.00
65	HS18050572-02		Unknown	51	1.0000	10.0	1.00	1.00
66	HS18050572-16		Unknown	52	1.0000	10.0	1.00	1.00
67	HS18050572-15		Unknown	56	1.0000	10.0	1.00	1.00
68	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
69	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
70	CCB		Unknown	4	1.0000	10.0	1.00	1.00
71	HS18050572-10DF10		Unknown	60	10.0000	10.0	1.00	1.00
72	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
73	HS18050572-35		Unknown	57	1.0000	10.0	1.00	1.00
74	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
75	WBLKW2-051118		Unknown	35	1.0000	10.0	1.00	1.00
76	WLCSW2-051118		Unknown	36	1.0000	10.0	1.00	1.00
77	WLCSDW2-051118		Unknown	37	1.0000	10.0	1.00	1.00
78	HS18050567-06		Unknown	62	1.0000	10.0	1.00	1.00
79	HS18050567-06DF20		Unknown	63	20.0000	10.0	1.00	1.00
80	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
81	CCV		Unknown	1	1.0000	10.0	1.00	1.00
82	CCB		Unknown	2	1.0000	10.0	1.00	1.00
83	HS18050642-01		Unknown	71	1.0000	10.0	1.00	1.00
84	HS18050633-01DF10		Unknown	64	10.0000	10.0	1.00	1.00

Sequence: 051118A
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157

Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Method	Status	Inj. Date/Time	Program
43	HS18050572-34	042618	Finished	5/12/2018 5:35:05 AM	Anions Gradient Program
44	HS18050572-13	042618	Finished	5/12/2018 5:49:37 AM	Anions Gradient Program
45	CCV1	042618	Finished	5/12/2018 6:04:10 AM	Anions Gradient Program
46	CCB	042618	Finished	5/12/2018 6:18:43 AM	Anions Gradient Program
47	HS18050572-09	042618	Finished	5/12/2018 6:33:15 AM	Anions Gradient Program
48	HS18050572-09MS	042618	Finished	5/12/2018 6:47:48 AM	Anions Gradient Program
49	HS18050572-09MSD	042618	Finished	5/12/2018 7:02:21 AM	Anions Gradient Program
50	HS18050572-17	042618	Finished	5/12/2018 7:16:54 AM	Anions Gradient Program
51	HS18050572-08	042618	Finished	5/12/2018 7:31:27 AM	Anions Gradient Program
52	HS18050572-26	042618	Finished	5/12/2018 7:46:00 AM	Anions Gradient Program
53	HS18050572-01	042618	Finished	5/12/2018 8:00:32 AM	Anions Gradient Program
54	HS18050572-01MS	042618	Finished	5/12/2018 8:15:05 AM	Anions Gradient Program
55	HS18050572-01MSD	042618	Finished	5/12/2018 8:29:38 AM	Anions Gradient Program
56	DI H2O	042618	Finished	5/12/2018 8:44:11 AM	Anions Gradient Program
57	CCV	042618	Finished	5/12/2018 8:58:44 AM	Anions Gradient Program
58	CCB	042618	Finished	5/12/2018 9:13:16 AM	Anions Gradient Program
59	HS18050572-28	042618	Finished	5/12/2018 9:27:49 AM	Anions Gradient Program
60	HS18050572-18	042618	Finished	5/12/2018 9:42:22 AM	Anions Gradient Program
61	HS18050572-03	042618	Finished	5/12/2018 9:56:55 AM	Anions Gradient Program
62	HS18050572-33	042618	Finished	5/12/2018 10:11:27 AM	Anions Gradient Program
63	HS18050572-14	042618	Finished	5/12/2018 10:26:00 AM	Anions Gradient Program
64	HS18050572-04	042618	Finished	5/12/2018 10:40:32 AM	Anions Gradient Program
65	HS18050572-02	042618	Finished	5/12/2018 10:55:05 AM	Anions Gradient Program
66	HS18050572-16	042618	Finished	5/12/2018 11:09:38 AM	Anions Gradient Program
67	HS18050572-15	042618	Finished	5/12/2018 11:24:11 AM	Anions Gradient Program
68	DI H2O	042618	Finished	5/12/2018 11:38:45 AM	Anions Gradient Program
69	CCV1	042618	Finished	5/12/2018 11:53:17 AM	Anions Gradient Program
70	CCB	042618	Finished	5/12/2018 12:07:50 PM	Anions Gradient Program
71	HS18050572-10DF10	042618	Finished	5/12/2018 12:22:22 PM	Anions Gradient Program
72	DI H2O	042618	Finished	5/12/2018 12:36:55 PM	Anions Gradient Program
73	HS18050572-35	042618	Finished	5/12/2018 12:51:27 PM	Anions Gradient Program
74	DI H2O	042618	Finished	5/12/2018 1:06:00 PM	Anions Gradient Program
75	WBLKW2-051118	042618	Finished	5/12/2018 1:20:33 PM	Anions Gradient Program
76	WLCSW2-051118	042618	Finished	5/12/2018 1:35:06 PM	Anions Gradient Program
77	WLCSDW2-051118	042618	Finished	5/12/2018 1:49:39 PM	Anions Gradient Program
78	HS18050567-06	042618	Finished	5/12/2018 2:04:12 PM	Anions Gradient Program
79	HS18050567-06DF20	042618	Finished	5/12/2018 2:18:44 PM	Anions Gradient Program
80	DI H2O	042618	Finished	5/12/2018 2:33:17 PM	Anions Gradient Program
81	CCV	042618	Finished	5/12/2018 3:16:47 PM	Anions Gradient Program
82	CCB	042618	Finished	5/12/2018 3:31:21 PM	Anions Gradient Program
83	HS18050642-01	042618	Finished	5/12/2018 3:45:54 PM	Anions Gradient Program
84	HS18050633-01DF10	042618	Finished	5/12/2018 4:05:48 PM	Anions Gradient Program

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Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	GUID
43	HS18050572-34	00cedd4a-55d0-11e8-b6d9-ac2a724b15e4
44	HS18050572-13	0917e8e1-55d2-11e8-b6d9-ac2a724b15e4
45	CCV1	1122f7d6-55d4-11e8-b6d9-ac2a724b15e4
46	CCB	191891ce-55d6-11e8-b6d9-ac2a724b15e4
47	HS18050572-09	2155b1bc-55d8-11e8-b6d9-ac2a724b15e4
48	HS18050572-09MS	299ebd53-55da-11e8-b6d9-ac2a724b15e4
49	HS18050572-09MSD	31f8793d-55dc-11e8-b6d9-ac2a724b15e4
50	HS18050572-17	3a46497e-55de-11e8-b6d9-ac2a724b15e4
51	HS18050572-08	4291b76a-55e0-11e8-b6d9-ac2a724b15e4
52	HS18050572-26	4a7dc80e-55e2-11e8-b6d9-ac2a724b15e4
53	HS18050572-01	52deaaf7-55e4-11e8-b6d9-ac2a724b15e4
54	HS18050572-01MS	5ab5469e-55e6-11e8-b6d9-ac2a724b15e4
55	HS18050572-01MSD	6307db89-55e8-11e8-b6d9-ac2a724b15e4
56	DI H2O	6b6b20c7-55ea-11e8-b6d9-ac2a724b15e4
57	CCV	73c4dcb1-55ec-11e8-b6d9-ac2a724b15e4
58	CCB	7c06c149-55ee-11e8-b6d9-ac2a724b15e4
59	HS18050572-28	8448a5e1-55f0-11e8-b6d9-ac2a724b15e4
60	HS18050572-18	8c3bdd84-55f2-11e8-b6d9-ac2a724b15e4
61	HS18050572-03	949cc06d-55f4-11e8-b6d9-ac2a724b15e4
62	HS18050572-33	9c8b3366-55f6-11e8-b6d9-ac2a724b15e4
63	HS18050572-14	a4db65fc-55f8-11e8-b6d9-ac2a724b15e4
64	HS18050572-04	acc9d8f5-55fa-11e8-b6d9-ac2a724b15e4
65	HS18050572-02	b51c6de0-55fc-11e8-b6d9-ac2a724b15e4
66	HS18050572-16	bd60b4cd-55fe-11e8-b6d9-ac2a724b15e4
67	HS18050572-15	c5cc58d4-5600-11e8-b6d9-ac2a724b15e4
68	DI H2O	ce4cb534-5602-11e8-b6d9-ac2a724b15e4
69	CCV1	d644019c-5604-11e8-b6d9-ac2a724b15e4
70	CCB	de943432-5606-11e8-b6d9-ac2a724b15e4
71	HS18050572-10DF10	e67b802c-5608-11e8-b6d9-ac2a724b15e4
72	DI H2O	eec6ee18-560a-11e8-b6d9-ac2a724b15e4
73	HS18050572-35	f6ba25bb-560c-11e8-b6d9-ac2a724b15e4
74	DI H2O	ff033152-560e-11e8-b6d9-ac2a724b15e4
75	WBLKW2-051118	07510193-5611-11e8-b6d9-ac2a724b15e4
76	WLCSW2-051118	0f9c6f7f-5613-11e8-b6d9-ac2a724b15e4
77	WLCSDW2-051118	17d72d18-5615-11e8-b6d9-ac2a724b15e4
78	HS18050567-06	202038af-5617-11e8-b6d9-ac2a724b15e4
79	HS18050567-06DF20	282420a5-5619-11e8-b6d9-ac2a724b15e4
80	DI H2O	306f8e91-561b-11e8-b6d9-ac2a724b15e4
81	CCV	c767847f-5620-11e8-b6d9-ac2a724b15e4
82	CCB	4c89ef4c-5623-11e8-b6d9-ac2a724b15e4
83	HS18050642-01	5528ced7-5625-11e8-b6d9-ac2a724b15e4
84	HS18050633-01DF10	a05e1068-5627-11e8-b6d9-ac2a724b15e4

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Inj. Vol.	*Initial_Vol_Wt	*Final_Volume
85	HS18050633-02DF10		Unknown	66	10.0000	10.0	1.00	1.00
86	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
87	HS18050633-01DF200		Unknown	65	200.0000	10.0	1.00	1.00
88	HS18050633-02DF100		Unknown	67	100.0000	10.0	1.00	1.00
89	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
90	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
91	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
92	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
93	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
94	CCB		Unknown	4	1.0000	10.0	1.00	1.00
95	WBLKW3-051118		Unknown	68	1.0000	10.0	1.00	1.00
96	WLCSW3-051118		Unknown	69	1.0000	10.0	1.00	1.00
97	WLCSDW3-051118		Unknown	70	1.0000	10.0	1.00	1.00
98	HS18050618-02		Unknown	73	1.0000	10.0	1.00	1.00
99	HS18050618-02DF20		Unknown	74	20.0000	10.0	1.00	1.00
100	HS18050618-07		Unknown	77	1.0000	10.0	1.00	1.00
101	HS18050618-07MS		Unknown	78	1.0000	10.0	1.00	1.00
102	HS18050618-07MSD		Unknown	79	1.0000	10.0	1.00	1.00
103	HS18050618-07DF20		Unknown	80	20.0000	10.0	1.00	1.00
104	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
105	CCV		Unknown	1	1.0000	10.0	1.00	1.00
106	CCB		Unknown	2	1.0000	10.0	1.00	1.00
107	HS18050618-11		Unknown	75	1.0000	10.0	1.00	1.00
108	HS18050618-11DF20		Unknown	76	20.0000	10.0	1.00	1.00
109	HS18050618-12		Unknown	81	1.0000	10.0	1.00	1.00
110	HS18050618-12DF20		Unknown	82	20.0000	10.0	1.00	1.00
111	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
112	HS18050618-15		Unknown	83	1.0000	10.0	1.00	1.00
113	HS18050618-15DF20		Unknown	84	20.0000	10.0	1.00	1.00
114	HS18050618-08		Unknown	85	1.0000	10.0	1.00	1.00
115	HS18050618-08DF20		Unknown	86	20.0000	10.0	1.00	1.00
116	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
117	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
118	CCB		Unknown	4	1.0000	10.0	1.00	1.00
119	HS18050618-13		Unknown	87	1.0000	10.0	1.00	1.00
120	HS18050618-13DF20		Unknown	88	20.0000	10.0	1.00	1.00
121	HS18050618-03		Unknown	89	1.0000	10.0	1.00	1.00
122	HS18050618-03DF20		Unknown	90	20.0000	10.0	1.00	1.00
123	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
124	HS18050618-09		Unknown	11	1.0000	10.0	1.00	1.00
125	HS18050618-09DF20		Unknown	12	20.0000	10.0	1.00	1.00
126	HS18050618-14		Unknown	13	1.0000	10.0	1.00	1.00

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Method	Status	Inj. Date/Time	Program
85	HS18050633-02DF10	042618	Finished	5/12/2018 4:20:21 PM	Anions Gradient Program
86	DI H2O	042618	Finished	5/12/2018 4:34:54 PM	Anions Gradient Program
87	HS18050633-01DF200	042618	Finished	5/12/2018 4:49:27 PM	Anions Gradient Program
88	HS18050633-02DF100	042618	Finished	5/12/2018 5:04:00 PM	Anions Gradient Program
89	DI H2O	042618	Finished	5/12/2018 5:18:33 PM	Anions Gradient Program
90	DI H2O	042618	Finished	5/12/2018 5:33:06 PM	Anions Gradient Program
91	DI H2O	042618	Finished	5/12/2018 5:47:39 PM	Anions Gradient Program
92	DI H2O	042618	Finished	5/12/2018 6:02:12 PM	Anions Gradient Program
93	CCV1	042618	Finished	5/12/2018 6:16:45 PM	Anions Gradient Program
94	CCB	042618	Finished	5/12/2018 6:31:17 PM	Anions Gradient Program
95	WBLKW3-051118	042618	Finished	5/12/2018 6:45:50 PM	Anions Gradient Program
96	WLCSW3-051118	042618	Finished	5/12/2018 7:00:23 PM	Anions Gradient Program
97	WLCSDW3-051118	042618	Finished	5/12/2018 7:14:56 PM	Anions Gradient Program
98	HS18050618-02	042618	Finished	5/12/2018 7:29:28 PM	Anions Gradient Program
99	HS18050618-02DF20	042618	Finished	5/12/2018 7:44:01 PM	Anions Gradient Program
100	HS18050618-07	042618	Finished	5/12/2018 7:58:34 PM	Anions Gradient Program
101	HS18050618-07MS	042618	Finished	5/12/2018 8:13:07 PM	Anions Gradient Program
102	HS18050618-07MSD	042618	Finished	5/12/2018 8:27:40 PM	Anions Gradient Program
103	HS18050618-07DF20	042618	Finished	5/12/2018 8:42:13 PM	Anions Gradient Program
104	DI H2O	042618	Finished	5/12/2018 8:56:46 PM	Anions Gradient Program
105	CCV	042618	Finished	5/12/2018 9:11:19 PM	Anions Gradient Program
106	CCB	042618	Finished	5/12/2018 9:25:52 PM	Anions Gradient Program
107	HS18050618-11	042618	Finished	5/12/2018 9:40:24 PM	Anions Gradient Program
108	HS18050618-11DF20	042618	Finished	5/12/2018 9:54:57 PM	Anions Gradient Program
109	HS18050618-12	042618	Finished	5/12/2018 10:09:29 PM	Anions Gradient Program
110	HS18050618-12DF20	042618	Finished	5/12/2018 10:24:02 PM	Anions Gradient Program
111	DI H2O	042618	Finished	5/12/2018 10:38:35 PM	Anions Gradient Program
112	HS18050618-15	042618	Finished	5/12/2018 10:53:08 PM	Anions Gradient Program
113	HS18050618-15DF20	042618	Finished	5/12/2018 11:07:41 PM	Anions Gradient Program
114	HS18050618-08	042618	Finished	5/12/2018 11:22:13 PM	Anions Gradient Program
115	HS18050618-08DF20	042618	Finished	5/12/2018 11:36:46 PM	Anions Gradient Program
116	DI H2O	042618	Finished	5/12/2018 11:51:19 PM	Anions Gradient Program
117	CCV1	042618	Finished	5/13/2018 12:05:52 AM	Anions Gradient Program
118	CCB	042618	Finished	5/13/2018 12:20:25 AM	Anions Gradient Program
119	HS18050618-13	042618	Finished	5/13/2018 12:34:57 AM	Anions Gradient Program
120	HS18050618-13DF20	042618	Finished	5/13/2018 12:49:30 AM	Anions Gradient Program
121	HS18050618-03	042618	Finished	5/13/2018 1:04:04 AM	Anions Gradient Program
122	HS18050618-03DF20	042618	Finished	5/13/2018 1:18:37 AM	Anions Gradient Program
123	DI H2O	042618	Finished	5/13/2018 1:33:10 AM	Anions Gradient Program
124	HS18050618-09	042618	Finished	5/13/2018 1:47:42 AM	Anions Gradient Program
125	HS18050618-09DF20	042618	Finished	5/13/2018 2:02:14 AM	Anions Gradient Program
126	HS18050618-14	042618	Finished	5/13/2018 2:16:47 AM	Anions Gradient Program

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	GUID
85	HS18050633-02DF10	25795436-562a-11e8-b6d9-ac2a724b15e4
86	DI H2O	2dc25fcd-562c-11e8-b6d9-ac2a724b15e4
87	HS18050633-01DF200	3610300e-562e-11e8-b6d9-ac2a724b15e4
88	HS18050633-02DF100	3e56d950-5630-11e8-b6d9-ac2a724b15e4
89	DI H2O	469fe4e7-5632-11e8-b6d9-ac2a724b15e4
90	DI H2O	4efc0326-5634-11e8-b6d9-ac2a724b15e4
91	DI H2O	5742ac68-5636-11e8-b6d9-ac2a724b15e4
92	DI H2O	5f9ecaa7-5638-11e8-b6d9-ac2a724b15e4
93	CCV1	67e7d63e-563a-11e8-b6d9-ac2a724b15e4
94	CCB	6fdd7036-563c-11e8-b6d9-ac2a724b15e4
95	WBLKW3-051118	7834c9cb-563e-11e8-b6d9-ac2a724b15e4
96	WLCSW3-051118	807dd562-5640-11e8-b6d9-ac2a724b15e4
97	WLCSDW3-051118	88b892fb-5642-11e8-b6d9-ac2a724b15e4
98	HS18050618-02	91124ee5-5644-11e8-b6d9-ac2a724b15e4
99	HS18050618-02DF20	994847d4-5646-11e8-b6d9-ac2a724b15e4
100	HS18050618-07	a1a203be-5648-11e8-b6d9-ac2a724b15e4
101	HS18050618-07MS	a9eb0f55-564a-11e8-b6d9-ac2a724b15e4
102	HS18050618-07MSD	b243c4b4-564c-11e8-b6d9-ac2a724b15e4
103	HS18050618-07DF20	bab4daed-564e-11e8-b6d9-ac2a724b15e4
104	DI H2O	c30a211c-5650-11e8-b6d9-ac2a724b15e4
105	CCV	cb4ea75d-5652-11e8-b6d9-ac2a724b15e4
106	CCB	d392ee4a-5654-11e8-b6d9-ac2a724b15e4
107	HS18050618-11	db731345-5656-11e8-b6d9-ac2a724b15e4
108	HS18050618-11DF20	e3c5a830-5658-11e8-b6d9-ac2a724b15e4
109	HS18050618-12	eba5cd2b-565a-11e8-b6d9-ac2a724b15e4
110	HS18050618-12DF20	f3a4f077-565c-11e8-b6d9-ac2a724b15e4
111	DI H2O	fbe93764-565e-11e8-b6d9-ac2a724b15e4
112	HS18050618-15	042b1bfc-5661-11e8-b6d9-ac2a724b15e4
113	HS18050618-15DF20	0c873a3b-5663-11e8-b6d9-ac2a724b15e4
114	HS18050618-08	147cd433-5665-11e8-b6d9-ac2a724b15e4
115	HS18050618-08DF20	1ccd06c9-5667-11e8-b6d9-ac2a724b15e4
116	DI H2O	25161260-5669-11e8-b6d9-ac2a724b15e4
117	CCV1	2d5cbba2-566b-11e8-b6d9-ac2a724b15e4
118	CCB	35a364e4-566d-11e8-b6d9-ac2a724b15e4
119	HS18050618-13	3df5f9cf-566f-11e8-b6d9-ac2a724b15e4
120	HS18050618-13DF20	463f0566-5671-11e8-b6d9-ac2a724b15e4
121	HS18050618-03	4e8810fd-5673-11e8-b6d9-ac2a724b15e4
122	HS18050618-03DF20	57222bde-5675-11e8-b6d9-ac2a724b15e4
123	DI H2O	5f6ffc1f-5677-11e8-b6d9-ac2a724b15e4
124	HS18050618-09	67574819-5679-11e8-b6d9-ac2a724b15e4
125	HS18050618-09DF20	6f3c31be-567b-11e8-b6d9-ac2a724b15e4
126	HS18050618-14	779ab252-567d-11e8-b6d9-ac2a724b15e4

Sequence: 051118A
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157

Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Inj. Vol.	*Initial_Vol_Wt	*Final_Volume
127	HS18050618-14DF20		Unknown	14	20.0000	10.0	1.00	1.00
128	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
129	CCV		Unknown	1	1.0000	10.0	1.00	1.00
130	CCB		Unknown	2	1.0000	10.0	1.00	1.00
131	HS18050618-05		Unknown	15	1.0000	10.0	1.00	1.00
132	HS18050618-05DF20		Unknown	16	20.0000	10.0	1.00	1.00
133	HS18050618-04		Unknown	17	1.0000	10.0	1.00	1.00
134	HS18050618-04DF20		Unknown	18	20.0000	10.0	1.00	1.00
135	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
136	HS18050618-10		Unknown	19	1.0000	10.0	1.00	1.00
137	HS18050618-10DF20		Unknown	20	20.0000	10.0	1.00	1.00
138	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
139	HS18050260-01DF10		Unknown	21	10.0000	10.0	1.00	1.00
140	HS18050260-01DF20		Unknown	22	20.0000	10.0	1.00	1.00
141	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
142	CCB		Unknown	4	1.0000	10.0	1.00	1.00
143	HS18041479-01DF2		Unknown	23	2.0000	10.0	1.00	1.00
144	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
145	HS18041479-01DF20		Unknown	24	20.0000	10.0	1.00	1.00
146	HS18041479-01MSDF20		Unknown	25	20.0000	10.0	1.00	1.00
147	HS18041479-01MSDDF20		Unknown	26	20.0000	10.0	1.00	1.00
148	HS18041479-01DF40		Unknown	27	40.0000	10.0	1.00	1.00
149	HS18041480-01DF2		Unknown	28	2.0000	10.0	1.00	1.00
150	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
151	DI H2O		Unknown	29	1.0000	10.0	1.00	1.00
152	HS18041480-01DF40		Unknown	30	40.0000	10.0	1.00	1.00
153	CCV		Unknown	1	1.0000	10.0	1.00	1.00
154	CCB		Unknown	2	1.0000	10.0	1.00	1.00
155	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00
156	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
157	DI H2O		Unknown	9	1.0000	10.0	1.00	1.00

Sequence: 051118A
Operator: ALSHS.NoUser

Printed: 6/1/2018 2:08:36 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157

Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Method	Status	Inj. Date/Time	Program
127	HS18050618-14DF20	042618	Finished	5/13/2018 2:31:20 AM	Anions Gradient Program
128	DI H2O	042618	Finished	5/13/2018 2:45:53 AM	Anions Gradient Program
129	CCV	042618	Finished	5/13/2018 3:00:25 AM	Anions Gradient Program
130	CCB	042618	Finished	5/13/2018 3:14:58 AM	Anions Gradient Program
131	HS18050618-05	042618	Finished	5/13/2018 3:29:31 AM	Anions Gradient Program
132	HS18050618-05DF20	042618	Finished	5/13/2018 3:44:05 AM	Anions Gradient Program
133	HS18050618-04	042618	Finished	5/13/2018 3:58:37 AM	Anions Gradient Program
134	HS18050618-04DF20	042618	Finished	5/13/2018 4:13:10 AM	Anions Gradient Program
135	DI H2O	042618	Finished	5/13/2018 4:27:43 AM	Anions Gradient Program
136	HS18050618-10	042618	Finished	5/13/2018 4:42:16 AM	Anions Gradient Program
137	HS18050618-10DF20	042618	Finished	5/13/2018 4:56:49 AM	Anions Gradient Program
138	DI H2O	042618	Finished	5/13/2018 5:11:21 AM	Anions Gradient Program
139	HS18050260-01DF10	042618	Finished	5/13/2018 5:25:54 AM	Anions Gradient Program
140	HS18050260-01DF20	042618	Finished	5/13/2018 5:40:28 AM	Anions Gradient Program
141	CCV1	042618	Finished	5/13/2018 5:55:01 AM	Anions Gradient Program
142	CCB	042618	Finished	5/13/2018 6:09:34 AM	Anions Gradient Program
143	HS18041479-01DF2	042618	Finished	5/13/2018 6:24:06 AM	Anions Gradient Program
144	DI H2O	042618	Finished	5/13/2018 6:38:39 AM	Anions Gradient Program
145	HS18041479-01DF20	042618	Finished	5/13/2018 6:53:12 AM	Anions Gradient Program
146	HS18041479-01MSDF20	042618	Finished	5/13/2018 7:07:45 AM	Anions Gradient Program
147	HS18041479-01MSDDF20	042618	Finished	5/13/2018 7:22:17 AM	Anions Gradient Program
148	HS18041479-01DF40	042618	Finished	5/13/2018 7:36:50 AM	Anions Gradient Program
149	HS18041480-01DF2	042618	Finished	5/13/2018 7:51:23 AM	Anions Gradient Program
150	DI H2O	042618	Finished	5/13/2018 8:05:55 AM	Anions Gradient Program
151	DI H2O	042618	Finished	5/13/2018 8:20:27 AM	Anions Gradient Program
152	HS18041480-01DF40	042618	Finished	5/13/2018 8:35:00 AM	Anions Gradient Program
153	CCV	042618	Finished	5/13/2018 8:49:32 AM	Anions Gradient Program
154	CCB	042618	Finished	5/13/2018 9:04:05 AM	Anions Gradient Program
155	DI H2O	042618	Finished	5/13/2018 9:18:38 AM	Anions Gradient Program
156	DI H2O	042618	Finished	5/13/2018 9:33:11 AM	Anions Gradient Program
157	DI H2O	042618	Finished	5/13/2018 9:47:43 AM	Anions Gradient Program

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 157
Created: 5/12/2018 3:04:39 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	GUID
127	HS18050618-14DF20	7fd30d96-567f-11e8-b6d9-ac2a724b15e4
128	DI H2O	881e7b82-5681-11e8-b6d9-ac2a724b15e4
129	CCV	900829d1-5683-11e8-b6d9-ac2a724b15e4
130	CCB	98644810-5685-11e8-b6d9-ac2a724b15e4
131	HS18050618-05	a0be03fa-5687-11e8-b6d9-ac2a724b15e4
132	HS18050618-05DF20	a8f65f3e-5689-11e8-b6d9-ac2a724b15e4
133	HS18050618-04	b1a38cc7-568b-11e8-b6d9-ac2a724b15e4
134	HS18050618-04DF20	b9814f6d-568d-11e8-b6d9-ac2a724b15e4
135	DI H2O	c1e23256-568f-11e8-b6d9-ac2a724b15e4
136	HS18050618-10	ca2b3ded-5691-11e8-b6d9-ac2a724b15e4
137	HS18050618-10DF20	d284f9d7-5693-11e8-b6d9-ac2a724b15e4
138	DI H2O	dace056e-5695-11e8-b6d9-ac2a724b15e4
139	HS18050260-01DF10	e3171105-5697-11e8-b6d9-ac2a724b15e4
140	HS18050260-01DF20	eb81e84f-5699-11e8-b6d9-ac2a724b15e4
141	CCV1	f3d7804c-569b-11e8-b6d9-ac2a724b15e4
142	CCB	fc3211ca-569d-11e8-b6d9-ac2a724b15e4
143	HS18041479-01DF2	048bcdb4-56a0-11e8-b6d9-ac2a724b15e4
144	DI H2O	0c9217ff-56a2-11e8-b6d9-ac2a724b15e4
145	HS18041479-01DF20	14b9c2f0-56a4-11e8-b6d9-ac2a724b15e4
146	HS18041479-01MSDF20	1d02ce87-56a6-11e8-b6d9-ac2a724b15e4
147	HS18041479-01MSDDF20	254bda1e-56a8-11e8-b6d9-ac2a724b15e4
148	HS18041479-01DF40	2d97480a-56aa-11e8-b6d9-ac2a724b15e4
149	HS18041480-01DF2	3579cf5a-56ac-11e8-b6d9-ac2a724b15e4
150	DI H2O	3d6f6952-56ae-11e8-b6d9-ac2a724b15e4
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152	HS18041480-01DF40	4d6b4d95-56b2-11e8-b6d9-ac2a724b15e4
153	CCV	553f86e7-56b4-11e8-b6d9-ac2a724b15e4
154	CCB	5d9942d1-56b6-11e8-b6d9-ac2a724b15e4
155	DI H2O	65e24e68-56b8-11e8-b6d9-ac2a724b15e4
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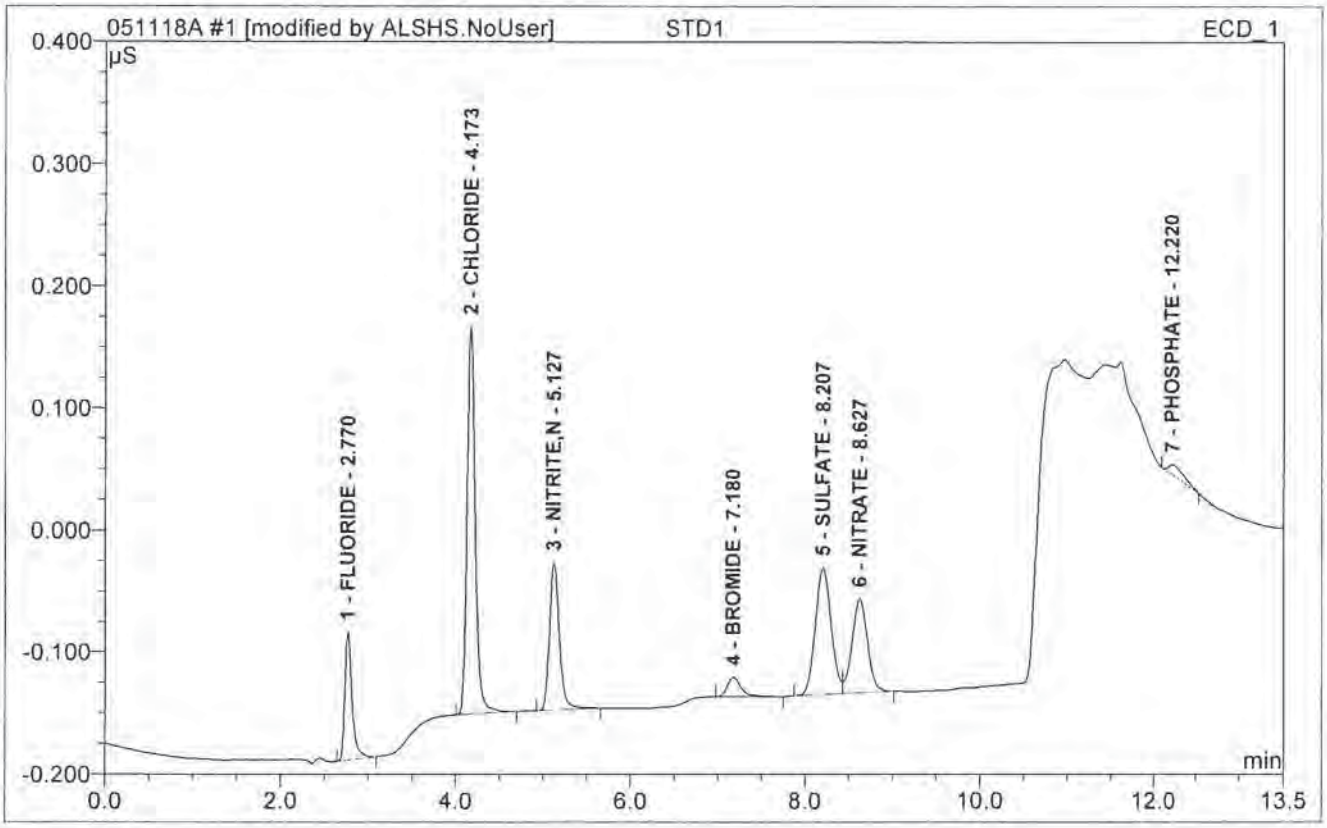
157	DI H2O	761043a4-56bc-11e8-b6d9-ac2a724b15e4

1 STD1

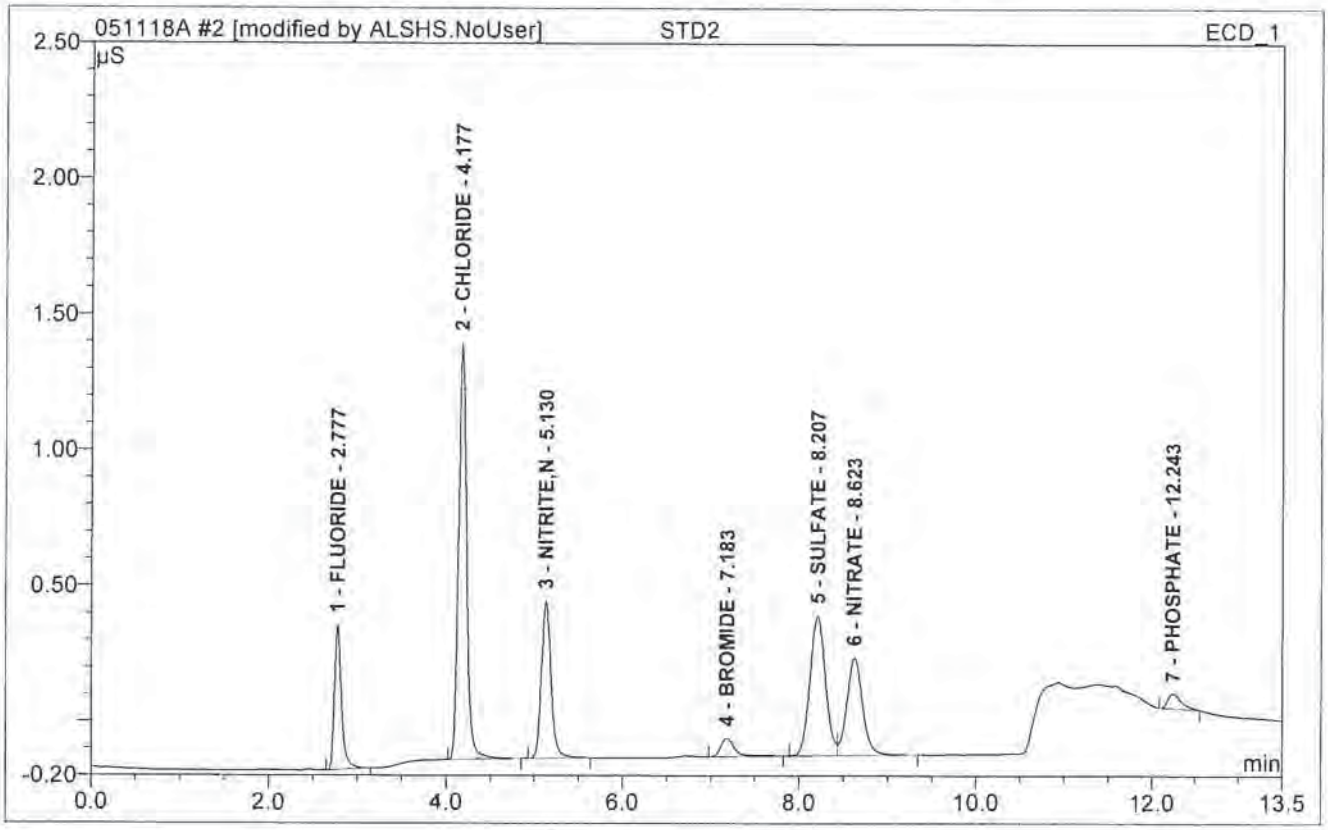
Sample Name:	**STD1**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 13:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	0.105	0.010	9.73	0.100	1.
2	4.17	CHLORIDE	0.317	0.034	33.44	0.521	1.
3	5.13	NITRITE,N	0.121	0.016	15.45	0.092	1.
4	7.18	BROMIDE	0.016	0.003	2.80	0.122	1.
5	8.21	SULFATE	0.104	0.022	21.24	0.558	1.
6	8.63	NITRATE	0.077	0.016	15.45	0.113	1.
7	12.22	PHOSPHATE	0.008	0.002	1.90	0.448	1.
Total:			0.749	0.103	100.00	1.955	

2 STD2

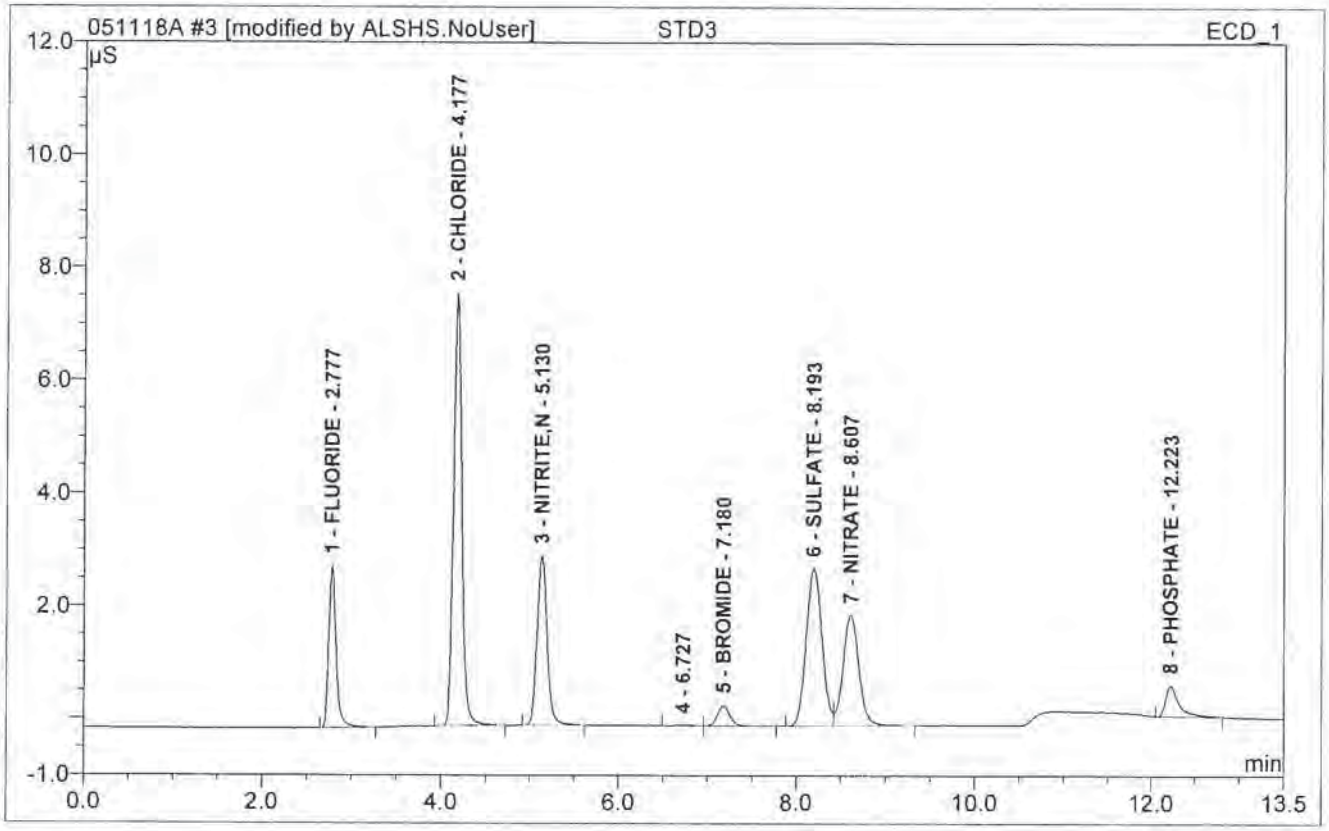
Sample Name:	**STD2**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 13:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	0.534	0.049	10.06	0.381	1.
2	4.18	CHLORIDE	1.536	0.164	33.45	1.989	1.
3	5.13	NITRITE,N	0.580	0.074	15.04	0.394	1.
4	7.18	BROMIDE	0.068	0.013	2.57	0.391	1.
5	8.21	SULFATE	0.515	0.105	21.54	1.884	1.
6	8.62	NITRATE	0.360	0.075	15.27	0.377	1.
7	12.24	PHOSPHATE	0.056	0.010	2.07	0.555	1.
Total:			3.649	0.489	100.00	5.971	

3 STD3

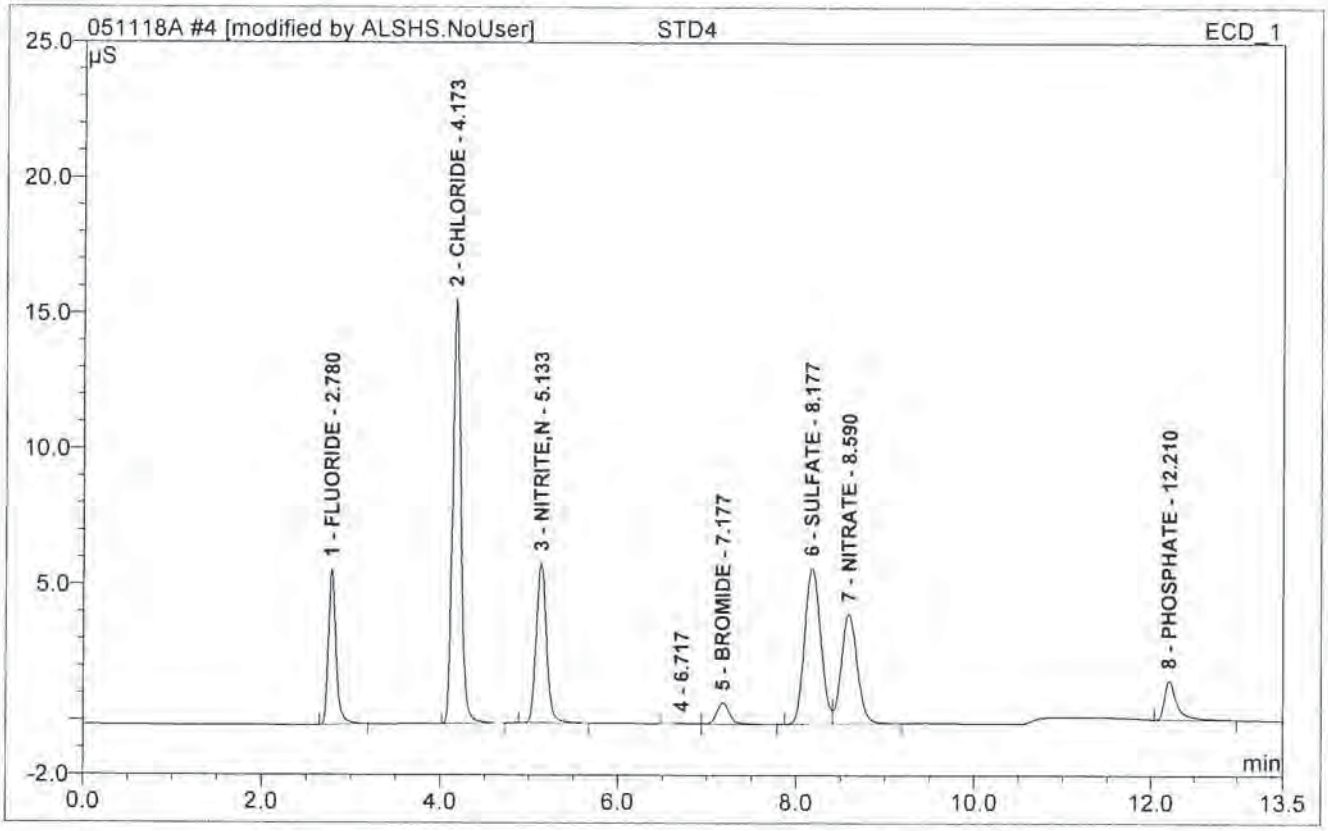
Sample Name:	**STD3**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 13:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	2.881	0.275	10.42	1.999	1.
2	4.18	CHLORIDE	7.667	0.832	31.50	9.575	1.
3	5.13	NITRITE,N	3.010	0.392	14.84	2.060	1.
5	7.18	BROMIDE	0.358	0.059	2.25	1.688	1.
6	8.19	SULFATE	2.797	0.578	21.87	9.384	1.
7	8.61	NITRATE	1.972	0.405	15.34	1.863	1.
8	12.22	PHOSPHATE	0.548	0.098	3.70	1.697	1.
Total:			19.232	2.639	99.91	28.265	

4 STD4

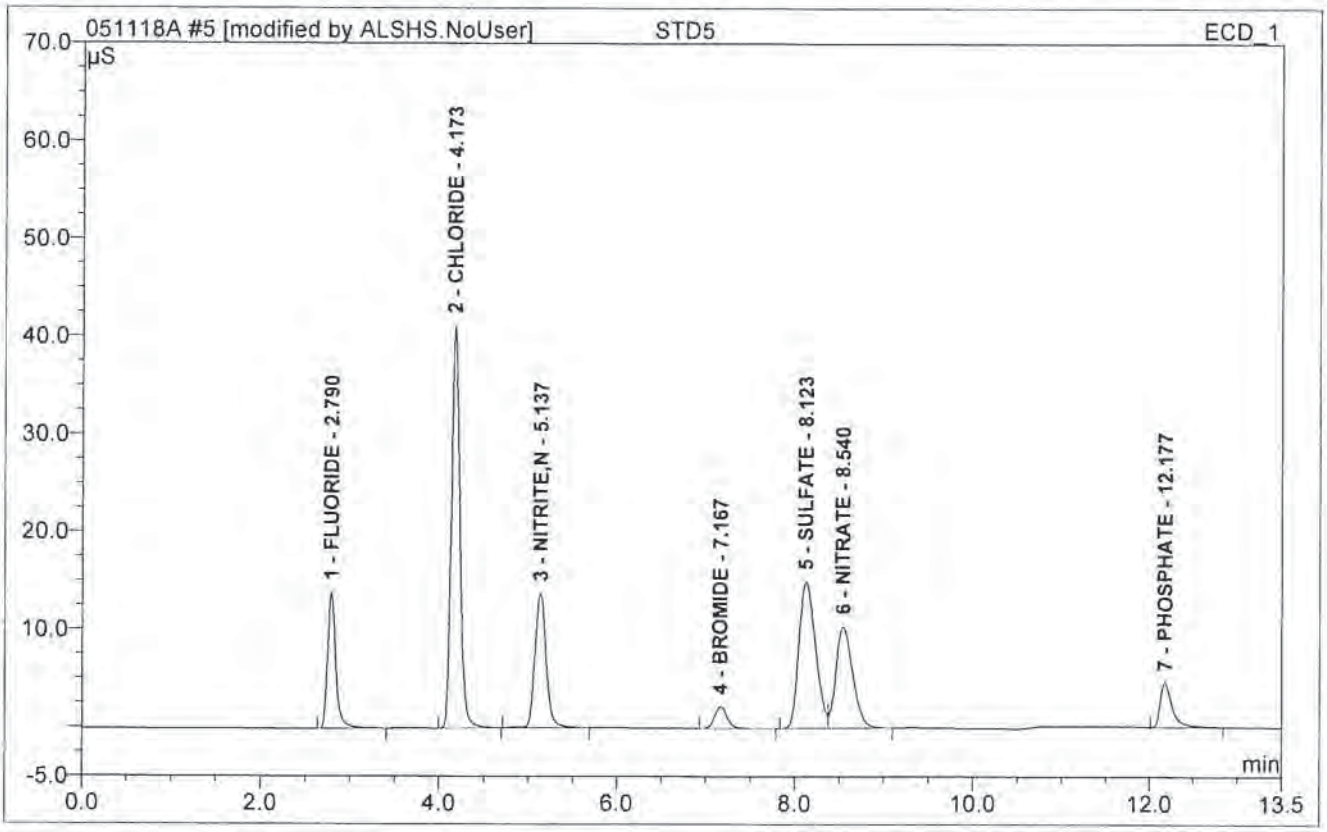
Sample Name:	**STD4**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 14:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.716	0.561	10.17	4.043	1.
2	4.17	CHLORIDE	15.662	1.714	31.10	19.593	1.
3	5.13	NITRITE,N	5.891	0.798	14.49	4.187	1.
5	7.18	BROMIDE	0.787	0.129	2.34	3.626	1.
6	8.18	SULFATE	5.753	1.209	21.94	19.413	1.
7	8.59	NITRATE	4.059	0.851	15.44	3.866	1.
8	12.21	PHOSPHATE	1.441	0.245	4.44	3.615	1.
Total:			39.309	5.507	99.92	58.343	

5 STD5

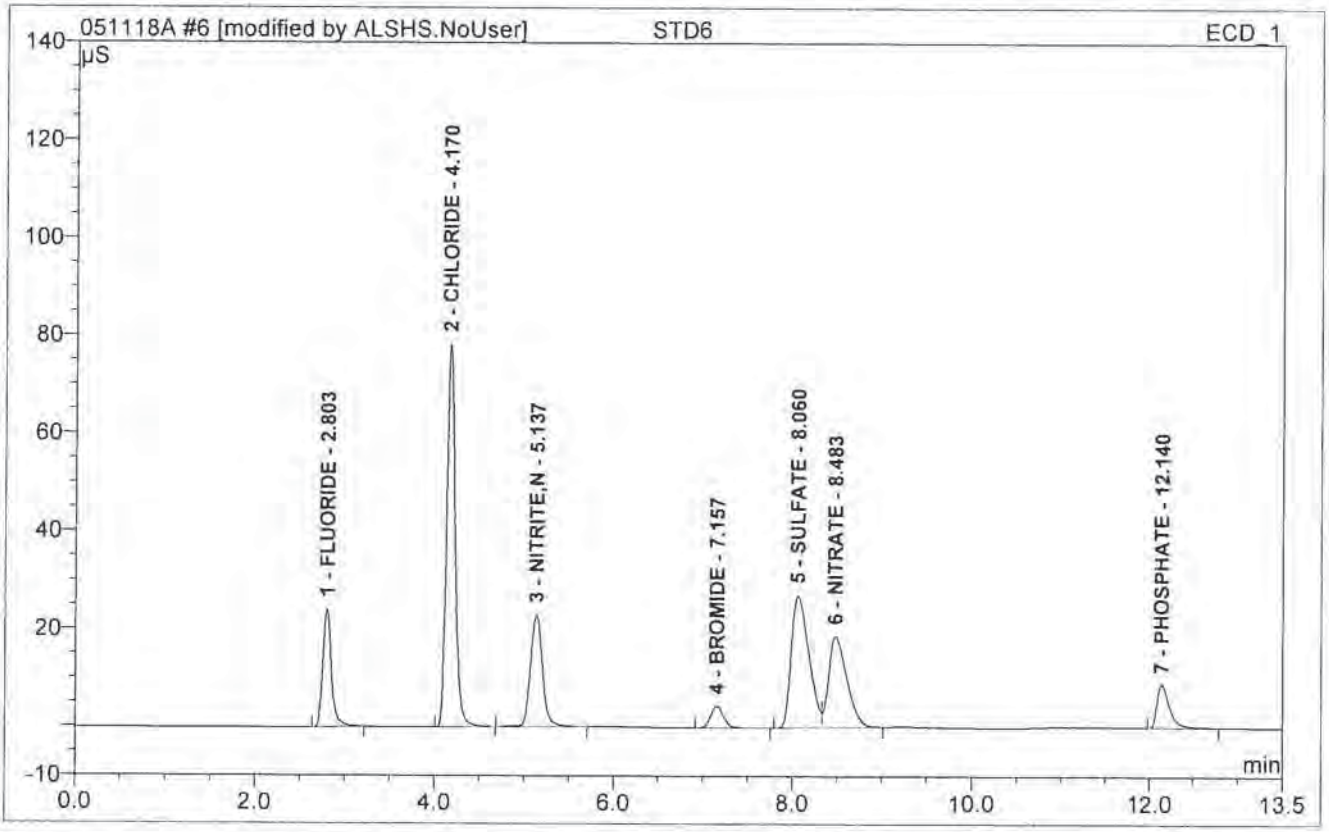
Sample Name:	**STD5**	*Injection Volume:*	**10.0**
Vial Number:	**5**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 14:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.79	FLUORIDE	13.977	1.484	10.07	10.657	1.
2	4.17	CHLORIDE	41.234	4.552	30.87	51.811	1.
3	5.14	NITRITE,N	13.797	2.034	13.79	10.652	1.
4	7.17	BROMIDE	2.258	0.369	2.50	10.267	1.
5	8.12	SULFATE	15.028	3.268	22.16	52.102	1.
6	8.54	NITRATE	10.425	2.293	15.55	10.352	1.
7	12.18	PHOSPHATE	4.602	0.746	5.06	10.164	1.
Total:			101.321	14.745	100.00	156.007	

6 STD6

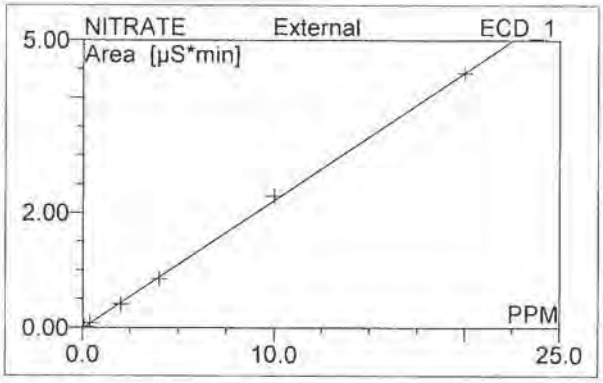
Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 14:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**

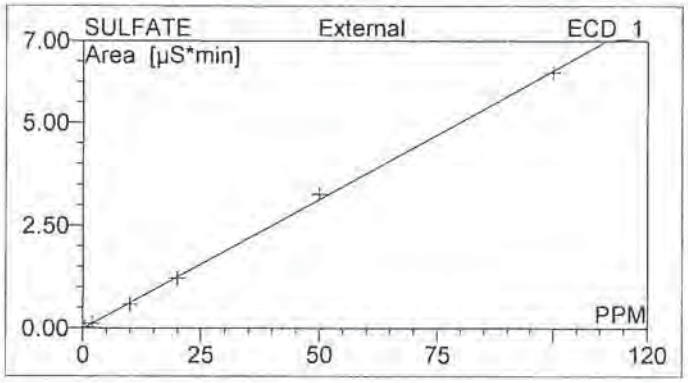


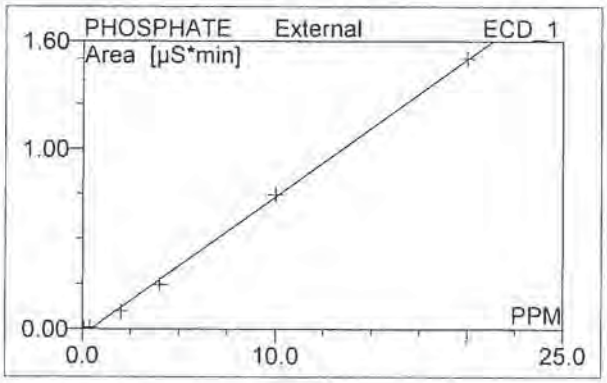
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.80	FLUORIDE	24.122	2.694	9.64	19.319	1.
2	4.17	CHLORIDE	78.319	8.708	31.17	99.011	1.
3	5.14	NITRITE,N	23.018	3.651	13.07	19.116	1.
4	7.16	BROMIDE	4.472	0.734	2.63	20.405	1.
5	8.06	SULFATE	27.203	6.231	22.30	99.159	1.
6	8.48	NITRATE	18.761	4.423	15.83	19.929	1.
7	12.14	PHOSPHATE	8.892	1.501	5.37	20.020	1.
Total:			184.787	27.943	100.00	296.959	

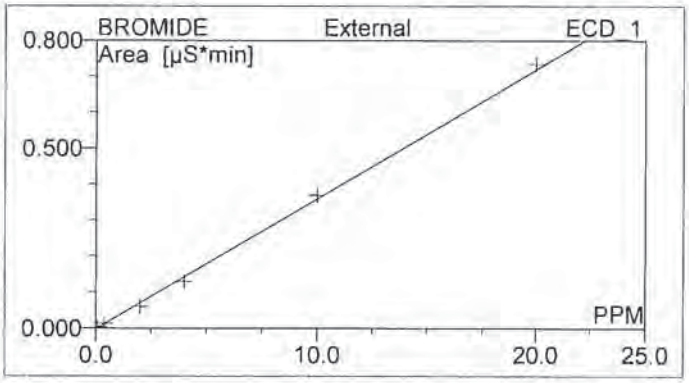
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 14:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**









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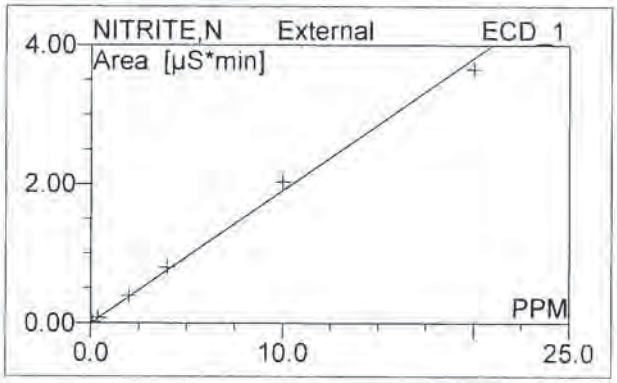
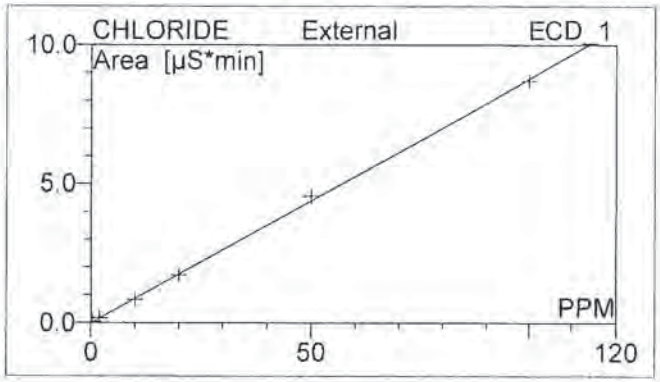
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.80	FLUORIDE	XLOff	6	99.800	-0.0040	0.1397	0.000
2	4.17	CHLORIDE	XLOff	6	99.939	-0.0114	0.0881	0.000
3	5.14	NITRITE,N	XLOff	6	99.726	-0.0016	0.1911	0.000
4	7.16	BROMIDE	XLOff	6	99.692	-0.0015	0.0361	0.000
5	8.06	SULFATE	XLOff	6	99.903	-0.0132	0.0630	0.000
6	8.48	NITRATE	XLOff	6	99.913	-0.0092	0.2224	0.000
7	12.14	PHOSPHATE	LOff	6	99.862	-0.0324	0.0766	0.000
Average:					99.8337	-0.0105	0.1167	0.0000

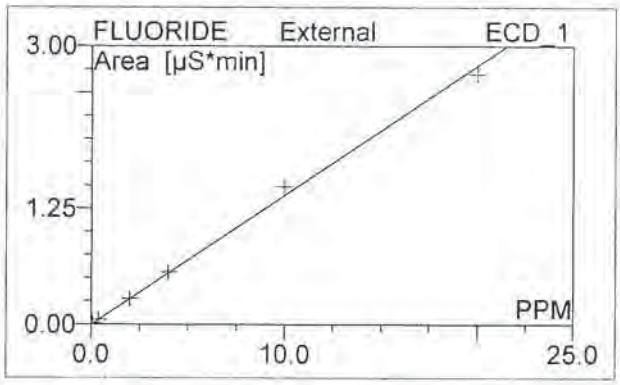
No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.80	FLUORIDE	XLOff	6	99.900	7.160	0.012	20.786
2	4.17	CHLORIDE	XLOff	6	99.970	11.355	0.021	11.367
3	5.14	NITRITE,N	XLOff	6	99.863	5.233	0.019	23.207
4	7.16	BROMIDE	XLOff	6	99.846	27.732	0.004	26.659
5	8.06	SULFATE	XLOff	6	99.952	15.881	0.019	14.933
6	8.48	NITRATE	XLOff	6	99.956	4.497	0.013	14.121
7	12.14	PHOSPHATE	LOff	6	99.931	13.054	0.025	5.675
Average:					99.9168	12.1303	0.0162	16.6784

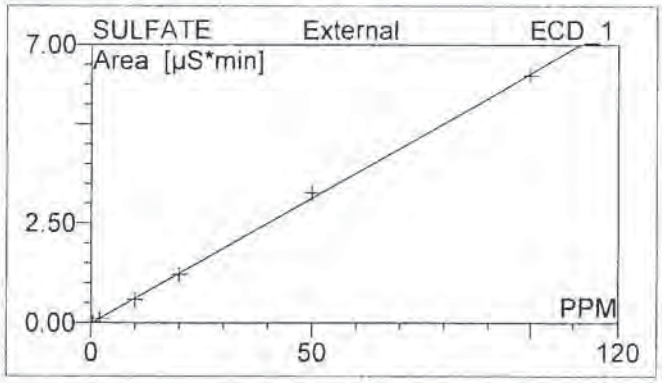
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.000**
Recording Time:	**4/26/2018 14:36**	*Sample Weight/Volume:*	**1.000**
Run Time (min):	**13.50**	*Final Volume:*	**1.000**









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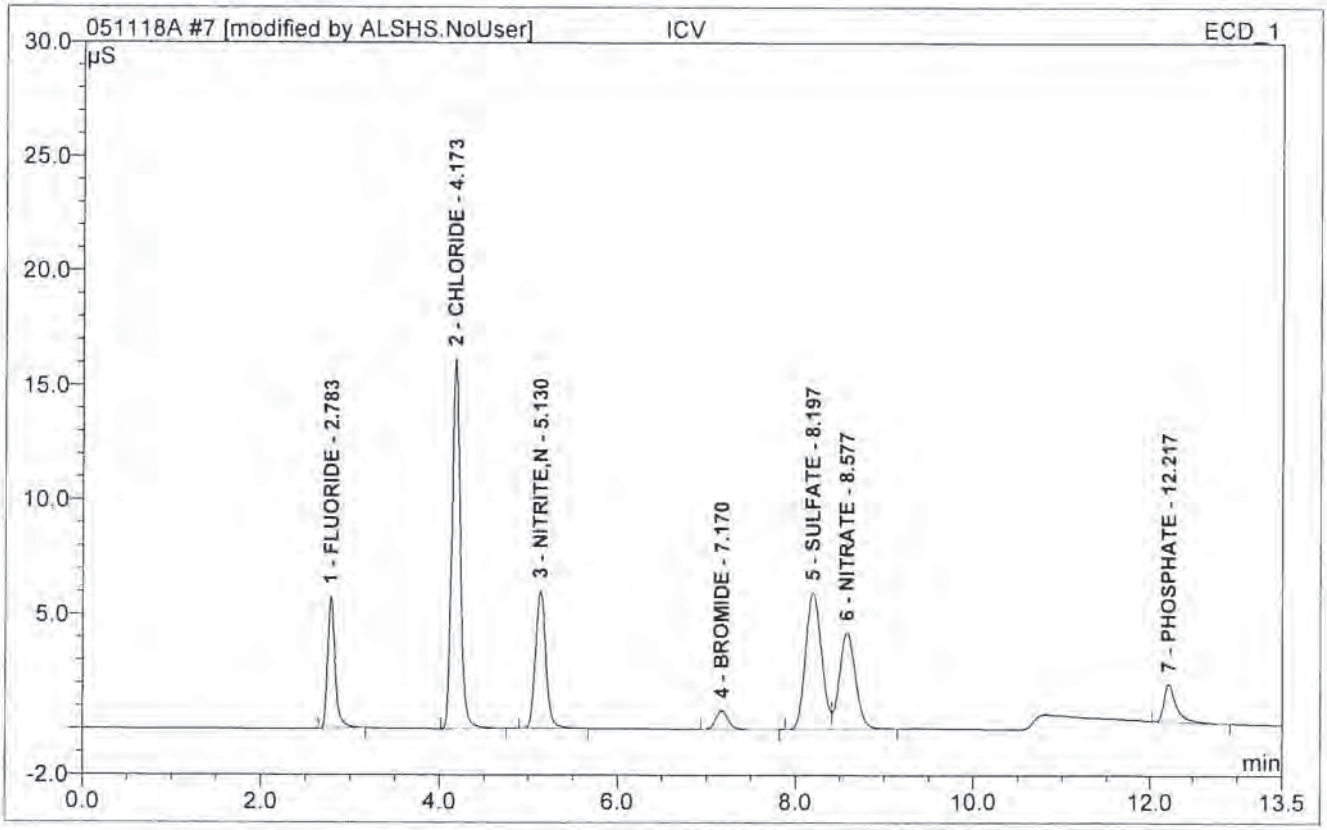
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.80	FLUORIDE	XLOff	6	99.7999	-0.0040	0.1397	0.000
2	4.17	CHLORIDE	XLOff	6	99.9393	-0.0114	0.0881	0.000
3	5.14	NITRITE,N	XLOff	6	99.7262	-0.0016	0.1911	0.000
4	7.16	BROMIDE	XLOff	6	99.6924	-0.0015	0.0361	0.000
5	8.06	SULFATE	XLOff	6	99.9031	-0.0132	0.0630	0.000
6	8.48	NITRATE	XLOff	6	99.9130	-0.0092	0.2224	0.000
7	12.14	PHOSPHATE	LOff	6	99.8617	-0.0324	0.0766	0.000
Average:					99.8337	-0.0105	0.1167	0.000

No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.80	FLUORIDE	XLOff	6	99.900	7.160	0.012	20.786
2	4.17	CHLORIDE	XLOff	6	99.970	11.355	0.021	11.367
3	5.14	NITRITE,N	XLOff	6	99.863	5.233	0.019	23.207
4	7.16	BROMIDE	XLOff	6	99.846	27.732	0.004	26.659
5	8.06	SULFATE	XLOff	6	99.952	15.881	0.019	14.933
6	8.48	NITRATE	XLOff	6	99.956	4.497	0.013	14.121
7	12.14	PHOSPHATE	LOff	6	99.931	13.054	0.025	5.675
Average:					99.9168	12.130	0.016	16.678

7 ICV

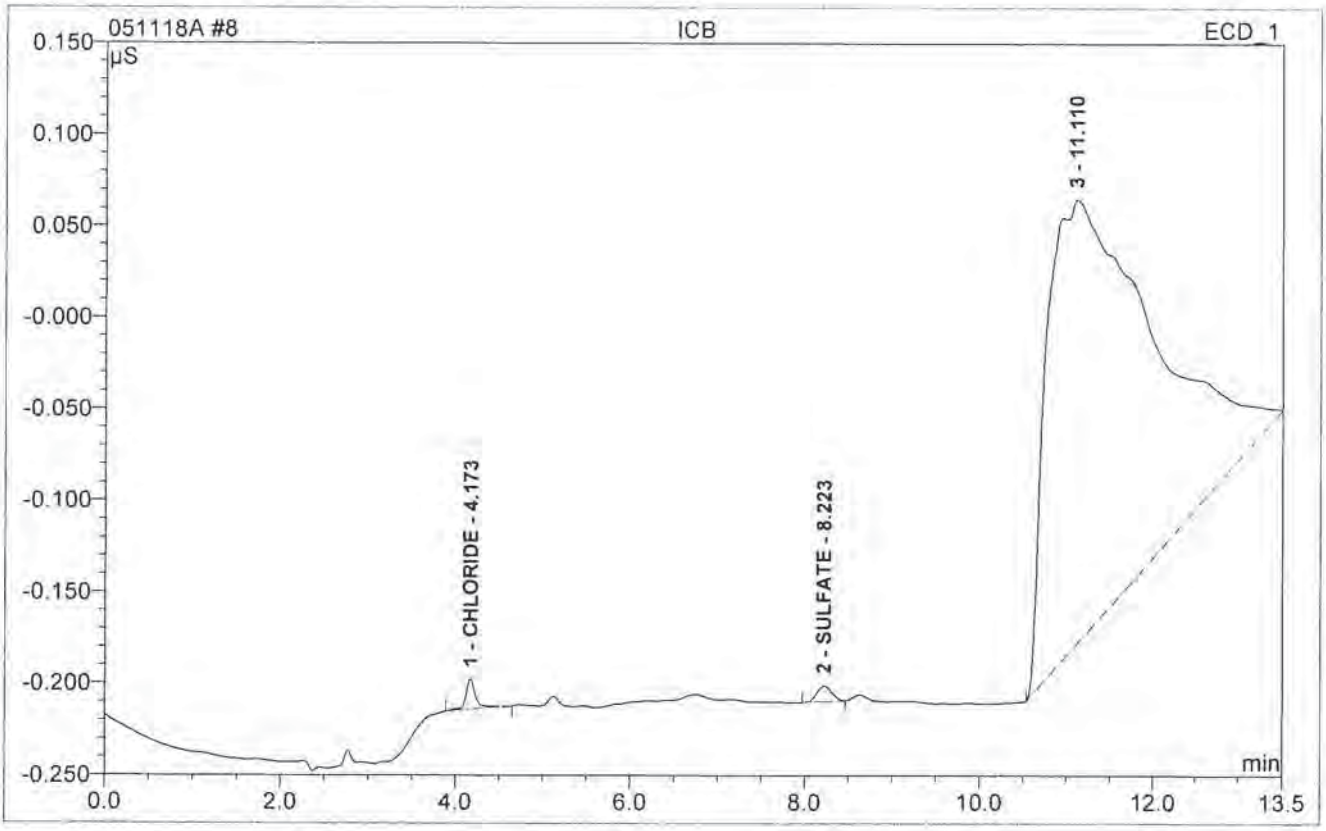
Sample Name:	**ICV**	*Injection Volume:*	**10.0**
Vial Number:	**7**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 15:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.746	0.560	9.87	4.039	1.
2	4.17	CHLORIDE	16.161	1.756	30.96	20.069	1.
3	5.13	NITRITE,N	6.016	0.813	14.33	4.261	1.
4	7.17	BROMIDE	0.819	0.134	2.36	3.749	1.
5	8.20	SULFATE	5.960	1.248	22.01	20.035	1.
6	8.58	NITRATE	4.210	0.883	15.57	4.012	1.
7	12.22	PHOSPHATE	1.654	0.279	4.91	4.062	1.
Total:			40.567	5.673	100.00	60.228	

8 ICB

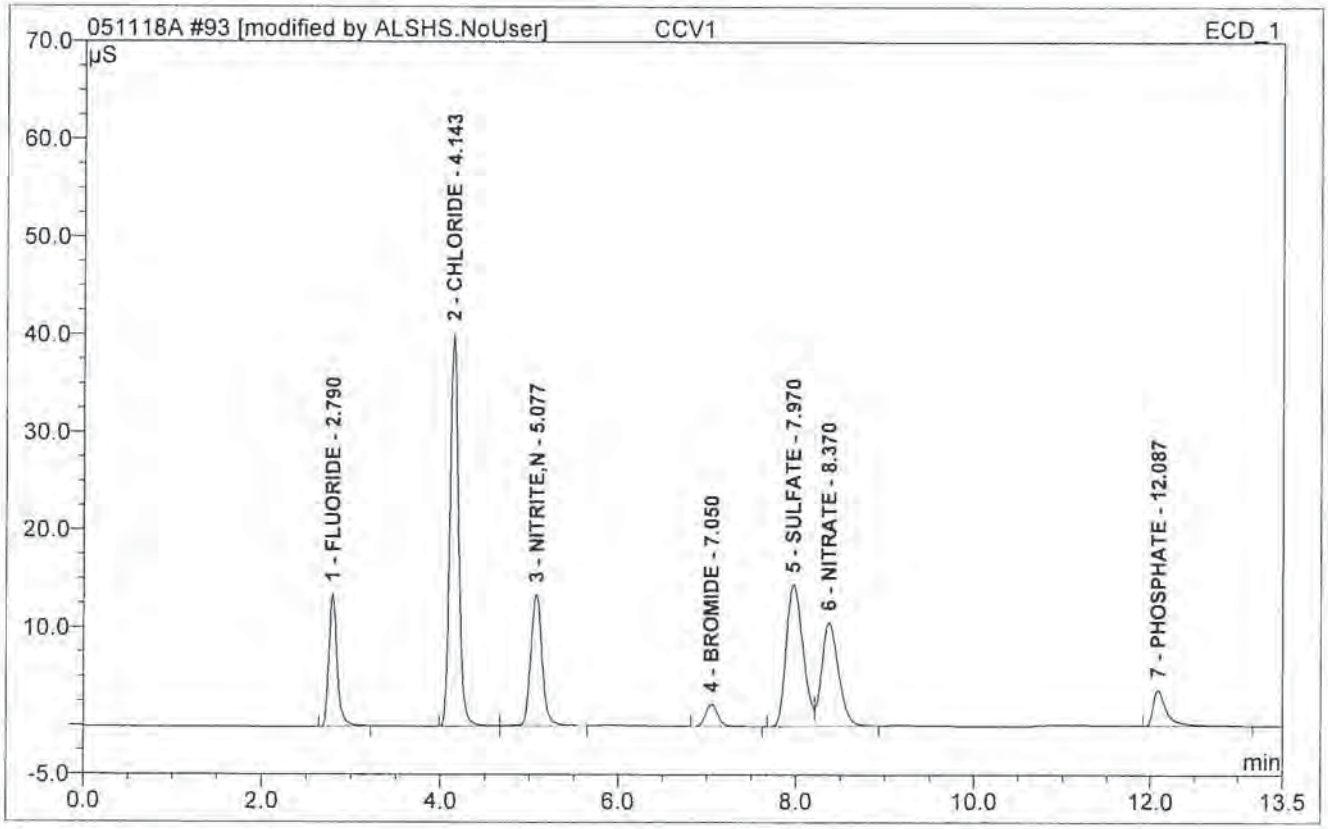
Sample Name:	**ICB**	*Injection Volume:*	**10.0**
Vial Number:	**8**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 16:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.17	CHLORIDE	0.016	0.002	0.60	0.153	1.
2	8.22	SULFATE	0.008	0.002	0.50	0.237	1.
Total:			0.025	0.004	1.10	0.391	

93 CCV1

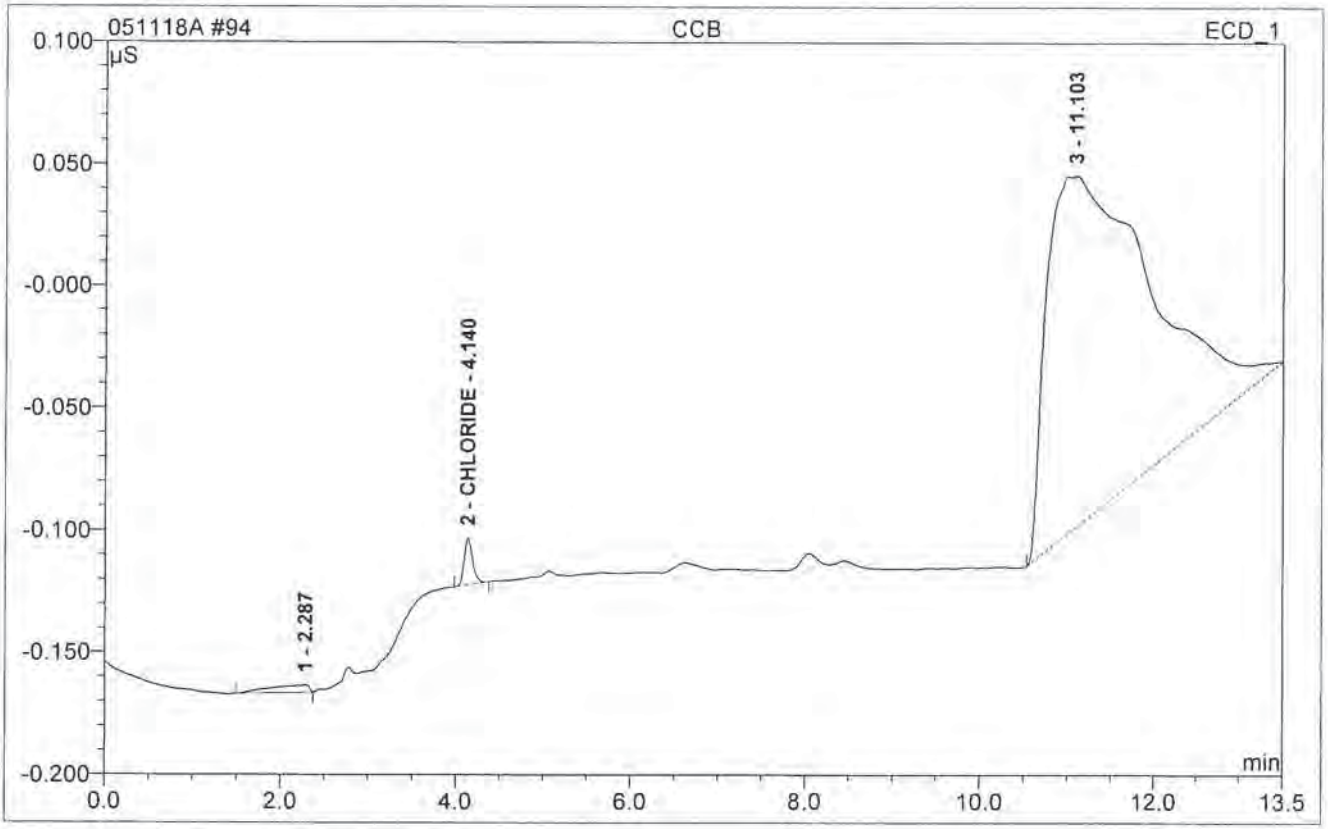
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 18:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.79	FLUORIDE	13.559	1.440	9.96	10.339	1.
2	4.14	CHLORIDE	40.231	4.514	31.22	51.386	1.
3	5.08	NITRITE,N	13.443	1.999	13.82	10.468	1.
4	7.05	BROMIDE	2.257	0.364	2.52	10.150	1.
5	7.97	SULFATE	14.493	3.158	21.84	50.367	1.
6	8.37	NITRATE	10.597	2.324	16.07	10.492	1.
7	12.09	PHOSPHATE	3.668	0.660	4.57	9.045	1.
Total:			98.248	14.460	100.00	152.249	

94 CCB

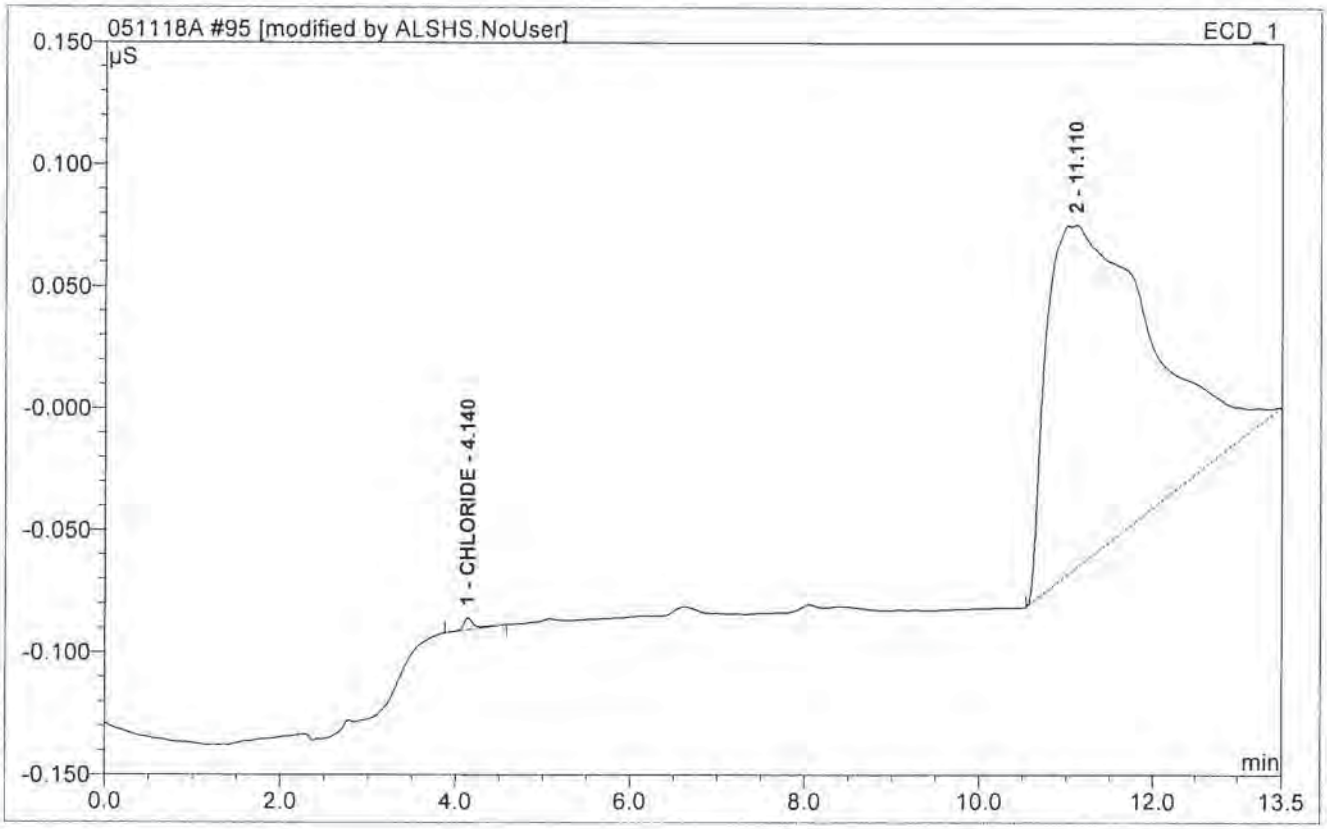
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 18:31**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	4.14	CHLORIDE	0.019	0.002	1.05	0.154	1.
Total:			0.019	0.002	1.05	0.154	

95 WBLKW3-051118

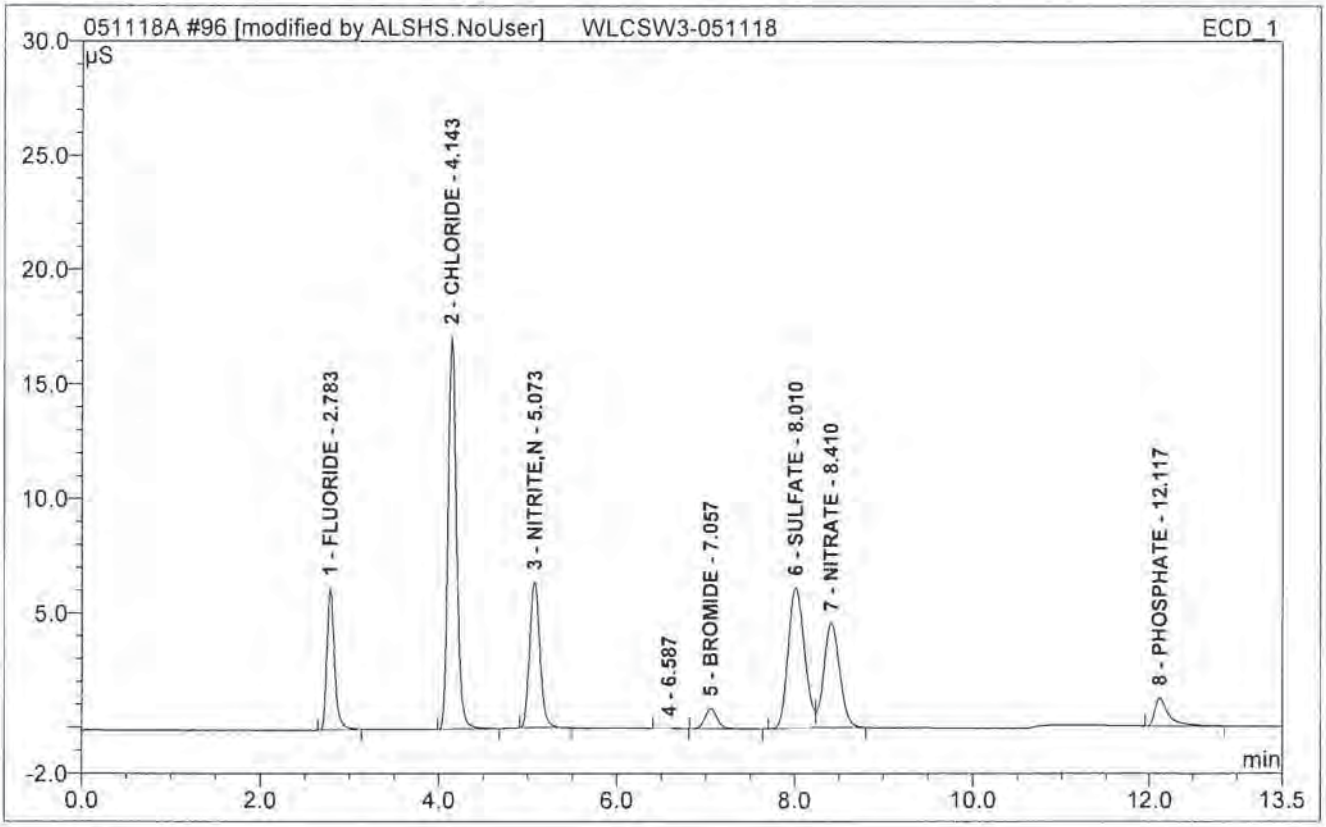
Sample Name:	**WBLKW3-051118**	*Injection Volume:*	**10.0**
Vial Number:	**68**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 18:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.14	CHLORIDE	0.005	0.001	0.34	0.137	1
Total:			0.005	0.001	0.34	0.137	

96 WLCSW3-051118

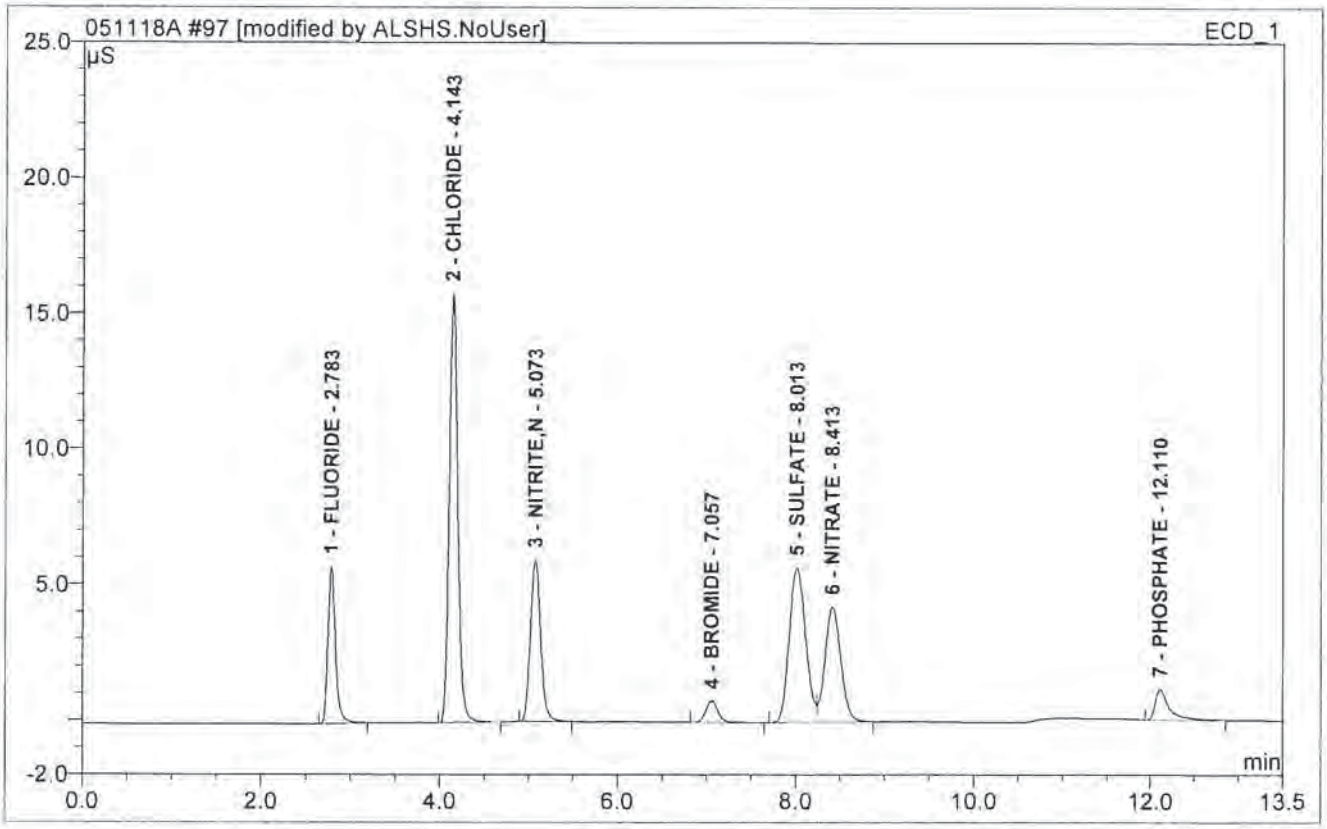
Sample Name:	**WLCSW3-051118**	*Injection Volume:*	**10.0**
Vial Number:	**69**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 19:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	6.214	0.614	10.24	4.428	1.
2	4.14	CHLORIDE	17.127	1.900	31.66	21.702	1.
3	5.07	NITRITE,N	6.372	0.855	14.25	4.485	1.
5	7.06	BROMIDE	0.882	0.142	2.37	3.983	1.
6	8.01	SULFATE	6.159	1.310	21.83	21.015	1.
7	8.41	NITRATE	4.587	0.948	15.80	4.305	1.
8	12.12	PHOSPHATE	1.238	0.230	3.83	3.420	1.
Total:			42.579	5.999	99.97	63.337	

97 WLCSDW3-051118

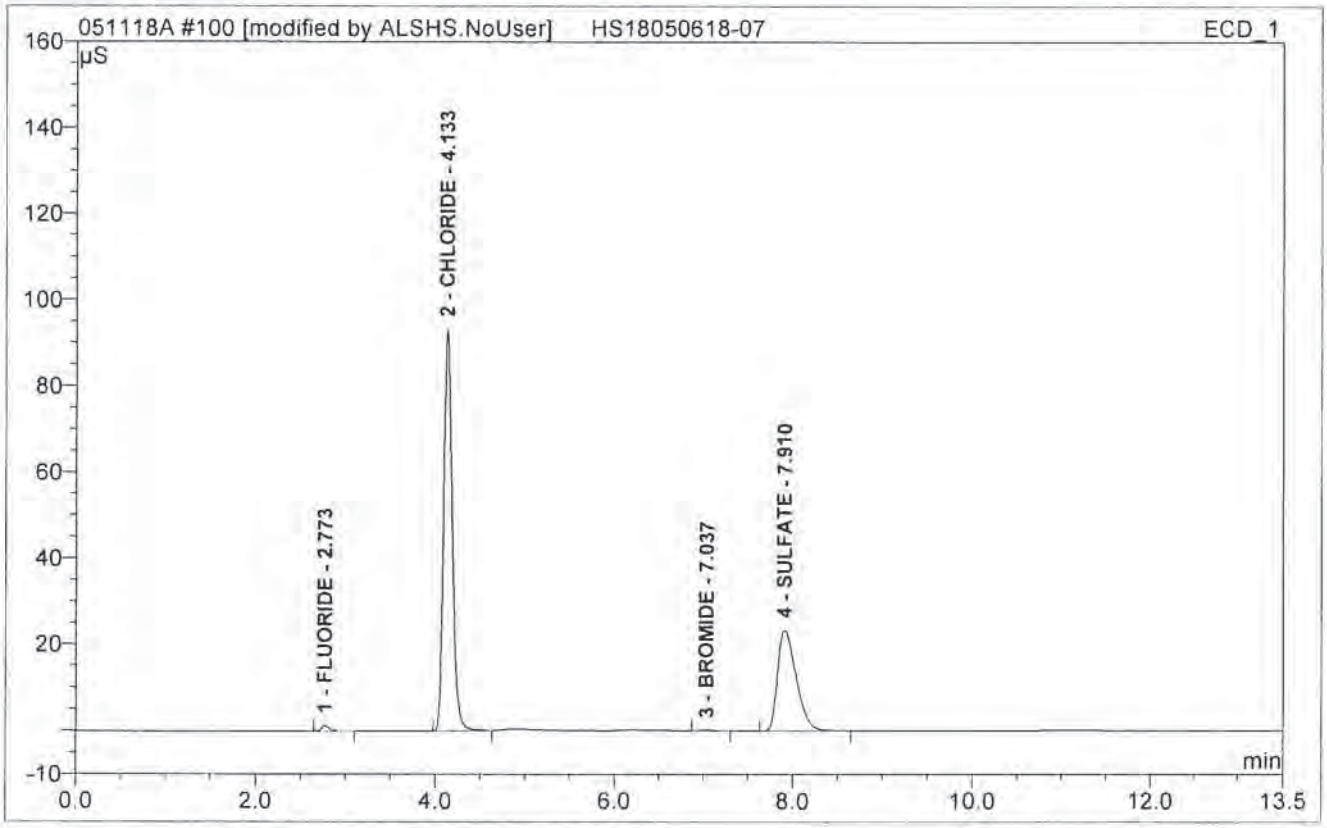
Sample Name:	**WLCSDW3-051118**	*Injection Volume:*	**10.0**
Vial Number:	**70**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 19:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.795	0.572	10.27	4.126	1.
2	4.14	CHLORIDE	15.804	1.751	31.43	20.016	1.
3	5.07	NITRITE,N	5.950	0.804	14.43	4.215	1.
4	7.06	BROMIDE	0.807	0.130	2.33	3.644	1.
5	8.01	SULFATE	5.699	1.217	21.84	19.542	1.
6	8.41	NITRATE	4.260	0.883	15.85	4.013	1.
7	12.11	PHOSPHATE	1.151	0.215	3.85	3.225	1.
Total:			39.467	5.573	100.00	58.781	

100 HS18050618-07

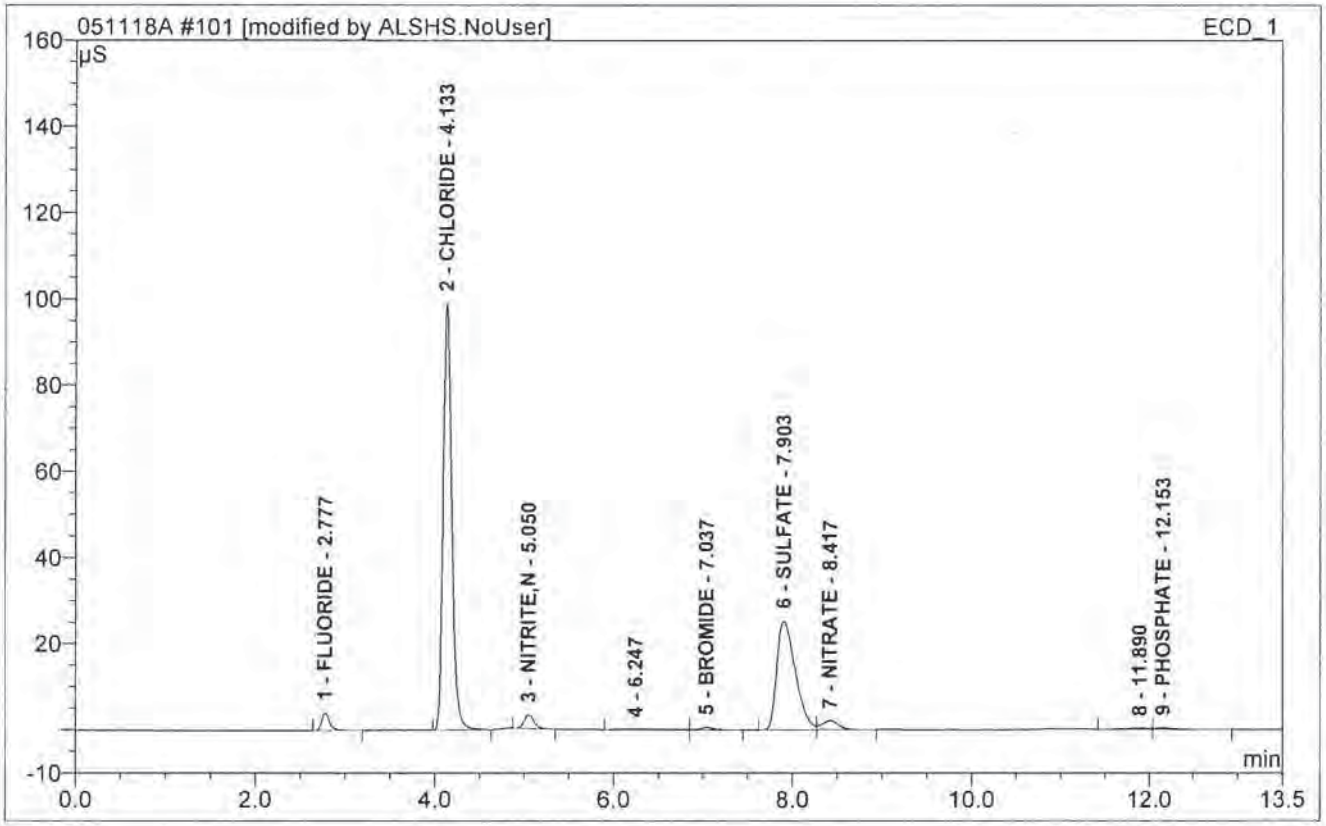
Sample Name:	**HS18050618-07**	*Injection Volume:*	**10.0**
Vial Number:	**77**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 19:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	1.309	0.123	0.76	0.912	1.
2	4.13	CHLORIDE	93.202	10.376	64.24	117.951	1.
3	7.04	BROMIDE	0.193	0.030	0.19	0.876	1.
4	7.91	SULFATE	23.442	5.622	34.81	89.498	1.
Total:			118.147	16.152	100.00	209.237	

101 HS18050618-07MS

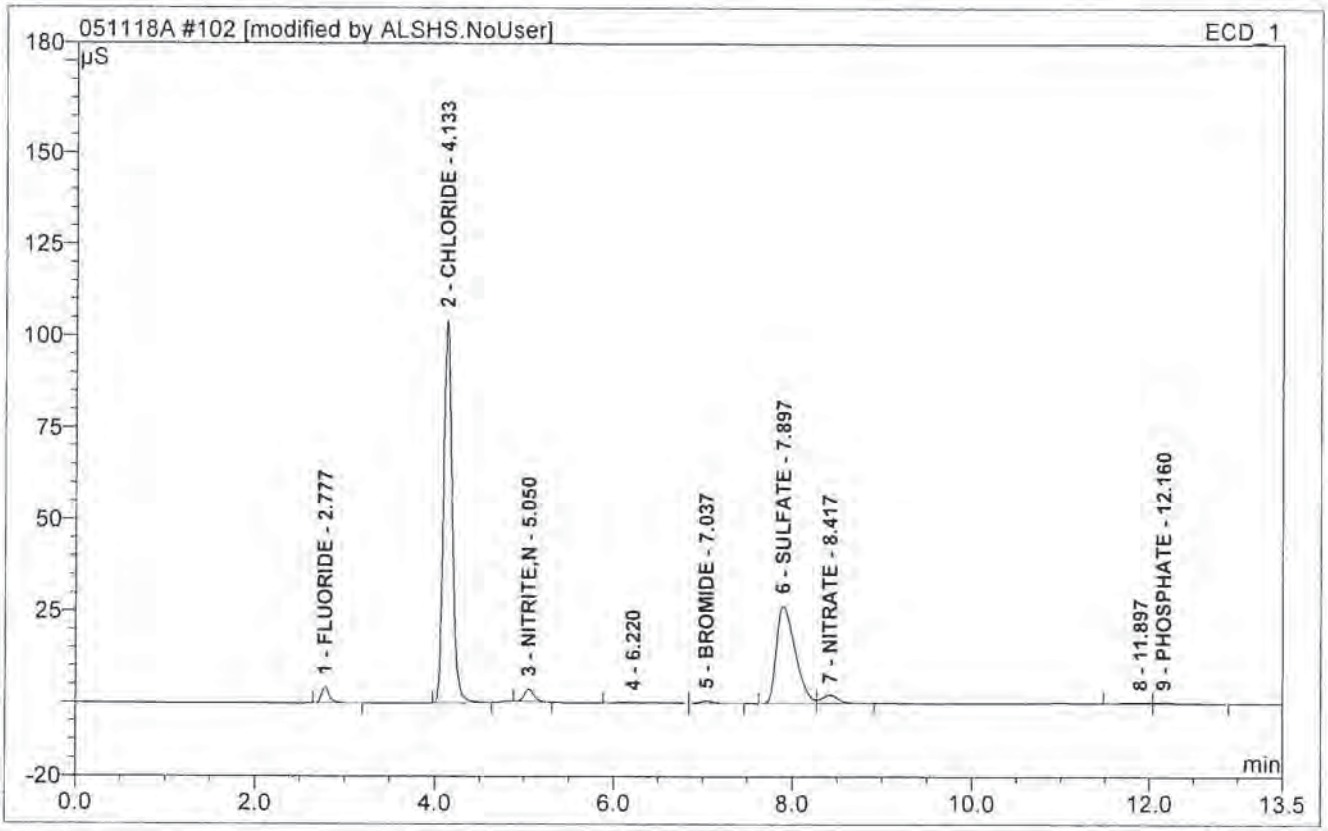
Sample Name:	**HS18050618-07MS**	*Injection Volume:*	**10.0**
Vial Number:	**78**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 20:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	4.125	0.409	2.17	2.956	1.
2	4.13	CHLORIDE	99.088	11.029	58.66	125.358	1.
3	5.05	NITRITE,N	3.242	0.409	2.18	2.150	1.
5	7.04	BROMIDE	0.615	0.105	0.56	2.948	1.
6	7.90	SULFATE	25.506	6.116	32.53	97.345	1.
7	8.42	NITRATE	2.154	0.461	2.45	2.114	1.
9	12.15	PHOSPHATE	0.334	0.085	0.45	1.536	1.
Total:			135.063	18.614	99.01	234.407	

102 HS18050618-07MSD

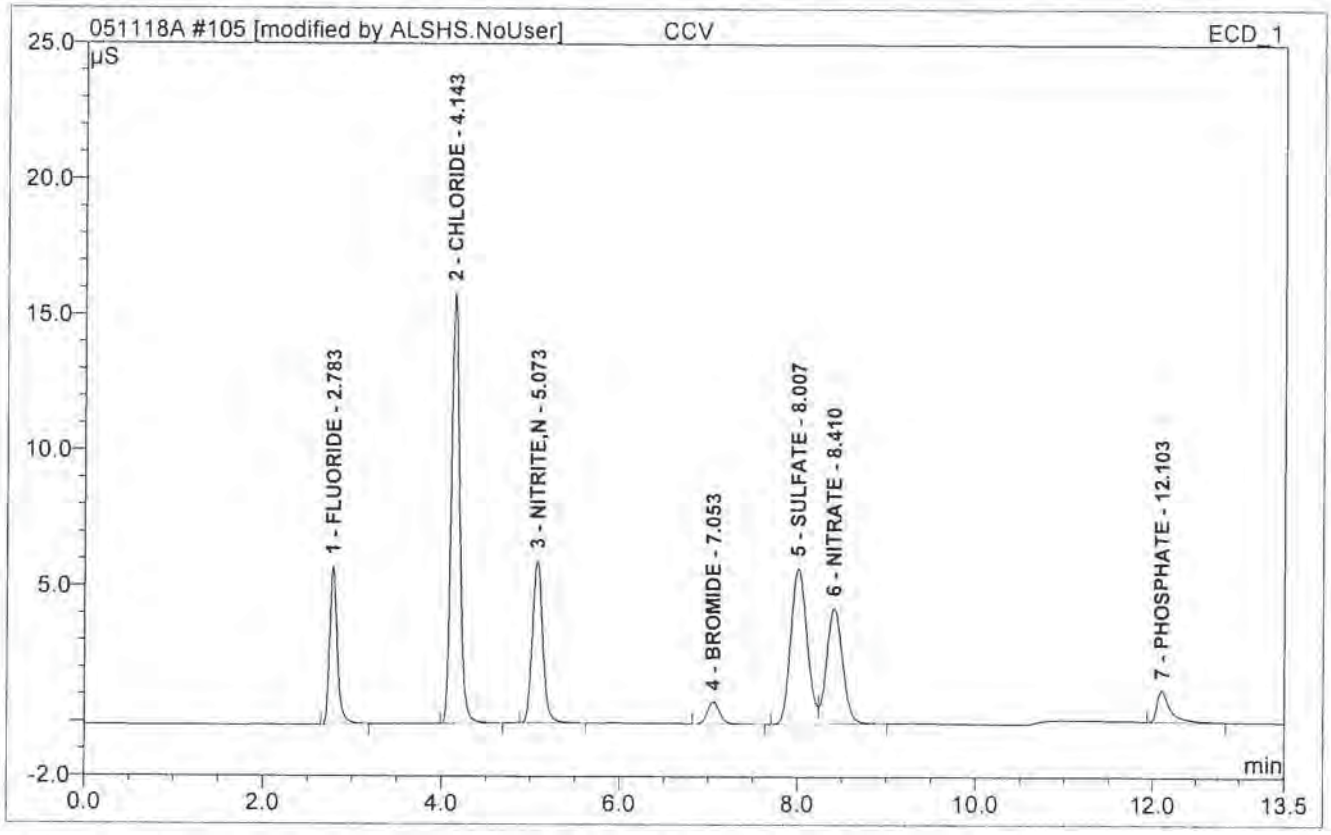
Sample Name:	**HS18050618-07MSD**	*Injection Volume:*	**10.0**
Vial Number:	**79**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 20:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	4.344	0.432	2.18	3.122	1.
2	4.13	CHLORIDE	104.491	11.653	58.68	132.446	1.
3	5.05	NITRITE,N	3.410	0.429	2.16	2.252	1.
5	7.04	BROMIDE	0.654	0.110	0.56	3.103	1.
6	7.90	SULFATE	26.784	6.469	32.57	102.940	1.
7	8.42	NITRATE	2.272	0.486	2.45	2.228	1.
9	12.16	PHOSPHATE	0.359	0.092	0.46	1.622	1.
Total:			142.315	19.671	99.06	247.712	

105 CCV

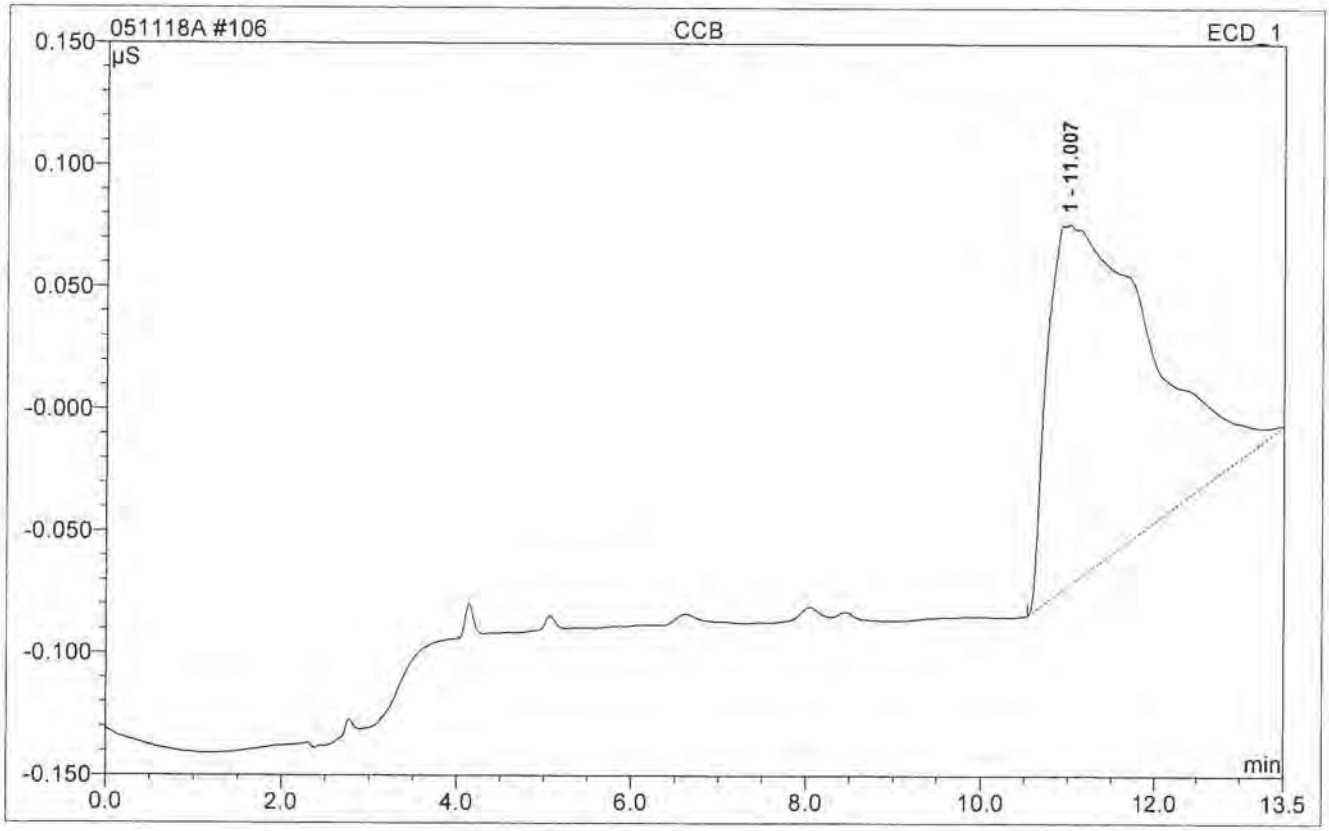
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 21:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.820	0.577	10.28	4.160	1.
2	4.14	CHLORIDE	15.886	1.761	31.38	20.129	1.
3	5.07	NITRITE,N	5.964	0.812	14.46	4.257	1.
4	7.05	BROMIDE	0.808	0.130	2.32	3.651	1.
5	8.01	SULFATE	5.748	1.225	21.83	19.670	1.
6	8.41	NITRATE	4.287	0.891	15.88	4.048	1.
7	12.10	PHOSPHATE	1.178	0.216	3.84	3.239	1.
Total:			39.691	5.613	100.00	59.156	

106 CCB

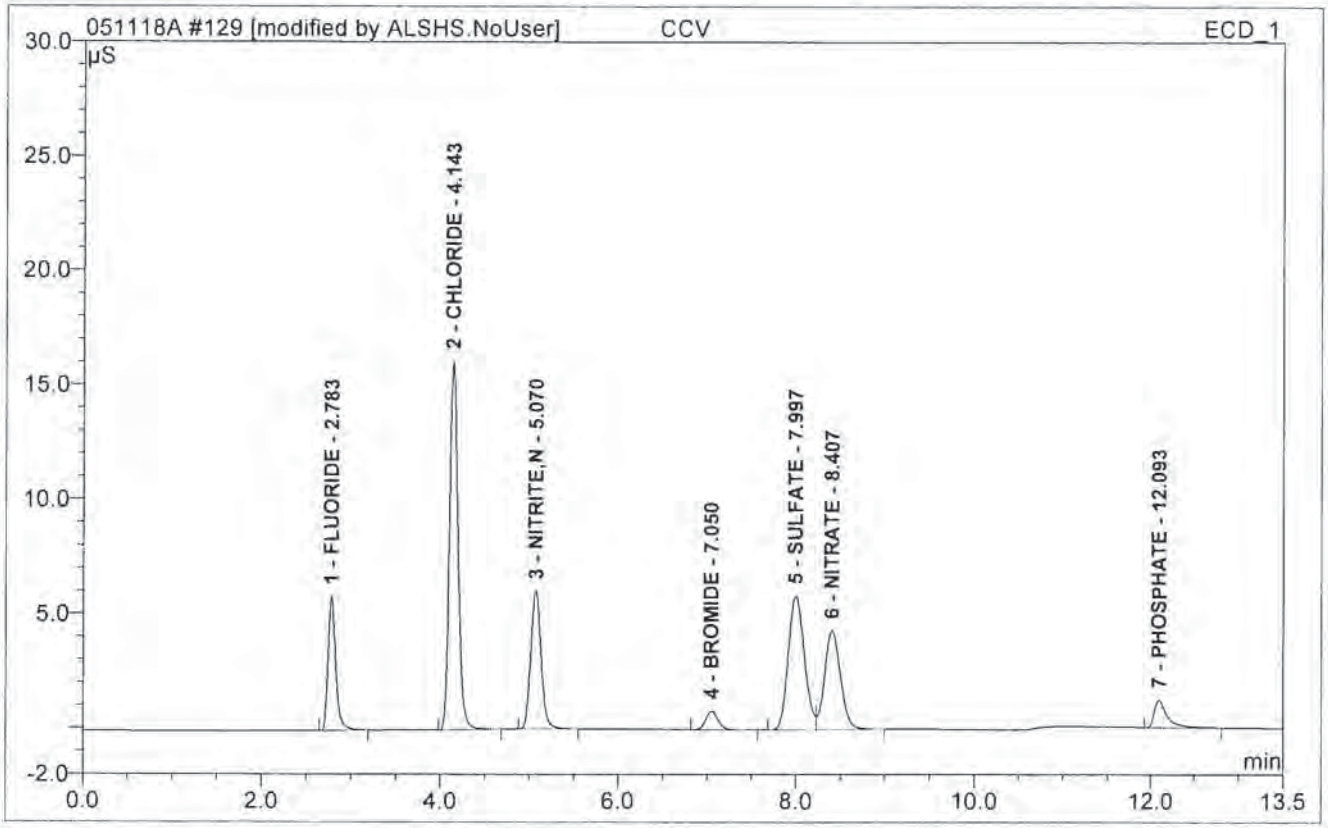
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/12/2018 21:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
Total:			0.000	0.000	0.00	0.000	

129 CCV

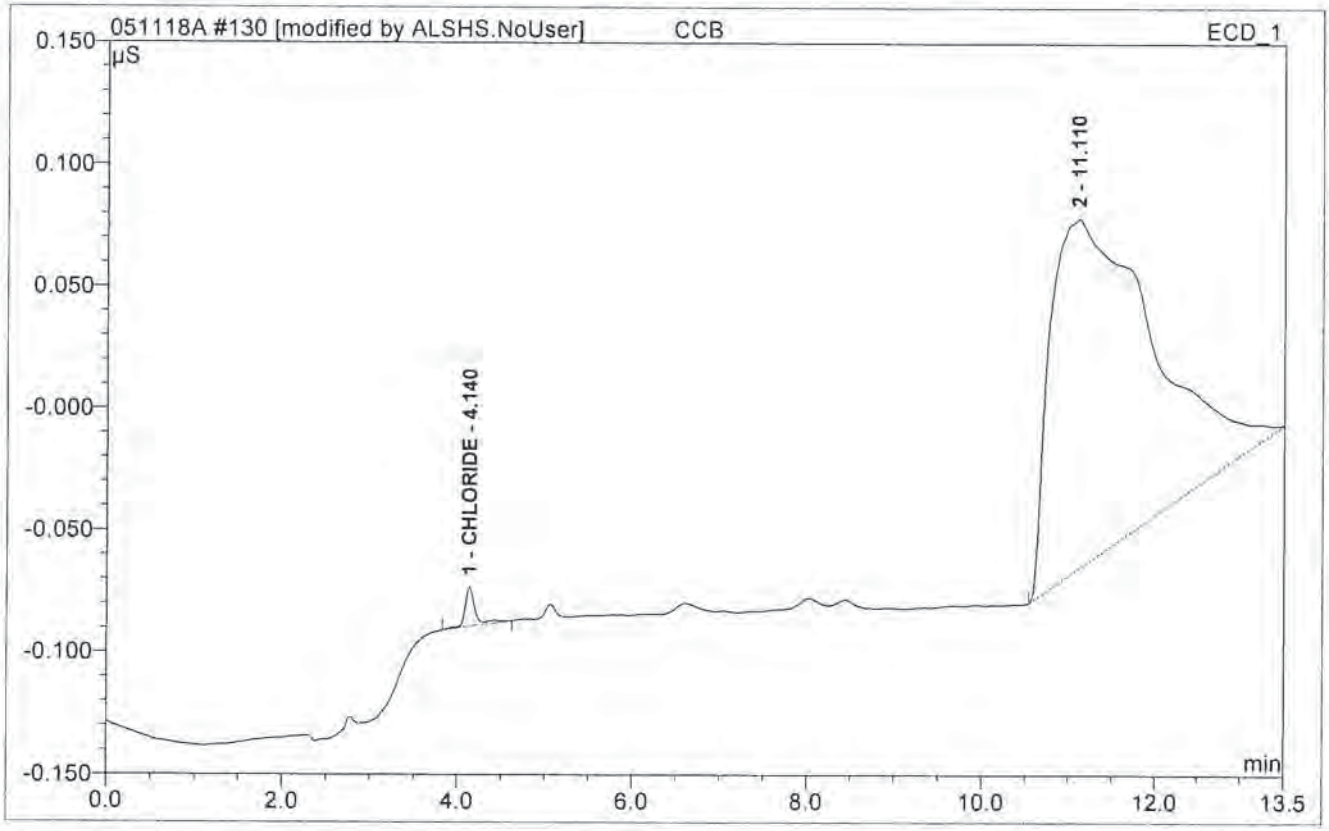
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/13/2018 3:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.872	0.582	10.26	4.197	1.
2	4.14	CHLORIDE	16.080	1.784	31.45	20.384	1.
3	5.07	NITRITE,N	6.028	0.820	14.45	4.297	1.
4	7.05	BROMIDE	0.816	0.131	2.31	3.671	1.
5	8.00	SULFATE	5.858	1.243	21.92	19.955	1.
6	8.41	NITRATE	4.326	0.898	15.82	4.077	1.
7	12.09	PHOSPHATE	1.207	0.215	3.79	3.226	1.
Total:			40.186	5.672	100.00	59.809	

130 CCB

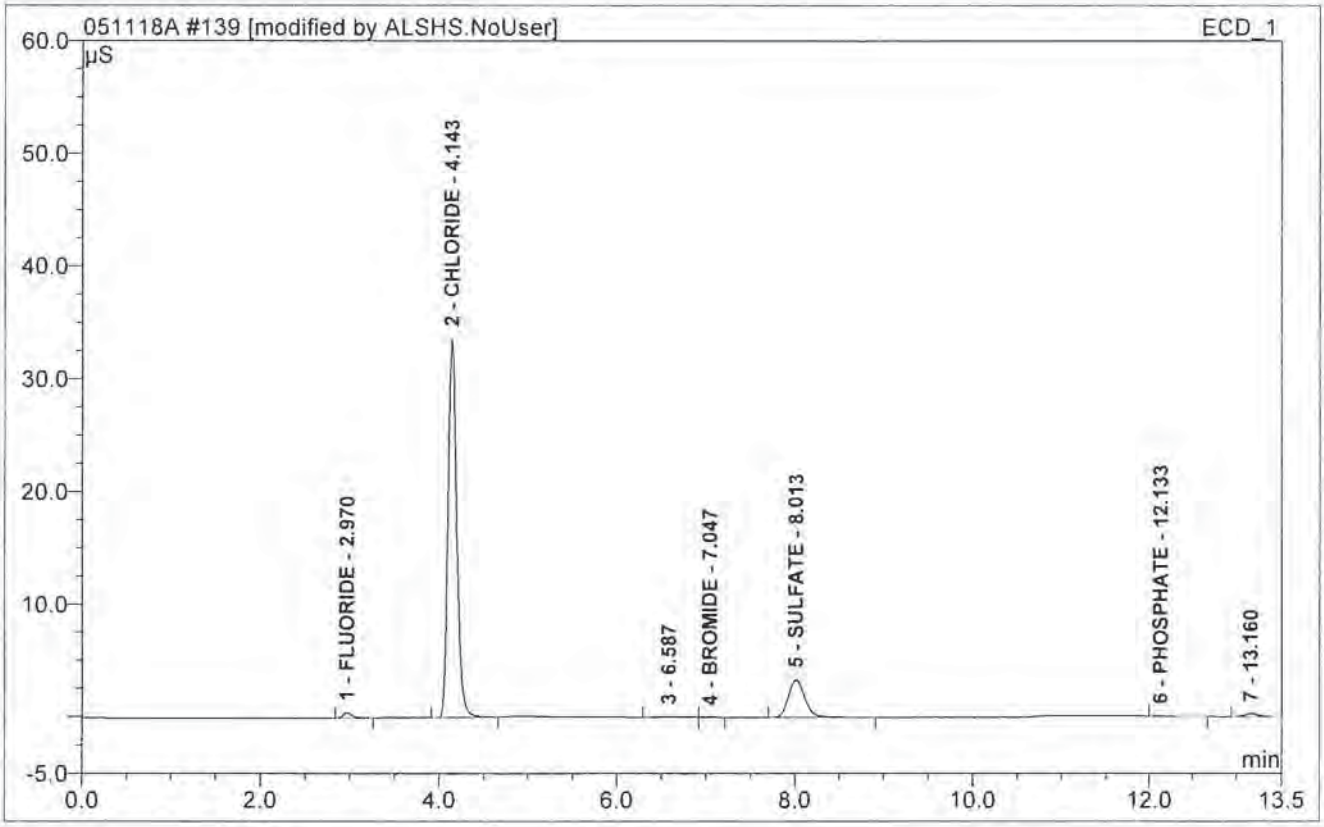
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/13/2018 3:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.14	CHLORIDE	0.016	0.002	1.06	0.153	1.
Total:			0.016	0.002	1.06	0.153	

139 HS18050260-01DF10

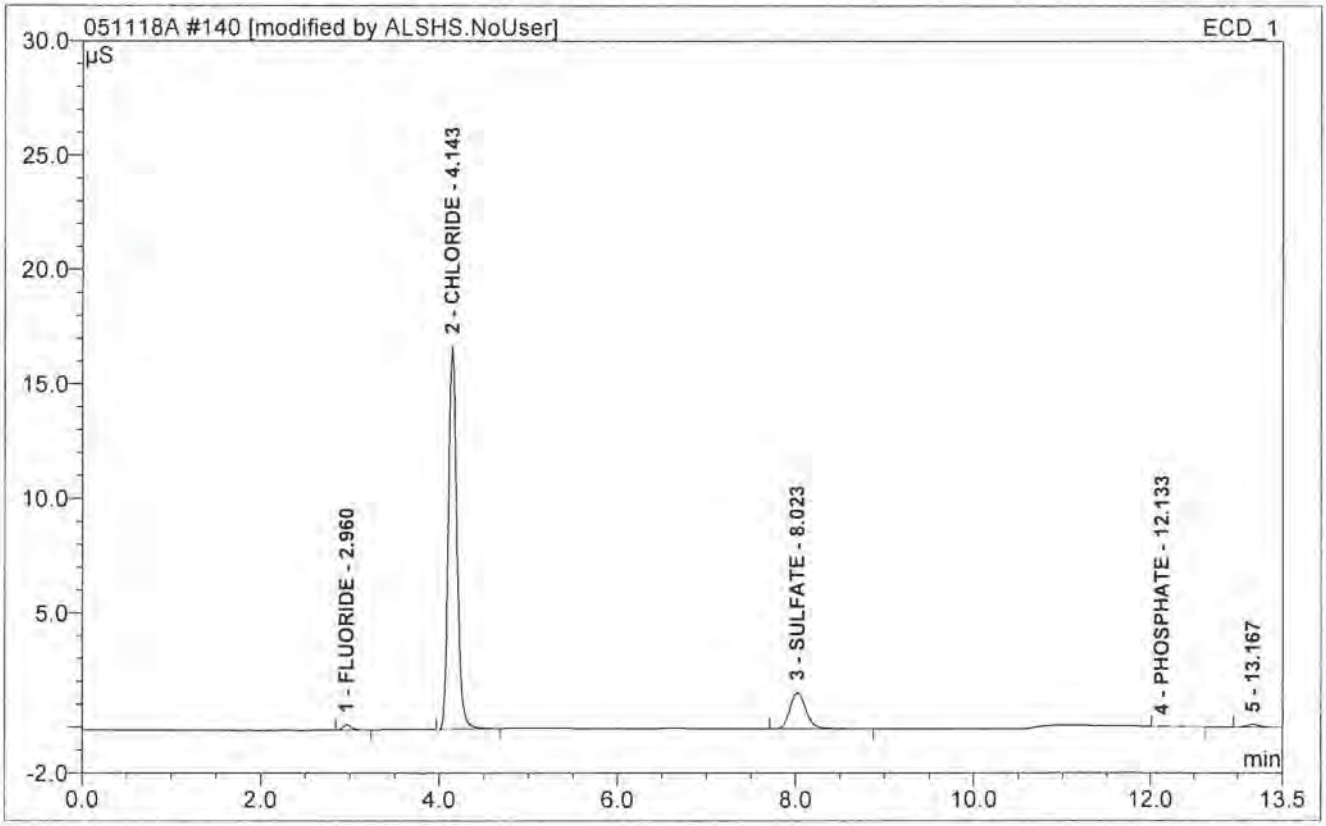
Sample Name:	**HS18050260-01DF10**	*Injection Volume:*	**10.0**
Vial Number:	**21**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**10.**
Recording Time:	**5/13/2018 5:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.97	FLUORIDE	0.470	0.054	1.18	4.186	10.
2	4.14	CHLORIDE	33.611	3.763	81.73	428.526	10.
4	7.05	BROMIDE	0.021	0.003	0.07	1.372	10.
5	8.01	SULFATE	3.330	0.715	15.52	115.588	10.
6	12.13	PHOSPHATE	0.036	0.008	0.18	5.334	10.
Total:			37.468	4.544	98.69	555.006	

140 HS18050260-01DF20

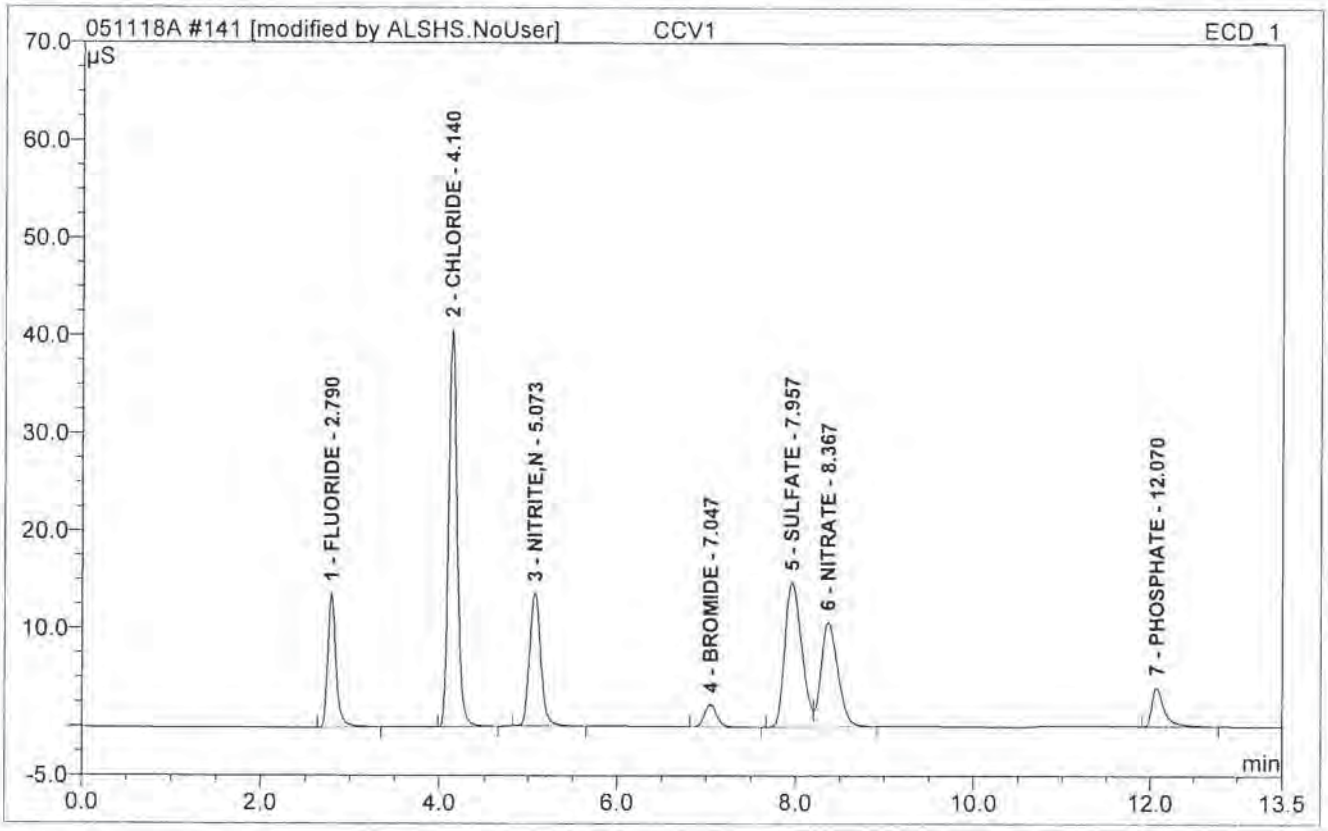
Sample Name:	**HS18050260-01DF20**	*Injection Volume:*	**10.0**
Vial Number:	**22**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**20.**
Recording Time:	**5/13/2018 5:40**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.96	FLUORIDE	0.231	0.026	1.14	4.239	20.
2	4.14	CHLORIDE	16.724	1.859	82.74	424.674	20.
3	8.02	SULFATE	1.602	0.339	15.09	111.891	20.
4	12.13	PHOSPHATE	0.015	0.004	0.17	9.455	20.
Total:			18.572	2.227	99.15	550.259	

141 CCV1

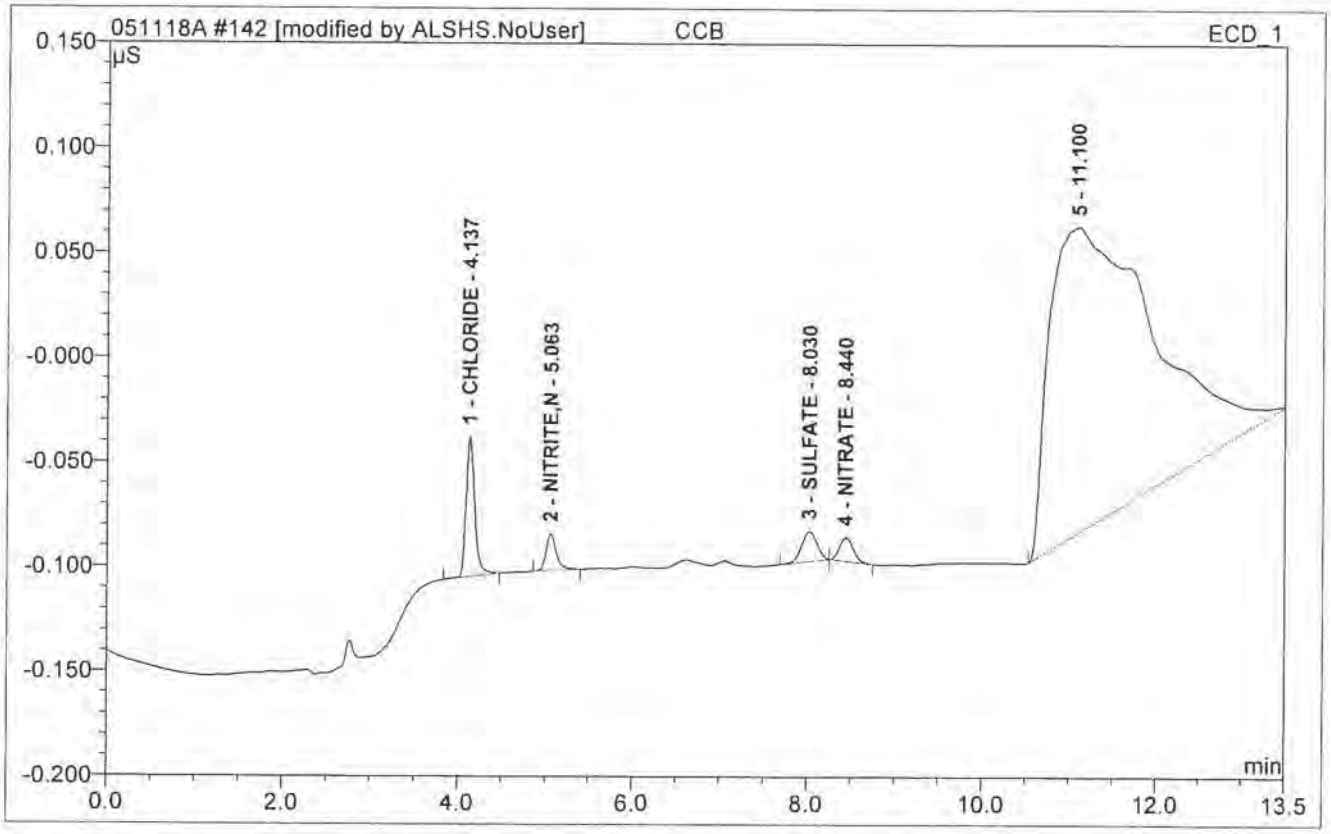
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/13/2018 5:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.79	FLUORIDE	13.721	1.466	10.05	10.523	1.
2	4.14	CHLORIDE	40.670	4.557	31.25	51.878	1.
3	5.07	NITRITE,N	13.548	1.985	13.61	10.397	1.
4	7.05	BROMIDE	2.276	0.367	2.51	10.208	1.
5	7.96	SULFATE	14.783	3.213	22.03	51.243	1.
6	8.37	NITRATE	10.657	2.326	15.95	10.502	1.
7	12.07	PHOSPHATE	3.997	0.671	4.60	9.178	1.
Total:			99.652	14.585	100.00	153.929	

142 CCB

Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/13/2018 6:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.14	CHLORIDE	0.067	0.008	3.55	0.216	1.
2	5.06	NITRITE,N	0.017	0.002	1.09	0.021	1.
3	8.03	SULFATE	0.014	0.003	1.38	0.257	1.
4	8.44	NITRATE	0.011	0.002	0.97	0.051	1.
Total:			0.109	0.015	6.98	0.544	

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

WorkOrder: HS18050925

Longhorn GW Treatment Plant Weekly Samples

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

12-Jun-2018

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

May 31, 2018

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

Work Order: **HS18050925**

Revision: **1**

Laboratory Results for: **Longhorn GW Treatment Plant Weekly Samples**

Dear Marcia,

ALS Environmental received 1 sample(s) on May 18, 2018 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 Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18050925

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050925-01	LH18/24-SP650_051718	Water		17-May-2018 14:00	18-May-2018 12:43	☐

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 31-May-18

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

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.
- Revised to correct case narrative

WetChemistry by Method E415.1

Batch ID: R316746

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

WetChemistry by Method E365.3

Batch ID: R316901

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

WetChemistry by Method E350.3

Batch ID: R316670

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

Revision:1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
ANALYTICAL REPORT
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder:HS18050925
Sample ID: LH18/24-SP650_051718
Lab ID:HS18050925-01
Collection Date: 17-May-2018 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)	**49**		**2.0**	**2.0**	**2.0**	**mg/L**	10	22-May-2018 14:11
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: MZD
Phosphorus, Total Orthophosphate (As P)	**4.30**		**0.250**	**0.250**	**0.625**	**mg/L**	25	18-May-2018 18:15
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**233**		**5.00**	**6.00**	**10.0**	**mg/L**	10	23-May-2018 17:47
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-May-2018 16:53

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

Revision:1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050925

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R316670	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18050925-01	LH18/24-SP650_051718	17 May 2018 14:00			22 May 2018 14:11	10
Batch ID R316746	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18050925-01	LH18/24-SP650_051718	17 May 2018 14:00			23 May 2018 17:47	10
Batch ID R316901	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18050925-01	LH18/24-SP650_051718	17 May 2018 14:00			18 May 2018 18:15	25
Batch ID R317193	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18050925-01	LH18/24-SP650_051718	17 May 2018 14:00			31 May 2018 16:53	1

Revision:1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050925

QC BATCH REPORT

Batch ID: R316670 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-316670** Units: **mg/L** Analysis Date: **22-May-2018 14:11**
Client ID: Run ID: **WetChem_HS_316670** SeqNo: **4571000** 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)	0.20	0.20								U

LCS Sample ID: **LCS-316670** Units: **mg/L** Analysis Date: **22-May-2018 14:11**
Client ID: Run ID: **WetChem_HS_316670** SeqNo: **4571001** 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)	10.1	0.20	10	0	101	80 - 120				

MS Sample ID: **HS18050726-01MS** Units: **mg/L** Analysis Date: **22-May-2018 14:11**
Client ID: Run ID: **WetChem_HS_316670** SeqNo: **4571004** 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)	10.71	0.20	10	0.138	106	80 - 120				

MSD Sample ID: **HS18050726-01MSD** Units: **mg/L** Analysis Date: **22-May-2018 14:11**
Client ID: Run ID: **WetChem_HS_316670** SeqNo: **4571005** 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)	10.8	0.20	10	0.138	107	80 - 120	10.71	0.837	20	

The following samples were analyzed in this batch: HS18050925-01

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

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050925

QC BATCH REPORT

Batch ID: R316746 **Instrument: TOC_02** **Method: E415.1**

MBLK Sample ID: **WBLKW1-180522** Units: **mg/L** Analysis Date: **22-May-2018 20:42**
Client ID: Run ID: **TOC_02_316746** SeqNo: **4572700** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW1-180522** Units: **mg/L** Analysis Date: **22-May-2018 20:55**
Client ID: Run ID: **TOC_02_316746** SeqNo: **4572701** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.826	1.00	10	0	98.3	80 - 120				

LCSD Sample ID: **WLCSDW1-180522** Units: **mg/L** Analysis Date: **22-May-2018 21:08**
Client ID: Run ID: **TOC_02_316746** SeqNo: **4572702** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.762	1.00	10	0	97.6	80 - 120	9.826	0.653	20	

MS Sample ID: **HS18050869-01MS** Units: **mg/L** Analysis Date: **22-May-2018 23:41**
Client ID: Run ID: **TOC_02_316746** SeqNo: **4572713** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	23.86	1.00	10	13.54	103	80 - 120				

The following samples were analyzed in this batch: HS18050925-01

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

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: HS18050925

QC BATCH REPORT

Batch ID: R316901 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-316901** Units: **mg/L** Analysis Date: **18-May-2018 18:15**
Client ID: Run ID: **UV-2450_316901** SeqNo: **4576303** 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)	0.0100	0.0250								U

LCS Sample ID: **LCS-316901** Units: **mg/L** Analysis Date: **18-May-2018 18:15**
Client ID: Run ID: **UV-2450_316901** SeqNo: **4576304** 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				

MS Sample ID: **HS18050925-01MS** Units: **mg/L** Analysis Date: **18-May-2018 18:15**
Client ID: **LH18/24-SP650_051718** Run ID: **UV-2450_316901** SeqNo: **4576306** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	10.98	0.625	6.25	4.3	107	80 - 120				

MSD Sample ID: **HS18050925-01MSD** Units: **mg/L** Analysis Date: **18-May-2018 18:15**
Client ID: **LH18/24-SP650_051718** Run ID: **UV-2450_316901** SeqNo: **4576307** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	11	0.625	6.25	4.3	107	80 - 120	10.98	0.228	20	

The following samples were analyzed in this batch: HS18050925-01

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
WorkOrder: **HS18050925**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231	30-Apr-2019
North Dakota	R193	30-Apr-2019

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant Weekly Samples
Work Order: HS18050925

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18050925-01	LH18/24-SP650_051718	Login	5/18/2018 12:43:47 PM	JRM	Sub
HS18050925-01	LH18/24-SP650_051718	Login	5/18/2018 12:43:47 PM	JRM	WET234
HS18050925-01	LH18/24-SP650_051718	Login	5/18/2018 12:43:47 PM	JRM	WET234
HS18050925-01	LH18/24-SP650_051718	Login	5/18/2018 12:43:47 PM	JRM	WET234

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Date: 31-May-18

Sample Receipt Checklist

Client Name:	Bhate Environmental	Date/Time Received:	**18-May-2018 12:43**
Work Order:	HS18050925	Received by:	**JRM**

Checklist completed by: *Jared R. Makan* eSignature — 18-May-2018 Date

Reviewed by: *RJ Modashia* eSignature — 18-May-2018 Date

Matrices:

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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	2.1c/1.6c UC/C	IR11	
Cooler(s)/Kit(s):	43885		
Date/Time sample(s) sent to storage:	05/18/2018 12:46		
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: SONIA WEST

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_051718	Water	05/17/18 / 14:00		2	X	X			H2SO4	
LH18/24-SP650_051718	Water	05/17/18 / 14:00		2			X	X	NONE	

HS18050925
Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant Weekly Samples

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	05/17/18	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.M	5/18/18	08:45							

Remarks:

Cooler - 43285
Temp 2.1
IR-11
CF-0.5

(Word) S:\Users\Forms\Chain of Custody - B\Weekly

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5637

43 885

CUSTODY SEAL

Date: 5/17/18 Time: 1430
Name: Scott Beesinger
Company: BHATS

Seal Broken By:
Date: 05/18/18

43885 MAY 18 2018

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: ADDITIONAL COOLERS - RJ
RMA:

43885

FedEx Express

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 0221 4380 9528 6289

FedEx
TRK# 0221 4380 9528 6289

FRI - 18 MAY 10:30A
PRIORITY OVERNIGHT

99

AB SGRA

77099
TX-US
IAH

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Wet Chemistry Raw Data

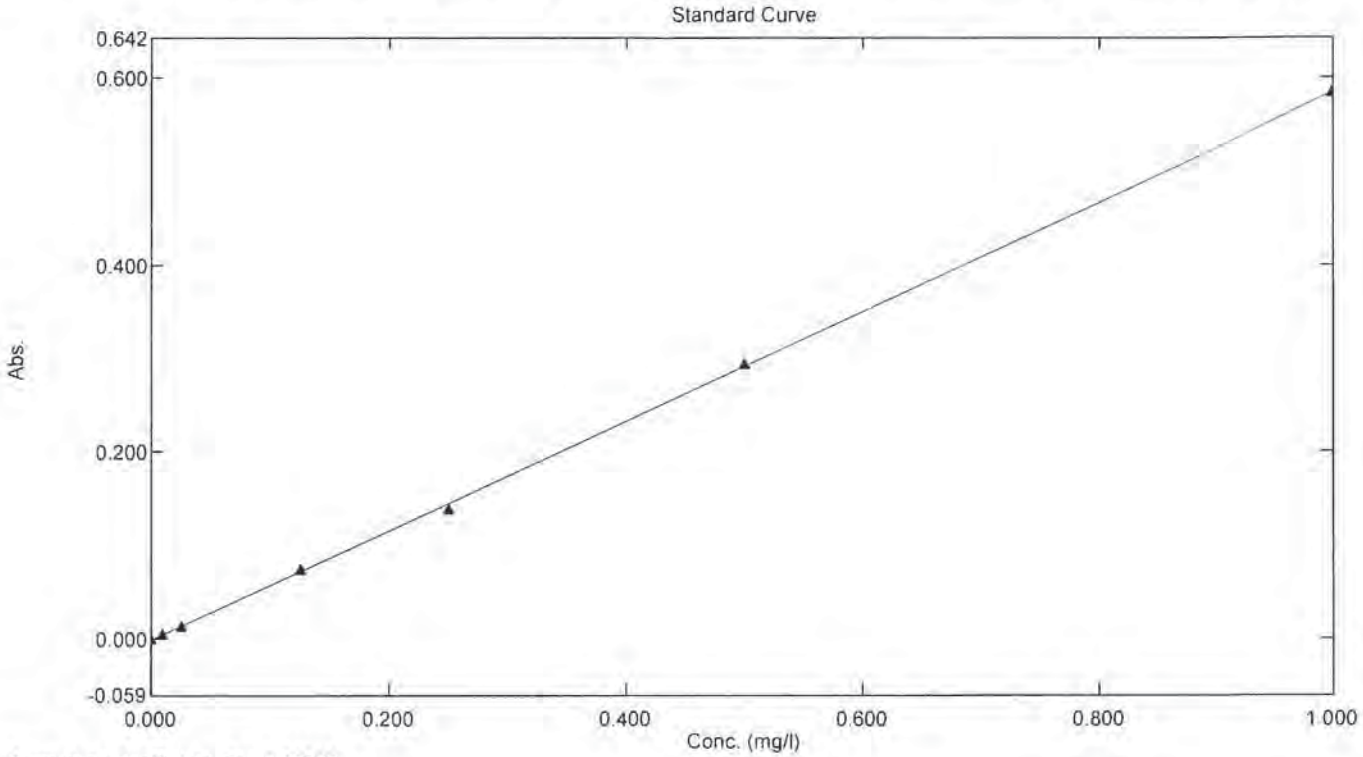
Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
WEEKLY SAMPLES
ALS WO# HS18050925

HS180509 25

Standard Table Report

06/11/2018 10:34:26 AM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180518_P_ORTH



Correlation Coefficient r2 = 0.99986

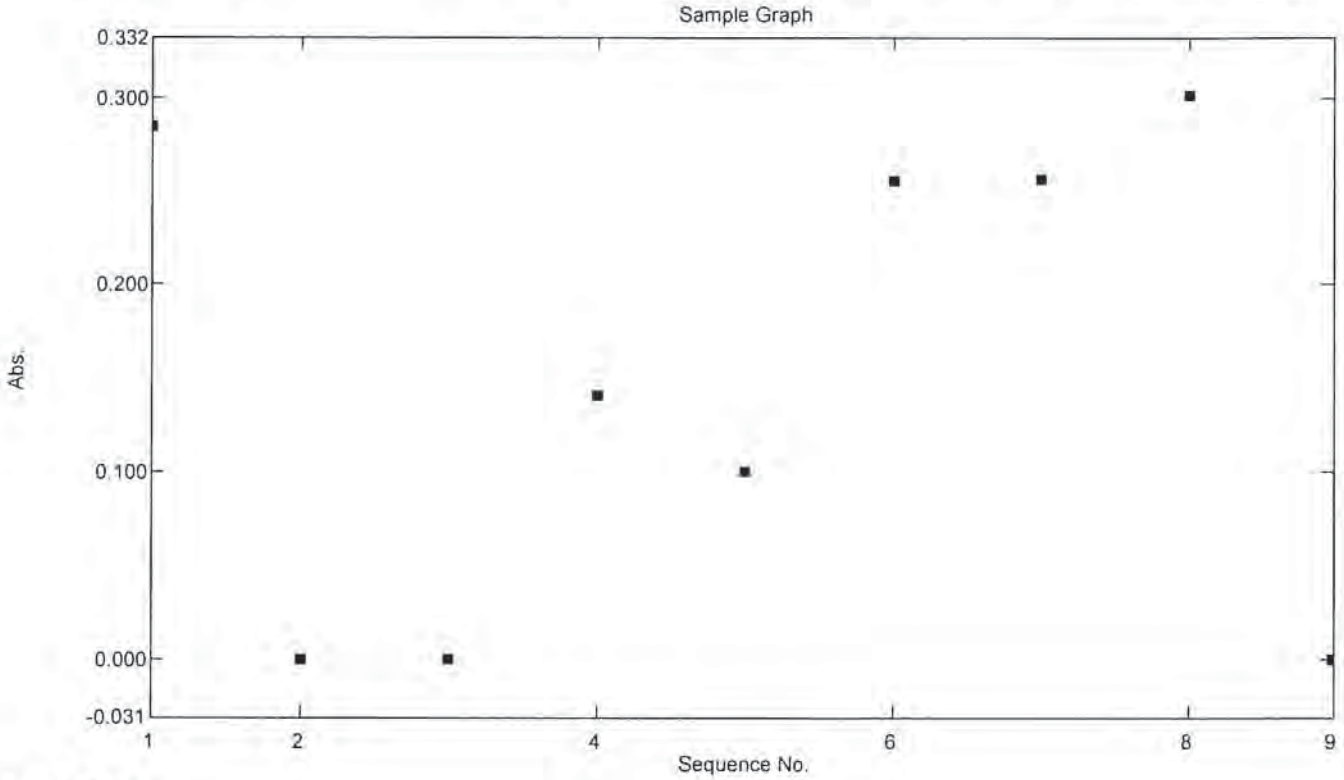
Standard Table

	Sample ID	Type	Ex	Conc	WL880.0	Wgt.Facto	Comments
1	STD1	Standard		0.000	-0.000	1.000	
2	STD2	Standard		0.010	0.006	1.000	
3	STD3	Standard		0.025	0.014	1.000	
4	STD4	Standard		0.125	0.075	1.000	
5	STD5	Standard		0.250	0.140	1.000	
6	STD6	Standard		0.500	0.294	1.000	
7	STD7	Standard		1.000	0.584	1.000	
8							

Sample Table Report

06/11/2018 10:34:23 AM

File Name: C:\Program Files (x86)\Shimadzu\UVProbe\Data\O_PO4_UNKNOWN\ORTHO_2018\180518_P_ORT



Sample Table

	Sample ID	Type	Ex	Conc	WL880.0	Comments
1	CCV	Unknown		0.488	0.285	
2	CCB	Unknown		0.000	-0.000	
3	MBLK	Unknown		0.000	-0.000	
4	LCS	Unknown		0.242	0.141	
5	18050925.0125X	Unknown		0.172	0.100	FILTER,06:15PM,25X
6	18050925.01MS25X	Unknown		0.439	0.256	25X
7	18050925.01MSD25X	Unknown		0.440	0.257	25X
8	CCV2	Unknown		0.518	0.302	
9	CCB2	Unknown		0.000	-0.000	
10						

NIT-AMN- W-ISE /350.3

HS18050925

ALS Laboratory Group

Logbook **30622**

Ion Selective Electrode Logbook

Analyst: MD		Date: 05/22/2018	
Method: SM4500NH3-D/EPA 350.3 or SM4500 NH3 B-F			
Probe Calibration Date: 05/22/2018	Cal Std ID: 30606(03-07)	Probe ID: 1SR15190	

Std Level		mV	Conc., mg/L:
STD 1 (mg/L):	0.2	116.0	0.2027
STD 2 (mg/L):	1	76.0	1.015
STD 3 (mg/L):	5	34.1	5.076

Sodium Thiosulfate ID:		
Std Level	mV	Conc., mg/L:
STD 4 (mg/L): 10	16.8	10.17
STD 5 (mg/L): 50	-25.0	50.07

LSC / MS Spike ID: 2970206404
ICV Cal STD ID: 306068703
DPD Reagent ID: 2970204302

ICAL Date & Slope: 94.8% / -56.0mV.

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		10.10			
CCB					0.02013			
MBLK					0.02105			
LCS					10.10			
HS18050726-01					0.1380		-ve	
HS18050748-01					0.1810		-ve	
HS18050925-01		5ml	50ml	10X	4.884		-ve	
HS18050930-01		50ml	50ml		0.4385		-ve	
HS18050957-01		1ml	50ml	50X	0.1456		-ve	high in scat sam hydrous
-02				50X	0.1112		-ve	
-03				50X	0.1022		-ve	
CCV		50ml	50ml		10.50			
CCB					0.02072			
HS18050957-04		1ml	50ml	50X	~~0.8674~~	0.1148	-ve	MD
HS18050726-01MS		50ml	50ml		10.71			
HS18050726-01MSD					10.80			
CCV		50ml	50ml		10.17			
CCB					0.02044			

Batch ID:	Reported By	Reviewed By:
3505316670 / 316671	MD	MD

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
1	U	NPOC	CCV	306.068.202	05-08-2018_	NPOC:22.65mg/L	Completed	5/22/2018 8:03:50 PM	1
2	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.08181mg/	Completed	5/22/2018 8:19:08 PM	2
3	U	NPOC	WBLKW1-180522	TOC_W	05-08-2018_	NPOC:0.03656mg/	Completed	5/22/2018 8:46:33 PM	3
4	U	NPOC	WLCSW1-180522	Untitled	05-08-2018_	NPOC:9.826mg/L	Completed	5/22/2018 8:59:46 PM	4
5	U	NPOC	WLCSDW1-180522	Untitled	05-08-2018_	NPOC:9.762mg/L	Completed	5/22/2018 9:13:02 PM	5
6	U	NPOC	HS18050639-01DF5	1/2 HI SALT	05-08-2018_	NPOC:0.6132mg/L	Completed	5/22/2018 9:28:20 PM	6
7	U	NPOC	HS18050639-02DF5	1/2 HI SALT	05-08-2018_	NPOC:0.5131mg/L	Completed	5/22/2018 9:41:28 PM	7
8	U	NPOC	HS18050639-03DF5	1/2 HI SALT	05-08-2018_	NPOC:0.3287mg/L	Completed	5/22/2018 9:54:41 PM	8
9	U	NPOC	HS18050639-04DF5	1/2 HI SALT	05-08-2018_	NPOC:0.3131mg/L	Completed	5/22/2018 10:07:54 PM	9
10	U	NPOC	HS18050639-05DF20	1/2 HI SALT	05-08-2018_	NPOC:0.3045mg/L	Completed	5/22/2018 10:23:12 PM	10
11	U	NPOC	HS18050639-06DF20	1/2 HI SALT	05-08-2018_	NPOC:0.4810mg/L	Completed	5/22/2018 10:36:20 PM	11
12	U	NPOC	HS18050925-01	1/2	05-08-2018_	NPOC:242.2mg/L	Completed	5/22/2018 10:50:24 PM	12
13	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.03mg/L	Completed	5/22/2018 11:03:45 PM	13
14	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1298mg/L	Completed	5/22/2018 11:19:03 PM	14
15	U	NPOC	HS18050869-01	1/2	05-08-2018_	NPOC:13.54mg/L	Completed	5/22/2018 11:32:11 PM	15
16	U	NPOC	HS18050869-01MS	1/2	05-08-2018_	NPOC:23.86mg/L	Completed	5/22/2018 11:45:24 PM	16
17	U	NPOC	HS18051078-01	1/2	05-08-2018_	NPOC:11.96mg/L	Completed	5/22/2018 11:58:37 PM	17
18	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:24.52mg/L	Completed	5/23/2018 12:11:52 AM	18
19	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1137mg/L	Completed	5/23/2018 12:27:10 AM	19
20	U	NPOC	WBLKW2-180522	TOC_W 5310B	05-08-2018_	NPOC:0.1122mg/L	Completed	5/23/2018 12:40:18 AM	20
21	U	NPOC	WLCSW2-180522	Untitled	05-08-2018_	NPOC:9.664mg/L	Completed	5/23/2018 12:53:33 AM	21
22	U	NPOC	WLCSDW2-180522	Untitled	05-08-2018_	NPOC:9.741mg/L	Completed	5/23/2018 1:06:57 AM	22
23	U	NPOC	HS18050835-04DF5	1/2	05-08-2018_	NPOC:5.645mg/L	Completed	5/23/2018 1:20:10 AM	23
24	U	NPOC	HS18050835-05DF2	1/2	05-08-2018_	NPOC:5.418mg/L	Completed	5/23/2018 1:35:28 AM	24
25	U	NPOC	HS18050835-06DF5	1/2	05-08-2018_	NPOC:5.874mg/L	Completed	5/23/2018 1:48:36 AM	25
26	U	NPOC	HS18050836-01DF50	1/2	05-08-2018_	NPOC:10.38mg/L	Completed	5/23/2018 2:02:08 AM	26
27	U	NPOC	HS18050836-02DF40	1/2	05-08-2018_	NPOC:12.19mg/L	Completed	5/23/2018 2:15:22 AM	27
28	U	NPOC	HS18050836-03DF40	1/2	05-08-2018_	NPOC:9.936mg/L	Completed	5/23/2018 2:28:50 AM	28
29	U	NPOC	HS18050836-04DF5	1/2	05-08-2018_	NPOC:8.062mg/L	Completed	5/23/2018 2:42:04 AM	29
30	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:24.65mg/L	Completed	5/23/2018 2:55:32 AM	30
31	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1127mg/L	Completed	5/23/2018 3:10:51 AM	31
32	U	NPOC	HS18050836-05DF2	1/2	05-08-2018_	NPOC:5.861mg/L	Completed	5/23/2018 3:24:00 AM	32
33	U	NPOC	HS18050836-06DF5	1/2	05-08-2018_	NPOC:6.552mg/L	Completed	5/23/2018 3:37:14 AM	33
34	U	NPOC	HS18050859-01	1/2	05-08-2018_	NPOC:2.806mg/L	Completed	5/23/2018 3:50:28 AM	34
35	U	NPOC	HS18050859-01MS	1/2	05-08-2018_	NPOC:12.67mg/L	Completed	5/23/2018 4:03:53 AM	35
36	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:24.36mg/L	Completed	5/23/2018 4:17:52 AM	36
37	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.08301mg/	Completed	5/23/2018 4:33:11 AM	37
38	U	NPOC	WBLKW3-180522	TOC_W 5310B	05-08-2018_	NPOC:0.07882mg/	Completed	5/23/2018 4:46:20 AM	38
39	U	NPOC	WLCSW3-180522	Untitled	05-08-2018_	NPOC:9.795mg/L	Completed	5/23/2018 4:59:34 AM	39
40	U	NPOC	WLCSDW3-180522	Untitled	05-08-2018_	NPOC:9.778mg/L	Completed	5/23/2018 5:12:52 AM	40
41	U	NPOC	HS18051063-01	1/2	05-08-2018_	NPOC:0.08104mg/	Completed	5/23/2018 5:26:06 AM	41
42	U	NPOC	HS18051065-01	1/2	05-08-2018_	NPOC:0.05255mg/	Completed	5/23/2018 5:39:20 AM	42
43	U	NPOC	HS18050861-01	1/2	05-08-2018_	NPOC:21.04mg/L	Completed	5/23/2018 5:53:04 AM	43
44	U	NPOC	HS18050944-01	1/2	05-08-2018_	NPOC:16.73mg/L	Completed	5/23/2018 6:06:18 AM	44
45	U	NPOC	HS18050996-01	1/1	05-08-2018_	NPOC:16.19mg/L	Completed	5/23/2018 6:19:32 AM	45
46	U	NPOC	HS18050997-01	1/1	05-08-2018_	NPOC:8.006mg/L	Completed	5/23/2018 6:32:46 AM	46
47	U	NPOC	HS18050997-01MS	1/1	05-08-2018_	NPOC:17.87mg/L	Completed	5/23/2018 6:46:13 AM	47
48	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:24.15mg/L	Completed	5/23/2018 6:59:36 AM	48
49	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.09667mg/	Completed	5/23/2018 7:14:56 AM	49
50	U	NPOC	HS18050998-01	1/1	05-08-2018_	NPOC:3.827mg/L	Completed	5/23/2018 7:28:06 AM	50
51	U	NPOC	HS18050999-01	1/1	05-08-2018_	NPOC:3.990mg/L	Completed	5/23/2018 7:41:21 AM	51

	T	Analys	Sample Name	Sample ID	Origin	Result	Status	Date / Time	Vial
52	U	NPOC	HS18051000-01	1/1	05-08-2018_	NPOC:6.287mg/L	Completed	5/23/2018 7:54:36 AM	52
53	U	NPOC	HS18051004-01	1/2	05-08-2018_	NPOC:19.90mg/L	Completed	5/23/2018 8:07:51 AM	53
54	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:25.07mg/L	Completed	5/23/2018 8:21:10 AM	54
55	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1719mg/L	Completed	5/23/2018 8:36:30 AM	55
56	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.1025mg/L	Completed	5/23/2018 8:51:45 AM	56
57	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:22.74mg/L	Completed	5/23/2018 5:13:47 PM	1
58	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.06661mg/	Completed	5/23/2018 5:38:19 PM	2
59	U	NPOC	HS18050925-01DF10	1/2	05-08-2018_	NPOC:23.32mg/L	Completed	5/23/2018 5:51:26 PM	3
60	U	NPOC	HS18050639-05DF10	1/1 HI SALT CL	05-08-2018_	NPOC:0.5345mg/L	Completed	5/23/2018 6:06:45 PM	6
61	U	NPOC	HS18050639-06DF10	1/1 HI SALT CL	05-08-2018_	NPOC:1.019mg/L	Completed	5/23/2018 6:19:54 PM	7
62	U	NPOC	CCV	Untitled	05-08-2018_	NPOC:23.72mg/L	Completed	5/23/2018 6:33:30 PM	4
63	U	NPOC	CCB	Untitled	05-08-2018_	NPOC:0.09824mg/	Completed	5/23/2018 6:48:48 PM	5

Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

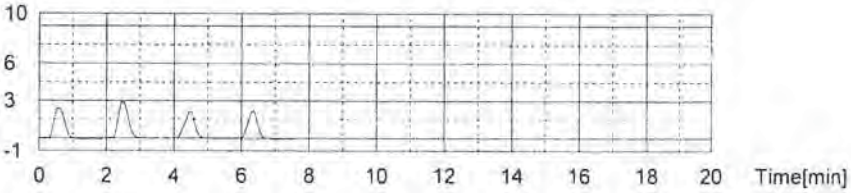
Sample Name:	CAL
Sample ID:	306.067:504-509
Cal. Curve:	05-08-2018_W.2018_05_08_16_59_08.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	5.281	50uL	1	*******		5/8/2018 5:07:52 PM
2	5.767	50uL	1	*******	E	5/8/2018 5:09:57 PM
3	4.377	50uL	1	*******		5/8/2018 5:12:02 PM
4	4.321	50uL	1	*******		5/8/2018 5:14:07 PM

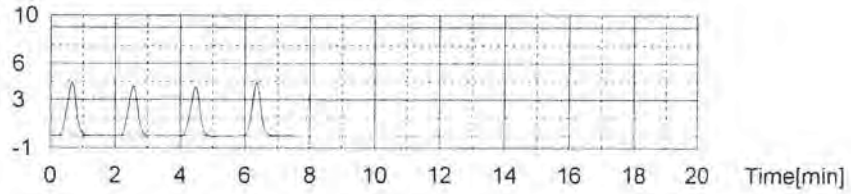
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 4.660



Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	8.552	50uL	1	*******	E	5/8/2018 5:23:05 PM
2	7.956	50uL	1	*******		5/8/2018 5:25:10 PM
3	7.917	50uL	1	*******		5/8/2018 5:27:15 PM
4	7.981	50uL	1	*******		5/8/2018 5:29:20 PM

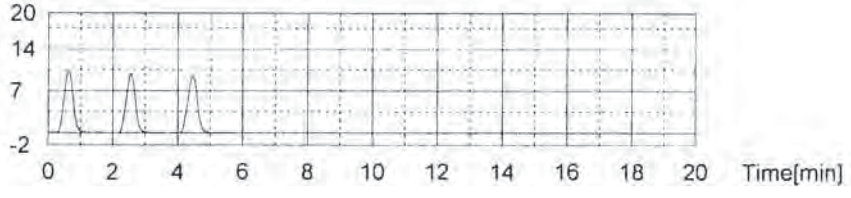
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 7.951



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	19.68	50uL	1	*******		5/8/2018 5:38:18 PM
2	19.11	50uL	1	*******		5/8/2018 5:40:23 PM
3	19.32	50uL	1	*******		5/8/2018 5:42:28 PM

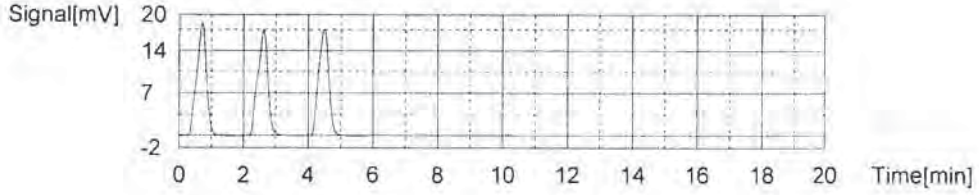
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 19.37



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	38.73	50uL	1	*******		5/8/2018 5:51:31 PM
2	37.61	50uL	1	*******		5/8/2018 5:53:36 PM
3	38.22	50uL	1	*******		5/8/2018 5:55:41 PM

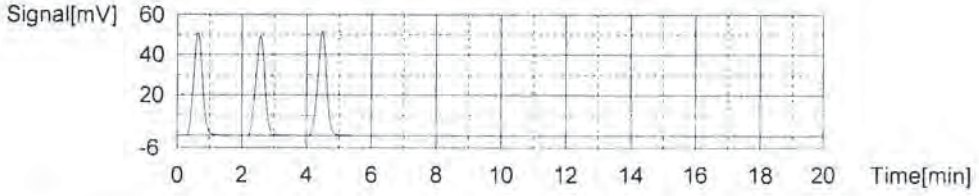
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 38.19



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	97.00	50uL	1	*******		5/8/2018 6:04:44 PM
2	96.71	50uL	1	*******		5/8/2018 6:06:49 PM
3	96.75	50uL	1	*******		5/8/2018 6:08:54 PM

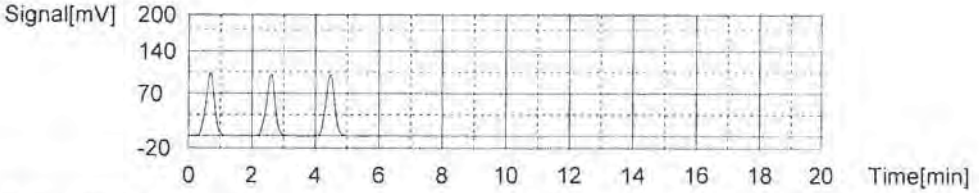
Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 96.82



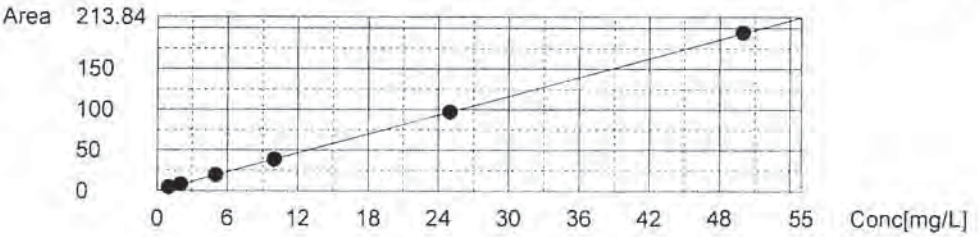
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	195.4	50uL	1	*******		5/8/2018 6:17:57 PM
2	193.7	50uL	1	*******		5/8/2018 6:20:02 PM
3	194.1	50uL	1	*******		5/8/2018 6:22:07 PM

Acid Add. 0.000%
Sp. Time 180.0sec
Mean Area 194.4



Slope: 3.881
Intercept 0.07512
r^2 1.0000
r 1.0000
Zero Shift No



Sample

Sample Name: ICV
Sample ID: 306.067.601
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

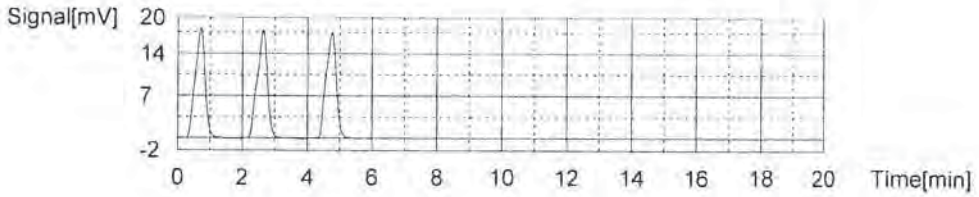
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.923mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.63	9.934mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:31:10 PM
2	38.67	9.944mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:33:30 PM
3	38.46	9.890mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:35:35 PM

Mean Area 38.59
Mean Conc. 9.923mg/L



Sample

Sample Name: ICB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

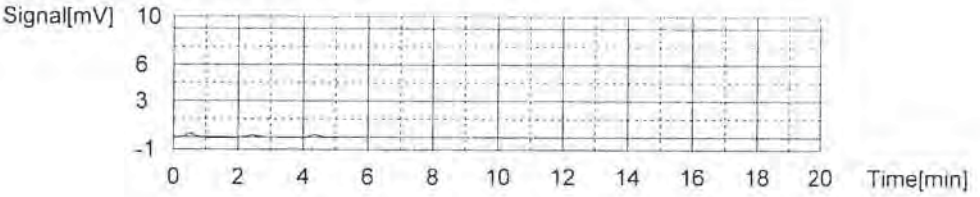
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.09481mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4983	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:44:38 PM
2	0.3330	0.06645mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:46:43 PM
3	0.4980	0.1090mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/8/2018 6:48:48 PM

Mean Area 0.4431
Mean Conc. 0.09481mg/L



Instr.Information

System	TOC csh with asi
Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Sample

Sample Name:	CCV
Sample ID:	306.068.202
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

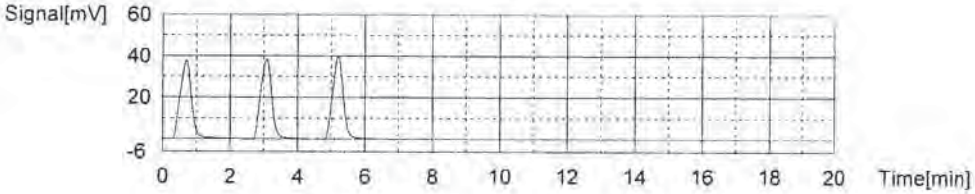
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:22.65mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	87.28	22.47mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 7:59:04 PM
2	87.80	22.60mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:01:22 PM
3	88.90	22.89mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:03:50 PM

Mean Area 87.99
Mean Conc. 22.65mg/L



Sample

Sample Name:	CCB
Sample ID:	Untitled
Origin:	05-08-2018_W.cal
Status	Completed
Chk. Result	

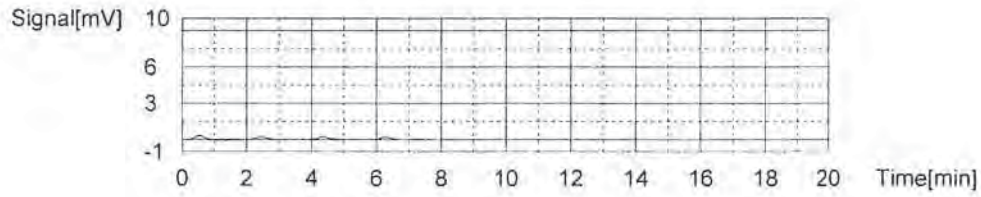
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.08181mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.5918	0.1331mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:12:53 PM
2	0.4435	0.09492mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:14:58 PM
3	0.3606	0.07356mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:17:03 PM
4	0.3738	0.07696mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:19:08 PM

Mean Area 0.3926
Mean Conc. 0.08181mg/L



Sample

Sample Name: WBLKW1-180522
Sample ID: TOC_W
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

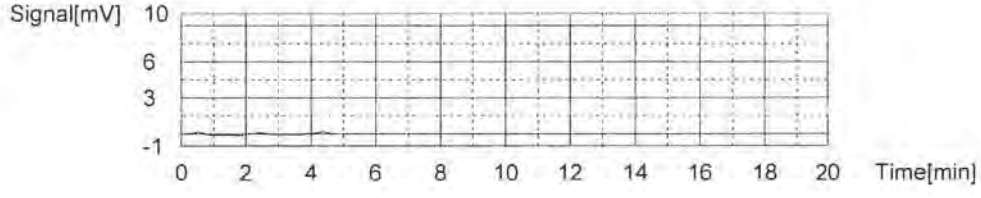
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.03656mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.2497	0.04498mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:42:23 PM
2	0.2024	0.03279mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:44:28 PM
3	0.1989	0.03189mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:46:33 PM

Mean Area 0.2170
Mean Conc. 0.03656mg/L



Sample

Sample Name: WLCSW1-180522
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

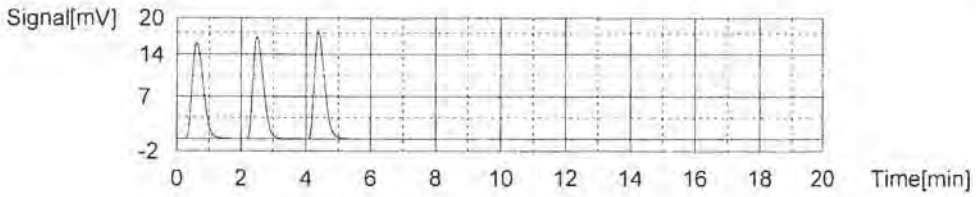
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.826mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.20	9.823mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:55:36 PM
2	37.95	9.759mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:57:41 PM
3	38.48	9.896mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 8:59:46 PM

Mean Area 38.21
Mean Conc. 9.826mg/L



Sample

Sample Name: WLCSDW1-180522
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:9.762mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.32	9.854mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 9:08:49 PM
2	37.38	9.612mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 9:10:57 PM
3	38.18	9.818mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 9:13:02 PM

Mean Area 37.96
Mean Conc. 9.762mg/L



Sample

Sample Name: HS18050925-01
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

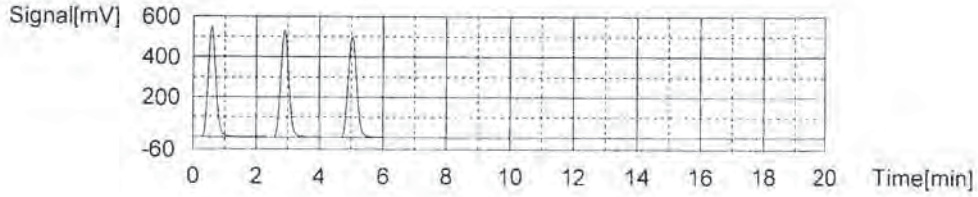
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:242.2mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	929.5	239.5mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 10:45:46 PM
2	938.3	241.7mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 10:48:05 PM
3	952.5	245.4mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 10:50:24 PM

Mean Area 940.1
Mean Conc. 242.2mg/L



Sample

Sample Name: CCV
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

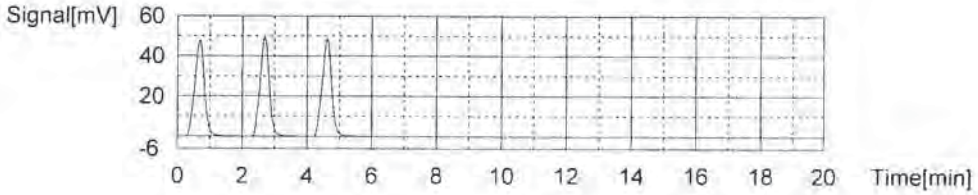
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.03mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	98.11	25.26mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 10:59:35 PM
2	96.20	24.77mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:01:40 PM
3	97.29	25.05mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:03:45 PM

Mean Area 97.20
Mean Conc. 25.03mg/L



Sample

Sample Name: CCB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

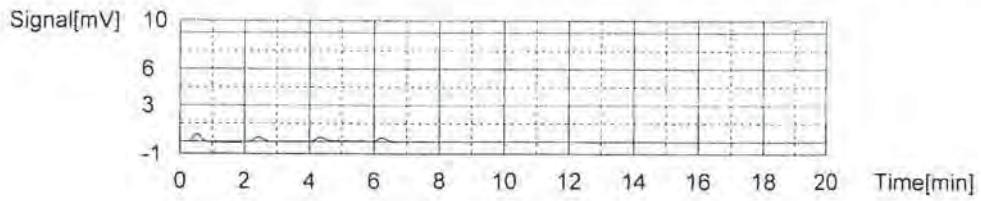
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1298mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.023	0.2442mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:12:48 PM
2	0.6355	0.1444mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:14:53 PM
3	0.5563	0.1240mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:16:58 PM
4	0.5445	0.1209mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:19:03 PM

Mean Area 0.5788
Mean Conc. 0.1298mg/L



Sample

Sample Name: HS18050869-01
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

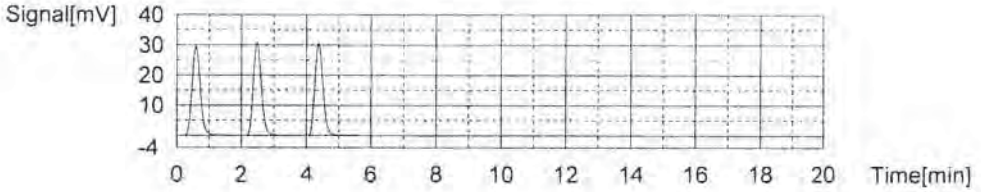
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:13.54mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	51.95	13.37mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:28:01 PM
2	52.50	13.51mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:30:06 PM
3	53.40	13.74mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:32:11 PM

Mean Area 52.62
Mean Conc. 13.54mg/L



Sample

Sample Name: HS18050869-01MS
Sample ID: 1/2
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

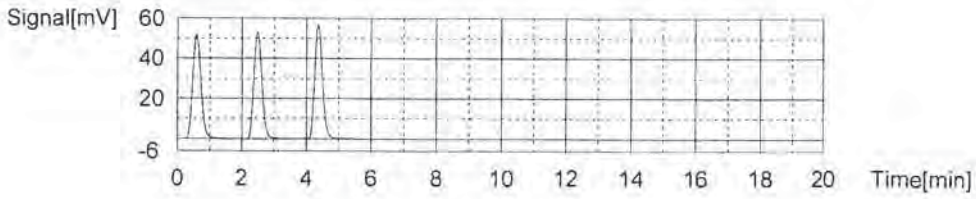
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:23.86mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	91.48	23.55mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:41:14 PM
2	92.60	23.84mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:43:19 PM
3	93.97	24.19mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/22/2018 11:45:24 PM

Mean Area 92.68
Mean Conc. 23.86mg/L



Sample

Sample Name: CCV
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

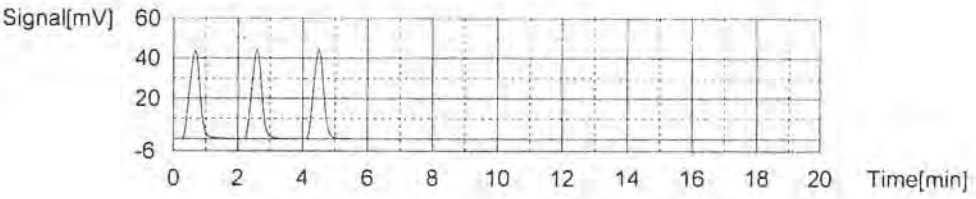
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.52mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	95.82	24.67mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:07:41 AM
2	94.52	24.33mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:09:47 AM
3	95.35	24.55mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:11:52 AM

Mean Area 95.23
Mean Conc. 24.52mg/L



Sample

Sample Name: CCB
Sample ID: Untitled
Origin: 05-08-2018_W.cal
Status Completed
Chk. Result

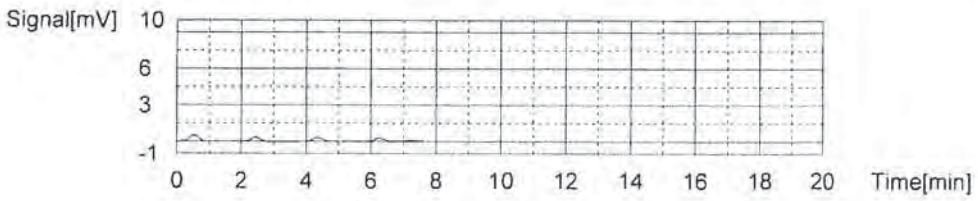
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1137mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.8107	0.1895mg/L	50uL	1	E	05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:20:55 AM
2	0.4899	0.1069mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:23:00 AM
3	0.6228	0.1411mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:25:05 AM
4	0.4369	0.09322mg/L	50uL	1		05-08-2018_W.2018_05_08_16_59_08.cal	5/23/2018 12:27:10 AM

Mean Area	0.5165
Mean Conc.	0.1137mg/L



Sub Contract Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
WEEKLY SAMPLES
ALS WO# HS18050925

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1813746; 1814144; 1814932; 1814934; 1814935

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2095 (215757)

General Set Information: There were ten 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: Sample 1814932001 was analyzed and reported at a 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 603140) was less than 1/2 the CRDL. The recovery for the LCS (603141) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1813746001 (Client ID: HS18050824-01 50WW10-180515. 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. The initial analysis of field sample 1813746005 failed the Internal Standard recovery of 50 – 150% method requirement, possibly due to a spiking error. The sample was re-prepped, re-analyzed and reported. Manual Integrations was performed for datafile 02APRD01/02 along with datafiles 30MAYD06/07/21/22.

Thomas Bosch May 31, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: May 31, 2018

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

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1814144**
Project ID: HS18050925 051718
Purchase Order: HS18050925
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_051718	1814144001	05/17/18	05/19/18	

ANALYTICAL REPORT

Workorder: 34-1814144
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_051718**	Sampling Site: NA	Collected: 05/17/2018
Lab ID: 1814144001	Media: 125 mL Nalgene	Received: 05/19/2018
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/2095 (HBN: 215757)	**Percent Solid:** NA
	Analyzed: 05/30/2018 11:39	**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 05/31/2018 10:04	/S/ Stephen Brose 05/31/2018 14:00

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: 34-1814144
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	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

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.
< 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: 1814144

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2095 (HBN: 215757)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 603140
Analyzed: 05/30/2018 09:17
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 603141
Analyzed: 05/30/2018 09:31
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	5.30	5.00	106	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1813746001	**MS:** 603142	**MSD:** 603143
Analyzed: 05/30/2018 09:46	**Analyzed:** 05/30/2018 10:00	**Analyzed:** 05/30/2018 10:15
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	5.39	5	108	78.8	123.8	5.58	112	3.48	0.0	20.0

Continuing Calibration Verification

CCV: 603137	**CCV:** 603144	**CCV:** 603231
Analyzed: 05/30/2018 08:32	**Analyzed:** 05/30/2018 12:08	**Analyzed:** 05/30/2018 13:18
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	27.1	25.0	109	26.9	25.0	108	27.4	25.0	110

Interference Check Sample

ICSA: 603139
Analyzed: 05/30/2018 09:02
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	1.24	1.00	124

Limit of Detection Verification

LODV: 603138	**LODV:** 603145	**LODV:** 603232
Analyzed: 05/30/2018 08:48	**Analyzed:** 05/30/2018 12:22	**Analyzed:** 05/30/2018 13:33
Units: ug/L	**Units:** ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	1.01	1.00	101	1.01	1.00	101	0.948	1.00	94.8

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1814144

Limits:	Client SOW/Contract Specified	**Preparation:**	NA
Basis:	DoD QSM	**Batch:**	NA
		Prepared By:	NA
Analysis:	EPA 6850		
Batch:	ELMS/2095 (HBN: 215757)		
Analyzed By:	Thomas Bosch		

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

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
05/31/2018 10:04	05/31/2018 14:00

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



18698/#2

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

COC ID: 9127

1814144

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:	HS18050925
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18050925-01**	**LH18/24-SP650_051718**	**Water**	**17 May 2018 14:00**
	SUB_Perch-6850			29 May 2018

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: 5/18/18 1800.

Received By: _____ Date/Time: 5/18/2017

Cooler ID(s): 8578 Temperature(s): 4°

00904602

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18050925	Split:	Workorder ID: 1814144	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives: COOL	EPA 6850_DoD QSM

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis
1	05/17/2018 14:00	LH18/24-SP650_051718	1814144001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

41 of 143

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	05/19/2018 09:17	ALS Sample Receiving	Sample Login
Julie Warath	5/21/18 1420	14B	Storage
R.33.)	5.30.18/07:45	T. Bush	6850

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

Mon, 05/21/18 2:13 PM

ALSCOCV3.1

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

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: HS Houston — Project/Task/Site: 1814144

Date/Time of Receipt: 5/19/16 9AM — 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	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 8548	4 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Meredith Stevens (Signature) — Meredith Stevens (Printed Name) — 5/19/16 (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!

Part # 159469-434 RIT2 EXP 11/18

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

SHIP DATE: 18MAY18
ACTWGT: 9.80 LB
CAD: 300130/CAFE3111
DIMS: 14x11x10 IN

BILL SENDER

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18050925 - RJ

546C2/7828/53C1

FedEx Express

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 4380 9529 2711

XO BTFA

84123
UT-US SLC

atch Worklist

Batch: ELMS/ 2095 **Created:** 5/30/2018 08:11 **Instrument:** **HBN:** 215757
Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1813746 [ENV_LVL4]
Workorder: 1814144 [ENV_LVL4]
Workorder: 1814932 [ENV_LVL4]
Workorder: 1814934 [ENV_LVL4]
Workorder: 1814935 [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	603137	CCV for HBN 215757 [ELMS/2095]				CCV	3		E685041C3Q	5311		5/31/2018	
2	603138	LODV for HBN 215757 [ELMS/2095				LODV	3		E6850..D3Q	5311		5/31/2018	
3	603139	ICS for HBN 215757 [ELMS/2095]				ICS	3		E6850..D3Q	5311		5/31/2018	
4	603140	LMB for HBN 215757 [ELMS/2095]				LMB	3		E6850Q413Q	5311		5/31/2018	
5	603141	LCS for HBN 215757 [ELMS/2095]				LCS	3		E6850Q413Q	5311		5/31/2018	
6	1813746001	HS18050824-01 50WW10-180515				SAMPLE	3	1813746001-A	E6850Q41.3	5480	6/12/2018	5/31/2018	
7	603142	HS18050824-01...(1813746001MS)				MS	3		E6850Q413Q	5311		5/31/2018	
8	603143	HS18050824-0...(1813746001MSD)				MSD	3		E6850Q413Q	5311		5/31/2018	
9	1813746002	HS18050824-02 50WW09-180515				SAMPLE	3	1813746002-A	E6850Q41.3	5480	6/12/2018	5/31/2018	
10	1813746003	HS18050824-03 50WW09-180515-FD				FLDDUP	3	1813746003-A	E6850Q41.3	5480	6/12/2018	5/31/2018	
11	1813746004	HS18050824-04 50WW23-180515				SAMPLE	3	1813746004-A	E6850Q41.3	5480	6/12/2018	5/31/2018	
12	1813746005	HS18050824-05 50WW05-180515				SAMPLE	3	1813746005-A	E6850Q41.3	5480	6/12/2018	5/31/2018	
13	1813746006	HS18050824-06 50WW17-180515				SAMPLE	3	1813746006-A	E6850Q41.3	5480	6/12/2018	5/31/2018	
14	1814144001	LH18/24-SP650_051718				SAMPLE	3	1814144001-A	E6850Q41.3	5480	6/14/2018	6/1/2018	
15	1814932001	LH18/24-SP140_052418				SAMPLE	3	1814932001-A	E6850Q41.3	5480	6/21/2018	6/8/2018	
16	1814934001	LH18/24-SP650_052418				SAMPLE	3	1814934001-A	E6850Q41.3	5480	6/21/2018	6/8/2018	
17	1814935001	LH18/24-SP650_052418				SAMPLE	3	1814935001-A	E6850Q41.3	5480	6/21/2018	6/8/2018	
18	603144	CCV for HBN 215757 [ELMS/2095]				CCV	3		E685041C3Q	5311		5/31/2018	
19	603145	LODV for HBN 215757 [ELMS/2095				LODV	3		E6850..D3Q	5311		5/31/2018	
20	603231	CCV for HBN 215757 [ELMS/2095]				CCV	3		E685041C3Q	5311		5/31/2018	
21	603232	LODV for HBN 215757 [ELMS/2095				LODV	3		E6850..D3Q	5311		5/31/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1813746 (001-06); 1814144 (001); 1814932 (001); 1814934 (001); 1814935 (001) ELMS Batch/HBN ID: 2095 (215757)
Prep Date: 05/30/2018 Analysis Date: 05/30/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\MAY\30MAY18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:
Water: Samples were prepared by TNB. 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 DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 04/02/2018, sequence 02APR18D.s Offline Quantitation Method: CLO4-DPR.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-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 603141; Target = 5.0µg/L. ASTM type II water was used for LMB 603140.

MS/MSD: MS/MSD was performed on sample 1813746001 (Client ID: HS18050824-01 50WW10-180515). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. Sample 1814932001 was analyzed and reported at a 1:1,000 dilution. The reporting limit has been adjusted accordingly. The initial analysis of field sample 1813746005 failed the Internal Standard recovery of 50 – 150% method requirement, possibly due to a spiking error. The sample was re-prepped, re-analyzed and reported.
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\2018\MAY\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations was performed for datafiles 02APRD01/02 along with datafiles 30MAYD06/07/21/22.
5) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\215757-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	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
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK — Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

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

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

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

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

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
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

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

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 41827	Created By: Thomas Bosch	Amount: 10 mL
MFG: ALS/SLC	Create Date: 05/09/2018 10:05AM	Expires: 05/09/2019
MFG Lot: TNB: 05/09/2018	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
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	Created By: Thomas Bosch	Amount: 1 mL
MFG: Cambridge Isotope	Create Date: 04/04/2014 03:04PM	Expires: 02/27/2024
MFG Lot: SDDG-013	Verified By: Thomas Bosch	Usable: Yes
Part ID: OLM-7310-S	Verify Date: 02/05/2009 12:02AM	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 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 41831
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

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

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
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

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

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

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.

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

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Signal Word: Warning

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

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
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 Guide 34, ISO/IEC 17025 and certified to ISO 9001

DR-ORG/INO-001
Rev. 5/16

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
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.

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.

** For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy J. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

atch Report: C:\HPCHEM\1\DATA\30MAY18D\30MAY18D.B

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

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

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	603137 CCV@25	Vial 71	1	Control	1	1.02906e6	8.597	27.13125
*	603138 LODV@1.	Vial 72	1	Control	2	4.91456e4	8.746	1.00633
*	603139 ICS@1.0	Vial 73	1	Control	3	3.92585e4	8.536	1.24353
*	603140 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	603141 QC@5	Vial 75	1	Control	5	1.80606e5	8.569	5.30329
*	1813746001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	603142 137461S	Vial 77	1	Sample	7	1.37245e5	8.454	5.38855
*	603143 137461D	Vial 78	1	Sample	8	1.61939e5	8.470	5.57965
*	1813746002	Vial 79	1	Sample	9	7.14560e4	8.361	2.66402
*	1813746003	Vial 80	1	Sample	10	6.12046e4	8.385	2.80285
*	1813746004	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	1813746005	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	1813746006	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1814144001	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	1814932001 1K	Vial 85	1	Sample	15	3.84295e5	8.839	1.24660e4
*	603144 CCV@25	Vial 71	1	Control	16	9.75035e5	8.838	26.90405
*	603145 LODV@1.	Vial 72	1	Control	17	4.57818e4	8.861	1.01213
*	1814934001	Vial 86	1	Sample	18	9.32499e5	8.441	33.87657
*	1814935001	Vial 87	1	Sample	19	7.25811e5	8.399	22.74694
*	1813746005 RE	Vial 82	1	Sample	20	0.00000	0.000	0.00000
*	603231 CCV@25	Vial 71	1	Control	21	9.74748e5	8.822	27.39369
*	603232 LODV@1.	Vial 72	1	Control	22	4.38332e4	8.849	9.48247e-1

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	603137 CCV@25	Vial 71	1	Control	1	3.22432e5	8.612	27.37425
*	603138 LODV@1.	Vial 72	1	Control	2	1.73338e4	8.758	9.91998e-1
*	603139 ICS@1.0	Vial 73	1	Control	3	1.36799e4	8.558	1.23705
*	603140 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	603141 QC@5	Vial 75	1	Control	5	5.82740e4	8.586	5.26554
*	1813746001	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	603142 137461S	Vial 77	1	Sample	7	4.56103e4	8.466	5.51401
*	603143 137461D	Vial 78	1	Sample	8	5.38797e4	8.487	5.72188
*	1813746002	Vial 79	1	Sample	9	2.49602e4	8.376	2.79768
*	1813746003	Vial 80	1	Sample	10	2.10324e4	8.399	2.90021
*	1813746004	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	1813746005	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	1813746006	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	1814144001	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	1814932001 1K	Vial 85	1	Sample	15	1.23790e5	8.857	1.26359e4
*	603144 CCV@25	Vial 71	1	Control	16	3.07089e5	8.854	27.26483
*	603145 LODV@1.	Vial 72	1	Control	17	1.60481e4	8.876	9.91252e-1
*	1814934001	Vial 86	1	Sample	18	3.00525e5	8.456	35.29064
*	1814935001	Vial 87	1	Sample	19	2.36380e5	8.415	23.64992
*	1813746005 RE	Vial 82	1	Sample	20	0.00000	0.000	0.00000
*	603231 CCV@25	Vial 71	1	Control	21	3.03819e5	8.840	27.51730
*	603232 LODV@1.	Vial 72	1	Control	22	1.57022e4	8.869	9.44920e-1

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	603137 CCV@25	Vial 71	1	Control	1	1.53517e5	8.618	5.00000
*	603138 LODV@1.	Vial 72	1	Control	2	2.20291e5	8.766	5.00000
*	603139 ICS@1.0	Vial 73	1	Control	3	1.43388e5	8.568	5.00000
*	603140 LMB	Vial 74	1	Control	4	1.78787e5	8.566	5.00000
*	603141 QC@5	Vial 75	1	Control	5	1.55079e5	8.590	5.00000
*	1813746001	Vial 76	1	Sample	6	9.36751e4	8.483	5.00000
*	603142 137461S	Vial 77	1	Sample	7	1.15938e5	8.473	5.00000
*	603143 137461D	Vial 78	1	Sample	8	1.31998e5	8.490	5.00000

atch Report: C:\HPCHEM\1\DATA\30MAY18D\30MAY18D.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	1813746002	Vial 79	1	Sample	9	1.23091e5	8.379	5.00000
*	1813746003	Vial 80	1	Sample	10	1.00208e5	8.401	5.00000
*	1813746004	Vial 81	1	Sample	11	9.38686e4	8.374	5.00000
*	1813746005	Vial 82	1	Sample	12	7.48830e4	8.421	5.00000
*	1813746006	Vial 83	1	Sample	13	8.67174e4	8.418	5.00000
*	1814144001	Vial 84	1	Sample	14	8.53104e4	9.768	5.00000
*	1814932001 1K	Vial 85	1	Sample	15	1.35180e5	8.856	5000.00000
*	603144 CCV@25	Vial 71	1	Control	16	1.46863e5	8.859	5.00000
*	603145 LODV@1.	Vial 72	1	Control	17	2.04082e5	8.875	5.00000
*	1814934001	Vial 86	1	Sample	18	1.07552e5	8.461	5.00000
*	1814935001	Vial 87	1	Sample	19	1.32221e5	8.419	5.00000
*	1813746005 RE	Vial 82	1	Sample	20	1.07709e5	8.457	5.00000
*	603231 CCV@25	Vial 71	1	Control	21	1.43821e5	8.841	5.00000
*	603232 LODV@1.	Vial 72	1	Control	22	2.08034e5	8.868	5.00000

*** End of Report ***

equence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\MAY\30MAY18D.S

Sequence Table:

Method and Injection Info Part:

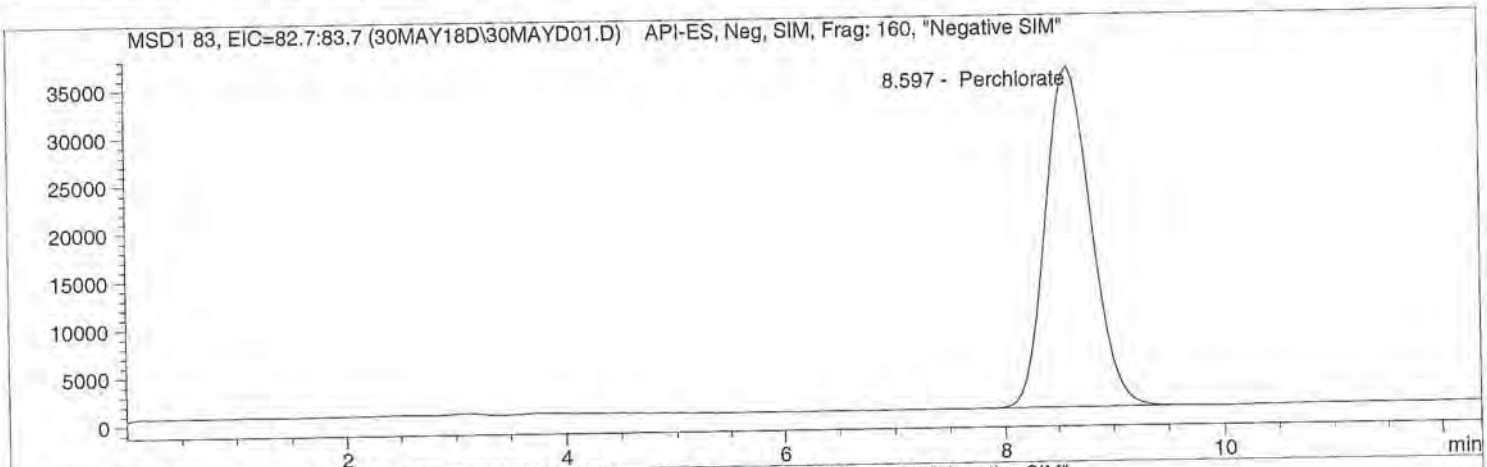
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	603137	CCV@25	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	603138	LODV@1.	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	603139	ICS@1.0	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	603140	LMB	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	603141	QC@5	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	1813746001		CLO4-DOD	1	Sample		
7	Vial 77	603142	137461S	CLO4-DOD	1	Sample		
8	Vial 78	603143	137461D	CLO4-DOD	1	Sample		
9	Vial 79	1813746002		CLO4-DOD	1	Sample		
10	Vial 80	1813746003		CLO4-DOD	1	Sample		
11	Vial 81	1813746004		CLO4-DOD	1	Sample		
12	Vial 82	1813746005		CLO4-DOD	1	Sample		
13	Vial 83	1813746006		CLO4-DOD	1	Sample		
14	Vial 84	1814144001		CLO4-DOD	1	Sample		
15	Vial 85	1814932001	1K	CLO4-DOD	1	Sample		
16	Vial 71	603144	CCV@25	CLO4-DOD	1	Ctrl Samp		
17	Vial 72	603145	LODV@1.	CLO4-DOD	1	Ctrl Samp		
18	Vial 86	1814934001		CLO4-DOD	1	Sample		
19	Vial 87	1814935001		CLO4-DOD	1	Sample		
20	Vial 82	1813746005	RE	CLO4-DOD	1	Sample		
21	Vial 71	603231	CCV@25	CLO4-DOD	1	Ctrl Samp		
22	Vial 72	603232	LODV@1.	CLO4-DOD	1	Ctrl Samp		

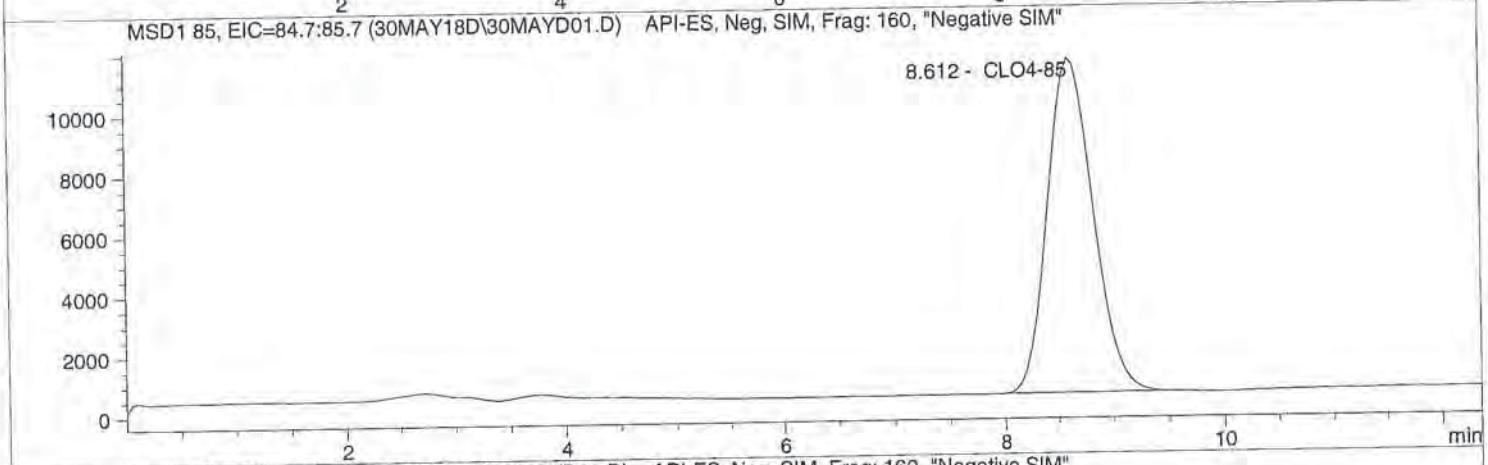
Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD01.D Sample Name: 603137 CCV@25

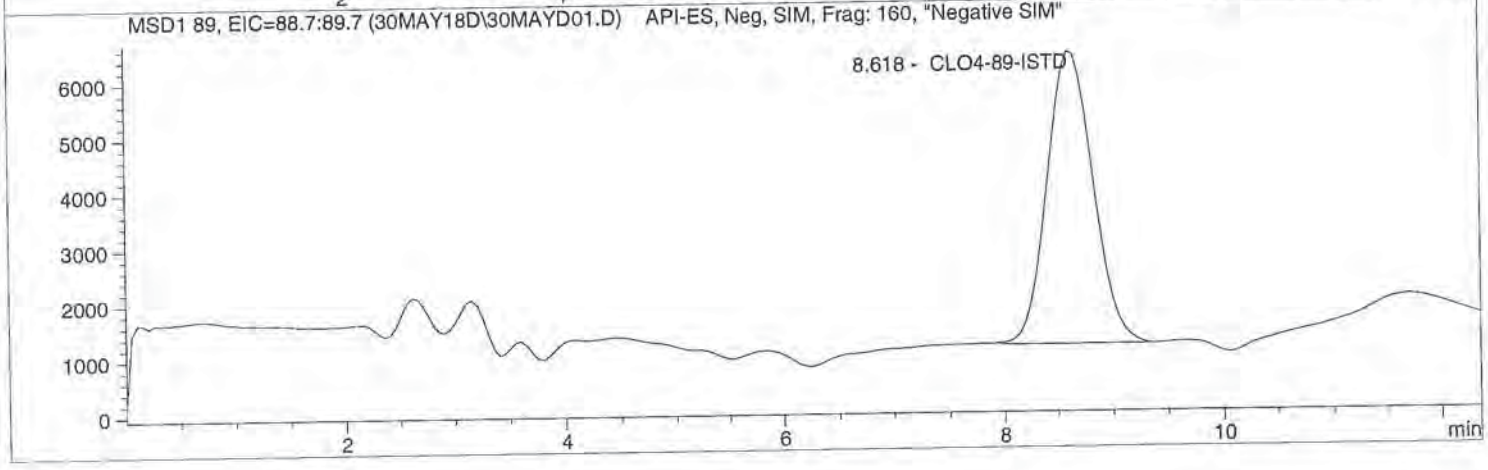
Injection Date:	5/30/2018 08:32:15	Seq Line:	1
Sample Name:	603137 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD01.D Sample Name: 603137 CCV@25

Injection Date:	5/30/2018 08:32:15	Seq Line:	1
Sample Name:	603137 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.597	PBA	1029059.8	27.1312	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.612	PBA	322431.6	27.3743	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.618	BBA	153517.3	5.0000	CLO4-89-ISTD

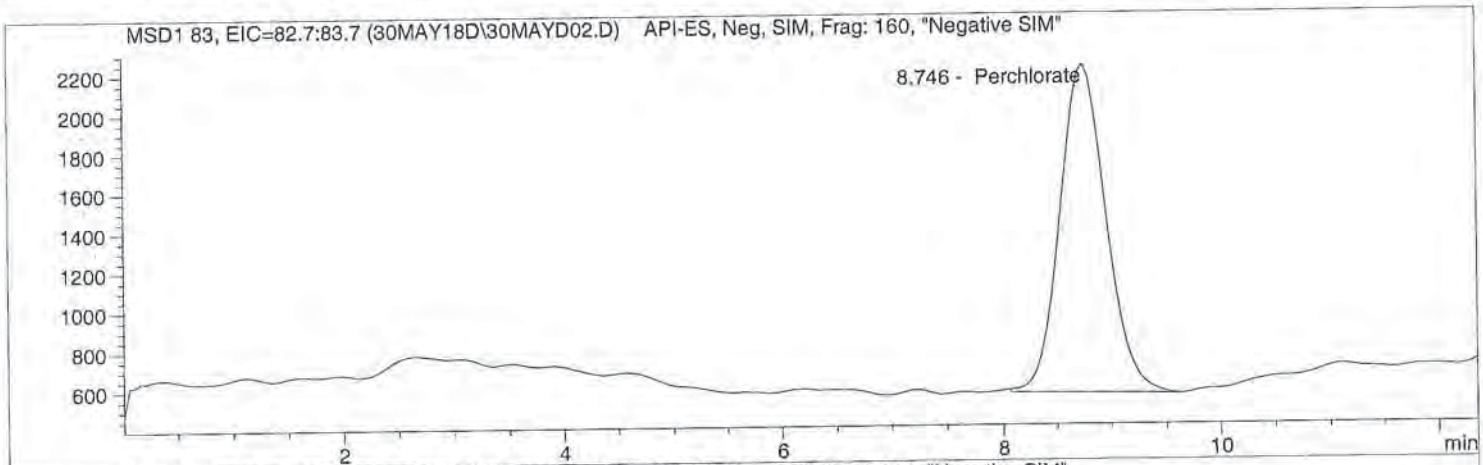
*** End of Report ***

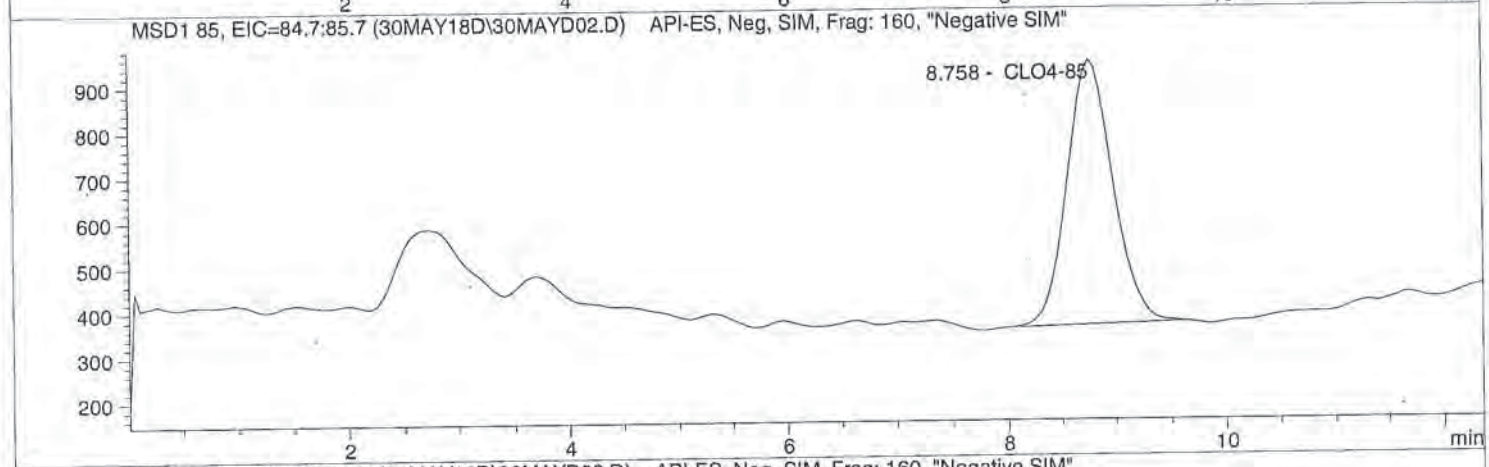
Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD02.D Sample Name: 603138 LODV@1.

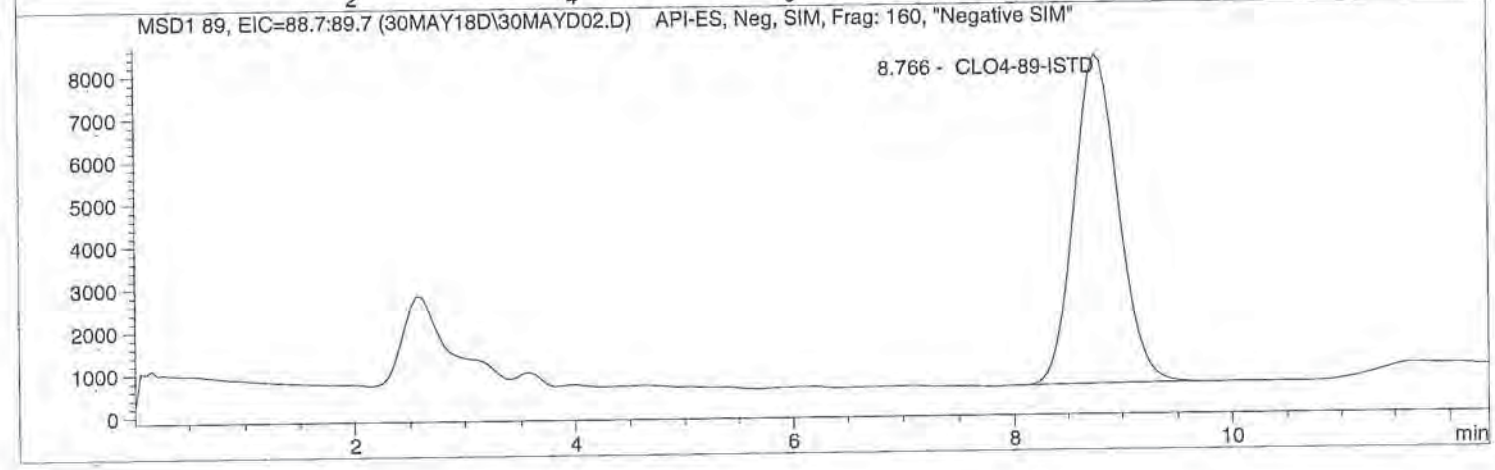
Injection Date:	5/30/2018 08:48:43	Seq Line:	2
Sample Name:	603138 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD02.D Sample Name: 603138 LODV@1.

Injection Date:	5/30/2018 08:48:43	Seq Line:	2
Sample Name:	603138 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.746	BBA	49145.6	1.0063	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.758	PBA	17333.8	0.9920	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.766	BBA	220290.5	5.0000	CLO4-89-ISTD

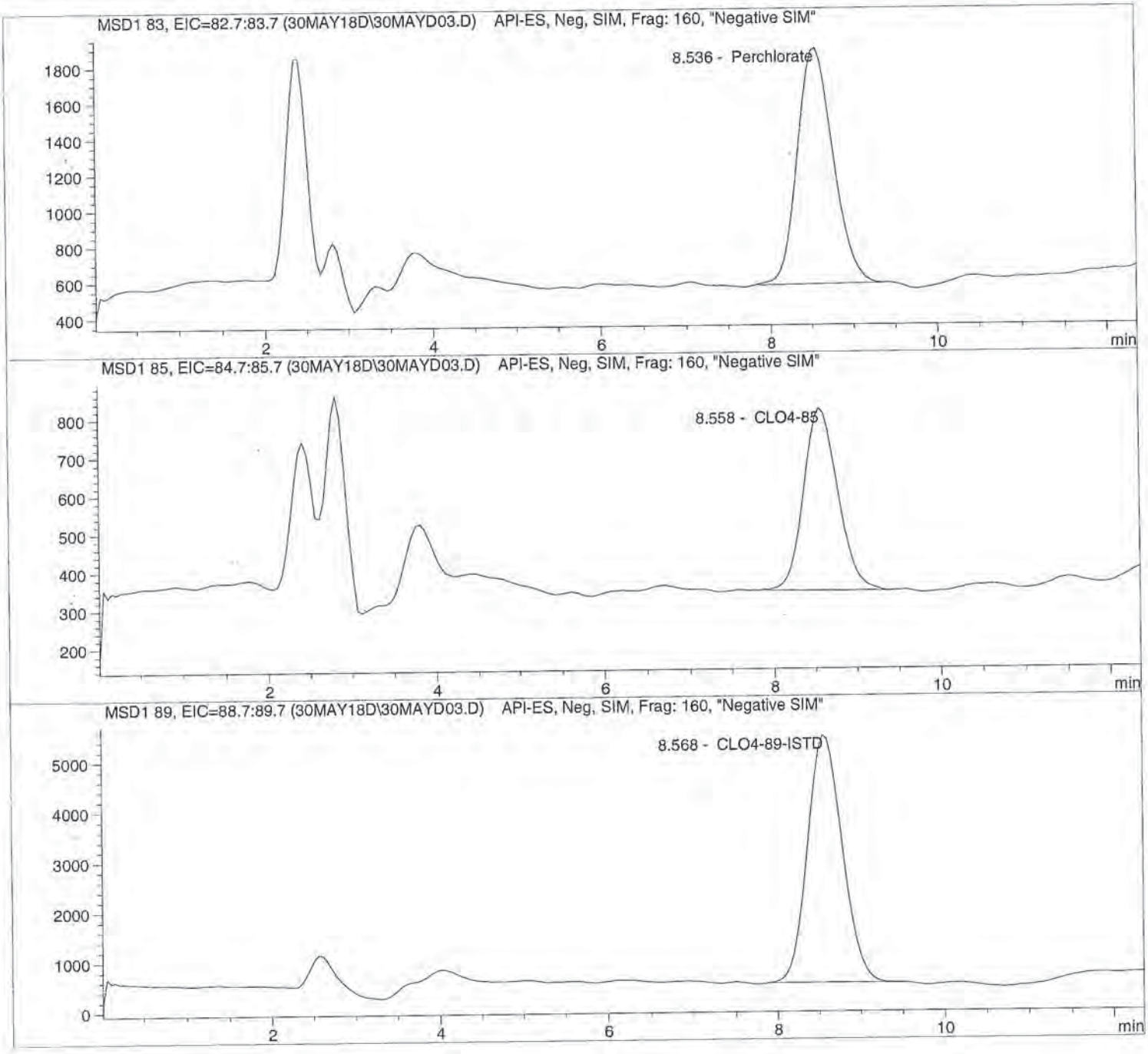
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD03.D Sample Name: 603139 ICS@1.0

Injection Date:	5/30/2018 09:02:54	Seq Line:	3
Sample Name:	603139 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD03.D Sample Name: 603139 ICS@1.0

Injection Date:	5/30/2018 09:02:54	Seq Line:	3
Sample Name:	603139 ICS@1.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.536	BBA	39258.5	1.2435	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.558	BBA	13679.9	1.2371	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.568	PBA	143388.5	5.0000	CLO4-89-ISTD

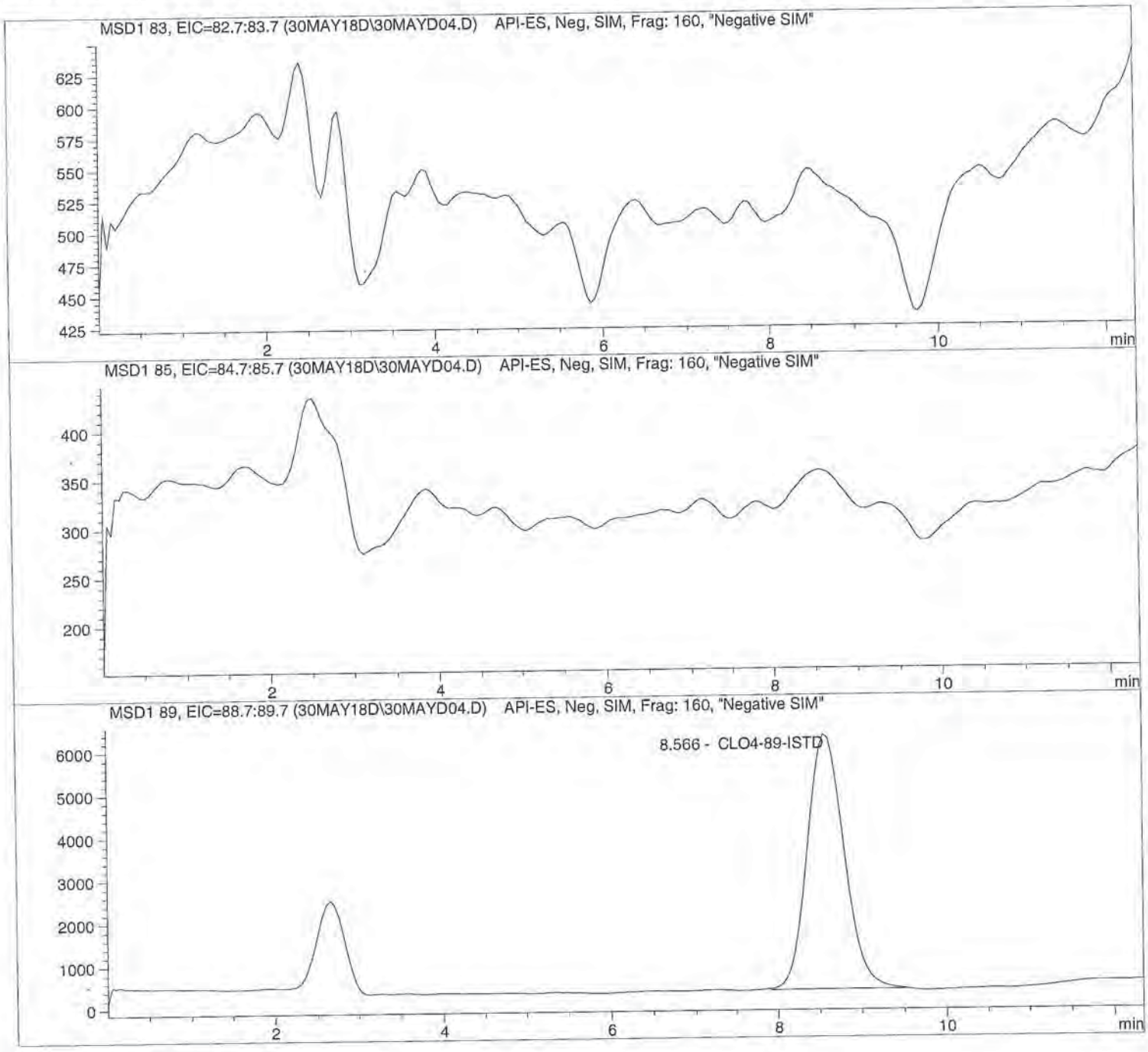
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD04.D Sample Name: 603140 LMB

Injection Date:	5/30/2018 09:17:07	Seq Line:	4
Sample Name:	603140 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD04.D Sample Name: 603140 LMB

Injection Date:	5/30/2018 09:17:07	Seq Line:	4
Sample Name:	603140 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.566	BBA	178787.3	5.0000	CLO4-89-ISTD

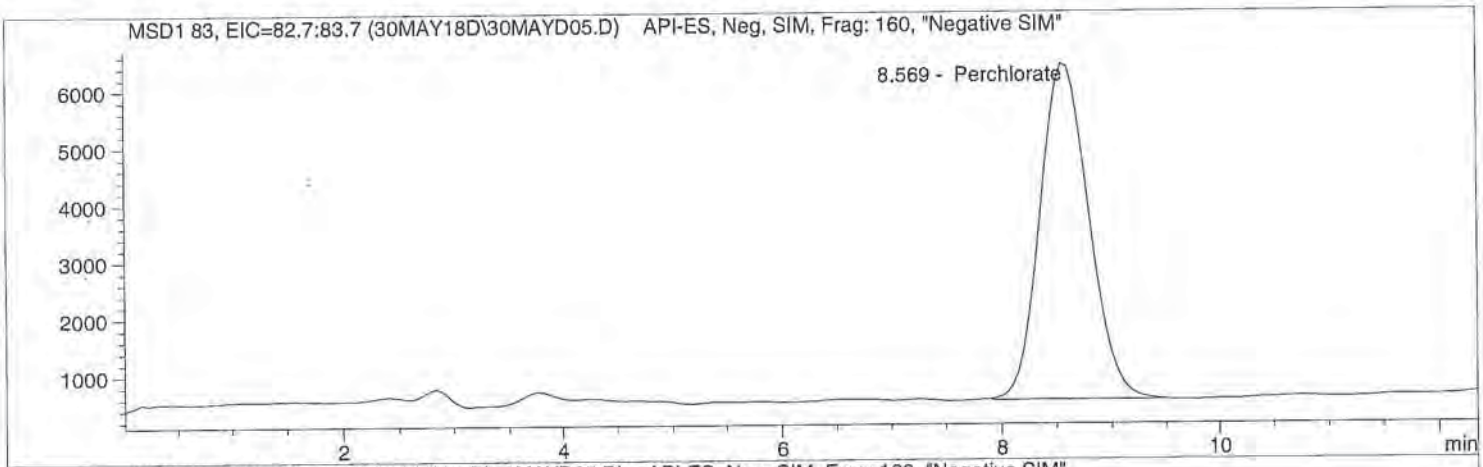
*** End of Report ***

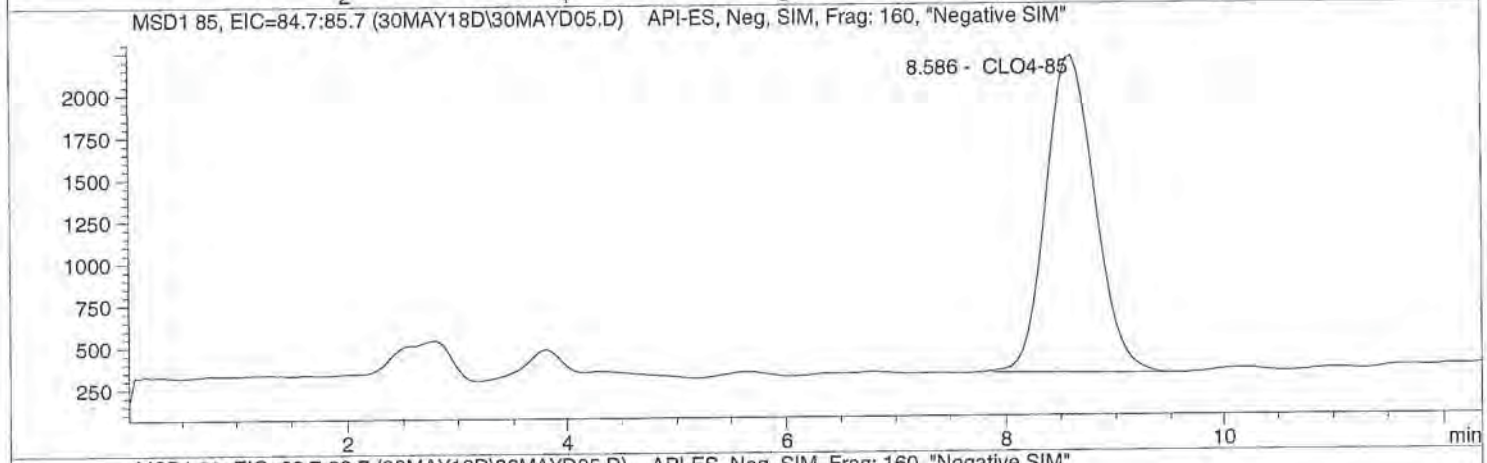
Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD05.D Sample Name: 603141 QC@5

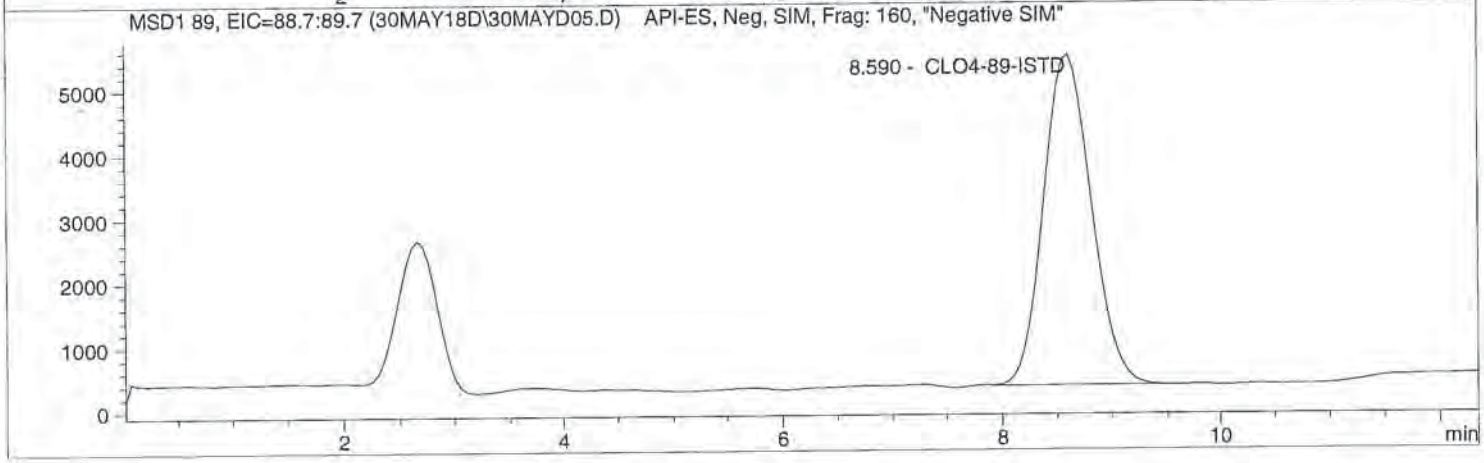
Injection Date:	5/30/2018 09:31:17	Seq Line:	5
Sample Name:	603141 QC@5	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD05.D Sample Name: 603141 QC@5

Injection Date:	5/30/2018 09:31:17	Seq Line:	5
Sample Name:	603141 QC@5	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.569	BBA	180606.1	5.3033	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.586	BBA	58274.0	5.2655	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.590	BBA	155079.4	5.0000	CLO4-89-ISTD

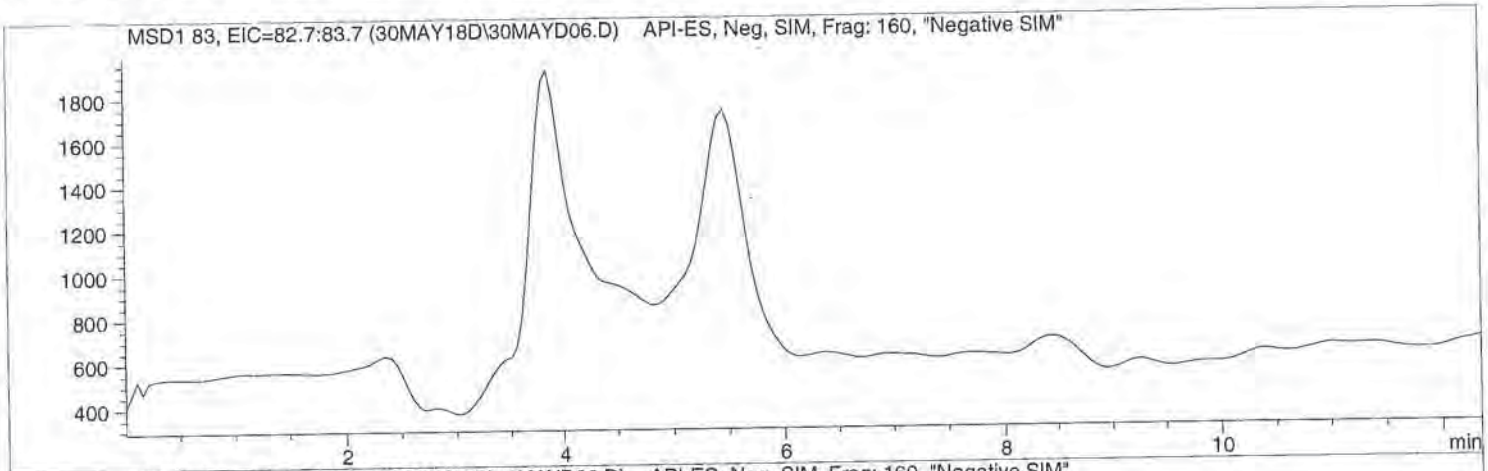
*** End of Report ***

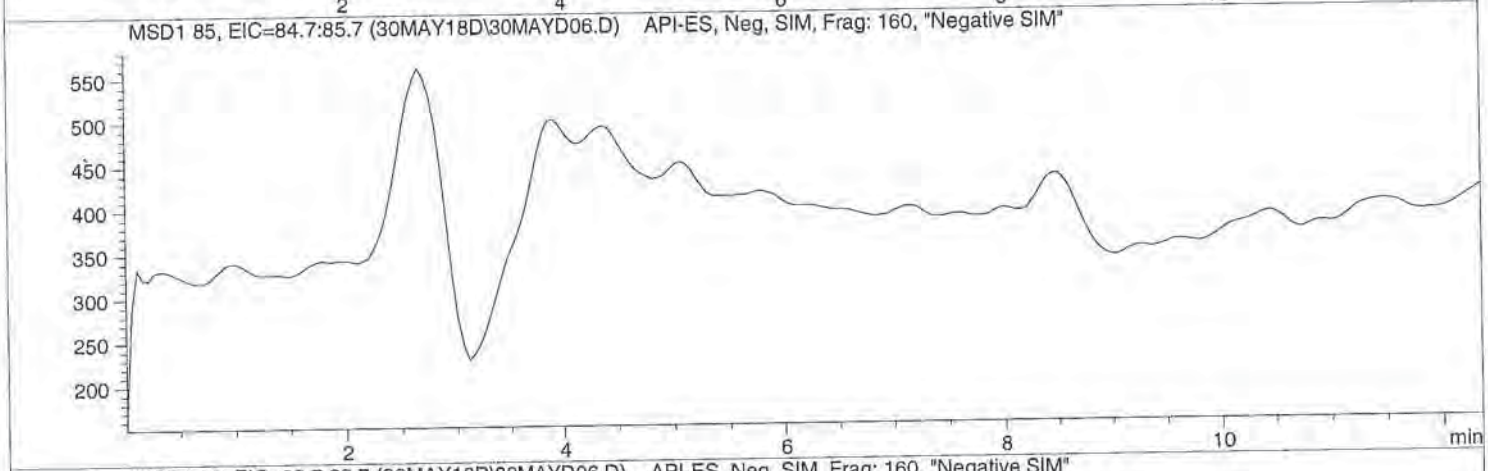
Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD06.D Sample Name: 1813746001

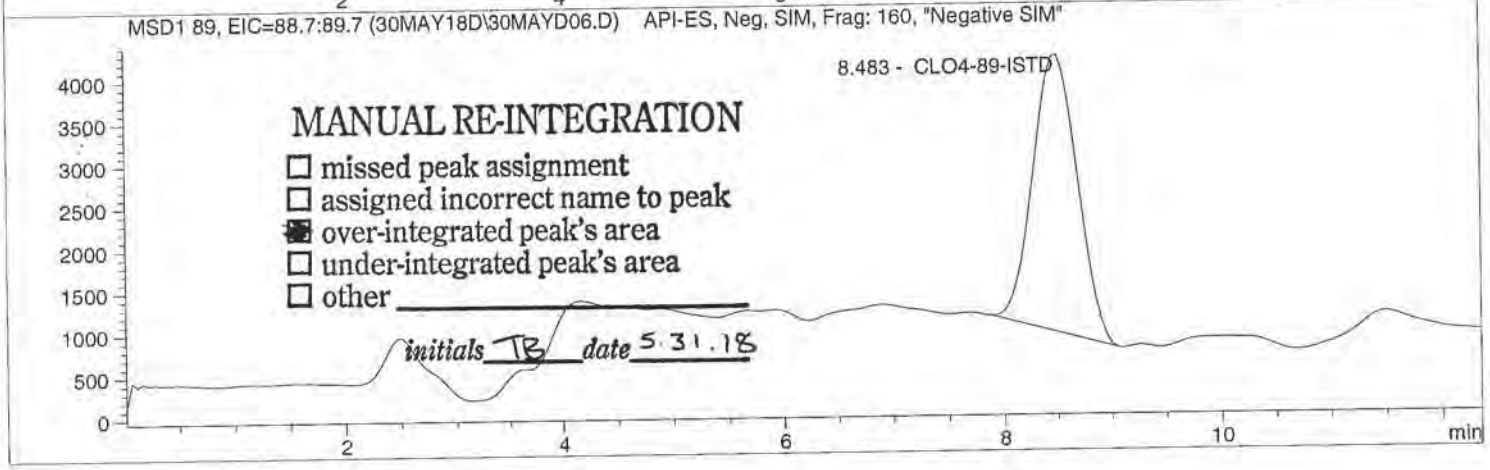
Injection Date:	5/30/2018 09:46:40	Seq Line:	6
Sample Name:	1813746001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

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 TB *date* 5.31.18

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD06.D Sample Name: 1813746001

Injection Date:	5/30/2018 09:46:40	Seq Line:	6
Sample Name:	1813746001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.483	MM	93675.1	5.0000	CLO4-89-ISTD

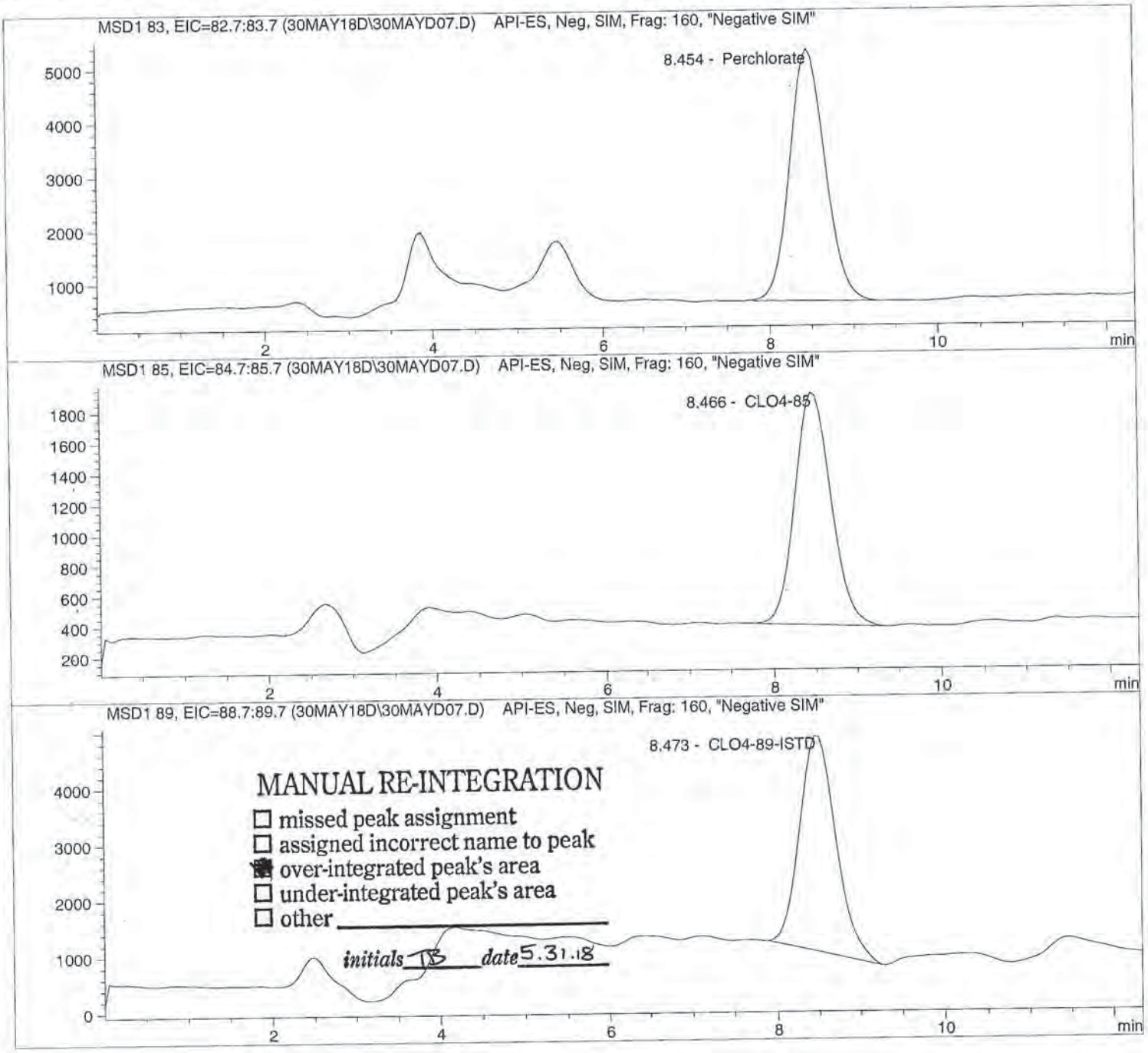
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD07.D Sample Name: 603142 137461S

Injection Date:	5/30/2018 10:00:51	Seq Line:	7
Sample Name:	603142 137461S	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD07.D Sample Name: 603142 137461S

Injection Date:	5/30/2018 10:00:51	Seq Line:	7
Sample Name:	603142 137461S	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.454	BBA	137244.7	5.3885	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.466	BBA	45610.3	5.5140	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.473	MM	115937.6	5.0000	CLO4-89-ISTD

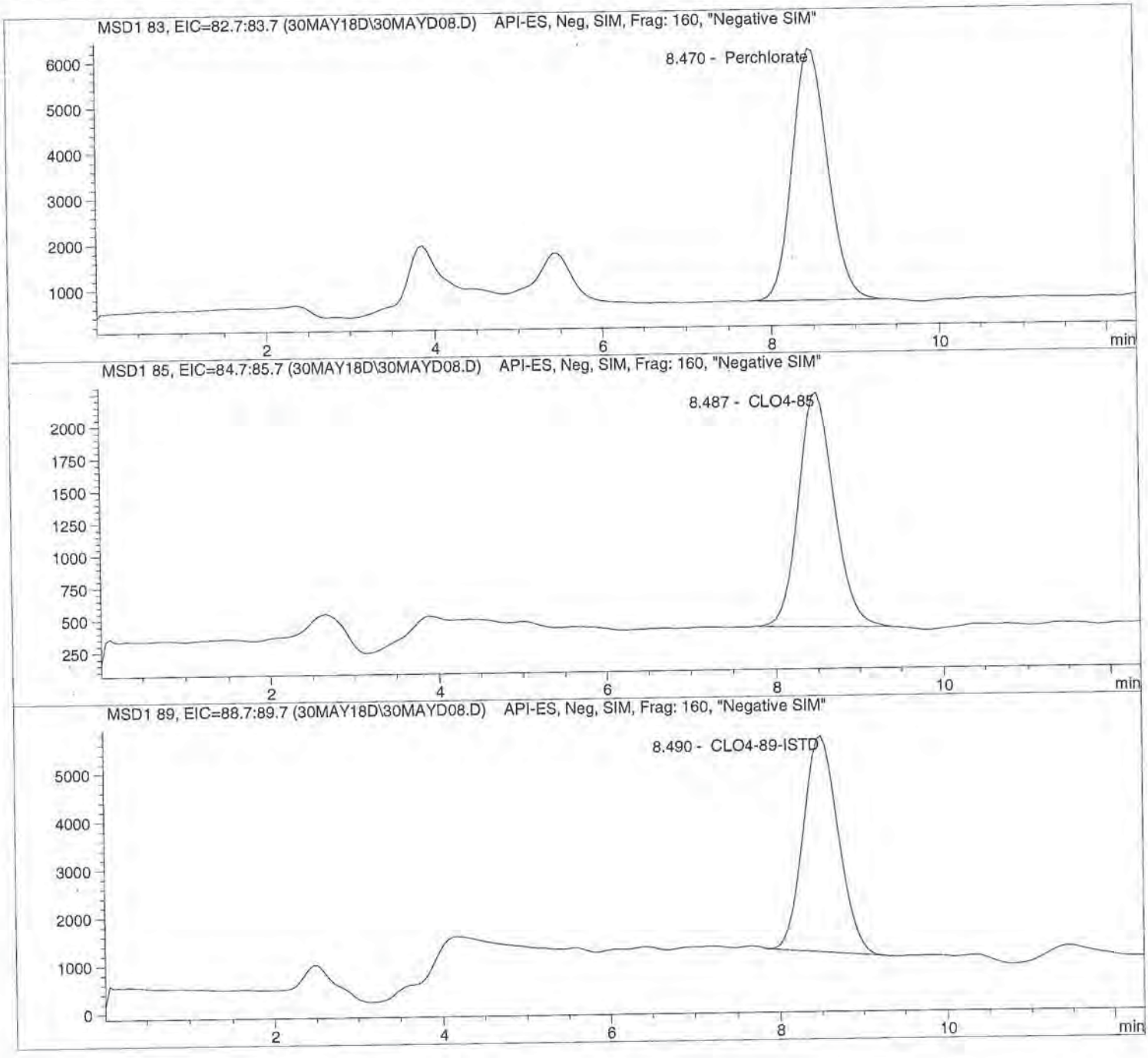
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD08.D Sample Name: 603143 137461D

Injection Date:	5/30/2018 10:15:02	Seq Line:	8
Sample Name:	603143 137461D	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD08.D Sample Name: 603143 137461D

Injection Date:	5/30/2018 10:15:02	Seq Line:	8
Sample Name:	603143 137461D	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.470	BBA	161939.0	5.5796	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.487	BBA	53879.7	5.7219	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.490	BBA	131997.7	5.0000	CLO4-89-ISTD

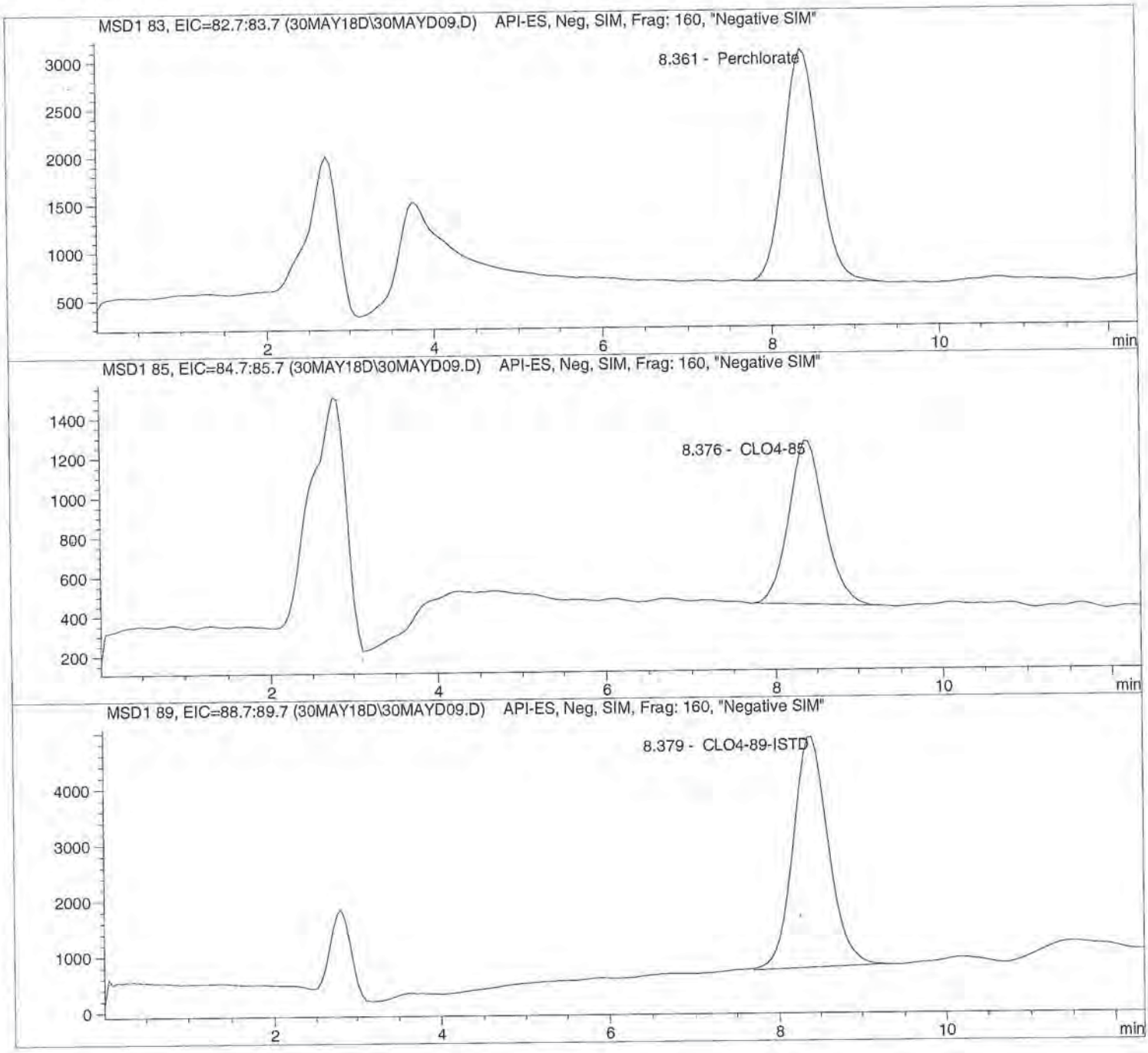
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD09.D Sample Name: 1813746002

Injection Date:	5/30/2018 10:29:13	Seq Line:	9
Sample Name:	1813746002	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD09.D Sample Name: 1813746002

Injection Date:	5/30/2018 10:29:13	Seq Line:	9
Sample Name:	1813746002	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.361	PBA	71456.0	2.6640	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.376	PBA	24960.2	2.7977	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.379	BBA	123091.3	5.0000	CLO4-89-ISTD

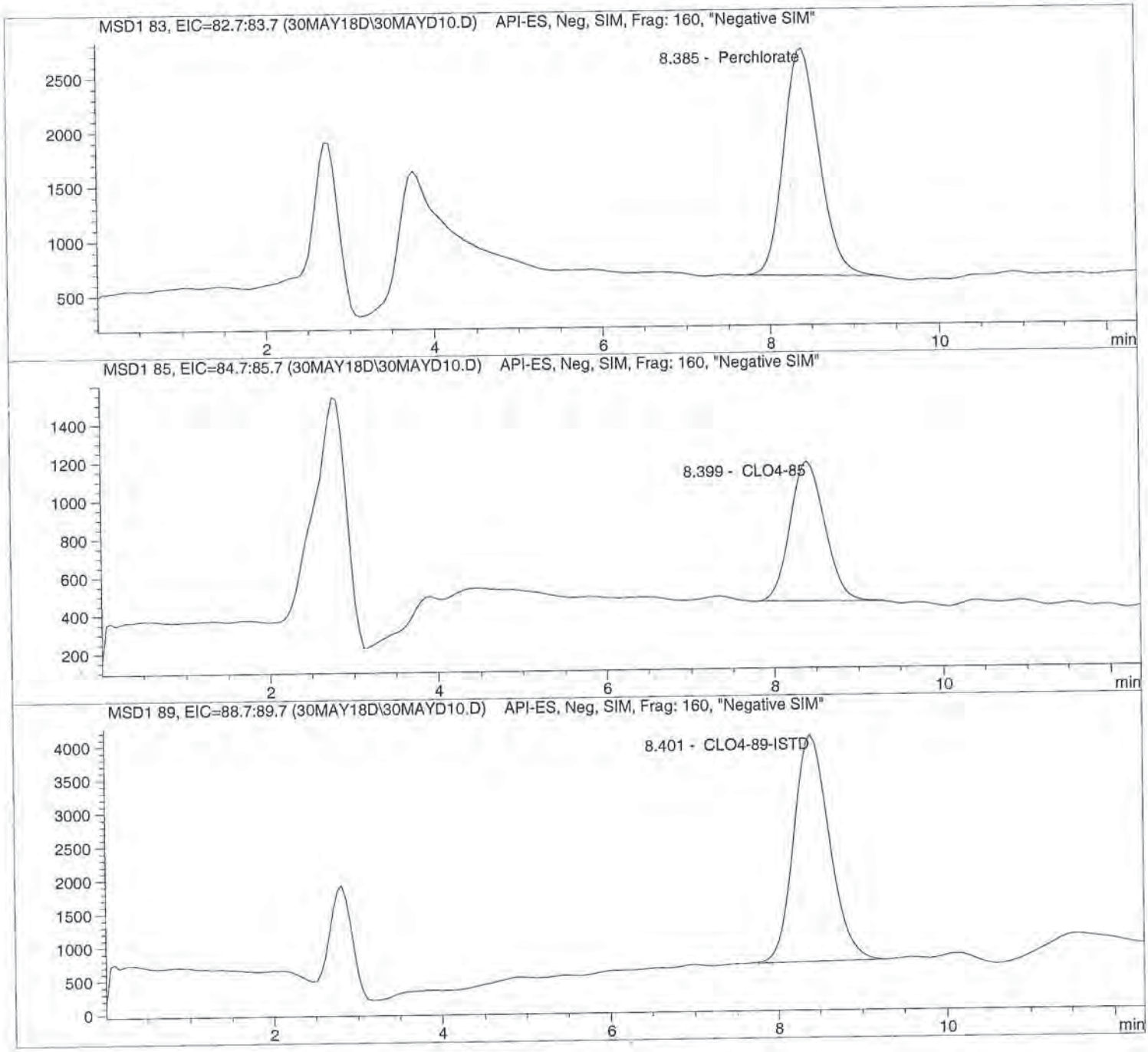
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD10.D Sample Name: 1813746003

Injection Date:	5/30/2018 10:43:22	Seq Line:	10
Sample Name:	1813746003	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD10.D Sample Name: 1813746003

Injection Date:	5/30/2018 10:43:22	Seq Line:	10
Sample Name:	1813746003	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.385	BBA	61204.6	2.8029	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.399	PBA	21032.4	2.9002	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.401	BBA	100207.8	5.0000	CLO4-89-ISTD

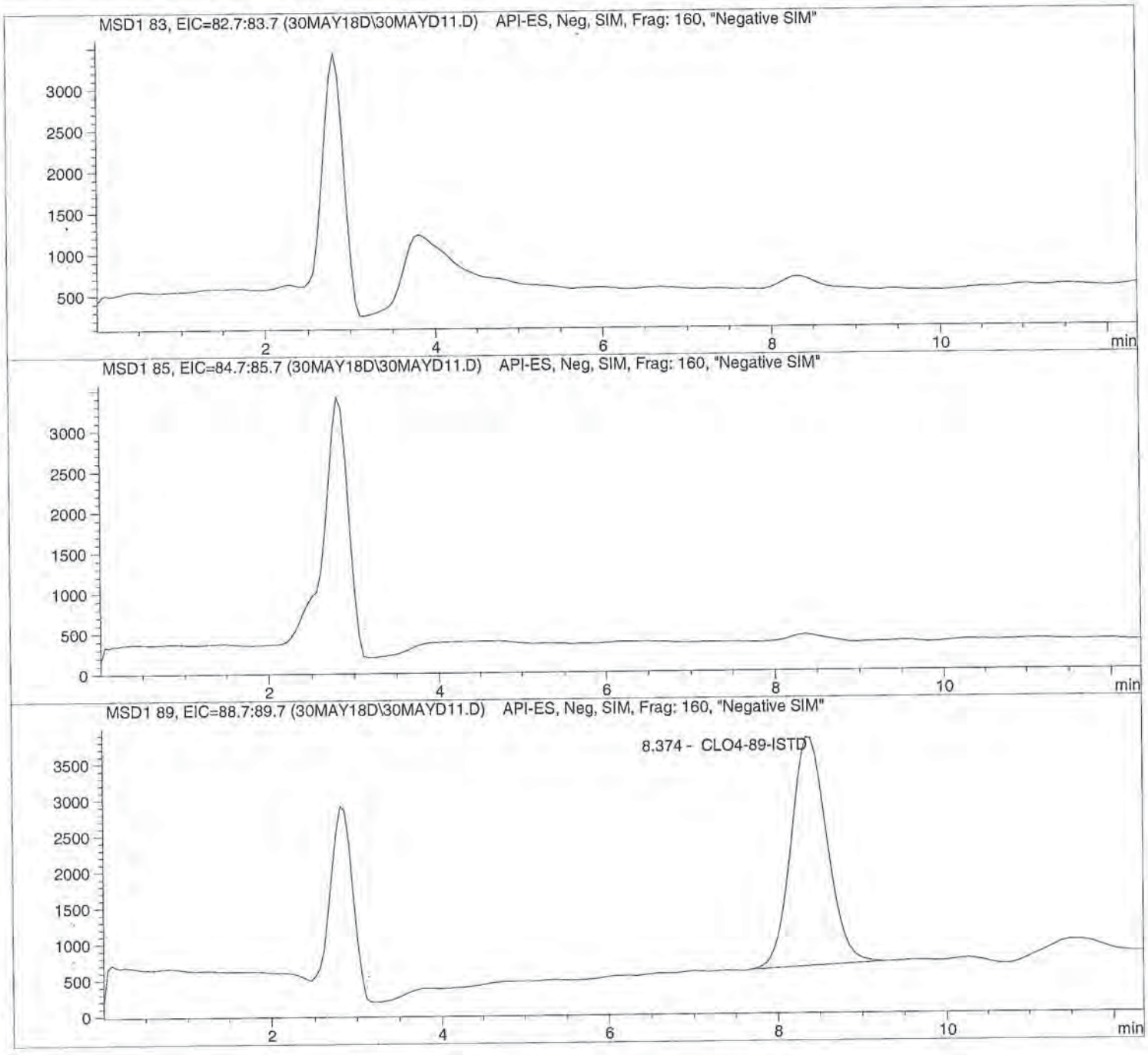
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD11.D Sample Name: 1813746004

Injection Date:	5/30/2018 10:57:34	Seq Line:	11
Sample Name:	1813746004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD11.D Sample Name: 1813746004

Injection Date:	5/30/2018 10:57:34	Seq Line:	11
Sample Name:	1813746004	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 2. Apr. 2018, 11:32:41 am
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
8.374	PBA	93868.6	5.0000	CLO4-89-ISTD

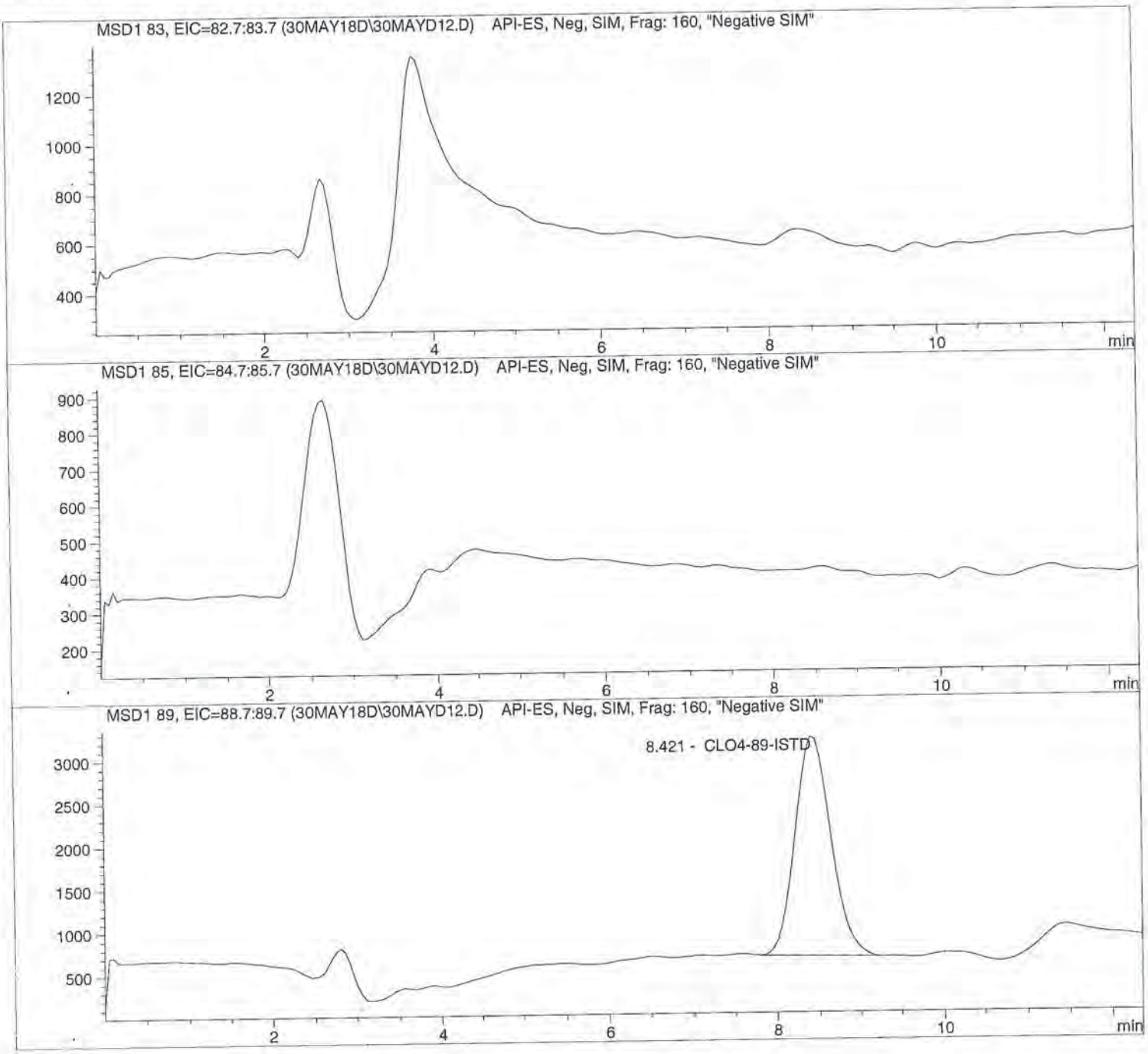
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD12.D Sample Name: 1813746005

Injection Date:	5/30/2018 11:11:41	Seq Line:	12
Sample Name:	1813746005	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD12.D Sample Name: 1813746005

Injection Date:	5/30/2018 11:11:41	Seq Line:	12
Sample Name:	1813746005	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 2. Apr. 2018, 11:32:41 am
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
8.421	BBA	74883.0	5.0000	CLO4-89-ISTD

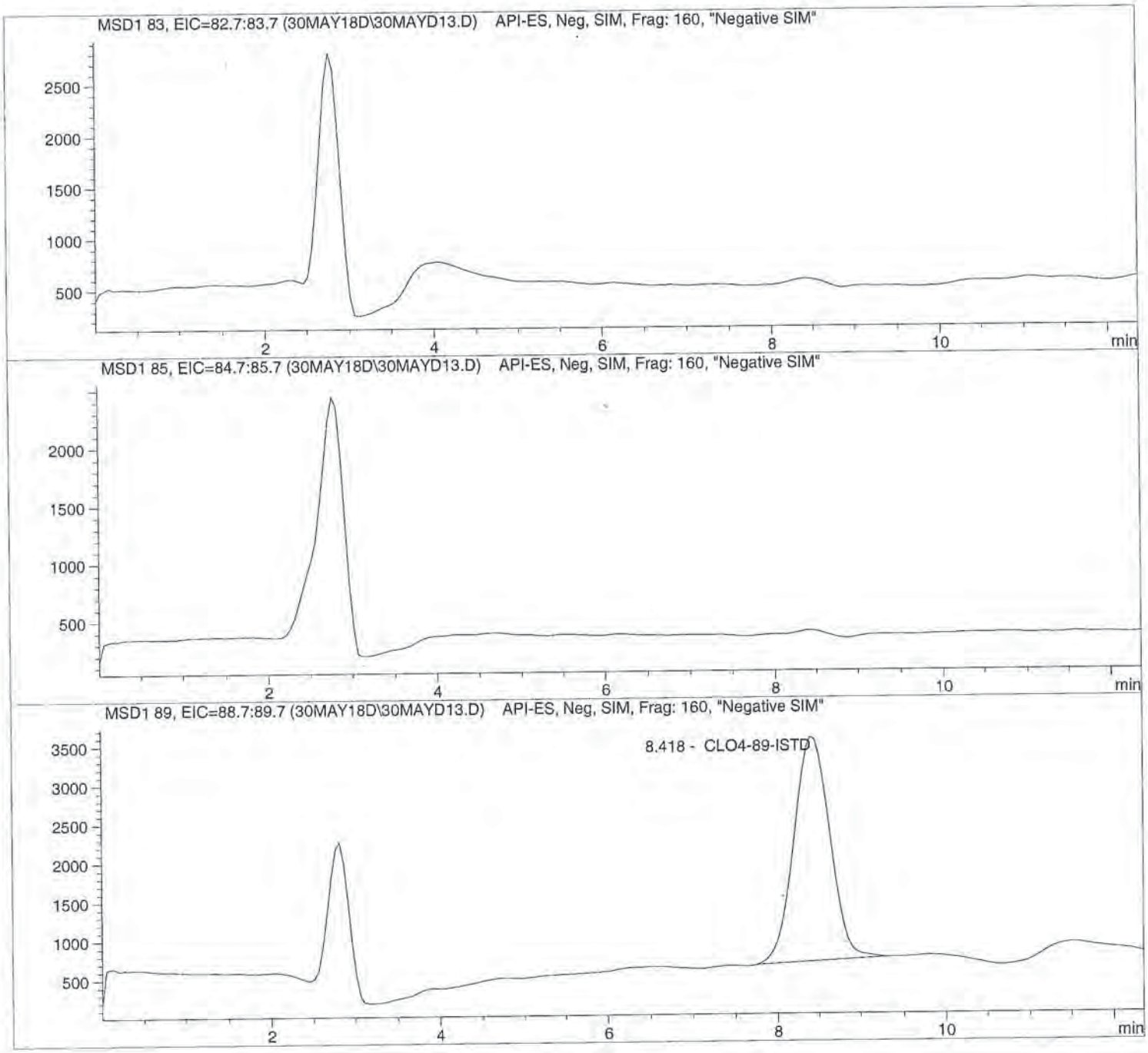
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD13.D Sample Name: 1813746006

Injection Date:	5/30/2018 11:25:48	Seq Line:	13
Sample Name:	1813746006	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD13.D Sample Name: 1813746006

Injection Date:	5/30/2018 11:25:48	Seq Line:	13
Sample Name:	1813746006	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.418	PBA	86717.4	5.0000	CLO4-89-ISTD

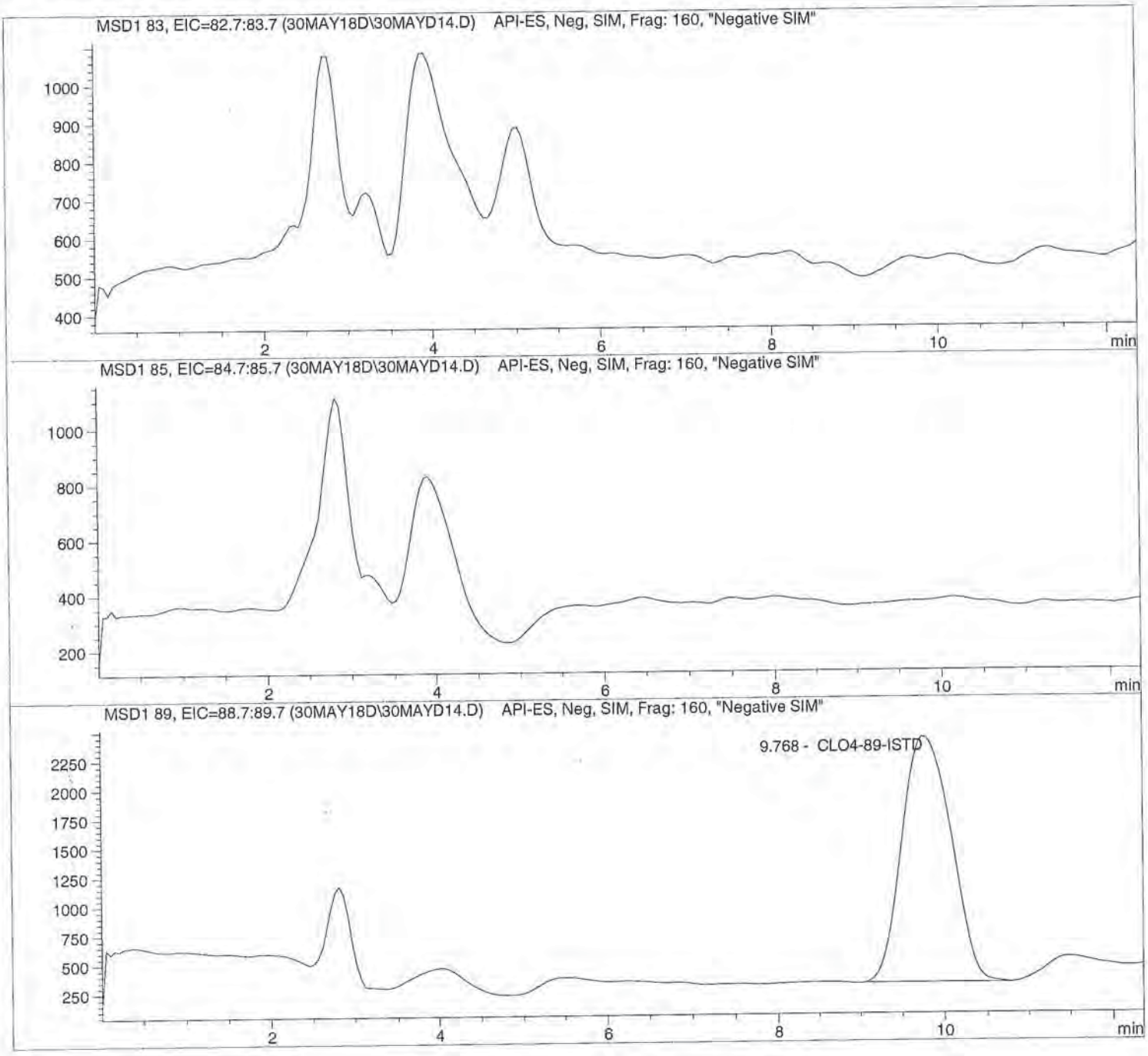
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD14.D Sample Name: 1814144001

Injection Date:	5/30/2018 11:39:56	Seq Line:	14
Sample Name:	1814144001	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD14.D Sample Name: 1814144001

Injection Date:	5/30/2018 11:39:56	Seq Line:	14
Sample Name:	1814144001	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
9.768	PBA	85310.4	5.0000	CLO4-89-ISTD

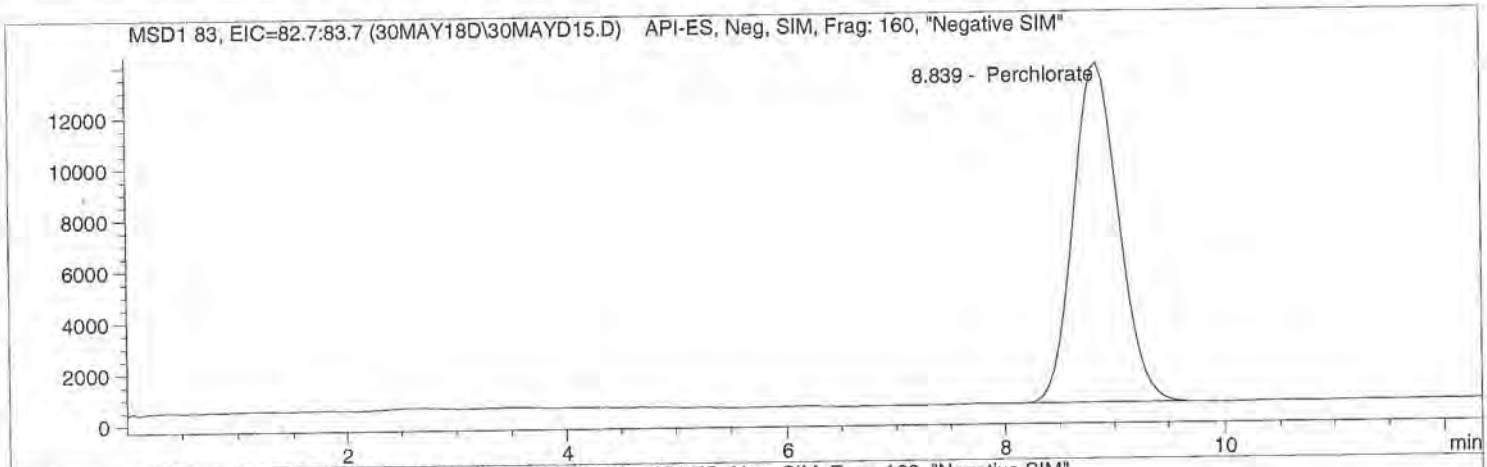
*** End of Report ***

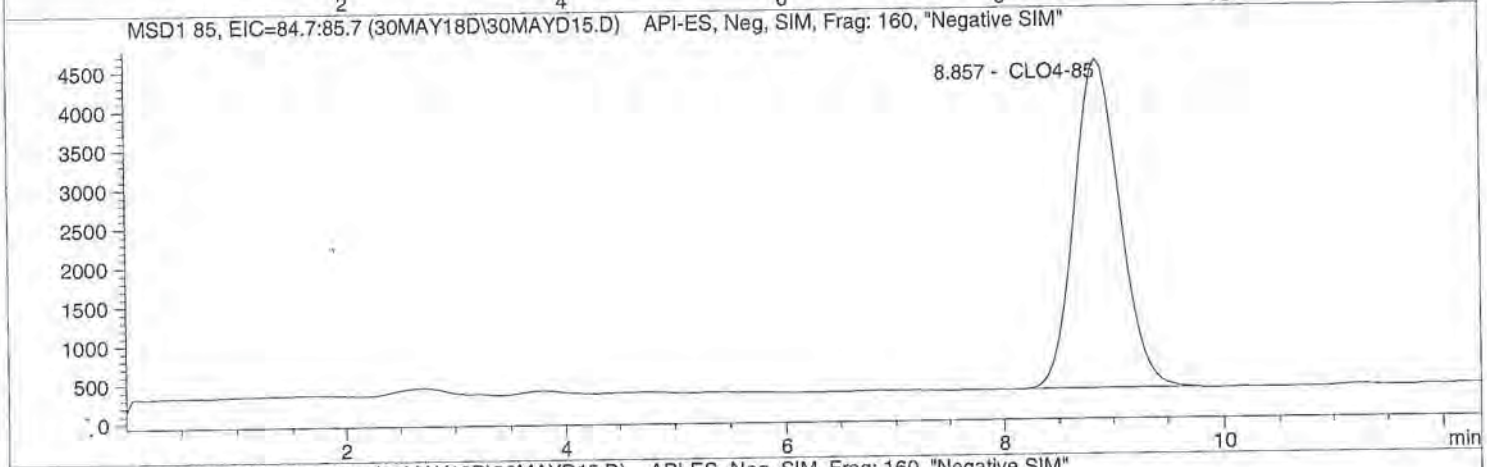
Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD15.D Sample Name: 1814932001 1K

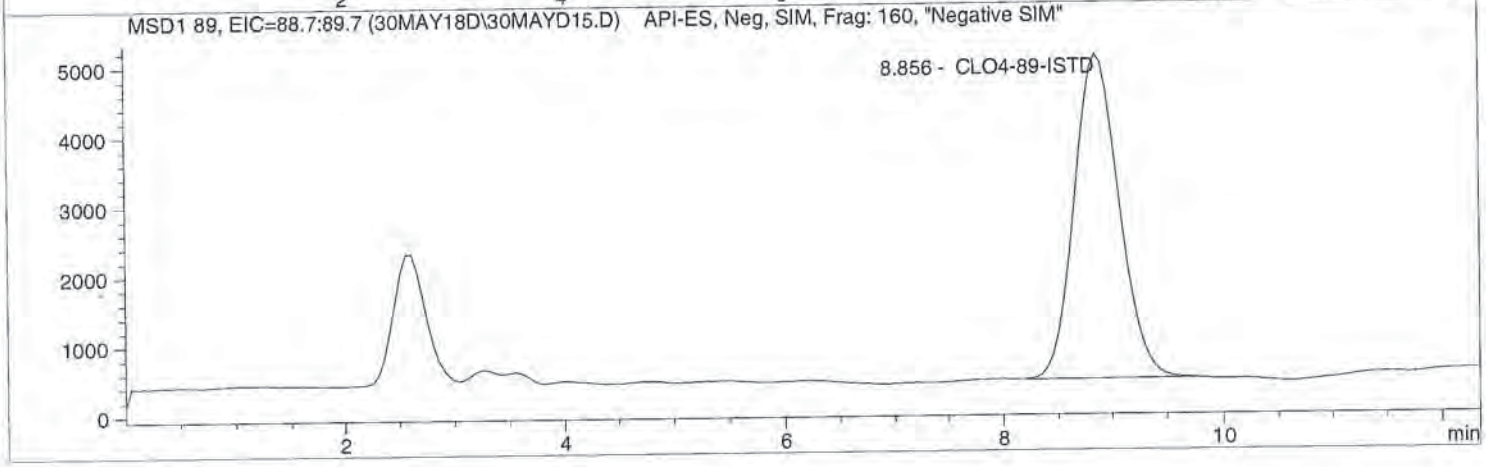
Injection Date:	5/30/2018 11:54:05	Seq Line:	15
Sample Name:	1814932001 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD15.D Sample Name: 1814932001 1K

Injection Date:	5/30/2018 11:54:05	Seq Line:	15
Sample Name:	1814932001 1K	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.839	PBA	384295.5	12466.0215	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.857	BBA	123789.8	12635.9492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.856	BBA	135180.3	5000.0000	CLO4-89-ISTD

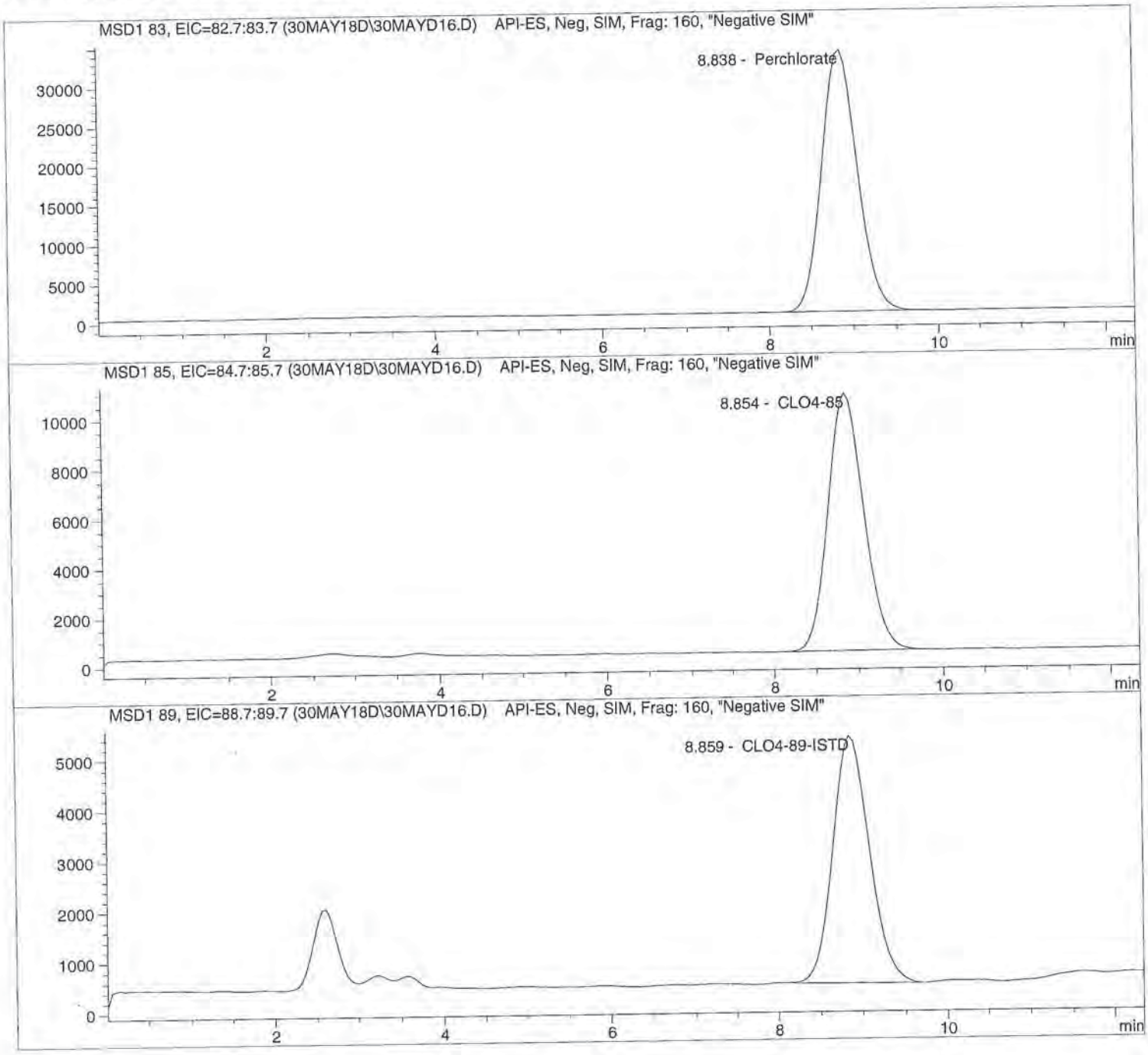
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD16.D Sample Name: 603144 CCV@25

Injection Date:	5/30/2018 12:08:16	Seq Line:	16
Sample Name:	603144 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD16.D Sample Name: 603144 CCV@25

Injection Date:	5/30/2018 12:08:16	Seq Line:	16
Sample Name:	603144 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.838	BBA	975034.7	26.9041	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.854	PBA	307089.1	27.2648	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.859	BBA	146863.3	5.0000	CLO4-89-ISTD

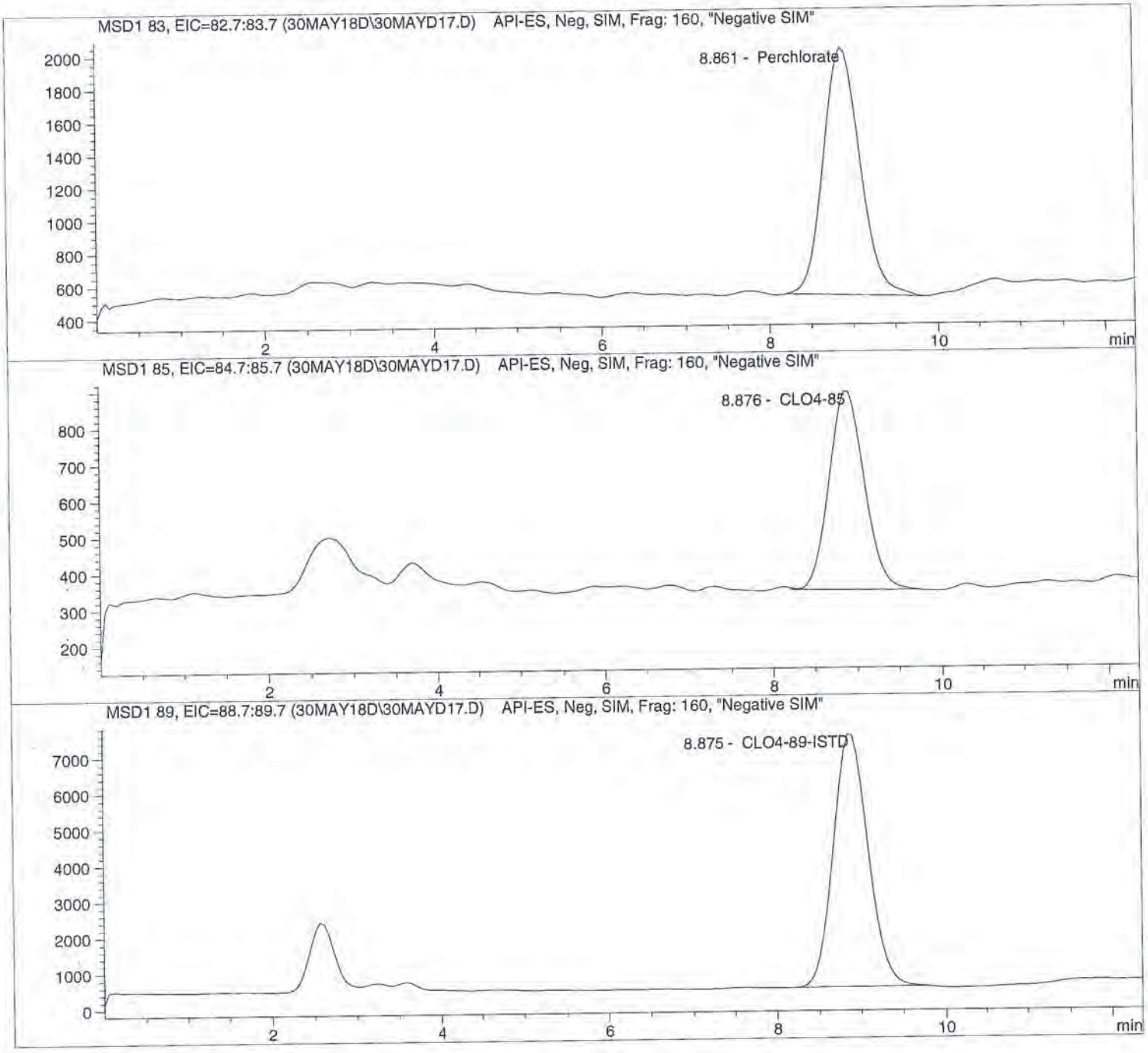
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD17.D Sample Name: 603145 LODV@1.

Injection Date:	5/30/2018 12:22:22	Seq Line:	17
Sample Name:	603145 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD17.D Sample Name: 603145 LODV@1.

Injection Date:	5/30/2018 12:22:22	Seq Line:	17
Sample Name:	603145 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.861	PBA	45781.8	1.0121	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.876	BBA	16048.1	0.9913	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.875	PBA	204081.9	5.0000	CLO4-89-ISTD

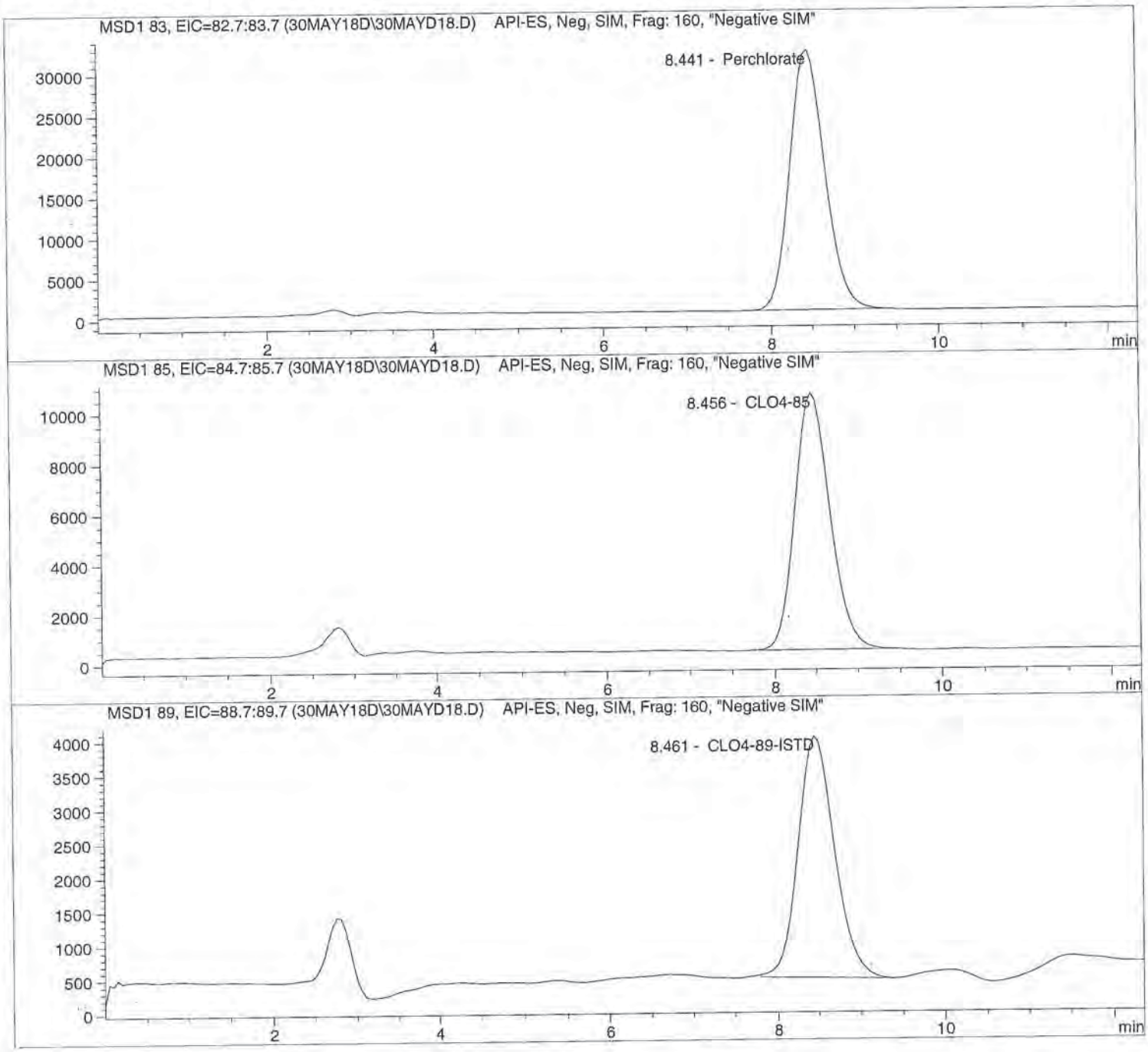
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD18.D Sample Name: 1814934001

Injection Date:	5/30/2018 12:36:32	Seq Line:	18
Sample Name:	1814934001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD18.D Sample Name: 1814934001

Injection Date:	5/30/2018 12:36:32	Seq Line:	18
Sample Name:	1814934001	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.441	PBA	932498.9	33.8766	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.456	BBA	300524.9	35.2906	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.461	BBA	107551.7	5.0000	CLO4-89-ISTD

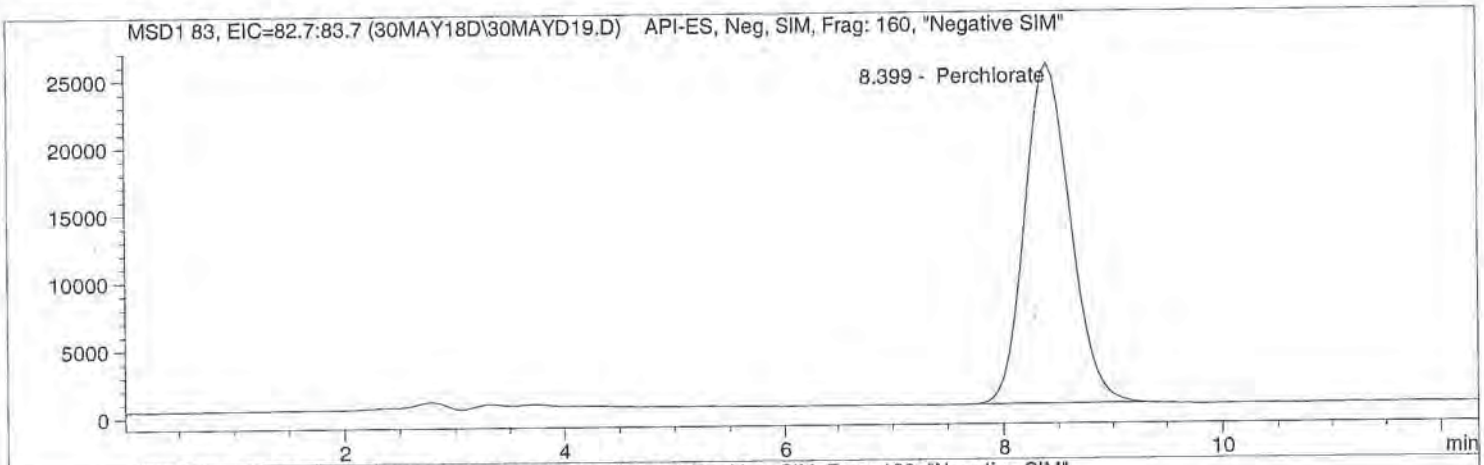
*** End of Report ***

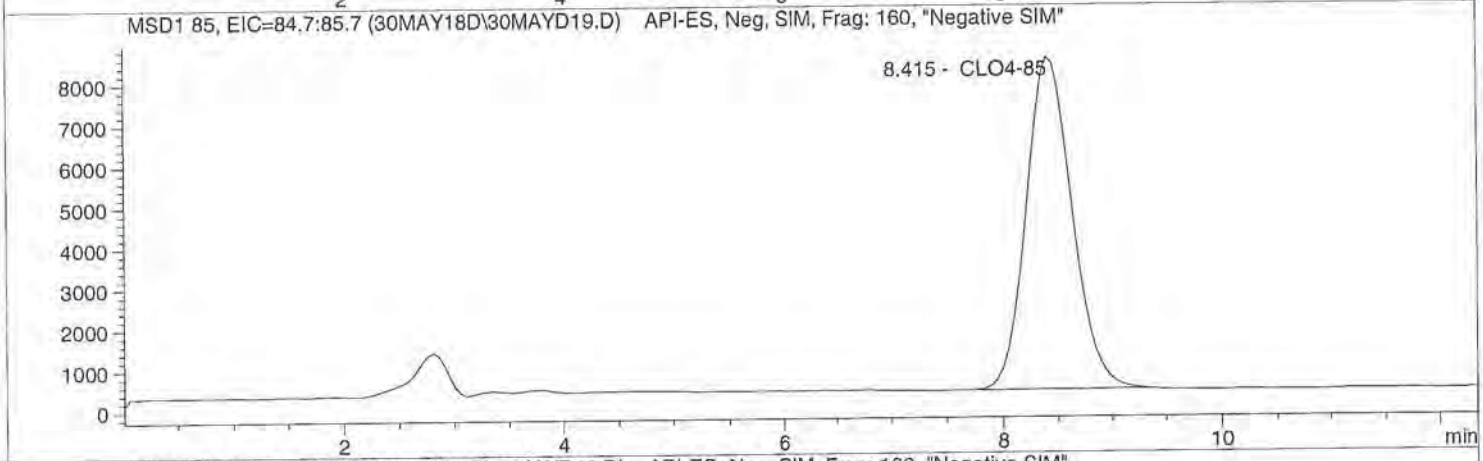
Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD19.D Sample Name: 1814935001

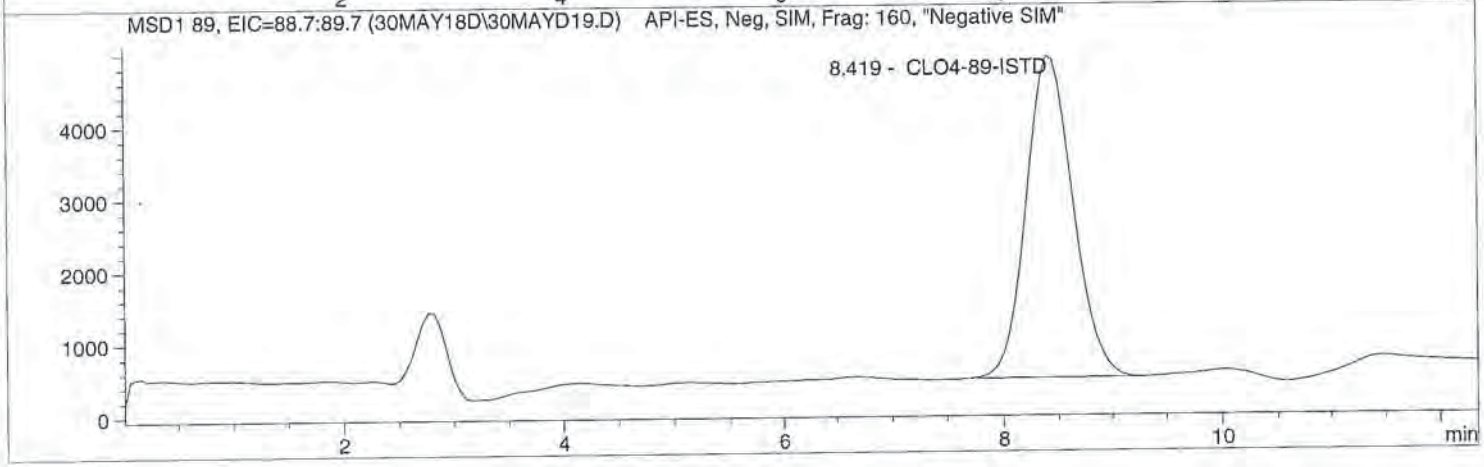
Injection Date:	5/30/2018 12:50:38	Seq Line:	19
Sample Name:	1814935001	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD19.D Sample Name: 1814935001

Injection Date:	5/30/2018 12:50:38	Seq Line:	19
Sample Name:	1814935001	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.399	PBA	725810.6	22.7469	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.415	BBA	236380.5	23.6499	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.419	PBA	132221.0	5.0000	CLO4-89-ISTD

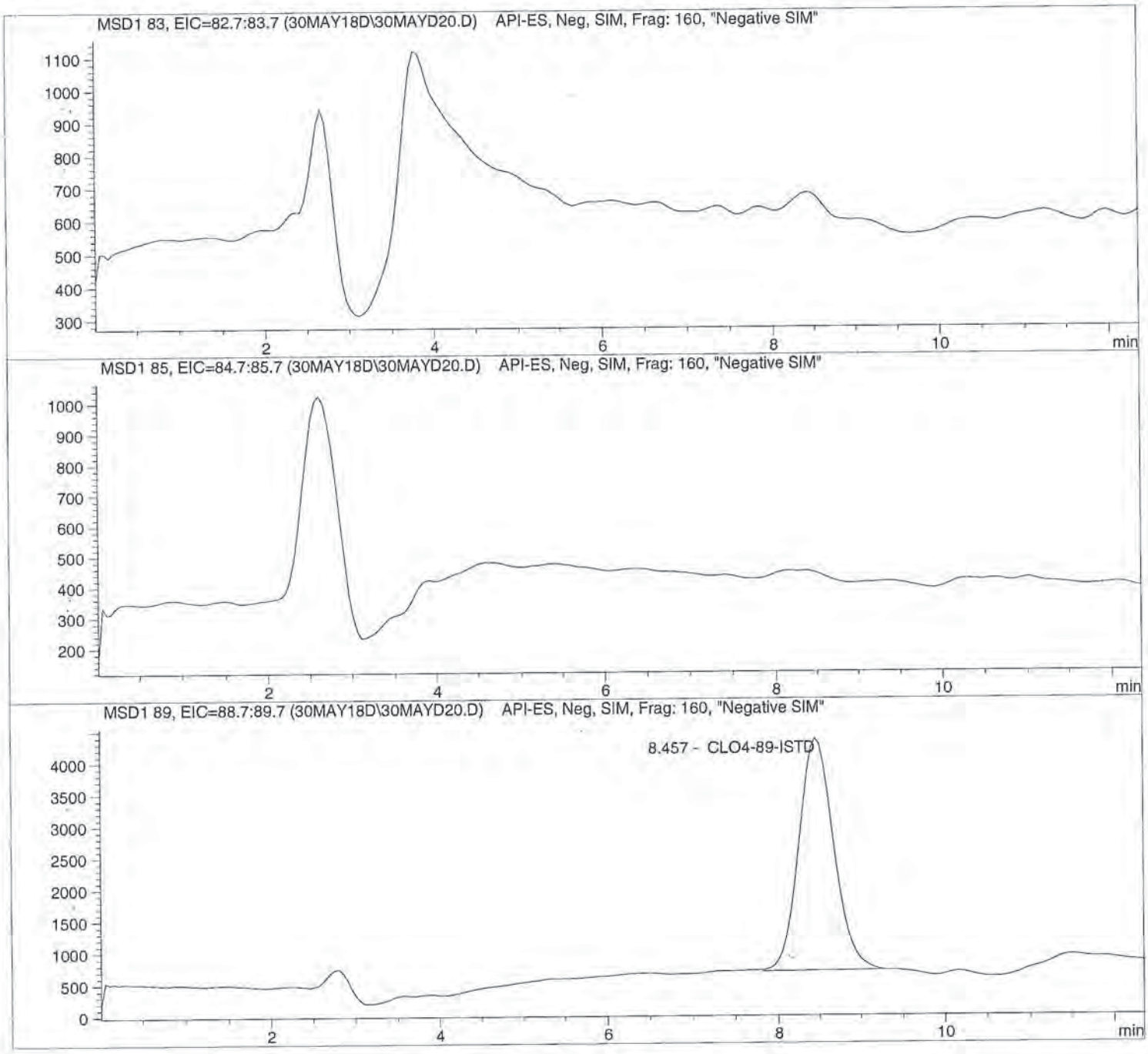
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD20.D Sample Name: 1813746005 RE

Injection Date:	5/30/2018 13:04:47	Seq Line:	20
Sample Name:	1813746005 RE	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD20.D Sample Name: 1813746005 RE

Injection Date:	5/30/2018 13:04:47	Seq Line:	20
Sample Name:	1813746005 RE	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.457	BBA	107709.2	5.0000	CLO4-89-ISTD

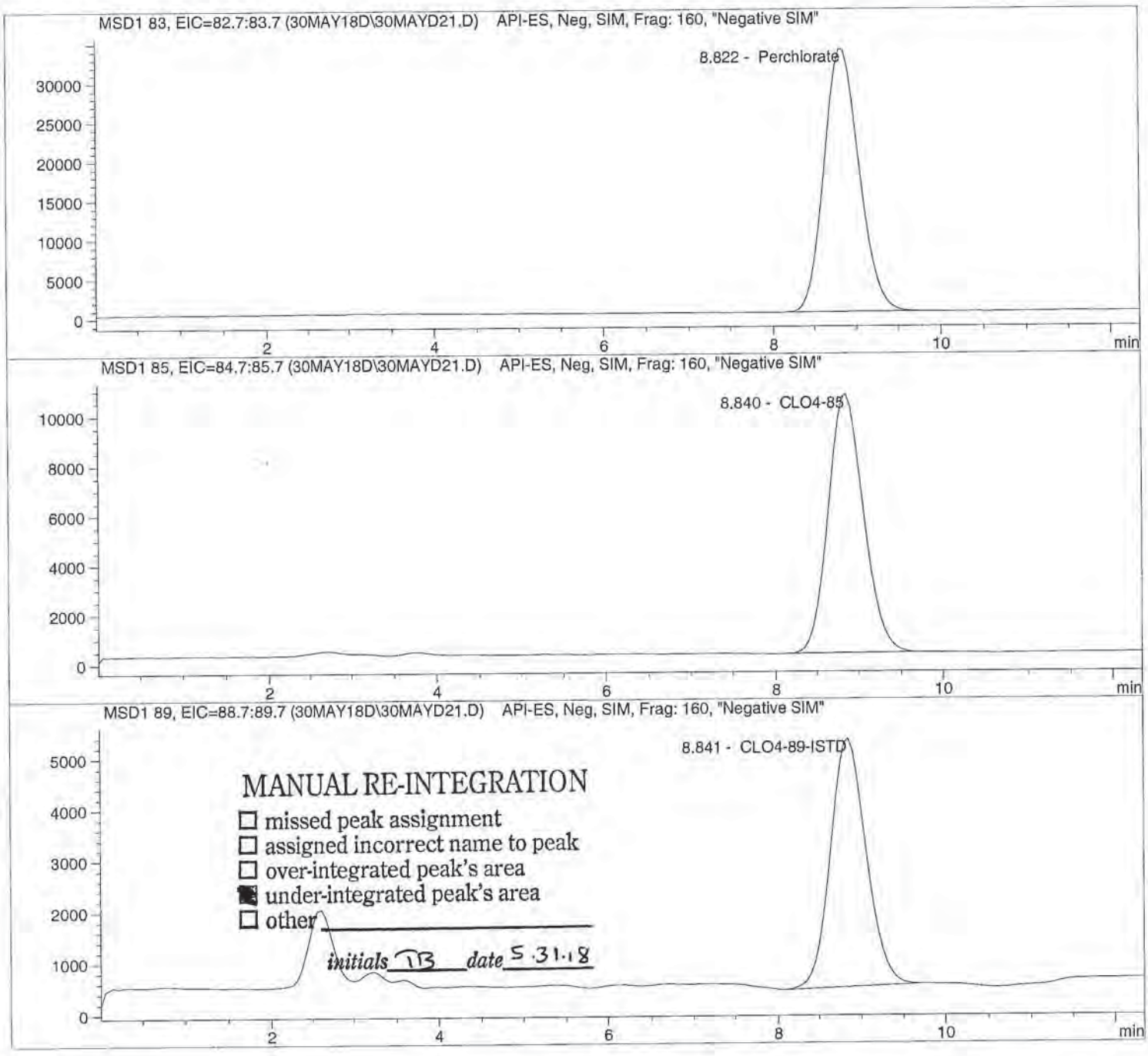
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD21.D Sample Name: 603231 CCV@25

Injection Date:	5/30/2018 13:18:56	Seq Line:	21
Sample Name:	603231 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD21.D Sample Name: 603231 CCV@25

Injection Date:	5/30/2018 13:18:56	Seq Line:	21
Sample Name:	603231 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.822	PBA	974747.6	27.3937	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.840	PBA	303819.0	27.5173	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.841	MM	143821.2	5.0000	CLO4-89-ISTD

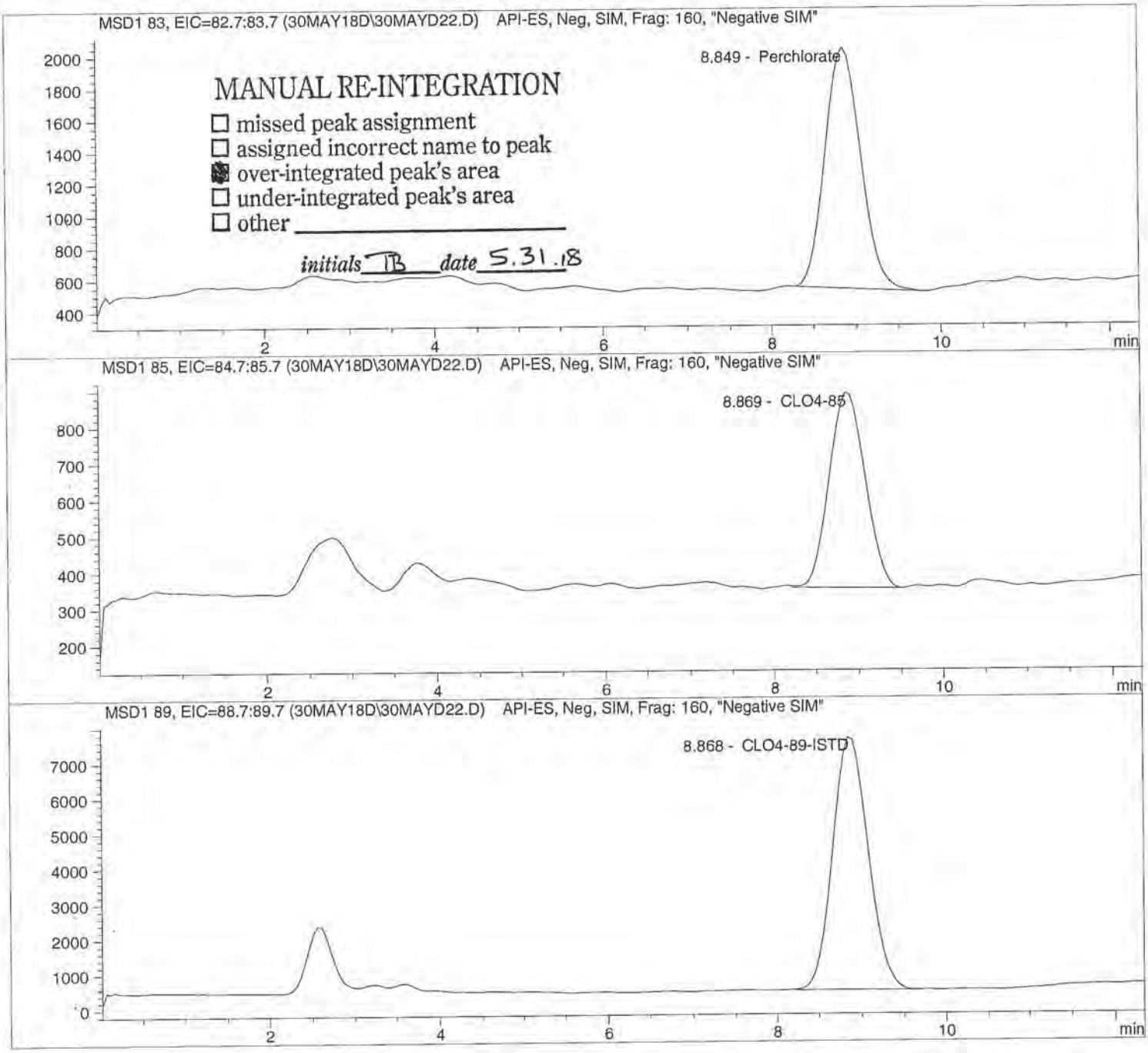
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD22.D Sample Name: 603232 LODV@1.

Injection Date:	5/30/2018 13:33:11	Seq Line:	22
Sample Name:	603232 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD22.D Sample Name: 603232 LODV@1.

Injection Date:	5/30/2018 13:33:11	Seq Line:	22
Sample Name:	603232 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.849	MM	43833.2	0.9482	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.869	BBA	15702.2	0.9449	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.868	BBA	208034.0	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Batch Report: C:\HPCHEM\1\DATA\02APR18D\02APR18I.B

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

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

#	Sample Location	Inj	SampleType	Run	Perchlorate Area	Perchlorate RT	Perchlorate Amount
*	ICAL1@ 1.0ug/L Vial 71	1	Control	1	4.75217e4	8.805	1.04383
*	ICAL2@ 2.0ug/L Vial 72	1	Control	2	7.57673e4	8.842	1.88584
*	ICAL3@ 5.0ug/L Vial 73	1	Control	3	1.87507e5	8.869	5.06681
*	ICAL4@ 10.ug/L Vial 74	1	Control	4	4.00349e5	8.838	9.89695
*	ICAL5@ 25.ug/L Vial 75	1	Control	5	1.13339e6	8.844	25.44483
*	ICAL6@ 50.ug/L Vial 76	1	Control	6	2.22347e6	8.787	49.47140
*	ICAL7@ 75.ug/L Vial 77	1	Control	7	3.56432e6	8.816	75.20096
*	ICAL Verf@10ug/L Vial 78	1	Control	8	3.99588e5	8.826	10.16984

#	Sample Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	ICAL1@ 1.0ug/L Vial 71	1	Control	1	1.48071e4	8.787	8.93940e-1
*	ICAL2@ 2.0ug/L Vial 72	1	Control	2	2.78914e4	8.863	2.05665
*	ICAL3@ 5.0ug/L Vial 73	1	Control	3	6.40466e4	8.880	5.32040
*	ICAL4@ 10.ug/L Vial 74	1	Control	4	1.32002e5	8.855	10.20400
*	ICAL5@ 25.ug/L Vial 75	1	Control	5	3.49808e5	8.856	25.27336
*	ICAL6@ 50.ug/L Vial 76	1	Control	6	6.58628e5	8.801	48.60374
*	ICAL7@ 75.ug/L Vial 77	1	Control	7	1.06294e6	8.833	75.70015
*	ICAL Verf@10ug/L Vial 78	1	Control	8	1.27530e5	8.845	10.16575

#	Sample Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-ISTD RT	CLO4-89-ISTD Amount
*	ICAL1@ 1.0ug/L Vial 71	1	Control	1	2.05633e5	8.818	5.00000
*	ICAL2@ 2.0ug/L Vial 72	1	Control	2	1.83981e5	8.862	5.00000
*	ICAL3@ 5.0ug/L Vial 73	1	Control	3	1.68695e5	8.888	5.00000
*	ICAL4@ 10.ug/L Vial 74	1	Control	4	1.79911e5	8.861	5.00000
*	ICAL5@ 25.ug/L Vial 75	1	Control	5	1.81917e5	8.865	5.00000
*	ICAL6@ 50.ug/L Vial 76	1	Control	6	1.62538e5	8.808	5.00000
*	ICAL7@ 75.ug/L Vial 77	1	Control	7	1.52621e5	8.841	5.00000
*	ICAL Verf@10ug/L Vial 78	1	Control	8	1.74490e5	8.846	5.00000

*** End of Report ***

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

Calibration Table

Perchlorate

Calib. Data Modified : 4/2/2018 11:32:41 AM

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
8.740	1	1	1.00000	4.75217e4	2.10430e-5		1	Perchlorate
		2	2.00000	7.57673e4	2.63966e-5			
		3	5.00000	1.87507e5	2.66656e-5			
		4	10.00000	4.00349e5	2.49782e-5			
		5	25.00000	1.13339e6	2.20577e-5			
		6	50.00000	2.22347e6	2.24874e-5			
		7	75.00000	3.56432e6	2.10419e-5			
8.787	2	1	1.00000	1.48071e4	6.75351e-5		1	CLO4-85
		2	2.00000	2.78914e4	7.17068e-5			
		3	5.00000	6.40466e4	7.80681e-5			
		4	10.00000	1.32002e5	7.57564e-5			
		5	25.00000	3.49808e5	7.14678e-5			
		6	50.00000	6.58628e5	7.59154e-5			
		7	75.00000	1.06294e6	7.05587e-5			
8.818	3	1	5.00000	2.05633e5	2.43151e-5	+I1		CLO4-89-ISTD
		2	5.00000	1.83981e5	2.71766e-5			
		3	5.00000	1.68695e5	2.96393e-5			
		4	5.00000	1.79911e5	2.77915e-5			
		5	5.00000	1.81917e5	2.74851e-5			
		6	5.00000	1.62538e5	3.07621e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DPR.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		7	5.00000	1.52621e5	3.27608e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 6.650 min To 10.650 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

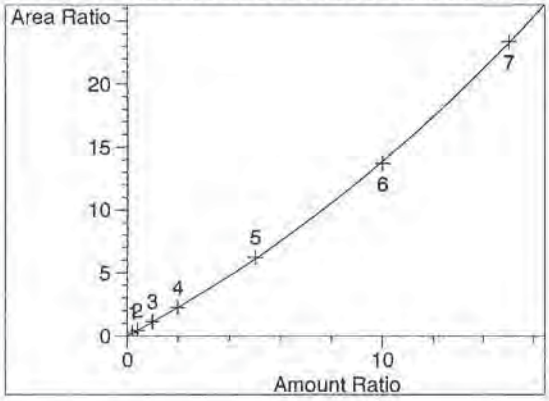
Compound: CLO4-85
- Time Window : From 6.682 min To 10.682 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 0.5
  - Level 3 : 0.2
  - Level 4 : 0.1
  - Level 5 : 0.04
  - Level 6 : 0.02
  - Level 7 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 6.711 min To 10.711 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 1 : 1
  - Level 2 : 1
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1

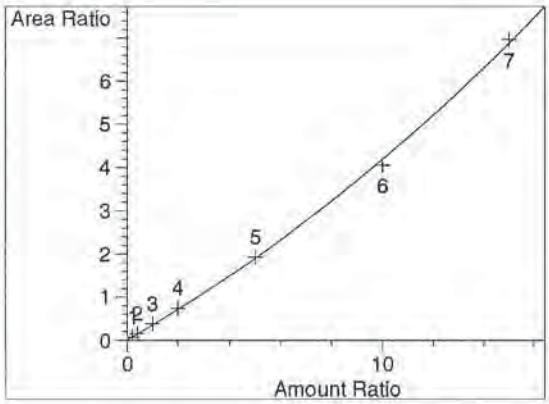
Peak Sum Table

No Entries in table

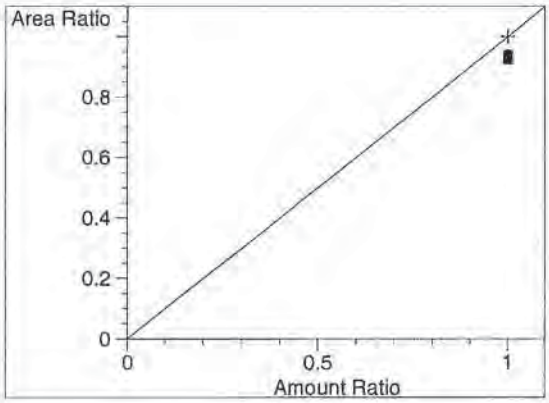
Calibration Curves



Perchlorate at exp. RT: 8.740
MSD1 83, EIC=82.7:83.7
Correlation: 0.99992
Residual Std. Dev.: 0.10616
Formula: $y = ax^2 + bx + c$
a: 3.31374e-2
b: 1.05374
c: 9.66975e-3
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-85 at exp. RT: 8.787
MSD1 85, EIC=84.7:85.7
Correlation: 0.99968
Residual Std. Dev.: 0.07365
Formula: $y = ax^2 + bx + c$
a: 8.04074e-3
b: 3.37521e-1
c: 1.14057e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.1
Level 5 : 0.04
Level 6 : 0.02
Level 7 : 0.013333



CLO4-89-ISTD at exp. RT: 8.818
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 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2018\APR\02APR18D.S

Sequence Table:

Method and Injection Info Part:

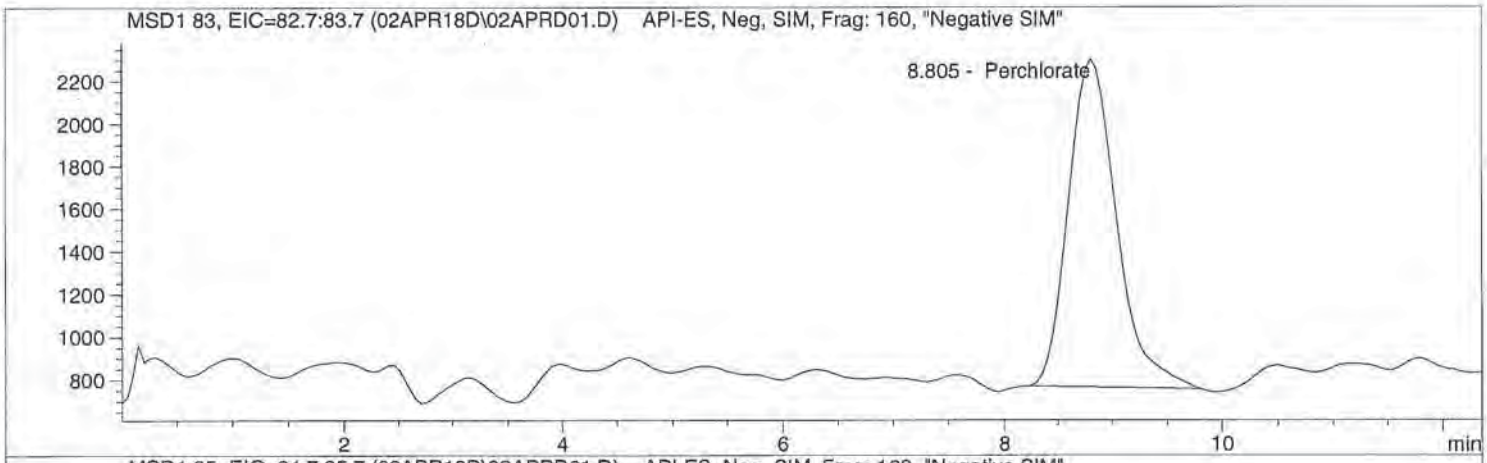
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	ICAL1@ 1.0ug/L	CLO4-DOD	1	Ctrl Samp		
2	Vial 72	ICAL2@ 2.0ug/L	CLO4-DOD	1	Ctrl Samp		
3	Vial 73	ICAL3@ 5.0ug/L	CLO4-DOD	1	Ctrl Samp		
4	Vial 74	ICAL4@ 10.ug/L	CLO4-DOD	1	Ctrl Samp		
5	Vial 75	ICAL5@ 25.ug/L	CLO4-DOD	1	Ctrl Samp		
6	Vial 76	ICAL6@ 50.ug/L	CLO4-DOD	1	Ctrl Samp		
7	Vial 77	ICAL7@ 75.ug/L	CLO4-DOD	1	Ctrl Samp		
8	Vial 78	ICAL Verf@10ug/L	CLO4-DOD	1	Ctrl Samp		

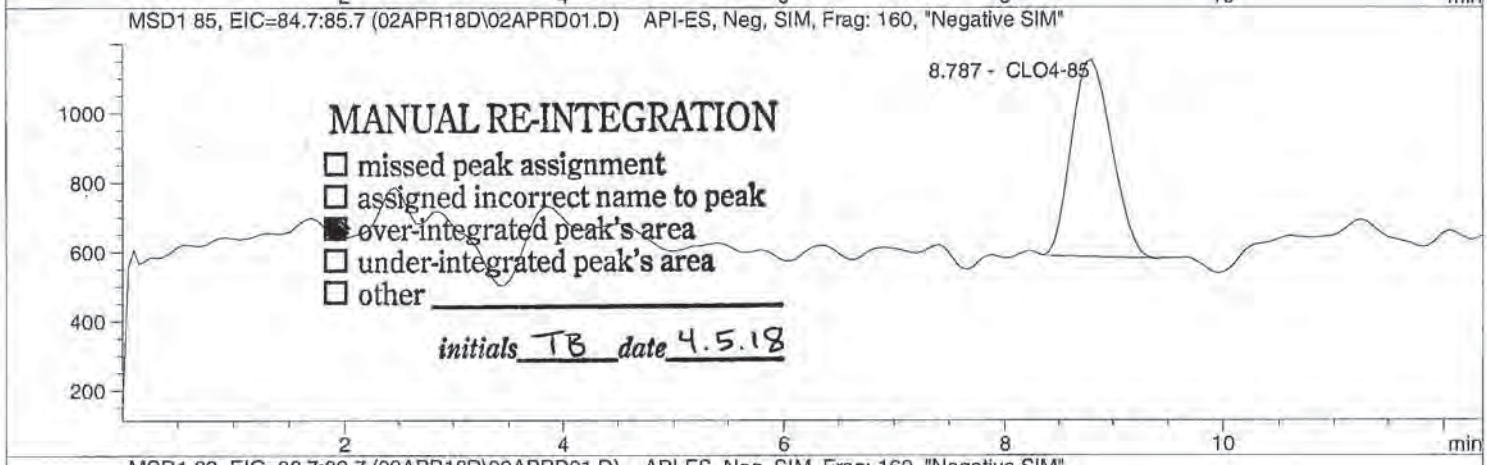
Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

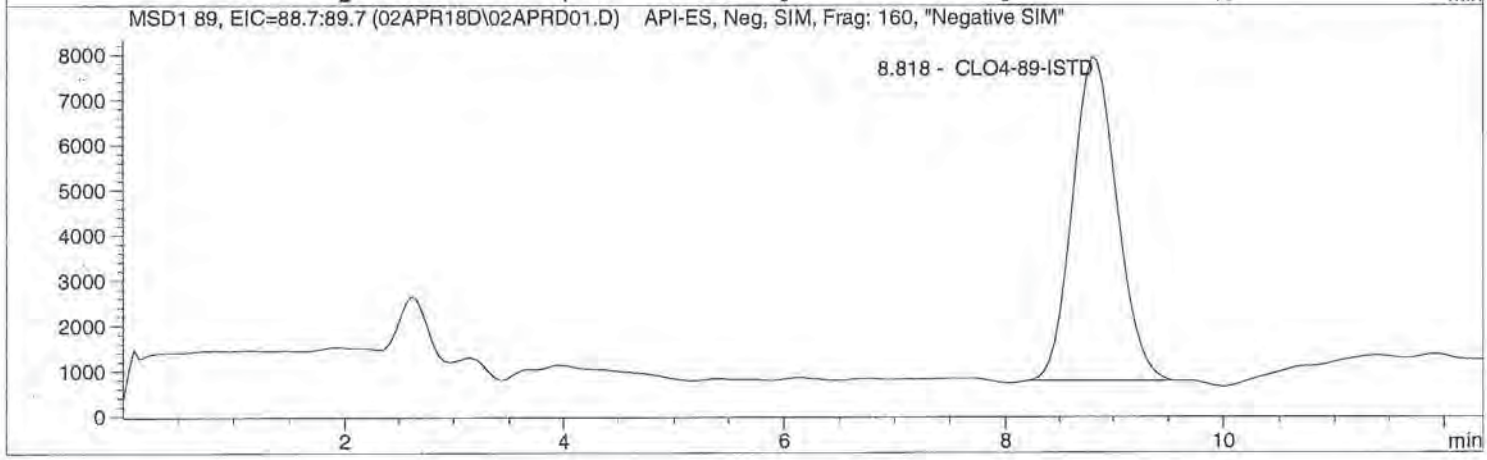
Perchlorate analysis





MANUAL RE-INTEGRATION
☐ missed peak assignment
☐ assigned incorrect name to peak
■ over-integrated peak's area
☐ under-integrated peak's area
☐ other _____

initials TB *date* 4.5.18



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.805	PBA	47521.7	1.0438	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.787	MM	14807.1	0.8939	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.818	PBA	205633.2	5.0000	CLO4-89-ISTD

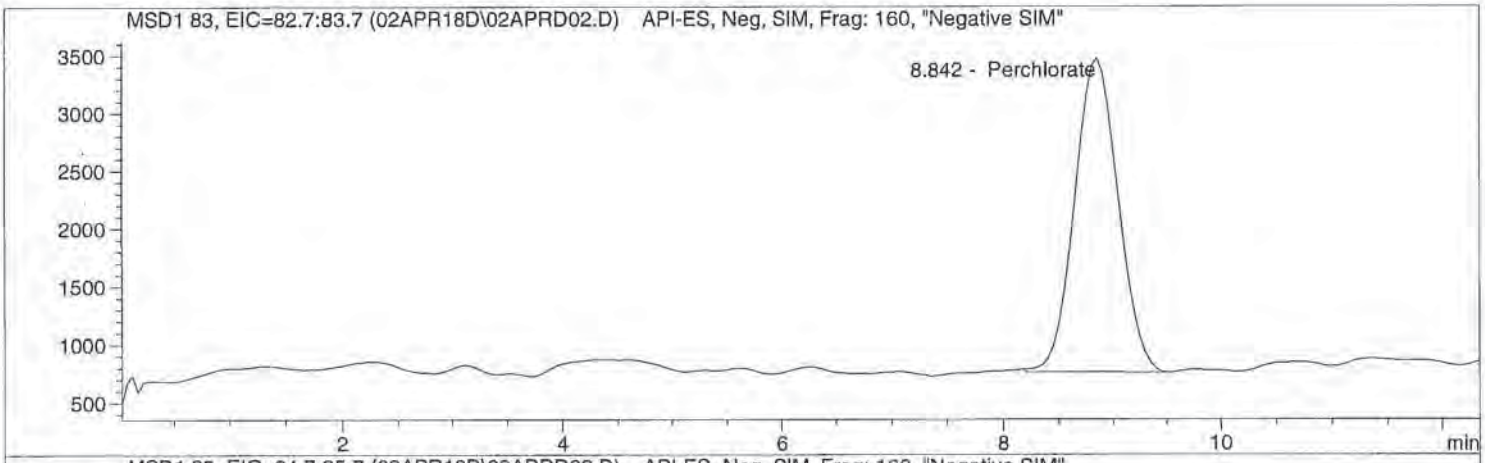
*** End of Report ***

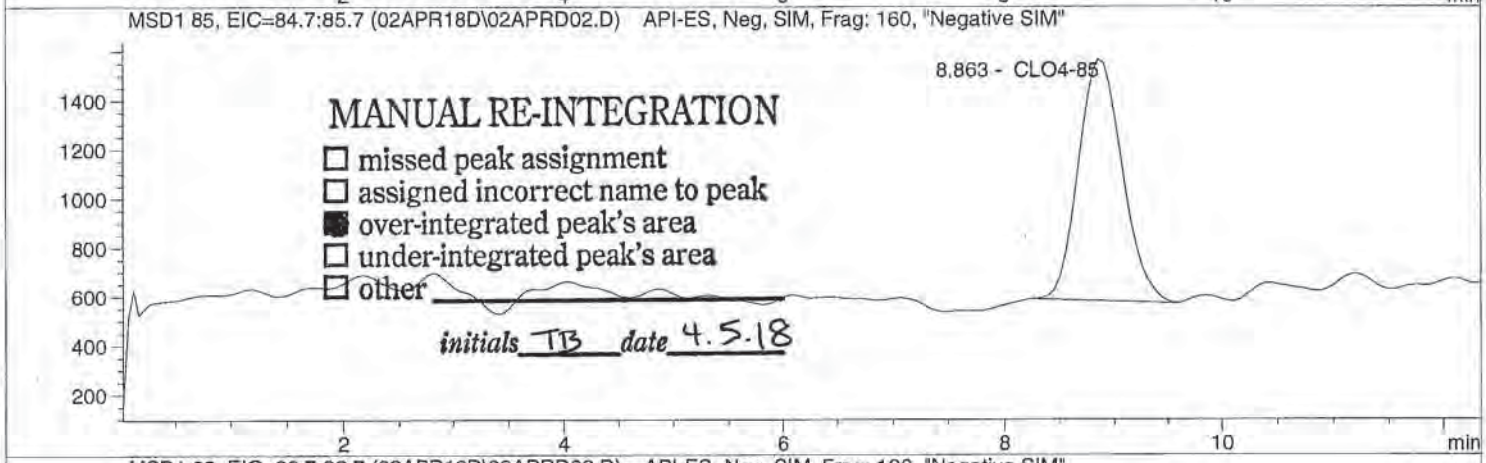
Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

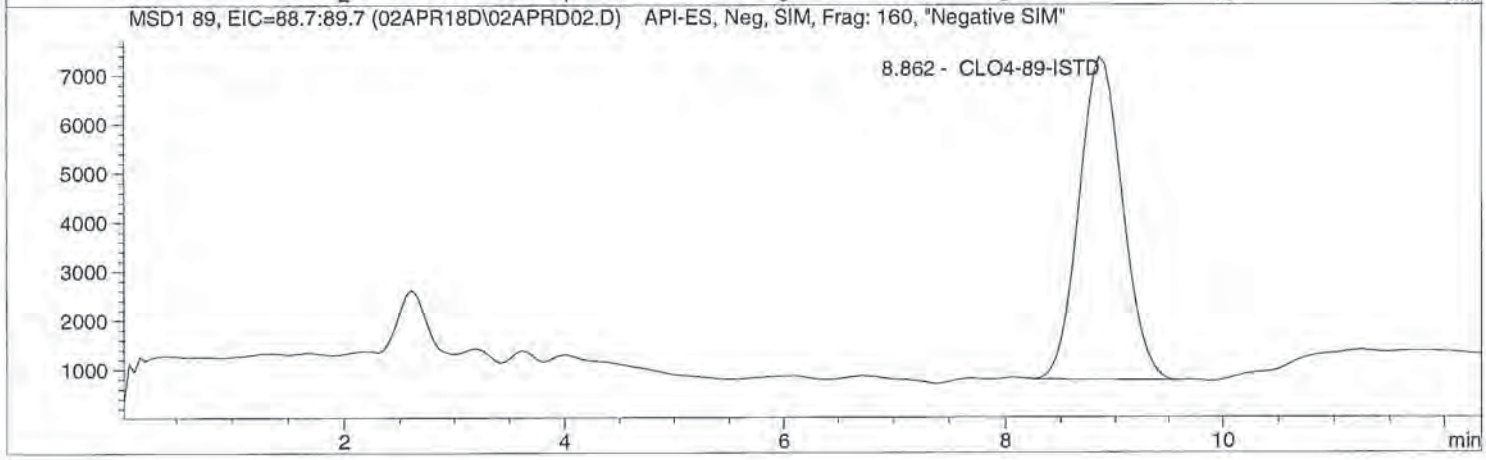
Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

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 TB *date* 4.5.18



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.842	BBA	75767.3	1.8858	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.863	MM	27891.4	2.0567	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.862	BBA	183981.5	5.0000	CLO4-89-ISTD

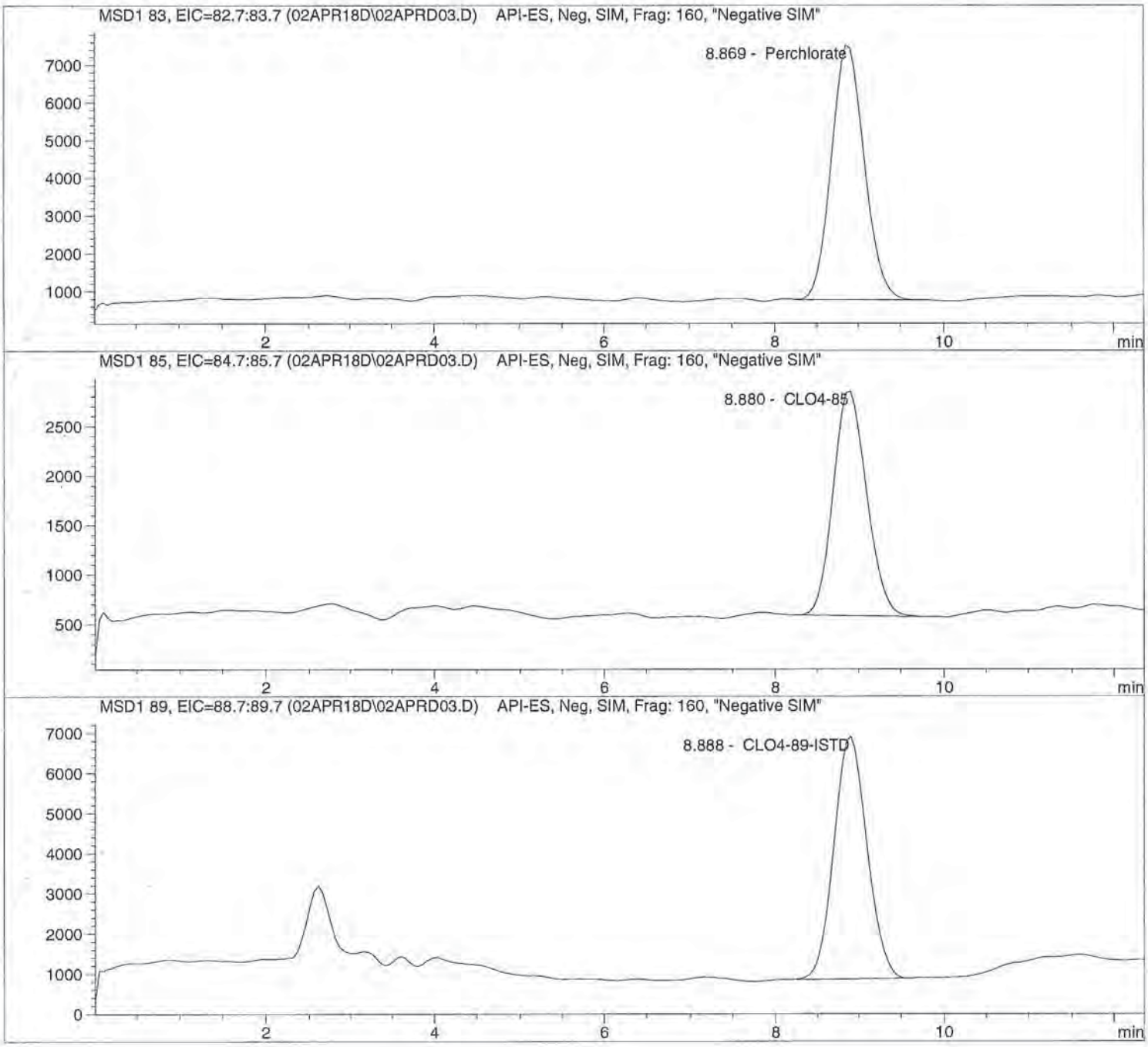
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	4/02/2018 09:36:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD03.D Sample Name: ICAL3@ 5.0ug/L

Injection Date:	4/02/2018 09:36:38	Seq Line:	3
Sample Name:	ICAL3@ 5.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.869	BBA	187507.2	5.0668	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.880	PBA	64046.6	5.3204	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.888	BBA	168695.0	5.0000	CLO4-89-ISTD

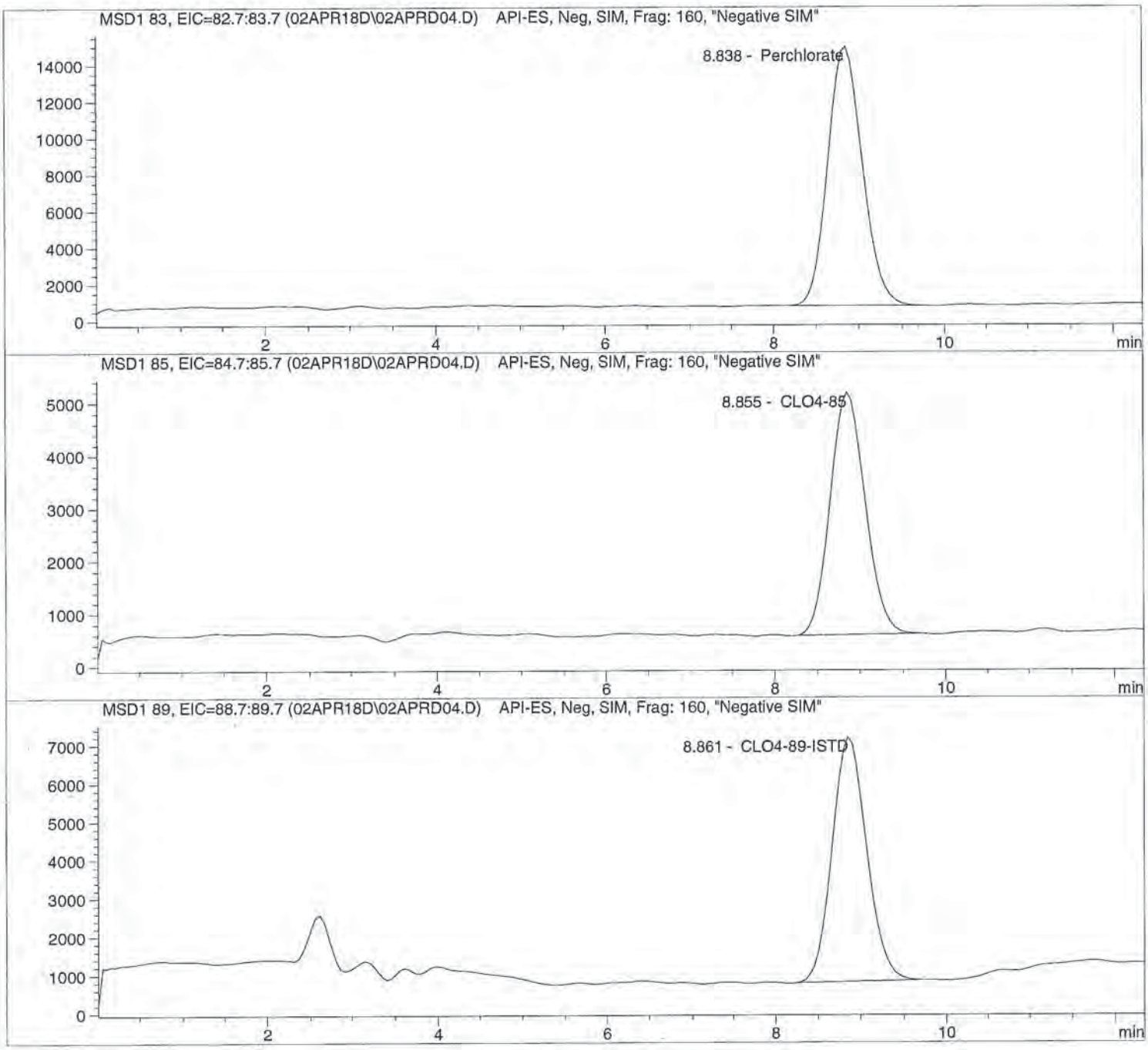
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	4/02/2018 09:50:54	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD04.D Sample Name: ICAL4@ 10.ug/L

Injection Date:	4/02/2018 09:50:54	Seq Line:	4
Sample Name:	ICAL4@ 10.ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.838	BBA	400349.0	9.8969	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.855	PBA	132002.1	10.2040	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.861	PBA	179911.2	5.0000	CLO4-89-ISTD

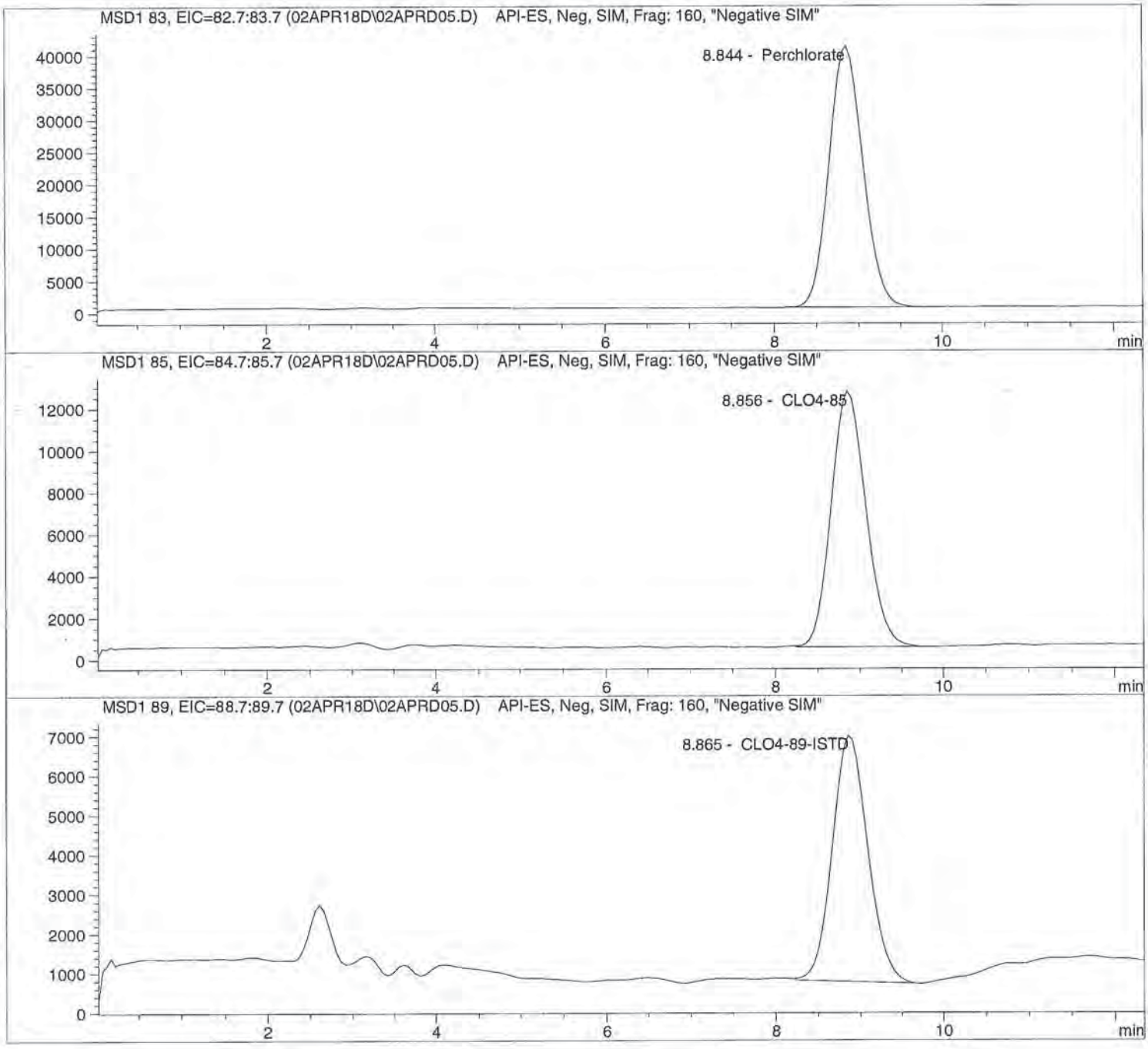
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	4/02/2018 10:05:03	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD05.D Sample Name: ICAL5@ 25.ug/L

Injection Date:	4/02/2018 10:05:03	Seq Line:	5
Sample Name:	ICAL5@ 25.ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.844	BBA	1133393.5	25.4448	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.856	BBA	349808.1	25.2734	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.865	BBA	181916.8	5.0000	CLO4-89-ISTD

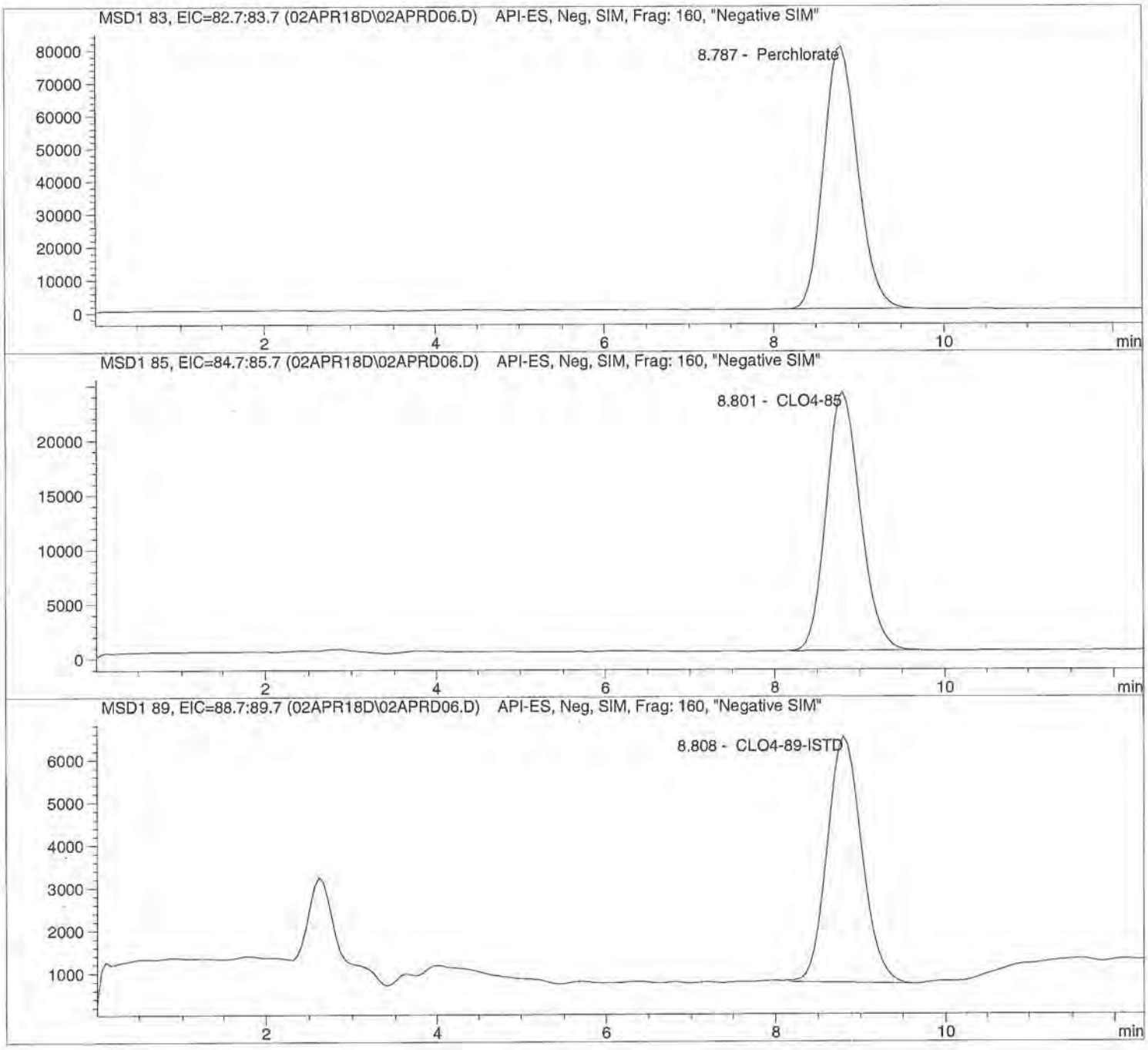
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	4/02/2018 10:19:12	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD06.D Sample Name: ICAL6@ 50.ug/L

Injection Date:	4/02/2018 10:19:12	Seq Line:	6
Sample Name:	ICAL6@ 50.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.787	BBA	2223467.0	49.4714	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.801	BBA	658628.2	48.6037	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.808	BBA	162537.8	5.0000	CLO4-89-ISTD

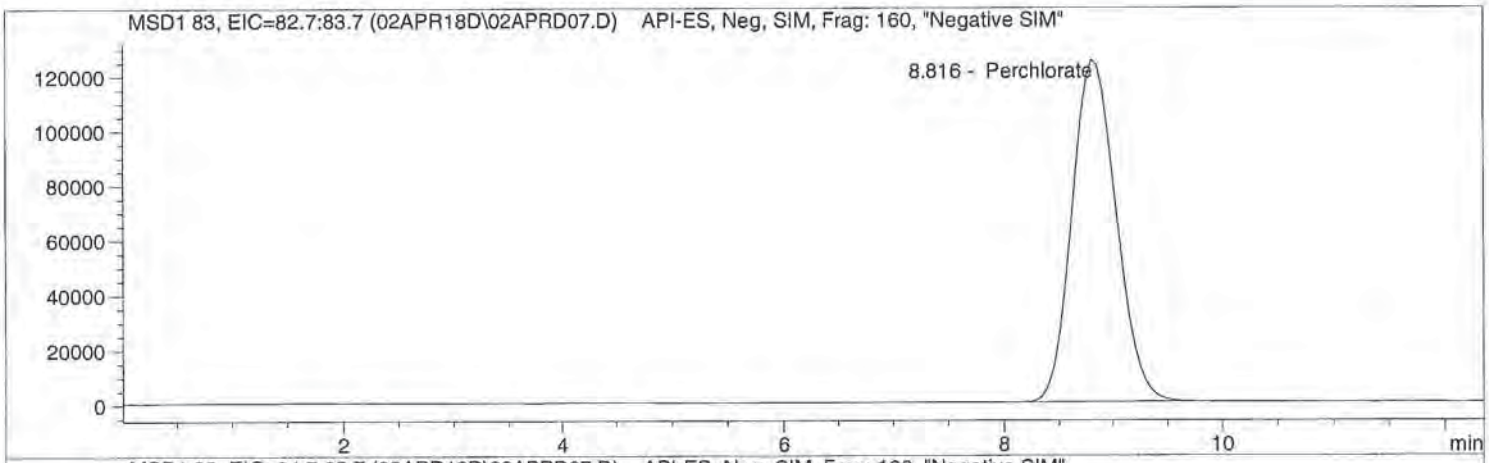
*** End of Report ***

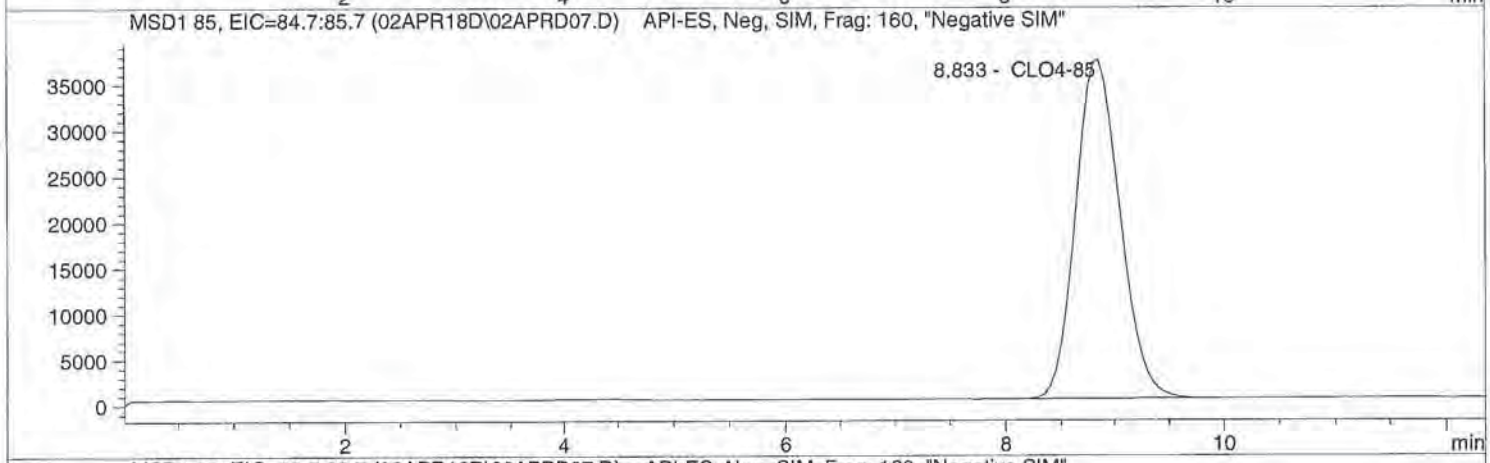
Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD07.D Sample Name: ICAL7@ 75.ug/L

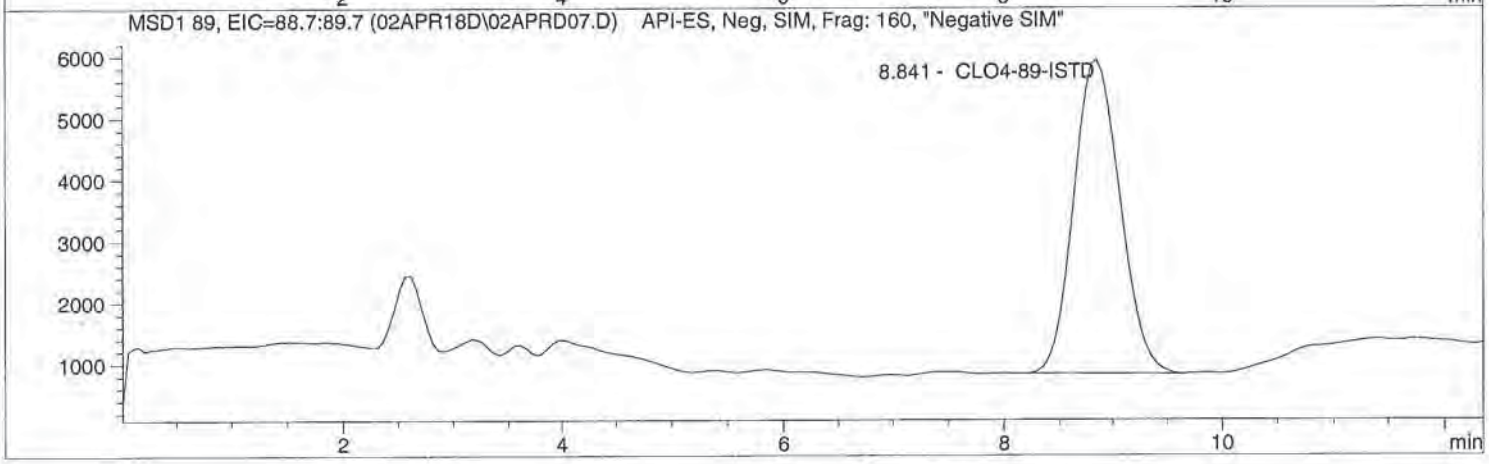
Injection Date:	4/02/2018 10:33:24	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD07.D Sample Name: ICAL7@ 75.ug/L

Injection Date:	4/02/2018 10:33:24	Seq Line:	7
Sample Name:	ICAL7@ 75.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.816	PBA	3564322.2	75.2010	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.833	BBA	1062944.2	75.7001	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.841	PBA	152621.4	5.0000	CLO4-89-ISTD

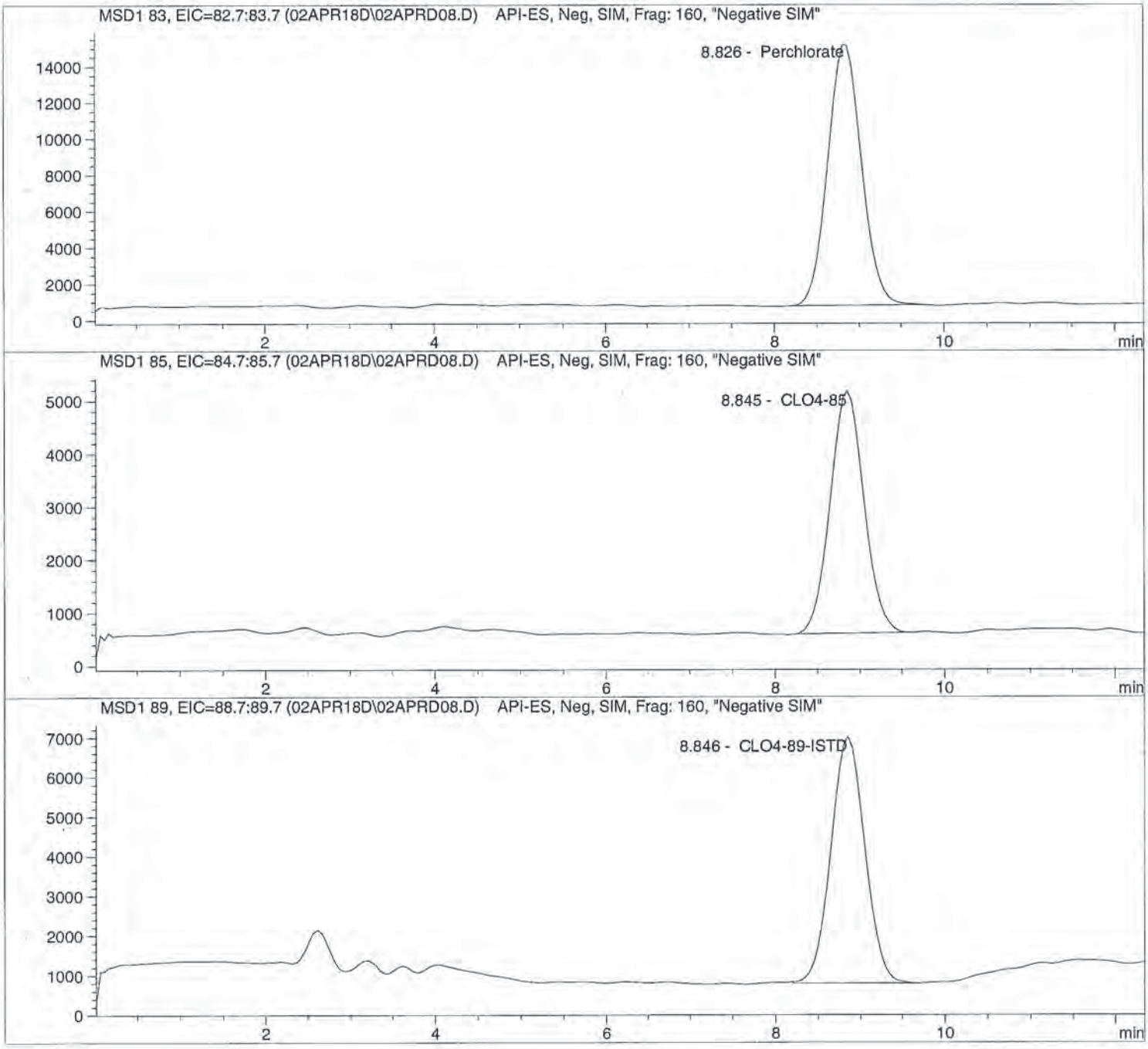
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	4/02/2018 10:47:33	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD08.D Sample Name: ICAL Verf@10ug/L

Injection Date:	4/02/2018 10:47:33	Seq Line:	8
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.826	BBA	399587.8	10.1698	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.845	PBA	127530.4	10.1657	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.846	BBA	174490.2	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

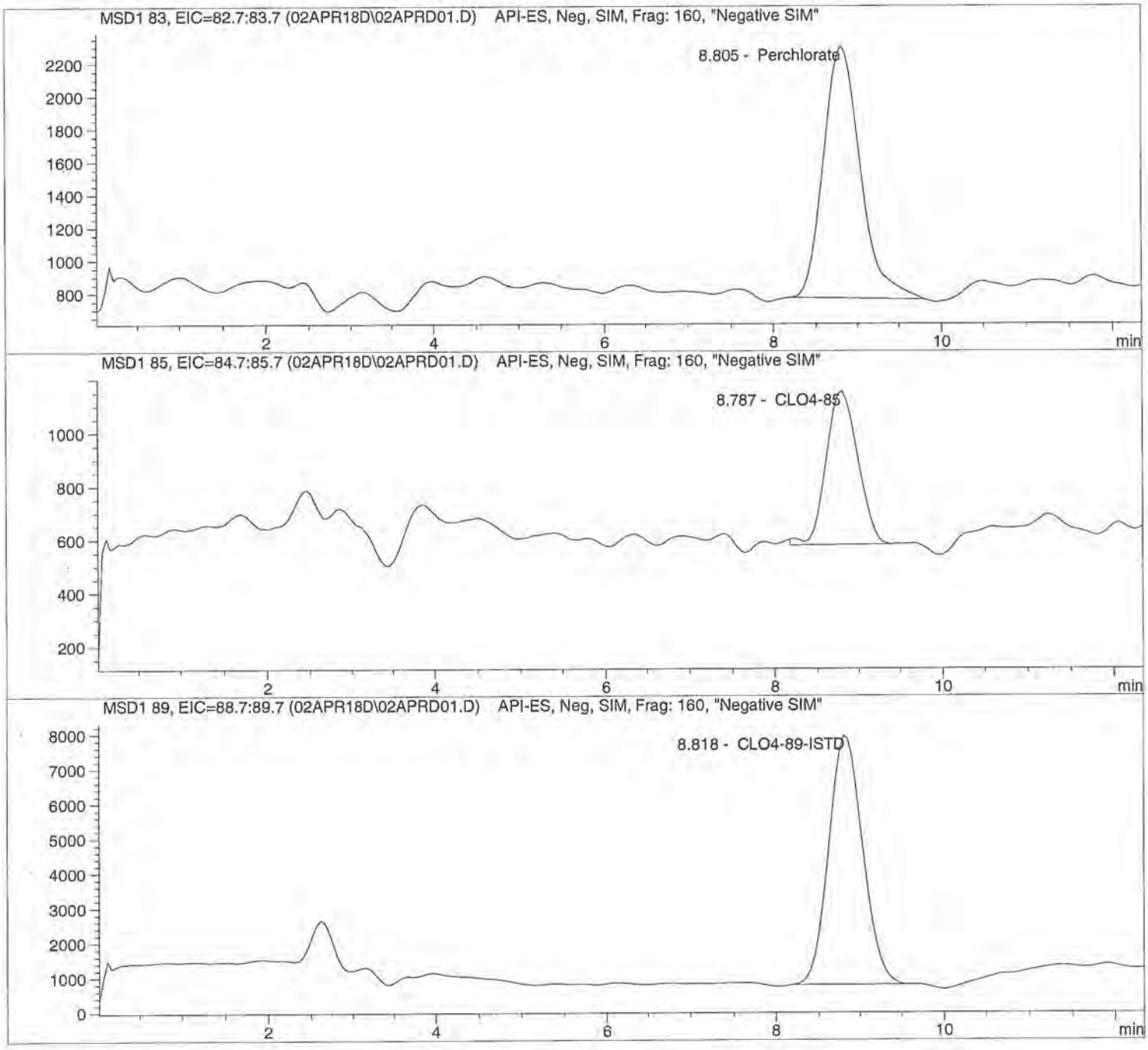
Unmodified

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD01.D Sample Name: ICAL1@ 1.0ug/L

Injection Date:	4/02/2018 09:08:19	Seq Line:	1
Sample Name:	ICAL1@ 1.0ug/L	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.805	PBA	47521.7	1.0438	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.787	BBA	15364.8	0.9338	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.818	PBA	205633.2	5.0000	CLO4-89-ISTD

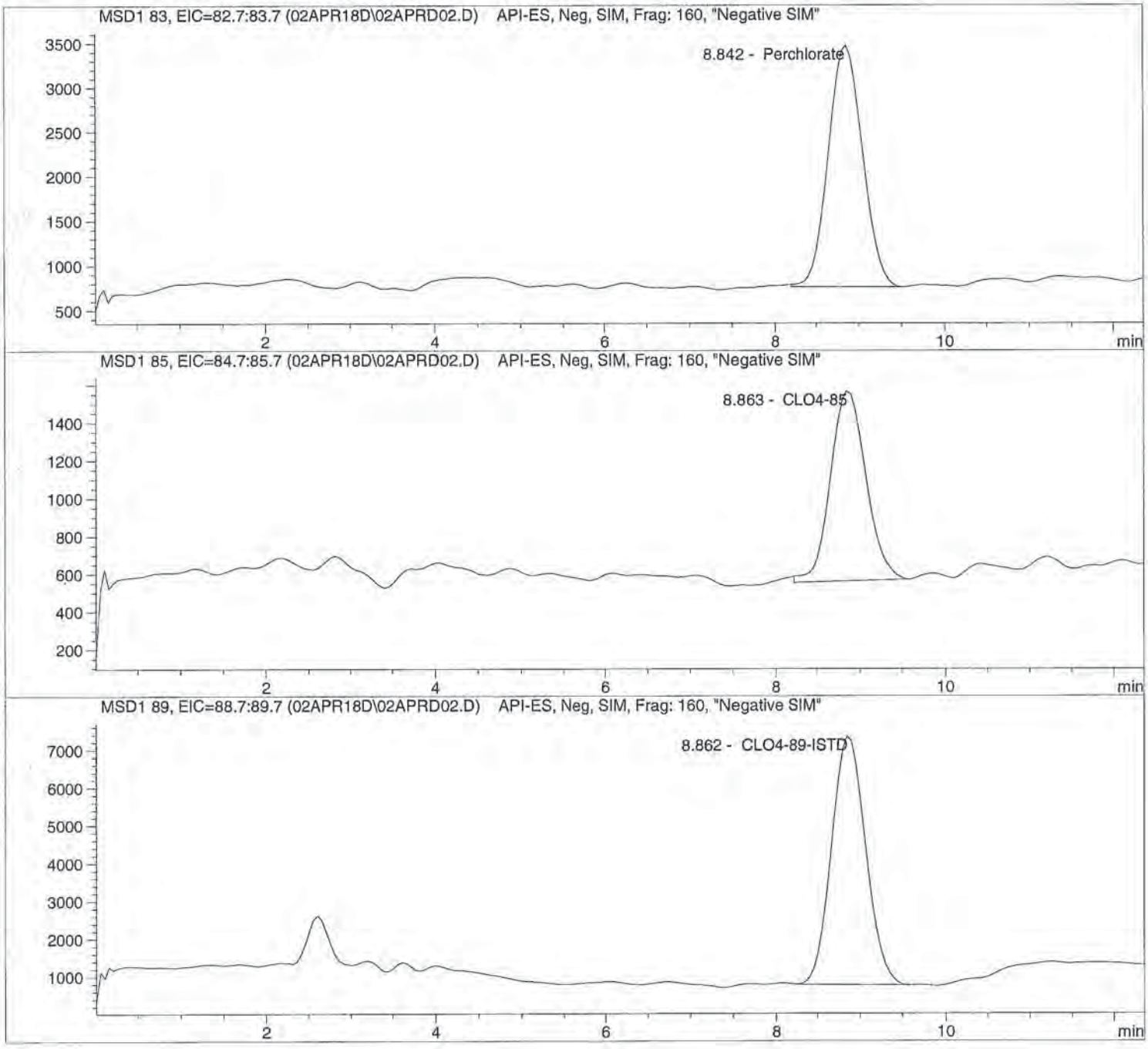
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\02APR18D\02APRD02.D Sample Name: ICAL2@ 2.0ug/L

Injection Date:	4/02/2018 09:22:28	Seq Line:	2
Sample Name:	ICAL2@ 2.0ug/L	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.842	BBA	75767.3	1.8858	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.863	BBA	29265.6	2.1651	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.862	BBA	183981.5	5.0000	CLO4-89-ISTD

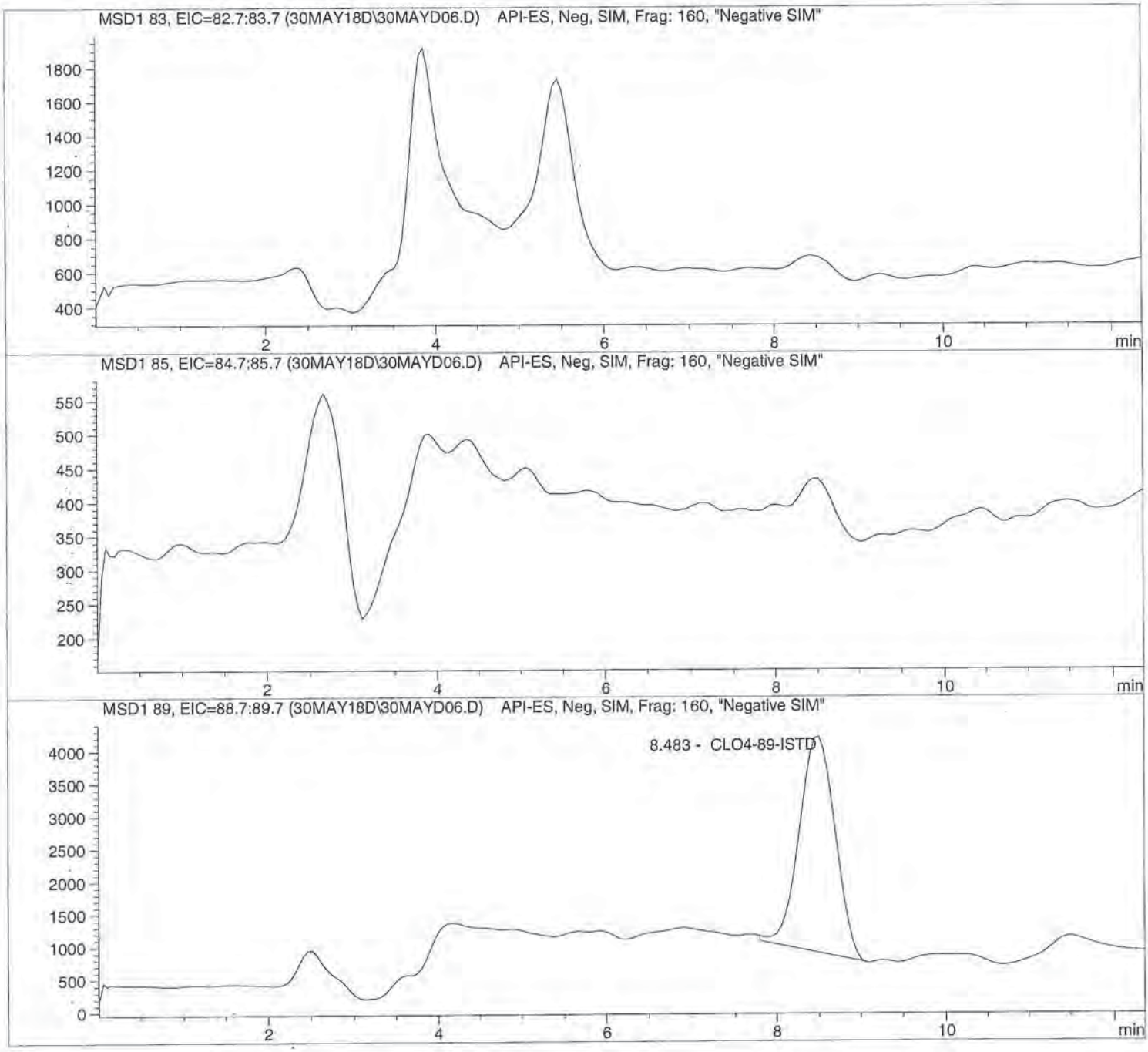
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD06.D Sample Name: 1813746001

Injection Date:	5/30/2018 09:46:40	Seq Line:	6
Sample Name:	1813746001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD06.D Sample Name: 1813746001

Injection Date:	5/30/2018 09:46:40	Seq Line:	6
Sample Name:	1813746001	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.483	BBA	96934.4	5.0000	CLO4-89-ISTD

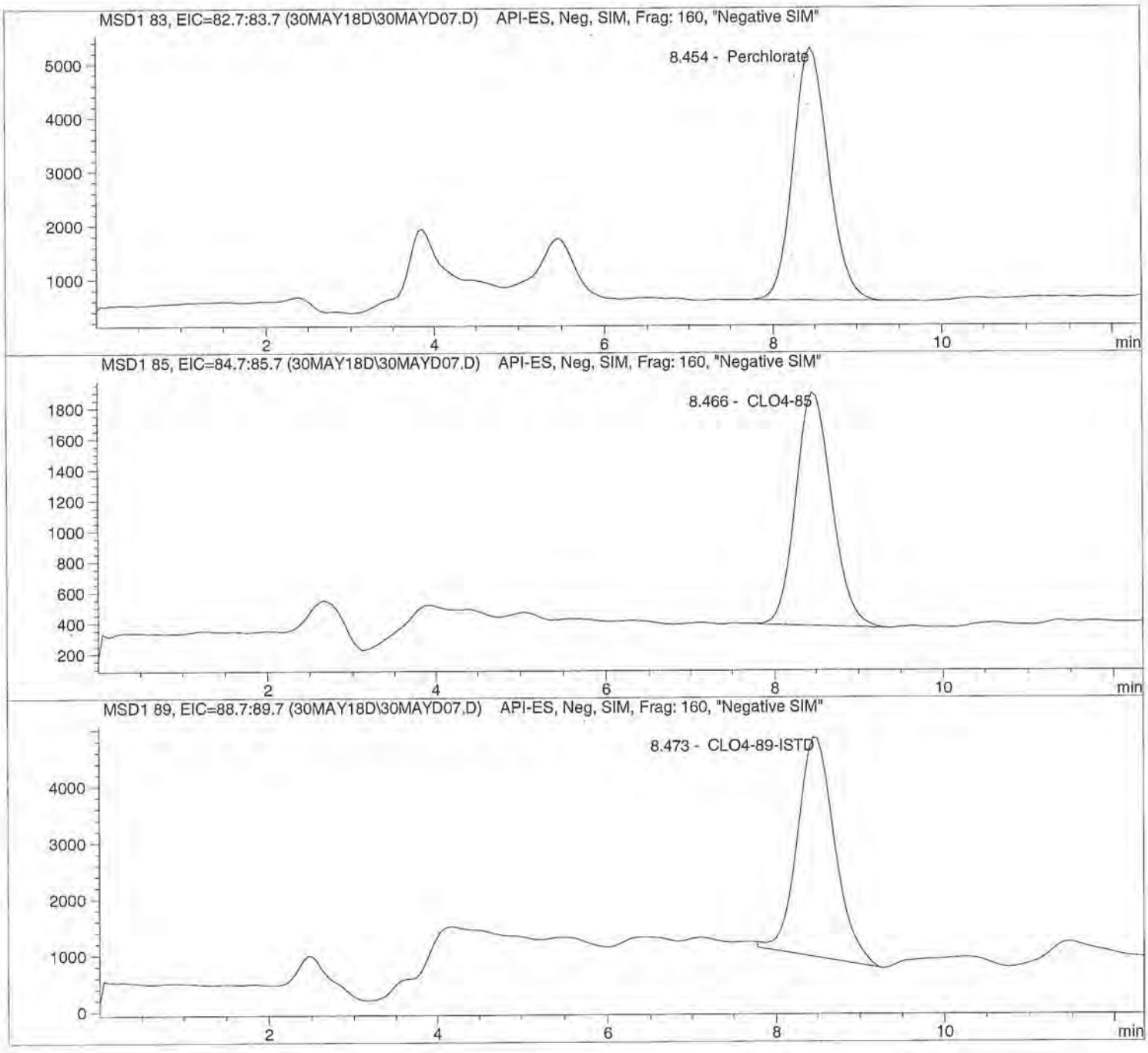
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD07.D Sample Name: 603142 137461S

Injection Date:	5/30/2018 10:00:51	Seq Line:	7
Sample Name:	603142 137461S	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD07.D Sample Name: 603142 137461S

Injection Date:	5/30/2018 10:00:51	Seq Line:	7
Sample Name:	603142 137461S	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method:	CLO4-DOD.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed:	4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.454	BBA	137244.7	5.1733	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.466	BBA	45610.3	5.2876	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.473	BBA	120876.2	5.0000	CLO4-89-ISTD

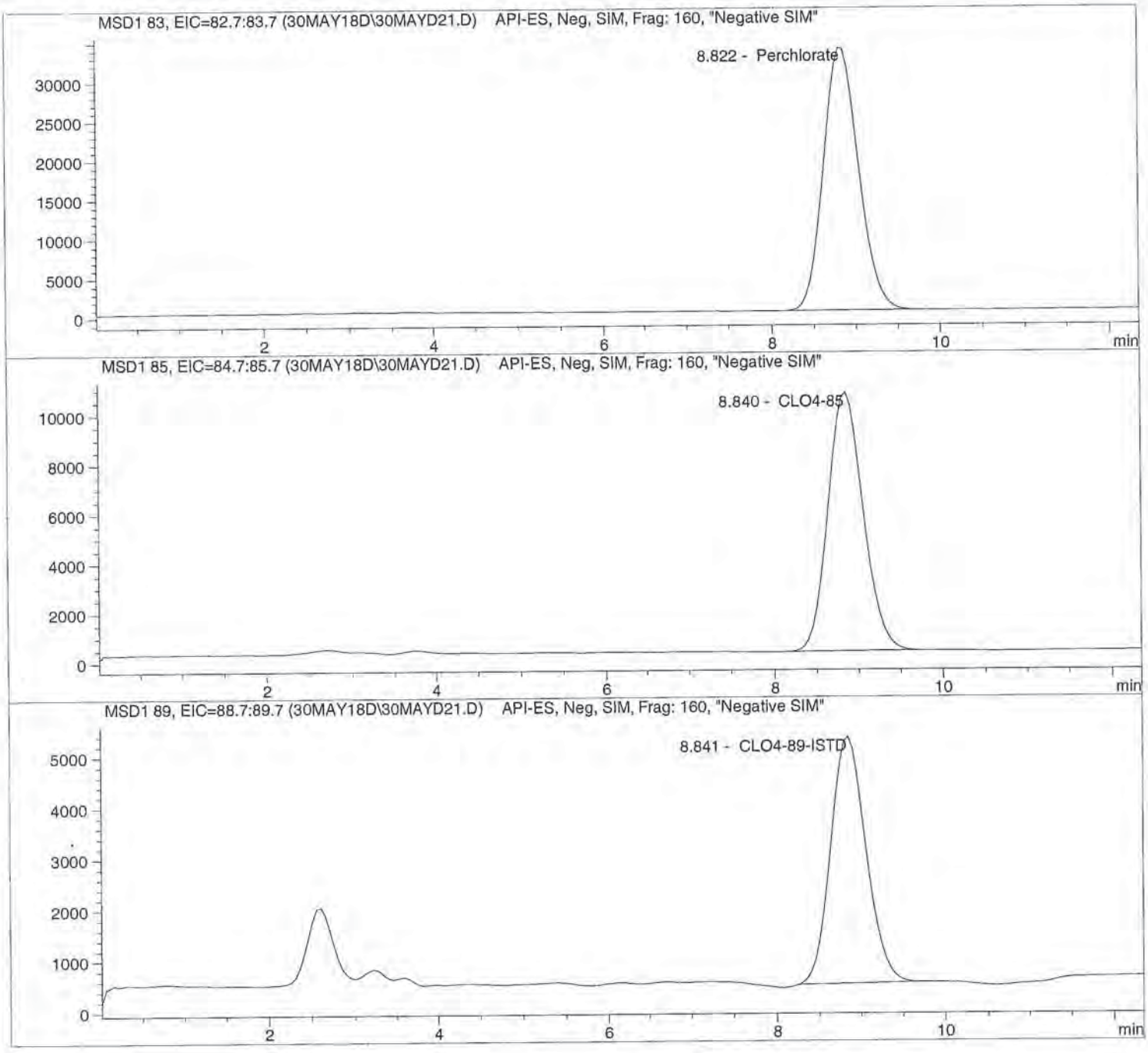
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD21.D Sample Name: 603231 CCV@25

Injection Date:	5/30/2018 13:18:56	Seq Line:	21
Sample Name:	603231 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD21.D Sample Name: 603231 CCV@25

Injection Date:	5/30/2018 13:18:56	Seq Line:	21
Sample Name:	603231 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.822	PBA	974747.6	27.7972	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.840	PBA	303819.0	27.9357	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.841	PBA	141430.9	5.0000	CLO4-89-ISTD

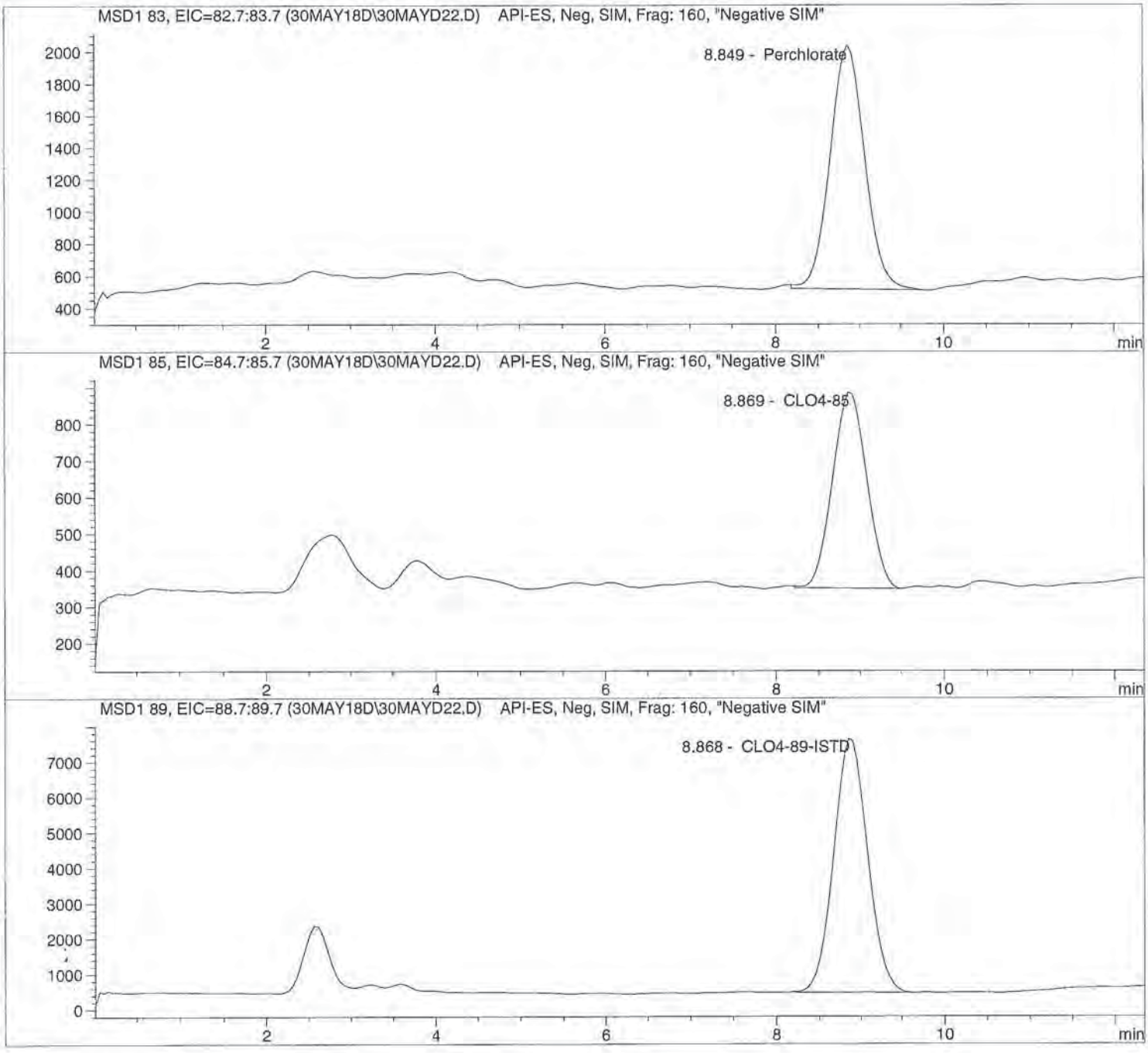
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD22.D Sample Name: 603232 LODV@1.

Injection Date:	5/30/2018 13:33:11	Seq Line:	22
Sample Name:	603232 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\30MAY18D\30MAYD22.D Sample Name: 603232 LODV@1.

Injection Date:	5/30/2018 13:33:11	Seq Line:	22
Sample Name:	603232 LODV@1.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	25 µl

Acq. Method: CLO4-DOD.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DPR.M
Last Changed: 4/2/2018 11:32:43

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 2. Apr. 2018, 11:32:41 am
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
8.849	BBA	44908.3	0.9725	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.869	BBA	15702.2	0.9449	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.868	BBA	208034.0	5.0000	CLO4-89-ISTD

*** End of Report ***

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WorkOrder: HS18050932

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

14-Jun-2018

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

May 31, 2018

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

Work Order: **HS18050932**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 2 sample(s) on May 18, 2018 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 Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18050932

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050932-01	LH18/24-SP650_051718	Water		17-May-2018 14:00	18-May-2018 08:45	☐
HS18050932-02	Trip Blank	Water		17-May-2018 00:00	18-May-2018 08:45	☐

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order:

CASE NARRATIVE

Work Order Comments

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

GCMS Volatiles by Method SW8260

Batch ID: R316644

Sample ID: HS18050926-06MS

- MS is for an unrelated sample

WetChemistry by Method SW9056

Batch ID: R317203

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_051718
Collection Date: 17-May-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18050932
Lab ID:HS18050932-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 16:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 16:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2018 16:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	21-May-2018 16:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	21-May-2018 16:25
Acetone	**21**		**0.40**	**1.0**	**2.0**	**ug/L**	1	21-May-2018 16:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	21-May-2018 16:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 16:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_051718
Collection Date: 17-May-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18050932
Lab ID:HS18050932-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
cis-1,2-Dichloroethene	**4.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2018 16:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2018 16:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	21-May-2018 16:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2018 16:25
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	21-May-2018 16:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 16:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Toluene	**0.44**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2018 16:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Trichloroethene	**2.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	21-May-2018 16:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 16:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 16:25
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*1*	*21-May-2018 16:25*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*21-May-2018 16:25*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*1*	*21-May-2018 16:25*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*21-May-2018 16:25*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**492**		**2.00**	**5.00**	**5.00**	**mg/L**	10	23-May-2018 22:45
Sulfate	**153**		**2.00**	**5.00**	**5.00**	**mg/L**	10	23-May-2018 22:45

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 17-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050932
Lab ID:HS18050932-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 13:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 13:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2018 13:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	21-May-2018 13:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	21-May-2018 13:06
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	21-May-2018 13:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	21-May-2018 13:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	21-May-2018 13:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 17-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050932
Lab ID:HS18050932-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	21-May-2018 13:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	21-May-2018 13:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	21-May-2018 13:06
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	21-May-2018 13:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	21-May-2018 13:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	21-May-2018 13:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	21-May-2018 13:06
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*81-118*	*%REC*	*1*	*21-May-2018 13:06*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*21-May-2018 13:06*
Surr: Dibromofluoromethane	*106*			**0**	*80-119*	*%REC*	*1*	*21-May-2018 13:06*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*21-May-2018 13:06*

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R316644	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18050932-01	LH18/24-SP650_051718	17 May 2018 14:00			21 May 2018 16:25	1
HS18050932-02	Trip Blank	17 May 2018 00:00			21 May 2018 13:06	1
Batch ID R317203	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18050932-01	LH18/24-SP650_051718	17 May 2018 14:00			23 May 2018 22:45	10

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180521** Units: **ug/L** Analysis Date: **21-May-2018 11:28**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570490** 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

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180521** Units: **ug/L** Analysis Date: **21-May-2018 11:28**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570490** 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	*50.12*	*1.0*	*50*	*0*	*100*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.63*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*52*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*53.82*	*1.0*	*50*	*0*	*108*	*89 - 112*				

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180521** Units: **ug/L** Analysis Date: **21-May-2018 10:39**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570488** 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	49.08	1.0	50	0	98.2	78 - 124				
1,1,1-Trichloroethane	47.41	1.0	50	0	94.8	74 - 131				
1,1,2,2-Tetrachloroethane	46.44	1.0	50	0	92.9	71 - 121				
1,1,2-Trichloroethane	49.98	1.0	50	0	100.0	80 - 119				
1,1-Dichloroethane	47.78	1.0	50	0	95.6	77 - 125				
1,1-Dichloroethene	49.27	1.0	50	0	98.5	71 - 131				
1,1-Dichloropropene	42.67	1.0	50	0	85.3	78 - 125				
1,2,3-Trichlorobenzene	46.79	1.0	50	0	93.6	69 - 129				
1,2,3-Trichloropropane	54.1	1.0	50	0	108	73 - 122				
1,2,4-Trichlorobenzene	48.27	1.0	50	0	96.5	69 - 130				
1,2,4-Trimethylbenzene	52.5	1.0	50	0	105	76 - 124				
1,2-Dibromo-3-chloropropane	53.68	1.0	50	0	107	62 - 128				
1,2-Dibromoethane	50.61	1.0	50	0	101	77 - 121				
1,2-Dichlorobenzene	46.59	1.0	50	0	93.2	80 - 119				
1,2-Dichloroethane	49.2	1.0	50	0	98.4	73 - 128				
1,2-Dichloropropane	47.89	1.0	50	0	95.8	78 - 122				
1,3,5-Trimethylbenzene	43.49	1.0	50	0	87.0	75 - 124				
1,3-Dichlorobenzene	45.69	1.0	50	0	91.4	80 - 119				
1,3-Dichloropropane	50.02	1.0	50	0	100	80 - 119				
1,4-Dichlorobenzene	44.72	1.0	50	0	89.4	79 - 118				
2,2-Dichloropropane	48.77	1.0	50	0	97.5	60 - 139				
2-Butanone	108.3	2.0	100	0	108	56 - 143				
2-Chlorotoluene	51.62	1.0	50	0	103	79 - 122				
2-Hexanone	107.9	2.0	100	0	108	57 - 139				
4-Chlorotoluene	52.24	1.0	50	0	104	78 - 122				
4-Isopropyltoluene	44.81	1.0	50	0	89.6	77 - 127				
4-Methyl-2-pentanone	102	2.0	100	0	102	67 - 130				
Acetone	110.4	2.0	100	0	110	39 - 160				
Benzene	46.45	1.0	50	0	92.9	79 - 120				
Bromobenzene	45.86	1.0	50	0	91.7	80 - 120				
Bromochloromethane	51.12	1.0	50	0	102	78 - 123				
Bromodichloromethane	49.03	1.0	50	0	98.1	79 - 125				
Bromoform	52.61	1.0	50	0	105	66 - 130				
Bromomethane	43.6	1.0	50	0	87.2	53 - 141				

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180521** Units: **ug/L** Analysis Date: **21-May-2018 10:39**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570488** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	93.14	2.0	100	0	93.1	64 - 133				
Carbon tetrachloride	43.82	1.0	50	0	87.6	72 - 136				
Chlorobenzene	46.61	1.0	50	0	93.2	82 - 118				
Chloroethane	56.09	1.0	50	0	112	60 - 138				
Chloroform	47.93	1.0	50	0	95.9	79 - 124				
Chloromethane	54.33	1.0	50	0	109	50 - 139				
cis-1,2-Dichloroethene	48.8	1.0	50	0	97.6	78 - 123				
cis-1,3-Dichloropropene	52.6	1.0	50	0	105	75 - 124				
Dibromochloromethane	50.77	1.0	50	0	102	74 - 126				
Dibromomethane	53.12	1.0	50	0	106	79 - 123				
Dichlorodifluoromethane	50.27	1.0	50	0	101	32 - 152				
Ethylbenzene	45.75	1.0	50	0	91.5	79 - 121				
Hexachlorobutadiene	45.09	1.0	50	0	90.2	66 - 134				
Isopropylbenzene	46.7	1.0	50	0	93.4	72 - 131				
m,p-Xylene	110.4	2.0	100	0	110	80 - 121				
Methylene chloride	44.87	2.0	50	0	89.7	74 - 124				
Naphthalene	49.76	1.0	50	0	99.5	61 - 128				
n-Butylbenzene	46.26	1.0	50	0	92.5	75 - 128				
n-Propylbenzene	44.26	1.0	50	0	88.5	76 - 126				
o-Xylene	47.74	1.0	50	0	95.5	78 - 122				
sec-Butylbenzene	44.92	1.0	50	0	89.8	77 - 126				
Styrene	49.02	1.0	50	0	98.0	78 - 123				
tert-Butylbenzene	44.39	1.0	50	0	88.8	78 - 124				
Tetrachloroethene	46.02	1.0	50	0	92.0	74 - 129				
Toluene	45.53	1.0	50	0	91.1	80 - 121				
trans-1,2-Dichloroethene	52.02	1.0	50	0	104	75 - 124				
trans-1,3-Dichloropropene	54.42	1.0	50	0	109	73 - 127				
Trichloroethene	50.04	1.0	50	0	100	79 - 123				
Trichlorofluoromethane	49.42	1.0	50	0	98.8	65 - 141				
Vinyl chloride	49.08	1.0	50	0	98.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.66*	*1.0*	*50*	*0*	*103*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.04*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*49.97*	*1.0*	*50*	*0*	*99.9*	*80 - 119*				
Surr: Toluene-d8	*51.37*	*1.0*	*50*	*0*	*103*	*89 - 112*				

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050926-06MS** Units: **ug/L** Analysis Date: **21-May-2018 13:55**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570496** 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	50.3	1.0	50	0	101	78 - 124				
1,1,1-Trichloroethane	54.5	1.0	50	0	109	74 - 131				
1,1,2,2-Tetrachloroethane	46.57	1.0	50	0	93.1	71 - 121				
1,1,2-Trichloroethane	50.4	1.0	50	0	101	80 - 119				
1,1-Dichloroethane	50.92	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	56.86	1.0	50	0	114	71 - 131				
1,1-Dichloropropene	48.77	1.0	50	0	97.5	78 - 125				
1,2,3-Trichlorobenzene	49.17	1.0	50	0	98.3	69 - 129				
1,2,3-Trichloropropane	53.97	1.0	50	0	108	73 - 122				
1,2,4-Trichlorobenzene	50.65	1.0	50	0	101	69 - 130				
1,2,4-Trimethylbenzene	55.67	1.0	50	0	111	76 - 124				
1,2-Dibromo-3-chloropropane	56.36	1.0	50	0	113	62 - 128				
1,2-Dibromoethane	51.75	1.0	50	0	104	77 - 121				
1,2-Dichlorobenzene	47.93	1.0	50	0	95.9	80 - 119				
1,2-Dichloroethane	50.01	1.0	50	0	100	73 - 128				
1,2-Dichloropropane	49.69	1.0	50	0	99.4	78 - 122				
1,3,5-Trimethylbenzene	47.1	1.0	50	0	94.2	75 - 124				
1,3-Dichlorobenzene	47.57	1.0	50	0	95.1	80 - 119				
1,3-Dichloropropane	50.16	1.0	50	0	100	80 - 119				
1,4-Dichlorobenzene	46.7	1.0	50	0	93.4	79 - 118				
2,2-Dichloropropane	53.26	1.0	50	0	107	60 - 139				
2-Butanone	113.3	2.0	100	0	113	56 - 143				
2-Chlorotoluene	55.34	1.0	50	0	111	79 - 122				
2-Hexanone	111.4	2.0	100	0	111	57 - 139				
4-Chlorotoluene	55.98	1.0	50	0	112	78 - 122				
4-Isopropyltoluene	50.32	1.0	50	0	101	77 - 127				
4-Methyl-2-pentanone	105.5	2.0	100	0	105	67 - 130				
Acetone	114.3	2.0	100	0	114	39 - 160				
Benzene	50.06	1.0	50	0	100	79 - 120				
Bromobenzene	47.11	1.0	50	0	94.2	80 - 120				
Bromochloromethane	53.39	1.0	50	0	107	78 - 123				
Bromodichloromethane	50.22	1.0	50	0	100	79 - 125				
Bromoform	52.75	1.0	50	0	106	66 - 130				
Bromomethane	47	1.0	50	0	94.0	53 - 141				

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050926-06MS** Units: **ug/L** Analysis Date: **21-May-2018 13:55**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570496** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	106.8	2.0	100	0	107	64 - 133				
Carbon tetrachloride	50.99	1.0	50	0	102	72 - 136				
Chlorobenzene	48.81	1.0	50	0	97.6	82 - 118				
Chloroethane	60.44	1.0	50	0	121	60 - 138				
Chloroform	50.01	1.0	50	0	100	79 - 124				
Chloromethane	54.28	1.0	50	0	109	50 - 139				
cis-1,2-Dichloroethene	51.76	1.0	50	0	104	78 - 123				
cis-1,3-Dichloropropene	53.26	1.0	50	0	107	75 - 124				
Dibromochloromethane	51.54	1.0	50	0	103	74 - 126				
Dibromomethane	51.73	1.0	50	0	103	79 - 123				
Dichlorodifluoromethane	56.1	1.0	50	0	112	32 - 152				
Ethylbenzene	49.99	1.0	50	0	100.0	79 - 121				
Hexachlorobutadiene	51.71	1.0	50	0	103	66 - 134				
Isopropylbenzene	52.03	1.0	50	0	104	72 - 131				
m,p-Xylene	122.3	2.0	100	0	122	80 - 121				S
Methylene chloride	47.19	2.0	50	0	94.4	74 - 124				
Naphthalene	50.74	1.0	50	0	101	61 - 128				
n-Butylbenzene	52.41	1.0	50	0	105	75 - 128				
n-Propylbenzene	48.63	1.0	50	0	97.3	76 - 126				
o-Xylene	50.44	1.0	50	0	101	78 - 122				
sec-Butylbenzene	50.95	1.0	50	0	102	77 - 126				
Styrene	50.34	1.0	50	0	101	78 - 123				
tert-Butylbenzene	49.26	1.0	50	0	98.5	78 - 124				
Tetrachloroethene	52.52	1.0	50	0	105	74 - 129				
Toluene	48.75	1.0	50	0	97.5	80 - 121				
trans-1,2-Dichloroethene	56.26	1.0	50	0	113	75 - 124				
trans-1,3-Dichloropropene	55.15	1.0	50	0	110	73 - 127				
Trichloroethene	54.06	1.0	50	0	108	79 - 123				
Trichlorofluoromethane	57.9	1.0	50	0	116	65 - 141				
Vinyl chloride	56.65	1.0	50	0	113	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.22*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.09*	*1.0*	*50*	*0*	*108*	*85 - 114*				
Surr: Dibromofluoromethane	*49.92*	*1.0*	*50*	*0*	*99.8*	*80 - 119*				
Surr: Toluene-d8	*51.6*	*1.0*	*50*	*0*	*103*	*89 - 112*				

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050926-06MSD** Units: **ug/L** Analysis Date: **21-May-2018 14:20**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570497** 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	49.84	1.0	50	0	99.7	78 - 124	50.3	0.914	20	
1,1,1-Trichloroethane	53.76	1.0	50	0	108	74 - 131	54.5	1.38	20	
1,1,2,2-Tetrachloroethane	46.29	1.0	50	0	92.6	71 - 121	46.57	0.6	20	
1,1,2-Trichloroethane	50.02	1.0	50	0	100	80 - 119	50.4	0.743	20	
1,1-Dichloroethane	51.12	1.0	50	0	102	77 - 125	50.92	0.386	20	
1,1-Dichloroethene	56.08	1.0	50	0	112	71 - 131	56.86	1.38	20	
1,1-Dichloropropene	48.74	1.0	50	0	97.5	78 - 125	48.77	0.0696	20	
1,2,3-Trichlorobenzene	49.1	1.0	50	0	98.2	69 - 129	49.17	0.138	20	
1,2,3-Trichloropropane	51.75	1.0	50	0	104	73 - 122	53.97	4.19	20	
1,2,4-Trichlorobenzene	50.45	1.0	50	0	101	69 - 130	50.65	0.407	20	
1,2,4-Trimethylbenzene	55.71	1.0	50	0	111	76 - 124	55.67	0.0599	20	
1,2-Dibromo-3-chloropropane	55.73	1.0	50	0	111	62 - 128	56.36	1.12	20	
1,2-Dibromoethane	52.12	1.0	50	0	104	77 - 121	51.75	0.706	20	
1,2-Dichlorobenzene	47.54	1.0	50	0	95.1	80 - 119	47.93	0.809	20	
1,2-Dichloroethane	50.41	1.0	50	0	101	73 - 128	50.01	0.793	20	
1,2-Dichloropropane	49.41	1.0	50	0	98.8	78 - 122	49.69	0.575	20	
1,3,5-Trimethylbenzene	46.36	1.0	50	0	92.7	75 - 124	47.1	1.6	20	
1,3-Dichlorobenzene	46.94	1.0	50	0	93.9	80 - 119	47.57	1.33	20	
1,3-Dichloropropane	49.98	1.0	50	0	100.0	80 - 119	50.16	0.369	20	
1,4-Dichlorobenzene	46.66	1.0	50	0	93.3	79 - 118	46.7	0.0916	20	
2,2-Dichloropropane	53.1	1.0	50	0	106	60 - 139	53.26	0.307	20	
2-Butanone	114.3	2.0	100	0	114	56 - 143	113.3	0.899	20	
2-Chlorotoluene	54.44	1.0	50	0	109	79 - 122	55.34	1.63	20	
2-Hexanone	113.7	2.0	100	0	114	57 - 139	111.4	2.03	20	
4-Chlorotoluene	54.84	1.0	50	0	110	78 - 122	55.98	2.05	20	
4-Isopropyltoluene	49.39	1.0	50	0	98.8	77 - 127	50.32	1.87	20	
4-Methyl-2-pentanone	105.9	2.0	100	0	106	67 - 130	105.5	0.429	20	
Acetone	117.2	2.0	100	0	117	39 - 160	114.3	2.47	20	
Benzene	49.7	1.0	50	0	99.4	79 - 120	50.06	0.724	20	
Bromobenzene	46.07	1.0	50	0	92.1	80 - 120	47.11	2.23	20	
Bromochloromethane	53.16	1.0	50	0	106	78 - 123	53.39	0.446	20	
Bromodichloromethane	49.77	1.0	50	0	99.5	79 - 125	50.22	0.902	20	
Bromoform	53.29	1.0	50	0	107	66 - 130	52.75	1	20	
Bromomethane	45.84	1.0	50	0	91.7	53 - 141	47	2.51	20	

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R316644 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050926-06MSD** Units: **ug/L** Analysis Date: **21-May-2018 14:20**
Client ID: Run ID: **VOA2_316644** SeqNo: **4570497** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	105.6	2.0	100	0	106	64 - 133	106.8	1.11	20	
Carbon tetrachloride	49.94	1.0	50	0	99.9	72 - 136	50.99	2.07	20	
Chlorobenzene	48.68	1.0	50	0	97.4	82 - 118	48.81	0.283	20	
Chloroethane	58.6	1.0	50	0	117	60 - 138	60.44	3.09	20	
Chloroform	49.78	1.0	50	0	99.6	79 - 124	50.01	0.479	20	
Chloromethane	53.42	1.0	50	0	107	50 - 139	54.28	1.59	20	
cis-1,2-Dichloroethene	51.82	1.0	50	0	104	78 - 123	51.76	0.113	20	
cis-1,3-Dichloropropene	53.39	1.0	50	0	107	75 - 124	53.26	0.238	20	
Dibromochloromethane	50.93	1.0	50	0	102	74 - 126	51.54	1.2	20	
Dibromomethane	52.66	1.0	50	0	105	79 - 123	51.73	1.77	20	
Dichlorodifluoromethane	53.82	1.0	50	0	108	32 - 152	56.1	4.14	20	
Ethylbenzene	49.46	1.0	50	0	98.9	79 - 121	49.99	1.06	20	
Hexachlorobutadiene	53.14	1.0	50	0	106	66 - 134	51.71	2.73	20	
Isopropylbenzene	51.48	1.0	50	0	103	72 - 131	52.03	1.06	20	
m,p-Xylene	119.4	2.0	100	0	119	80 - 121	122.3	2.4	20	
Methylene chloride	46.48	2.0	50	0	93.0	74 - 124	47.19	1.52	20	
Naphthalene	52.1	1.0	50	0	104	61 - 128	50.74	2.65	20	
n-Butylbenzene	52.08	1.0	50	0	104	75 - 128	52.41	0.631	20	
n-Propylbenzene	47.99	1.0	50	0	96.0	76 - 126	48.63	1.33	20	
o-Xylene	50.27	1.0	50	0	101	78 - 122	50.44	0.334	20	
sec-Butylbenzene	50.1	1.0	50	0	100	77 - 126	50.95	1.68	20	
Styrene	50.68	1.0	50	0	101	78 - 123	50.34	0.682	20	
tert-Butylbenzene	48.5	1.0	50	0	97.0	78 - 124	49.26	1.55	20	
Tetrachloroethene	52.55	1.0	50	0	105	74 - 129	52.52	0.0617	20	
Toluene	47.99	1.0	50	0	96.0	80 - 121	48.75	1.56	20	
trans-1,2-Dichloroethene	55.67	1.0	50	0	111	75 - 124	56.26	1.05	20	
trans-1,3-Dichloropropene	55.24	1.0	50	0	110	73 - 127	55.15	0.156	20	
Trichloroethene	54.17	1.0	50	0	108	79 - 123	54.06	0.192	20	
Trichlorofluoromethane	59.73	1.0	50	0	119	65 - 141	57.9	3.12	20	
Vinyl chloride	56.08	1.0	50	0	112	58 - 137	56.65	1.02	20	
Surr: 1,2-Dichloroethane-d4	*52.51*	*1.0*	*50*	*0*	*105*	*81 - 118*	*52.22*	*0.553*	*20*	
Surr: 4-Bromofluorobenzene	*53.47*	*1.0*	*50*	*0*	*107*	*85 - 114*	*54.09*	*1.15*	*20*	
Surr: Dibromofluoromethane	*50.6*	*1.0*	*50*	*0*	*101*	*80 - 119*	*49.92*	*1.36*	*20*	
Surr: Toluene-d8	*51.24*	*1.0*	*50*	*0*	*102*	*89 - 112*	*51.6*	*0.702*	*20*	

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

ALS Group Houston, Corp Date: 31-May-18

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant
WorkOrder:	HS18050932

QC BATCH REPORT

Batch ID:	**R316644**	**Instrument:**	**VOA2**	**Method:**	**SW8260**

The following samples were analyzed in this batch: HS18050932-01 HS18050932-02

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18050932

QC BATCH REPORT

Batch ID: R317203 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-052318** Units: **mg/L** Analysis Date: **23-May-2018 19:50**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582591** 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: **WLCSW1-052318** Units: **mg/L** Analysis Date: **23-May-2018 20:05**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582592** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.27	0.500	20	0	101	80 - 120				
Sulfate	20.37	0.500	20	0	102	80 - 120				

LCSD Sample ID: **WLCSDW1-052318** Units: **mg/L** Analysis Date: **23-May-2018 20:19**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582593** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.53	0.500	20	0	103	80 - 120	20.27	1.29	20	
Sulfate	20.54	0.500	20	0	103	80 - 120	20.37	0.826	20	

MS Sample ID: **HS18051121-08MS** Units: **mg/L** Analysis Date: **23-May-2018 20:48**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582595** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	14.9	0.500	10	4.869	100	80 - 120				
Sulfate	46.13	0.500	10	36.48	96.6	80 - 120				

MSD Sample ID: **HS18051121-08MSD** Units: **mg/L** Analysis Date: **23-May-2018 21:03**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582596** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	15.35	0.500	10	4.869	105	80 - 120	14.9	2.98	20	
Sulfate	47.4	0.500	10	36.48	109	80 - 120	46.13	2.72	20	

The following samples were analyzed in this batch: HS18050932-01

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

ALS Group Houston, Corp Date: 31-May-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18050932**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 31-May-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18050932
Date/Time Received: **18-May-2018 08:45**
Received by: **JRM**

Checklist completed by: *Raegen Giga* eSignature | 18-May-2018 Date
Reviewed by: 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	2.1c/1.6c uc/c	IR 11	
Cooler(s)/Kit(s):	43885		
Date/Time sample(s) sent to storage:	05/18/2018 13:40		
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: SONIA WEST

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

HS18050932
Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	VOC	CHLORIDE, SULFATE									Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_051718	Water	05/17/18 / 14:00		3	3										HCL	
LH18/24-SP650_051718	Water	05/17/18 / 14:00		1		1									NONE	
Trip Blank	Water	05/17/18		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	05/17/18	14:30									

9For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition
Jm	5/18/18	08:45							

Remarks

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

Cooler -43885
Temp 2.1

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5837

43 885

CUSTODY SEAL
Date: 5/17/18 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broke: SY
Date: 05/18/18

43885 MAY 18 2018

10 CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: ADDITIONAL COOLERS - RJ

43885

RMA:

FedEx Express

E

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 0221 4380 9528 6289

FedEx
TRK# 0221 4380 9528 6289

FRI - 18 MAY 10:30A 99
PRIORITY OVERNIGHT

AB SGRA

77099
IAH

FID 162786 17MAY18 IGGA 54602/7828/9C8A

Volatile Organics Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18050932

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL)#	SMC3 (DCE)#	OTHER #	TOT OUT
01	VLCSW-180521	100	103	103	106	0
02	VBLKW-180521	104	108	100	101	0
03	HS18050932-02	106	107	101	102	0
04	HS18050926-06	100	103	104	108	0
05	HS18050926-06	101	102	105	107	0
06	HS18050932-01	107	108	102	103	0
07						
08						
09						
10						
11						
12						
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14						
15						
16						
17						
18						
19						
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22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(85-115)
SMC2 (TOL)	= Toluene-d8	(85-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-120)
OTHER	= 4-Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.00	53.10	106	80-120
1,2-Dichloroethylene (t	100.00	104.13	104	80-120
Chloromethane	50.00	53.68	107	80-120
Vinyl Chloride	50.00	51.64	103	80-120
Bromomethane	50.00	41.07	82	80-120
Chloroethane	50.00	53.92	108	80-120
Trichlorofluoromethane	50.00	54.87	110	80-120
Acetone	100.00	102.09	102	80-120
1,1-Dichloroethene	50.00	52.72	105	80-120
Methylene Chloride	50.00	46.67	93	80-120
Methyl tert-butyl ether	50.00	48.16	96	80-120
Carbon Disulfide	100.00	100.30	100	80-120
trans-1,2-Dichloroethen	50.00	54.01	108	80-120
1,1-Dichloroethane	50.00	48.95	98	80-120
2-Butanone	100.00	100.51	100	80-120
2,2-Dichloropropane	50.00	51.46	103	80-120
cis-1,2-Dichloroethene	50.00	50.11	100	80-120
Chloroform	50.00	48.73	97	80-120
Bromochloromethane	50.00	52.79	106	80-120
1,1,1-Trichloroethane	50.00	51.43	103	80-120
1,1-Dichloropropene	50.00	45.16	90	80-120
1,2-Dichloroethane	50.00	49.32	99	80-120
Carbon Tetrachloride	50.00	48.06	96	80-120
Benzene	50.00	46.61	93	80-120
Trichloroethene	50.00	50.16	100	80-120
Bromodichloromethane	50.00	48.33	97	80-120
1,2-Dichloropropane	50.00	46.53	93	80-120
Dibromomethane	50.00	50.99	102	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
4-Methyl-2-Pentanone	100.00	92.91	93	80-120
cis-1,3-Dichloropropene	50.00	51.55	103	80-120
Toluene	50.00	45.47	91	80-120
trans-1,3-Dichloroprope	50.00	54.22	108	80-120
2-Hexanone	100.00	97.97	98	80-120
1,1,2-Trichloroethane	50.00	47.82	96	80-120
1,3-Dichloropropane	50.00	48.02	96	80-120
Dibromochloromethane	50.00	49.92	100	80-120
Tetrachloroethene	50.00	49.00	98	80-120
1,2-Dibromoethane	50.00	50.23	100	80-120
1-Chlorohexane	50.00	54.93	110	80-120
Chlorobenzene	50.00	46.33	93	80-120
1,1,1,2-Tetrachloroetha	50.00	48.27	96	80-120
Ethylbenzene	50.00	47.18	94	80-120
m,p-Xylenes	100.00	112.80	113	80-120
o-Xylene	50.00	47.82	96	80-120
Styrene	50.00	49.10	98	80-120
Bromoform	50.00	50.99	102	80-120
Isopropylbenzene	50.00	48.27	96	80-120
1,1,2,2-Tetrachloroetha	50.00	45.64	91	80-120
1,2,3-Trichloropropane	50.00	52.24	104	80-120
n-Propylbenzene	50.00	47.44	95	80-120
Bromobenzene	50.00	48.25	96	80-120
1,3,5-Trimethylbenzene	50.00	46.77	94	80-120
2-Chlorotoluene	50.00	54.60	109	80-120
4-Chlorotoluene	50.00	55.63	111	80-120
tert-Butylbenzene	50.00	47.99	96	80-120
1,2,4-Trimethylbenzene	50.00	56.40	113	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
sec-Butylbenzene	50.00	50.01	100	80-120
p-Isopropyltoluene	50.00	49.43	99	80-120
1,3-Dichlorobenzene	50.00	48.13	96	80-120
1,4-Dichlorobenzene	50.00	47.22	94	80-120
n-Butylbenzene	50.00	51.85	104	80-120
1,2-Dichlorobenzene	50.00	48.27	96	80-120
1,2-Dibromo-3-Chloropro	50.00	52.00	104	80-120
1,2,4-Trichlorobenzene	50.00	52.35	105	80-120
Hexachlorobutadiene	50.00	52.20	104	80-120
Naphthalene	50.00	51.79	104	80-120
1,2,3-Trichlorobenzene	50.00	49.83	100	80-120
Methyl acetate	50.00	47.14	94	80-120
Freon TF	50.00	54.31	109	80-120
Methylcyclohexane	50.00	49.74	99	80-120
Cyclohexane	50.00	53.79	108	80-120
Xylenes (total)	150.00	160.63	107	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Lab File ID: D050401 BFB Injection Date: 05/04/18

Instrument ID: VOA2 BFB Injection Time: 1455

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.5
75	30.0 - 60.0% of mass 95	48.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.5
175	5.0 - 9.0% of mass 174	7.0 (8.4)1
176	95.0 - 101.0% of mass 174	79.9 (95.7)1
177	5.0 - 9.0% of mass 176	5.9 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD00.5	VSTD00.5	D050402	05/04/18	1519
02	VSTD001	VSTD001	D050403	05/04/18	1543
03	VSTD002	VSTD002	D050404	05/04/18	1608
04	VSTD005	VSTD005	D050405	05/04/18	1632
05	VSTD010	VSTD010	D050406	05/04/18	1656
06	VSTD020	VSTD020	D050407	05/04/18	1721
07	VSTD050	VSTD050	D050408	05/04/18	1745
08	VSTD100	VSTD100	D050409	05/04/18	1809
09	VSTD200	VSTD200	D050410	05/04/18	1834
10					
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page 1 of 1

FORM V VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
Iodomethane	908	1852	4199	13424	36689	95749
Dichlorodifluoromethane	811	2981	7390	16634	34343	71401
1,2-Dichloroethylene (total)	0.477	0.480	0.437	0.495	0.326	0.514
Chloromethane	4673	8950	15710	36344	63352	130241
tert-Amyl alcohol	0.040	0.041	0.038	0.043	0.038	0.044
Vinyl Chloride	0.566	0.640	0.620	0.642	0.631	0.702
Bromomethane	0.422	0.420	0.385	0.409	0.351	0.354
Chloroethane	826	2325	6397	11400	24091	55952
tert-Butyl ethyl ether	0.793	0.830	0.754	0.854	0.754	0.875
Trichlorofluoromethane	0.409	0.581	0.574	0.589	0.609	0.697
Acrolein	526	1199	3349	8739	16945	33060
Acetone	3867	5388	7902	14626	26679	49743
1,1-Dichloroethene	0.321	0.368	0.348	0.415	0.387	0.404
Isobutyl Alcohol	60	176	300	1867	3536	7038
Acetonitrile	0.067	0.070	0.066	0.055	0.058	0.064
Allyl Chloride	1.724	1.875	1.637	1.454	1.404	1.663
Acrylonitrile	0.168	0.218	0.216	0.267	0.175	0.236
Methylene Chloride	0.622	0.641	0.544	0.540	0.464	0.516
Methyl tert-butyl ether	1.528	1.675	1.388	1.520	1.347	1.508
Carbon Disulfide	0.923	0.899	0.845	0.877	0.821	0.915
trans-1,2-Dichloroethene	1429	3416	6251	16439	14477	65763
Vinyl Acetate	0.672	0.766	0.622	0.717	0.591	0.695
1,1-Dichloroethane	1.020	1.096	0.952	1.090	0.958	1.053
2-Butanone	0.234	0.264	0.225	0.283	0.250	0.286
Methacrylonitrile	0.672	0.668	0.554	0.668	0.583	0.650
2,2-Dichloropropane	0.565	0.670	0.691	0.723	0.665	0.754
cis-1,2-Dichloroethene	0.580	0.509	0.492	0.544	0.462	0.557
Chloroform	0.908	0.906	0.890	0.933	0.828	0.906
Bromochloromethane	0.240	0.241	0.216	0.275	0.242	0.266
tert-Amyl methyl ether	1.717	1.817	1.607	1.788	1.607	1.722
1,1,1-Trichloroethane	0.677	0.720	0.714	0.759	0.711	0.800
1,1-Dichloropropene	0.576	0.569	0.417	0.418	0.390	0.410
1,2-Dichloroethane	0.502	0.553	0.412	0.517	0.463	0.490
Carbon Tetrachloride	0.553	0.435	0.449	0.459	0.413	0.448
3,3-Dimethyl-1-butanol	0.034	0.033	0.028	0.032	0.031	0.036
Benzene	1.454	1.456	1.303	1.404	1.188	1.292
Trichloroethene	0.338	0.339	0.325	0.344	0.314	0.350
Bromodichloromethane	0.500	0.510	0.449	0.498	0.438	0.482
Methyl Methacrylate	0.603	0.595	0.549	0.618	0.561	0.641
2-Chloroethylvinyl ether	0.065	0.059	0.057	0.064	0.054	0.059
1,2-Dichloropropane	0.426	0.420	0.385	0.428	0.358	0.396
tert-Butyl formate	0.938	0.952	0.880	0.940	0.830	0.921
Dibromomethane	0.173	0.194	0.181	0.211	0.185	0.202
4-Methyl-2-Pentanone	0.521	0.508	0.461	0.493	0.425	0.478

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
cis-1,3-Dichloropropene	0.512	0.502	0.478	0.572	0.499	0.554
1,3,5-Trichlorobenzene	1.173	1.011	0.942	1.305	0.993	1.155
Ethyl Methacrylate	4038	6033	11086	28787	50649	104310
Toluene	1.873	1.750	1.559	1.678	1.440	1.537
trans-1,3-Dichloropropene	0.348	0.431	0.378	0.479	0.408	0.461
2-Hexanone	0.309	0.302	0.275	0.310	0.262	0.301
1,1,2-Trichloroethane	0.294	0.328	0.291	0.316	0.274	0.289
1,3-Dichloropropane	0.616	0.619	0.562	0.621	0.551	0.587
Dibromochloromethane	0.432	0.432	0.405	0.465	0.402	0.437
Tetrachloroethene	0.363	0.305	0.311	0.312	0.290	0.315
1,2-Dibromoethane	0.366	0.367	0.341	0.396	0.336	0.378
1-Chlorohexane	7042	8884	5291	23114	41316	79441
Chlorobenzene	1.221	1.062	0.956	1.037	0.875	0.954
1,1,1,2-Tetrachloroethane	0.391	0.406	0.375	0.430	0.367	0.388
Ethylbenzene	0.662	0.572	0.505	0.558	0.477	0.514
m,p-Xylenes	8714	14801	28486	70246	125344	249353
o-Xylene	0.770	0.691	0.652	0.721	0.619	0.654
Styrene	1.154	1.060	1.058	1.186	1.007	1.086
Bromoform	0.270	0.321	0.286	0.321	0.285	0.320
Isopropylbenzene	1.809	1.752	1.516	1.680	1.496	1.636
1,1,2,2-Tetrachloroethane	1.249	1.257	1.127	1.254	1.030	1.134
Ethanol	0.050	0.054	0.032	0.044	0.042	0.047
1,2,3-Trichloropropane	5517	4425	6121	12511	23472	44805
trans-1,4-Dichloro-2-butene	308	721	2058	5862	10789	23370
n-Propylbenzene	4.670	4.367	3.905	4.332	3.679	3.989
Bromobenzene	1.148	1.054	1.034	1.135	0.926	1.009
1,3,5-Trimethylbenzene	3.665	3.191	2.986	3.384	2.789	3.016
2-Chlorotoluene	7021	12620	24838	60449	108687	221609
4-Chlorotoluene	7552	13276	25669	66016	121891	243997
tert-Butylbenzene	3.007	2.534	2.277	2.752	2.289	2.511
1,2,4-Trimethylbenzene	8310	14136	27909	72111	127826	260489
sec-Butylbenzene	3.744	3.179	3.083	3.717	3.162	3.452
p-Isopropyltoluene	3.256	2.780	2.637	3.168	2.640	2.896
1,3-Dichlorobenzene	2.147	1.820	1.698	1.838	1.549	1.710
1,4-Dichlorobenzene	2.214	1.797	1.579	1.719	1.481	1.607
n-Butylbenzene	2.358	1.972	1.802	2.510	1.995	2.221
1,2-Dichlorobenzene	1.792	1.720	1.603	1.806	1.534	1.673
1,2-Dibromo-3-Chloropropane	0.158	0.152	0.162	0.191	0.173	0.192
1,2,4-Trichlorobenzene	643	1481	4916	18861	35798	79809
Hexachlorobutadiene	1253	1556	3032	10646	16436	35809
Naphthalene	1615	1823	4856	35272	83218	198251
1,2,3-Trichlorobenzene	411	946	3702	16133	30812	66775
Methyl acetate	0.627	0.677	0.595	0.665	0.529	0.596
Freon TF	1062	2610	4698	13149	30530	61420

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
1,2,3-Trimethylbenzene	3.625	2.970	2.800	3.095	2.586	2.862
Methylcyclohexane	0.494	0.445	0.404	0.436	0.435	0.477
1,4-Dioxane	113	690	1405	3801	6381	13691
n-Butanol	0.021	0.023	0.015	0.019	0.016	0.019
Methyl Acrylate	0.740	0.808	0.754	0.858	0.836	0.940
Ethyl Acrylate	1.553	1.469	1.439	1.524	1.503	1.659
n-Hexane	0.522	0.576	0.555	0.552	0.588	0.672
Cyclohexane	0.786	0.777	0.816	0.752	0.848	0.957
Isopropyl alcohol	0.042	0.041	0.037	0.040	0.035	0.038
Tert-butyl alcohol	0.063	0.066	0.048	0.063	0.053	0.064
Xylenes (total)	0.743	0.646	0.588	0.643	0.543	0.577
Propionitrile	0.178	0.183	0.167	0.170	0.157	0.184
2-Nitropropane	1.339	1.318	1.220	1.324	1.167	1.340
Ethyl Acetate	1.334	1.378	1.196	1.196	1.179	1.324
Diethyl ether	0.801	1.023	0.886	0.962	0.876	0.949
Tetrahydrofuran	0.181	0.230	0.200	0.219	0.192	0.212
4-Methyl-2-pentanol	0.100	0.101	0.091	0.105	0.090	0.106
Diisopropyl ether	2.277	2.461	1.971	2.288	2.021	2.230
2-Methylnaphthalene	948	734	1017	2313	4532	17472
Dichlorofluoromethane	0.956	1.036	0.892	0.964	0.856	0.983
1-Methylnaphthalene	844	914	1005	2396	4903	22016
Isobutylene		0.441	0.446	0.518	0.499	0.596
Dibromofluoromethane		4558	7916	18421	34934	66765
Toluene-d8		23273	34734	74973	138297	257970
1,2-Dichloroethane-d4	4399	5880	9916	23445	43519	86791
4-Bromofluorobenzene	11709	9609	13070	28190	50489	96704

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
Iodomethane	287361	593037	1249302
Dichlorodifluoromethane	187813	343934	702772
1,2-Dichloroethylene (total)	0.511	0.443	0.441
Chloromethane	317456	602360	1207423
tert-Amyl alcohol	0.044	0.042	0.039
Vinyl Chloride	0.679	0.566	0.565
Bromomethane	0.339	0.273	
Chloroethane	136214	254833	499449
tert-Butyl ethyl ether	0.886	0.838	0.786
Trichlorofluoromethane	0.706	0.571	0.576
Acrolein	84761	191202	381410
Acetone	125590	250202	492850
1,1-Dichloroethene	0.432	0.360	0.363
Isobutyl Alcohol	17826	39310	
Acetonitrile	0.068	0.063	0.062
Allyl Chloride	1.762	1.566	1.557
Acrylonitrile	0.259	0.227	0.231
Methylene Chloride	0.522	0.458	0.448
Methyl tert-butyl ether	1.474	1.287	1.250
Carbon Disulfide	0.924	0.784	0.792
trans-1,2-Dichloroethene	164665	314877	630396
Vinyl Acetate	0.634	0.556	0.539
1,1-Dichloroethane	1.049	0.914	0.903
2-Butanone	0.284	0.263	0.250
Methacrylonitrile	0.641	0.581	0.556
2,2-Dichloropropane	0.758	0.643	0.643
cis-1,2-Dichloroethene	0.552	0.480	0.474
Chloroform	0.897	0.774	0.754
Bromochloromethane	0.278	0.246	0.241
tert-Amyl methyl ether	1.690	1.498	1.416
1,1,1-Trichloroethane	0.812	0.679	0.672
1,1-Dichloropropene	0.411	0.347	0.342
1,2-Dichloroethane	0.475	0.419	0.413
Carbon Tetrachloride	0.436	0.371	0.379
3,3-Dimethyl-1-butanol	0.038	0.034	0.032
Benzene	1.272	1.064	1.004
Trichloroethene	0.353	0.303	0.292
Bromodichloromethane	0.474	0.409	0.394
Methyl Methacrylate	0.636	0.566	0.544
2-Chloroethylvinyl ether	0.057	0.049	0.049
1,2-Dichloropropane	0.381	0.323	0.315
tert-Butyl formate	0.883	0.767	0.769
Dibromomethane	0.208	0.181	0.178
4-Methyl-2-Pentanone	0.459	0.403	0.381

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
cis-1,3-Dichloropropene	0.563	0.488	0.466
1,3,5-Trichlorobenzene	1.148	1.040	1.026
Ethyl Methacrylate	266010	516544	982185
Toluene	1.488	1.249	1.171
trans-1,3-Dichloropropene	0.488	0.433	0.420
2-Hexanone	0.300	0.269	0.258
1,1,2-Trichloroethane	0.293	0.252	0.246
1,3-Dichloropropane	0.572	0.507	0.490
Dibromochloromethane	0.438	0.388	0.381
Tetrachloroethene	0.317	0.267	0.266
1,2-Dibromoethane	0.374	0.336	0.329
1-Chlorohexane	198340	370336	722126
Chlorobenzene	0.936	0.806	0.755
1,1,1,2-Tetrachloroethane	0.389	0.340	0.329
Ethylbenzene	0.508	0.441	0.422
m,p-Xylenes	611125	1138513	2087186
o-Xylene	0.654	0.562	0.531
Styrene	1.062	0.910	0.854
Bromoform	0.318	0.286	0.279
Isopropylbenzene	1.619	1.346	1.238
1,1,2,2-Tetrachloroethane	1.072	0.933	0.915
Ethanol	0.046	0.041	0.038
1,2,3-Trichloropropane	109708	210995	405365
trans-1,4-Dichloro-2-butene	64084	133141	273122
n-Propylbenzene	3.914	3.290	3.150
Bromobenzene	1.002	0.870	0.854
1,3,5-Trimethylbenzene	2.913	2.437	2.300
2-Chlorotoluene	552517	1043252	1946835
4-Chlorotoluene	609251	1137519	2097579
tert-Butylbenzene	2.532	2.100	2.047
1,2,4-Trimethylbenzene	648084	1208466	2216630
sec-Butylbenzene	3.424	2.872	2.768
p-Isopropyltoluene	2.883	2.450	2.371
1,3-Dichlorobenzene	1.699	1.485	1.449
1,4-Dichlorobenzene	1.625	1.438	1.419
n-Butylbenzene	2.281	1.950	1.932
1,2-Dichlorobenzene	1.604	1.381	1.332
1,2-Dibromo-3-Chloropropane	0.199	0.189	0.194
1,2,4-Trichlorobenzene	211499	444824	861637
Hexachlorobutadiene	92968	187228	376631
Naphthalene	525810	1071893	2071564
1,2,3-Trichlorobenzene	177731	381509	758156
Methyl acetate	0.605	0.556	0.543
Freon TF	150866	279713	561005

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
1,2,3-Trimethylbenzene	2.788	2.383	2.294
Methylcyclohexane	0.477	0.392	0.391
1,4-Dioxane	35743	71709	138351
n-Butanol	0.018	0.016	0.016
Methyl Acrylate	0.947	0.848	0.816
Ethyl Acrylate	1.654	1.435	1.404
n-Hexane	0.708	0.594	0.612
Cyclohexane	0.956	0.794	0.793
Isopropyl alcohol	0.038	0.035	0.036
Tert-butyl alcohol	0.065	0.059	0.056
Xylenes (total)	0.568	0.474	
Propionitrile	0.190	0.169	0.160
2-Nitropropane	1.297	1.135	1.062
Ethyl Acetate	1.291	1.113	1.078
Diethyl ether	0.913	0.806	0.775
Tetrahydrofuran	0.209	0.183	0.177
4-Methyl-2-pentanol	0.105	0.088	0.078
Diisopropyl ether	2.179	1.888	1.812
2-Methylnaphthalene	147779	411151	895104
Dichlorofluoromethane	0.968	0.820	0.798
1-Methylnaphthalene	162419	403943	838915
Isobutylene	0.544	0.423	0.405
Dibromofluoromethane	161085	308649	584635
Toluene-d8	611504	1145767	
1,2-Dichloroethane-d4	212338	423867	804250
4-Bromofluorobenzene	235072	459019	852556

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Iodomethane	LINR	8.189e-002	2.46335476		0.9991102	0.9900000
Dichlorodifluoromethane	LINR	-1.92e-002	2.19991391		0.9977154	0.9900000
1,2-Dichloroethylene (total)	AVRG		0.45816206		12.572	15.000
Chloromethane	LINR	-3.53e-002	1.28409200		0.9984324	0.9900000
tert-Amyl alcohol	AVRG		4.095e-002		6.040	20.000
Vinyl Chloride	AVRG		0.62359143		8.051	15.000
Bromomethane	AVRG		0.36929500		13.707	15.000
Chloroethane	LINR	-3.23e-002	3.07923819		0.9973153	0.9900000
tert-Butyl ethyl ether	AVRG		0.81895199		6.040	20.000
Trichlorofluoromethane	AVRG		0.59017758		14.561	15.000
Acrolein	LINR	-7.83e-003	8.11796688		0.9995181	0.9900000
Acetone	LINR	-7.42e-002	6.29263964		0.9993250	0.9900000
1,1-Dichloroethene	AVRG		0.37751366		9.310	15.000
Isobutyl Alcohol	LINR	0.22430274	391.223339		0.9998638	0.9900000
Acetonitrile	AVRG		6.383e-002		7.570	15.000
Allyl Chloride	AVRG		1.62703303		9.186	15.000
Acrylonitrile	AVRG		0.22187087		14.951	15.000
Methylene Chloride	AVRG		0.52836197		12.945	15.000
Methyl tert-butyl ether	AVRG		1.44180586		9.364	15.000
Carbon Disulfide	AVRG		0.86450338		6.448	15.000
trans-1,2-Dichloroethene	LINR	-6.6e-003	2.43638553		0.9974880	0.9900000
Vinyl Acetate	AVRG		0.64364705		11.757	15.000
1,1-Dichloroethane	AVRG		1.00417451		7.347	15.000
2-Butanone	AVRG		0.25994514		8.409	15.000
Methacrylonitrile	AVRG		0.61913674		8.056	15.000
2,2-Dichloropropane	AVRG		0.67900374		9.012	15.000
cis-1,2-Dichloroethene	AVRG		0.51662595		8.236	15.000
Chloroform	AVRG		0.86628053		7.472	15.000
Bromochloromethane	AVRG		0.24932446		7.949	15.000
tert-Amyl methyl ether	AVRG		1.65126939		8.010	20.000
1,1,1-Trichloroethane	AVRG		0.72725901		7.172	15.000
1,1-Dichloropropene	AVRG		0.43095089		19.750	15.000
1,2-Dichloroethane	AVRG		0.47160607		10.508	15.000
Carbon Tetrachloride	AVRG		0.43824169		12.077	15.000
3,3-Dimethyl-1-butanol	AVRG		3.327e-002		8.454	20.000
Benzene	AVRG		1.27097369		12.689	15.000
Trichloroethene	AVRG		0.32898077		6.578	15.000
Bromodichloromethane	AVRG		0.46161921		8.953	15.000
Methyl Methacrylate	AVRG		0.59079374		6.249	15.000
2-Chloroethylvinyl ether	AVRG		5.706e-002		9.715	15.000
1,2-Dichloropropane	AVRG		0.38141520		11.039	15.000
tert-Butyl formate	AVRG		0.87542044		8.216	20.000
Dibromomethane	AVRG		0.19042867		7.347	15.000
4-Methyl-2-Pentanone	AVRG		0.45881731		10.380	15.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.51508472		7.544	15.000
1,3,5-Trichlorobenzene	AVRG		1.08812993		10.523	20.000
Ethyl Methacrylate	LINR	-4.54e-002	2.48619322		0.9973218	0.9900000
Toluene	AVRG		1.52725800		14.767	15.000
trans-1,3-Dichloropropene	AVRG		0.42746512		10.662	15.000
2-Hexanone	AVRG		0.28750947		7.279	15.000
1,1,2-Trichloroethane	AVRG		0.28686074		9.303	15.000
1,3-Dichloropropane	AVRG		0.56948690		8.359	15.000
Dibromochloromethane	AVRG		0.42004436		6.527	15.000
Tetrachloroethene	AVRG		0.30523513		9.588	15.000
1,2-Dibromoethane	AVRG		0.35811597		6.487	15.000
1-Chlorohexane	LINR	-5.88e-002	3.40929522		0.9971719	0.9900000
Chlorobenzene	AVRG		0.95571951		14.713	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.37945450		8.252	15.000
Ethylbenzene	AVRG		0.51791421		14.064	15.000
m,p-Xylenes	LINR	-0.1344974	2.04592126		0.9954426	0.9900000
o-Xylene	AVRG		0.65039936		11.401	15.000
Styrene	AVRG		1.04192927		10.200	15.000
Bromoform	AVRG		0.29840970		7.039	15.000
Isopropylbenzene	AVRG		1.56586944		11.898	15.000
1,1,2,2-Tetrachloroethane	AVRG		1.10788977		11.932	15.000
Ethanol	AVRG		4.38e-002		14.407	15.000
1,2,3-Trichloropropane	LINR	-5.21e-002	2.29870153		0.9990095	0.9900000
trans-1,4-Dichloro-2-butene	LINR	1.543e-002	7.89416251		0.9995944	0.9900000
n-Propylbenzene	AVRG		3.92184130		12.699	15.000
Bromobenzene	AVRG		1.00360302		10.434	15.000
1,3,5-Trimethylbenzene	AVRG		2.96468255		14.482	15.000
2-Chlorotoluene	LINR	-4.73e-002	0.47352840		0.9978258	0.9900000
4-Chlorotoluene	LINR	-5.33e-002	0.43852809		0.9971166	0.9900000
tert-Butylbenzene	AVRG		2.44993705		12.577	15.000
1,2,4-Trimethylbenzene	LINR	-5.59e-002	0.41467645		0.9968763	0.9900000
sec-Butylbenzene	AVRG		3.26693980		10.529	15.000
p-Isopropyltoluene	AVRG		2.78673905		10.739	15.000
1,3-Dichlorobenzene	AVRG		1.71066117		12.475	15.000
1,4-Dichlorobenzene	AVRG		1.65308224		14.795	15.000
n-Butylbenzene	AVRG		2.11326574		11.193	15.000
1,2-Dichlorobenzene	AVRG		1.60513122		10.398	15.000
1,2-Dibromo-3-Chloropropane	AVRG		0.17885592		9.980	15.000
1,2,4-Trichlorobenzene	LINR	8.689e-003	1.06786014		0.9998126	0.9900000
Hexachlorobutadiene	LINR	-5.59e-004	2.46565106		0.9992458	0.9900000
Naphthalene	LINR	1.026e-002	0.44283851		0.9994513	0.9900000
1,2,3-Trichlorobenzene	LINR	2.046e-002	1.21724769		0.9997504	0.9900000
Methyl acetate	AVRG		0.59921227		8.570	15.000
Freon TF	LINR	-2.9e-002	2.75277887		0.9976496	0.9900000

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,2,3-Trimethylbenzene	AVRG		2.82248193		14.128	15.000
Methylcyclohexane	AVRG		0.43895621		8.674	15.000
1,4-Dioxane	LINR	-0.4032007	221.786386		0.9987196	0.9900000
n-Butanol	AVRG		1.823e-002		14.617	15.000
Methyl Acrylate	AVRG		0.83874099		8.510	15.000
Ethyl Acrylate	AVRG		1.51559692		6.104	15.000
n-Hexane	AVRG		0.59755237		9.898	15.000
Cyclohexane	AVRG		0.83108987		9.102	15.000
Isopropyl alcohol	AVRG		3.801e-002		6.909	15.000
Tert-butyl alcohol	AVRG		5.976e-002		10.202	15.000
Xylenes (total)	AVRG		0.59780977		13.452	15.000
Propionitrile	AVRG		0.17328970		6.503	15.000
2-Nitropropane	AVRG		1.24476677		8.241	15.000
Ethyl Acetate	AVRG		1.23229311		8.458	15.000
Diethyl ether	AVRG		0.88790529		9.365	15.000
Tetrahydrofuran	AVRG		0.20038573		9.298	15.000
4-Methyl-2-pentanol	AVRG		9.614e-002		10.060	15.000
Diisopropyl ether	AVRG		2.12537869		10.061	15.000
2-Methylnaphthalene	2ORDR	0.10631846	1.25517173	-6.55e-002	0.9948166	0.9900000
Dichlorofluoromethane	AVRG		0.91934791		8.824	15.000
1-Methylnaphthalene	2ORDR	9.678e-002	1.22233030	-4.15e-002	0.9959842	0.9900000
Isobutylene	AVRG		0.48384642		13.701	15.000
Dibromofluoromethane	2ORDR	-1.57e-002	2.22255691	0.28885730	0.9993429	0.9900000
Toluene-d8	2ORDR	2.428e-003	0.64565832	0.14421290	0.9996227	0.9900000
1,2-Dichloroethane-d4	LINR	-4.11e-002	1.91112683		0.9982824	0.9900000
4-Bromofluorobenzene	2ORDR	-2.62e-002	2.14770503	0.25219752	0.9996603	0.9900000

FORM VI VOA

MSVOA02 -Logbook

Batch: 31755
Date: 05-04-2018
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-04-2018 02:55 pm	1.00	50 mL	50 mL	D050401.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD00.5	ICAL1	05-04-2018 03:19 pm	1.00	50 mL	50 mL	D050402.D	Liquid	Y	NA
	0.5 uL cal std/250 ml DI									
3	VSTD001	ICAL2	05-04-2018 03:43 pm	1.00	50 mL	50 mL	D050403.D	Liquid	Y	NA
	1 uL cal std/250 ml DI									
4	VSTD002	ICAL3	05-04-2018 04:08 pm	1.00	50 mL	50 mL	D050404.D	Liquid	Y	NA
	2 uL cal std/250 ml DI									
5	VSTD005	ICAL4	05-04-2018 04:32 pm	1.00	50 mL	50 mL	D050405.D	Liquid	Y	NA
	5 uL cal std/250 ml DI									
6	VSTD010	ICAL5	05-04-2018 04:56 pm	1.00	50 mL	50 mL	D050406.D	Liquid	Y	NA
	2 uL cal std/50 ml DI									
7	VSTD020	ICAL6	05-04-2018 05:21 pm	1.00	50 mL	50 mL	D050407.D	Liquid	Y	NA
	4 uL cal std/50 ml DI									
8	VSTD050	ICAL7	05-04-2018 05:45 pm	1.00	50 mL	50 mL	D050408.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
9	VSTD100	ICAL8	05-04-2018 06:09 pm	1.00	50 mL	50 mL	D050409.D	Liquid	Y	NA
	20 uL cal std/50 ml DI									
10	VSTD200	ICAL9	05-04-2018 06:34 pm	1.00	50 mL	50 mL	D050410.D	Liquid	Y	NA
	40 uL cal std/50 ml DI									
11	BLK	SAMP	05-04-2018 06:58 pm	1.00	50 mL	50 mL	D050411.D	Liquid	Y	NA
12	VSTD-ICV	ICV	05-04-2018 07:22 pm	1.00	50 mL	50 mL	D050412.D	Liquid	Y	NA
	10 uL ICV std/50 ml DI									
13	BFB	TUNE	05-04-2018 08:11 pm	1.00	50 mL	50 mL	E050401.D	Liquid	Y	NA
14	CCV	CCV	05-04-2018 08:35 pm	1.00	50 mL	50 mL	E050402.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
15	CCV	CCV	05-04-2018 09:00 pm	1.00	50 mL	50 mL	E050403.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
16	CCB	SAMP	05-04-2018 09:24 pm	1.00	50 mL	50 mL	E050404.D	Liquid	Y	NA
	CCB									
17	VLCSW-180504	LCS	05-04-2018 09:48 pm	1.00	50 mL	50 mL	E050405.D	Liquid	Y	NA
18	VBLKM-180504	SAMP	05-04-2018 10:12 pm	50.00	1 mL	50 mL	E050406.D	Liquid	Y	NA
19	VBLKW-180504	MBLK	05-04-2018 10:38 pm	1.00	50 mL	50 mL	E050407.D	Liquid	Y	NA
20	VBLKW-180504	MBLK	05-04-2018 11:01 pm	1.00	50 mL	50 mL	E050408.D	Liquid	Y	NA
21	HS18050238-01	SAMP	05-04-2018 11:25 pm	1.00	50 mL	50 mL	E050409.D	Liquid	Y	NA
22	HS18041008-05	SAMP	05-04-2018 11:49 pm	1.00	50 mL	50 mL	E050410.D	Liquid	Y	NA
23	HS18050153-15	SAMP	05-05-2018 12:14 am	1.00	50 mL	50 mL	E050411.D	Liquid	Y	<2
24	HS18050153-15MS	MS	05-05-2018 12:38 am	1.00	50 mL	50 mL	E050412.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
25	HS18050153-15MSD	MSD	05-05-2018 01:02 am	1.00	50 mL	50 mL	E050413.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
26	HS18050153-18	SAMP	05-05-2018 01:27 am	1.00	50 mL	50 mL	E050414.D	Liquid	Y	<2
27	HS18050153-01	SAMP	05-05-2018 01:51 am	1.00	50 mL	50 mL	E050415.D	Liquid	Y	<2
28	HS18050153-02	SAMP	05-05-2018 02:16 am	1.00	50 mL	50 mL	E050416.D	Liquid	Y	<2
29	HS18050153-03	SAMP	05-05-2018 02:40 am	1.00	50 mL	50 mL	E050417.D	Liquid	Y	<2
30	HS18050153-04	SAMP	05-05-2018 03:04 am	1.00	50 mL	50 mL	E050418.D	Liquid	Y	<2
31	HS18050153-05	SAMP	05-05-2018 03:29 am	1.00	50 mL	50 mL	E050419.D	Liquid	Y	<2
32	HS18050153-06	SAMP	05-05-2018 03:53 am	1.00	50 mL	50 mL	E050420.D	Liquid	Y	<2
33	HS18050153-07	SAMP	05-05-2018 04:17 am	1.00	50 mL	50 mL	E050421.D	Liquid	Y	<2

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
34	HS18050153-08	SAMP	05-05-2018 04:42 am	1.00	50 mL	50 mL	E050422.D	Liquid	Y	<2
35	HS18050153-09	SAMP	05-05-2018 05:06 am	1.00	50 mL	50 mL	E050423.D	Liquid	Y	<2
36	HS18050153-10	SAMP	05-05-2018 05:31 am	1.00	50 mL	50 mL	E050424.D	Liquid	Y	<2
37	HS18050153-11	SAMP	05-05-2018 05:55 am	1.00	50 mL	50 mL	E050425.D	Liquid	Y	<2
38	HS18050153-12	SAMP	05-05-2018 06:19 am	1.00	50 mL	50 mL	E050426.D	Liquid	Y	<2
39	HS18050153-13	SAMP	05-05-2018 06:44 am	1.00	50 mL	50 mL	E050427.D	Liquid	Y	<2
40	HS18050153-14	SAMP	05-05-2018 07:08 am	1.00	50 mL	50 mL	E050428.D	Liquid	Y	<2
41	HS18050153-16	SAMP	05-05-2018 07:33 am	1.00	50 mL	50 mL	E050429.D	Liquid	Y	<2
42	HS18050153-17	SAMP	05-05-2018 07:57 am	1.00	50 mL	50 mL	E050430.D	Liquid	Y	<2

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30502-23-01/02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

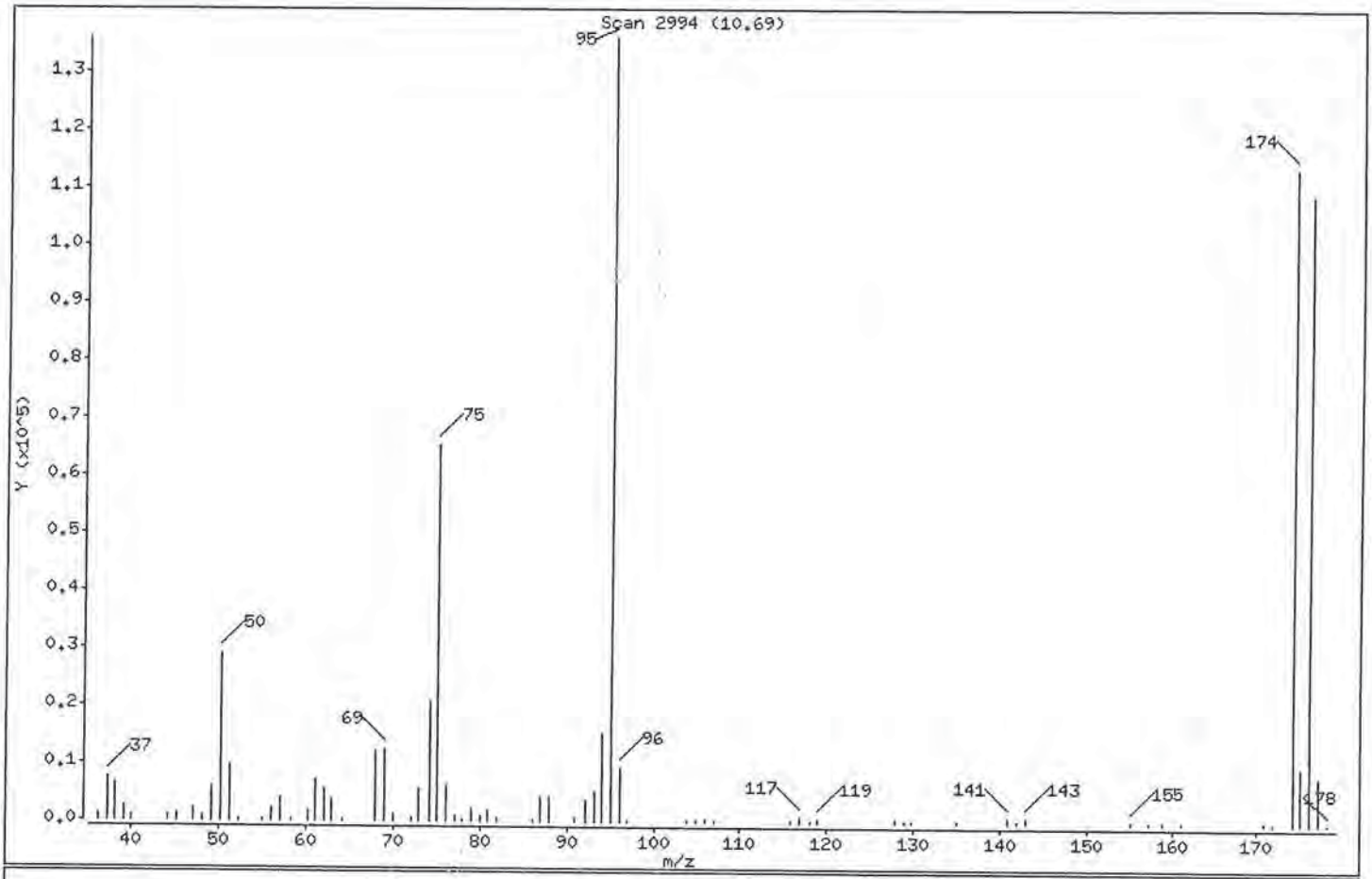
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.47
75	30.00 - 60.00% of mass 95	47.97
96	5.00 - 9.00% of mass 95	6.97
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.53
175	5.00 - 9.00% of mass 174	7.02 (8.41)
176	95.00 - 101.00% of mass 174	79.92 (95.68)
177	5.00 - 9.00% of mass 176	5.87 (7.34)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D050401.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 72

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	1405	62.10	5772	88.00	4497	134.90	157
37.10	7380	63.00	3785	91.00	496	140.90	862
38.10	6551	64.20	300	92.10	3889	141.80	209
39.10	2452	68.00	12134	93.10	5254	142.90	1014
40.00	890	69.00	12441	94.10	15326	155.00	301
44.00	831	70.10	1157	95.10	136064	157.10	297
45.10	1152	72.00	775	96.10	9482	158.80	217
47.10	2317	73.00	5765	97.00	198	161.10	265
48.00	869	74.10	20544	103.90	271	170.80	158
49.10	5957	75.10	65272	105.00	231	171.70	156
50.10	29216	76.10	6197	105.90	665	174.00	113648
51.10	9780	77.10	877	106.90	352	175.00	9558
52.20	327	78.00	385	115.70	233	176.00	108736
54.90	456	78.90	2155	116.90	930	177.00	7985
56.00	2046	80.00	818	118.00	451	178.10	152
57.10	3950	80.90	1942	118.90	697		
58.20	221	81.90	642	127.90	534		
60.10	1857	86.00	290	128.90	225		
61.10	7253	87.00	4446	129.80	309		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

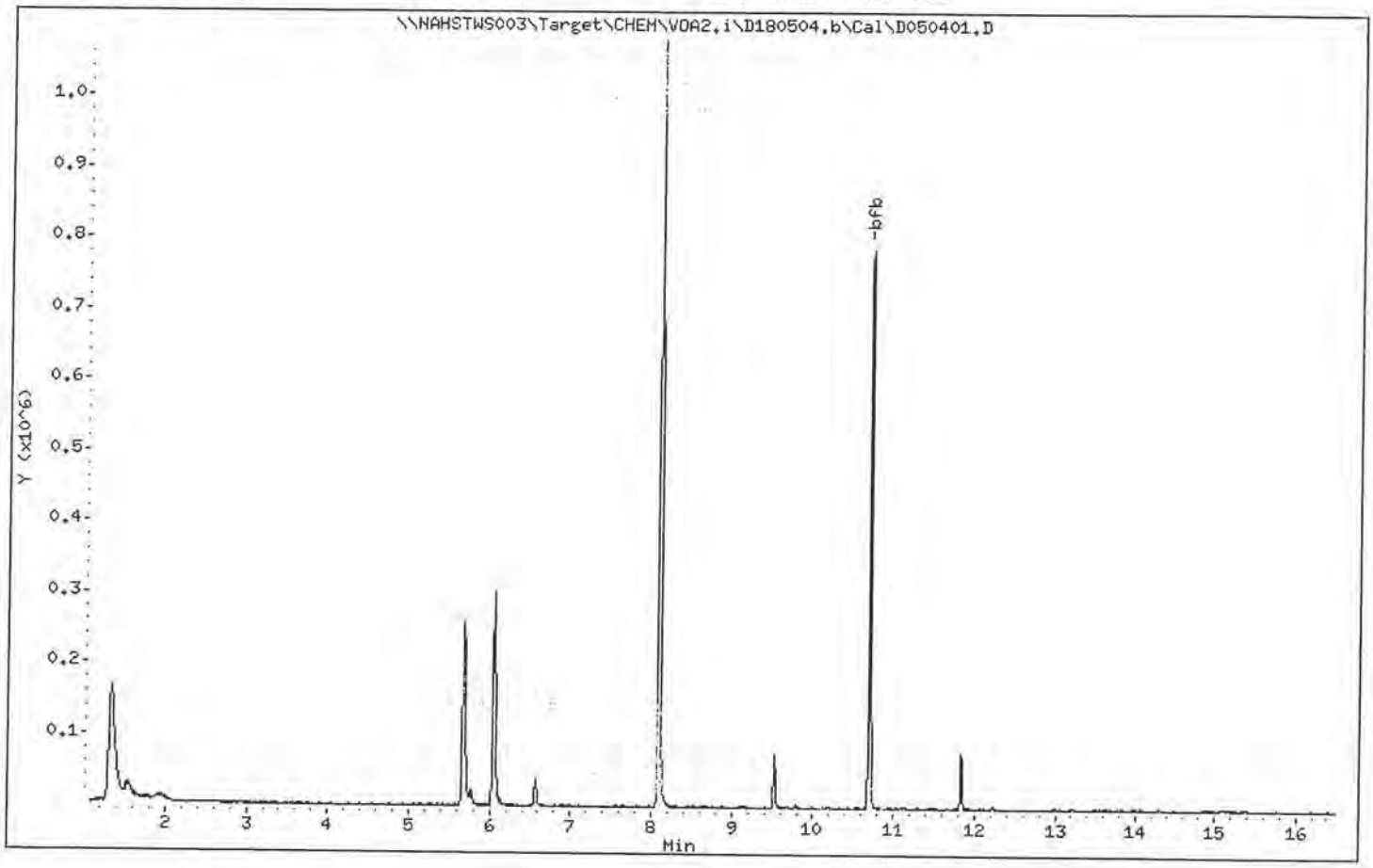
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050402.D
Lab Smp Id: VSTD00.5 Client Smp ID: VSTD00.5
Inj Date : 04-MAY-2018 15:19
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD00.5;VSTD00.5;1;1;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 18:34 Cal File: D050410.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	382189	50.0000	
186 Isobutylene	56	1.646	1.646	(0.285)	1409	0.50000	0.38 (aAM)
4 Propionitrile	54	5.246	5.246	(0.909)	6824	5.00000	5.15 (aM)
5 Vinyl Chloride	62	1.678	1.678	(0.291)	2163	0.50000	0.45 (aM)
6 Bromomethane	94	1.938	1.938	(0.336)	1615	0.50000	0.57 (aM)
159 Dichlorofluoromethane	67	2.211	2.211	(0.383)	3654	0.50000	0.51 (aM)
12 Isobutyl Alcohol	74	6.231	6.231	(1.079)	60	10.0000	14.28 (TM)
13 Acetonitrile	39	3.164	3.164	(0.548)	2548	5.00000	5.22 (aM)
14 Allyl Chloride	41	3.151	3.151	(0.546)	6589	0.50000	0.52 (aM)
15 Iodomethane	142	2.894	2.894	(0.501)	908	1.00000	4.38 (M)
16 Acrylonitrile	53	3.725	3.725	(0.645)	1284	1.00000	0.75 (aM)
17 Methylene Chloride	84	3.327	3.327	(0.576)	2378	0.50000	0.58 (aM)
18 Methyl tert-butyl ether	73	3.684	3.684	(0.638)	5840	0.50000	0.52 (aM)
19 Carbon Disulfide	76	2.936	2.936	(0.509)	7054	1.00000	1.06 (aM)
21 Vinyl Acetate	43	5.246	5.246	(0.909)	5135	1.00000	1.04 (M)
22 1,1-Dichloroethane	63	4.255	4.255	(0.737)	3900	0.50000	0.50 (aM)
24 2-Butanone	43	5.166	5.166	(0.895)	1793	1.00000	0.90 (aM)
25 Methacrylonitrile	41	5.413	5.413	(0.938)	2568	0.50000	0.54 (aM)
26 2,2-Dichloropropane	77	5.034	5.034	(0.872)	2158	0.50000	0.41 (aM)
27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.878)	2217	0.50000	0.56 (aM)
28 Chloroform	83	5.490	5.490	(0.951)	3472	0.50000	0.52 (aM)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	29 Bromochloromethane	128	5.352	5.352	(0.927)	916	0.50000	0.48 (aM)
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	4661	0.50000	0.57 (aM)
	31 1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	2588	0.50000	0.46 (a)
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	3227	0.50000	0.66 (aM)
	33 1,2-Dichloroethane	62	6.145	6.145	(0.936)	2814	0.50000	0.53 (Ta)
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	3099	0.50000	0.63 (aM)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	4399	0.50000	(Ta)
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	560342	50.0000	
	37 Benzene	78	6.093	6.093	(0.928)	8149	0.50000	0.57 (Ta)
	38 Trichloroethene	130	6.812	6.812	(1.038)	1897	0.50000	0.51 (aM)
	39 Bromodichloromethane	83	7.367	7.367	(1.122)	2801	0.50000	0.54 (aM)
	40 Methyl Methacrylate	41	7.249	7.249	(1.256)	2305	0.50000	0.51 (aM)
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	732	1.00000	1.14 (aM)
	42 1,2-Dichloropropane	63	7.059	7.059	(1.075)	2387	0.50000	0.55 (aM)
	43 2-Nitropropane	43	8.032	8.032	(1.391)	5117	0.50000	0.53 (aM)
	44 Dibromomethane	93	7.194	7.194	(1.096)	969	0.50000	0.45 (aM)
	45 4-Methyl-2-Pentanone	43	8.032	8.032	(0.843)	5117	1.00000	1.13 (aM)
	46 cis-1,3-Dichloropropene	75	7.846	7.846	(1.195)	2872	0.50000	0.49 (aM)
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	490857	50.0000	
$	48 Toluene-d8	98	8.089	8.089	(0.849)	25814	0.50000	1.83
	50 Toluene	91	8.150	8.150	(0.856)	9194	0.50000	0.61 (Ta)
	51 trans-1,3-Dichloropropene	75	8.413	8.413	(1.282)	1951	0.50000	0.40 (aM)
	52 2-Hexanone	43	8.872	8.872	(0.932)	3032	1.00000	1.07 (aM)
	53 1,1,2-Trichloroethane	83	8.596	8.596	(0.903)	1442	0.50000	0.51 (aM)
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	3026	0.50000	0.54 (aM)
	55 Dibromochloromethane	129	8.965	8.965	(0.941)	2123	0.50000	0.51 (aM)
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	1784	0.50000	0.59 (aM)
	57 1,2-Dibromoethane	107	9.071	9.071	(0.952)	1798	0.50000	0.51 (aM)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	5995	0.50000	0.63 (Ta)
	60 1,1,1,2-Tetrachloroethane	131	9.642	9.642	(1.012)	1919	0.50000	0.51 (aM)
	61 Ethylbenzene	106	9.665	9.665	(1.015)	3251	0.50000	0.63 (a)
	63 o-Xylene	106	10.175	10.175	(1.068)	3780	0.50000	0.59 (a)
	64 Styrene	104	10.194	10.194	(1.070)	5663	0.50000	0.55 (a)
	66 Bromoform	173	10.377	10.377	(1.090)	1328	0.50000	0.45 (aM)
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	8878	0.50000	0.57 (aM)
	68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	2473	0.50000	0.56 (aM)
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	11709	0.50000	1.25
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	197955	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	5517	0.50000	0.59 (Ta)
	72 trans-1,4-Dichloro-2-butene	53	10.945	10.945	(1.149)	308	0.50000	1.01 (M)
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	9244	0.50000	0.59 (Ta)
	74 Bromobenzene	156	10.827	10.827	(0.915)	2273	0.50000	0.57 (aM)
	75 1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	7256	0.50000	0.61 (a)
	78 tert-Butylbenzene	119	11.446	11.446	(0.967)	5952	0.50000	0.61 (Ta)
	81 sec-Butylbenzene	105	11.667	11.667	(0.986)	7412	0.50000	0.57 (aM)
	82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	6445	0.50000	0.58 (aM)
	83 1,3-Dichlorobenzene	146	11.770	11.770	(0.995)	4250	0.50000	0.62 (a)
	84 1,4-Dichlorobenzene	146	11.853	11.853	(1.002)	4382	0.50000	0.66 (a)
	87 n-Butylbenzene	91	12.229	12.229	(1.033)	4668	0.50000	0.55 (Ta)
	88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	3547	0.50000	0.55 (a)
	90 1,2,4-Trichlorobenzene	180	13.820	13.820	(1.168)	643	0.50000	0.60 (aM)
	92 Naphthalene	128	14.068	14.068	(1.189)	1615	0.50000	0.69 (aM)
	93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.209)	411	0.50000	1.14 (M)
	146 Methyl acetate	43	3.244	3.244	(0.562)	2398	0.50000	0.52 (aM)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
139 Diethyl ether	59	2.535	2.535	(0.439)	3060	0.50000	0.45(aM)
147 Methylcyclohexane	83	6.976	6.976	(1.063)	2766	0.50000	0.56(Ta)
131 Methyl Acrylate	55	5.272	5.272	(0.913)	2829	0.50000	0.44(aM)
133 Ethyl Acrylate	55	7.018	7.018	(1.216)	5935	0.50000	0.51(aM)
141 Cyclohexane	56	5.683	5.683	(0.984)	3004	0.50000	0.47(aM)
142 Tetrahydrofuran	42	5.426	5.426	(0.940)	1382	1.00000	0.90(aM)
148 Tert-butyl alcohol	59	3.574	3.574	(0.619)	4807	10.0000	10.52(M)
149 Isopropyl alcohol	45	3.074	3.074	(0.533)	3252	10.0000	11.19(aM)
151 4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	9850	10.0000	10.43(aM)
166 1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	7176	0.50000	0.64(Ta)
170 1,3,5-Trichlorobenzene	180	13.211	13.211	(1.116)	2323	0.50000	0.53(aM)
175 tert-Butyl ethyl ether	59	6.244	6.244	(1.082)	3031	0.50000	0.48(Ta)
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	948	0.50000	5.61(M)
156 Diisopropyl ether	45	4.425	4.425	(0.767)	8702	0.50000	0.53(aM)
171 1-Methylnaphthalene	142	15.390	15.390	(1.300)	844	0.50000	5.09(M)
130 Ethyl Acetate	43	5.246	5.246	(0.909)	5100	0.50000	0.54(aM)

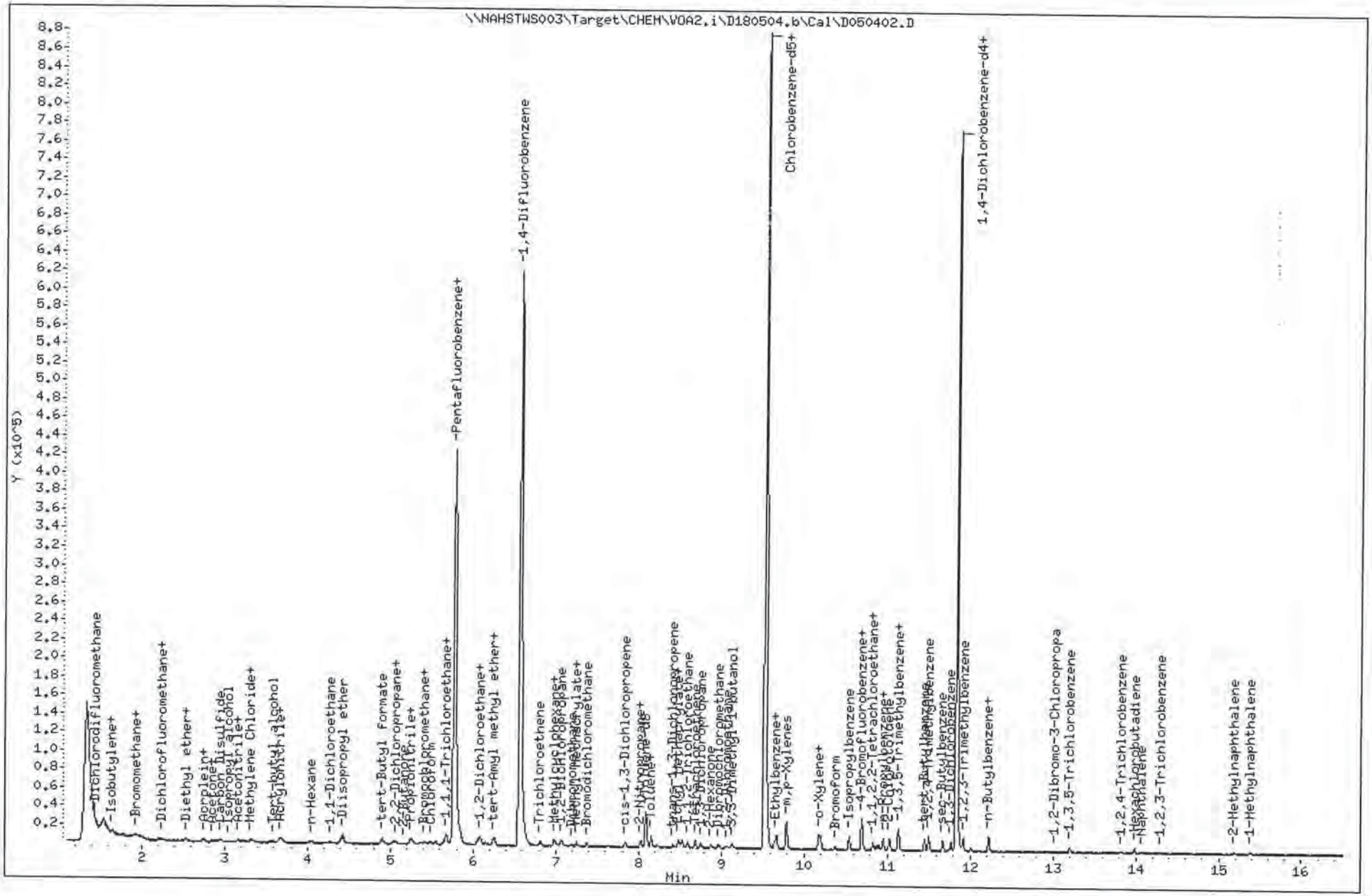
QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050402.D
Date : 04-MAY-2018 15:19
Client ID: VSTD00.5
Sample Info: VSTD00.5;VSTD00.5;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050403.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 04-MAY-2018 15:43
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD001;VSTD001;1;2;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	378806	50.0000	
186 Isobutylene	56	1.656	1.656	(0.287)	3339	1.00000	0.91(aAM)
4 Propionitrile	54	5.240	5.240	(0.908)	13838	10.0000	10.54(M)
5 Vinyl Chloride	62	1.669	1.669	(0.289)	4852	1.00000	1.02(M)
6 Bromomethane	94	1.938	1.938	(0.336)	3182	1.00000	1.13(M)
159 Dichlorofluoromethane	67	2.220	2.220	(0.385)	7851	1.00000	1.12(M)
8 Trichlorofluoromethane	101	2.243	2.243	(0.389)	4402	1.00000	0.98(TaM)
11 1,1-Dichloroethene	96	2.744	2.744	(0.475)	2789	1.00000	0.97(aM)
12 Isobutyl Alcohol	74	6.164	6.164	(1.068)	176	20.0000	20.30(M)
13 Acetonitrile	39	3.170	3.170	(0.549)	5343	10.0000	11.04(M)
14 Allyl Chloride	41	3.164	3.164	(0.548)	14206	1.00000	1.15(M)
15 Iodomethane	142	2.901	2.901	(0.503)	1852	2.00000	4.69(M)
16 Acrylonitrile	53	3.700	3.700	(0.641)	3300	2.00000	1.96(aM)
17 Methylene Chloride	84	3.318	3.318	(0.575)	4855	1.00000	1.21(aM)
18 Methyl tert-butyl ether	73	3.668	3.668	(0.635)	12688	1.00000	1.16(M)
19 Carbon Disulfide	76	2.946	2.946	(0.510)	13619	2.00000	2.07(M)
20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.634)	3416	1.00000	0.76(aM)
21 Vinyl Acetate	43	5.243	5.243	(0.908)	11611	2.00000	2.38(M)
22 1,1-Dichloroethane	63	4.274	4.274	(0.740)	8304	1.00000	1.09(M)
24 2-Butanone	43	5.150	5.150	(0.892)	3998	2.00000	2.03(M)
25 Methacrylonitrile	41	5.407	5.407	(0.937)	5060	1.00000	1.07(aM)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.873)	5075	1.00000	0.98 (aM)
	27 cis-1,2-Dichloroethene	96	5.067	5.067	(0.878)	3857	1.00000	0.98 (a)
	28 Chloroform	83	5.490	5.490	(0.951)	6867	1.00000	1.04 (T)
	29 Bromochloromethane	128	5.365	5.365	(0.929)	1825	1.00000	0.96 (aM)
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	4558	1.00000	0.55 (a)
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.979)	5457	1.00000	0.99 (a)
	32 1,1-Dichloropropene	75	5.843	5.843	(0.890)	6332	1.00000	1.31 (M)
	33 1,2-Dichloroethane	62	6.145	6.145	(0.936)	6154	1.00000	1.17
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	4846	1.00000	0.99 (Ta)
$	35 1,2-Dichloroethane-d4	65	6.062	6.062	(1.050)	5880	1.00000	(aM)
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	556696	50.0000	
	37 Benzene	78	6.084	6.084	(0.927)	16213	1.00000	1.14
	38 Trichloroethene	130	6.812	6.812	(1.038)	3776	1.00000	1.03 (M)
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	5674	1.00000	1.10 (T)
	40 Methyl Methacrylate	41	7.246	7.246	(1.255)	4518	1.00000	1.00 (Ta)
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	1312	2.00000	2.06 (aM)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	4675	1.00000	1.10 (M)
	43 2-Nitropropane	43	8.029	8.029	(1.391)	9984	1.00000	1.05 (Ta)
	44 Dibromomethane	93	7.191	7.191	(1.095)	2157	1.00000	1.01 (M)
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	9984	2.00000	2.21
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	5594	1.00000	0.97 (aM)
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	491624	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	23273	1.00000	1.66 (M)
	50 Toluene	91	8.154	8.154	(0.856)	17211	1.00000	1.14 (T)
	51 trans-1,3-Dichloropropene	75	8.420	8.420	(1.282)	4796	1.00000	1.00 (M)
	52 2-Hexanone	43	8.869	8.869	(0.931)	5938	2.00000	2.10
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	3223	1.00000	1.14
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	6083	1.00000	1.08 (M)
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	4243	1.00000	1.02 (T)
	56 Tetrachloroethene	164	8.680	8.680	(0.911)	2998	1.00000	0.99 (a)
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	3611	1.00000	1.02 (T)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	10439	1.00000	1.11
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	3990	1.00000	1.06
	61 Ethylbenzene	106	9.668	9.668	(1.015)	5630	1.00000	1.10
	63 o-Xylene	106	10.172	10.172	(1.068)	6791	1.00000	1.06
	64 Styrene	104	10.201	10.201	(1.071)	10422	1.00000	1.01
	66 Bromoform	173	10.371	10.371	(1.089)	3153	1.00000	1.07 (M)
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	17227	1.00000	1.11
	68 1,1,2,2-Tetrachloroethane	83	10.868	10.868	(0.918)	5176	1.00000	1.13 (M)
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	9609	1.00000	0.79 (a)
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	205822	50.0000	
	72 trans-1,4-Dichloro-2-butene	53	10.933	10.933	(1.148)	721	1.00000	1.35 (M)
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	17978	1.00000	1.11 (T)
	74 Bromobenzene	156	10.830	10.830	(0.915)	4337	1.00000	1.04
	75 1,3,5-Trimethylbenzene	105	11.128	11.128	(0.940)	13135	1.00000	1.07
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	10431	1.00000	1.03
	81 sec-Butylbenzene	105	11.664	11.664	(0.986)	13088	1.00000	0.97 (a)
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	11443	1.00000	0.99 (a)
	83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	7494	1.00000	1.06
	84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	7397	1.00000	1.08
	87 n-Butylbenzene	91	12.219	12.219	(1.033)	8116	1.00000	0.93 (a)
	88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	7081	1.00000	1.07
	89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	627	1.00000	0.85 (aM)
	90 1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	1481	1.00000	0.81 (aM)

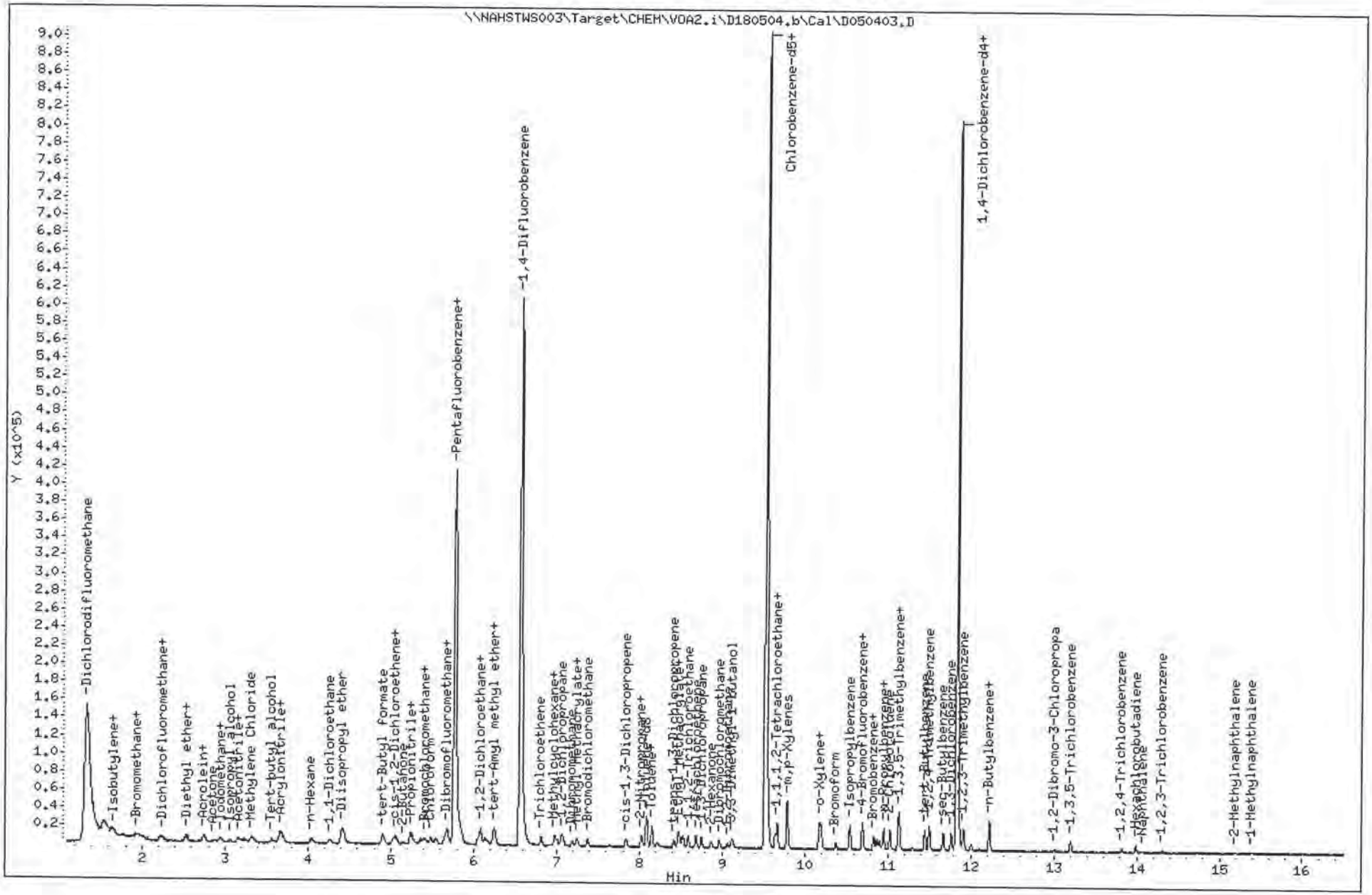
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
92	Naphthalene	128	14.065	14.065	(1.188)	1823	1.00000	0.70 (aM)
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	946	1.00000	1.30 (M)
146	Methyl acetate	43	3.241	3.241	(0.561)	5130	1.00000	1.13 (aM)
139	Diethyl ether	59	2.535	2.535	(0.439)	7750	1.00000	1.15 (M)
147	Methylcyclohexane	83	6.989	6.989	(1.065)	4954	1.00000	1.01 (T)
132	n-Butanol	56	6.995	6.995	(1.212)	3492	20.0000	25.28 (M)
131	Methyl Acrylate	55	5.272	5.272	(0.913)	6121	1.00000	0.96 (TaM)
133	Ethyl Acrylate	55	7.011	7.011	(1.215)	11130	1.00000	0.96 (aM)
136	n-Hexane	57	4.046	4.046	(0.701)	4365	1.00000	0.96 (aM)
141	Cyclohexane	56	5.686	5.686	(0.985)	5885	1.00000	0.93 (aH)
142	Tetrahydrofuran	42	5.423	5.423	(0.939)	3484	2.00000	2.29 (M)
148	Tert-butyl alcohol	59	3.562	3.562	(0.617)	9997	20.0000	22.08 (TM)
149	Isopropyl alcohol	45	3.071	3.071	(0.532)	6200	20.0000	21.53 (M)
151	4-Methyl-2-pentanol	45	8.475	8.475	(0.890)	19907	20.0000	21.05
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	12224	1.00000	1.05 (T)
167	Ethanol	45	2.529	2.529	(0.438)	8147	20.0000	24.55 (TM)
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	4162	1.00000	0.92 (Ta)
172	tert-Butyl formate	59	4.900	4.900	(0.849)	14427	2.00000	2.17
173	3,3-Dimethyl-1-butanol	57	9.123	9.123	(0.958)	6570	20.0000	20.08
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	13767	1.00000	1.10 (T)
175	tert-Butyl ethyl ether	59	6.238	6.238	(1.081)	6285	1.00000	1.01 (T)
176	tert-Amyl alcohol	59	6.238	6.238	(1.081)	6285	20.0000	20.25
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	734	1.00000	5.53 (M)
156	Diisopropyl ether	45	4.412	4.412	(0.764)	18648	1.00000	1.15 (M)
171	1-Methylnaphthalene	142	15.393	15.393	(1.301)	914	1.00000	5.11 (M)
130	Ethyl Acetate	43	5.243	5.243	(0.908)	10442	1.00000	1.11 (aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050403.D
Date : 04-MAY-2018 15:43
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;2;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050404.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 04-MAY-2018 16:08
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD002;VSTD002;1;3;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:43 Cal File: D050403.D
Als bottle: 4 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.770	5.770	(1.000)	408537	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	7390	2.00000	1.02(M)
186	Isobutylene	56	1.640	1.640	(0.284)	7283	2.00000	1.84(aAM)
3	Chloromethane	50	1.585	1.585	(0.275)	15710	2.00000	0.70(aM)
4	Propionitrile	54	5.227	5.227	(0.906)	27267	20.0000	19.25(M)
5	Vinyl Chloride	62	1.675	1.675	(0.290)	10131	2.00000	1.98
6	Bromomethane	94	1.941	1.941	(0.337)	6295	2.00000	2.08(TM)
7	Chloroethane	64	2.031	2.031	(0.352)	6397	2.00000	0.79(aM)
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	14585	2.00000	1.94(M)
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	9388	2.00000	1.94(T)
9	Acrolein	56	2.692	2.692	(0.467)	3349	4.00000	2.93(M)
10	Acetone	43	2.853	2.853	(0.494)	7902	4.00000	2.37(M)
11	1,1-Dichloroethene	96	2.744	2.744	(0.476)	5688	2.00000	1.84
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	300	40.0000	25.57(M)
13	Acetonitrile	39	3.158	3.158	(0.547)	10786	20.0000	20.68(M)
14	Allyl Chloride	41	3.158	3.158	(0.547)	26751	2.00000	2.01(TM)
15	Iodomethane	142	2.895	2.895	(0.502)	4199	4.00000	5.36(M)
16	Acrylonitrile	53	3.716	3.716	(0.644)	7073	4.00000	3.90(M)
17	Methylene Chloride	84	3.328	3.328	(0.577)	8887	2.00000	2.05(M)
18	Methyl tert-butyl ether	73	3.671	3.671	(0.636)	22687	2.00000	1.92(T)
19	Carbon Disulfide	76	2.939	2.939	(0.510)	27610	4.00000	3.90(M)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.634)	6251	2.00000	1.53
	21 Vinyl Acetate	43	5.237	5.237	(0.908)	20320	4.00000	3.86 (M)
	22 1,1-Dichloroethane	63	4.278	4.278	(0.741)	15565	2.00000	1.89 (TM)
	24 2-Butanone	43	5.147	5.147	(0.892)	7364	4.00000	3.46 (M)
	25 Methacrylonitrile	41	5.407	5.407	(0.937)	9046	2.00000	1.78 (aH)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	11289	2.00000	2.03 (M)
	27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.879)	8037	2.00000	1.90
	28 Chloroform	83	5.481	5.481	(0.950)	14540	2.00000	2.05
	29 Bromochloromethane	128	5.359	5.359	(0.929)	3530	2.00000	1.73
$	30 Dibromofluoromethane	113	5.683	5.683	(0.985)	7916	2.00000	1.37
	31 1,1,1-Trichloroethane	97	5.638	5.638	(0.977)	11672	2.00000	1.96
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	10081	2.00000	1.93 (M)
	33 1,2-Dichloroethane	62	6.136	6.136	(0.934)	9963	2.00000	1.74
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	10845	2.00000	2.04 (M)
$	35 1,2-Dichloroethane-d4	65	6.059	6.059	(1.050)	9916	2.00000	0.26 (Ta)
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	603837	50.0000	
	37 Benzene	78	6.084	6.084	(0.926)	31478	2.00000	2.05
	38 Trichloroethene	130	6.813	6.813	(1.037)	7859	2.00000	1.97
	39 Bromodichloromethane	83	7.371	7.371	(1.122)	10838	2.00000	1.94 (T)
	40 Methyl Methacrylate	41	7.246	7.246	(1.256)	8977	2.00000	1.85 (Ta)
	41 2-Chloroethylvinyl ether	63	8.151	8.151	(1.241)	2748	4.00000	3.98 (Ta)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	9305	2.00000	2.02 (M)
	43 2-Nitropropane	43	8.032	8.032	(1.392)	19944	2.00000	1.96 (Ta)
	44 Dibromomethane	93	7.191	7.191	(1.095)	4373	2.00000	1.90
	45 4-Methyl-2-Pentanone	43	8.032	8.032	(0.843)	19944	4.00000	4.02
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	11552	2.00000	1.85
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	540359	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	34734	2.00000	2.22
	50 Toluene	91	8.154	8.154	(0.856)	33700	2.00000	2.04
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	9140	2.00000	1.77
	52 2-Hexanone	43	8.870	8.870	(0.931)	11905	4.00000	3.83
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	6288	2.00000	2.02
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	12138	2.00000	1.97
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	8759	2.00000	1.92 (T)
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	6719	2.00000	2.03
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	7371	2.00000	1.90 (T)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	20671	2.00000	2.00
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	8097	2.00000	1.97
	61 Ethylbenzene	106	9.665	9.665	(1.015)	10915	2.00000	1.95
	63 o-Xylene	106	10.176	10.176	(1.068)	14102	2.00000	2.00
	64 Styrene	104	10.198	10.198	(1.071)	22878	2.00000	2.03
	66 Bromoform	173	10.375	10.375	(1.089)	6171	2.00000	1.91 (T)
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	32768	2.00000	1.93
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	10142	2.00000	2.03 (M)
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	13070	2.00000	1.29
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	225031	50.0000	
	71 1,2,3-Trichloropropane	75	10.699	10.699	(0.904)	6121	2.00000	0.52 (a)
	72 trans-1,4-Dichloro-2-butene	53	10.933	10.933	(1.148)	2058	2.00000	2.27 (M)
	73 n-Propylbenzene	91	10.949	10.949	(0.925)	35151	2.00000	1.99
	74 Bromobenzene	156	10.827	10.827	(0.915)	9306	2.00000	2.06
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	26879	2.00000	2.01
	78 tert-Butylbenzene	119	11.450	11.450	(0.967)	20496	2.00000	1.85
	81 sec-Butylbenzene	105	11.661	11.661	(0.985)	27748	2.00000	1.88
	82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	23739	2.00000	1.89

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	15281	2.00000	1.98
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	14210	2.00000	1.90
87	n-Butylbenzene	91	12.223	12.223	(1.033)	16217	2.00000	1.70
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	14433	2.00000	1.99
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	1454	2.00000	1.80(M)
90	1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	4916	2.00000	1.60(T)
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	3032	2.00000	1.63(M)
92	Naphthalene	128	14.058	14.058	(1.188)	4856	2.00000	0.99(a)
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	3702	2.00000	2.02(T)
146	Methyl acetate	43	3.228	3.228	(0.560)	9717	2.00000	1.98(aM)
139	Diethyl ether	59	2.532	2.532	(0.439)	14477	2.00000	1.99
147	Methylcyclohexane	83	6.983	6.983	(1.063)	9765	2.00000	1.84
132	n-Butanol	56	6.983	6.983	(1.210)	5000	40.0000	33.57
131	Methyl Acrylate	55	5.260	5.260	(0.912)	12328	2.00000	1.79(a)
133	Ethyl Acrylate	55	7.015	7.015	(1.216)	23518	2.00000	1.89(M)
136	n-Hexane	57	4.040	4.040	(0.700)	9072	2.00000	1.85
141	Cyclohexane	56	5.683	5.683	(0.985)	13340	2.00000	1.96(aH)
142	Tetrahydrofuran	42	5.423	5.423	(0.940)	6546	4.00000	3.99(M)
148	Tert-butyl alcohol	59	3.559	3.559	(0.617)	15804	40.0000	32.36
149	Isopropyl alcohol	45	3.065	3.065	(0.531)	12046	40.0000	38.79(M)
151	4-Methyl-2-pentanol	45	8.472	8.472	(0.889)	39442	40.0000	37.96
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	25205	2.00000	1.98
167	Ethanol	45	2.535	2.535	(0.439)	10631	40.0000	29.70(T)
170	1,3,5-Trichlorobenzene	180	13.205	13.205	(1.116)	8475	2.00000	1.73(T)
172	tert-Butyl formate	59	4.903	4.903	(0.850)	28750	4.00000	4.01
173	3,3-Dimethyl-1-butanol	57	9.117	9.117	(0.957)	12313	40.0000	34.24
174	tert-Amyl methyl ether	73	6.251	6.251	(1.083)	26257	2.00000	1.94
175	tert-Butyl ethyl ether	59	6.238	6.238	(1.081)	12322	2.00000	1.84
176	tert-Amyl alcohol	59	6.238	6.238	(1.081)	12322	40.0000	36.82
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	1017	2.00000	5.59(M)
156	Diisopropyl ether	45	4.409	4.409	(0.764)	32209	2.00000	1.85(T)
171	1-Methylnaphthalene	142	15.384	15.384	(1.300)	1005	2.00000	5.11(M)
130	Ethyl Acetate	43	5.237	5.237	(0.908)	19554	2.00000	1.94(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

00904760

Page 4

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050404.D
Date : 04-MAY-2018 16:08
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;3;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050405.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 04-MAY-2018 16:32
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD005;VSTD005;1;4;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:08 Cal File: D050404.D
Als bottle: 5 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	368815	50.0000	
2	Dichlorodifluoromethane	85	1.444	1.444	(0.250)	16634	5.00000	3.99(T)
186	Isobutylene	56	1.643	1.643	(0.285)	19089	5.00000	5.34(AM)
3	Chloromethane	50	1.592	1.592	(0.276)	36344	5.00000	4.56(Ta)
4	Propionitrile	54	5.231	5.231	(0.906)	62776	50.0000	49.11
5	Vinyl Chloride	62	1.669	1.669	(0.289)	23697	5.00000	5.15
6	Bromomethane	94	1.935	1.935	(0.335)	15086	5.00000	5.53(M)
7	Chloroethane	64	2.034	2.034	(0.352)	11400	5.00000	3.14
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	35542	5.00000	5.24
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	21717	5.00000	4.98(T)
9	Acrolein	56	2.683	2.683	(0.465)	8739	10.0000	9.22
10	Acetone	43	2.853	2.853	(0.494)	14626	10.0000	8.76
11	1,1-Dichloroethene	96	2.744	2.744	(0.475)	15301	5.00000	5.49
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	1867	100.000	110.23(AM)
13	Acetonitrile	39	3.161	3.161	(0.548)	20400	50.0000	43.32
14	Allyl Chloride	41	3.167	3.167	(0.549)	53628	5.00000	4.46
15	Iodomethane	142	2.894	2.894	(0.501)	13424	10.0000	8.57(T)
16	Acrylonitrile	53	3.684	3.684	(0.638)	19689	10.0000	12.03(M)
17	Methylene Chloride	84	3.312	3.312	(0.574)	19899	5.00000	5.10
18	Methyl tert-butyl ether	73	3.681	3.681	(0.638)	56045	5.00000	5.26(T)
19	Carbon Disulfide	76	2.949	2.949	(0.511)	64712	10.0000	10.14

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	16439	5.00000	5.09
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	52898	10.0000	11.14(M)
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	40191	5.00000	5.42(T)
	24 2-Butanone	43	5.144	5.144	(0.891)	20865	10.0000	10.88
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	24625	5.00000	5.39(H)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	26675	5.00000	5.32
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	20047	5.00000	5.26
	28 Chloroform	83	5.484	5.484	(0.950)	34425	5.00000	5.38
	29 Bromochloromethane	128	5.365	5.365	(0.929)	10128	5.00000	5.50
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	18421	5.00000	4.80
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	27980	5.00000	5.21
	32 1,1-Dichloropropene	75	5.843	5.843	(0.890)	22939	5.00000	4.84
	33 1,2-Dichloroethane	62	6.132	6.132	(0.934)	28375	5.00000	5.47
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	25192	5.00000	5.23(M)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	23445	5.00000	4.01
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	549263	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	77141	5.00000	5.52
	38 Trichloroethene	130	6.816	6.816	(1.038)	18924	5.00000	5.23
	39 Bromodichloromethane	83	7.377	7.377	(1.124)	27353	5.00000	5.39(T)
	40 Methyl Methacrylate	41	7.243	7.243	(1.255)	22802	5.00000	5.23
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	6981	10.0000	11.13(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	23531	5.00000	5.61(M)
	43 2-Nitropropane	43	8.026	8.026	(1.390)	48813	5.00000	5.31(T)
	44 Dibromomethane	93	7.191	7.191	(1.095)	11613	5.00000	5.55
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	48813	10.0000	10.75
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	31441	5.00000	5.55
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	494726	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	74973	5.00000	5.17
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	28787	5.00000	4.24
	50 Toluene	91	8.157	8.157	(0.856)	83038	5.00000	5.49
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	26311	5.00000	5.60
	52 2-Hexanone	43	8.866	8.866	(0.931)	30707	10.0000	10.79
	53 1,1,2-Trichloroethane	83	8.587	8.587	(0.902)	15628	5.00000	5.50
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	30718	5.00000	5.45
	55 Dibromochloromethane	129	8.963	8.963	(0.941)	23010	5.00000	5.53
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	15423	5.00000	5.10
	57 1,2-Dibromoethane	107	9.062	9.062	(0.951)	19577	5.00000	5.52
	58 1-Chlorohexane	55	9.547	9.547	(1.454)	23114	5.00000	4.23
	59 Chlorobenzene	112	9.553	9.553	(1.003)	51312	5.00000	5.42
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	21297	5.00000	5.67
	61 Ethylbenzene	106	9.668	9.668	(1.015)	27630	5.00000	5.39
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	70246	10.0000	7.80
	63 o-Xylene	106	10.172	10.172	(1.068)	35661	5.00000	5.54
	64 Styrene	104	10.195	10.195	(1.070)	58682	5.00000	5.69
	66 Bromoform	173	10.374	10.374	(1.089)	15879	5.00000	5.37(T)
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	83116	5.00000	5.36
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	26404	5.00000	5.65
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	28190	5.00000	4.84
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	210568	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	12511	5.00000	4.22
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	5862	5.00000	5.44
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	91215	5.00000	5.52
	74 Bromobenzene	156	10.833	10.833	(0.915)	23897	5.00000	5.65
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	71255	5.00000	5.70

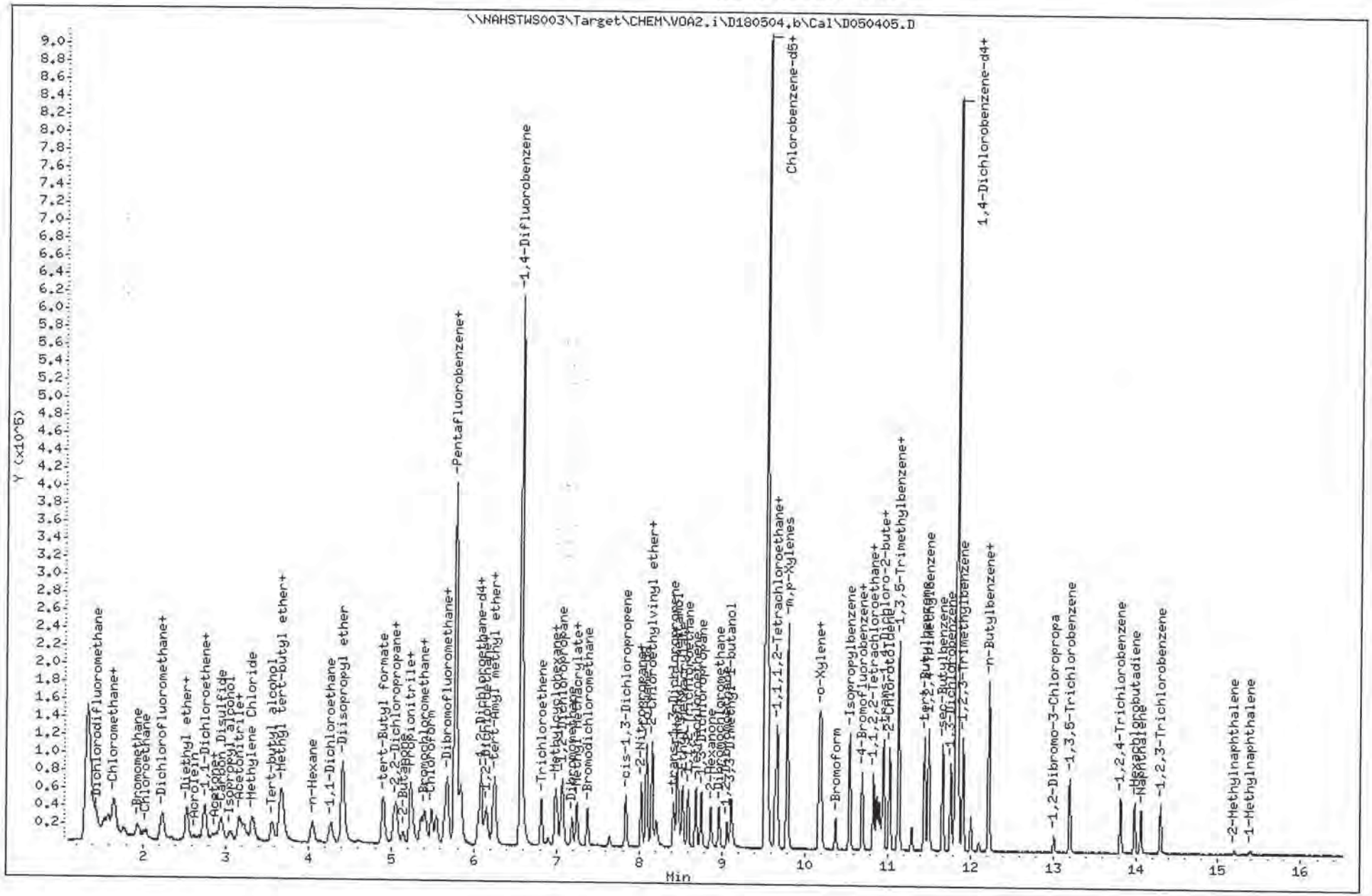
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	60449	5.00000	4.43
77	4-Chlorotoluene	91	11.135	11.135	(0.941)	66016	5.00000	4.21
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	57950	5.00000	5.61
79	1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	72111	5.00000	4.30
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	78275	5.00000	5.68
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	66698	5.00000	5.68
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	38711	5.00000	5.37
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	36191	5.00000	5.19
87	n-Butylbenzene	91	12.223	12.223	(1.033)	52844	5.00000	5.93
88	1,2-Dichlorobenzene	146	12.220	12.220	(1.033)	38032	5.00000	5.62
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	4014	5.00000	5.32
90	1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	18861	5.00000	5.21
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	10646	5.00000	6.20
92	Naphthalene	128	14.061	14.061	(1.188)	35272	5.00000	4.22
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	16133	5.00000	5.68
146	Methyl acetate	43	3.225	3.225	(0.559)	24517	5.00000	5.54
138	Freon TF	101	2.756	2.756	(0.478)	13149	5.00000	3.45
139	Diethyl ether	59	2.535	2.535	(0.439)	35484	5.00000	5.41
147	Methylcyclohexane	83	6.983	6.983	(1.064)	23938	5.00000	4.96
135	1,4-Dioxane	88	7.239	7.239	(1.254)	3801	100.000	94.12
132	n-Butanol	56	6.986	6.986	(1.210)	14101	100.000	104.88(T)
131	Methyl Acrylate	55	5.256	5.256	(0.911)	31657	5.00000	5.11(T)
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	56205	5.00000	5.02(M)
136	n-Hexane	57	4.050	4.050	(0.702)	20349	5.00000	4.61
141	Cyclohexane	56	5.680	5.680	(0.984)	27757	5.00000	4.52(aH)
142	Tetrahydrofuran	42	5.420	5.420	(0.939)	16181	10.0000	10.94
148	Tert-butyl alcohol	59	3.556	3.556	(0.616)	46267	100.000	104.95(T)
149	Isopropyl alcohol	45	3.055	3.055	(0.529)	29228	100.000	104.25(M)
151	4-Methyl-2-pentanol	45	8.459	8.459	(0.888)	104204	100.000	109.54
166	1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	65165	5.00000	5.48
167	Ethanol	45	2.532	2.532	(0.439)	32609	100.000	100.93(T)
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	27478	5.00000	5.99
172	tert-Butyl formate	59	4.906	4.906	(0.850)	69303	10.0000	10.73
173	3,3-Dimethyl-1-butanol	57	9.113	9.113	(0.957)	31712	100.000	96.32
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	65931	5.00000	5.41
175	tert-Butyl ethyl ether	59	6.235	6.235	(1.080)	31493	5.00000	5.21
176	tert-Amyl alcohol	59	6.235	6.235	(1.080)	31493	100.000	104.26
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	2313	5.00000	6.00(M)
156	Diisopropyl ether	45	4.412	4.412	(0.764)	84402	5.00000	5.38(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	2396	5.00000	5.53(M)
130	Ethyl Acetate	43	5.231	5.231	(0.906)	44132	5.00000	4.85(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050405.D
Date : 04-MAY-2018 16:32
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;4;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050406.D
Lab Smp Id: VSTD010 Client Smp ID: VSTD010
Inj Date : 04-MAY-2018 16:56
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD010;VSTD010;1;5;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:32 Cal File: D050405.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	382417	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.250)	34343	10.0000	8.91
186 Isobutylene	56	1.646	1.646	(0.285)	38157	10.0000	10.31(AM)
3 Chloromethane	50	1.585	1.585	(0.275)	63352	10.0000	8.87(T)
4 Propionitrile	54	5.231	5.231	(0.906)	120091	100.000	90.60
5 Vinyl Chloride	62	1.672	1.672	(0.290)	48240	10.0000	10.11
6 Bromomethane	94	1.941	1.941	(0.336)	26816	10.0000	9.49(M)
7 Chloroethane	64	2.025	2.025	(0.351)	24091	10.0000	8.08
159 Dichlorofluoromethane	67	2.221	2.221	(0.385)	65485	10.0000	9.31
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	46559	10.0000	10.31
9 Acrolein	56	2.680	2.680	(0.464)	16945	10.0000	17.59
10 Acetone	43	2.853	2.853	(0.494)	26679	20.0000	18.23
11 1,1-Dichloroethene	96	2.744	2.744	(0.475)	29578	10.0000	10.24
12 Isobutyl Alcohol	74	6.158	6.158	(1.067)	3536	200.000	192.08(AM)
13 Acetonitrile	39	3.158	3.158	(0.547)	44568	100.000	91.29
14 Allyl Chloride	41	3.164	3.164	(0.548)	107425	10.0000	8.63
15 Iodomethane	142	2.891	2.891	(0.501)	36689	20.0000	15.91
16 Acrylonitrile	53	3.690	3.690	(0.639)	26809	20.0000	15.79
17 Methylene Chloride	84	3.321	3.321	(0.575)	35507	10.0000	8.78
18 Methyl tert-butyl ether	73	3.671	3.671	(0.636)	103031	10.0000	9.34
19 Carbon Disulfide	76	2.943	2.943	(0.510)	125648	20.0000	19.00

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	14477	10.0000	4.28
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	90381	20.0000	18.35(M)
	22 1,1-Dichloroethane	63	4.271	4.271	(0.740)	73301	10.0000	9.54
	24 2-Butanone	43	5.138	5.138	(0.890)	38309	20.0000	19.26
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	44608	10.0000	9.42(H)
	26 2,2-Dichloropropane	77	5.028	5.028	(0.871)	50840	10.0000	9.78
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	35362	10.0000	8.94
	28 Chloroform	83	5.484	5.484	(0.950)	63334	10.0000	9.55
	29 Bromochloromethane	128	5.362	5.362	(0.929)	18517	10.0000	9.71
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	34934	10.0000	9.48
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.979)	54412	10.0000	9.78
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	45588	10.0000	9.05
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	54107	10.0000	9.81
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	48322	10.0000	9.43(M)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	43519	10.0000	8.81
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	584344	50.0000	
	37 Benzene	78	6.084	6.084	(0.926)	138877	10.0000	9.34
	38 Trichloroethene	130	6.816	6.816	(1.038)	36754	10.0000	9.55
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	51244	10.0000	9.49
	40 Methyl Methacrylate	41	7.239	7.239	(1.254)	42920	10.0000	9.49
	41 2-Chloroethylvinyl ether	63	8.148	8.148	(1.240)	12708	20.0000	19.05(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	41828	10.0000	9.38(M)
	43 2-Nitropropane	43	8.022	8.022	(1.390)	89256	10.0000	9.37
	44 Dibromomethane	93	7.191	7.191	(1.095)	21661	10.0000	9.73
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	89256	20.0000	18.52
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	58307	10.0000	9.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	525130	50.0000	
$	48 Toluene-d8	98	8.087	8.087	(0.849)	138297	10.0000	9.12
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	50649	10.0000	8.50
	50 Toluene	91	8.154	8.154	(0.856)	151189	10.0000	9.42
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	47668	10.0000	9.54
	52 2-Hexanone	43	8.866	8.866	(0.931)	55066	20.0000	18.23
	53 1,1,2-Trichloroethane	83	8.594	8.594	(0.902)	28779	10.0000	9.55
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	57901	10.0000	9.68
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	42245	10.0000	9.57
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	30503	10.0000	9.51
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	35307	10.0000	9.38
	58 1-Chlorohexane	55	9.547	9.547	(1.453)	41316	10.0000	9.11
	59 Chlorobenzene	112	9.553	9.553	(1.003)	91882	10.0000	9.15
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	38571	10.0000	9.67
	61 Ethylbenzene	106	9.669	9.669	(1.015)	50060	10.0000	9.20
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	125344	20.0000	17.69
	63 o-Xylene	106	10.176	10.176	(1.068)	64974	10.0000	9.51
	64 Styrene	104	10.195	10.195	(1.070)	105799	10.0000	9.66
	66 Bromoform	173	10.374	10.374	(1.089)	29901	10.0000	9.54
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	157147	10.0000	9.55
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	47008	10.0000	9.29
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	50489	10.0000	9.13
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.831	(1.000)	228196	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	23472	10.0000	9.21
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	10789	10.0000	8.88
	73 n-Propylbenzene	91	10.952	10.952	(0.926)	167906	10.0000	9.38
	74 Bromobenzene	156	10.830	10.830	(0.915)	42282	10.0000	9.23
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	127283	10.0000	9.40

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	108687	10.0000	8.91
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	121891	10.0000	9.04
78	tert-Butylbenzene	119	11.446	11.446	(0.967)	104486	10.0000	9.34
79	1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	127826	10.0000	8.82
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	144328	10.0000	9.67
82	p-Isopropyltoluene	119	11.815	11.815	(0.999)	120510	10.0000	9.47
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	70713	10.0000	9.05
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	67589	10.0000	8.95
87	n-Butylbenzene	91	12.223	12.223	(1.033)	91053	10.0000	9.44
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	70001	10.0000	9.55
89	1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	7903	10.0000	9.68
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	35798	10.0000	8.81
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	16436	10.0000	8.85
92	Naphthalene	128	14.062	14.062	(1.188)	83218	10.0000	8.58
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.209)	30812	10.0000	9.24
146	Methyl acetate	43	3.222	3.222	(0.558)	40480	10.0000	8.83
138	Freon TF	101	2.760	2.760	(0.478)	30530	10.0000	9.53
139	Diethyl ether	59	2.532	2.532	(0.439)	67010	10.0000	9.86
147	Methylcyclohexane	83	6.986	6.986	(1.064)	50863	10.0000	9.91
135	1,4-Dioxane	88	7.239	7.239	(1.254)	6381	200.000	164.87
132	n-Butanol	56	6.979	6.979	(1.209)	25115	200.000	180.16
131	Methyl Acrylate	55	5.259	5.259	(0.911)	53965	10.0000	9.97
133	Ethyl Acrylate	55	7.008	7.008	(1.214)	114943	10.0000	9.91
136	n-Hexane	57	4.043	4.043	(0.700)	44987	10.0000	9.84
141	Cyclohexane	56	5.683	5.683	(0.984)	64836	10.0000	10.20(H)
142	Tetrahydrofuran	42	5.414	5.414	(0.938)	29323	20.0000	19.13
148	Tert-butyl alcohol	59	3.562	3.562	(0.617)	81132	200.000	177.50
149	Isopropyl alcohol	45	3.049	3.049	(0.528)	53396	200.000	183.69(M)
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	189165	200.000	187.33
166	1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	118022	10.0000	9.16
167	Ethanol	45	2.532	2.532	(0.439)	63839	200.000	190.56
170	1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	45331	10.0000	9.12
172	tert-Butyl formate	59	4.903	4.903	(0.849)	126914	20.0000	18.95
173	3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.957)	65672	200.000	187.92
174	tert-Amyl methyl ether	73	6.251	6.251	(1.083)	122900	10.0000	9.73
175	tert-Butyl ethyl ether	59	6.229	6.229	(1.079)	57687	10.0000	9.20
176	tert-Amyl alcohol	59	6.229	6.229	(1.079)	57687	200.000	184.19
157	2-Methylnaphthalene	142	15.194	15.194	(1.284)	4532	10.0000	6.56(T)
156	Diisopropyl ether	45	4.412	4.412	(0.764)	154561	10.0000	9.50(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.301)	4903	10.0000	6.15(T)
130	Ethyl Acetate	43	5.231	5.231	(0.906)	90208	10.0000	9.57

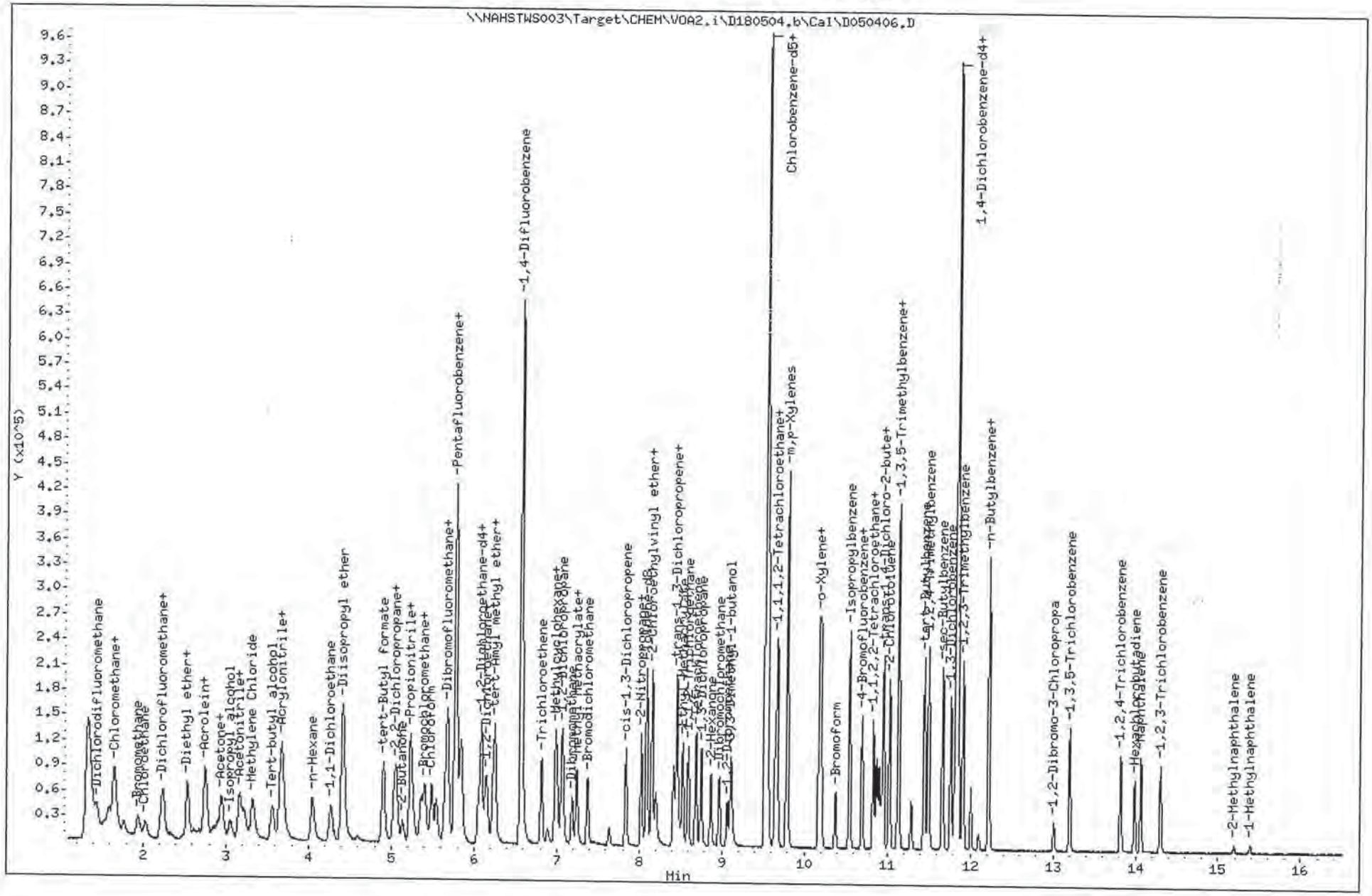
QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050406.D
Date : 04-MAY-2018 16:56
Client ID: VSTD010
Sample Info: VSTD010;VSTD010;1;5;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050407.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 04-MAY-2018 17:21
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:56 Cal File: D050406.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.772	5.772	(1.000)	349139	50.0000	
2	Dichlorodifluoromethane	85	1.437	1.437	(0.249)	71401	20.0000	21.53
186	Isobutylene	56	1.646	1.646	(0.285)	83233	20.0000	24.63(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	130241	20.0000	22.18
4	Propionitrile	54	5.224	5.224	(0.905)	257578	200.000	212.86
5	Vinyl Chloride	62	1.671	1.671	(0.290)	98115	20.0000	22.53
6	Bromomethane	94	1.938	1.938	(0.336)	49519	20.0000	19.20
7	Chloroethane	64	2.031	2.031	(0.352)	55952	20.0000	23.06
159	Dichlorofluoromethane	67	2.220	2.220	(0.385)	137229	20.0000	21.37
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	97406	20.0000	23.63
9	Acrolein	56	2.676	2.676	(0.464)	33060	40.0000	38.04
10	Acetone	43	2.846	2.846	(0.493)	49743	40.0000	41.11
11	1,1-Dichloroethene	96	2.750	2.750	(0.476)	56471	20.0000	21.42
12	Isobutyl Alcohol	74	6.157	6.157	(1.067)	7038	400.000	405.53(AM)
13	Acetonitrile	39	3.170	3.170	(0.549)	90061	200.000	202.06
14	Allyl Chloride	41	3.167	3.167	(0.549)	232316	20.0000	20.44
15	Iodomethane	142	2.904	2.904	(0.503)	95749	40.0000	37.87
16	Acrylonitrile	53	3.687	3.687	(0.639)	65793	40.0000	42.46
17	Methylene Chloride	84	3.327	3.327	(0.576)	72041	20.0000	19.52
18	Methyl tert-butyl ether	73	3.680	3.680	(0.638)	210597	20.0000	20.91
19	Carbon Disulfide	76	2.942	2.942	(0.510)	255686	40.0000	42.35

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	65763	20.0000	22.61
	21 Vinyl Acetate	43	5.233	5.233	(0.907)	194220	40.0000	43.21(M)
	22 1,1-Dichloroethane	63	4.267	4.267	(0.739)	147120	20.0000	20.98
	24 2-Butanone	43	5.134	5.134	(0.889)	79772	40.0000	43.94
	25 Methacrylonitrile	41	5.394	5.394	(0.934)	90721	20.0000	20.98(H)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.873)	105239	20.0000	22.19
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	77848	20.0000	21.57
	28 Chloroform	83	5.490	5.490	(0.951)	126506	20.0000	20.91
	29 Bromochloromethane	128	5.362	5.362	(0.929)	37197	20.0000	21.36
$	30 Dibromofluoromethane	113	5.679	5.679	(0.984)	66765	20.0000	20.99
	31 1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	111797	20.0000	22.01
	32 1,1-Dichloropropene	75	5.849	5.849	(0.891)	89289	20.0000	19.00
	33 1,2-Dichloroethane	62	6.138	6.138	(0.935)	106949	20.0000	20.80
	34 Carbon Tetrachloride	117	5.830	5.830	(0.888)	97675	20.0000	20.44(MH)
$	35 1,2-Dichloroethane-d4	65	6.048	6.048	(1.048)	86791	20.0000	21.69
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	545071	50.0000	
	37 Benzene	78	6.090	6.090	(0.928)	281645	20.0000	20.32
	38 Trichloroethene	130	6.815	6.815	(1.038)	76419	20.0000	21.30
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	105096	20.0000	20.88
	40 Methyl Methacrylate	41	7.245	7.245	(1.255)	89556	20.0000	21.70
	41 2-Chloroethylvinyl ether	63	8.153	8.153	(1.242)	25768	40.0000	41.42(T)
	42 1,2-Dichloropropane	63	7.059	7.059	(1.075)	86252	20.0000	20.74
	43 2-Nitropropane	43	8.022	8.022	(1.390)	187193	20.0000	21.53
	44 Dibromomethane	93	7.184	7.184	(1.094)	44155	20.0000	21.26
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	187193	40.0000	41.64
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	120790	20.0000	21.51
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	489834	50.0000	
$	48 Toluene-d8	98	8.086	8.086	(0.849)	257970	20.0000	19.12
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	104310	20.0000	21.51
	50 Toluene	91	8.153	8.153	(0.856)	301116	20.0000	20.12
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.282)	100604	20.0000	21.58
	52 2-Hexanone	43	8.863	8.863	(0.931)	117912	40.0000	41.86
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	56618	20.0000	20.14
	54 1,3-Dichloropropane	76	8.747	8.747	(0.918)	114958	20.0000	20.60
	55 Dibromochloromethane	129	8.968	8.968	(0.942)	85643	20.0000	20.81
	56 Tetrachloroethene	164	8.689	8.689	(0.912)	61687	20.0000	20.62
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	74048	20.0000	21.10
	58 1-Chlorohexane	55	9.549	9.549	(1.455)	79441	20.0000	21.90
	59 Chlorobenzene	112	9.553	9.553	(1.003)	186888	20.0000	19.96
	60 1,1,1,2-Tetrachloroethane	131	9.642	9.642	(1.012)	76030	20.0000	20.45
	61 Ethylbenzene	106	9.668	9.668	(1.015)	100751	20.0000	19.85
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	249353	40.0000	45.34
	63 o-Xylene	106	10.175	10.175	(1.068)	120206	20.0000	20.12
	64 Styrene	104	10.197	10.197	(1.071)	212786	20.0000	20.84
	66 Bromoform	173	10.374	10.374	(1.089)	62785	20.0000	21.47
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	320662	20.0000	20.90
	68 1,1,2,2-Tetrachloroethane	83	10.871	10.871	(0.919)	97153	20.0000	20.46
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	96704	20.0000	20.38
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	214276	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	44805	20.0000	21.42
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	23370	20.0000	19.60
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	341924	20.0000	20.34
	74 Bromobenzene	156	10.833	10.833	(0.915)	86488	20.0000	20.10
	75 1,3,5-Trimethylbenzene	105	11.128	11.128	(0.940)	258546	20.0000	20.34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.025	11.025	(0.932)	221609	20.0000	22.12
77	4-Chlorotoluene	91	11.134	11.134	(0.941)	243997	20.0000	22.30
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	215240	20.0000	20.50
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	260489	20.0000	22.41
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	295848	20.0000	21.13
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	248221	20.0000	20.78
83	1,3-Dichlorobenzene	146	11.763	11.763	(0.994)	146530	20.0000	19.98
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	137777	20.0000	19.44
87	n-Butylbenzene	91	12.222	12.222	(1.033)	190336	20.0000	21.01
88	1,2-Dichlorobenzene	146	12.222	12.222	(1.033)	143392	20.0000	20.84
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	16482	20.0000	21.50
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	79809	20.0000	20.32
91	Hexachlorobutadiene	225	13.987	13.987	(1.182)	35809	20.0000	20.57
92	Naphthalene	128	14.061	14.061	(1.188)	198251	20.0000	20.99
93	1,2,3-Trichlorobenzene	182	14.298	14.298	(1.208)	66775	20.0000	19.98
146	Methyl acetate	43	3.221	3.221	(0.558)	83175	20.0000	19.87
138	Freon TF	101	2.753	2.753	(0.477)	61420	20.0000	22.76
139	Diethyl ether	59	2.531	2.531	(0.439)	132597	20.0000	21.38
147	Methylcyclohexane	83	6.985	6.985	(1.064)	103943	20.0000	21.72
135	1,4-Dioxane	88	7.236	7.236	(1.253)	13691	400.000	414.69
132	n-Butanol	56	6.982	6.982	(1.210)	53244	400.000	418.35
131	Methyl Acrylate	55	5.259	5.259	(0.911)	131269	20.0000	22.41
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	231736	20.0000	21.89
136	n-Hexane	57	4.049	4.049	(0.702)	93793	20.0000	22.47
141	Cyclohexane	56	5.683	5.683	(0.984)	133600	20.0000	23.02(H)
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	59334	40.0000	42.40
148	Tert-butyl alcohol	59	3.555	3.555	(0.616)	179831	400.000	430.94
149	Isopropyl alcohol	45	3.048	3.048	(0.528)	107029	400.000	403.30(M)
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	414823	400.000	440.42
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	245288	20.0000	20.27
167	Ethanol	45	2.535	2.535	(0.439)	131873	400.000	431.17
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	98974	20.0000	21.22
172	tert-Butyl formate	59	4.906	4.906	(0.850)	257312	40.0000	42.09
173	3,3-Dimethyl-1-butanol	57	9.100	9.100	(0.956)	142103	400.000	435.94
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	240484	20.0000	20.85
175	tert-Butyl ethyl ether	59	6.225	6.225	(1.078)	122247	20.0000	21.37
176	tert-Amyl alcohol	59	6.225	6.225	(1.078)	122247	400.000	427.54
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	17472	20.0000	10.41
156	Diisopropyl ether	45	4.418	4.418	(0.765)	311485	20.0000	20.98(T)
171	1-Methylnaphthalene	142	15.390	15.390	(1.300)	22016	20.0000	11.09
130	Ethyl Acetate	43	5.233	5.233	(0.907)	184870	20.0000	21.48

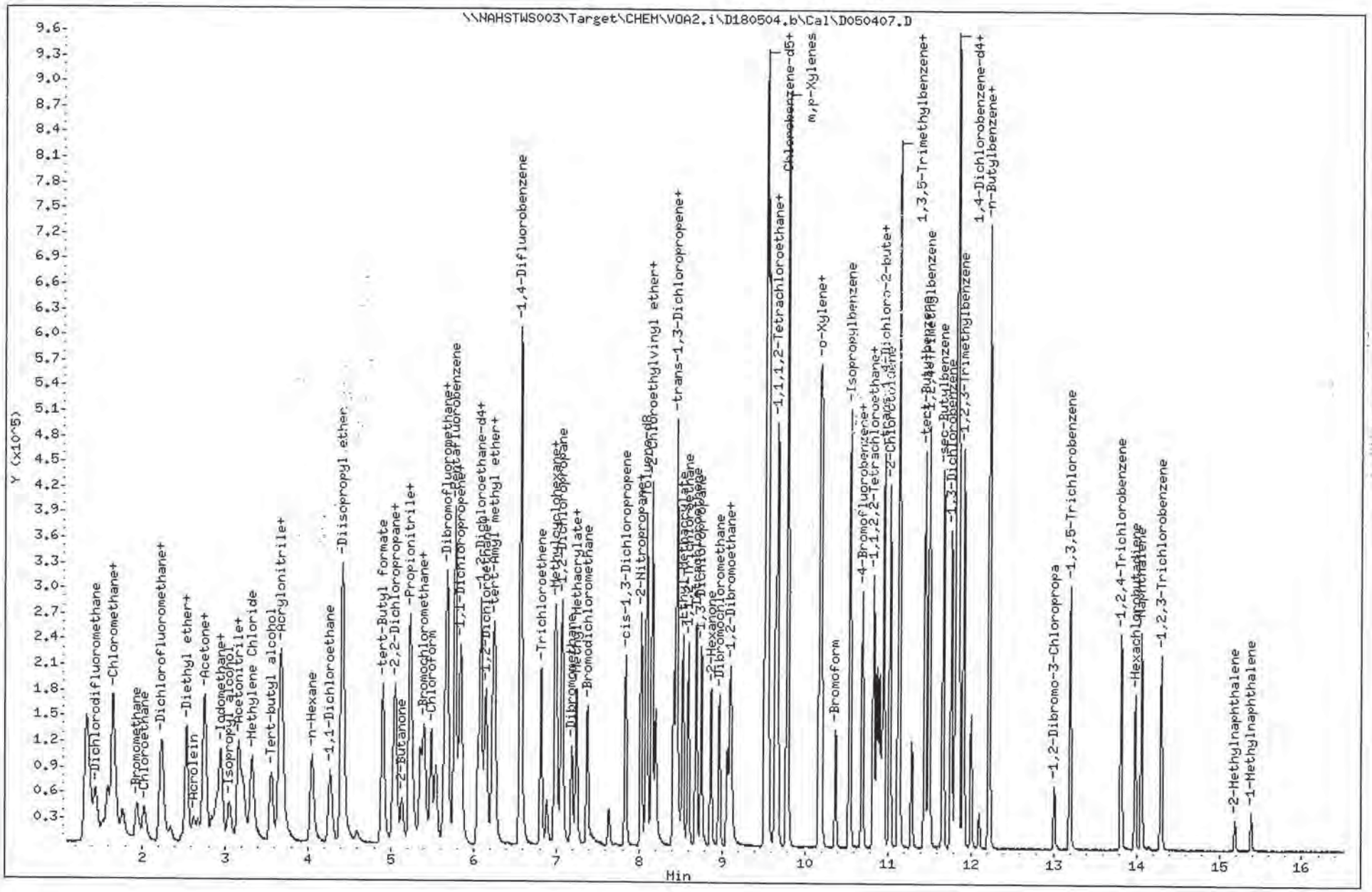
QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050407.D
Date : 04-MAY-2018 17:21
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050408.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 04-MAY-2018 17:45
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 17:21 Cal File: D050407.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	350686	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	187813	50.0000	57.94
186	Isobutylene	56	1.646	1.646	(0.285)	190723	50.0000	56.20(AM)
3	Chloromethane	50	1.588	1.588	(0.275)	317456	50.0000	56.35
4	Propionitrile	54	5.230	5.230	(0.906)	666410	500.000	548.30
5	Vinyl Chloride	62	1.672	1.672	(0.289)	238278	50.0000	54.47
6	Bromomethane	94	1.938	1.938	(0.336)	118894	50.0000	45.90
7	Chloroethane	64	2.025	2.025	(0.351)	136214	50.0000	58.18
159	Dichlorofluoromethane	67	2.221	2.221	(0.384)	339623	50.0000	52.67
8	Trichlorofluoromethane	101	2.243	2.243	(0.388)	247524	50.0000	59.79
9	Acrolein	56	2.670	2.670	(0.462)	84761	100.000	97.71
10	Acetone	43	2.843	2.843	(0.492)	125590	100.000	108.96
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	151526	50.0000	57.22
12	Isobutyl Alcohol	74	6.158	6.158	(1.066)	17826	1000.00	1005.54(AM)
13	Acetonitrile	39	3.161	3.161	(0.547)	239911	500.000	535.88
14	Allyl Chloride	41	3.167	3.167	(0.548)	617975	50.0000	54.15
15	Iodomethane	142	2.898	2.898	(0.502)	287361	100.000	105.02
16	Acrylonitrile	53	3.687	3.687	(0.638)	181398	100.000	116.56
17	Methylene Chloride	84	3.328	3.328	(0.576)	183050	50.0000	49.39
18	Methyl tert-butyl ether	73	3.677	3.677	(0.637)	516807	50.0000	51.10
19	Carbon Disulfide	76	2.946	2.946	(0.510)	648043	100.000	106.87

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	164665	50.0000	56.87
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	444824	100.000	98.53
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	368035	50.0000	52.25
	24 2-Butanone	43	5.134	5.134	(0.889)	199091	100.000	109.19
	25 Methacrylonitrile	41	5.401	5.401	(0.935)	224737	50.0000	51.75(H)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.872)	265984	50.0000	55.85
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	193540	50.0000	53.41
	28 Chloroform	83	5.490	5.490	(0.951)	314451	50.0000	51.75
	29 Bromochloromethane	128	5.359	5.359	(0.928)	97371	50.0000	55.68
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	161085	50.0000	53.31
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	284593	50.0000	55.79
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	225428	50.0000	47.68
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	260346	50.0000	50.32
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	239306	50.0000	49.77(H)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	212338	50.0000	55.80
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	548473	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	697898	50.0000	50.05
	38 Trichloroethene	130	6.816	6.816	(1.038)	193685	50.0000	53.67
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	260198	50.0000	51.38
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	223241	50.0000	53.87
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	62277	100.000	99.50(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	208974	50.0000	49.94
	43 2-Nitropropane	43	8.025	8.025	(1.389)	454901	50.0000	52.10
	44 Dibromomethane	93	7.188	7.188	(1.094)	113995	50.0000	54.57
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	454901	100.000	100.03
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	308972	50.0000	54.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	495545	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	611504	50.0000	50.93
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	266010	50.0000	58.02
	50 Toluene	91	8.154	8.154	(0.856)	737279	50.0000	48.70
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	267533	50.0000	57.05
	52 2-Hexanone	43	8.863	8.863	(0.931)	297754	100.000	104.49
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	145070	50.0000	51.02
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	283622	50.0000	50.25
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	216917	50.0000	52.10
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	157120	50.0000	51.93
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	185246	50.0000	52.19
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	198340	50.0000	58.70
	59 Chlorobenzene	112	9.553	9.553	(1.003)	463607	50.0000	48.94
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	192645	50.0000	51.22
	61 Ethylbenzene	106	9.668	9.668	(1.015)	251848	50.0000	49.06
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	611125	100.000	119.43
	63 o-Xylene	106	10.175	10.175	(1.068)	323883	50.0000	50.24
	64 Styrene	104	10.195	10.195	(1.070)	526444	50.0000	50.98
	66 Bromoform	173	10.374	10.374	(1.089)	157552	50.0000	53.27
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	802370	50.0000	51.70
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	234466	50.0000	48.38
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	235072	50.0000	52.46
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	218685	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	109708	50.0000	55.05
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	64084	50.0000	51.81
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	855905	50.0000	49.89
	74 Bromobenzene	156	10.833	10.833	(0.915)	219152	50.0000	49.92
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	637021	50.0000	49.12

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	552517	50.0000	57.45
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	609251	50.0000	58.42
78 tert-Butylbenzene	119	11.449	11.449	(0.967)	553745	50.0000	51.67
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	648084	50.0000	58.65
81 sec-Butylbenzene	105	11.664	11.664	(0.986)	748824	50.0000	52.40
82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	630469	50.0000	51.72
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	371616	50.0000	49.66
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	355327	50.0000	49.14
87 n-Butylbenzene	91	12.219	12.219	(1.033)	498858	50.0000	53.97
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	350866	50.0000	49.97
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	43462	50.0000	55.55
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	211499	50.0000	52.07
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	92968	50.0000	52.38
92 Naphthalene	128	14.061	14.061	(1.188)	525810	50.0000	53.75
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	177731	50.0000	50.48
146 Methyl acetate	43	3.218	3.218	(0.557)	212044	50.0000	50.45
138 Freon TF	101	2.753	2.753	(0.477)	150866	50.0000	57.76
139 Diethyl ether	59	2.532	2.532	(0.438)	320037	50.0000	51.39
147 Methylcyclohexane	83	6.986	6.986	(1.064)	261508	50.0000	54.30
135 1,4-Dioxane	88	7.233	7.233	(1.252)	35743	1000.00	1110.09
132 n-Butanol	56	6.992	6.992	(1.211)	125296	1000.00	980.14
131 Methyl Acrylate	55	5.253	5.253	(0.909)	332179	50.0000	56.46
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	580097	50.0000	54.57
136 n-Hexane	57	4.053	4.053	(0.702)	248185	50.0000	59.21
141 Cyclohexane	56	5.683	5.683	(0.984)	335256	50.0000	57.51(H)
142 Tetrahydrofuran	42	5.410	5.410	(0.937)	146733	100.000	104.40
148 Tert-butyl alcohol	59	3.552	3.552	(0.615)	458271	1000.00	1093.35
149 Isopropyl alcohol	45	3.045	3.045	(0.527)	265448	1000.00	995.83(T)
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1040452	1000.00	1091.92
166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	609823	50.0000	49.39
167 Ethanol	45	2.529	2.529	(0.438)	319345	1000.00	1039.53
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	251018	50.0000	52.74
172 tert-Butyl formate	59	4.903	4.903	(0.849)	619085	100.000	100.82
173 3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	375304	1000.00	1138.10
174 tert-Amyl methyl ether	73	6.251	6.251	(1.082)	592618	50.0000	51.16
175 tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	310903	50.0000	54.12
176 tert-Amyl alcohol	59	6.228	6.228	(1.078)	310903	1000.00	1082.55
157 2-Methylnaphthalene	142	15.188	15.188	(1.283)	147779	50.0000	46.22
156 Diisopropyl ether	45	4.415	4.415	(0.764)	764306	50.0000	51.27(T)
171 1-Methylnaphthalene	142	15.383	15.383	(1.300)	162419	50.0000	49.08
130 Ethyl Acetate	43	5.237	5.237	(0.907)	452615	50.0000	52.36

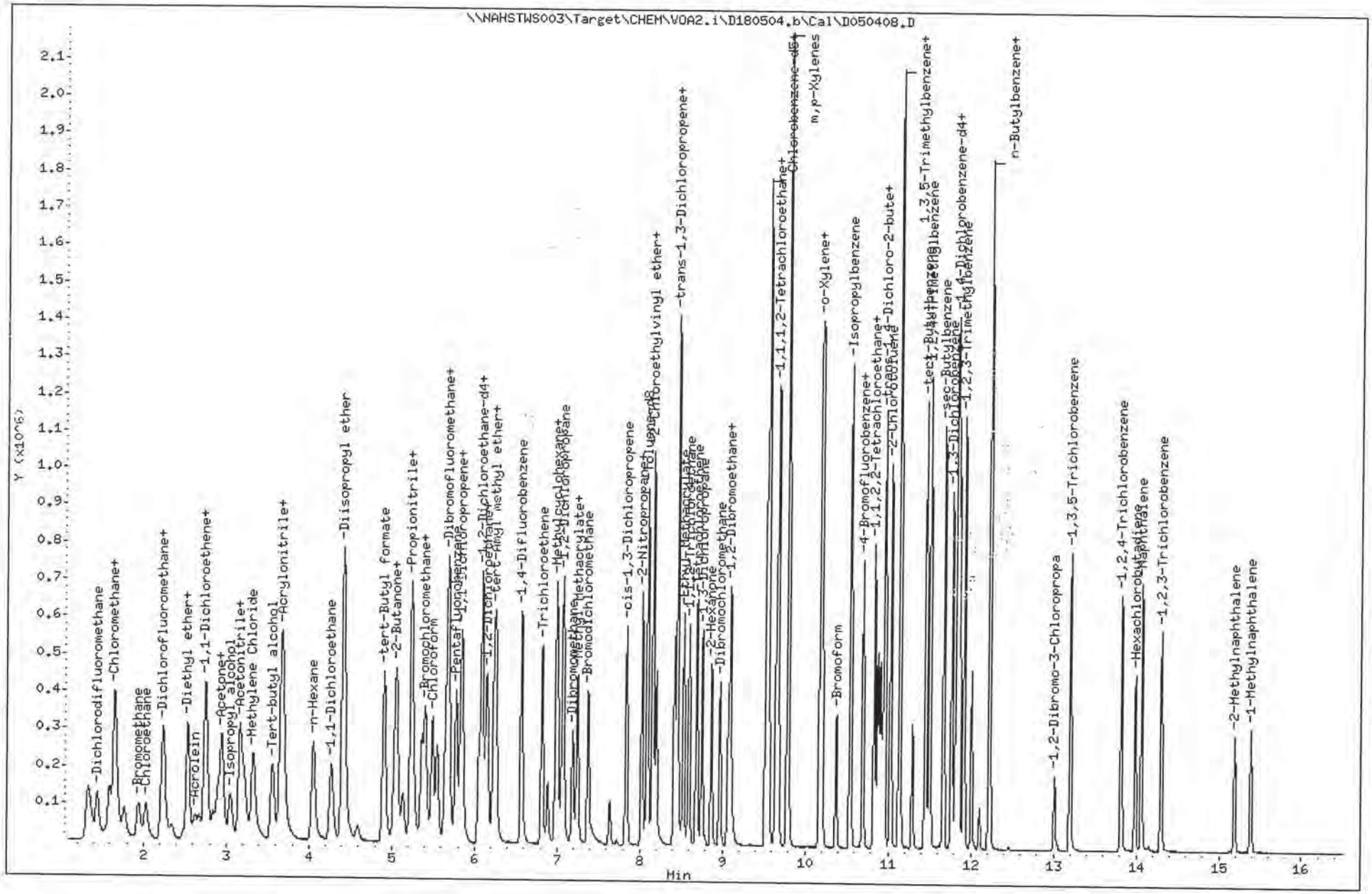
QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050408.D
Date : 04-MAY-2018 17:45
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050409.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 04-MAY-2018 18:09
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 17:45 Cal File: D050408.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

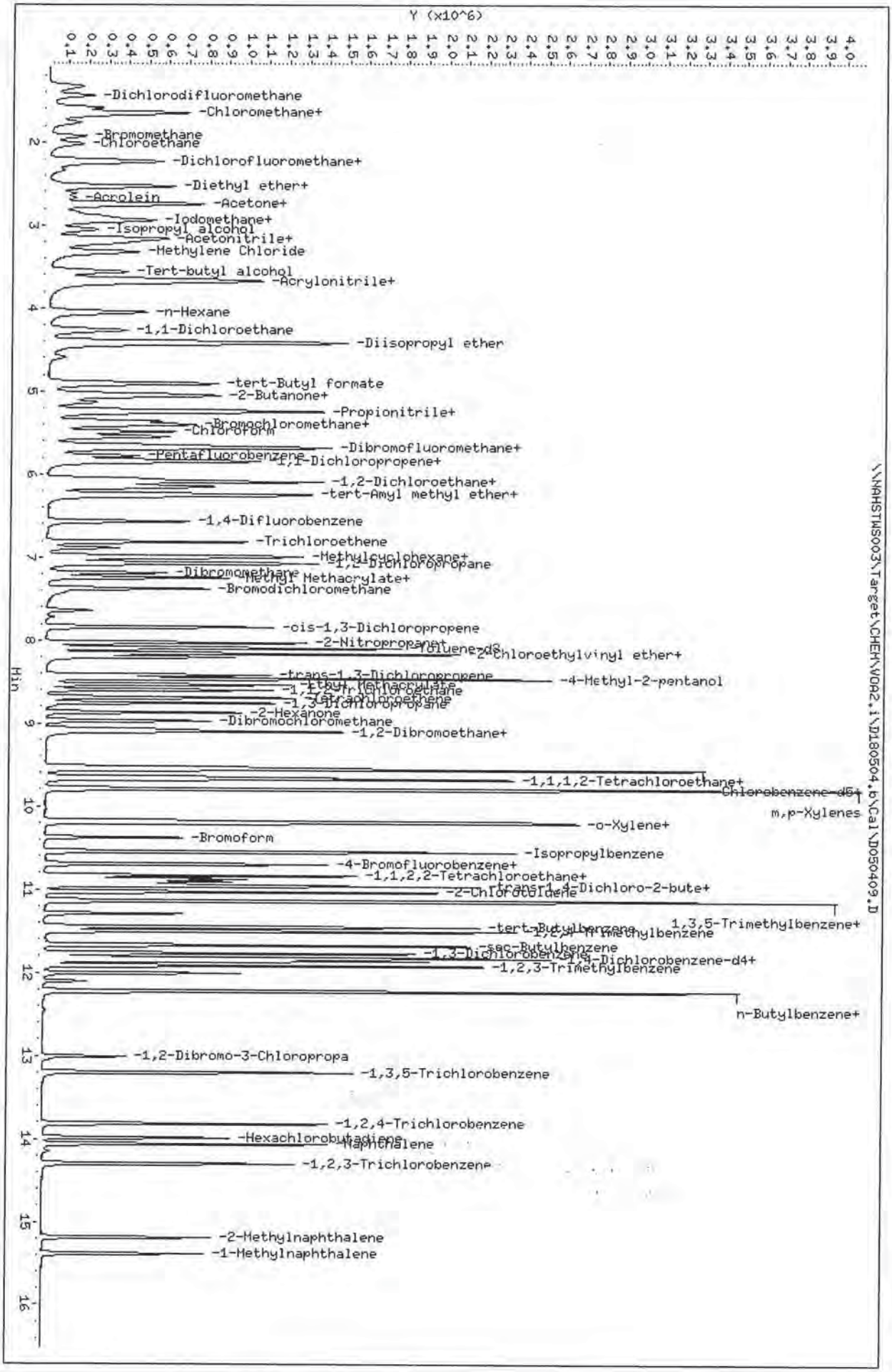
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	387338	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	343934	100.000	96.70
186	Isobutylene	56	1.640	1.640	(0.284)	327597	100.000	87.40(AM)
3	Chloromethane	50	1.585	1.585	(0.274)	602360	100.000	98.08
4	Propionitrile	54	5.240	5.240	(0.907)	1312512	1000.00	977.71
5	Vinyl Chloride	62	1.669	1.669	(0.289)	438115	100.000	90.69
6	Bromomethane	94	1.928	1.928	(0.334)	211727	100.000	74.00
7	Chloroethane	64	2.025	2.025	(0.351)	254833	100.000	99.68
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	635538	100.000	89.23
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	442242	100.000	96.72
9	Acrolein	56	2.676	2.676	(0.463)	191202	200.000	199.97
10	Acetone	43	2.840	2.840	(0.492)	250202	200.000	199.52
11	1,1-Dichloroethene	96	2.740	2.740	(0.474)	278753	100.000	95.31
12	Isobutyl Alcohol	74	6.164	6.164	(1.067)	39310	2000.00	1996.43(AM)
13	Acetonitrile	39	3.157	3.157	(0.547)	485819	1000.00	982.48
14	Allyl Chloride	41	3.164	3.164	(0.548)	1213192	100.000	96.25
15	Iodomethane	142	2.898	2.898	(0.502)	593037	200.000	192.67
16	Acrylonitrile	53	3.681	3.681	(0.637)	352303	200.000	204.97
17	Methylene Chloride	84	3.324	3.324	(0.576)	355236	100.000	86.78
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	997217	100.000	89.28
19	Carbon Disulfide	76	2.942	2.942	(0.509)	1214197	200.000	181.30

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	314877	100.000	98.69
	21 Vinyl Acetate	43	5.243	5.243	(0.908)	862066	200.000	172.89
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	708167	100.000	91.03
	24 2-Butanone	43	5.134	5.134	(0.889)	408035	200.000	202.62
	25 Methacrylonitrile	41	5.397	5.397	(0.934)	450364	100.000	93.89(M)
	26 2,2-Dichloropropane	77	5.031	5.031	(0.871)	498071	100.000	94.68
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.876)	371650	100.000	92.86
	28 Chloroform	83	5.487	5.487	(0.950)	599403	100.000	89.31
	29 Bromochloromethane	128	5.362	5.362	(0.928)	190373	100.000	98.56
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	308649	100.000	96.93
	31 1,1,1-Trichloroethane	97	5.644	5.644	(0.977)	526141	100.000	93.38
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	427075	100.000	80.47
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	516083	100.000	88.86
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	457167	100.000	84.71(H)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	423867	100.000	102.51
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	615694	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	1309865	100.000	83.69
	38 Trichloroethene	130	6.812	6.812	(1.038)	373414	100.000	92.17
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	504183	100.000	88.69
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	438915	100.000	95.90
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	121413	200.000	172.81(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	398256	100.000	84.79
	43 2-Nitropropane	43	8.029	8.029	(1.390)	879605	100.000	91.21
	44 Dibromomethane	93	7.185	7.185	(1.094)	223210	100.000	95.18
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	879605	200.000	175.72
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	601144	100.000	94.77
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	545483	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	1145767	100.000	99.74
	49 Ethyl Methacrylate	69	8.532	8.532	(1.300)	516544	100.000	102.02
	50 Toluene	91	8.157	8.157	(0.856)	1362659	100.000	81.78
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	533443	100.000	101.34
	52 2-Hexanone	43	8.866	8.866	(0.931)	587124	200.000	187.18
	53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	274614	100.000	87.74
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	553206	100.000	89.04
	55 Dibromochloromethane	129	8.969	8.969	(0.941)	423304	100.000	92.37
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	291588	100.000	87.56
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	366099	100.000	93.70
	58 1-Chlorohexane	55	9.553	9.553	(1.455)	370336	100.000	99.59
	59 Chlorobenzene	112	9.553	9.553	(1.003)	879204	100.000	84.32
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	370903	100.000	89.59
	61 Ethylbenzene	106	9.672	9.672	(1.015)	481450	100.000	85.20
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	1138513	200.000	206.78
	63 o-Xylene	106	10.179	10.179	(1.068)	612664	100.000	86.34
	64 Styrene	104	10.198	10.198	(1.070)	992298	100.000	87.29
	66 Bromoform	173	10.374	10.374	(1.089)	311532	100.000	95.69
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	1468464	100.000	85.96
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	448846	100.000	84.19
$	69 4-Bromofluorobenzene	95	10.698	10.698	(1.123)	459019	100.000	97.98
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	240587	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.903)	210995	100.000	98.19
	72 trans-1,4-Dichloro-2-butene	53	10.929	10.929	(1.147)	133141	100.000	97.11
	73 n-Propylbenzene	91	10.958	10.958	(0.926)	1583226	100.000	83.89
	74 Bromobenzene	156	10.833	10.833	(0.915)	418632	100.000	86.68
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.940)	1172773	100.000	82.21

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.032	11.032	(0.932)	1043252	100.000	100.30
77 4-Chlorotoluene	91	11.141	11.141	(0.941)	1137519	100.000	101.00
78 tert-Butylbenzene	119	11.453	11.453	(0.967)	1010400	100.000	85.71
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	1208466	100.000	101.35
81 sec-Butylbenzene	105	11.671	11.671	(0.986)	1381860	100.000	87.90
82 p-Isopropyltoluene	119	11.822	11.822	(0.999)	1178802	100.000	87.91
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	714434	100.000	86.79
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	691697	100.000	86.95
87 n-Butylbenzene	91	12.223	12.223	(1.033)	938234	100.000	92.26
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	664542	100.000	86.04
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	90887	100.000	105.60
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	444824	100.000	99.15
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	187228	100.000	95.91
92 Naphthalene	128	14.061	14.061	(1.188)	1071893	100.000	99.16
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	381509	100.000	97.53
146 Methyl acetate	43	3.218	3.218	(0.557)	430908	100.000	92.82
138 Freon TF	101	2.753	2.753	(0.477)	279713	100.000	97.94
139 Diethyl ether	59	2.529	2.529	(0.438)	624845	100.000	90.84
147 Methylcyclohexane	83	6.986	6.986	(1.064)	482683	100.000	89.29
135 1,4-Dioxane	88	7.236	7.236	(1.253)	71709	2000.00	2032.83
132 n-Butanol	56	6.989	6.989	(1.210)	246373	2000.00	1744.92
131 Methyl Acrylate	55	5.259	5.259	(0.911)	656838	100.000	101.09
133 Ethyl Acrylate	55	7.008	7.008	(1.213)	1111716	100.000	94.68
136 n-Hexane	57	4.053	4.053	(0.702)	459982	100.000	99.36
141 Cyclohexane	56	5.680	5.680	(0.983)	615427	100.000	95.58
142 Tetrahydrofuran	42	5.410	5.410	(0.937)	283688	200.000	182.74
148 Tert-butyl alcohol	59	3.559	3.559	(0.616)	910410	2000.00	1966.53
149 Isopropyl alcohol	45	3.052	3.052	(0.528)	549951	2000.00	1867.93(T)
151 4-Methyl-2-pentanol	45	8.462	8.462	(0.888)	1921741	2000.00	1832.17
166 1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	1146469	100.000	84.41
167 Ethanol	45	2.529	2.529	(0.438)	631759	2000.00	1861.91
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.115)	500662	100.000	95.62
172 tert-Butyl formate	59	4.906	4.906	(0.849)	1187774	200.000	175.14
173 3,3-Dimethyl-1-butanol	57	9.097	9.097	(0.955)	743085	2000.00	2047.10
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	1160484	100.000	90.71
175 tert-Butyl ethyl ether	59	6.235	6.235	(1.079)	648877	100.000	102.27
176 tert-Amyl alcohol	59	6.235	6.235	(1.079)	648877	2000.00	2045.56
157 2-Methylnaphthalene	142	15.191	15.191	(1.283)	411151	100.000	103.00(M)
156 Diisopropyl ether	45	4.415	4.415	(0.764)	1462659	100.000	88.83
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	403943	100.000	101.60
130 Ethyl Acetate	43	5.243	5.243	(0.908)	862066	100.000	90.30

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050409.D
Date : 04-MAY-2018 18:09
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1:8;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

00904780

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050410.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 04-MAY-2018 18:34
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD200;VSTD200;1;9;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 18:09 Cal File: D050409.D
Als bottle: 10 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	386220	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	702772	200.000	199.18
186	Isobutylene	56	1.643	1.643	(0.284)	625943	200.000	167.47(AM)
3	Chloromethane	50	1.585	1.585	(0.274)	1207423	200.000	198.95(A)
4	Propionitrile	54	5.266	5.266	(0.911)	2478374	2000.00	1851.52
5	Vinyl Chloride	62	1.669	1.669	(0.289)	873139	200.000	181.26
6	Bromomethane	94	1.929	1.929	(0.334)	369198	200.000	129.42
7	Chloroethane	64	2.015	2.015	(0.349)	499449	200.000	197.48
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	1232681	200.000	173.58(A)
8	Trichlorofluoromethane	101	2.237	2.237	(0.387)	889267	200.000	195.06
9	Acrolein	56	2.676	2.676	(0.463)	381410	400.000	400.45(A)
10	Acetone	43	2.859	2.859	(0.495)	492850	400.000	397.78
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	560434	200.000	192.18
12	Isobutyl Alcohol	74	6.177	6.177	(1.069)	67493	4000.00	3429.58(AM)
13	Acetonitrile	39	3.158	3.158	(0.546)	959063	2000.00	1945.16
14	Allyl Chloride	41	3.170	3.170	(0.549)	2405098	200.000	191.36
15	Iodomethane	142	2.898	2.898	(0.501)	1249302	400.000	402.50(A)
16	Acrylonitrile	53	3.690	3.690	(0.639)	713421	400.000	416.27(A)
17	Methylene Chloride	84	3.325	3.325	(0.575)	692452	200.000	169.66
18	Methyl tert-butyl ether	73	3.677	3.677	(0.636)	1930364	200.000	173.32
19	Carbon Disulfide	76	2.949	2.949	(0.510)	2448110	400.000	366.60

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	630396	200.000	198.50
	21 Vinyl Acetate	43	5.247	5.247	(0.908)	1665534	400.000	334.99 (A)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	1395618	200.000	179.92
	24 2-Butanone	43	5.138	5.138	(0.889)	771325	400.000	384.14
	25 Methacrylonitrile	41	5.407	5.407	(0.936)	859160	200.000	179.64 (M)
	26 2,2-Dichloropropane	77	5.035	5.035	(0.871)	992977	200.000	189.32
	27 cis-1,2-Dichloroethene	96	5.061	5.061	(0.876)	731765	200.000	183.37
	28 Chloroform	83	5.491	5.491	(0.950)	1165117	200.000	174.11
	29 Bromochloromethane	128	5.369	5.369	(0.929)	372129	200.000	193.22
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	584635	200.000	200.52 (A)
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	1038682	200.000	184.89
	32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	839177	200.000	158.48
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	1015284	200.000	175.21
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	931768	200.000	173.04
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	804250	200.000	196.92
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	614331	50.0000	
	37 Benzene	78	6.094	6.094	(0.928)	2467969	200.000	158.04
	38 Trichloroethene	130	6.819	6.819	(1.038)	717187	200.000	177.43
	39 Bromodichloromethane	83	7.377	7.377	(1.123)	968251	200.000	170.71
	40 Methyl Methacrylate	41	7.249	7.249	(1.254)	841202	200.000	184.33
	41 2-Chloroethylvinyl ether	63	8.160	8.160	(1.242)	242260	400.000	345.58 (A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	774714	200.000	165.31
	43 2-Nitropropane	43	8.035	8.035	(1.390)	1641027	200.000	170.67
	44 Dibromomethane	93	7.188	7.188	(1.094)	436776	200.000	186.67
	45 4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	1641027	400.000	332.14
	46 cis-1,3-Dichloropropene	75	7.843	7.843	(1.194)	1144272	200.000	180.80
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	538415	50.0000	
$	48 Toluene-d8	98	8.096	8.096	(0.850)	2114605	200.000	238.13 (A)
	49 Ethyl Methacrylate	69	8.536	8.536	(1.299)	982185	200.000	196.47
	50 Toluene	91	8.164	8.164	(0.857)	2521971	200.000	153.34
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	1033374	200.000	196.75
	52 2-Hexanone	43	8.873	8.873	(0.931)	1113325	400.000	359.60
	53 1,1,2-Trichloroethane	83	8.600	8.600	(0.903)	529641	200.000	171.46
	54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	1055986	200.000	172.19
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	820409	200.000	181.37
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	574051	200.000	174.65
	57 1,2-Dibromoethane	107	9.072	9.072	(0.952)	709119	200.000	183.88
	58 1-Chlorohexane	55	9.556	9.556	(1.455)	722126	200.000	197.43
	59 Chlorobenzene	112	9.556	9.556	(1.003)	1625569	200.000	157.95
	60 1,1,1,2-Tetrachloroethane	131	9.649	9.649	(1.013)	709047	200.000	173.52
	61 Ethylbenzene	106	9.678	9.678	(1.016)	909838	200.000	163.13
	62 m,p-Xylenes	106	9.800	9.800	(1.029)	2087186	400.000	389.82 (M)
	63 o-Xylene	106	10.182	10.182	(1.069)	1144526	200.000	163.41
	64 Styrene	104	10.204	10.204	(1.071)	1838822	200.000	163.89
	66 Bromoform	173	10.378	10.378	(1.089)	601655	200.000	187.23
	67 Isopropylbenzene	105	10.551	10.551	(1.107)	2666209	200.000	158.12
	68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	844339	200.000	165.21
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	852556	200.000	200.34 (A)
*	70 1,4-Dichlorobenzene-d4	152	11.841	11.841	(1.000)	230646	50.0000	
	71 1,2,3-Trichloropropane	75	10.699	10.699	(0.904)	405365	200.000	199.39
	72 trans-1,4-Dichloro-2-butene	53	10.936	10.936	(1.148)	273122	200.000	200.99 (A)
	73 n-Propylbenzene	91	10.962	10.962	(0.926)	2906123	200.000	160.63
	74 Bromobenzene	156	10.837	10.837	(0.915)	788067	200.000	170.22
	75 1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	2121973	200.000	155.16

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.036	11.036	(0.932)	1946835	200.000	197.48
77	4-Chlorotoluene	91	11.145	11.145	(0.941)	2097579	200.000	196.74
78	tert-Butylbenzene	119	11.456	11.456	(0.967)	1888477	200.000	167.10
79	1,2,4-Trimethylbenzene	105	11.507	11.507	(0.972)	2216630	200.000	196.46
81	sec-Butylbenzene	105	11.674	11.674	(0.986)	2554233	200.000	169.48
82	p-Isopropyltoluene	119	11.825	11.825	(0.999)	2187279	200.000	170.15
83	1,3-Dichlorobenzene	146	11.774	11.774	(0.994)	1337147	200.000	169.44
84	1,4-Dichlorobenzene	146	11.867	11.867	(1.002)	1309141	200.000	171.67
87	n-Butylbenzene	91	12.226	12.226	(1.033)	1782095	200.000	182.81
88	1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	1229142	200.000	166.00
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	179466	200.000	217.52(A)
90	1,2,4-Trichlorobenzene	180	13.821	13.821	(1.167)	861637	200.000	199.89
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	376631	200.000	201.28(A)
92	Naphthalene	128	14.065	14.065	(1.188)	2071564	200.000	199.38
93	1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	758156	200.000	201.08(A)
146	Methyl acetate	43	3.222	3.222	(0.558)	839236	200.000	181.31(A)
138	Freon TF	101	2.753	2.753	(0.476)	561005	200.000	198.47
139	Diethyl ether	59	2.532	2.532	(0.438)	1196889	200.000	174.51
147	Methylcyclohexane	83	6.989	6.989	(1.064)	961284	200.000	178.23
135	1,4-Dioxane	88	7.246	7.246	(1.254)	138351	4000.00	3952.23
132	n-Butanol	56	6.989	6.989	(1.209)	494053	4000.00	3509.22
131	Methyl Acrylate	55	5.276	5.276	(0.913)	1261234	200.000	194.67
133	Ethyl Acrylate	55	7.015	7.015	(1.214)	2168785	200.000	185.25
136	n-Hexane	57	4.050	4.050	(0.701)	944930	200.000	204.71(A)
141	Cyclohexane	56	5.683	5.683	(0.983)	1225578	200.000	190.90(A)
142	Tetrahydrofuran	42	5.417	5.417	(0.937)	545809	400.000	352.62
148	Tert-butyl alcohol	59	3.581	3.581	(0.620)	1741948	4000.00	3773.60
149	Isopropyl alcohol	45	3.077	3.077	(0.533)	1097936	4000.00	3739.97
151	4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	3368065	4000.00	3253.24
166	1,2,3-Trimethylbenzene	105	11.921	11.921	(1.007)	2116203	200.000	162.53
167	Ethanol	45	2.529	2.529	(0.438)	1192097	4000.00	3523.50
170	1,3,5-Trichlorobenzene	180	13.205	13.205	(1.115)	946359	200.000	188.53
172	tert-Butyl formate	59	4.910	4.910	(0.850)	2375854	400.000	351.34
173	3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.956)	1361525	4000.00	3800.05
174	tert-Amyl methyl ether	73	6.261	6.261	(1.083)	2186944	200.000	171.45
175	tert-Butyl ethyl ether	59	6.251	6.251	(1.082)	1214646	200.000	192.01
176	tert-Amyl alcohol	59	6.251	6.251	(1.082)	1214646	4000.00	3840.22
157	2-Methylnaphthalene	142	15.191	15.191	(1.283)	895104	200.000	199.53(M)
156	Diisopropyl ether	45	4.422	4.422	(0.765)	2799123	200.000	170.49
171	1-Methylnaphthalene	142	15.390	15.390	(1.300)	838915	200.000	199.70
130	Ethyl Acetate	43	5.247	5.247	(0.908)	1665534	200.000	174.97

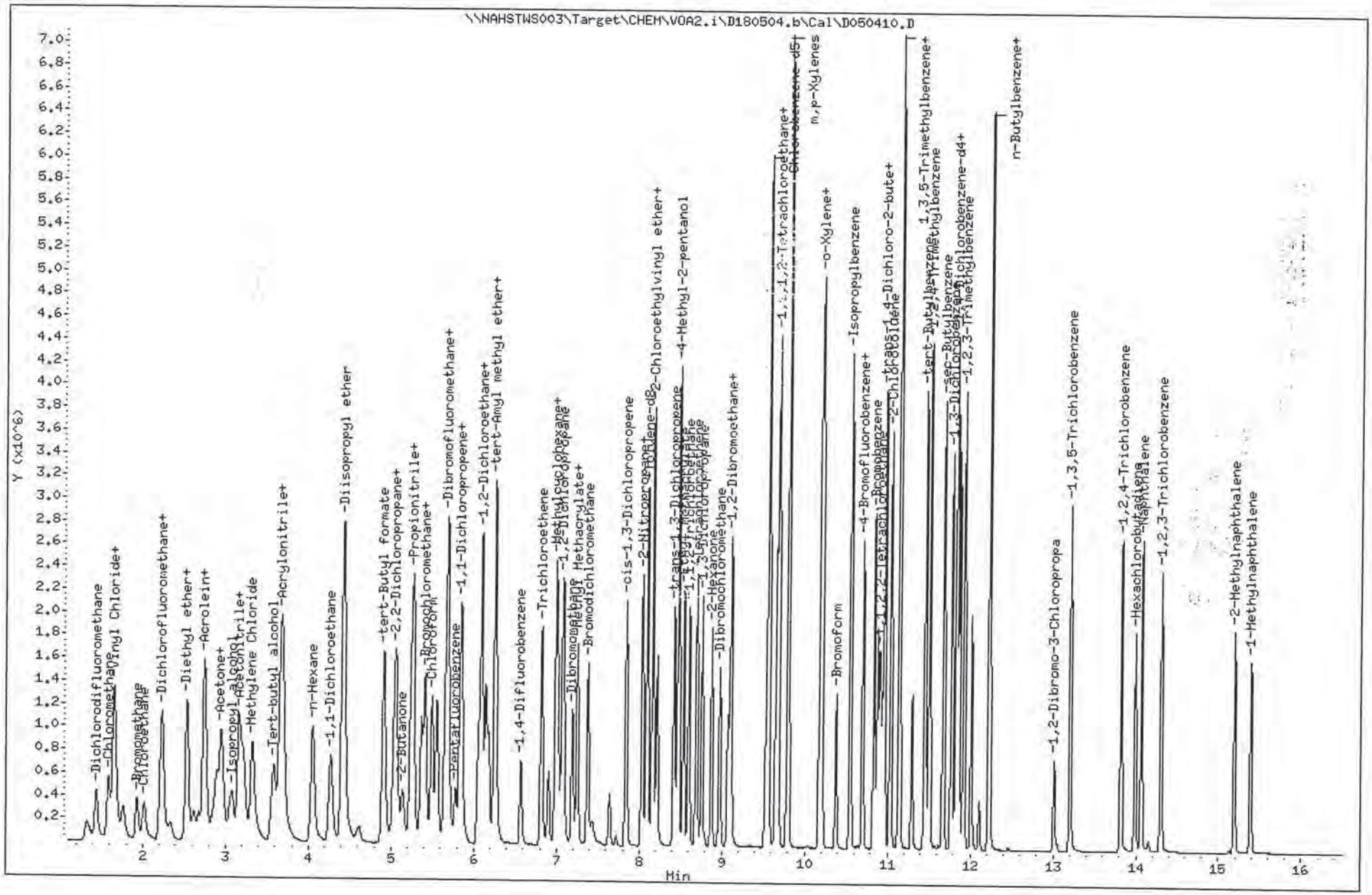
QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050410.D
Date : 04-MAY-2018 18:34
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;9;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050412.D
Lab Smp Id: VSTD-ICV Client Smp ID: VSTD-ICV
Inj Date : 04-MAY-2018 19:22
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\8260LL.m
Meth Date : 05-Jun-2018 16:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 18:34 Cal File: D050410.D
Als bottle: 12 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.779	(1.000)	357022	50.0000	
2 Dichlorodifluoromethane	85	1.438	1.438	(0.249)	175501	53.1092	53.10
3 Chloromethane	50	1.585	1.585	(0.275)	308312	53.6814	53.68
4 Propionitrile	54	5.227	5.266	(0.906)	609889	492.893	492.89
5 Vinyl Chloride	62	1.675	1.669	(0.290)	229971	51.6473	51.64
6 Bromomethane	94	1.938	1.929	(0.336)	108319	41.0777	41.07
7 Chloroethane	64	2.031	2.015	(0.352)	128783	53.9236	53.92
159 Dichlorofluoromethane	67	2.221	2.217	(0.385)	319863	48.7258	48.72
8 Trichlorofluoromethane	101	2.240	2.237	(0.388)	231238	54.8721	54.87
9 Acrolein	56	2.676	2.676	(0.464)	81061	91.7670	91.76
10 Acetone	43	2.846	2.859	(0.493)	120061	102.094	102.09
11 1,1-Dichloroethene	96	2.737	2.737	(0.474)	142132	52.7271	52.72
12 Isobutyl Alcohol	74	6.248	6.177	(1.082)	29392	1621.60	1621.59(A)
13 Acetonitrile	39	3.154	3.158	(0.546)	229961	504.548	504.54
14 Allyl Chloride	41	3.164	3.170	(0.548)	584685	50.3269	50.32
15 Iodomethane	142	2.901	2.898	(0.503)	243781	88.1954	88.19
16 Acrylonitrile	53	3.677	3.690	(0.637)	165242	104.303	104.30
17 Methylene Chloride	84	3.328	3.325	(0.576)	176083	46.6725	46.67
18 Methyl tert-butyl ether	73	3.671	3.677	(0.636)	495877	48.1662	48.16
19 Carbon Disulfide	76	2.939	2.949	(0.509)	619148	100.300	100.30
20 trans-1,2-Dichloroethene	96	3.658	3.652	(0.634)	159266	54.0129	54.01

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	21 Vinyl Acetate	43	5.234	5.247	(0.907)	412309	89.7119	89.71
	22 1,1-Dichloroethane	63	4.271	4.268	(0.740)	351016	48.9545	48.95
	24 2-Butanone	43	5.134	5.138	(0.889)	186570	100.516	100.51
	25 Methacrylonitrile	41	5.394	5.407	(0.934)	215324	48.7058	48.70
	26 2,2-Dichloropropane	77	5.032	5.035	(0.872)	249512	51.4629	51.46
	27 cis-1,2-Dichloroethene	96	5.057	5.061	(0.876)	184886	50.1191	50.11
	28 Chloroform	83	5.484	5.491	(0.950)	301427	48.7302	48.73
	29 Bromochloromethane	128	5.356	5.369	(0.928)	93985	52.7921	52.79
$	30 Dibromofluoromethane	113	5.677	5.683	(0.983)	154230	49.9185	49.91
	31 1,1,1-Trichloroethane	97	5.644	5.651	(0.978)	267082	51.4317	51.43
	32 1,1-Dichloropropene	75	5.850	5.853	(0.891)	217794	45.1688	45.16
	33 1,2-Dichloroethane	62	6.139	6.142	(0.935)	260249	49.3208	49.32
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	235694	48.0679	48.06
$	35 1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	207851	53.5738	53.57
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	559435	50.0000	
	37 Benzene	78	6.090	6.094	(0.927)	662907	46.6162	46.61
	38 Trichloroethene	130	6.816	6.819	(1.038)	184669	50.1700	50.16
	39 Bromodichloromethane	83	7.374	7.377	(1.123)	249639	48.3336	48.33
	40 Methyl Methacrylate	41	7.242	7.249	(1.255)	212832	50.4517	50.45
	41 2-Chloroethylvinyl ether	63	8.154	8.160	(1.241)	61489	96.3209	96.32(T)
	42 1,2-Dichloropropane	63	7.063	7.066	(1.075)	198603	46.5381	46.53
	43 2-Nitropropane	43	8.025	8.035	(1.390)	428521	48.2124	48.21
	44 Dibromomethane	93	7.188	7.188	(1.094)	108649	50.9934	50.99
	45 4-Methyl-2-Pentanone	43	8.025	8.035	(0.843)	428521	92.9156	92.91
	46 cis-1,3-Dichloropropene	75	7.836	7.843	(1.193)	297131	51.5572	51.55
*	47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	502590	50.0000	
$	48 Toluene-d8	98	8.090	8.096	(0.849)	587310	47.6926	47.69
	49 Ethyl Methacrylate	69	8.529	8.536	(1.298)	255620	54.5302	54.53
	50 Toluene	91	8.154	8.164	(0.856)	698058	45.4711	45.47
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.281)	259340	54.2237	54.22
	52 2-Hexanone	43	8.863	8.873	(0.931)	283151	97.9765	97.97
	53 1,1,2-Trichloroethane	83	8.590	8.600	(0.902)	137900	47.8244	47.82
	54 1,3-Dichloropropane	76	8.751	8.757	(0.919)	274941	48.0299	48.02
	55 Dibromochloromethane	129	8.966	8.972	(0.941)	210780	49.9218	49.92
	56 Tetrachloroethene	164	8.686	8.693	(0.912)	150367	49.0088	49.00
	57 1,2-Dibromoethane	107	9.065	9.072	(0.952)	180829	50.2343	50.23
	58 1-Chlorohexane	55	9.550	9.556	(1.454)	189935	54.9327	54.93
	59 Chlorobenzene	112	9.553	9.556	(1.003)	445152	46.3377	46.33
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.649	(1.012)	184136	48.2764	48.27
	61 Ethylbenzene	106	9.668	9.678	(1.015)	245621	47.1806	47.18
	62 m,p-Xylenes	106	9.790	9.800	(1.028)	587270	112.807	112.80
	63 o-Xylene	106	10.175	10.182	(1.068)	312674	47.8264	47.82
	64 Styrene	104	10.198	10.204	(1.071)	514288	49.1048	49.10
	66 Bromoform	173	10.374	10.378	(1.089)	152964	50.9956	50.99
	67 Isopropylbenzene	105	10.544	10.551	(1.107)	759849	48.2756	48.27
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.878	(0.919)	223836	45.6497	45.64
$	69 4-Bromofluorobenzene	95	10.695	10.699	(1.123)	231019	50.7138	50.71
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.841	(1.000)	221292	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.699	(0.904)	105613	52.2487	52.24
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.936	(1.147)	61863	49.3556	49.35
	73 n-Propylbenzene	91	10.952	10.962	(0.925)	823548	47.4464	47.44
	74 Bromobenzene	156	10.830	10.837	(0.915)	214332	48.2536	48.25
	75 1,3,5-Trimethylbenzene	105	11.132	11.138	(0.941)	613753	46.7756	46.77
	76 2-Chlorotoluene	91	11.029	11.036	(0.932)	532531	54.6098	54.60

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
77	4-Chlorotoluene	91	11.138	11.145	(0.941)	588388	55.6363	55.63
78	tert-Butylbenzene	119	11.446	11.456	(0.967)	520459	47.9994	47.99
79	1,2,4-Trimethylbenzene	105	11.501	11.507	(0.972)	631820	56.4046	56.40
81	sec-Butylbenzene	105	11.668	11.674	(0.986)	723210	50.0181	50.01
82	p-Isopropyltoluene	119	11.818	11.825	(0.999)	609665	49.4310	49.43
83	1,3-Dichlorobenzene	146	11.767	11.774	(0.994)	364428	48.1340	48.13
84	1,4-Dichlorobenzene	146	11.857	11.867	(1.002)	345513	47.2252	47.22
87	n-Butylbenzene	91	12.219	12.226	(1.033)	485020	51.8573	51.85
88	1,2-Dichlorobenzene	146	12.223	12.229	(1.033)	342980	48.2795	48.27
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	41165	52.0031	52.00
90	1,2,4-Trichlorobenzene	180	13.818	13.821	(1.168)	215174	52.3513	52.35
91	Hexachlorobutadiene	225	13.988	13.991	(1.182)	93757	52.2044	52.20
92	Naphthalene	128	14.061	14.065	(1.188)	512528	51.7954	51.79
93	1,2,3-Trichlorobenzene	182	14.299	14.305	(1.208)	177489	49.8383	49.83
146	Methyl acetate	43	3.215	3.222	(0.557)	201705	47.1423	47.14
138	Freon TF	101	2.753	2.753	(0.477)	144639	54.3103	54.31
139	Diethyl ether	59	2.532	2.532	(0.439)	321139	50.6526	50.65
147	Methylcyclohexane	83	6.986	6.989	(1.064)	244328	49.7476	49.74
135	1,4-Dioxane	88	7.239	7.246	(1.254)	32183	979.463	979.46
132	n-Butanol	56	6.986	6.989	(1.210)	122610	942.115	942.11
131	Methyl Acrylate	55	5.259	5.276	(0.911)	318487	53.1788	53.17
133	Ethyl Acrylate	55	7.002	7.015	(1.213)	546872	50.5332	50.53
136	n-Hexane	57	4.046	4.050	(0.701)	223778	52.4465	52.44
141	Cyclohexane	56	5.683	5.683	(0.984)	319251	53.7972	53.79
142	Tetrahydrofuran	42	5.407	5.417	(0.937)	136501	95.3991	95.39
148	Tert-butyl alcohol	59	3.555	3.581	(0.616)	417806	979.118	979.11
149	Isopropyl alcohol	45	3.045	3.077	(0.528)	245359	904.137	904.13
151	4-Methyl-2-pentanol	45	8.449	8.478	(0.887)	977046	1011.01	1011.00
166	1,2,3-Trimethylbenzene	105	11.915	11.921	(1.007)	594057	47.5556	47.55
167	Ethanol	45	2.525	2.529	(0.438)	299751	958.439	958.43
170	1,3,5-Trichlorobenzene	180	13.201	13.205	(1.116)	248529	51.6060	51.60
172	tert-Butyl formate	59	4.900	4.910	(0.849)	627330	100.359	100.35
173	3,3-Dimethyl-1-butanol	57	9.094	9.110	(0.955)	355019	1061.50	1061.49
174	tert-Amyl methyl ether	73	6.251	6.261	(1.083)	598324	50.7450	50.74
175	tert-Butyl ethyl ether	59	6.228	6.251	(1.079)	301447	51.5499	51.54
176	tert-Amyl alcohol	59	6.228	6.251	(1.079)	301447	1031.00	1030.99
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	145628	45.1975	45.19
156	Diisopropyl ether	45	4.412	4.422	(0.764)	733521	48.3338	48.33(T)
171	1-Methylnaphthalene	142	15.387	15.390	(1.300)	160032	47.9522	47.95
130	Ethyl Acetate	43	5.234	5.247	(0.907)	412309	46.8580	46.85
M 94	1,2-Dichloroethylene (total)	96				344152	104.132	104.13
M 95	Xylenes (total)	106				899944	160.633	160.63

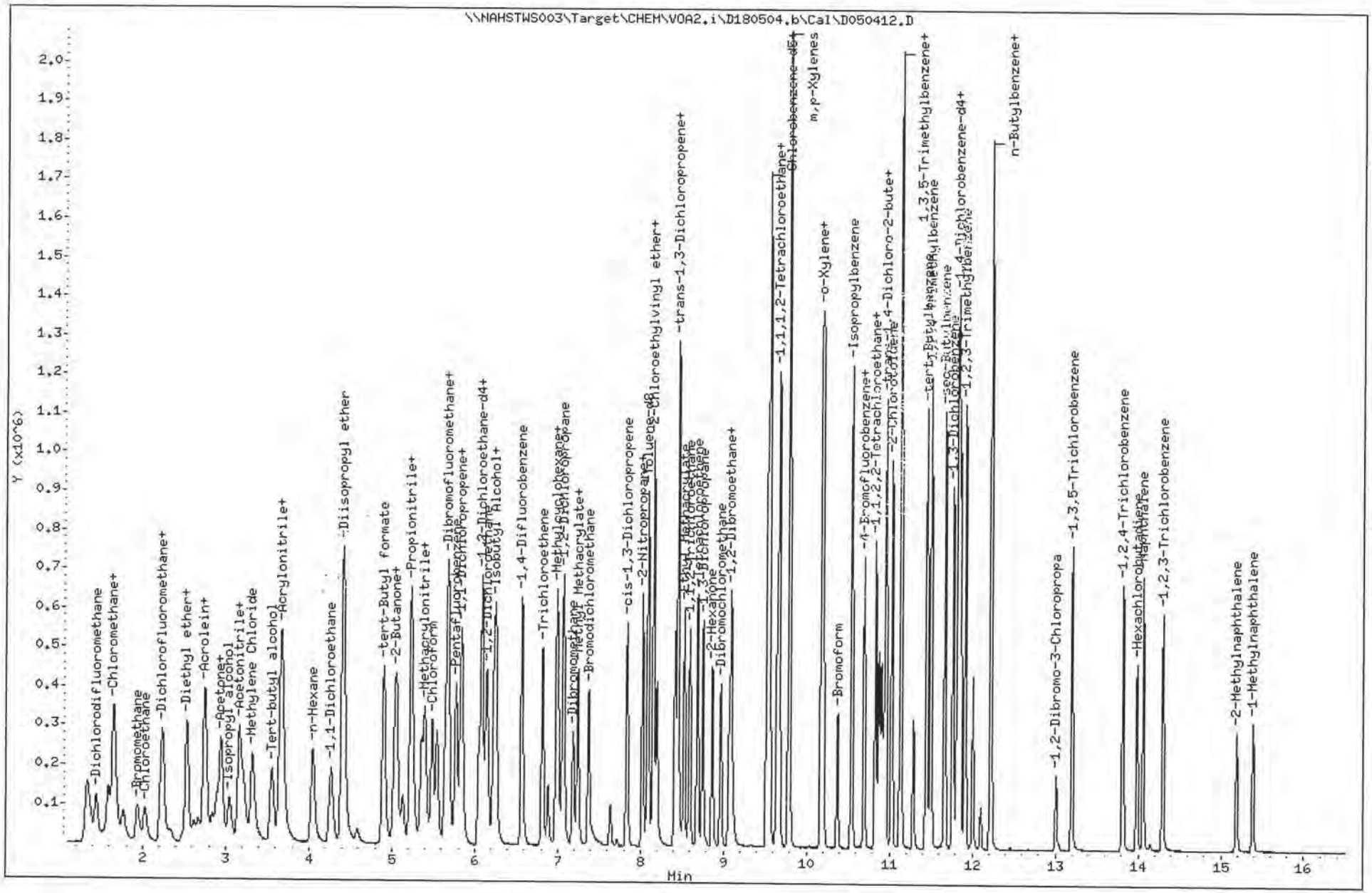
QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\Cal\D050412.D
Date : 04-MAY-2018 19:22
Client ID: VSTD-ICV
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050926

Lab File ID: D052101 BFB Injection Date: 05/21/18

Instrument ID: VOA2 BFB Injection Time: 0901

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.9
75	30.0 - 60.0% of mass 95	45.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	88.7
175	5.0 - 9.0% of mass 174	7.0 (7.8)1
176	95.0 - 101.0% of mass 174	84.7 (95.5)1
177	5.0 - 9.0% of mass 176	5.6 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	D052102	05/21/18	0925
02	VLCSW-180521	VLCSW-180521	D052105	05/21/18	1039
03	VBLKW-180521	VBLKW-180521	D052107	05/21/18	1128
04	HS18050932-0	HS18050932-02	D052111	05/21/18	1306
05	HS18050926-0	HS18050926-06M	D052113	05/21/18	1355
06	HS18050926-0	HS18050926-06M	D052114	05/21/18	1420
07	HS18050932-0	HS18050932-01	D052119	05/21/18	1625
08	CCV_END	CCV_END	D052129	05/21/18	2032
09					
10					
11					
12					
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15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Instrument ID: VOA2 Calibration Date: 05/21/18 Time: 0925

Lab File ID: D052102 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	98.489752	100.00000	0.3831989	0.1	-1.51	20.00	LINR
Dichlorodifluoromethane	52.400442	50.000000	0.4851256	0.1	4.80	20.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4739875	0.4739875	0.1	3.49	20.00	AVRG
Chloromethane	55.047502	50.000000	0.8848437	0.1	10.10	20.00	LINR
tert-Amyl alcohol	4.1e-002	3.72e-002	3.72e-002	0.005	-9.27	20.00	AVRG
Vinyl Chloride	0.6230000	0.6275257	0.6275257	0.1	0.73	20.00	AVRG
Bromomethane	0.3690000	0.3253416	0.3253416	0.1	-11.83	20.00	AVRG
Chloroethane	54.802969	50.000000	0.3664261	0.1	9.60	20.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7446166	0.7446166	0.1	-9.08	20.00	AVRG
Trichlorofluoromethane	0.5900000	0.6418161	0.6418161	0.1	8.78	20.00	AVRG
Acrolein	91.090535	100.00000	0.1126906	0.01	-8.91	20.00	LINR
Acetone	96.810226	100.00000	0.1597463	0.1	-3.19	20.00	LINR
1,1-Dichloroethene	0.3780000	0.3774540	0.3774540	0.1	-0.14	20.00	AVRG
Isobutyl Alcohol	863.99537	1000.0000	2.18e-003	0.001	-13.60	20.00	LINR
Acetonitrile	6.4e-002	6.2e-002	6.2e-002	0.01	-3.12	20.00	AVRG
Allyl Chloride	1.6270000	1.6154566	1.6154566	0.05	-0.71	20.00	AVRG
Acrylonitrile	0.2220000	0.2317612	0.2317612	0.05	4.40	20.00	AVRG
Methylene Chloride	0.5280000	0.4800432	0.4800432	0.1	-9.08	20.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3359047	1.3359047	0.1	-7.36	20.00	AVRG
Carbon Disulfide	0.8640000	0.8299456	0.8299456	0.1	-3.94	20.00	AVRG
trans-1,2-Dichloroethene	52.757447	50.000000	0.4357897	0.1	5.51	20.00	LINR
Vinyl Acetate	0.6440000	0.5749771	0.5749771	0.1	-10.72	20.00	AVRG
1,1-Dichloroethane	1.0040000	0.9760126	0.9760126	0.2	-2.79	20.00	AVRG
2-Butanone	0.2600000	0.2583200	0.2583200	0.1	-0.65	20.00	AVRG
Methacrylonitrile	0.6190000	0.5706085	0.5706085	0.01	-7.82	20.00	AVRG
2,2-Dichloropropane	0.6790000	0.7044495	0.7044495	0.1	3.75	20.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5121853	0.5121853	0.1	-0.93	20.00	AVRG
Chloroform	0.8660000	0.8377563	0.8377563	0.2	-3.26	20.00	AVRG
Bromochloromethane	0.2490000	0.2589900	0.2589900	0.1	4.01	20.00	AVRG
tert-Amyl methyl ether	1.6510000	1.4498809	1.4498809	0.05	-12.18	20.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7205839	0.7205839	0.1	-0.88	20.00	AVRG
1,1-Dichloropropene	0.4310000	0.3852024	0.3852024	0.1	-10.62	20.00	AVRG
1,2-Dichloroethane	0.4720000	0.4692277	0.4692277	0.1	-0.59	20.00	AVRG
Carbon Tetrachloride	0.4380000	0.4070860	0.4070860	0.1	-7.06	20.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.19e-002	3.19e-002	0.005	-3.33	20.00	AVRG
Benzene	1.2710000	1.2276652	1.2276652	0.5	-3.41	20.00	AVRG
Trichloroethene	0.3290000	0.3451380	0.3451380	0.2	4.90	20.00	AVRG
Bromodichloromethane	0.4620000	0.4679954	0.4679954	0.2	1.30	20.00	AVRG
Methyl Methacrylate	0.5900000	0.5837823	0.5837823	0.05	-1.05	20.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.61e-002	5.61e-002	0.05	-1.58	20.00	AVRG
1,2-Dichloropropane	0.3810000	0.3741729	0.3741729	0.1	-1.79	20.00	AVRG
tert-Butyl formate	0.8760000	0.7776762	0.7776762	0.1	-11.22	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date: 05/21/18 Time: 0925

Lab File ID: D052102 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.2000036	0.2000036	0.1	5.26	20.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4392155	0.4392155	0.1	-4.31	20.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5583673	0.5583673	0.2	8.42	20.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0343332	1.0343332	0.1	-4.93	20.00	AVRG
Ethyl Methacrylate	55.080759	50.000000	0.4613543	0.01	10.16	20.00	LINR
Toluene	1.5270000	1.4308307	1.4308307	0.4	-6.30	20.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4746305	0.4746305	0.1	11.15	20.00	AVRG
2-Hexanone	0.2870000	0.2852009	0.2852009	0.1	-0.63	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2826630	0.2826630	0.1	-1.51	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5657002	0.5657002	0.1	-0.58	20.00	AVRG
Dibromochloromethane	0.4200000	0.4309316	0.4309316	0.1	2.60	20.00	AVRG
Tetrachloroethene	0.3050000	0.3017901	0.3017901	0.2	-1.05	20.00	AVRG
1,2-Dibromoethane	0.3580000	0.3621275	0.3621275	0.1	1.15	20.00	AVRG
1-Chlorohexane	53.877440	50.000000	0.3333219	0.1	7.75	20.00	LINR
Chlorobenzene	0.9560000	0.9238320	0.9238320	0.5	-3.36	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3835966	0.3835966	0.1	1.21	20.00	AVRG
Ethylbenzene	0.5180000	0.4975304	0.4975304	0.1	-3.95	20.00	AVRG
m,p-Xylenes	117.18495	100.00000	0.6056431	0.1	17.18	20.00	LINR
o-Xylene	0.6500000	0.6469195	0.6469195	0.3	-0.47	20.00	AVRG
Styrene	1.0420000	1.0487491	1.0487491	0.3	0.65	20.00	AVRG
Bromoform	0.2980000	0.3070274	0.3070274	0.1	3.03	20.00	AVRG
Isopropylbenzene	1.5660000	1.5529331	1.5529331	0.1	-0.83	20.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9736533	0.9736533	0.3	-12.12	20.00	AVRG
Ethanol	4.4e-002	4.38e-002	4.38e-002	0.001	-0.45	20.00	AVRG
1,2,3-Trichloropropane	53.855355	50.000000	0.4912350	0.1	7.71	20.00	LINR
trans-1,4-Dichloro-2-butene	43.374302	50.000000	0.1079346	0.05	-13.25	20.00	LINR
n-Propylbenzene	3.9220000	3.6864774	3.6864774	0.1	-6.00	20.00	AVRG
Bromobenzene	1.0040000	0.9521496	0.9521496	0.1	-5.16	20.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.7364104	2.7364104	0.1	-7.68	20.00	AVRG
2-Chlorotoluene	54.819326	50.000000	2.4153139	0.1	9.64	20.00	LINR
4-Chlorotoluene	55.323859	50.000000	2.6446243	0.1	10.65	20.00	LINR
tert-Butylbenzene	2.4500000	2.3102661	2.3102661	0.1	-5.70	20.00	AVRG
1,2,4-Trimethylbenzene	55.336421	50.000000	2.8036229	0.1	10.67	20.00	LINR
sec-Butylbenzene	3.2670000	3.1107700	3.1107700	0.1	-4.78	20.00	AVRG
p-Isopropyltoluene	2.7870000	2.6534999	2.6534999	0.1	-4.79	20.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.6162098	1.6162098	0.6	-5.48	20.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.5279455	1.5279455	0.4	-7.56	20.00	AVRG
n-Butylbenzene	2.1130000	2.0885001	2.0885001	0.05	-1.16	20.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.5240062	1.5240062	0.4	-5.05	20.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1787340	0.1787340	0.05	-0.15	20.00	AVRG
1,2,4-Trichlorobenzene	47.971604	50.000000	0.8903253	0.2	-4.06	20.00	LINR
Hexachlorobutadiene	49.867450	50.000000	0.4047241	0.1	-0.26	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date: 05/21/18 Time: 0925

Lab File ID: D052102 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Naphthalene	48.411201	50.000000	2.1632276	0.2	-3.18	20.00	LINR	
1,2,3-Trichlorobenzene	47.032885	50.000000	0.7559641	0.1	-5.93	20.00	LINR	
Methyl acetate	0.5990000	0.6611406	0.6611406	0.1	10.37	20.00	AVRG	
Freon TF	48.750210	50.000000	0.3647300	0.1	-2.50	20.00	LINR	
1,2,3-Trimethylbenzene	2.8220000	2.6036160	2.6036160	0.1	-7.74	20.00	AVRG	
Methylcyclohexane	0.4390000	0.4145459	0.4145459	0.1	-5.57	20.00	AVRG	
1,4-Dioxane	917.98136	1000.0000	4.23e-003	0.001	-8.20	20.00	LINR	
n-Butanol	1.8e-002	1.51e-002	1.51e-002	0.001	-16.11	20.00	AVRG	
Methyl Acrylate	0.8380000	0.8484311	0.8484311	0.1	1.24	20.00	AVRG	
Ethyl Acrylate	1.5160000	1.4437332	1.4437332	0.1	-4.77	20.00	AVRG	
n-Hexane	0.5980000	0.6094145	0.6094145	0.1	1.91	20.00	AVRG	
Cyclohexane	0.8310000	0.7830785	0.7830785	0.1	-5.77	20.00	AVRG	
Isopropyl alcohol	3.8e-002	3.29e-002	3.29e-002	0.005	-13.42	20.00	AVRG	
Tert-butyl alcohol	6.e-002	5.7e-002	5.7e-002	0.005	-5.00	20.00	AVRG	
Xylenes (total)	0.5980000	0.5574094	0.5574094	0.1	-6.79	20.00	AVRG	
Propionitrile	0.1730000	0.1714137	0.1714137	0.01	-0.92	20.00	AVRG	
2-Nitropropane	1.2450000	1.1830018	1.1830018	0.1	-4.98	20.00	AVRG	
Ethyl Acetate	1.2320000	1.1499543	1.1499543	0.01	-6.66	20.00	AVRG	
Diethyl ether	0.8880000	0.8829242	0.8829242	0.05	-0.57	20.00	AVRG	
Tetrahydrofuran	0.2000000	0.1886893	0.1886893	0.05	-5.66	20.00	AVRG	
4-Methyl-2-pentanol	9.6e-002	9.02e-002	9.02e-002	0.005	-6.04	20.00	AVRG	
Diisopropyl ether	2.1250000	2.0337779	2.0337779	0.05	-4.29	20.00	AVRG	
2-Methylnaphthalene	33.610331	50.000000	0.4619854	0.05	-32.78	20.00	2RDR	<-
Dichlorofluoromethane	0.9190000	0.8932791	0.8932791	0.1	-2.80	20.00	AVRG	
1-Methylnaphthalene	36.509736	50.000000	0.5276508	0.1	-26.98	20.00	2RDR	<-
Isobutylene	0.4840000	0.5772361	0.5772361	0.1	19.26	20.00	AVRG	
Dibromofluoromethane	50.009466	50.000000	0.4327264	0.1	0.02	20.00	2RDR	
Toluene-d8	51.773008	50.000000	1.2506230	0.1	3.55	20.00	2RDR	
1,2-Dichloroethane-d4	50.739439	50.000000	0.5525184	0.1	1.48	20.00	LINR	
4-Bromofluorobenzene	53.686853	50.000000	0.4845795	0.1	7.37	20.00	2RDR	

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Instrument ID: VOA2 Calibration Date: 05/21/18 Time: 2032

Lab File ID: D052129 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	99.366967	100.00000	0.3867599	0.1	-0.63	50.00	LINR
Dichlorodifluoromethane	65.083779	50.000000	0.6004332	0.1	30.17	50.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.5512750	0.5512750	0.1	20.36	50.00	AVRG
Chloromethane	60.088067	50.000000	0.9633516	0.1	20.18	50.00	LINR
tert-Amyl alcohol	4.1e-002	4.21e-002	4.21e-002	0.005	2.68	50.00	AVRG
Vinyl Chloride	0.6230000	0.7656406	0.7656406	0.1	22.90	50.00	AVRG
Bromomethane	0.3690000	0.3333926	0.3333926	0.1	-9.65	50.00	AVRG
Chloroethane	68.648525	50.000000	0.4563546	0.1	37.30	50.00	LINR
tert-Butyl ethyl ether	0.8190000	0.8412963	0.8412963	0.1	2.72	50.00	AVRG
Trichlorofluoromethane	0.5900000	0.7836631	0.7836631	0.1	32.82	50.00	AVRG
Acrolein	91.409792	100.00000	0.1130838	0.01	-8.59	50.00	LINR
Acetone	113.52498	100.00000	0.1863087	0.1	13.52	50.00	LINR
1,1-Dichloroethene	0.3780000	0.4771648	0.4771648	0.1	26.23	50.00	AVRG
Isobutyl Alcohol	907.69721	1000.0000	2.29e-003	0.001	-9.23	50.00	LINR
Acetonitrile	6.4e-002	7.18e-002	7.18e-002	0.01	12.19	50.00	AVRG
Allyl Chloride	1.6270000	1.8102510	1.8102510	0.05	11.26	50.00	AVRG
Acrylonitrile	0.2220000	0.2541081	0.2541081	0.05	14.46	50.00	AVRG
Methylene Chloride	0.5280000	0.5387561	0.5387561	0.1	2.04	50.00	AVRG
Methyl tert-butyl ether	1.4420000	1.4499825	1.4499825	0.1	0.55	50.00	AVRG
Carbon Disulfide	0.8640000	1.0010860	1.0010860	0.1	15.87	50.00	AVRG
trans-1,2-Dichloroethene	62.874250	50.000000	0.5188373	0.1	25.75	50.00	LINR
Vinyl Acetate	0.6440000	0.6428394	0.6428394	0.1	-0.18	50.00	AVRG
1,1-Dichloroethane	1.0040000	1.1135755	1.1135755	0.2	10.91	50.00	AVRG
2-Butanone	0.2600000	0.2812996	0.2812996	0.1	8.19	50.00	AVRG
Methacrylonitrile	0.6190000	0.6416186	0.6416186	0.01	3.65	50.00	AVRG
2,2-Dichloropropane	0.6790000	0.7282079	0.7282079	0.1	7.25	50.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5837127	0.5837127	0.1	12.90	50.00	AVRG
Chloroform	0.8660000	0.9441007	0.9441007	0.2	9.02	50.00	AVRG
Bromochloromethane	0.2490000	0.2906478	0.2906478	0.1	16.73	50.00	AVRG
tert-Amyl methyl ether	1.6510000	1.5974830	1.5974830	0.05	-3.24	50.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.8600694	0.8600694	0.1	18.30	50.00	AVRG
1,1-Dichloropropene	0.4310000	0.4651713	0.4651713	0.1	7.93	50.00	AVRG
1,2-Dichloroethane	0.4720000	0.4975245	0.4975245	0.1	5.41	50.00	AVRG
Carbon Tetrachloride	0.4380000	0.4935762	0.4935762	0.1	12.69	50.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.58e-002	3.58e-002	0.005	8.48	50.00	AVRG
Benzene	1.2710000	1.3924567	1.3924567	0.5	9.56	50.00	AVRG
Trichloroethene	0.3290000	0.3942248	0.3942248	0.2	19.82	50.00	AVRG
Bromodichloromethane	0.4620000	0.5083461	0.5083461	0.2	10.03	50.00	AVRG
Methyl Methacrylate	0.5900000	0.6286233	0.6286233	0.05	6.55	50.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	6.34e-002	6.34e-002	0.05	11.23	50.00	AVRG
1,2-Dichloropropane	0.3810000	0.4081056	0.4081056	0.1	7.11	50.00	AVRG
tert-Butyl formate	0.8760000	0.8360915	0.8360915	0.1	-4.56	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date: 05/21/18 Time: 2032

Lab File ID: D052129 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.2193393	0.2193393	0.1	15.44	50.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4666115	0.4666115	0.1	1.66	50.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5846618	0.5846618	0.2	13.53	50.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.1188129	1.1188129	0.1	2.83	50.00	AVRG
Ethyl Methacrylate	58.594948	50.000000	0.4896240	0.01	17.19	50.00	LINR
Toluene	1.5270000	1.6080340	1.6080340	0.4	5.31	50.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4971672	0.4971672	0.1	16.43	50.00	AVRG
2-Hexanone	0.2870000	0.3048219	0.3048219	0.1	6.21	50.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.3093444	0.3093444	0.1	7.78	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.6052265	0.6052265	0.1	6.37	50.00	AVRG
Dibromochloromethane	0.4200000	0.4590698	0.4590698	0.1	9.30	50.00	AVRG
Tetrachloroethene	0.3050000	0.3451218	0.3451218	0.2	13.15	50.00	AVRG
1,2-Dibromoethane	0.3580000	0.3945340	0.3945340	0.1	10.20	50.00	AVRG
1-Chlorohexane	63.633957	50.000000	0.3905567	0.1	27.27	50.00	LINR
Chlorobenzene	0.9560000	1.0045808	1.0045808	0.5	5.08	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.4175161	0.4175161	0.1	10.16	50.00	AVRG
Ethylbenzene	0.5180000	0.5630459	0.5630459	0.1	8.70	50.00	AVRG
m,p-Xylenes	130.91381	100.00000	0.6727467	0.1	30.91	50.00	LINR
o-Xylene	0.6500000	0.7101563	0.7101563	0.3	9.25	50.00	AVRG
Styrene	1.0420000	1.1509993	1.1509993	0.3	10.46	50.00	AVRG
Bromoform	0.2980000	0.3257241	0.3257241	0.1	9.30	50.00	AVRG
Isopropylbenzene	1.5660000	1.7630163	1.7630163	0.1	12.58	50.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	1.0642506	1.0642506	0.3	-3.95	50.00	AVRG
Ethanol	4.4e-002	4.82e-002	4.82e-002	0.001	9.54	50.00	AVRG
1,2,3-Trichloropropane	53.032538	50.000000	0.4840760	0.1	6.06	50.00	LINR
trans-1,4-Dichloro-2-butene	46.679284	50.000000	0.1163078	0.05	-6.64	50.00	LINR
n-Propylbenzene	3.9220000	4.1803444	4.1803444	0.1	6.59	50.00	AVRG
Bromobenzene	1.0040000	1.0318529	1.0318529	0.1	2.77	50.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	3.0332321	3.0332321	0.1	2.34	50.00	AVRG
2-Chlorotoluene	60.703682	50.000000	2.6638462	0.1	21.41	50.00	LINR
4-Chlorotoluene	60.657510	50.000000	2.8878768	0.1	21.32	50.00	LINR
tert-Butylbenzene	2.4500000	2.6116005	2.6116005	0.1	6.60	50.00	AVRG
1,2,4-Trimethylbenzene	60.681208	50.000000	3.0614040	0.1	21.36	50.00	LINR
sec-Butylbenzene	3.2670000	3.6471934	3.6471934	0.1	11.64	50.00	AVRG
p-Isopropyltoluene	2.7870000	3.0241081	3.0241081	0.1	8.51	50.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.7756652	1.7756652	0.6	3.84	50.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.6675174	1.6675174	0.4	0.88	50.00	AVRG
n-Butylbenzene	2.1130000	2.3974105	2.3974105	0.05	13.46	50.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.6772843	1.6772843	0.4	4.50	50.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1982390	0.1982390	0.05	10.75	50.00	AVRG
1,2,4-Trichlorobenzene	53.255666	50.000000	0.9892907	0.2	6.51	50.00	LINR
Hexachlorobutadiene	54.626853	50.000000	0.4433298	0.1	9.25	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805093

Instrument ID: VOA2 Calibration Date: 05/21/18 Time: 2032

Lab File ID: D052129 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	52.479960	50.000000	2.3469858	0.2	4.96	50.00	LINR
1,2,3-Trichlorobenzene	50.938273	50.000000	0.8201316	0.1	1.88	50.00	LINR
Methyl acetate	0.5990000	0.7299510	0.7299510	0.1	21.86	50.00	AVRG
Freon TF	60.809376	50.000000	0.4523445	0.1	21.62	50.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.8660362	2.8660362	0.1	1.56	50.00	AVRG
Methylcyclohexane	0.4390000	0.5045968	0.5045968	0.1	14.94	50.00	AVRG
1,4-Dioxane	1111.3768	1000.0000	5.1e-003	0.001	11.14	50.00	LINR
n-Butanol	1.8e-002	1.88e-002	1.88e-002	0.001	4.44	50.00	AVRG
Methyl Acrylate	0.8380000	0.9350726	0.9350726	0.1	11.58	50.00	AVRG
Ethyl Acrylate	1.5160000	1.6369836	1.6369836	0.1	7.98	50.00	AVRG
n-Hexane	0.5980000	0.6933884	0.6933884	0.1	15.95	50.00	AVRG
Cyclohexane	0.8310000	1.0219989	1.0219989	0.1	22.98	50.00	AVRG
Isopropyl alcohol	3.8e-002	3.81e-002	3.81e-002	0.005	0.26	50.00	AVRG
Tert-butyl alcohol	6.e-002	6.39e-002	6.39e-002	0.005	6.50	50.00	AVRG
Xylenes (total)	0.5980000	0.6212691	0.6212691	0.1	3.89	50.00	AVRG
Propionitrile	0.1730000	0.1873356	0.1873356	0.01	8.29	50.00	AVRG
2-Nitropropane	1.2450000	1.2769357	1.2769357	0.1	2.56	50.00	AVRG
Ethyl Acetate	1.2320000	1.2856788	1.2856788	0.01	4.36	50.00	AVRG
Diethyl ether	0.8880000	0.9700790	0.9700790	0.05	9.24	50.00	AVRG
Tetrahydrofuran	0.2000000	0.2103708	0.2103708	0.05	5.18	50.00	AVRG
4-Methyl-2-pentanol	9.6e-002	9.79e-002	9.79e-002	0.005	1.98	50.00	AVRG
Diisopropyl ether	2.1250000	2.2212569	2.2212569	0.05	4.53	50.00	AVRG
2-Methylnaphthalene	38.763560	50.000000	0.5486702	0.05	-22.47	50.00	2RDR
Dichlorofluoromethane	0.9190000	1.0606447	1.0606447	0.1	15.41	50.00	AVRG
1-Methylnaphthalene	41.987948	50.000000	0.6209208	0.1	-16.02	50.00	2RDR
Isobutylene	0.4840000	0.6405832	0.6405832	0.1	32.35	50.00	AVRG
Dibromofluoromethane	49.953360	50.000000	0.4322726	0.1	-0.09	50.00	2RDR
Toluene-d8	51.867213	50.000000	1.2524947	0.1	3.73	50.00	2RDR
1,2-Dichloroethane-d4	51.709161	50.000000	0.5626666	0.1	3.42	50.00	LINR
4-Bromofluorobenzene	53.059803	50.000000	0.4793340	0.1	6.12	50.00	2RDR

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Lab File ID (Standard): D052102 Date Analyzed: 05/21/18

Instrument ID: VOA2 Time Analyzed: 0925

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	IS1 RT #	IS2(DFB) AREA #	IS2(DFB) RT #	IS3(CBZ) AREA #	IS3(CBZ) RT #
	12 HOUR STD	331341	5.80	495851	6.58	446224	9.53
	UPPER LIMIT	662682	6.30	991702	7.08	892448	10.03
	LOWER LIMIT	165671	5.30	247926	6.08	223112	9.03
	CLIENT SAMPLE NO.						
01	VLCSW-180521	334646	5.79	505071	6.58	452498	9.52
02	VBLKW-180521	343547	5.79	494811	6.58	442330	9.53
03	HS18050926-06	322536	5.78	491127	6.58	439886	9.53
04	HS18050926-06	319698	5.79	486827	6.58	437604	9.53
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050932

Lab File ID (Standard): D052102 Date Analyzed: 05/21/18

Instrument ID: VOA2 Time Analyzed: 0925

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	203593	11.83				
	UPPER LIMIT	407186	12.33				
	LOWER LIMIT	101797	11.33				
	CLIENT SAMPLE NO.						
01	VLCSW-180521	206170	11.83				
02	VBLKW-180521	188380	11.83				
03	HS18050926-06	202444	11.83				
04	HS18050926-06	203519	11.83				
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

MSVOA02 -Logbook

Batch: 31798
Date: 05-21-2018
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-21-2018 09:01 am	1.00	50 mL	50 mL	D052101.D	Liquid	Y	NA
	Auto find/purged									
2	CCV	CCV	05-21-2018 09:25 am	1.00	50 mL	50 mL	D052102.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
3	CCV	CCV	05-21-2018 09:50 am	1.00	50 mL	50 mL	D052103.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
4	CCB	SAMP	05-21-2018 10:14 am	1.00	50 mL	50 mL	D052104.D	Liquid	Y	NA
	CCB									
5	VLCSW-180521	LCS	05-21-2018 10:39 am	1.00	50 mL	50 mL	D052105.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
6	VBLKM-180521	SAMP	05-21-2018 11:03 am	50.00	1 mL	50 mL	D052106.D	Liquid	Y	NA
	Medium Level Blk									
7	VBLKW-180521	MBLK	05-21-2018 11:28 am	1.00	50 mL	50 mL	D052107.D	Liquid	Y	NA
8	HS18050926-04	SAMP	05-21-2018 11:52 am	1.00	50 mL	50 mL	D052108.D	Liquid	Y	<2
9	HS18050926-05	SAMP	05-21-2018 12:17 pm	1.00	50 mL	50 mL	D052109.D	Liquid	Y	<2
10	HS18050926-07	SAMP	05-21-2018 12:42 pm	1.00	50 mL	50 mL	D052110.D	Liquid	Y	<2
11	HS18050932-02	SAMP	05-21-2018 01:06 pm	1.00	50 mL	50 mL	D052111.D	Liquid	Y	<2
12	HS18050926-06	SAMP	05-21-2018 01:31 pm	1.00	50 mL	50 mL	D052112.D	Liquid	Y	<2
13	HS18050926-06MS	MS	05-21-2018 01:55 pm	1.00	50 mL	50 mL	D052113.D	Liquid	Y	<2
	8 uL cal std/40 ml Sample									
14	HS18050926-06MSD	MSD	05-21-2018 02:20 pm	1.00	50 mL	50 mL	D052114.D	Liquid	Y	<2
	8 uL cal std/40 ml Sample									
15	HS18050829-11	SAMP	05-21-2018 02:47 pm	10.00	5 mL	50 mL	D052115.D	Liquid	Y	<2
16	HS18050926-01	SAMP	05-21-2018 03:11 pm	1.00	50 mL	50 mL	D052116.D	Liquid	Y	<2
17	HS18050926-02	SAMP	05-21-2018 03:36 pm	1.00	50 mL	50 mL	D052117.D	Liquid	Y	<2
18	HS18050926-03	SAMP	05-21-2018 04:00 pm	1.00	50 mL	50 mL	D052118.D	Liquid	Y	<2
19	HS18050932-01	SAMP	05-21-2018 04:25 pm	1.00	50 mL	50 mL	D052119.D	Liquid	Y	<2
20	HS18050764-09	SAMP	05-21-2018 04:49 pm	1.00	50 mL	50 mL	D052120.D	Liquid	Y	<2
21	HS18050764-10	SAMP	05-21-2018 05:14 pm	1.00	50 mL	50 mL	D052121.D	Liquid	Y	<2
22	HS18050867-01	SAMP	05-21-2018 05:38 pm	1.00	50 mL	50 mL	D052122.D	Liquid	Y	<2
23	HS18050722-01	SAMP	05-21-2018 06:03 pm	1.00	50 mL	50 mL	D052123.D	Liquid	Y	<2
24	HS18050722-02	SAMP	05-21-2018 06:27 pm	1.00	50 mL	50 mL	D052124.D	Liquid	Y	<2
25	HS18051025-01	SAMP	05-21-2018 06:52 pm	1.00	50 mL	50 mL	D052125.D	Liquid	Y	<2
26	HS18050829-05	SAMP	05-21-2018 07:16 pm	1.00	50 mL	50 mL	D052126.D	Liquid	Y	<2
27	HS18050674-01	SAMP	05-21-2018 07:41 pm	500.0	100 µL	50 mL	D052127.D	Liquid	Y	<2
28	HS18050674-01	SAMP	05-21-2018 08:08 pm	5000.0	10 µL	50 mL	D052128.D	Liquid	Y	<2
29	CCV_END	CCV_END	05-21-2018 08:32 pm	1.00	50 mL	50 mL	D052129.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
30	BFB	TUNE	05-21-2018 08:57 pm	1.00	50 mL	50 mL	E052101.D	Liquid	Y	NA
	Auto find/purged									
31	CCV	CCV	05-21-2018 09:21 pm	1.00	50 mL	50 mL	E052102.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
32	CCV	CCV	05-21-2018 09:46 pm	1.00	50 mL	50 mL	E052103.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
33	CCB	SAMP	05-21-2018 10:10 pm	1.00	50 mL	50 mL	E052104.D	Liquid	Y	NA
	CCB									
34	VLCSW-180521	LCS	05-21-2018 10:35 pm	1.00	50 mL	50 mL	E052105.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
35	VBLKM-180521	SAMP	05-21-2018 10:59 pm	1.00	50 mL	50 mL	E052106.D	Liquid	Y	NA
36	VBLKW-180521	MBLK	05-21-2018 11:23 pm	1.00	50 mL	50 mL	E052107.D	Liquid	Y	NA
37	HS18050822-09	SAMP	05-21-2018 11:48 pm	1.00	50 mL	50 mL	E052108.D	Liquid	Y	<2
38	HS18050714-01	SAMP	05-22-2018 12:12 am	1.00	50 mL	50 mL	E052109.D	Liquid	Y	<2
39	HS18050714-02	SAMP	05-22-2018 12:37 am	1.00	50 mL	50 mL	E052110.D	Liquid	Y	<2
40	HS18050714-03	SAMP	05-22-2018 01:01 am	1.00	50 mL	50 mL	E052111.D	Liquid	Y	<2
41	HS18050829-06	SAMP	05-22-2018 01:26 am	1.00	50 mL	50 mL	E052112.D	Liquid	Y	<2
42	HS18050829-06MS	MS	05-22-2018 01:50 am	1.00	50 mL	50 mL	E052113.D	Liquid	Y	<2
43	*8 uL cal std/40 ml Sample* HS18050829-06MSD	MSD	05-22-2018 02:15 am	1.00	50 mL	50 mL	E052114.D	Liquid	Y	<2
44	*8 uL cal std/40 ml Sample* HS18050714-04	SAMP	05-22-2018 02:39 am	1.00	50 mL	50 mL	E052115.D	Liquid	Y	<2
45	HS18050829-07	SAMP	05-22-2018 03:03 am	1.00	50 mL	50 mL	E052116.D	Liquid	Y	<2
46	HS18050829-12	SAMP	05-22-2018 03:28 am	1.00	50 mL	50 mL	E052117.D	Liquid	Y	<2
47	HS18050829-13	SAMP	05-22-2018 03:52 am	1.00	50 mL	50 mL	E052118.D	Liquid	Y	<2
48	HS18050829-03	SAMP	05-22-2018 04:19 am	10.00	5 mL	50 mL	E052119.D	Liquid	Y	<2
49	HS18050829-04	SAMP	05-22-2018 04:46 am	10.00	5 mL	50 mL	E052120.D	Liquid	Y	<2
50	HS18050829-02	SAMP	05-22-2018 05:13 am	50.00	1 mL	50 mL	E052121.D	Liquid	Y	<2
51	HS18050714-05	SAMP	05-22-2018 05:38 am	1.00	50 mL	50 mL	E052122.D	Liquid	Y	<2
52	HS18050714-06	SAMP	05-22-2018 06:02 am	1.00	50 mL	50 mL	E052123.D	Liquid	Y	<2
53	HS18050714-07	SAMP	05-22-2018 06:27 am	1.00	50 mL	50 mL	E052124.D	Liquid	Y	<2
54	HS18050714-08	SAMP	05-22-2018 06:51 am	1.00	50 mL	50 mL	E052125.D	Liquid	Y	<2
55	HS18050714-09	SAMP	05-22-2018 07:15 am	1.00	50 mL	50 mL	E052126.D	Liquid	Y	<2
56	HS18050714-10	SAMP	05-22-2018 07:40 am	1.00	50 mL	50 mL	E052127.D	Liquid	Y	<2
57	HS18050913-01	SAMP	05-22-2018 08:04 am	1.00	50 mL	50 mL	E052128.D	Liquid	Y	<2
58	HS18050822-08	SAMP	05-22-2018 08:29 am	1.00	50 mL	50 mL	E052129.D	Liquid	Y	<2

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
LCS/MS ID	30603-18-01
CAL STD ID	30603-18-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052101.D

Date : 21-MAY-2018 09:01

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

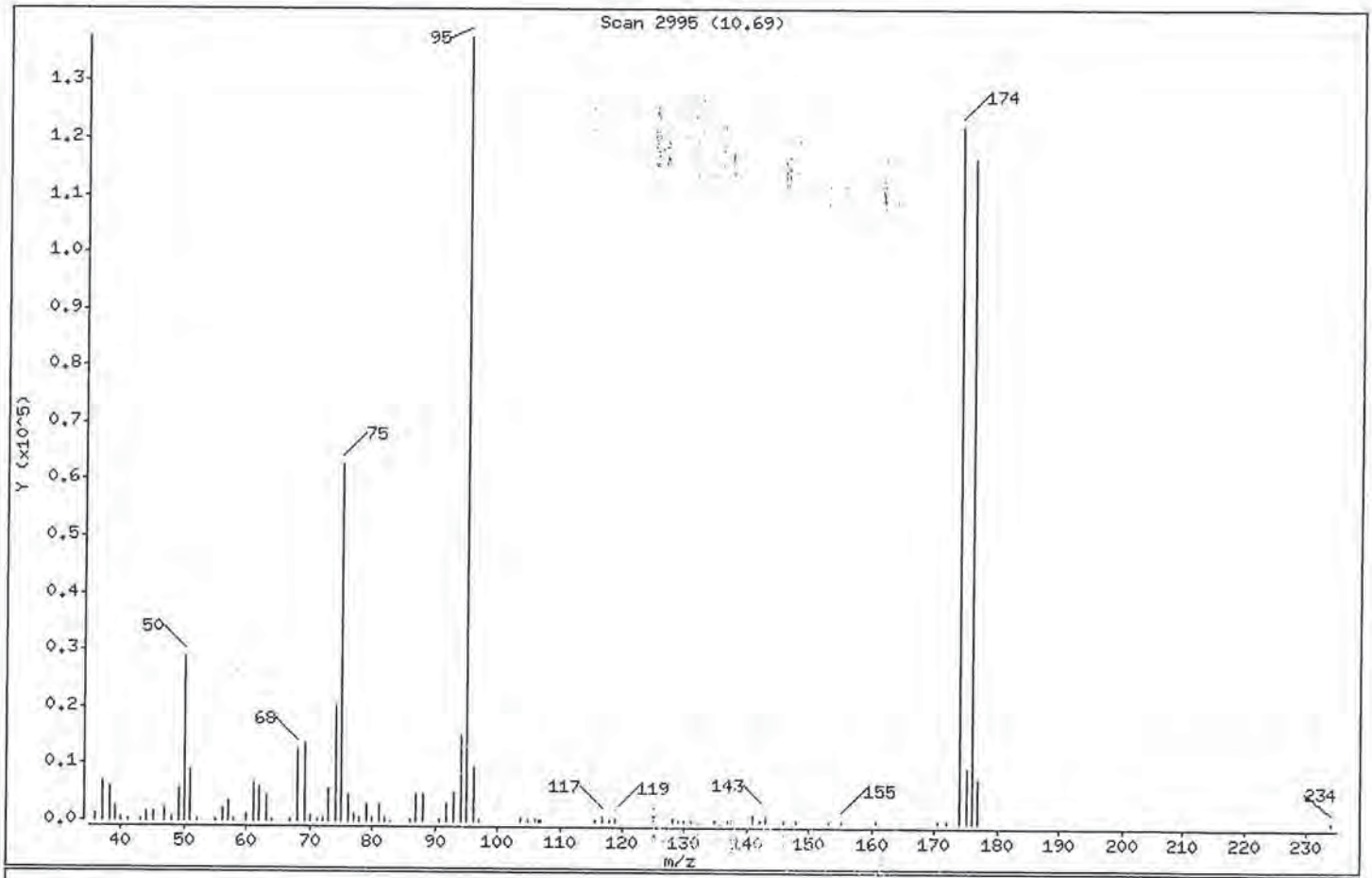
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.88
75	30.00 - 60.00% of mass 95	45.48
96	5.00 - 9.00% of mass 95	6.92
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	88.67
175	5.00 - 9.00% of mass 174	6.96 (7.85)
176	95.00 - 101.00% of mass 174	84.67 (95.49)
177	5.00 - 9.00% of mass 176	5.63 (6.64)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052101.D

Date : 21-MAY-2018 09:01

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D052101.D
Spectrum: Scan 2995 (10.69)
Location of Maximum: 95.10
Number of points: 81

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1242	62.00	6021	87.00	4760	131.00	307
37.10	6810	63.10	4468	88.00	4880	134.80	350
38.10	5963	64.00	376	90.80	382	136.80	171
39.10	2600	67.00	344	92.00	3151	141.00	1265
40.00	607	68.10	12742	93.00	5181	142.00	178
41.10	256	69.10	13457	94.10	15081	143.00	1411
43.10	274	70.10	901	95.10	137728	145.90	219
44.00	1433	71.20	204	96.10	9526	147.90	313
45.10	1525	72.00	500	97.10	341	153.00	153
47.00	2086	73.10	5797	103.90	603	155.00	379
48.00	766	74.10	20128	104.90	164	160.60	214
49.10	5588	75.10	62640	106.10	451	170.50	173
50.10	28760	76.10	4870	106.80	402	172.00	187
51.10	8910	77.00	1116	107.00	404	174.00	122120
52.00	412	77.90	488	115.80	318	175.00	9581
55.10	238	79.00	2821	116.90	866	176.00	116616
56.10	2268	80.00	705	118.00	323	177.00	7748
57.10	3496	81.00	2772	118.90	629	233.90	216
58.00	258	82.00	570	128.00	619		
60.00	1294	83.00	158	129.00	303		
61.00	6544	86.10	242	129.90	467		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052101.D

Date : 21-MAY-2018 09:01

Client ID: BFB

Instrument: VOA2.i

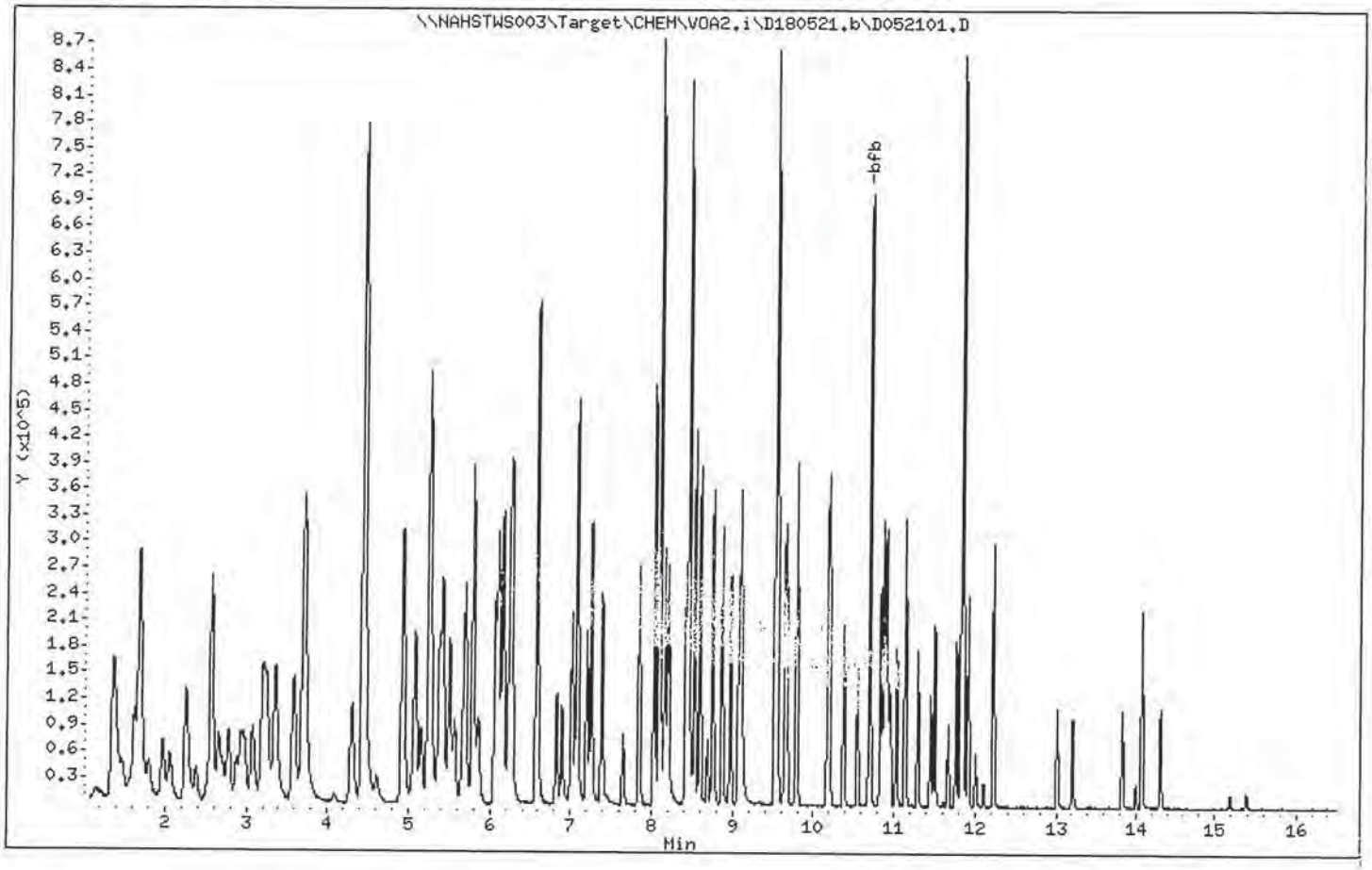
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052102.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 21-MAY-2018 09:25
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:22 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo) * 1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.795	5.795	(1.000)	331341	50.0000	
2	Dichlorodifluoromethane	85	1.479	1.479	(0.255)	160742	50.0000	52.40
186	Isobutylene	56	1.688	1.688	(0.291)	191262	50.0000	59.65(AM)
3	Chloromethane	50	1.630	1.630	(0.281)	293185	50.0000	55.04
4	Propionitrile	54	5.253	5.253	(0.906)	567964	500.000	494.58
5	Vinyl Chloride	62	1.710	1.710	(0.295)	207925	50.0000	50.31
6	Bromomethane	94	1.977	1.977	(0.341)	107799	50.0000	44.04
7	Chloroethane	64	2.067	2.067	(0.357)	121412	50.0000	54.80
159	Dichlorofluoromethane	67	2.262	2.262	(0.390)	295980	50.0000	48.58
8	Trichlorofluoromethane	101	2.278	2.278	(0.393)	212660	50.0000	54.37
9	Acrolein	56	2.712	2.712	(0.468)	74678	100.000	91.09
10	Acetone	43	2.878	2.878	(0.497)	105361	100.000	96.81
11	1,1-Dichloroethene	96	2.785	2.785	(0.481)	125066	50.0000	49.99
12	Isobutyl Alcohol	74	6.171	6.171	(1.065)	14445	1000.00	863.99(AM)
13	Acetonitrile	39	3.199	3.199	(0.552)	205547	500.000	485.93
14	Allyl Chloride	41	3.206	3.206	(0.553)	535267	50.0000	49.64
15	Iodomethane	142	2.939	2.939	(0.507)	253939	100.000	98.48
16	Acrylonitrile	53	3.722	3.722	(0.642)	153584	100.000	104.45
17	Methylene Chloride	84	3.357	3.357	(0.579)	159058	50.0000	45.42
18	Methyl tert-butyl ether	73	3.719	3.719	(0.642)	442640	50.0000	46.32
19	Carbon Disulfide	76	2.987	2.987	(0.516)	549990	100.000	96.00

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052102.D Page 2
Report Date: 05-Jun-2018 16:22

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.697	3.697	(0.638)	144395	50.0000	52.75
	21 Vinyl Acetate	43	5.256	5.256	(0.907)	381027	100.000	89.33
	22 1,1-Dichloroethane	63	4.300	4.300	(0.742)	323393	50.0000	48.59
	24 2-Butanone	43	5.157	5.157	(0.890)	171184	100.000	99.37
	25 Methacrylonitrile	41	5.420	5.420	(0.935)	189066	50.0000	46.08
	26 2,2-Dichloropropane	77	5.064	5.064	(0.874)	233413	50.0000	51.87
	27 cis-1,2-Dichloroethene	96	5.083	5.083	(0.877)	169708	50.0000	49.57
	28 Chloroform	83	5.506	5.506	(0.950)	277583	50.0000	48.35
	29 Bromochloromethane	128	5.378	5.378	(0.928)	85814	50.0000	51.93
$	30 Dibromofluoromethane	113	5.696	5.696	(0.983)	143380	50.0000	50.00
	31 1,1,1-Trichloroethane	97	5.667	5.667	(0.978)	238759	50.0000	49.54
	32 1,1-Dichloropropene	75	5.869	5.869	(0.892)	191003	50.0000	44.69
	33 1,2-Dichloroethane	62	6.155	6.155	(0.936)	232667	50.0000	49.74
	34 Carbon Tetrachloride	117	5.847	5.847	(0.889)	201854	50.0000	46.44
$	35 1,2-Dichloroethane-d4	65	6.068	6.068	(1.047)	183072	50.0000	50.73
*	36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	495851	50.0000	
	37 Benzene	78	6.107	6.107	(0.928)	608739	50.0000	48.29
	38 Trichloroethene	130	6.825	6.825	(1.038)	171137	50.0000	52.45
	39 Bromodichloromethane	83	7.384	7.384	(1.122)	232056	50.0000	50.69
	40 Methyl Methacrylate	41	7.252	7.252	(1.251)	193431	50.0000	49.40
	41 2-Chloroethylvinyl ether	63	8.163	8.163	(1.241)	55622	100.000	98.30(T)
	42 1,2-Dichloropropane	63	7.072	7.072	(1.075)	185534	50.0000	49.05
	43 2-Nitropropane	43	8.032	8.032	(1.386)	391977	50.0000	47.51
	44 Dibromomethane	93	7.198	7.198	(1.094)	99172	50.0000	52.51
	45 4-Methyl-2-Pentanone	43	8.032	8.032	(0.803)	391977	100.000	95.72
	46 cis-1,3-Dichloropropene	75	7.846	7.846	(1.193)	276867	50.0000	54.20
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	446224	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.849)	558058	50.0000	51.77
	49 Ethyl Methacrylate	69	8.532	8.532	(1.297)	228763	50.0000	55.08
	50 Toluene	91	8.160	8.160	(0.857)	638471	50.0000	46.84
	51 trans-1,3-Dichloropropene	75	8.420	8.420	(1.280)	235346	50.0000	55.51
	52 2-Hexanone	43	8.869	8.869	(0.931)	254527	100.000	99.19
	53 1,1,2-Trichloroethane	83	8.600	8.600	(0.903)	126131	50.0000	49.26
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	252429	50.0000	49.66
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	192292	50.0000	51.29
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	134666	50.0000	49.43
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	161590	50.0000	50.56
	58 1-Chlorohexane	55	9.553	9.553	(1.452)	165278	50.0000	53.87
	59 Chlorobenzene	112	9.556	9.556	(1.003)	412236	50.0000	48.33
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	171170	50.0000	50.54
	61 Ethylbenzene	106	9.672	9.672	(1.015)	222010	50.0000	48.03
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	540505	100.000	117.18
	63 o-Xylene	106	10.179	10.179	(1.068)	288671	50.0000	49.73
	64 Styrene	104	10.198	10.198	(1.070)	467977	50.0000	50.32
	66 Bromoform	173	10.374	10.374	(1.089)	137003	50.0000	51.44
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	692956	50.0000	49.58
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	198229	50.0000	43.94
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	216231	50.0000	53.68
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	203593	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	100012	50.0000	53.85
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.147)	48163	50.0000	43.37
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	750541	50.0000	46.99
	74 Bromobenzene	156	10.833	10.833	(0.915)	193851	50.0000	47.43
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	557114	50.0000	46.15

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
76 2-Chlorotoluene	91	11.029	11.029	(0.932)	491741	50.0000	54.81
77 4-Chlorotoluene	91	11.141	11.141	(0.941)	538427	50.0000	55.32
78 tert-Butylbenzene	119	11.449	11.449	(0.967)	470354	50.0000	47.14
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	570798	50.0000	55.33
81 sec-Butylbenzene	105	11.668	11.668	(0.986)	633331	50.0000	47.60
82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	540234	50.0000	47.60
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	329049	50.0000	47.23
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	311079	50.0000	46.21
87 n-Butylbenzene	91	12.223	12.223	(1.033)	425204	50.0000	49.41
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	310277	50.0000	47.47
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	36389	50.0000	49.96
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	181264	50.0000	47.97
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	82399	50.0000	49.86
92 Naphthalene	128	14.061	14.061	(1.188)	440418	50.0000	48.41
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	153909	50.0000	47.03
146 Methyl acetate	43	3.257	3.257	(0.562)	219063	50.0000	55.16
138 Freon TF	101	2.798	2.798	(0.483)	120850	50.0000	48.75
139 Diethyl ether	59	2.570	2.570	(0.444)	292549	50.0000	49.71
147 Methylcyclohexane	83	6.999	6.999	(1.064)	205553	50.0000	47.21
135 1,4-Dioxane	88	7.246	7.246	(1.250)	28031	1000.00	917.98
132 n-Butanol	56	7.005	7.005	(1.209)	100247	1000.00	829.98
131 Methyl Acrylate	55	5.279	5.279	(0.911)	281120	50.0000	50.57
133 Ethyl Acrylate	55	7.015	7.015	(1.210)	478368	50.0000	47.62
136 n-Hexane	57	4.088	4.088	(0.705)	201924	50.0000	50.99
141 Cyclohexane	56	5.699	5.699	(0.983)	259466	50.0000	47.11
142 Tetrahydrofuran	42	5.429	5.429	(0.937)	125041	100.000	94.16
148 Tert-butyl alcohol	59	3.591	3.591	(0.620)	377589	1000.00	953.45
149 Isopropyl alcohol	45	3.090	3.090	(0.533)	218300	1000.00	866.77
151 4-Methyl-2-pentanol	45	8.455	8.455	(0.888)	805174	1000.00	938.40
166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	530078	50.0000	46.12
167 Ethanol	45	2.570	2.570	(0.444)	290260	1000.00	1000.02
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	210583	50.0000	47.52
172 tert-Butyl formate	59	4.926	4.926	(0.850)	515352	100.000	88.83
173 3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.958)	284954	1000.00	959.62
174 tert-Amyl methyl ether	73	6.270	6.270	(1.082)	480405	50.0000	43.90
175 tert-Butyl ethyl ether	59	6.241	6.241	(1.077)	246722	50.0000	45.46
176 tert-Amyl alcohol	59	6.241	6.241	(1.077)	246722	1000.00	909.23
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	94057	50.0000	33.61
156 Diisopropyl ether	45	4.448	4.448	(0.767)	673874	50.0000	47.84(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	107426	50.0000	36.50
130 Ethyl Acetate	43	5.256	5.256	(0.907)	381027	50.0000	46.65

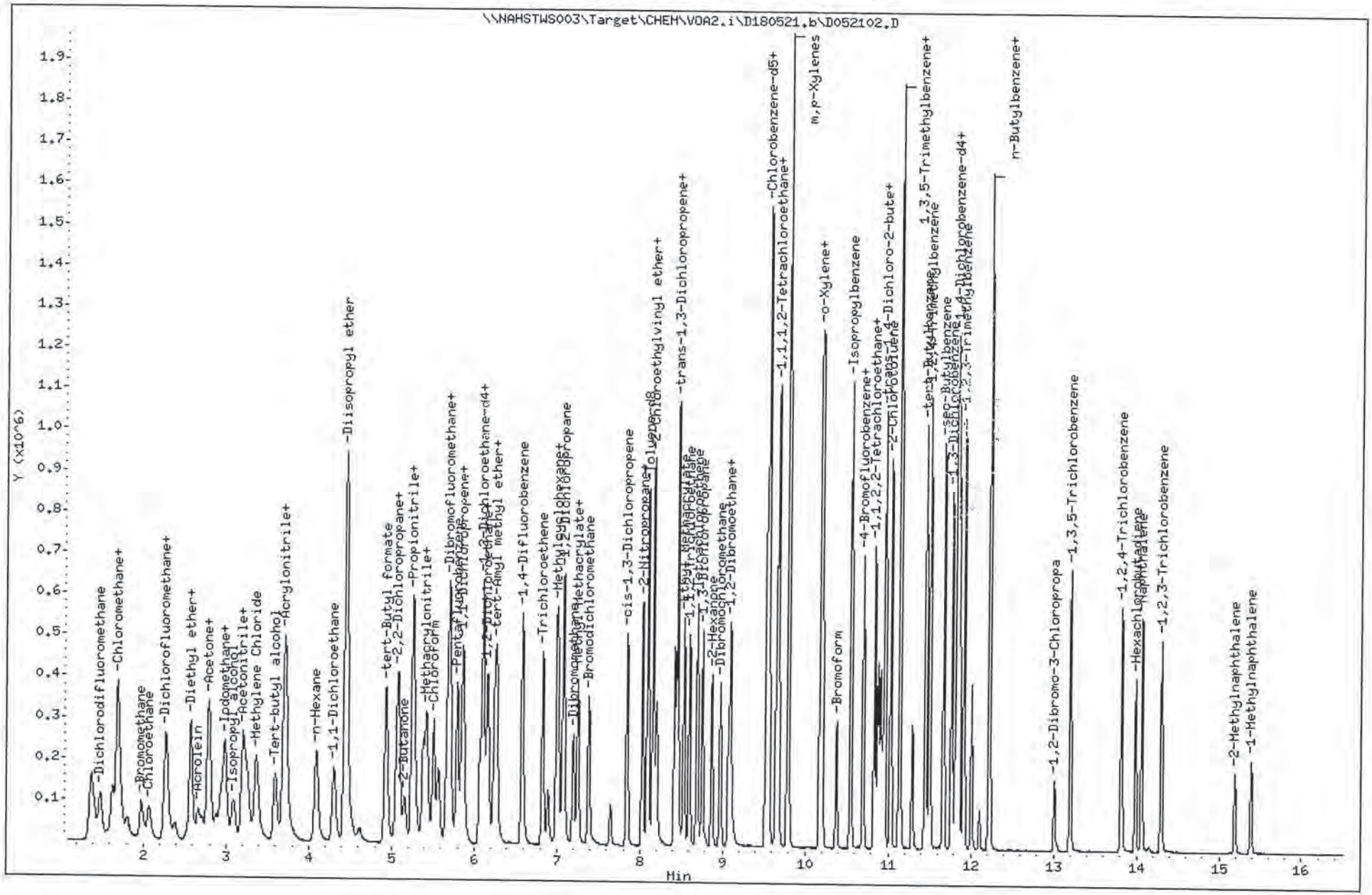
QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052102.D
Date : 21-MAY-2018 09:25
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052105.D
Lab Smp Id: VLCSW-180521 Client Smp ID: VLCSW-180521
Inj Date : 21-MAY-2018 10:39
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-180521;VLCSW-180521;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.786	5.795	(1.000)	334646	50.0000	
2	Dichlorodifluoromethane	85	1.460	1.479	(0.252)	155857	50.2678	50.26
186	Isobutylene	56	1.665	1.688	(0.288)	191846	59.2420	59.24(AM)
3	Chloromethane	50	1.604	1.630	(0.277)	292375	54.3310	54.33
4	Propionitrile	54	5.243	5.253	(0.906)	615483	530.674	530.67
5	Vinyl Chloride	62	1.694	1.710	(0.293)	204837	49.0787	49.07
6	Bromomethane	94	1.957	1.977	(0.338)	107776	43.6047	43.60
7	Chloroethane	64	2.050	2.067	(0.354)	125423	56.0912	56.09
159	Dichlorofluoromethane	67	2.243	2.262	(0.388)	288317	46.8570	46.85
8	Trichlorofluoromethane	101	2.265	2.278	(0.392)	195223	49.4234	49.42
9	Acrolein	56	2.695	2.712	(0.466)	85922	103.825	103.82
10	Acetone	43	2.862	2.878	(0.495)	121338	110.369	110.36
11	1,1-Dichloroethene	96	2.760	2.785	(0.477)	124479	49.2661	49.26
12	Isobutyl Alcohol	74	6.161	6.171	(1.065)	14432	854.813	854.81(A)
13	Acetonitrile	39	3.180	3.199	(0.550)	205793	481.713	481.71
14	Allyl Chloride	41	3.190	3.206	(0.551)	551977	50.6884	50.68
15	Iodomethane	142	2.917	2.939	(0.504)	242710	93.4246	93.42
16	Acrylonitrile	53	3.706	3.722	(0.641)	165530	111.471	111.47
17	Methylene Chloride	84	3.350	3.357	(0.579)	158671	44.8694	44.86
18	Methyl tert-butyl ether	73	3.697	3.719	(0.639)	454447	47.0935	47.09
19	Carbon Disulfide	76	2.968	2.987	(0.513)	538892	93.1364	93.13

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.677	3.697	(0.636)	143797	52.0155	52.01
	21 Vinyl Acetate	43	5.250	5.256	(0.907)	415935	96.5522	96.55
	22 1,1-Dichloroethane	63	4.284	4.300	(0.740)	321117	47.7792	47.77
	24 2-Butanone	43	5.150	5.157	(0.890)	188474	108.331	108.33
	25 Methacrylonitrile	41	5.410	5.420	(0.935)	209832	50.6372	50.63
	26 2,2-Dichloropropane	77	5.051	5.064	(0.873)	221614	48.7651	48.76
	27 cis-1,2-Dichloroethene	96	5.076	5.083	(0.877)	168749	48.8033	48.80
	28 Chloroform	83	5.497	5.506	(0.950)	277877	47.9268	47.92
	29 Bromochloromethane	128	5.372	5.378	(0.928)	85309	51.1228	51.12
$	30 Dibromofluoromethane	113	5.689	5.696	(0.983)	144691	49.9654	49.96
	31 1,1,1-Trichloroethane	97	5.660	5.667	(0.978)	230769	47.4103	47.41
	32 1,1-Dichloropropene	75	5.856	5.869	(0.891)	185738	42.6668	42.66
	33 1,2-Dichloroethane	62	6.148	6.155	(0.935)	234385	49.2003	49.20
	34 Carbon Tetrachloride	117	5.840	5.847	(0.888)	194007	43.8249	43.82
$	35 1,2-Dichloroethane-d4	65	6.061	6.068	(1.048)	188127	51.6614	51.66
*	36 1,4-Difluorobenzene	114	6.575	6.578	(1.000)	505071	50.0000	
	37 Benzene	78	6.097	6.107	(0.927)	596329	46.4480	46.44
	38 Trichloroethene	130	6.822	6.825	(1.038)	166287	50.0386	50.03
	39 Bromodichloromethane	83	7.377	7.384	(1.122)	228640	49.0327	49.03
	40 Methyl Methacrylate	41	7.249	7.252	(1.253)	203759	51.5306	51.53
	41 2-Chloroethylvinyl ether	63	8.157	8.163	(1.241)	55653	96.5626	96.56
	42 1,2-Dichloropropane	63	7.069	7.072	(1.075)	184510	47.8894	47.88
	43 2-Nitropropane	43	8.025	8.032	(1.387)	423646	50.8510	50.85
	44 Dibromomethane	93	7.191	7.198	(1.094)	102175	53.1166	53.11
	45 4-Methyl-2-Pentanone	43	8.025	8.032	(0.843)	423646	102.027	102.02
	46 cis-1,3-Dichloropropene	75	7.839	7.846	(1.192)	273660	52.5957	52.59
*	47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	452498	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.850)	562320	51.3749	51.37
	49 Ethyl Methacrylate	69	8.529	8.532	(1.297)	239871	56.7678	56.76
	50 Toluene	91	8.157	8.160	(0.856)	629245	45.5261	45.52
	51 trans-1,3-Dichloropropene	75	8.417	8.420	(1.280)	235006	54.4247	54.42
	52 2-Hexanone	43	8.866	8.869	(0.931)	280758	107.903	107.90
	53 1,1,2-Trichloroethane	83	8.593	8.600	(0.902)	129751	49.9796	49.97
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	257783	50.0177	50.01
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	192998	50.7704	50.77
	56 Tetrachloroethene	164	8.690	8.693	(0.912)	127128	46.0214	46.02
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	164017	50.6079	50.60
	58 1-Chlorohexane	55	9.553	9.553	(1.453)	153363	48.8188	48.81
	59 Chlorobenzene	112	9.553	9.556	(1.003)	403163	46.6126	46.61
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	168543	49.0800	49.07
	61 Ethylbenzene	106	9.672	9.672	(1.015)	214423	45.7474	45.74
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	518270	110.440	110.44
	63 o-Xylene	106	10.175	10.179	(1.068)	281022	47.7434	47.74
	64 Styrene	104	10.195	10.198	(1.070)	462211	49.0180	49.01
	66 Bromoform	173	10.374	10.374	(1.089)	142077	52.6095	52.60
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	661830	46.7029	46.70
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	212140	46.4377	46.43
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	216814	53.0377	53.03
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	206170	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.695	(0.903)	101711	54.0968	54.09
	72 trans-1,4-Dichloro-2-butene	53	10.929	10.930	(1.148)	52233	46.3338	46.33
	73 n-Propylbenzene	91	10.952	10.955	(0.925)	715772	44.2618	44.26
	74 Bromobenzene	156	10.830	10.833	(0.915)	189776	45.8589	45.85
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	531638	43.4893	43.48

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	470070	51.6159	51.61
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	516253	52.2408	52.24
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	448437	44.3906	44.39
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	549804	52.4985	52.49
81	sec-Butylbenzene	105	11.667	11.668	(0.986)	605109	44.9197	44.91
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	514959	44.8147	44.81
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	322287	45.6902	45.69
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	304853	44.7240	44.72
87	n-Butylbenzene	91	12.219	12.223	(1.033)	403076	46.2570	46.25
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	308392	46.5948	46.59
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	39591	53.6831	53.68
90	1,2,4-Trichlorobenzene	180	13.814	13.818	(1.167)	184692	48.2652	48.26
91	Hexachlorobutadiene	225	13.984	13.988	(1.182)	75447	45.0867	45.08
92	Naphthalene	128	14.061	14.061	(1.188)	458551	49.7599	49.75
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.208)	155043	46.7926	46.79
146	Methyl acetate	43	3.241	3.257	(0.560)	238785	59.5403	59.54
138	Freon TF	101	2.772	2.798	(0.479)	110485	43.9913	43.99
139	Diethyl ether	59	2.554	2.570	(0.442)	299181	50.3445	50.34
147	Methylcyclohexane	83	6.992	6.999	(1.063)	187733	42.3386	42.33
135	1,4-Dioxane	88	7.239	7.246	(1.251)	32412	1053.89	1053.89
132	n-Butanol	56	7.002	7.005	(1.210)	105443	864.381	864.38
131	Methyl Acrylate	55	5.269	5.279	(0.911)	300523	53.5346	53.53
133	Ethyl Acrylate	55	7.011	7.015	(1.212)	479613	47.2815	47.28
136	n-Hexane	57	4.072	4.088	(0.704)	180973	45.2504	45.25
141	Cyclohexane	56	5.692	5.699	(0.984)	247551	44.5042	44.50
142	Tetrahydrofuran	42	5.420	5.429	(0.937)	138086	102.960	102.95
148	Tert-butyl alcohol	59	3.581	3.591	(0.619)	440728	1101.90	1101.89
149	Isopropyl alcohol	45	3.074	3.090	(0.531)	263223	1034.82	1034.82
151	4-Methyl-2-pentanol	45	8.455	8.455	(0.888)	946146	1087.41	1087.41
166	1,2,3-Trimethylbenzene	105	11.911	11.915	(1.007)	516758	44.4018	44.40
167	Ethanol	45	2.554	2.570	(0.442)	302428	1031.66	1031.65
170	1,3,5-Trichlorobenzene	180	13.198	13.201	(1.115)	202243	45.0752	45.07
172	tert-Butyl formate	59	4.916	4.926	(0.850)	521615	89.0262	89.02
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	337345	1120.31	1120.31
174	tert-Amyl methyl ether	73	6.260	6.270	(1.082)	514444	46.5484	46.54
175	tert-Butyl ethyl ether	59	6.238	6.241	(1.078)	294432	53.7169	53.71
176	tert-Amyl alcohol	59	6.238	6.241	(1.078)	294432	1074.34	1074.33
157	2-Methylnaphthalene	142	15.188	15.191	(1.283)	112778	38.6656	38.66
156	Diisopropyl ether	45	4.435	4.448	(0.767)	671224	47.1863	47.18
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	129051	42.2820	42.28
130	Ethyl Acetate	43	5.250	5.256	(0.907)	415935	50.4308	50.43
M 94	1,2-Dichloroethylene (total)	96				312546	100.819	100.81
M 95	Xylenes (total)	106				799292	158.184	158.18

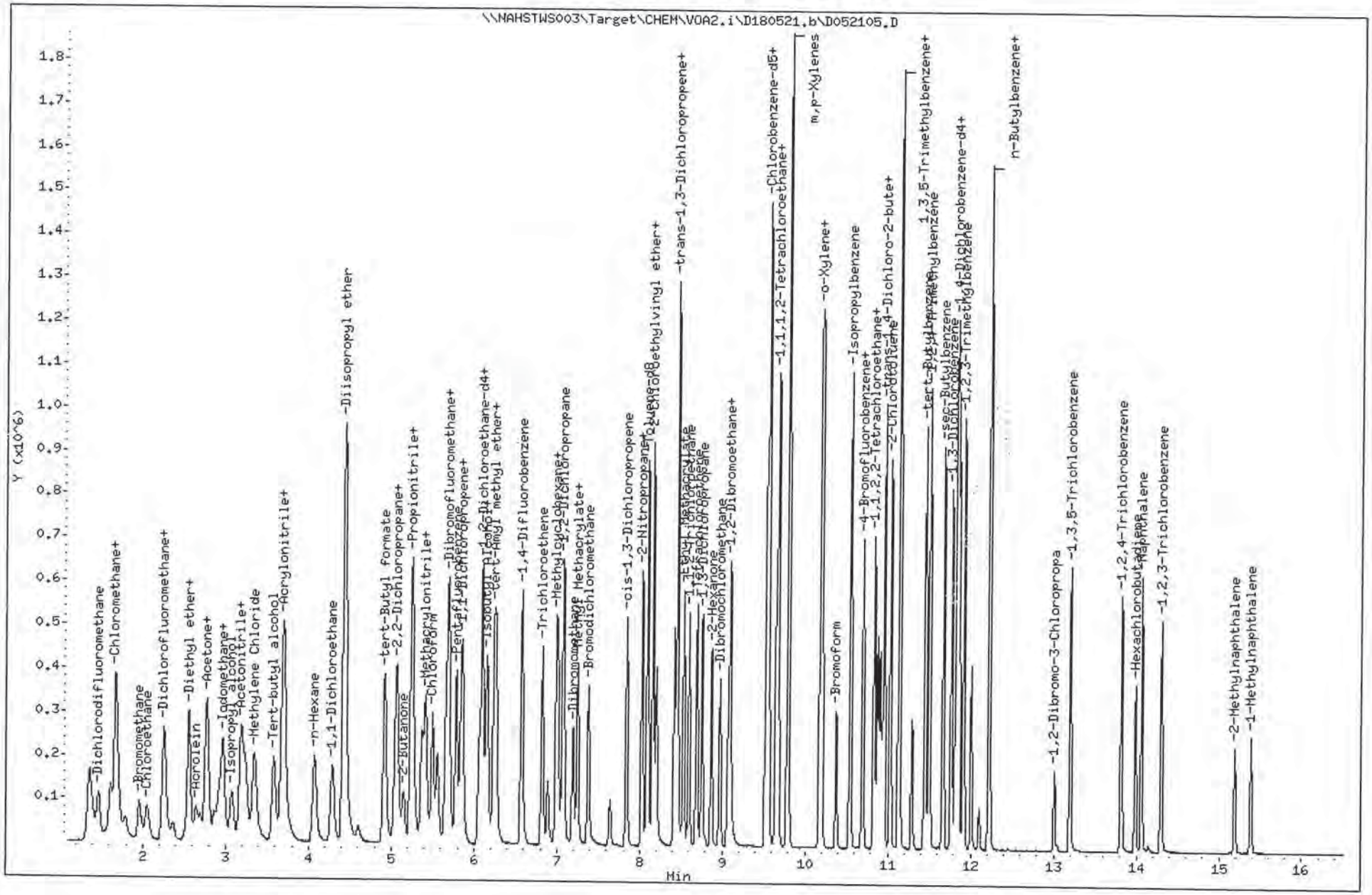
QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052105.D
Date : 21-MAY-2018 10:39
Client ID: VLCSW-180521
Sample Info: VLCSW-180521;VLCSW-180521;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052107.D
Lab Smp Id: VBLKW-180521 Client Smp ID: VBLKW-180521
Inj Date : 21-MAY-2018 11:28
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-180521;VBLKW-180521;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

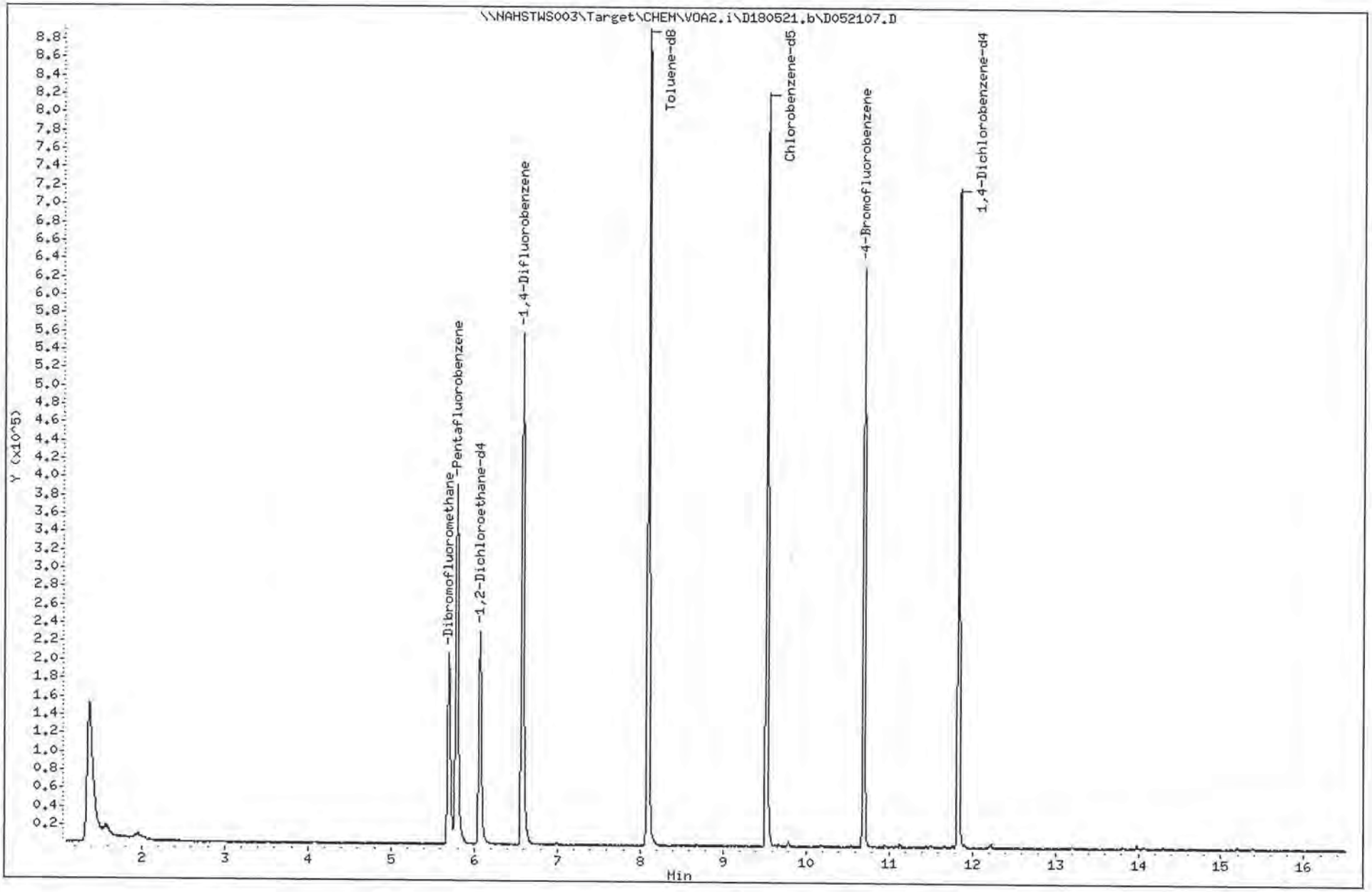
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.789	5.795	(1.000)	343547	50.0000	
$ 30 Dibromofluoromethane	113	5.696	5.696	(0.984)	154181	51.9993	51.99
$ 35 1,2-Dichloroethane-d4	65	6.068	6.068	(1.048)	187589	50.1200	50.12
* 36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	494811	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	442330	50.0000	
$ 48 Toluene-d8	98	8.093	8.093	(0.849)	571054	53.8172	53.81
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	203011	50.6307	50.63
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	188380	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052107.D
Date : 21-MAY-2018 11:28
Client ID: VBLKW-180521
Sample Info: VBLKW-180521;VBLKW-180521;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052111.D
Lab Smp Id: HS18050932-02 Client Smp ID: HS18050932-02
Inj Date : 21-MAY-2018 13:06
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050932-02;HS18050932-02;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

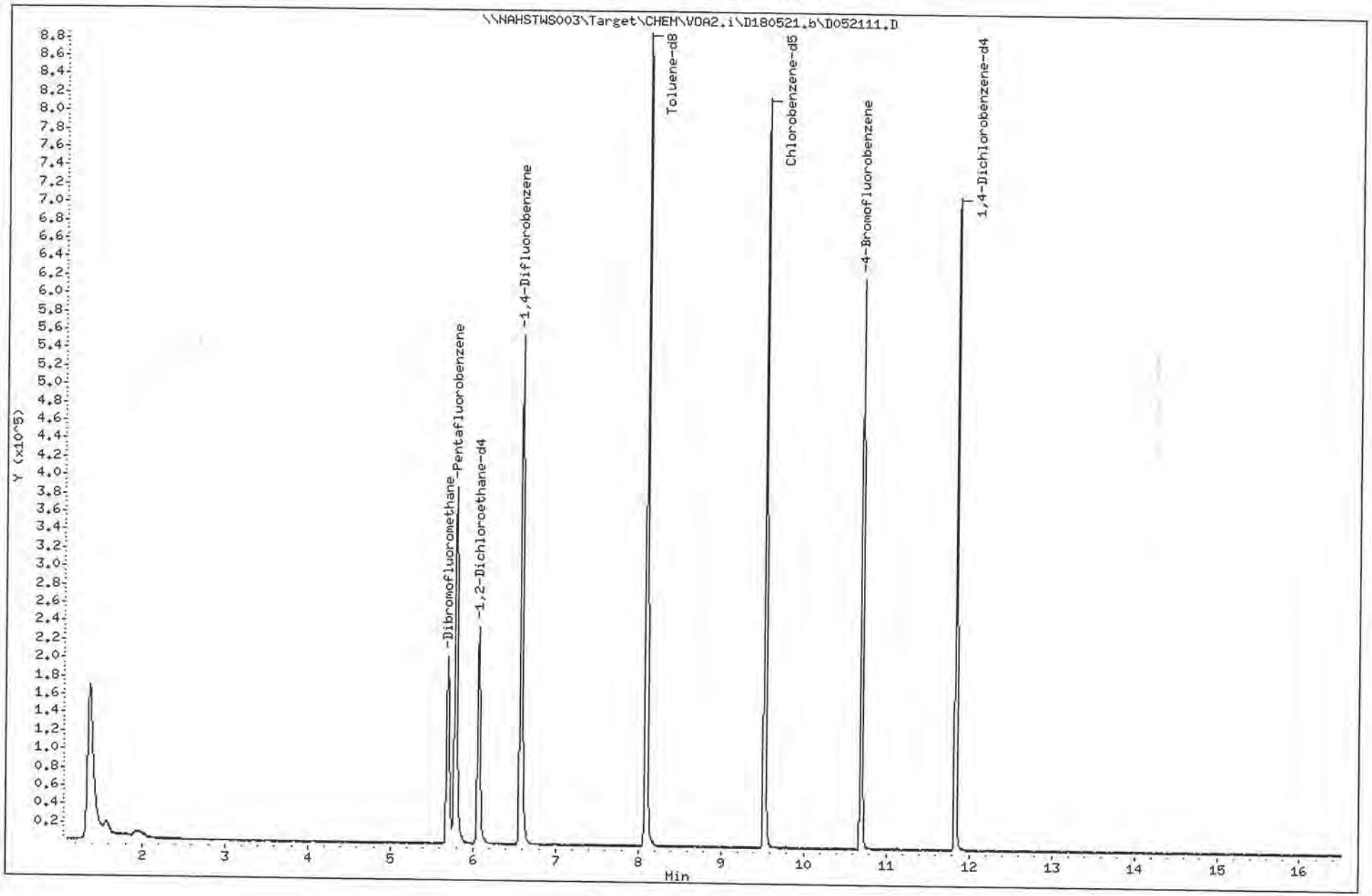
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.789	5.795	(1.000)	343412	50.0000	
$ 30 Dibromofluoromethane	113	5.693	5.696	(0.983)	157108	53.0799	53.07
$ 35 1,2-Dichloroethane-d4	65	6.062	6.068	(1.047)	189184	50.5843	50.58
* 36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	492330	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	439245	50.0000	
$ 48 Toluene-d8	98	8.093	8.093	(0.850)	563542	53.4086	53.40
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	202089	50.7644	50.76
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	186308	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052111.D
Date : 21-MAY-2018 13:06
Client ID: HS18050932-02
Sample Info: HS18050932-02;HS18050932-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052113.D
Lab Smp Id: HS18050926-06MS Client Smp ID: HS18050926-06MS
Inj Date : 21-MAY-2018 13:55
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050926-06MS;HS18050926-06MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 13 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.782	5.795	(1.000)	322536	50.0000	
2 Dichlorodifluoromethane	85	1.460	1.479	(0.253)	167316	56.0991	56.09
186 Isobutylene	56	1.669	1.688	(0.289)	118855	38.0804	38.08(AM)
3 Chloromethane	50	1.604	1.630	(0.278)	281535	54.2793	54.27
4 Propionitrile	54	5.243	5.253	(0.907)	617964	552.818	552.81
5 Vinyl Chloride	62	1.691	1.710	(0.293)	227893	56.6530	56.65
6 Bromomethane	94	1.957	1.977	(0.339)	111975	47.0045	47.00
7 Chloroethane	64	2.047	2.067	(0.354)	129997	60.4411	60.44
159 Dichlorofluoromethane	67	2.240	2.262	(0.387)	307601	51.8680	51.86
8 Trichlorofluoromethane	101	2.262	2.278	(0.391)	220412	57.8954	57.89
9 Acrolein	56	2.696	2.712	(0.466)	80904	101.423	101.42
10 Acetone	43	2.866	2.878	(0.496)	121005	114.327	114.32
11 1,1-Dichloroethene	96	2.760	2.785	(0.477)	138471	56.8615	56.86
12 Isobutyl Alcohol	74	6.164	6.171	(1.066)	16632	1019.91	1019.91(A)
13 Acetonitrile	39	3.183	3.199	(0.551)	218096	529.679	529.67
14 Allyl Chloride	41	3.190	3.206	(0.552)	539391	51.3924	51.39
15 Iodomethane	142	2.917	2.939	(0.504)	257981	102.610	102.61
16 Acrylonitrile	53	3.700	3.722	(0.640)	164038	114.614	114.61
17 Methylene Chloride	84	3.344	3.357	(0.578)	160845	47.1919	47.19
18 Methyl tert-butyl ether	73	3.697	3.719	(0.639)	447990	48.1674	48.16
19 Carbon Disulfide	76	2.962	2.987	(0.512)	595343	106.756	106.75

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052113.D Page 2
Report Date: 05-Jun-2018 16:16

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.668	3.697	(0.634)	149828	56.2587	56.25
	21 Vinyl Acetate	43	5.247	5.256	(0.907)	405603	97.6889	97.68
	22 1,1-Dichloroethane	63	4.284	4.300	(0.741)	329868	50.9240	50.92
	24 2-Butanone	43	5.150	5.157	(0.891)	189928	113.266	113.26
	25 Methacrylonitrile	41	5.410	5.420	(0.936)	210913	52.8091	52.80
	26 2,2-Dichloropropane	77	5.044	5.064	(0.872)	233298	53.2636	53.26
	27 cis-1,2-Dichloroethene	96	5.073	5.083	(0.877)	172500	51.7612	51.76
	28 Chloroform	83	5.500	5.506	(0.951)	279489	50.0147	50.01
	29 Bromochloromethane	128	5.369	5.378	(0.928)	85873	53.3929	53.39
$	30 Dibromofluoromethane	113	5.686	5.696	(0.983)	139339	49.9210	49.92
	31 1,1,1-Trichloroethane	97	5.657	5.667	(0.978)	255699	54.5044	54.50
	32 1,1-Dichloropropene	75	5.860	5.869	(0.891)	206448	48.7707	48.77
	33 1,2-Dichloroethane	62	6.148	6.155	(0.935)	231680	50.0133	50.01
	34 Carbon Tetrachloride	117	5.837	5.847	(0.887)	219490	50.9891	50.98
$	35 1,2-Dichloroethane-d4	65	6.062	6.068	(1.048)	183207	52.2207	52.22
*	36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	491127	50.0000	
	37 Benzene	78	6.097	6.107	(0.927)	624974	50.0612	50.06
	38 Trichloroethene	130	6.822	6.825	(1.037)	174704	54.0640	54.06
	39 Bromodichloromethane	83	7.377	7.384	(1.121)	227702	50.2180	50.21
	40 Methyl Methacrylate	41	7.246	7.252	(1.253)	202511	53.1379	53.13
	41 2-Chloroethylvinyl ether	63	8.154	8.163	(1.239)	57256	102.165	102.16(A)
	42 1,2-Dichloropropane	63	7.069	7.072	(1.075)	186176	49.6938	49.69
	43 2-Nitropropane	43	8.029	8.032	(1.388)	425765	53.0242	53.02
	44 Dibromomethane	93	7.191	7.198	(1.093)	96767	51.7334	51.73
	45 4-Methyl-2-Pentanone	43	8.029	8.032	(0.843)	425765	105.478	105.47
	46 cis-1,3-Dichloropropene	75	7.839	7.846	(1.192)	269460	53.2589	53.25
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	439886	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.849)	548661	51.6049	51.60
	49 Ethyl Methacrylate	69	8.529	8.532	(1.297)	233527	56.8382	56.83
	50 Toluene	91	8.160	8.160	(0.857)	654985	48.7471	48.74
	51 trans-1,3-Dichloropropene	75	8.417	8.420	(1.279)	231561	55.1494	55.14
	52 2-Hexanone	43	8.866	8.869	(0.931)	281837	111.423	111.42
	53 1,1,2-Trichloroethane	83	8.597	8.600	(0.902)	127185	50.3958	50.39
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	251313	50.1604	50.16
	55 Dibromochloromethane	129	8.969	8.972	(0.941)	190457	51.5385	51.53
	56 Tetrachloroethene	164	8.690	8.693	(0.912)	141036	52.5201	52.52
	57 1,2-Dibromoethane	107	9.065	9.068	(0.952)	163046	51.7507	51.75
	58 1-Chlorohexane	55	9.553	9.553	(1.452)	176522	58.3266	58.32
	59 Chlorobenzene	112	9.553	9.556	(1.003)	410429	48.8132	48.81
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	167919	50.3002	50.30
	61 Ethylbenzene	106	9.672	9.672	(1.015)	227762	49.9866	49.98
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	554931	122.325	122.32
	63 o-Xylene	106	10.179	10.179	(1.068)	288632	50.4422	50.44
	64 Styrene	104	10.195	10.198	(1.070)	461414	50.3364	50.33
	66 Bromoform	173	10.374	10.374	(1.089)	138494	52.7531	52.75
	67 Isopropylbenzene	105	10.545	10.548	(1.107)	716741	52.0279	52.02
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.872	(0.918)	208908	46.5719	46.57
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	214638	54.0889	54.08
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	202444	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	99650	53.9703	53.97
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.147)	51214	46.7258	46.72
	73 n-Propylbenzene	91	10.952	10.955	(0.925)	772205	48.6304	48.63
	74 Bromobenzene	156	10.830	10.833	(0.915)	191437	47.1117	47.11
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	565425	47.1044	47.10

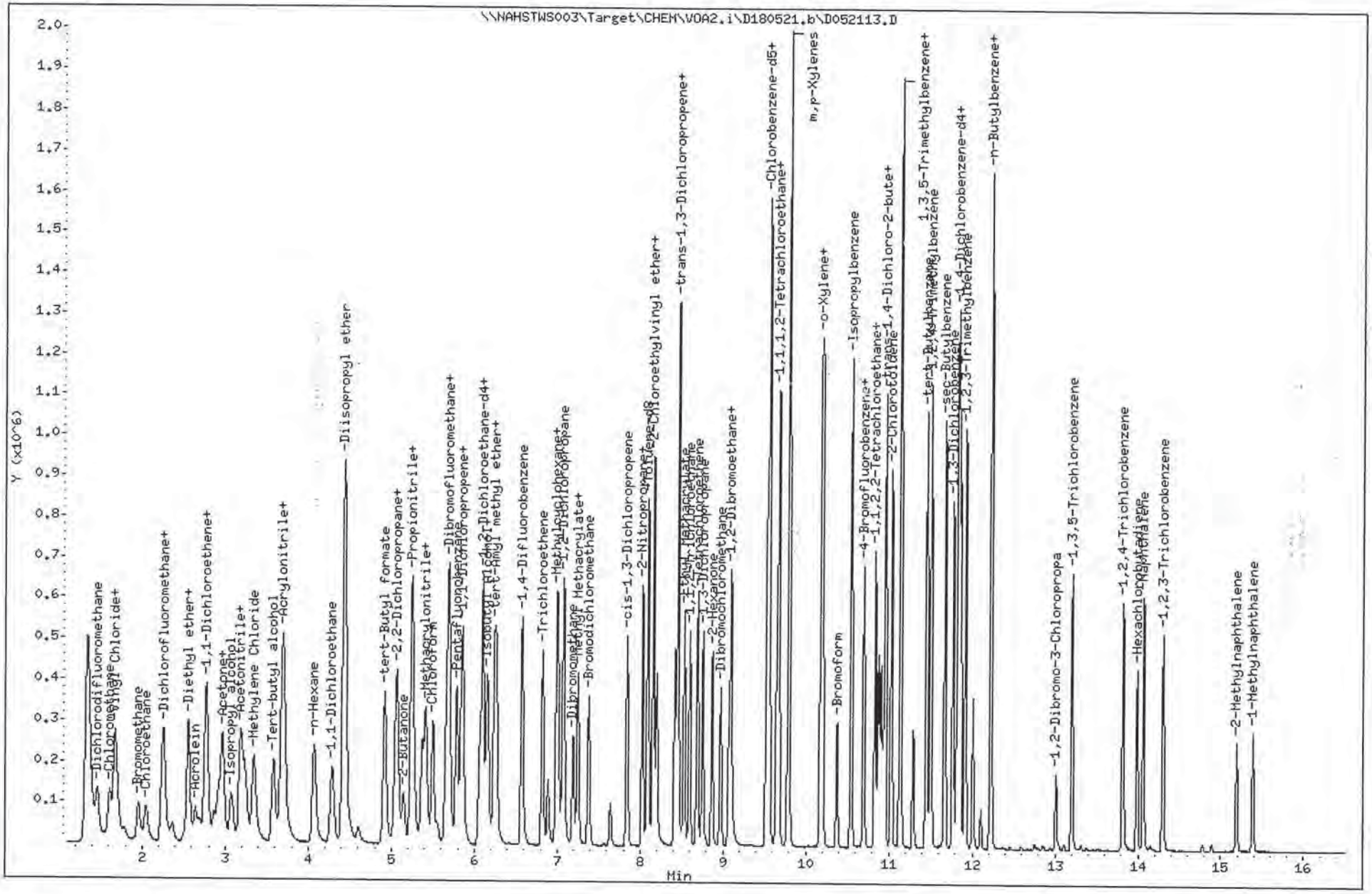
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	493379	55.3355	55.33
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	541433	55.9785	55.97
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	488626	49.2591	49.25
79	1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	570876	55.6743	55.67
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	673981	50.9532	50.95
82	p-Isopropyltoluene	119	11.815	11.818	(0.998)	567812	50.3238	50.32
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	329492	47.5714	47.57
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	312585	46.7024	46.70
87	n-Butylbenzene	91	12.220	12.223	(1.033)	448433	52.4093	52.40
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	311465	47.9252	47.92
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	40816	56.3628	56.36
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	190413	50.6544	50.65
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	84957	51.7084	51.70
92	Naphthalene	128	14.061	14.061	(1.188)	459235	50.7411	50.74
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	160151	49.1706	49.17
146	Methyl acetate	43	3.241	3.257	(0.561)	226751	58.6625	58.66
138	Freon TF	101	2.776	2.798	(0.480)	132310	55.0111	55.01
139	Diethyl ether	59	2.554	2.570	(0.442)	295620	51.6130	51.61
147	Methylcyclohexane	83	6.992	6.999	(1.063)	229092	53.1331	53.13
135	1,4-Dioxane	88	7.243	7.246	(1.252)	35211	1190.45	1190.45
132	n-Butanol	56	6.999	7.005	(1.210)	115519	982.535	982.53
131	Methyl Acrylate	55	5.269	5.279	(0.911)	304244	56.2323	56.23
133	Ethyl Acrylate	55	7.008	7.015	(1.212)	515370	52.7142	52.71
136	n-Hexane	57	4.072	4.088	(0.704)	225037	58.3808	58.38
141	Cyclohexane	56	5.693	5.699	(0.984)	304903	56.8729	56.87
142	Tetrahydrofuran	42	5.420	5.429	(0.937)	139088	107.601	107.60
148	Tert-butyl alcohol	59	3.578	3.591	(0.619)	440264	1142.06	1142.06
149	Isopropyl alcohol	45	3.074	3.090	(0.532)	262944	1072.54	1072.53
151	4-Methyl-2-pentanol	45	8.456	8.455	(0.888)	972945	1150.27	1150.27
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	528512	46.2476	46.24
167	Ethanol	45	2.551	2.570	(0.441)	299136	1058.74	1058.73
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	211978	48.1144	48.11
172	tert-Butyl formate	59	4.919	4.926	(0.851)	491354	87.0101	87.01
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	342673	1170.64	1170.63
174	tert-Amyl methyl ether	73	6.264	6.270	(1.083)	496638	46.6245	46.62
175	tert-Butyl ethyl ether	59	6.238	6.241	(1.079)	304285	57.5989	57.59
176	tert-Amyl alcohol	59	6.238	6.241	(1.079)	304285	1151.98	1151.97
157	2-Methylnaphthalene	142	15.188	15.191	(1.283)	124478	42.6662	42.66
156	Diisopropyl ether	45	4.432	4.448	(0.766)	653773	47.6851	47.68
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	142459	46.8195	46.81
130	Ethyl Acetate	43	5.247	5.256	(0.907)	405603	51.0245	51.02
M 94	1,2-Dichloroethylene (total)	96				322328	108.020	108.01
M 95	Xylenes (total)	106				843563	172.767	172.76

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052113.D
Date : 21-MAY-2018 13:55
Client ID: HS18050926-06MS
Sample Info: HS18050926-06MS;HS18050926-06MS;3;;HS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052114.D
Lab Smp Id: HS18050926-06MSD Client Smp ID: HS18050926-06MSD
Inj Date : 21-MAY-2018 14:20
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050926-06MSD;HS18050926-06MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 13 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.792	5.795	(1.000)	319698	50.0000	
2	Dichlorodifluoromethane	85	1.470	1.479	(0.254)	159229	53.8232	53.82
186	Isobutylene	56	1.672	1.688	(0.289)	104339	33.7263	33.72(AM)
3	Chloromethane	50	1.617	1.630	(0.279)	274796	53.4234	53.42
4	Propionitrile	54	5.250	5.253	(0.906)	628506	567.240	567.23
5	Vinyl Chloride	62	1.701	1.710	(0.294)	223603	56.0799	56.07
6	Bromomethane	94	1.964	1.977	(0.339)	108238	45.8391	45.83
7	Chloroethane	64	2.060	2.067	(0.356)	125033	58.6014	58.60
159	Dichlorofluoromethane	67	2.246	2.262	(0.388)	302852	51.5206	51.52
8	Trichlorofluoromethane	101	2.265	2.278	(0.391)	225401	59.7315	59.73
9	Acrolein	56	2.708	2.712	(0.468)	77773	98.3517	98.35
10	Acetone	43	2.875	2.878	(0.496)	122844	117.185	117.18
11	1,1-Dichloroethene	96	2.769	2.785	(0.478)	135375	56.0836	56.08
12	Isobutyl Alcohol	74	6.171	6.171	(1.065)	15329	949.141	949.14(A)
13	Acetonitrile	39	3.186	3.199	(0.550)	210296	515.269	515.26
14	Allyl Chloride	41	3.196	3.206	(0.552)	553091	53.1655	53.16
15	Iodomethane	142	2.926	2.939	(0.505)	262441	105.203	105.20
16	Acrylonitrile	53	3.709	3.722	(0.640)	161985	114.184	114.18
17	Methylene Chloride	84	3.353	3.357	(0.579)	157020	46.4787	46.47
18	Methyl tert-butyl ether	73	3.706	3.719	(0.640)	445199	48.2923	48.29
19	Carbon Disulfide	76	2.971	2.987	(0.513)	583585	105.577	105.57

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052114.D Page 2
Report Date: 05-Jun-2018 16:16

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.687	3.697	(0.637)	146969	55.6716	55.67
	21 Vinyl Acetate	43	5.253	5.256	(0.907)	407266	98.9602	98.96
	22 1,1-Dichloroethane	63	4.297	4.300	(0.742)	328230	51.1210	51.12
	24 2-Butanone	43	5.153	5.157	(0.890)	189956	114.288	114.28
	25 Methacrylonitrile	41	5.413	5.420	(0.935)	207338	52.3748	52.37
	26 2,2-Dichloropropane	77	5.057	5.064	(0.873)	230537	53.1005	53.10
	27 cis-1,2-Dichloroethene	96	5.080	5.083	(0.877)	171176	51.8199	51.81
	28 Chloroform	83	5.503	5.506	(0.950)	275705	49.7756	49.77
	29 Bromochloromethane	128	5.375	5.378	(0.928)	84739	53.1555	53.15
$	30 Dibromofluoromethane	113	5.693	5.696	(0.983)	139875	50.6027	50.60
	31 1,1,1-Trichloroethane	97	5.664	5.667	(0.978)	249965	53.7552	53.75
	32 1,1-Dichloropropene	75	5.863	5.869	(0.891)	204498	48.7368	48.73
	33 1,2-Dichloroethane	62	6.148	6.155	(0.935)	231481	50.4117	50.41
	34 Carbon Tetrachloride	117	5.843	5.847	(0.888)	213112	49.9447	49.94
$	35 1,2-Dichloroethane-d4	65	6.065	6.068	(1.047)	182564	52.5104	52.51
*	36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	486827	50.0000	
	37 Benzene	78	6.100	6.107	(0.927)	615032	49.7000	49.70
	38 Trichloroethene	130	6.822	6.825	(1.037)	173508	54.1682	54.16
	39 Bromodichloromethane	83	7.380	7.384	(1.122)	223681	49.7669	49.76
	40 Methyl Methacrylate	41	7.249	7.252	(1.252)	198328	52.5023	52.50
	41 2-Chloroethylvinyl ether	63	8.157	8.163	(1.240)	56654	101.983	101.98(A)
	42 1,2-Dichloropropane	63	7.072	7.072	(1.075)	183487	49.4086	49.40
	43 2-Nitropropane	43	8.029	8.032	(1.386)	425379	53.4464	53.44
	44 Dibromomethane	93	7.194	7.198	(1.094)	97633	52.6574	52.65
	45 4-Methyl-2-Pentanone	43	8.029	8.032	(0.843)	425379	105.931	105.93
	46 cis-1,3-Dichloropropene	75	7.843	7.846	(1.192)	267737	53.3857	53.38
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	437604	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.849)	542671	51.2441	51.24
	49 Ethyl Methacrylate	69	8.532	8.532	(1.297)	236238	58.0526	58.05
	50 Toluene	91	8.160	8.160	(0.857)	641521	47.9940	47.99
	51 trans-1,3-Dichloropropene	75	8.420	8.420	(1.280)	229893	55.2358	55.23
	52 2-Hexanone	43	8.866	8.869	(0.931)	286120	113.706	113.70
	53 1,1,2-Trichloroethane	83	8.597	8.600	(0.902)	125589	50.0229	50.02
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	249089	49.9758	49.97
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	187215	50.9254	50.92
	56 Tetrachloroethene	164	8.690	8.693	(0.912)	140391	52.5525	52.55
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	163350	52.1176	52.11
	58 1-Chlorohexane	55	9.553	9.553	(1.452)	173669	57.8688	57.86
	59 Chlorobenzene	112	9.553	9.556	(1.003)	407147	48.6754	48.67
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	165528	49.8426	49.84
	61 Ethylbenzene	106	9.672	9.672	(1.015)	224183	49.4577	49.45
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	539660	119.428	119.42
	63 o-Xylene	106	10.179	10.179	(1.068)	286178	50.2742	50.27
	64 Styrene	104	10.198	10.198	(1.070)	462161	50.6808	50.68
	66 Bromoform	173	10.374	10.374	(1.089)	139166	53.2855	53.28
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	705521	51.4805	51.48
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	208761	46.2933	46.29
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	211266	53.4715	53.47
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	203519	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	96255	51.7542	51.75
	72 trans-1,4-Dichloro-2-butene	53	10.929	10.930	(1.147)	52622	48.2354	48.23
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	766038	47.9872	47.98
	74 Bromobenzene	156	10.830	10.833	(0.915)	188213	46.0737	46.07
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	559425	46.3584	46.35

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.029	(0.932)	488286	54.4382	54.43
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	533746	54.8406	54.84
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	483689	48.5039	48.50
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	574235	55.7077	55.70
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	666239	50.1019	50.10
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	560268	49.3929	49.39
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	326867	46.9431	46.94
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	313957	46.6596	46.65
87	n-Butylbenzene	91	12.223	12.223	(1.033)	447979	52.0797	52.07
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	310595	47.5389	47.53
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	40574	55.7326	55.73
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	190639	50.4484	50.44
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	87769	53.1385	53.13
92	Naphthalene	128	14.061	14.061	(1.188)	474208	52.1048	52.10
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.208)	160775	49.1029	49.10
146	Methyl acetate	43	3.254	3.257	(0.562)	227670	59.4231	59.42
138	Freon TF	101	2.785	2.798	(0.481)	130886	54.8992	54.89
139	Diethyl ether	59	2.561	2.570	(0.442)	288442	50.8068	50.80
147	Methylcyclohexane	83	6.992	6.999	(1.063)	223079	52.1955	52.19
135	1,4-Dioxane	88	7.239	7.246	(1.250)	34839	1188.30	1188.29
132	n-Butanol	56	6.995	7.005	(1.208)	111971	960.812	960.81
131	Methyl Acrylate	55	5.272	5.279	(0.910)	303123	56.5225	56.52
133	Ethyl Acrylate	55	7.015	7.015	(1.211)	506296	52.2457	52.24
136	n-Hexane	57	4.078	4.088	(0.704)	213741	55.9425	55.94
141	Cyclohexane	56	5.693	5.699	(0.983)	297611	56.0056	56.00
142	Tetrahydrofuran	42	5.423	5.429	(0.936)	138974	108.467	108.46
148	Tert-butyl alcohol	59	3.591	3.591	(0.620)	445796	1166.68	1166.68
149	Isopropyl alcohol	45	3.087	3.090	(0.533)	262649	1080.84	1080.84
151	4-Methyl-2-pentanol	45	8.455	8.455	(0.888)	990754	1177.44	1177.43
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	522920	45.5165	45.51
167	Ethanol	45	2.564	2.570	(0.443)	289867	1035.04	1035.04
170	1,3,5-Trichlorobenzene	180	13.198	13.201	(1.115)	211460	47.7433	47.74
172	tert-Butyl formate	59	4.922	4.926	(0.850)	506632	90.5120	90.51
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	351684	1207.68	1207.68
174	tert-Amyl methyl ether	73	6.264	6.270	(1.081)	511255	48.4228	48.42
175	tert-Butyl ethyl ether	59	6.241	6.241	(1.078)	309209	59.0505	59.05
176	tert-Amyl alcohol	59	6.241	6.241	(1.078)	309209	1181.01	1181.01
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	138665	46.5550	46.55
156	Diisopropyl ether	45	4.441	4.448	(0.767)	650428	47.8622	47.86
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	153777	49.8341	49.83
130	Ethyl Acetate	43	5.253	5.256	(0.907)	407266	51.6885	51.68
M 94	1,2-Dichloroethylene (total)	96				318145	107.492	107.49
M 95	Xylenes (total)	106				825838	169.702	169.70

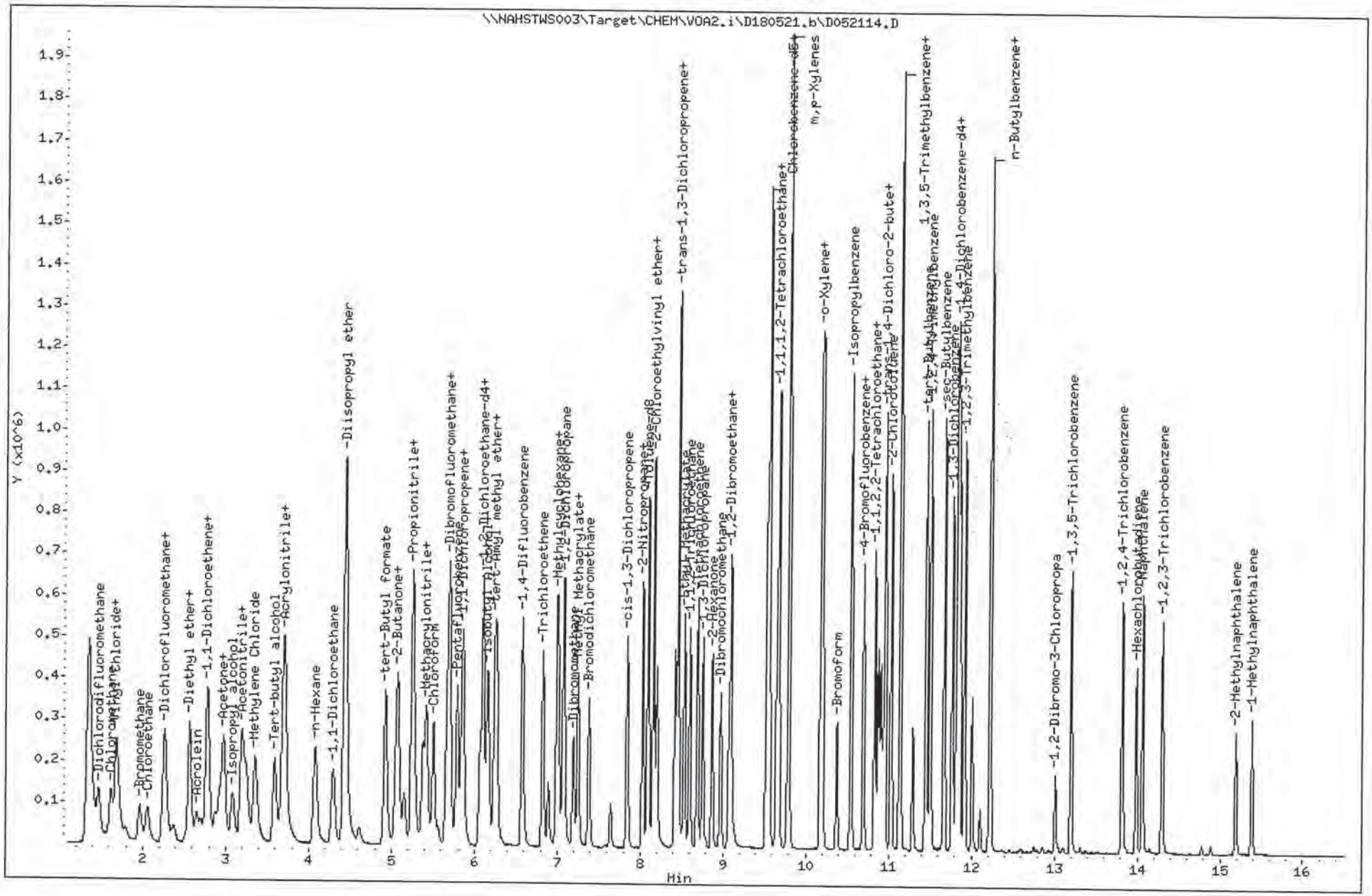
QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052114.D
Date : 21-MAY-2018 14:20
Client ID: HS18050926-06MSD
Sample Info: HS18050926-06MSD;HS18050926-06MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052119.D
Lab Smp Id: HS18050932-01 Client Smp ID: HS18050932-01
Inj Date : 21-MAY-2018 16:25
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050932-01;HS18050932-01;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.789	5.795	(1.000)	336255	50.0000	
	10 Acetone	43	2.885	2.878	(0.498)	26707	21.2772	21.27
	27 cis-1,2-Dichloroethene	96	5.086	5.083	(0.879)	15893	4.57437	4.57
$	30 Dibromofluoromethane	113	5.696	5.696	(0.984)	155585	53.7279	53.72
$	35 1,2-Dichloroethane-d4	65	6.068	6.068	(1.048)	187149	51.1265	51.12
*	36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	491681	50.0000	
	38 Trichloroethene	130	6.828	6.825	(1.038)	6702	2.07167	2.07
*	47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	440089	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.850)	569626	53.9867	53.98
	50 Toluene	91	8.157	8.160	(0.856)	5867	0.43645	0.43(a)
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	205927	51.6979	51.69
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	195282	50.0000	
	148 Tert-butyl alcohol	59	3.604	3.591	(0.623)	16876	41.9910	41.99(M)
M	94 1,2-Dichloroethylene (total)	96				15893	4.57437	4.57(a)

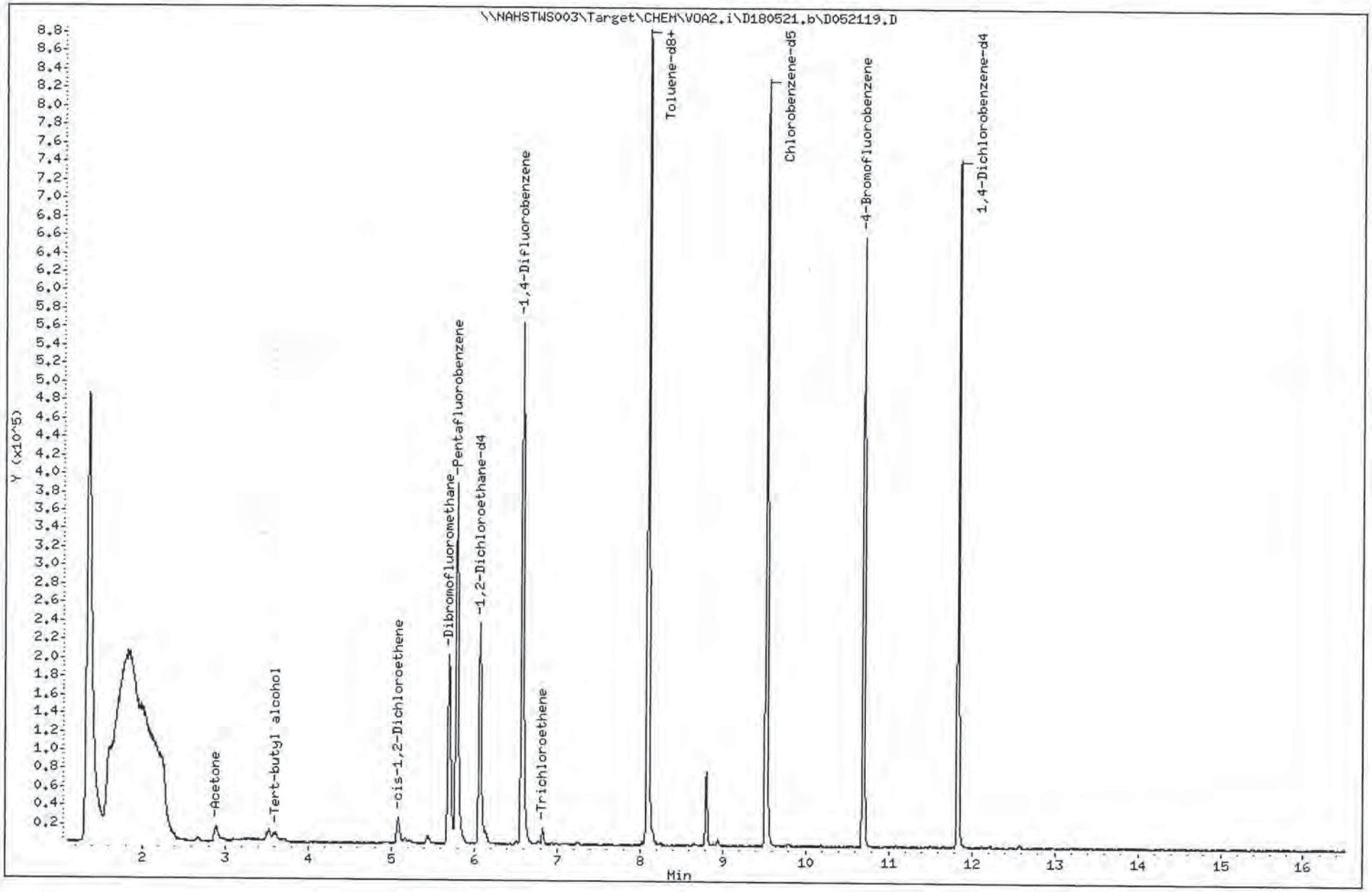
QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052119.D
Date : 21-MAY-2018 16:25
Client ID: HS18050932-01
Sample Info: HS18050932-01;HS18050932-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



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Date : 21-MAY-2018 16:25

Client ID: HS18050932-01

Instrument: VOA2.i

Sample Info: HS18050932-01:HS18050932-01;;;

Purge Volume: 5.0

Operator: AP

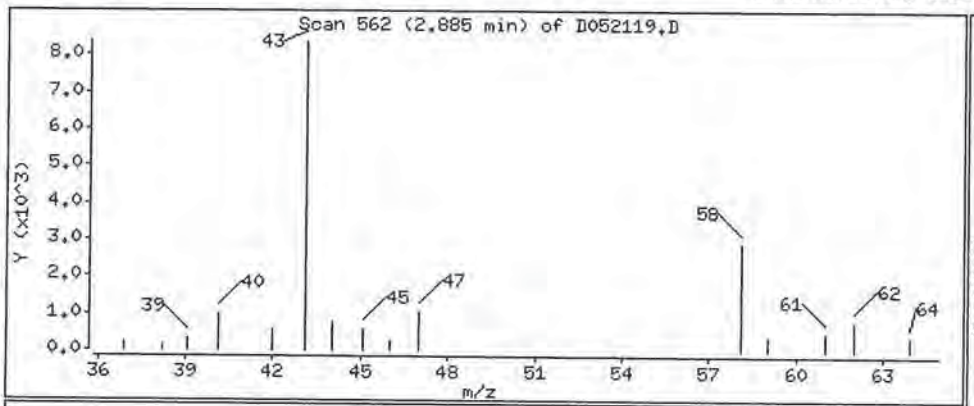
Column phase: DB624

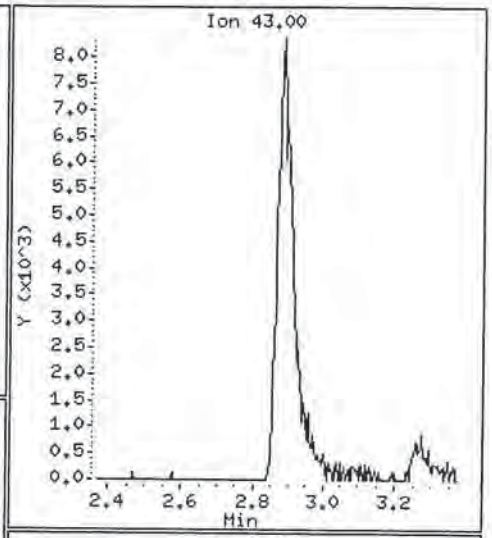
Column diameter: 0.18

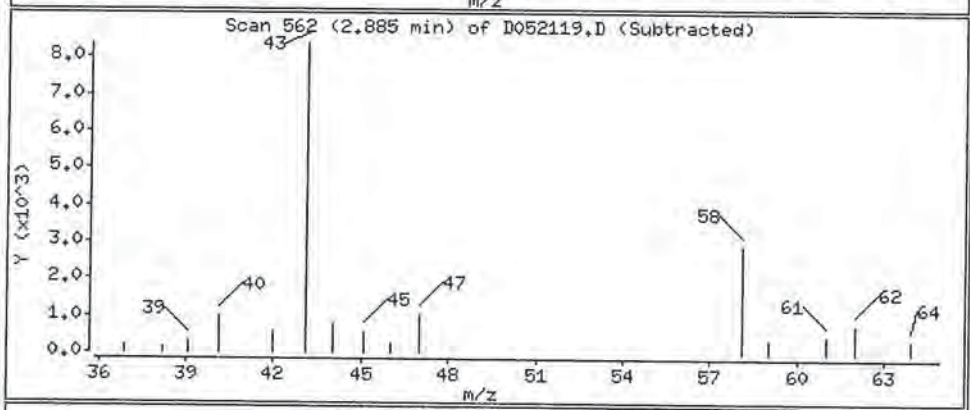
10 Acetone

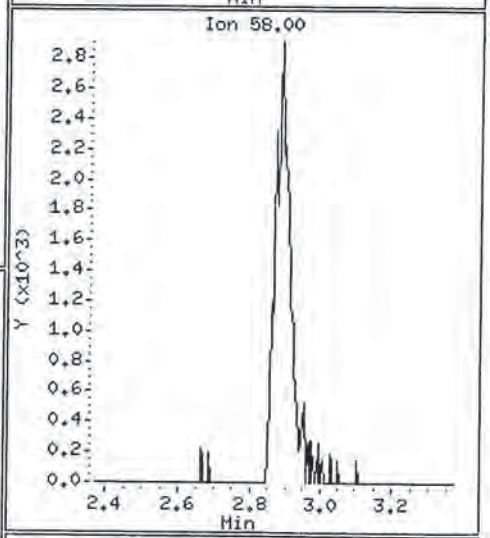
Concentration: 21.27 ug/l

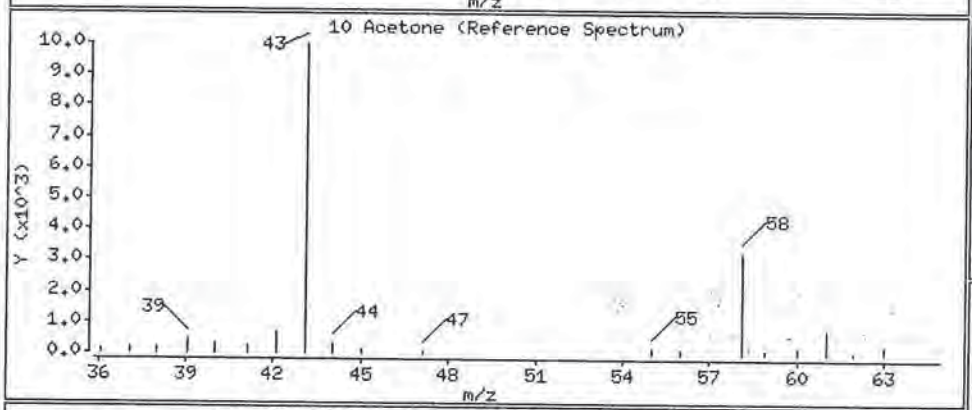
Review Code:

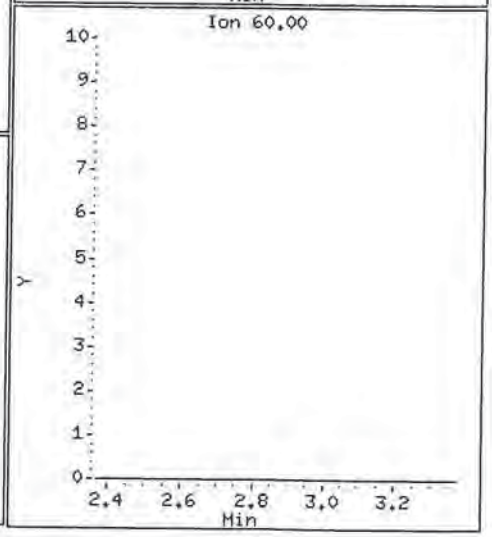


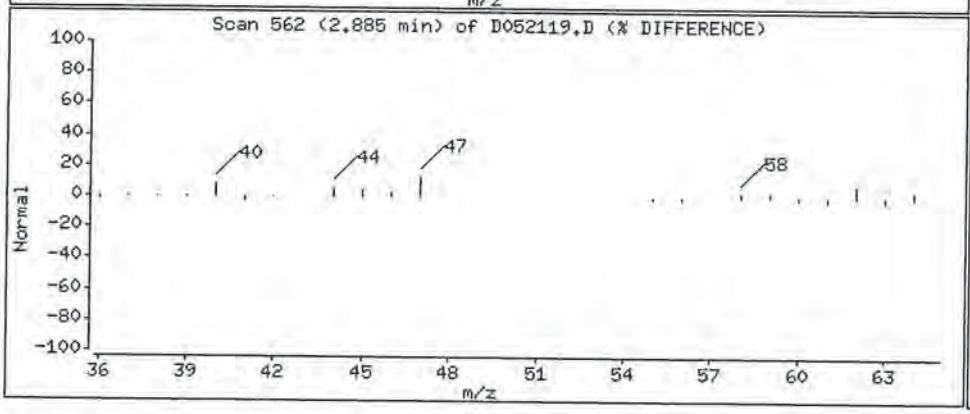












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052119.D

Page 4

Date : 21-MAY-2018 16:25

Client ID: HS18050932-01

Instrument: VOA2.i

Sample Info: HS18050932-01;HS18050932-01;;;

Purge Volume: 5.0

Operator: AP

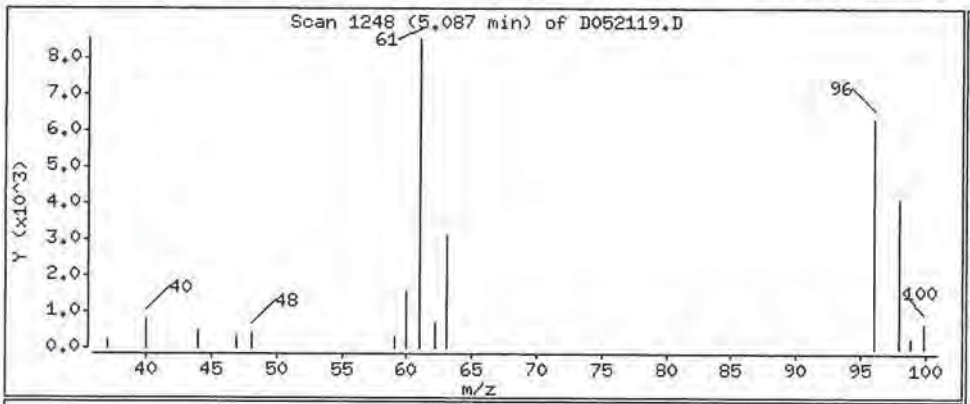
Column phase: DB624

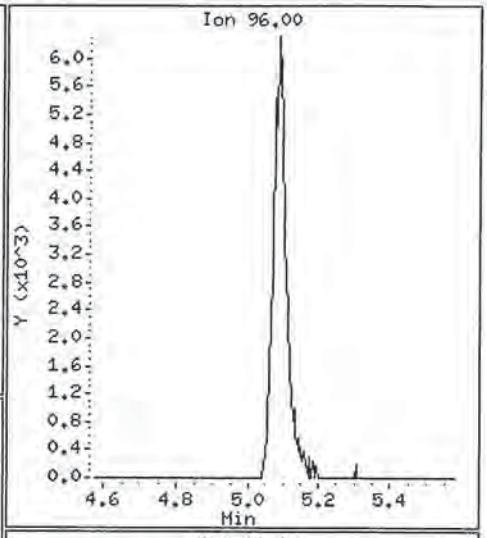
Column diameter: 0.18

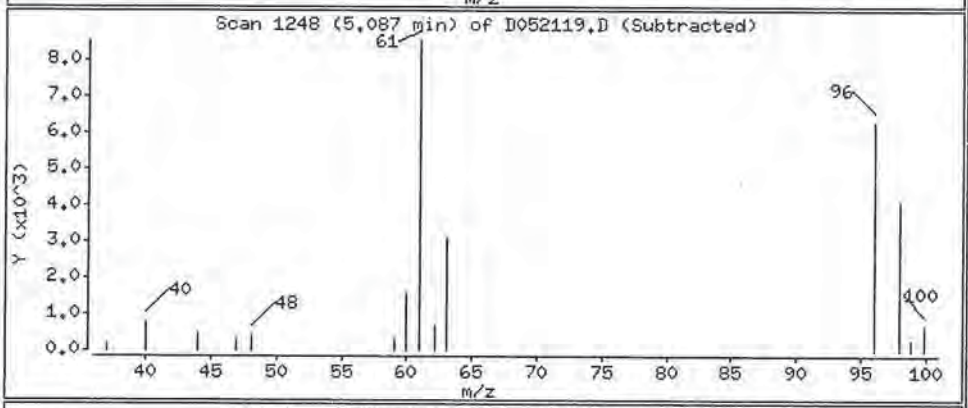
27 cis-1,2-Dichloroethene

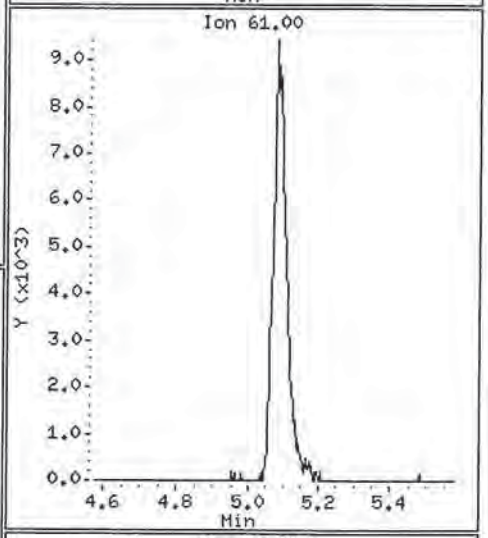
Concentration: 4.57 ug/l

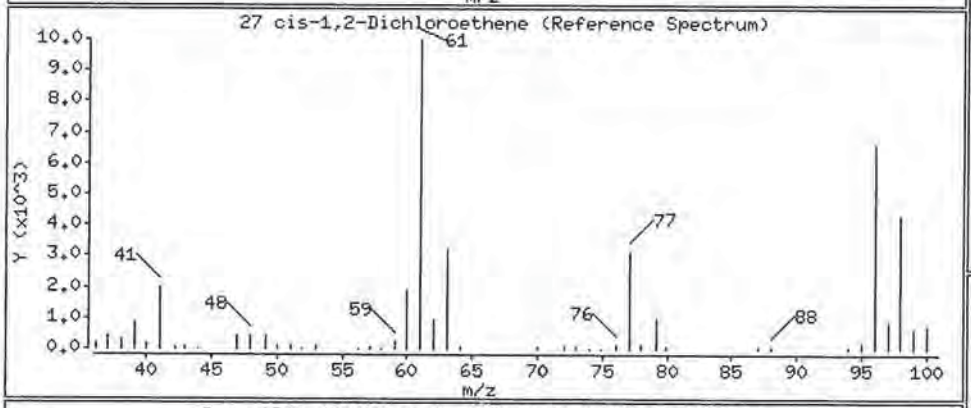
Review Code:

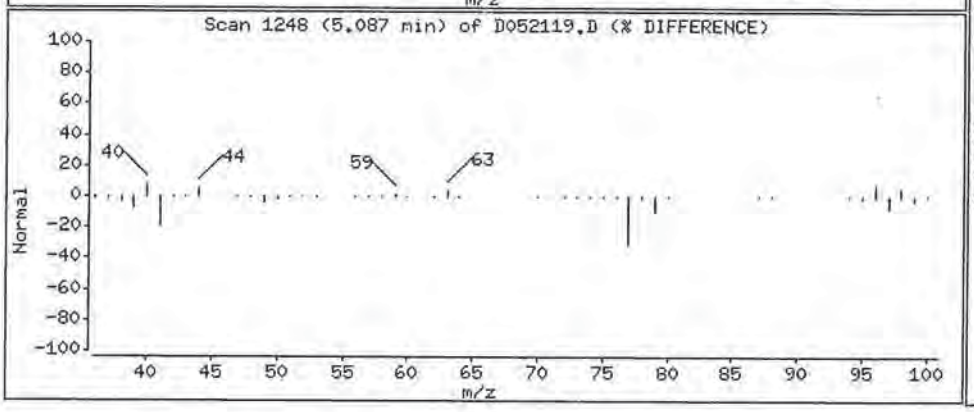


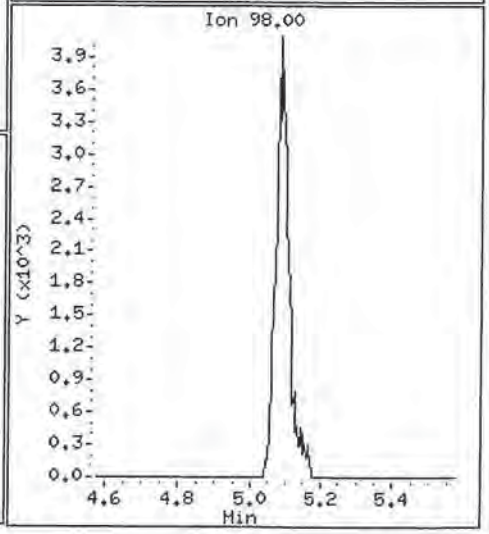












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052119.D

Date : 21-MAY-2018 16:25

Client ID: HS18050932-01

Instrument: VOA2.i

Sample Info: HS18050932-01;HS18050932-01;;;

Purge Volume: 5.0

Operator: AP

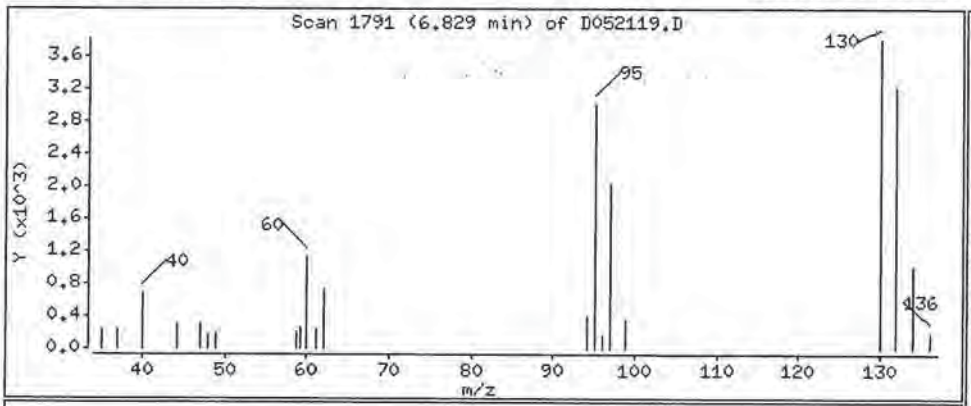
Column phase: DB624

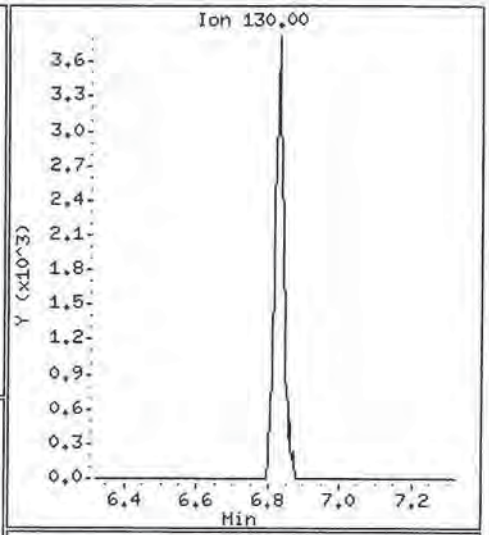
Column diameter: 0.18

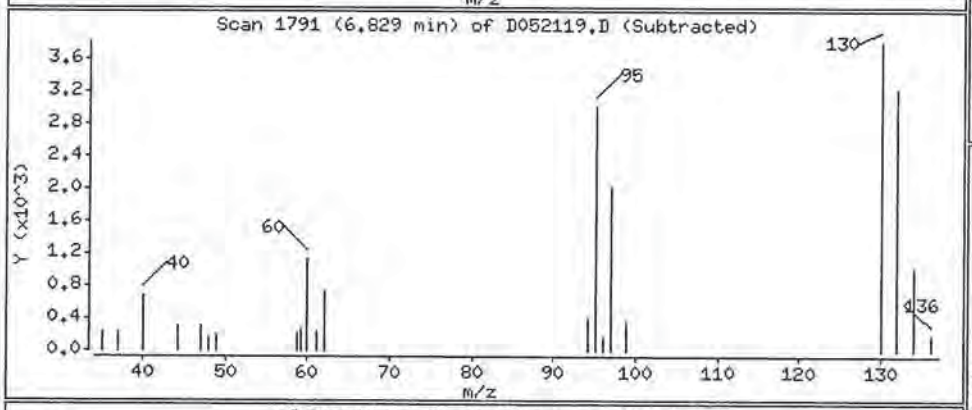
38 Trichloroethene

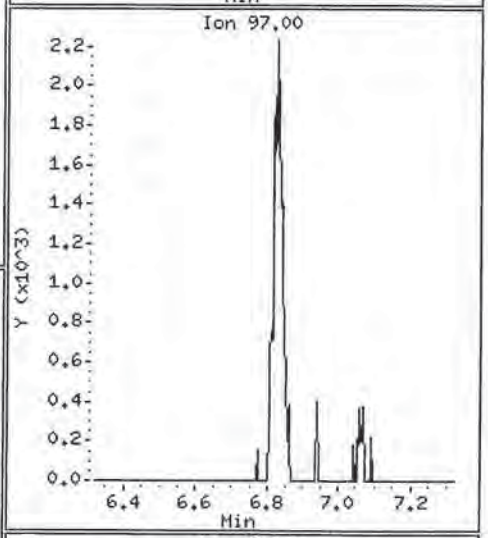
Concentration: 2.07 ug/l

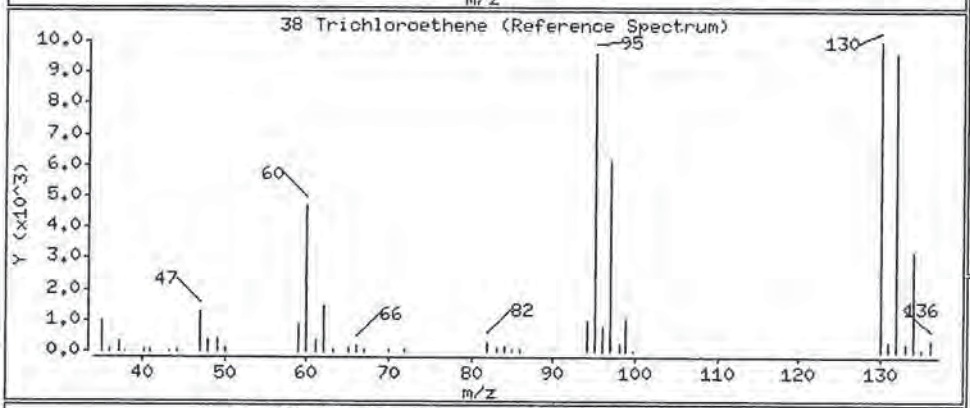
Review Code:

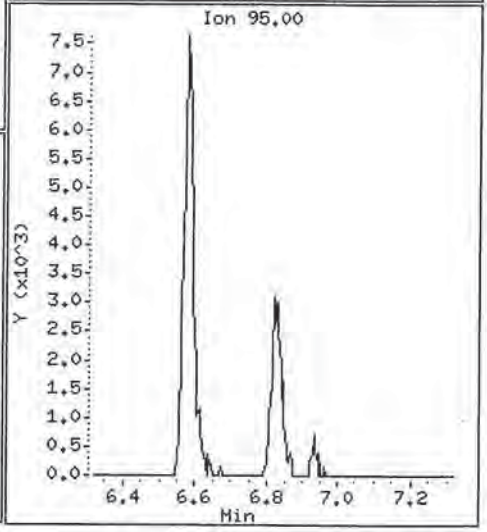


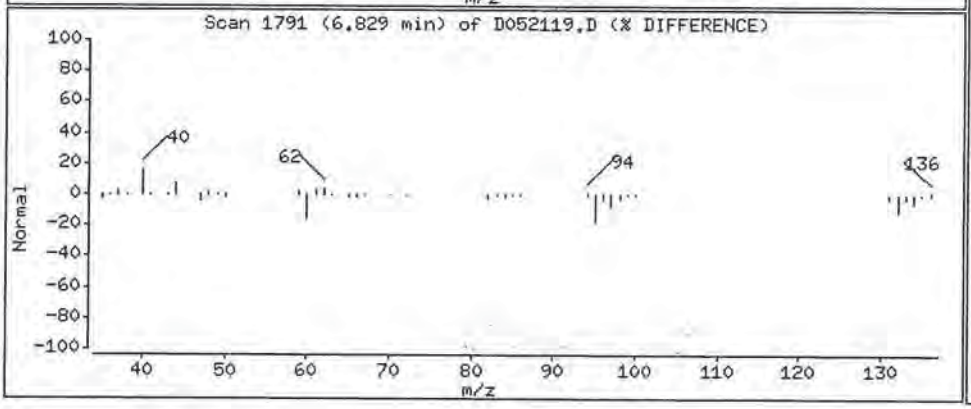












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052119.D

Date : 21-MAY-2018 16:25

Client ID: HS18050932-01

Instrument: VOA2.i

Sample Info: HS18050932-01;HS18050932-01;;;

Purge Volume: 5.0

Operator: AP

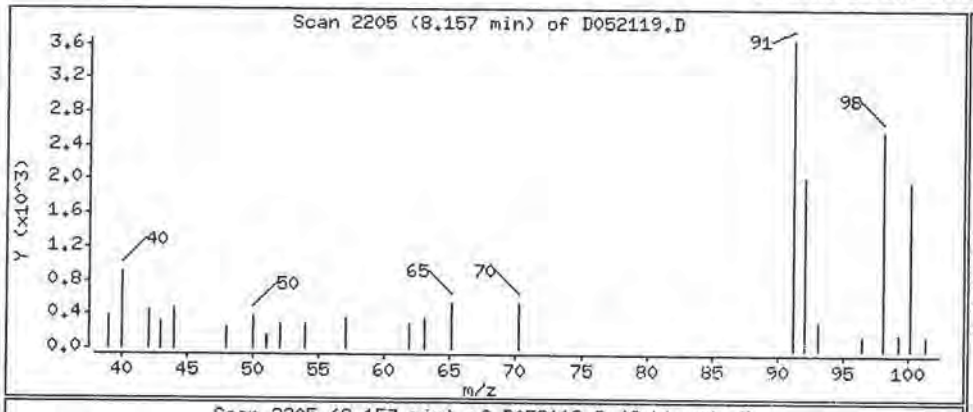
Column phase: DB624

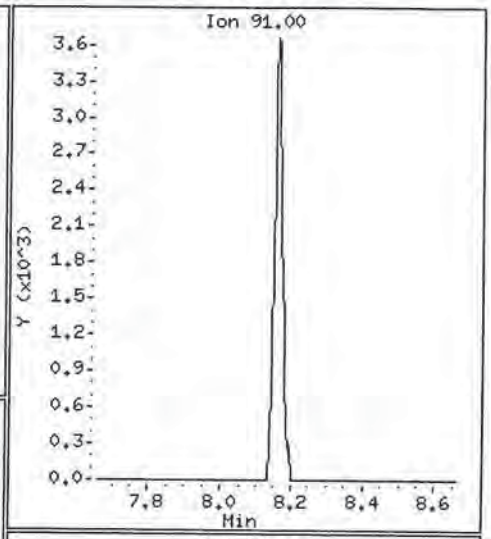
Column diameter: 0.18

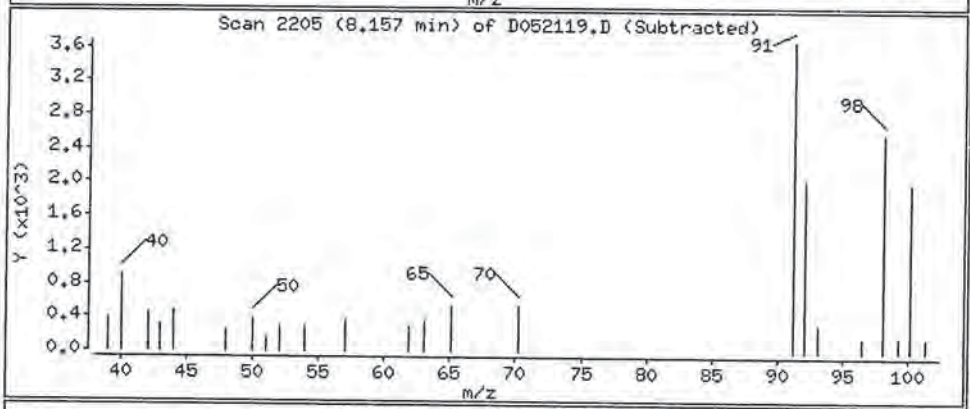
50 Toluene

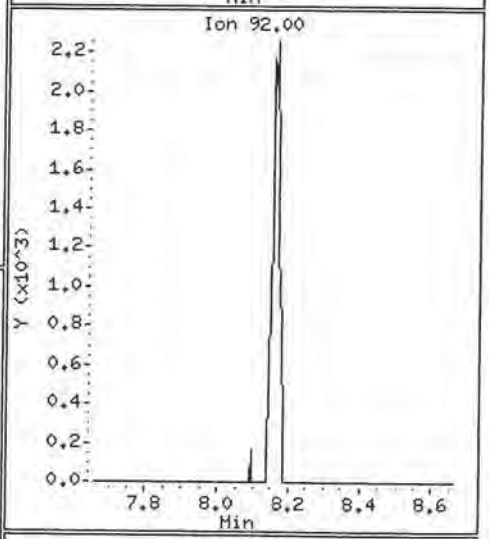
Concentration: 0.43 ug/l

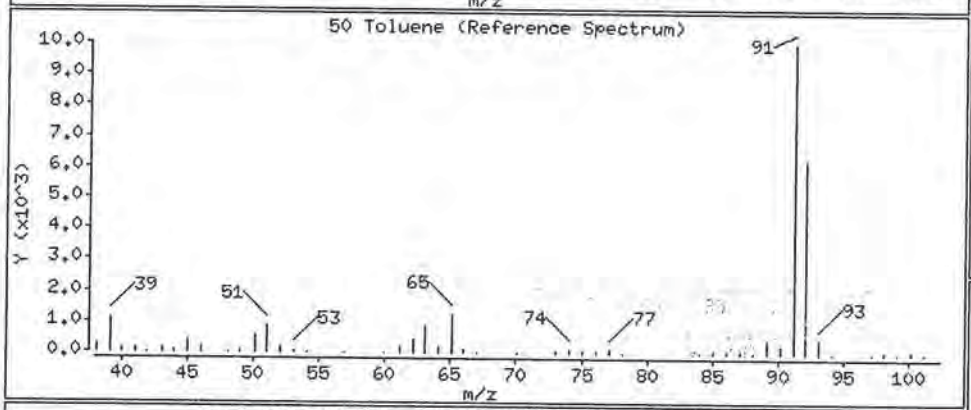
Review Code:

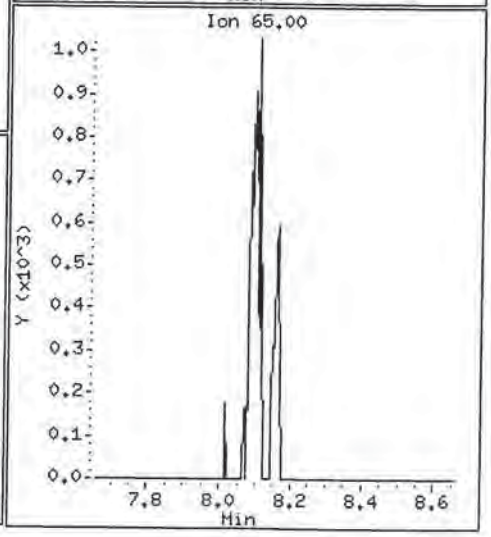


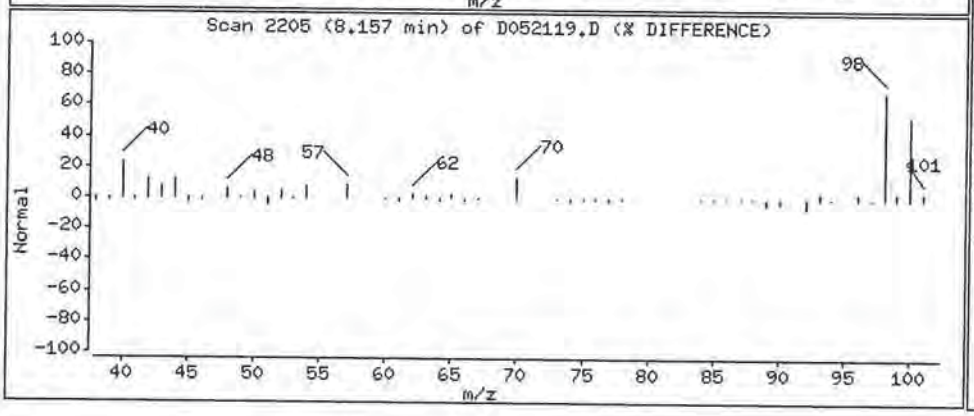












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052119.D

Date : 21-MAY-2018 16:25

Client ID: HS18050932-01

Instrument: VOA2.i

Sample Info: HS18050932-01;HS18050932-01;;;

Purge Volume: 5.0

Operator: AP

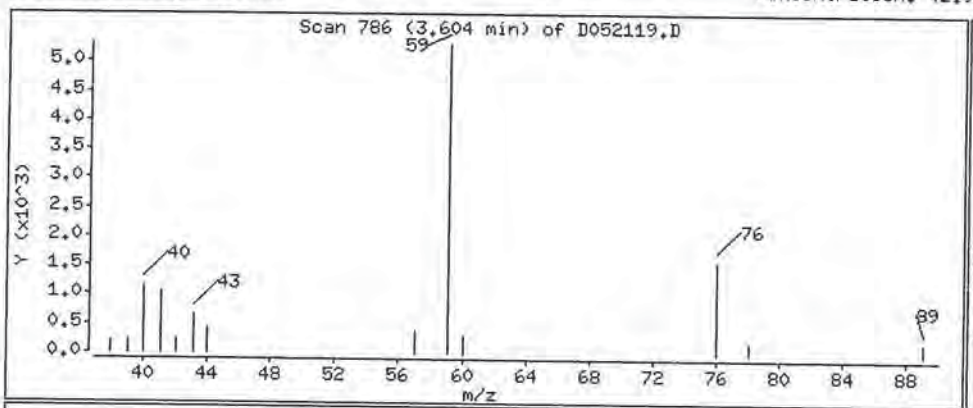
Column phase: DB624

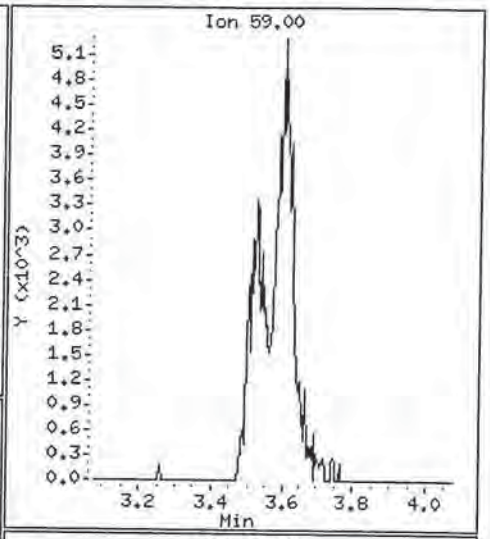
Column diameter: 0.18

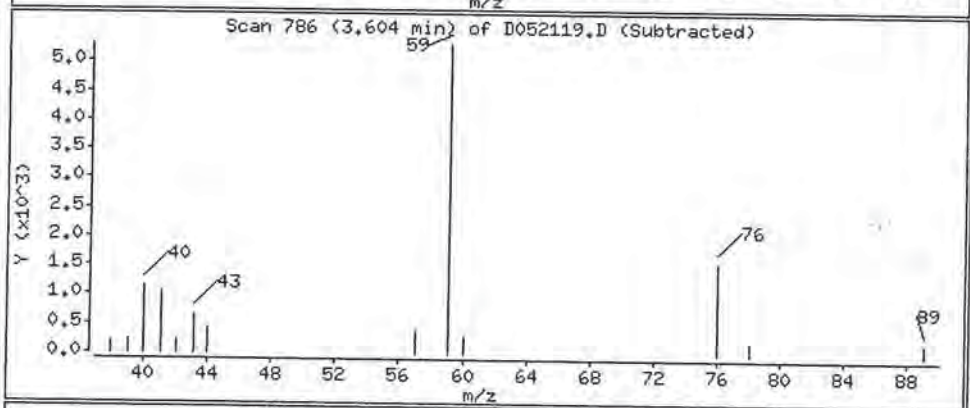
148 Tert-butyl alcohol

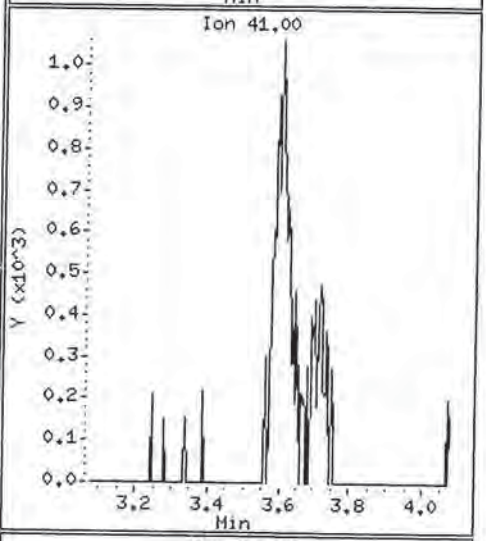
Concentration: 41.99 ug/l

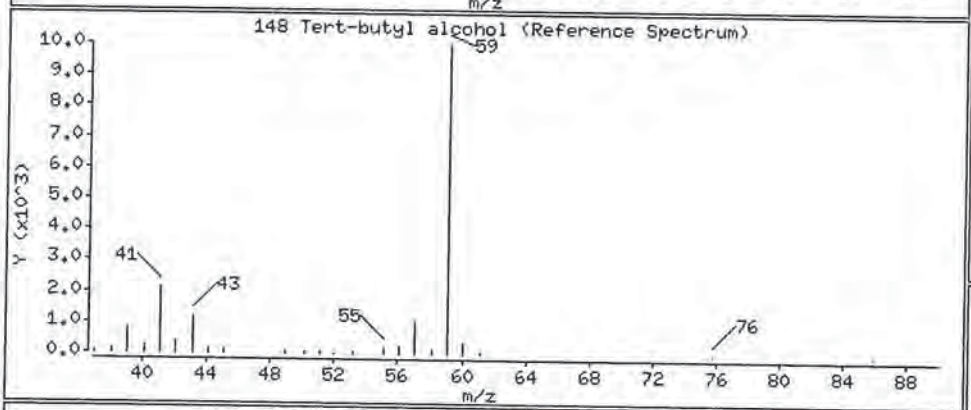
Review Code:

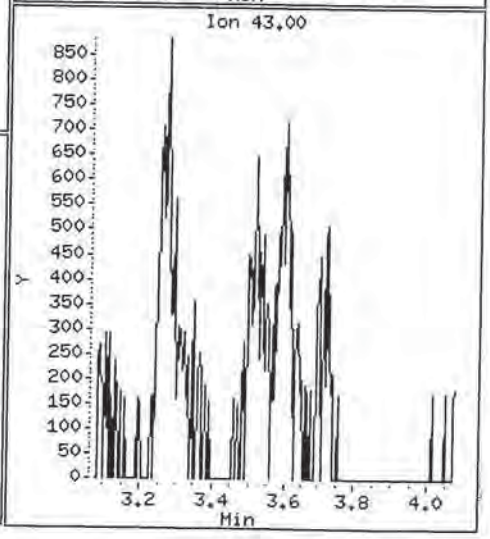


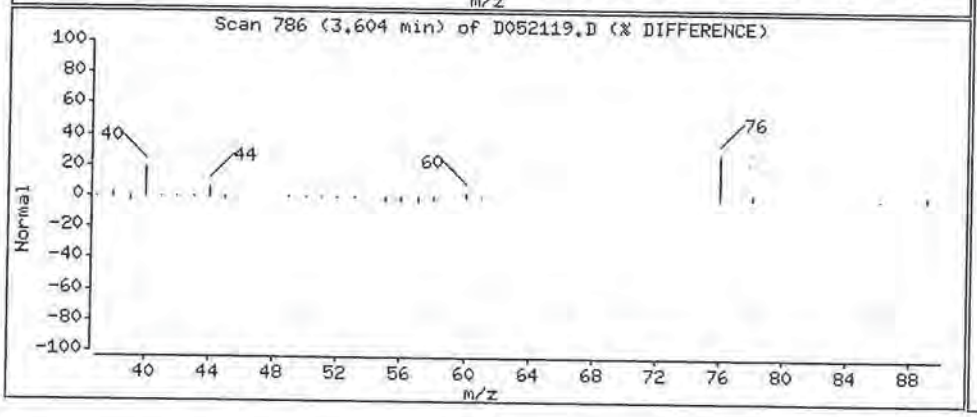












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052129.D Page 1
Report Date: 05-Jun-2018 16:16

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052129.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 21-MAY-2018 20:32
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\8260LL.m
Meth Date : 05-Jun-2018 16:16 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 27 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.789	5.789	(1.000)	326426	50.0000	
2	Dichlorodifluoromethane	85	1.473	1.473	(0.255)	195997	50.0000	65.08
186	Isobutylene	56	1.669	1.669	(0.288)	209103	50.0000	66.19(AM)
3	Chloromethane	50	1.614	1.614	(0.279)	314463	50.0000	60.08
4	Propionitrile	54	5.243	5.243	(0.906)	611512	500.000	540.52
5	Vinyl Chloride	62	1.701	1.701	(0.294)	249925	50.0000	61.38
6	Bromomethane	94	1.961	1.961	(0.339)	108828	50.0000	45.13
7	Chloroethane	64	2.057	2.057	(0.355)	148966	50.0000	68.64
159	Dichlorofluoromethane	67	2.249	2.249	(0.389)	346222	50.0000	57.68
8	Trichlorofluoromethane	101	2.272	2.272	(0.393)	255808	50.0000	66.39
9	Acrolein	56	2.708	2.708	(0.468)	73827	100.000	91.40
10	Acetone	43	2.869	2.869	(0.496)	121632	100.000	113.52
11	1,1-Dichloroethene	96	2.766	2.766	(0.478)	155759	50.0000	63.19
12	Isobutyl Alcohol	74	6.164	6.164	(1.065)	14960	1000.00	907.69(A)
13	Acetonitrile	39	3.190	3.190	(0.551)	234448	500.000	562.60
14	Allyl Chloride	41	3.193	3.193	(0.552)	590913	50.0000	55.63
15	Iodomethane	142	2.927	2.927	(0.506)	252497	100.000	99.36
16	Acrylonitrile	53	3.706	3.706	(0.640)	165895	100.000	114.52
17	Methylene Chloride	84	3.353	3.353	(0.579)	175864	50.0000	50.98
18	Methyl tert-butyl ether	73	3.703	3.703	(0.640)	473312	50.0000	50.28
19	Carbon Disulfide	76	2.975	2.975	(0.514)	653561	100.000	115.79

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052129.D Page 2
Report Date: 05-Jun-2018 16:16

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.681	3.681	(0.636)	169362	50.0000	62.87
	21 Vinyl Acetate	43	5.253	5.253	(0.907)	419679	100.000	99.87
	22 1,1-Dichloroethane	63	4.290	4.290	(0.741)	363500	50.0000	55.44
	24 2-Butanone	43	5.147	5.147	(0.889)	183647	100.000	108.21
	25 Methacrylonitrile	41	5.413	5.413	(0.935)	209441	50.0000	51.81
	26 2,2-Dichloropropane	77	5.048	5.048	(0.872)	237706	50.0000	53.62
	27 cis-1,2-Dichloroethene	96	5.080	5.080	(0.878)	190539	50.0000	56.49
	28 Chloroform	83	5.500	5.500	(0.950)	308179	50.0000	54.49
	29 Bromochloromethane	128	5.378	5.378	(0.929)	94875	50.0000	58.28
$	30 Dibromofluoromethane	113	5.693	5.693	(0.983)	141105	50.0000	49.95
	31 1,1,1-Trichloroethane	97	5.661	5.661	(0.978)	280749	50.0000	59.13
	32 1,1-Dichloropropene	75	5.863	5.863	(0.891)	229155	50.0000	53.97
	33 1,2-Dichloroethane	62	6.148	6.148	(0.935)	245093	50.0000	52.74
	34 Carbon Tetrachloride	117	5.843	5.843	(0.888)	243148	50.0000	56.31
$	35 1,2-Dichloroethane-d4	65	6.062	6.062	(1.047)	183669	50.0000	51.70
*	36 1,4-Difluorobenzene	114	6.578	6.578	(1.000)	492625	50.0000	
	37 Benzene	78	6.100	6.100	(0.927)	685959	50.0000	54.77
	38 Trichloroethene	130	6.822	6.822	(1.037)	194205	50.0000	59.91
	39 Bromodichloromethane	83	7.381	7.381	(1.122)	250424	50.0000	55.06
	40 Methyl Methacrylate	41	7.249	7.249	(1.252)	205199	50.0000	53.20
	41 2-Chloroethylvinyl ether	63	8.160	8.160	(1.240)	62444	100.000	111.08(TA)
	42 1,2-Dichloropropane	63	7.069	7.069	(1.075)	201043	50.0000	53.49
	43 2-Nitropropane	43	8.029	8.029	(1.387)	416825	50.0000	51.29
	44 Dibromomethane	93	7.194	7.194	(1.094)	108052	50.0000	57.59
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	416825	100.000	101.69
	46 cis-1,3-Dichloropropene	75	7.843	7.843	(1.192)	288019	50.0000	56.75
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	446651	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.850)	559428	50.0000	51.86
	49 Ethyl Methacrylate	69	8.533	8.533	(1.297)	241201	50.0000	58.59
	50 Toluene	91	8.160	8.160	(0.857)	718230	50.0000	52.64
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.279)	244917	50.0000	58.15
	52 2-Hexanone	43	8.869	8.869	(0.931)	272298	100.000	106.02
	53 1,1,2-Trichloroethane	83	8.597	8.597	(0.903)	138169	50.0000	53.91
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	270325	50.0000	53.13
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	205044	50.0000	54.64
	56 Tetrachloroethene	164	8.690	8.690	(0.912)	154149	50.0000	56.53
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	176219	50.0000	55.08
	58 1-Chlorohexane	55	9.553	9.553	(1.452)	192398	50.0000	63.63
	59 Chlorobenzene	112	9.553	9.553	(1.003)	448697	50.0000	52.55
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	186484	50.0000	55.01
	61 Ethylbenzene	106	9.672	9.672	(1.015)	251485	50.0000	54.35
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	600966	100.000	130.91
	63 o-Xylene	106	10.179	10.179	(1.069)	317192	50.0000	54.59
	64 Styrene	104	10.198	10.198	(1.071)	514095	50.0000	55.23
	66 Bromoform	173	10.374	10.374	(1.089)	145485	50.0000	54.57
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	787453	50.0000	56.29
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	216840	50.0000	48.03
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	214095	50.0000	53.05
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	203749	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	98630	50.0000	53.03
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	51949	50.0000	46.67
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	851741	50.0000	53.29
	74 Bromobenzene	156	10.830	10.830	(0.915)	210239	50.0000	51.40
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	618018	50.0000	51.15

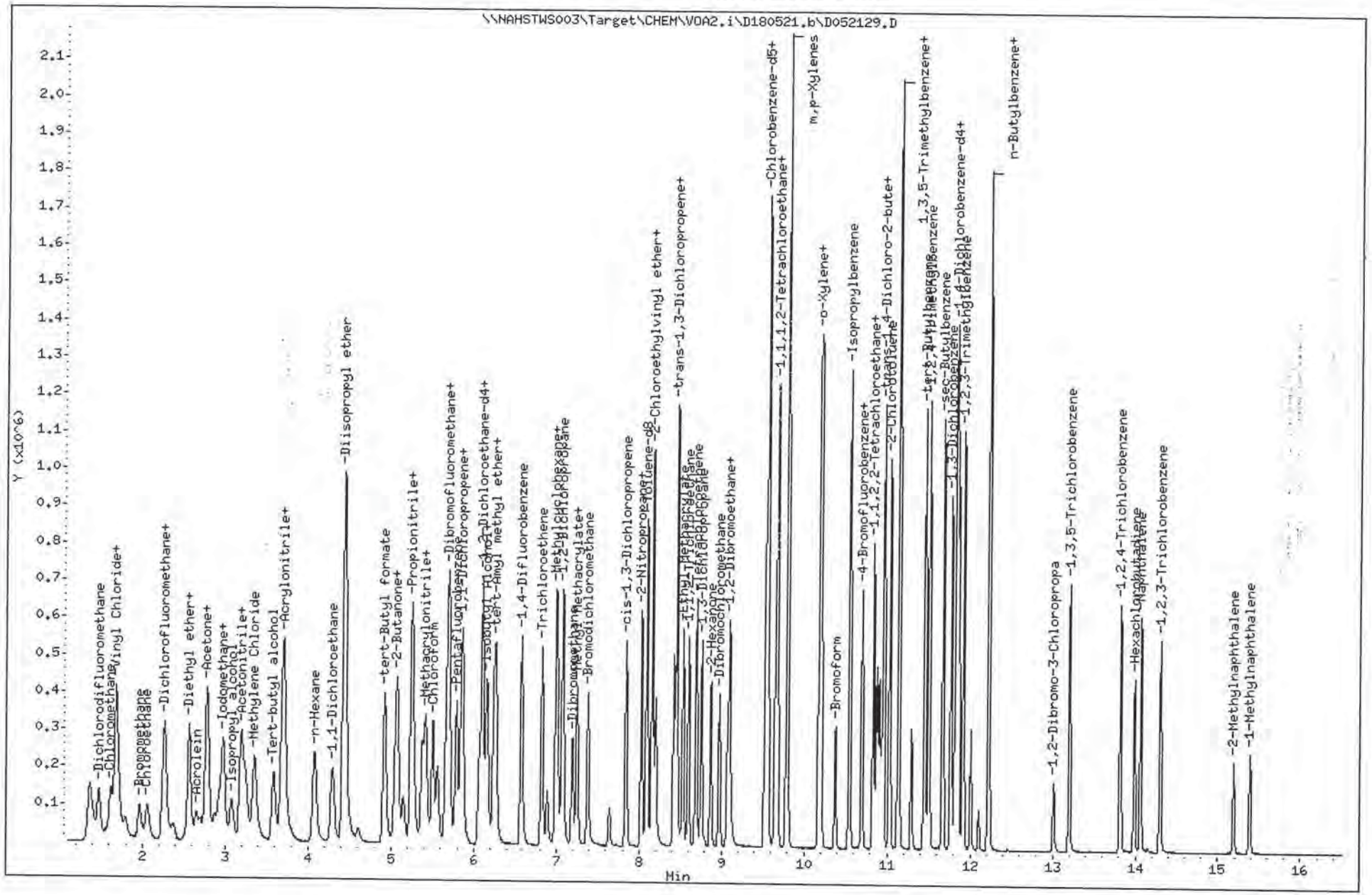
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.029	11.029	(0.932)	542756	50.0000	60.70
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	588402	50.0000	60.65
78 tert-Butylbenzene	119	11.449	11.449	(0.967)	532111	50.0000	53.29
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	623758	50.0000	60.68
81 sec-Butylbenzene	105	11.668	11.668	(0.986)	743112	50.0000	55.81
82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	616159	50.0000	54.25
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	361790	50.0000	51.89
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	339755	50.0000	50.43
87 n-Butylbenzene	91	12.220	12.220	(1.033)	488470	50.0000	56.72
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	341745	50.0000	52.24
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	40391	50.0000	55.41
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	201567	50.0000	53.25
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	90328	50.0000	54.62
92 Naphthalene	128	14.061	14.061	(1.188)	478196	50.0000	52.47
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	167101	50.0000	50.93
146 Methyl acetate	43	3.244	3.244	(0.560)	238275	50.0000	60.90
138 Freon TF	101	2.789	2.789	(0.482)	147657	50.0000	60.80
139 Diethyl ether	59	2.561	2.561	(0.442)	316659	50.0000	54.62
147 Methylcyclohexane	83	6.992	6.992	(1.063)	248577	50.0000	57.47
135 1,4-Dioxane	88	7.243	7.243	(1.251)	33308	1000.00	1111.37
132 n-Butanol	56	6.999	6.999	(1.209)	123014	1000.00	1033.81
131 Methyl Acrylate	55	5.269	5.269	(0.910)	305232	50.0000	55.74
133 Ethyl Acrylate	55	7.008	7.008	(1.211)	534354	50.0000	54.00
136 n-Hexane	57	4.079	4.079	(0.705)	226340	50.0000	58.01
141 Cyclohexane	56	5.696	5.696	(0.984)	333607	50.0000	61.48
142 Tetrahydrofuran	42	5.426	5.426	(0.937)	137341	100.000	104.98
148 Tert-butyl alcohol	59	3.581	3.581	(0.619)	417266	1000.00	1069.50
149 Isopropyl alcohol	45	3.081	3.081	(0.532)	248702	1000.00	1002.35
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	874159	1000.00	1017.83
166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	583952	50.0000	50.77
167 Ethanol	45	2.558	2.558	(0.442)	314409	1000.00	1099.53
170 1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	227957	50.0000	51.40
172 tert-Butyl formate	59	4.923	4.923	(0.850)	545844	100.000	95.50
173 3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	319808	1000.00	1075.97
174 tert-Amyl methyl ether	73	6.267	6.267	(1.083)	521460	50.0000	48.37
175 tert-Butyl ethyl ether	59	6.238	6.238	(1.078)	274621	50.0000	51.36
176 tert-Amyl alcohol	59	6.238	6.238	(1.078)	274621	1000.00	1027.28
157 2-Methylnaphthalene	142	15.188	15.188	(1.283)	111791	50.0000	38.76
156 Diisopropyl ether	45	4.438	4.438	(0.767)	725076	50.0000	52.25(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	126512	50.0000	41.98
130 Ethyl Acetate	43	5.253	5.253	(0.907)	419679	50.0000	52.16

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180521.b\D052129.D
Date : 21-MAY-2018 20:32
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



Anions Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18050932

Sequence: 052318 HS18050932
Operator: ALSHS.NoUser

Printed: 6/8/2018 5:53:48 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 113

Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Inj. Vol.	*Initial_Vol_Wt	*Final_Volume
1	STD1		Standard	1	1.0000	10.0	1.00	1.00
2	STD2		Standard	2	1.0000	10.0	1.00	1.00
3	STD3		Standard	3	1.0000	10.0	1.00	1.00
4	STD4		Standard	4	1.0000	10.0	1.00	1.00
5	STD5		Standard	5	1.0000	10.0	1.00	1.00
6	STD6		Standard	6	1.0000	10.0	1.00	1.00
7	ICV		Unknown	7	1.0000	10.0	1.00	1.00
8	ICB		Unknown	8	1.0000	10.0	1.00	1.00
9	CCV		Unknown	1	1.0000	10.0	1.00	1.00
10	CCB		Unknown	2	1.0000	10.0	1.00	1.00
11	WBLKW1-052318		Unknown	5	1.0000	10.0	1.00	1.00
12	WLCSW1-052318		Unknown	6	1.0000	10.0	1.00	1.00
13	WLCSDW1-052318		Unknown	7	1.0000	10.0	1.00	1.00
14	HS18051121-08		Unknown	11	1.0000	10.0	1.00	1.00
15	HS18051121-08MS		Unknown	12	1.0000	10.0	1.00	1.00
16	HS18051121-08MSD		Unknown	13	1.0000	10.0	1.00	1.00
17	HS18051121-09		Unknown	14	1.0000	10.0	1.00	1.00
18	HS18051121-10		Unknown	15	1.0000	10.0	1.00	1.00
19	HS18051121-11		Unknown	16	1.0000	10.0	1.00	1.00
20	HS18051121-11DF10		Unknown	17	10.0000	10.0	1.00	1.00
21	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
22	CCB		Unknown	4	1.0000	10.0	1.00	1.00
23	HS18050932-01DF10		Unknown	18	10.0000	10.0	1.00	1.00
24	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
25	CCV		Unknown	1	1.0000	10.0	1.00	1.00
26	CCB		Unknown	2	1.0000	10.0	1.00	1.00
27	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
28	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
29	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
30	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
31	CCV		Unknown	1	1.0000	10.0	1.00	1.00
32	CCB		Unknown	2	1.0000	10.0	1.00	1.00
33	HS18050419-06DF10		Unknown	8	10.0000	10.0	1.00	1.00
34	CCV		Unknown	1	1.0000	10.0	1.00	1.00
35	CCB		Unknown	2	1.0000	10.0	1.00	1.00
36	WBLKW1-052418		Unknown	5	1.0000	10.0	1.00	1.00
37	WLCSW1-052418		Unknown	6	1.0000	10.0	1.00	1.00
38	WLCSDW1-052418		Unknown	7	1.0000	10.0	1.00	1.00
39	HS18051229-01		Unknown	11	1.0000	10.0	1.00	1.00
40	HS18051235-01		Unknown	12	1.0000	10.0	1.00	1.00
41	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
42	HS18051187-02		Unknown	13	1.0000	10.0	1.00	1.00

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Sequence: 052318
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 113

Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Method	Status	Inj. Date/Time	Program
1	STD1	042618	Finished	4/26/2018 1:23:55 PM	Anions Gradient Program
2	STD2	042618	Finished	4/26/2018 1:38:28 PM	Anions Gradient Program
3	STD3	042618	Finished	4/26/2018 1:53:01 PM	Anions Gradient Program
4	STD4	042618	Finished	4/26/2018 2:07:34 PM	Anions Gradient Program
5	STD5	042618	Finished	4/26/2018 2:22:07 PM	Anions Gradient Program
6	STD6	042618	Finished	4/26/2018 2:36:39 PM	Anions Gradient Program
7	ICV	042618	Finished	4/26/2018 3:55:05 PM	Anions Gradient Program
8	ICB	042618	Finished	4/26/2018 4:09:38 PM	Anions Gradient Program
9	CCV	042618	Finished	5/23/2018 7:18:07 PM	Anions Gradient Program
10	CCB	042618	Finished	5/23/2018 7:36:10 PM	Anions Gradient Program
11	WBLKW1-052318	042618	Finished	5/23/2018 7:50:43 PM	Anions Gradient Program
12	WLCSW1-052318	042618	Finished	5/23/2018 8:05:15 PM	Anions Gradient Program
13	WLCSDW1-052318	042618	Finished	5/23/2018 8:19:48 PM	Anions Gradient Program
14	HS18051121-08	042618	Finished	5/23/2018 8:34:21 PM	Anions Gradient Program
15	HS18051121-08MS	042618	Finished	5/23/2018 8:48:54 PM	Anions Gradient Program
16	HS18051121-08MSD	042618	Finished	5/23/2018 9:03:27 PM	Anions Gradient Program
17	HS18051121-09	042618	Finished	5/23/2018 9:17:59 PM	Anions Gradient Program
18	HS18051121-10	042618	Finished	5/23/2018 9:32:32 PM	Anions Gradient Program
19	HS18051121-11	042618	Finished	5/23/2018 9:47:05 PM	Anions Gradient Program
20	HS18051121-11DF10	042618	Finished	5/23/2018 10:01:38 PM	Anions Gradient Program
21	CCV1	042618	Finished	5/23/2018 10:16:10 PM	Anions Gradient Program
22	CCB	042618	Finished	5/23/2018 10:30:43 PM	Anions Gradient Program
23	HS18050932-01DF10	042618	Finished	5/23/2018 10:45:16 PM	Anions Gradient Program
24	DI H2O	042618	Finished	5/23/2018 10:59:49 PM	Anions Gradient Program
25	CCV	042618	Finished	5/23/2018 11:14:22 PM	Anions Gradient Program
26	CCB	042618	Finished	5/23/2018 11:28:55 PM	Anions Gradient Program
27	DI H2O	042618	Finished	5/23/2018 11:43:28 PM	Anions Gradient Program
28	DI H2O	042618	Finished	5/24/2018 2:04:16 PM	Anions Gradient Program
29	DI H2O	042618	Finished	5/24/2018 2:18:49 PM	Anions Gradient Program
30	DI H2O	042618	Finished	5/24/2018 2:33:21 PM	Anions Gradient Program
31	CCV	042618	Finished	5/24/2018 2:47:55 PM	Anions Gradient Program
32	CCB	042618	Finished	5/24/2018 3:02:28 PM	Anions Gradient Program
33	HS18050419-06DF10	042618	Finished	5/24/2018 4:43:24 PM	Anions Gradient Program
34	CCV	042618	Finished	5/24/2018 4:57:57 PM	Anions Gradient Program
35	CCB	042618	Finished	5/24/2018 5:12:29 PM	Anions Gradient Program
36	WBLKW1-052418	042618	Finished	5/24/2018 5:27:02 PM	Anions Gradient Program
37	WLCSW1-052418	042618	Finished	5/24/2018 5:41:35 PM	Anions Gradient Program
38	WLCSDW1-052418	042618	Finished	5/24/2018 5:56:08 PM	Anions Gradient Program
39	HS18051229-01	042618	Finished	5/24/2018 6:35:32 PM	Anions Gradient Program
40	HS18051235-01	042618	Finished	5/24/2018 6:59:12 PM	Anions Gradient Program
41	DI H2O	042618	Finished	5/24/2018 7:13:45 PM	Anions Gradient Program
42	HS18051187-02	042618	Finished	5/24/2018 7:28:18 PM	Anions Gradient Program

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Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 113
Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	GUID
1	STD1	d92b3a74-497e-11e8-b6d9-ac2a724b15e4
2	STD2	e1774668-4980-11e8-b6d9-ac2a724b15e4
3	STD3	e9df5050-4982-11e8-b6d9-ac2a724b15e4
4	STD4	f22134e8-4984-11e8-b6d9-ac2a724b15e4
5	STD5	fa2ea632-4986-11e8-b6d9-ac2a724b15e4
6	STD6	026e2875-4989-11e8-b6d9-ac2a724b15e4
7	ICV	7a1849cd-4993-11e8-b6d9-ac2a724b15e4
8	ICB	ff9ed68c-4995-11e8-b6d9-ac2a724b15e4
9	CCV	cd766465-5ee7-11e8-b6d9-ac2a724b15e4
10	CCB	d5baab52-5ee9-11e8-b6d9-ac2a724b15e4
11	WBLKW1-052318	5b1d7516-5eec-11e8-b6d9-ac2a724b15e4
12	WLCSW1-052318	63130f0e-5eee-11e8-b6d9-ac2a724b15e4
13	WLCSDW1-052318	6b5c1aa5-5ef0-11e8-b6d9-ac2a724b15e4
14	HS18051121-08	73d07811-5ef2-11e8-b6d9-ac2a724b15e4
15	HS18051121-08MS	7c2179f3-5ef4-11e8-b6d9-ac2a724b15e4
16	HS18051121-08MSD	846f94c1-5ef6-11e8-b6d9-ac2a724b15e4
17	HS18051121-09	8c67910e-5ef8-11e8-b6d9-ac2a724b15e4
18	HS18051121-10	945ac8b1-5efa-11e8-b6d9-ac2a724b15e4
19	HS18051121-11	9ca3d448-5efc-11e8-b6d9-ac2a724b15e4
20	HS18051121-11DF10	a4fd9032-5efe-11e8-b6d9-ac2a724b15e4
21	CCV1	ad35eb76-5f00-11e8-b6d9-ac2a724b15e4
22	CCB	b57ef70d-5f02-11e8-b6d9-ac2a724b15e4
23	HS18050932-01DF10	bdc802a4-5f04-11e8-b6d9-ac2a724b15e4
24	DI H2O	c61cf9e4-5f06-11e8-b6d9-ac2a724b15e4
25	CCV	ce6aca25-5f08-11e8-b6d9-ac2a724b15e4
26	CCB	d6a32569-5f0a-11e8-b6d9-ac2a724b15e4
27	DI H2O	dedb80ad-5f0c-11e8-b6d9-ac2a724b15e4
28	DI H2O	a2daf101-5f84-11e8-b6d9-ac2a724b15e4
29	DI H2O	27e32227-5f87-11e8-b6d9-ac2a724b15e4
30	DI H2O	2fc5a977-5f89-11e8-b6d9-ac2a724b15e4
31	CCV	3852cc79-5f8b-11e8-b6d9-ac2a724b15e4
32	CCB	40f8f377-5f8d-11e8-b6d9-ac2a724b15e4
33	HS18050419-06DF10	dda0f40f-5f9a-11e8-b6d9-ac2a724b15e4
34	CCV	62ca85db-5f9d-11e8-b6d9-ac2a724b15e4
35	CCB	6b02e11f-5f9f-11e8-b6d9-ac2a724b15e4
36	WBLKW1-052418	735c9d09-5fa1-11e8-b6d9-ac2a724b15e4
37	WLCSW1-052418	7b975aa2-5fa3-11e8-b6d9-ac2a724b15e4
38	WLCSDW1-052418	83e06639-5fa5-11e8-b6d9-ac2a724b15e4
39	HS18051229-01	88152dac-5faa-11e8-b6d9-ac2a724b15e4
40	HS18051235-01	d65dfa04-5fad-11e8-b6d9-ac2a724b15e4
41	DI H2O	5b747928-5fb0-11e8-b6d9-ac2a724b15e4
42	HS18051187-02	63b3fb6b-5fb2-11e8-b6d9-ac2a724b15e4

Sequence: 052318
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 113

Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Inj. Vol.	*Initial_Vol_Wt	*Final_Volume
43	HS18051187-02MS		Unknown	14	1.0000	10.0	1.00	1.00
44	HS18051187-02MSD		Unknown	15	1.0000	10.0	1.00	1.00
45	HS18051187-02DF10		Unknown	16	10.0000	10.0	1.00	1.00
46	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
47	CCB		Unknown	4	1.0000	10.0	1.00	1.00
48	HS18051187-03		Unknown	17	1.0000	10.0	1.00	1.00
49	HS18051187-03DF10		Unknown	18	10.0000	10.0	1.00	1.00
50	HS18051186-01		Unknown	19	1.0000	10.0	1.00	1.00
51	HS18051186-01MS		Unknown	20	1.0000	10.0	1.00	1.00
52	HS18051186-01MSD		Unknown	21	1.0000	10.0	1.00	1.00
53	HS18051186-01DF10		Unknown	22	10.0000	10.0	1.00	1.00
54	HS18051186-05		Unknown	23	1.0000	10.0	1.00	1.00
55	HS18051186-05DF10		Unknown	24	10.0000	10.0	1.00	1.00
56	HS18051186-06		Unknown	25	1.0000	10.0	1.00	1.00
57	HS18051186-06DF10		Unknown	26	10.0000	10.0	1.00	1.00
58	CCV		Unknown	1	1.0000	10.0	1.00	1.00
59	CCB		Unknown	2	1.0000	10.0	1.00	1.00
60	HS18050822-01DF500		Unknown	27	500.0000	10.0	1.00	1.00
61	HS18050822-02DF200		Unknown	28	200.0000	10.0	1.00	1.00
62	HS18050822-03DF200		Unknown	29	200.0000	10.0	1.00	1.00
63	HS18050822-04DF200		Unknown	30	200.0000	10.0	1.00	1.00
64	HS18050822-05DF200		Unknown	31	200.0000	10.0	1.00	1.00
65	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
66	HS18050822-06DF50		Unknown	32	50.0000	10.0	1.00	1.00
67	HS18050822-07DF50		Unknown	33	50.0000	10.0	1.00	1.00
68	HS18050822-08DF200		Unknown	34	200.0000	10.0	1.00	1.00
69	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
70	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
71	CCB		Unknown	4	1.0000	10.0	1.00	1.00
72	WBLKW2-052418		Unknown	35	1.0000	10.0	1.00	1.00
73	WLCSW2-052418		Unknown	36	1.0000	10.0	1.00	1.00
74	WLCSDW2-052418		Unknown	37	1.0000	10.0	1.00	1.00
75	HS18050878-01DF10		Unknown	38	10.0000	10.0	1.00	1.00
76	HS18050878-01MSDF10		Unknown	39	10.0000	10.0	1.00	1.00
77	HS18050878-01MSDDF10		Unknown	40	10.0000	10.0	1.00	1.00
78	HS18050878-02DF500		Unknown	41	500.0000	10.0	1.00	1.00
79	HS18050878-03DF500		Unknown	42	500.0000	10.0	1.00	1.00
80	HS18050878-04DF500		Unknown	43	500.0000	10.0	1.00	1.00
81	HS18050878-05DF200		Unknown	44	200.0000	10.0	1.00	1.00
82	CCV		Unknown	1	1.0000	10.0	1.00	1.00
83	CCB		Unknown	2	1.0000	10.0	1.00	1.00
84	HS18050878-06DF500		Unknown	45	500.0000	10.0	1.00	1.00

Sequence: 052318
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 113

Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Method	Status	Inj. Date/Time	Program
43	HS18051187-02MS	042618	Finished	5/24/2018 7:42:50 PM	Anions Gradient Program
44	HS18051187-02MSD	042618	Finished	5/24/2018 7:57:23 PM	Anions Gradient Program
45	HS18051187-02DF10	042618	Finished	5/24/2018 8:11:56 PM	Anions Gradient Program
46	CCV1	042618	Finished	5/24/2018 8:26:29 PM	Anions Gradient Program
47	CCB	042618	Finished	5/24/2018 8:41:01 PM	Anions Gradient Program
48	HS18051187-03	042618	Finished	5/24/2018 8:55:34 PM	Anions Gradient Program
49	HS18051187-03DF10	042618	Finished	5/24/2018 9:10:07 PM	Anions Gradient Program
50	HS18051186-01	042618	Finished	5/24/2018 9:24:41 PM	Anions Gradient Program
51	HS18051186-01MS	042618	Finished	5/24/2018 9:39:14 PM	Anions Gradient Program
52	HS18051186-01MSD	042618	Finished	5/24/2018 9:53:47 PM	Anions Gradient Program
53	HS18051186-01DF10	042618	Finished	5/24/2018 10:08:19 PM	Anions Gradient Program
54	HS18051186-05	042618	Finished	5/24/2018 10:22:52 PM	Anions Gradient Program
55	HS18051186-05DF10	042618	Finished	5/24/2018 10:37:25 PM	Anions Gradient Program
56	HS18051186-06	042618	Finished	5/24/2018 10:51:58 PM	Anions Gradient Program
57	HS18051186-06DF10	042618	Finished	5/24/2018 11:06:31 PM	Anions Gradient Program
58	CCV	042618	Finished	5/24/2018 11:21:03 PM	Anions Gradient Program
59	CCB	042618	Finished	5/24/2018 11:35:36 PM	Anions Gradient Program
60	HS18050822-01DF500	042618	Finished	5/24/2018 11:50:10 PM	Anions Gradient Program
61	HS18050822-02DF200	042618	Finished	5/25/2018 12:04:43 AM	Anions Gradient Program
62	HS18050822-03DF200	042618	Finished	5/25/2018 12:19:16 AM	Anions Gradient Program
63	HS18050822-04DF200	042618	Finished	5/25/2018 12:33:49 AM	Anions Gradient Program
64	HS18050822-05DF200	042618	Finished	5/25/2018 12:48:21 AM	Anions Gradient Program
65	DI H2O	042618	Finished	5/25/2018 1:02:54 AM	Anions Gradient Program
66	HS18050822-06DF50	042618	Finished	5/25/2018 1:17:27 AM	Anions Gradient Program
67	HS18050822-07DF50	042618	Finished	5/25/2018 1:32:00 AM	Anions Gradient Program
68	HS18050822-08DF200	042618	Finished	5/25/2018 1:46:33 AM	Anions Gradient Program
69	DI H2O	042618	Finished	5/25/2018 2:01:06 AM	Anions Gradient Program
70	CCV1	042618	Finished	5/25/2018 2:15:38 AM	Anions Gradient Program
71	CCB	042618	Finished	5/25/2018 2:30:10 AM	Anions Gradient Program
72	WBLKW2-052418	042618	Finished	5/25/2018 2:44:43 AM	Anions Gradient Program
73	WLCSW2-052418	042618	Finished	5/25/2018 2:59:15 AM	Anions Gradient Program
74	WLCSDW2-052418	042618	Finished	5/25/2018 3:13:48 AM	Anions Gradient Program
75	HS18050878-01DF10	042618	Finished	5/25/2018 3:28:21 AM	Anions Gradient Program
76	HS18050878-01MSDF10	042618	Finished	5/25/2018 3:42:54 AM	Anions Gradient Program
77	HS18050878-01MSDDF10	042618	Finished	5/25/2018 3:57:27 AM	Anions Gradient Program
78	HS18050878-02DF500	042618	Finished	5/25/2018 4:12:00 AM	Anions Gradient Program
79	HS18050878-03DF500	042618	Finished	5/25/2018 4:26:33 AM	Anions Gradient Program
80	HS18050878-04DF500	042618	Finished	5/25/2018 4:41:06 AM	Anions Gradient Program
81	HS18050878-05DF200	042618	Finished	5/25/2018 4:55:39 AM	Anions Gradient Program
82	CCV	042618	Finished	5/25/2018 5:10:11 AM	Anions Gradient Program
83	CCB	042618	Finished	5/25/2018 5:24:44 AM	Anions Gradient Program
84	HS18050878-06DF500	042618	Finished	5/25/2018 5:39:17 AM	Anions Gradient Program

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Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100 Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
#Samples: 113 (Modified, not saved)

No.	Name	GUID
43	HS18051187-02MS	6c1019aa-5fb4-11e8-b6d9-ac2a724b15e4
44	HS18051187-02MSD	7456c2ec-5fb6-11e8-b6d9-ac2a724b15e4
45	HS18051187-02DF10	7c8f1e30-5fb8-11e8-b6d9-ac2a724b15e4
46	CCV1	84d829c7-5fba-11e8-b6d9-ac2a724b15e4
47	CCB	8ccdc3bf-5fbc-11e8-b6d9-ac2a724b15e4
48	HS18051187-03	9516cf56-5fbe-11e8-b6d9-ac2a724b15e4
49	HS18051187-03DF10	9d708b40-5fc0-11e8-b6d9-ac2a724b15e4
50	HS18051186-01	a5ca472a-5fc2-11e8-b6d9-ac2a724b15e4
51	HS18051186-01MS	ae56140d-5fc4-11e8-b6d9-ac2a724b15e4
52	HS18051186-01MSD	b69f1fa4-5fc6-11e8-b6d9-ac2a724b15e4
53	HS18051186-01DF10	bee82b3b-5fc8-11e8-b6d9-ac2a724b15e4
54	HS18051186-05	c741e725-5fca-11e8-b6d9-ac2a724b15e4
55	HS18051186-05DF10	cf7ca4be-5fcc-11e8-b6d9-ac2a724b15e4
56	HS18051186-06	d7bc2701-5fce-11e8-b6d9-ac2a724b15e4
57	HS18051186-06DF10	dfbb4a4d-5fd0-11e8-b6d9-ac2a724b15e4
58	CCV	e80b7ce3-5fd2-11e8-b6d9-ac2a724b15e4
59	CCB	f054887a-5fd4-11e8-b6d9-ac2a724b15e4
60	HS18050822-01DF500	f8d5c3c7-5fd6-11e8-b6d9-ac2a724b15e4
61	HS18050822-02DF200	01303b18-5fd9-11e8-b6d9-ac2a724b15e4
62	HS18050822-03DF200	09882ce7-5fdb-11e8-b6d9-ac2a724b15e4
63	HS18050822-04DF200	11dd2427-5fdd-11e8-b6d9-ac2a724b15e4
64	HS18050822-05DF200	1a2af468-5fdf-11e8-b6d9-ac2a724b15e4
65	DI H2O	226f3b55-5fe1-11e8-b6d9-ac2a724b15e4
66	HS18050822-06DF50	2a817149-5fe3-11e8-b6d9-ac2a724b15e4
67	HS18050822-07DF50	32b507e3-5fe5-11e8-b6d9-ac2a724b15e4
68	HS18050822-08DF200	3b09ff23-5fe7-11e8-b6d9-ac2a724b15e4
69	DI H2O	433ff812-5fe9-11e8-b6d9-ac2a724b15e4
70	CCV1	4b46425d-5feb-11e8-b6d9-ac2a724b15e4
71	CCB	534565a9-5fed-11e8-b6d9-ac2a724b15e4
72	WBLKW2-052418	5b874a41-5fef-11e8-b6d9-ac2a724b15e4
73	WLCSW2-052418	636c33e6-5ff1-11e8-b6d9-ac2a724b15e4
74	WLCSDW2-052418	6bcab47a-5ff3-11e8-b6d9-ac2a724b15e4
75	HS18050878-01DF10	7413c011-5ff5-11e8-b6d9-ac2a724b15e4
76	HS18050878-01MSDF10	7c6d7bfb-5ff7-11e8-b6d9-ac2a724b15e4
77	HS18050878-01MSDDF10	84af6093-5ff9-11e8-b6d9-ac2a724b15e4
78	HS18050878-02DF500	8cf609d5-5ffb-11e8-b6d9-ac2a724b15e4
79	HS18050878-03DF500	953f156c-5ffd-11e8-b6d9-ac2a724b15e4
80	HS18050878-04DF500	9d882103-5fff-11e8-b6d9-ac2a724b15e4
81	HS18050878-05DF200	a5be19f2-6001-11e8-b6d9-ac2a724b15e4
82	CCV	adc6c692-6003-11e8-b6d9-ac2a724b15e4
83	CCB	b60d6fd4-6005-11e8-b6d9-ac2a724b15e4
84	HS18050878-06DF500	be482d6d-6007-11e8-b6d9-ac2a724b15e4

Sequence: 052318
Operator: ALSHS.NoUser

Title:
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Timebase: ICS2100
#Samples: 113

Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
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86	HS18050878-08DF50		Unknown	47	50.0000	10.0	1.00	1.00
87	HS18050886-01DF200		Unknown	48	200.0000	10.0	1.00	1.00
88	HS18050886-02DF200		Unknown	49	200.0000	10.0	1.00	1.00
89	HS18050886-03DF200		Unknown	50	200.0000	10.0	1.00	1.00
90	HS18050886-04DF500		Unknown	51	500.0000	10.0	1.00	1.00
91	HS18050886-04MSDF500		Unknown	52	500.0000	10.0	1.00	1.00
92	HS18050886-04MSDDF500		Unknown	53	500.0000	10.0	1.00	1.00
93	HS18050886-05DF500		Unknown	54	500.0000	10.0	1.00	1.00
94	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
95	CCB		Unknown	4	1.0000	10.0	1.00	1.00
96	HS18050886-06DF200		Unknown	55	200.0000	10.0	1.00	1.00
97	HS18050886-07DF200		Unknown	56	200.0000	10.0	1.00	1.00
98	HS18050886-08DF10		Unknown	57	10.0000	10.0	1.00	1.00
99	HS18050886-09DF500		Unknown	58	500.0000	10.0	1.00	1.00
100	HS18050886-10DF500		Unknown	59	500.0000	10.0	1.00	1.00
101	HS18050886-11DF500		Unknown	60	500.0000	10.0	1.00	1.00
102	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
103	CCV		Unknown	1	1.0000	10.0	1.00	1.00
104	CCB		Unknown	2	1.0000	10.0	1.00	1.00
105	WLCSW2-052418		Unknown	36	1.0000	10.0	1.00	1.00
106	WLCSDW2-052418		Unknown	37	1.0000	10.0	1.00	1.00
107	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
108	DI H2O		Unknown	10	1.0000	10.0	1.00	1.00
109	CCV1		Unknown	3	1.0000	10.0	1.00	1.00
110	CCB		Unknown	4	1.0000	10.0	1.00	1.00
111	HS18051270-01DF20		Unknown	8	1.0000	10.0	1.00	1.00
112	CCV		Unknown	1	1.0000	10.0	1.00	1.00
113	CCB		Unknown	2	1.0000	10.0	1.00	1.00

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Location: ICS2100\Sequences and Data\01-2018
Timebase: ICS2100
#Samples: 113
Created: 5/23/2018 5:26:46 PM by ALSHS.NoUser
(Modified, not saved)

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86	HS18050878-08DF50	042618	Finished	5/25/2018 6:08:23 AM	Anions Gradient Program
87	HS18050886-01DF200	042618	Finished	5/25/2018 6:22:55 AM	Anions Gradient Program
88	HS18050886-02DF200	042618	Finished	5/25/2018 6:37:27 AM	Anions Gradient Program
89	HS18050886-03DF200	042618	Finished	5/25/2018 6:52:00 AM	Anions Gradient Program
90	HS18050886-04DF500	042618	Finished	5/25/2018 7:06:32 AM	Anions Gradient Program
91	HS18050886-04MSDF500	042618	Finished	5/25/2018 7:21:05 AM	Anions Gradient Program
92	HS18050886-04MSDDF500	042618	Finished	5/25/2018 7:35:38 AM	Anions Gradient Program
93	HS18050886-05DF500	042618	Finished	5/25/2018 7:50:11 AM	Anions Gradient Program
94	CCV1	042618	Finished	5/25/2018 8:04:44 AM	Anions Gradient Program
95	CCB	042618	Finished	5/25/2018 8:19:16 AM	Anions Gradient Program
96	HS18050886-06DF200	042618	Finished	5/25/2018 8:33:49 AM	Anions Gradient Program
97	HS18050886-07DF200	042618	Finished	5/25/2018 8:48:22 AM	Anions Gradient Program
98	HS18050886-08DF10	042618	Finished	5/25/2018 9:02:56 AM	Anions Gradient Program
99	HS18050886-09DF500	042618	Finished	5/25/2018 9:17:29 AM	Anions Gradient Program
100	HS18050886-10DF500	042618	Finished	5/25/2018 9:32:01 AM	Anions Gradient Program
101	HS18050886-11DF500	042618	Finished	5/25/2018 9:46:34 AM	Anions Gradient Program
102	DI H2O	042618	Finished	5/25/2018 10:01:07 AM	Anions Gradient Program
103	CCV	042618	Finished	5/25/2018 10:15:40 AM	Anions Gradient Program
104	CCB	042618	Finished	5/25/2018 10:30:12 AM	Anions Gradient Program
105	WLCSW2-052418	042618	Finished	5/25/2018 10:44:45 AM	Anions Gradient Program
106	WLCSDW2-052418	042618	Finished	5/25/2018 10:59:18 AM	Anions Gradient Program
107	DI H2O	042618	Finished	5/25/2018 11:17:22 AM	Anions Gradient Program
108	DI H2O	042618	Finished	5/25/2018 11:31:54 AM	Anions Gradient Program
109	CCV1	042618	Finished	5/25/2018 11:46:27 AM	Anions Gradient Program
110	CCB	042618	Finished	5/25/2018 12:01:00 PM	Anions Gradient Program
111	HS18051270-01DF20	042618	Finished	5/25/2018 2:13:38 PM	Anions Gradient Program
112	CCV	042618	Interrupted		Anions Gradient Program
113	CCB	042618	Single		Anions Gradient Program

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Location: ICS2100\Sequences and Data\01-2018
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87	HS18050886-01DF200	d7319e30-600d-11e8-b6d9-ac2a724b15e4
88	HS18050886-02DF200	df0839d7-600f-11e8-b6d9-ac2a724b15e4
89	HS18050886-03DF200	e71f3475-6011-11e8-b6d9-ac2a724b15e4
90	HS18050886-04DF500	eef10b72-6013-11e8-b6d9-ac2a724b15e4
91	HS18050886-04MSDF500	f74ac75c-6015-11e8-b6d9-ac2a724b15e4
92	HS18050886-04MSDDF500	ffa6e59b-6017-11e8-b6d9-ac2a724b15e4
93	HS18050886-05DF500	079a1d3e-601a-11e8-b6d9-ac2a724b15e4
94	CCV1	0ff3d928-601c-11e8-b6d9-ac2a724b15e4
95	CCB	182e96c1-601e-11e8-b6d9-ac2a724b15e4
96	HS18050886-06DF200	2077a258-6020-11e8-b6d9-ac2a724b15e4
97	HS18050886-07DF200	28be4b9a-6022-11e8-b6d9-ac2a724b15e4
98	HS18050886-08DF10	31553b00-6024-11e8-b6d9-ac2a724b15e4
99	HS18050886-09DF500	39a00498-6026-11e8-b6d9-ac2a724b15e4
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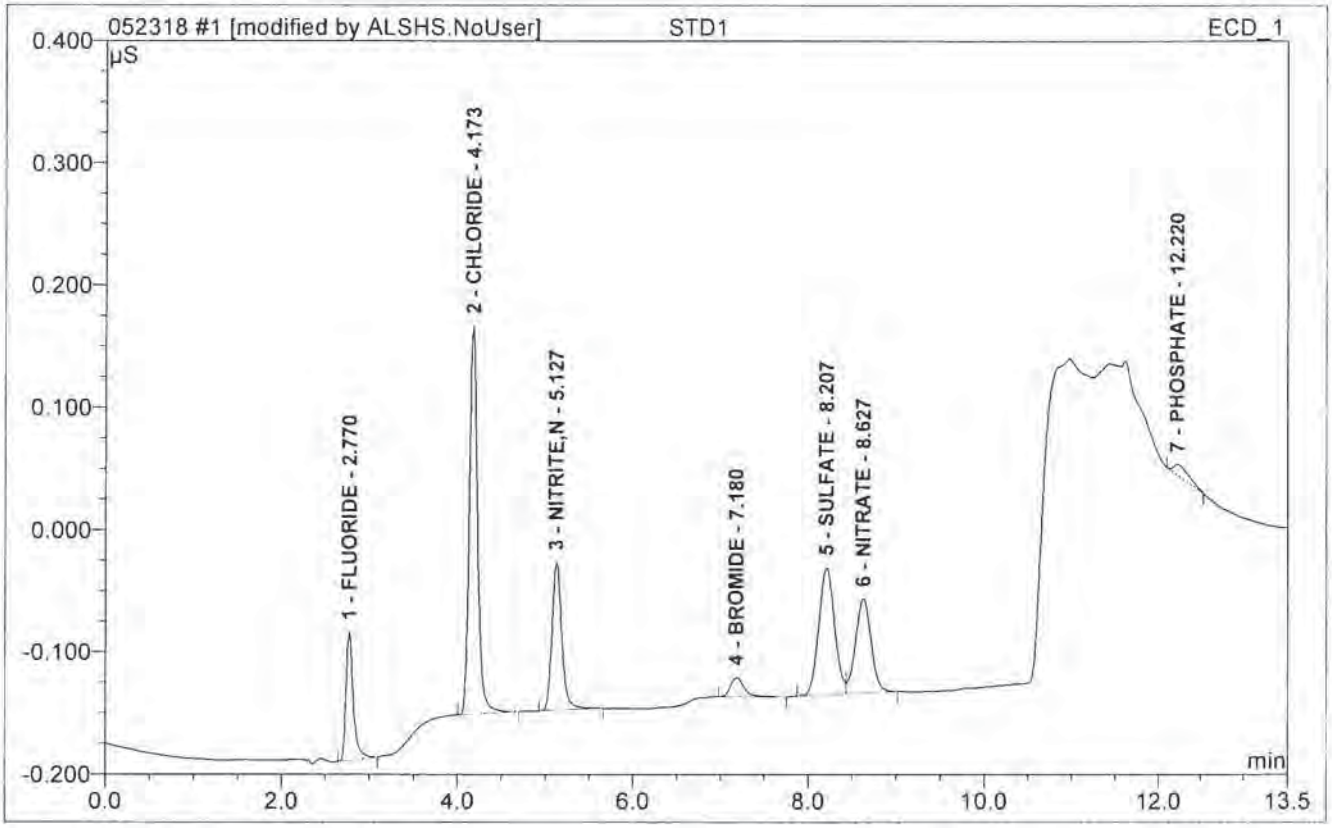
101	HS18050886-11DF500	4a3229f6-602a-11e8-b6d9-ac2a724b15e4
102	DI H2O	527ffa37-602c-11e8-b6d9-ac2a724b15e4
103	CCV	5ac44124-602e-11e8-b6d9-ac2a724b15e4
104	CCB	62b778c7-6030-11e8-b6d9-ac2a724b15e4
105	WLCSW2-052418	6aefd40b-6032-11e8-b6d9-ac2a724b15e4
106	WLCSDW2-052418	732cf3f9-6034-11e8-b6d9-ac2a724b15e4
107	DI H2O	7b7f88e4-6036-11e8-b6d9-ac2a724b15e4
108	DI H2O	01441245-6039-11e8-b6d9-ac2a724b15e4
109	CCV1	098d1ddc-603b-11e8-b6d9-ac2a724b15e4
110	CCB	11d62973-603d-11e8-b6d9-ac2a724b15e4
111	HS18051270-01DF20	1be27572-604f-11e8-b6d9-ac2a724b15e4
112	CCV	
113	CCB	

1 STD1

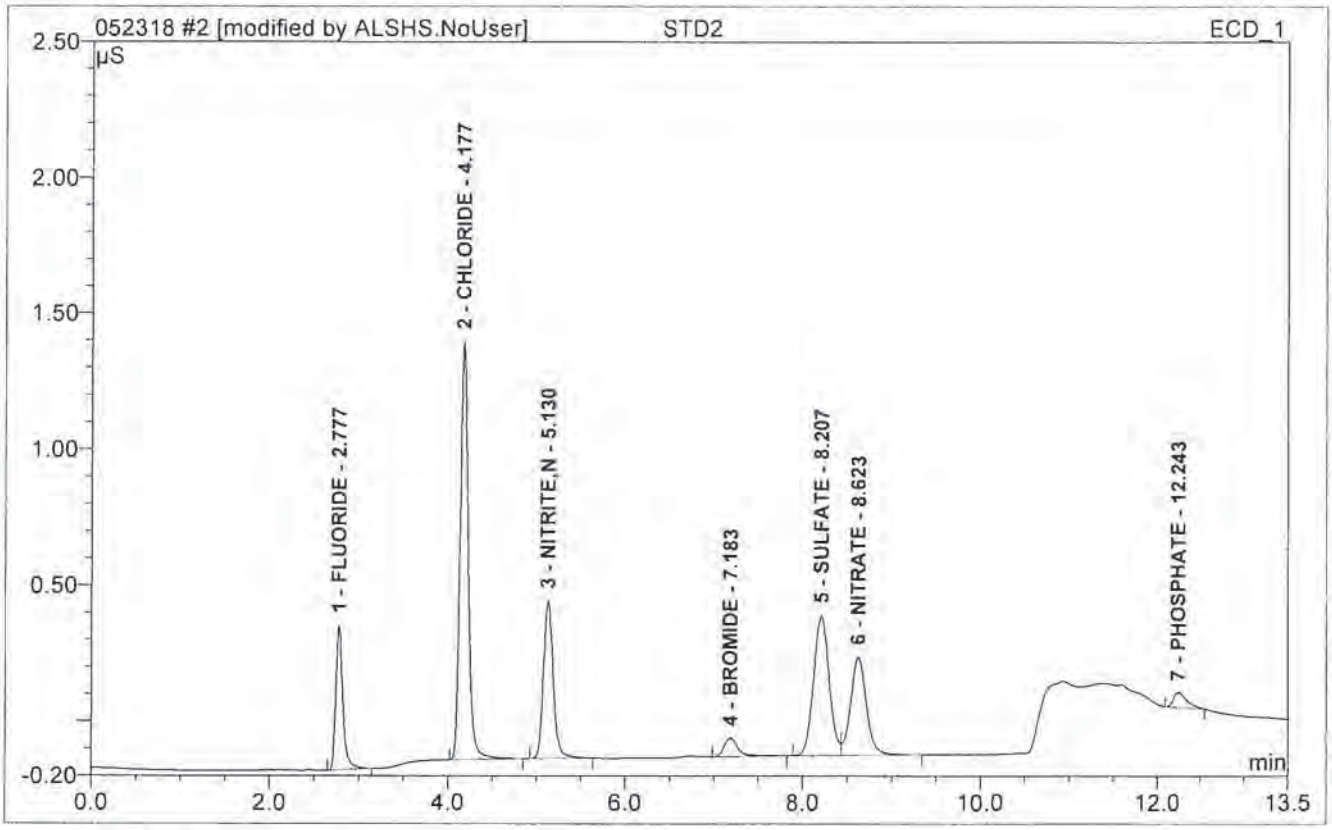
Sample Name:	**STD1**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 13:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	0.105	0.010	9.73	0.100	1.
2	4.17	CHLORIDE	0.317	0.034	33.44	0.521	1.
3	5.13	NITRITE,N	0.121	0.016	15.45	0.092	1.
4	7.18	BROMIDE	0.016	0.003	2.80	0.122	1.
5	8.21	SULFATE	0.104	0.022	21.24	0.558	1.
6	8.63	NITRATE	0.077	0.016	15.45	0.113	1.
7	12.22	PHOSPHATE	0.008	0.002	1.90	0.438	1.
Total:			0.749	0.103	100.00	1.944	

2 STD2

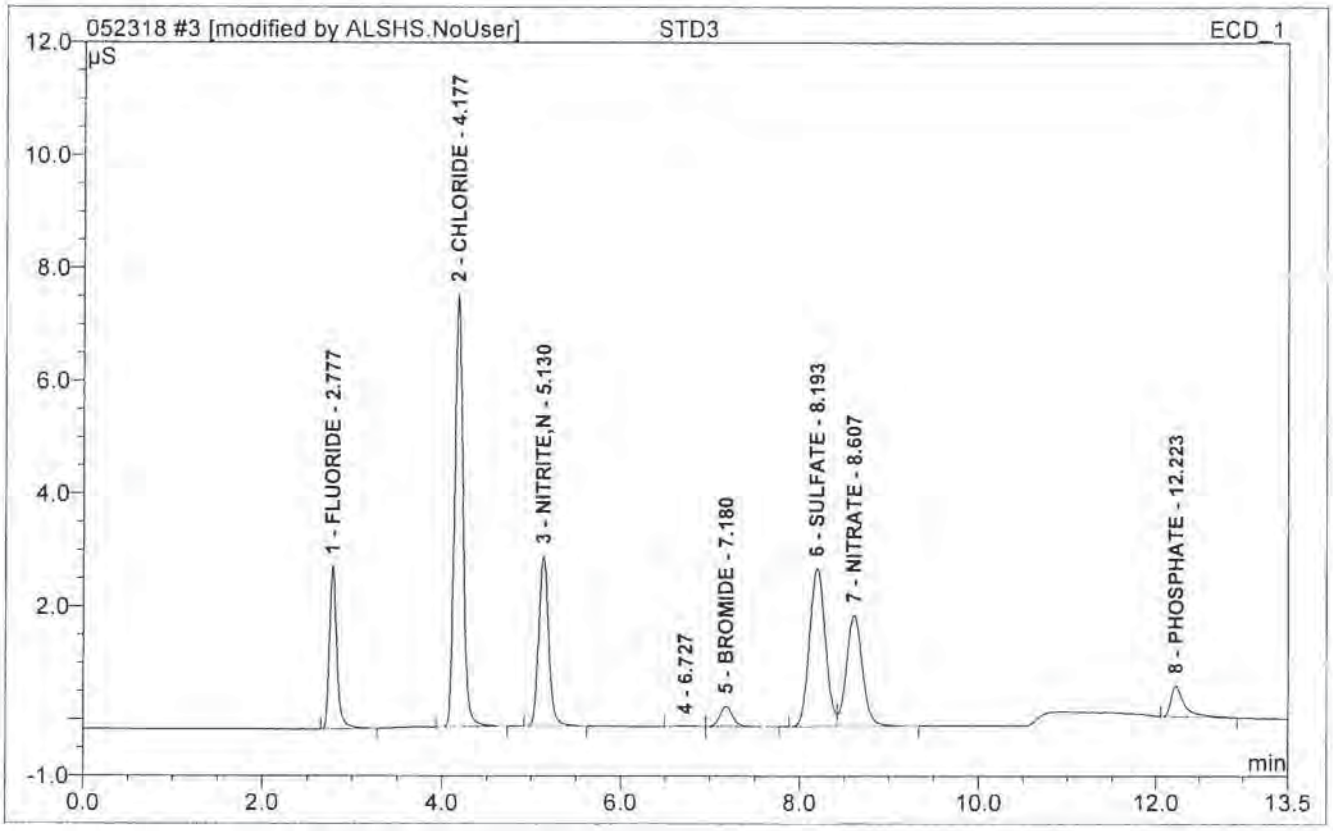
Sample Name:	**STD2**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 13:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	0.534	0.049	10.06	0.381	1.
2	4.18	CHLORIDE	1.536	0.164	33.45	1.989	1.
3	5.13	NITRITE,N	0.580	0.074	15.04	0.394	1.
4	7.18	BROMIDE	0.068	0.013	2.57	0.391	1.
5	8.21	SULFATE	0.515	0.105	21.54	1.884	1.
6	8.62	NITRATE	0.360	0.075	15.27	0.377	1.
7	12.24	PHOSPHATE	0.056	0.010	2.07	0.544	1.
Total:			3.649	0.489	100.00	5.961	

3 STD3

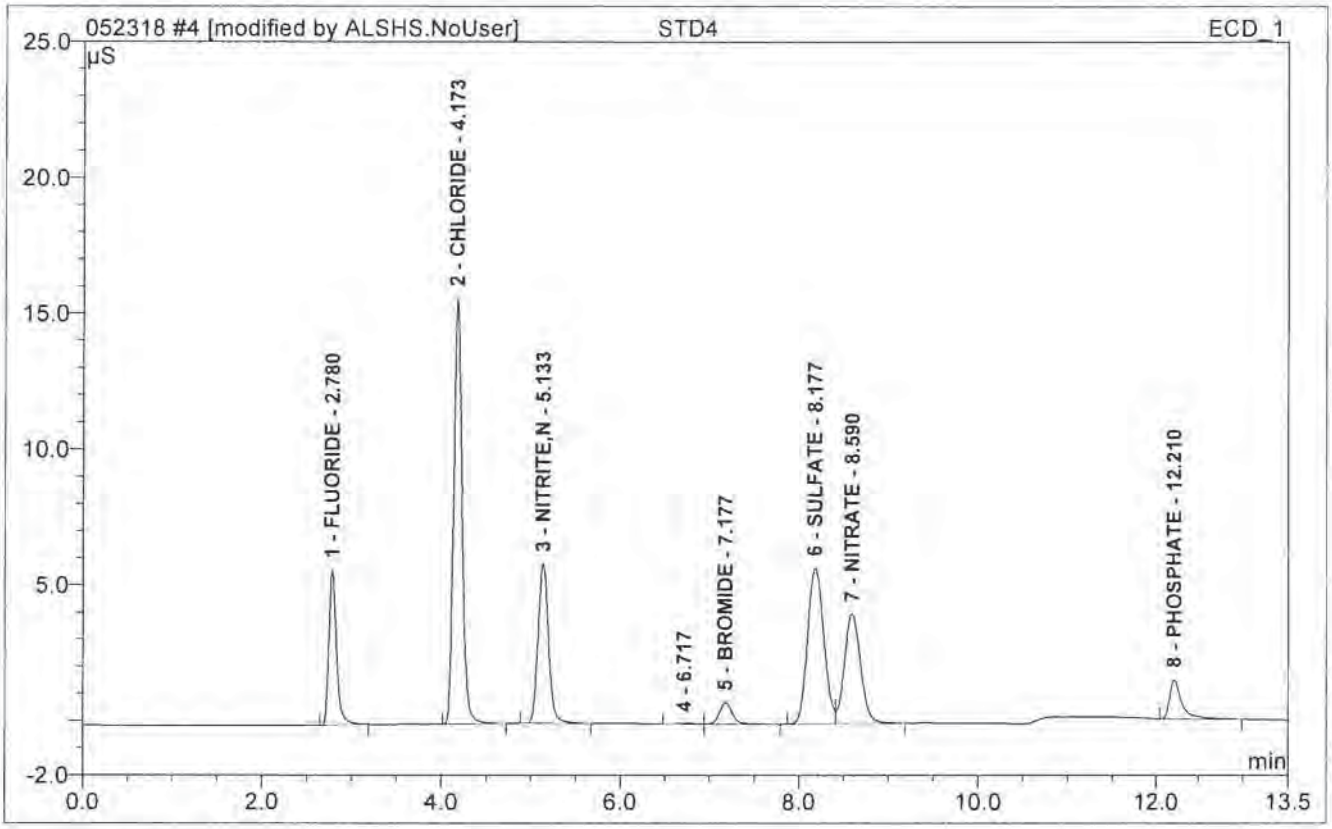
Sample Name:	**STD3**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 13:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	2.881	0.275	10.41	1.999	1.
2	4.18	CHLORIDE	7.667	0.832	31.46	9.575	1.
3	5.13	NITRITE,N	3.010	0.392	14.82	2.060	1.
5	7.18	BROMIDE	0.358	0.059	2.24	1.688	1.
6	8.19	SULFATE	2.797	0.578	21.84	9.384	1.
7	8.61	NITRATE	1.972	0.405	15.32	1.863	1.
8	12.22	PHOSPHATE	0.550	0.101	3.82	1.731	1.
Total:			19.234	2.642	99.91	28.299	

4 STD4

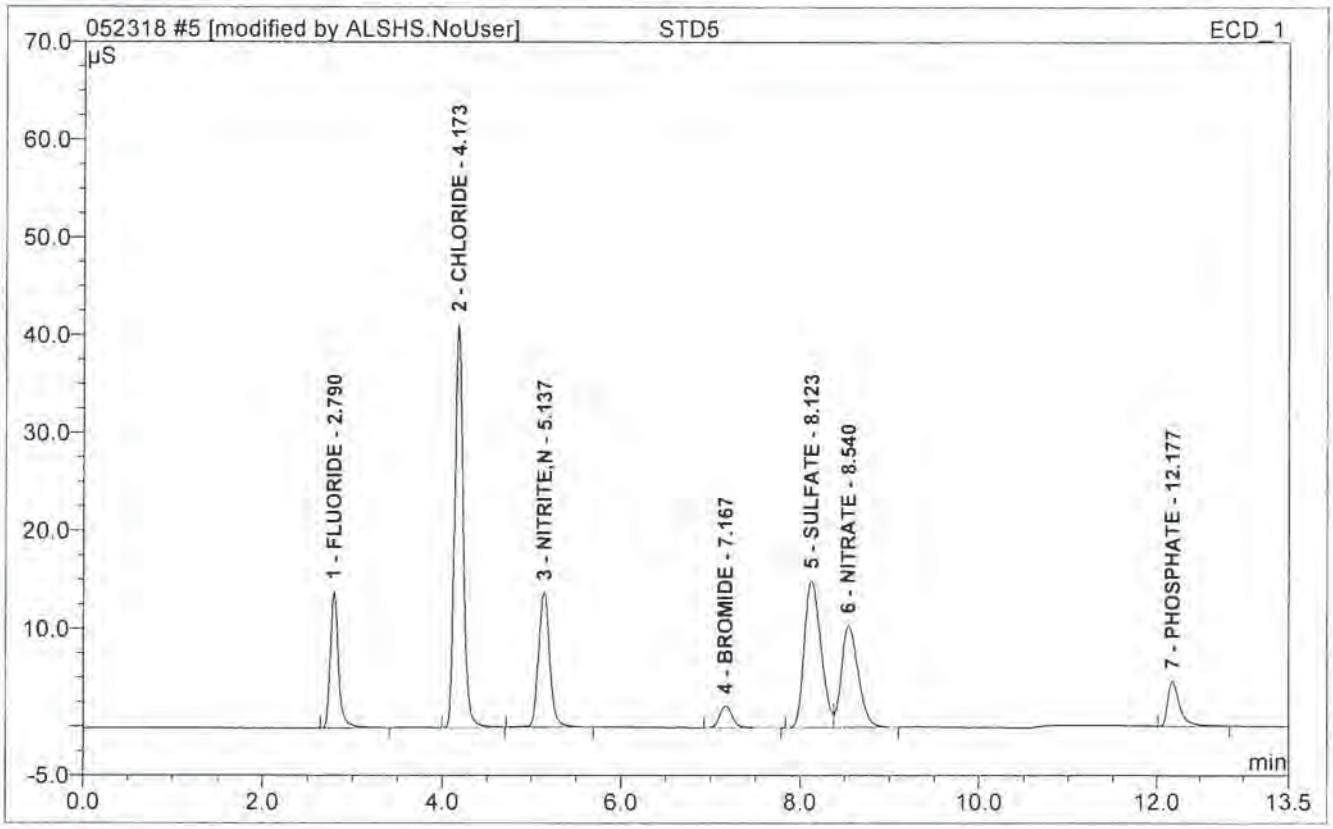
Sample Name:	**STD4**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 14:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.716	0.561	10.17	4.043	1.
2	4.17	CHLORIDE	15.662	1.714	31.10	19.593	1.
3	5.13	NITRITE,N	5.891	0.798	14.49	4.187	1.
5	7.18	BROMIDE	0.787	0.129	2.34	3.626	1.
6	8.18	SULFATE	5.753	1.209	21.94	19.413	1.
7	8.59	NITRATE	4.059	0.851	15.44	3.866	1.
8	12.21	PHOSPHATE	1.441	0.245	4.44	3.606	1.
Total:			39.309	5.507	99.92	58.334	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**10.0**
Vial Number:	**5**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 14:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.79	FLUORIDE	13.977	1.484	10.07	10.657	1.
2	4.17	CHLORIDE	41.234	4.552	30.87	51.811	1.
3	5.14	NITRITE,N	13.797	2.034	13.79	10.652	1.
4	7.17	BROMIDE	2.258	0.369	2.50	10.267	1.
5	8.12	SULFATE	15.028	3.268	22.16	52.102	1.
6	8.54	NITRATE	10.425	2.293	15.55	10.352	1.
7	12.18	PHOSPHATE	4.602	0.746	5.06	10.160	1.
Total:			101.321	14.745	100.00	156.002	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
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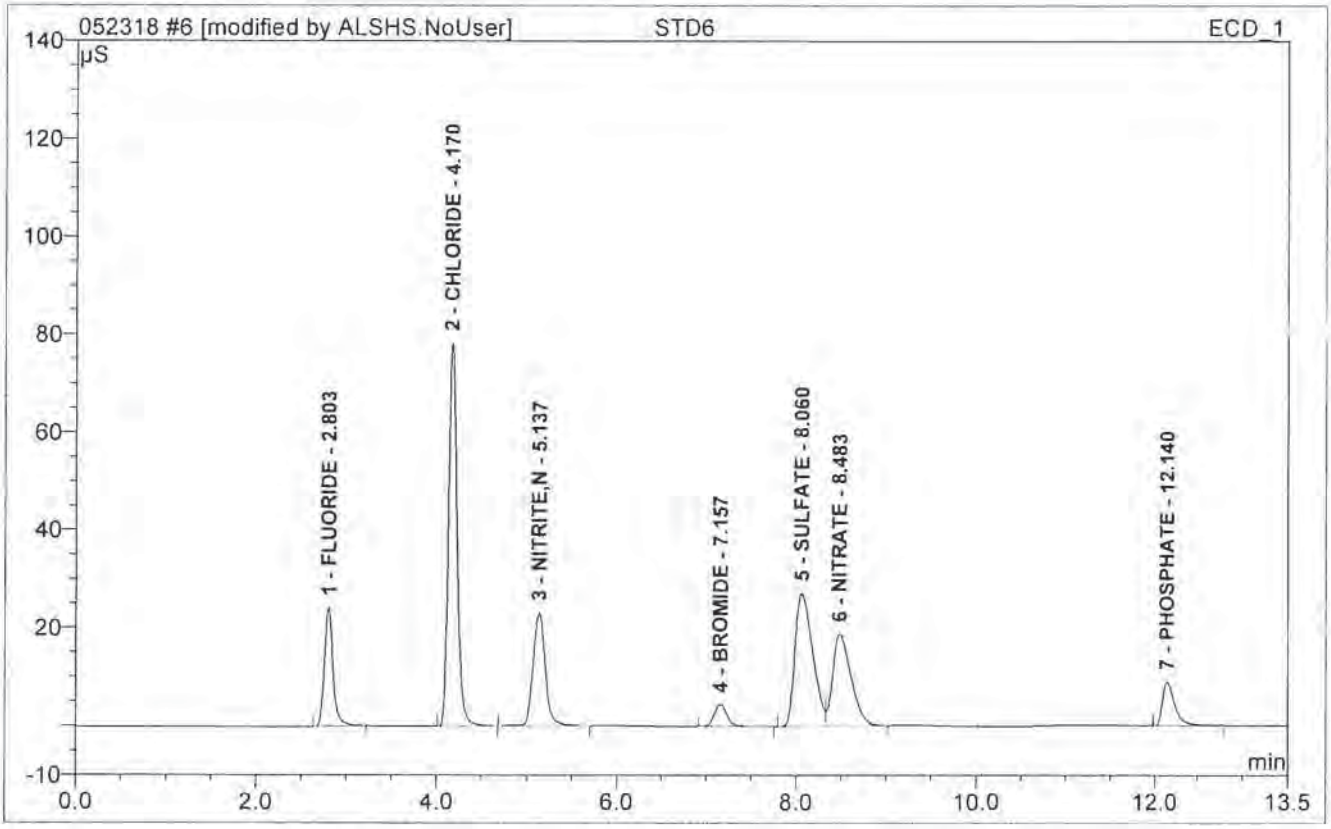
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.80	FLUORIDE	24.122	2.694	9.64	19.319	1.
2	4.17	CHLORIDE	78.319	8.708	31.17	99.011	1.
3	5.14	NITRITE,N	23.018	3.651	13.07	19.116	1.
4	7.16	BROMIDE	4.472	0.734	2.63	20.405	1.
5	8.06	SULFATE	27.203	6.231	22.30	99.159	1.
6	8.48	NITRATE	18.761	4.423	15.83	19.929	1.
7	12.14	PHOSPHATE	8.892	1.501	5.37	20.021	1.
Total:			184.787	27.943	100.00	296.960	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
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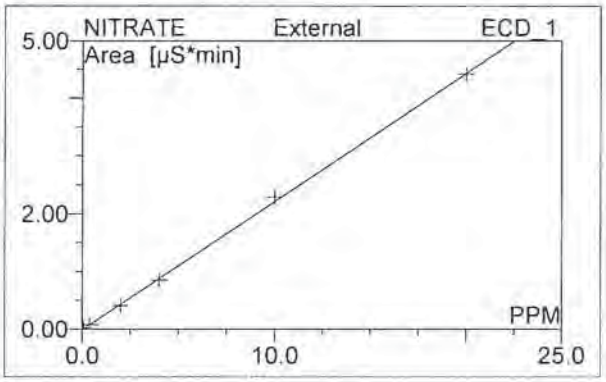
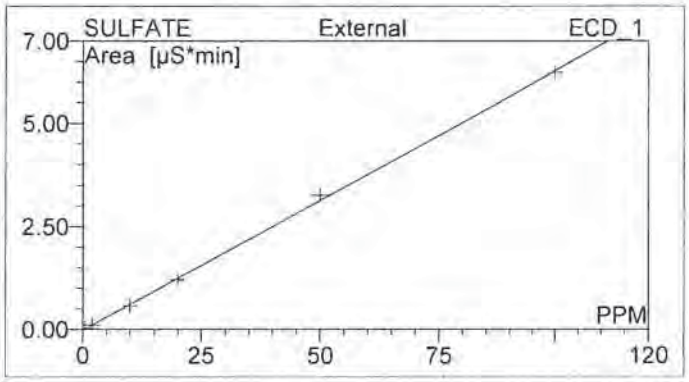
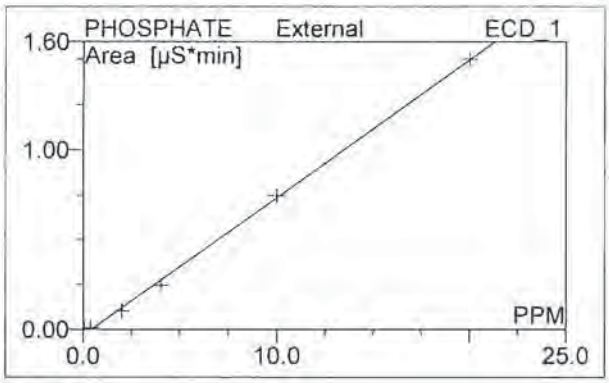
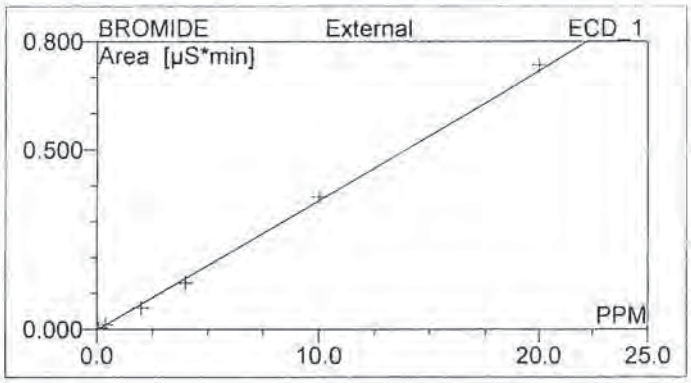
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**









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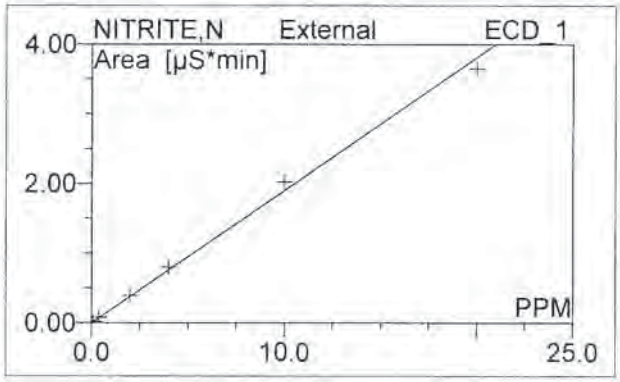
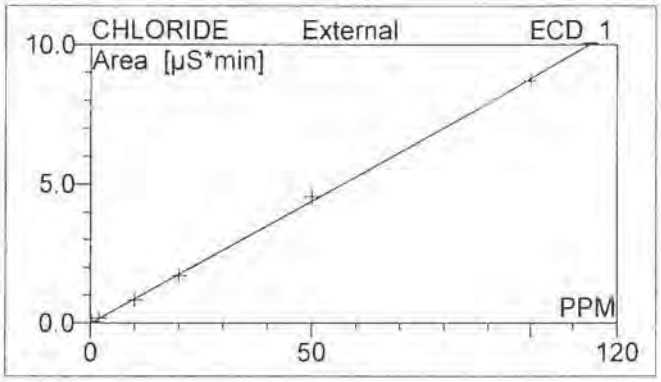
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.80	FLUORIDE	XLOff	6	99.800	-0.0040	0.1397	0.000
2	4.17	CHLORIDE	XLOff	6	99.939	-0.0114	0.0881	0.000
3	5.14	NITRITE,N	XLOff	6	99.726	-0.0016	0.1911	0.000
4	7.16	BROMIDE	XLOff	6	99.692	-0.0015	0.0361	0.000
5	8.06	SULFATE	XLOff	6	99.903	-0.0132	0.0630	0.000
6	8.48	NITRATE	XLOff	6	99.913	-0.0092	0.2224	0.000
7	12.14	PHOSPHATE	LOff	6	99.870	-0.0316	0.0766	0.000
Average:					99.8348	-0.0104	0.1167	0.0000

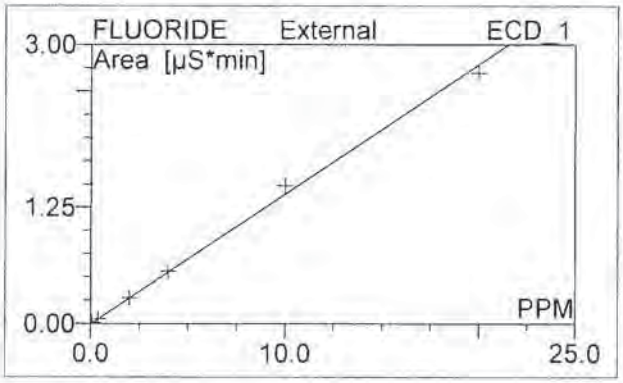
No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.80	FLUORIDE	XLOff	6	99.900	7.160	0.012	20.786
2	4.17	CHLORIDE	XLOff	6	99.970	11.355	0.021	11.367
3	5.14	NITRITE,N	XLOff	6	99.863	5.233	0.019	23.207
4	7.16	BROMIDE	XLOff	6	99.846	27.732	0.004	26.659
5	8.06	SULFATE	XLOff	6	99.952	15.881	0.019	14.933
6	8.48	NITRATE	XLOff	6	99.956	4.497	0.013	14.121
7	12.14	PHOSPHATE	LOff	6	99.935	13.062	0.024	5.493
Average:					99.9174	12.1314	0.0160	16.6523

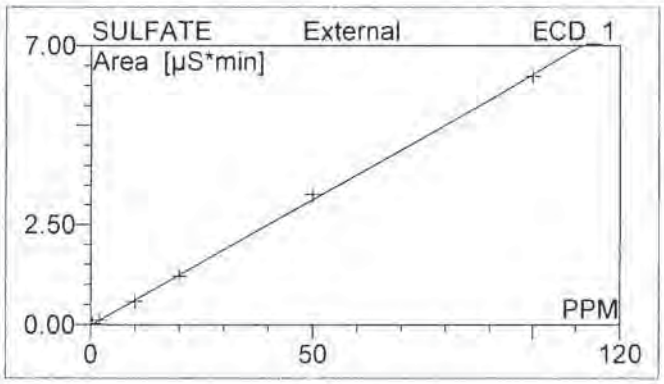
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.000**
Recording Time:	**4/26/2018 14:36**	*Sample Weight/Volume:*	**1.000**
Run Time (min):	**13.50**	*Final Volume:*	**1.000**









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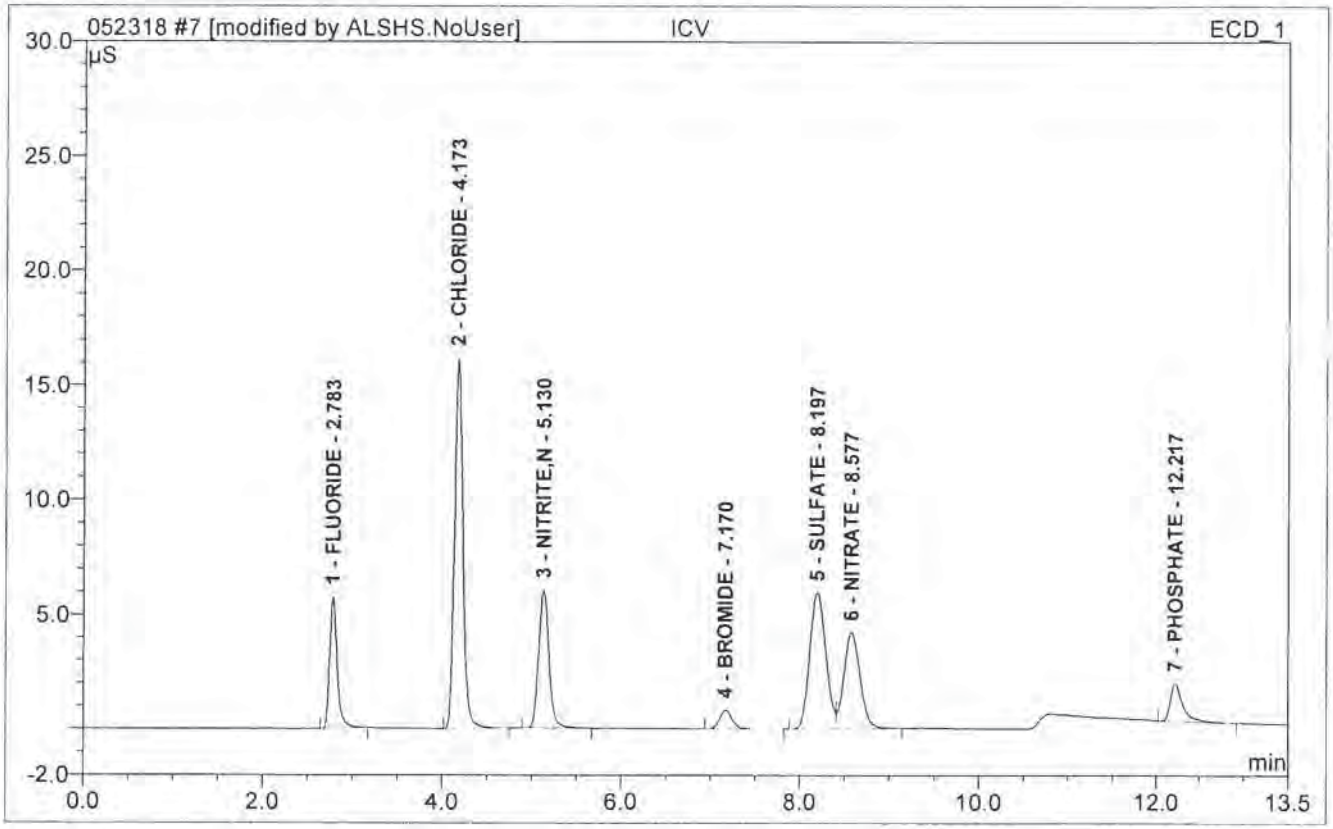
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.80	FLUORIDE	XLOff	6	99.7999	-0.0040	0.1397	0.000
2	4.17	CHLORIDE	XLOff	6	99.9393	-0.0114	0.0881	0.000
3	5.14	NITRITE,N	XLOff	6	99.7262	-0.0016	0.1911	0.000
4	7.16	BROMIDE	XLOff	6	99.6924	-0.0015	0.0361	0.000
5	8.06	SULFATE	XLOff	6	99.9031	-0.0132	0.0630	0.000
6	8.48	NITRATE	XLOff	6	99.9130	-0.0092	0.2224	0.000
7	12.14	PHOSPHATE	LOff	6	99.8700	-0.0316	0.0766	0.000
Average:					99.8348	-0.0104	0.1167	0.000

No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.80	FLUORIDE	XLOff	6	99.900	7.160	0.012	20.786
2	4.17	CHLORIDE	XLOff	6	99.970	11.355	0.021	11.367
3	5.14	NITRITE,N	XLOff	6	99.863	5.233	0.019	23.207
4	7.16	BROMIDE	XLOff	6	99.846	27.732	0.004	26.659
5	8.06	SULFATE	XLOff	6	99.952	15.881	0.019	14.933
6	8.48	NITRATE	XLOff	6	99.956	4.497	0.013	14.121
7	12.14	PHOSPHATE	LOff	6	99.935	13.062	0.024	5.493
Average:					99.9174	12.131	0.016	16.652

7 ICV

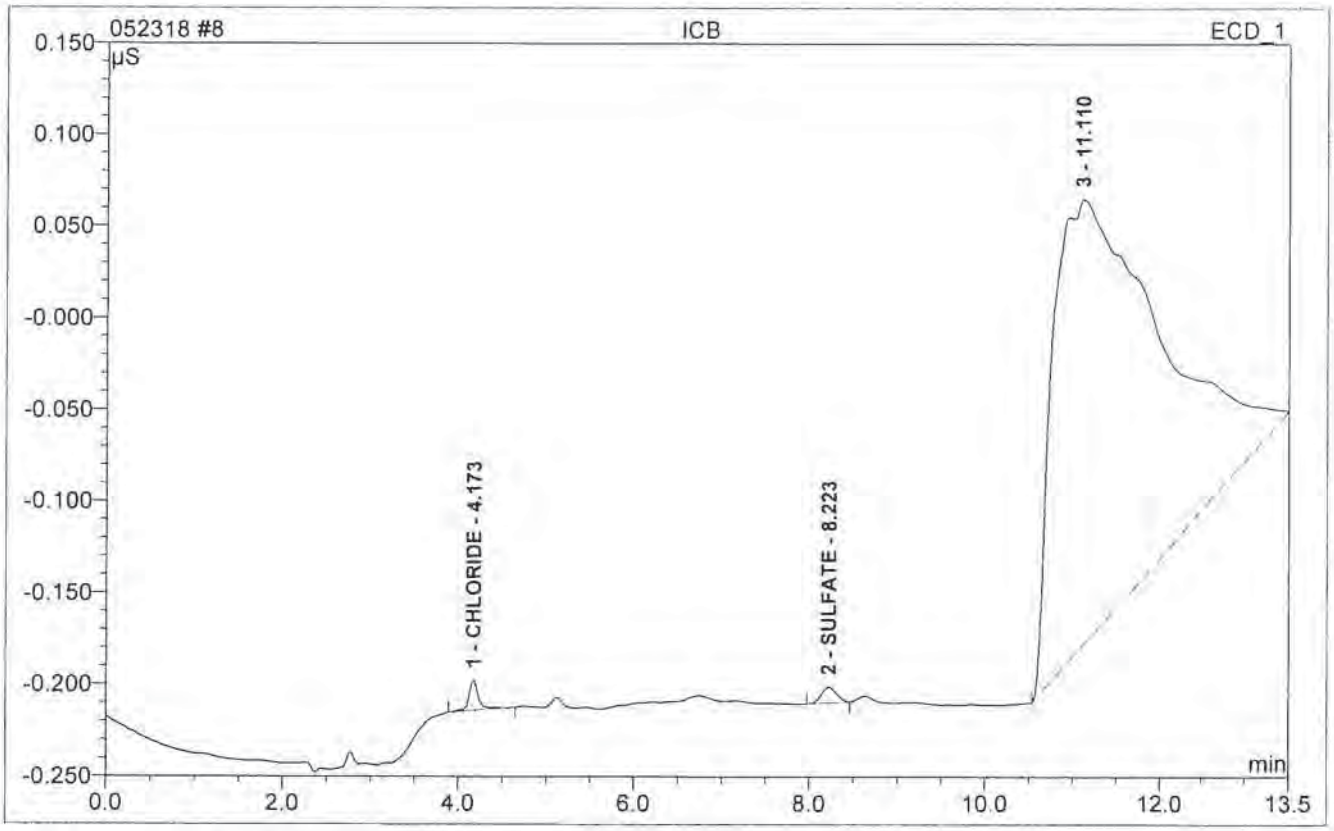
Sample Name:	**ICV**	*Injection Volume:*	**10.0**
Vial Number:	**7**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 15:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	5.746	0.560	9.87	4.039	1.
2	4.17	CHLORIDE	16.161	1.756	30.96	20.069	1.
3	5.13	NITRITE,N	6.016	0.813	14.33	4.261	1.
4	7.17	BROMIDE	0.819	0.134	2.36	3.749	1.
5	8.20	SULFATE	5.960	1.248	22.01	20.035	1.
6	8.58	NITRATE	4.210	0.883	15.57	4.012	1.
7	12.22	PHOSPHATE	1.654	0.279	4.91	4.053	1.
Total:			40.567	5.673	100.00	60.220	

8 ICB

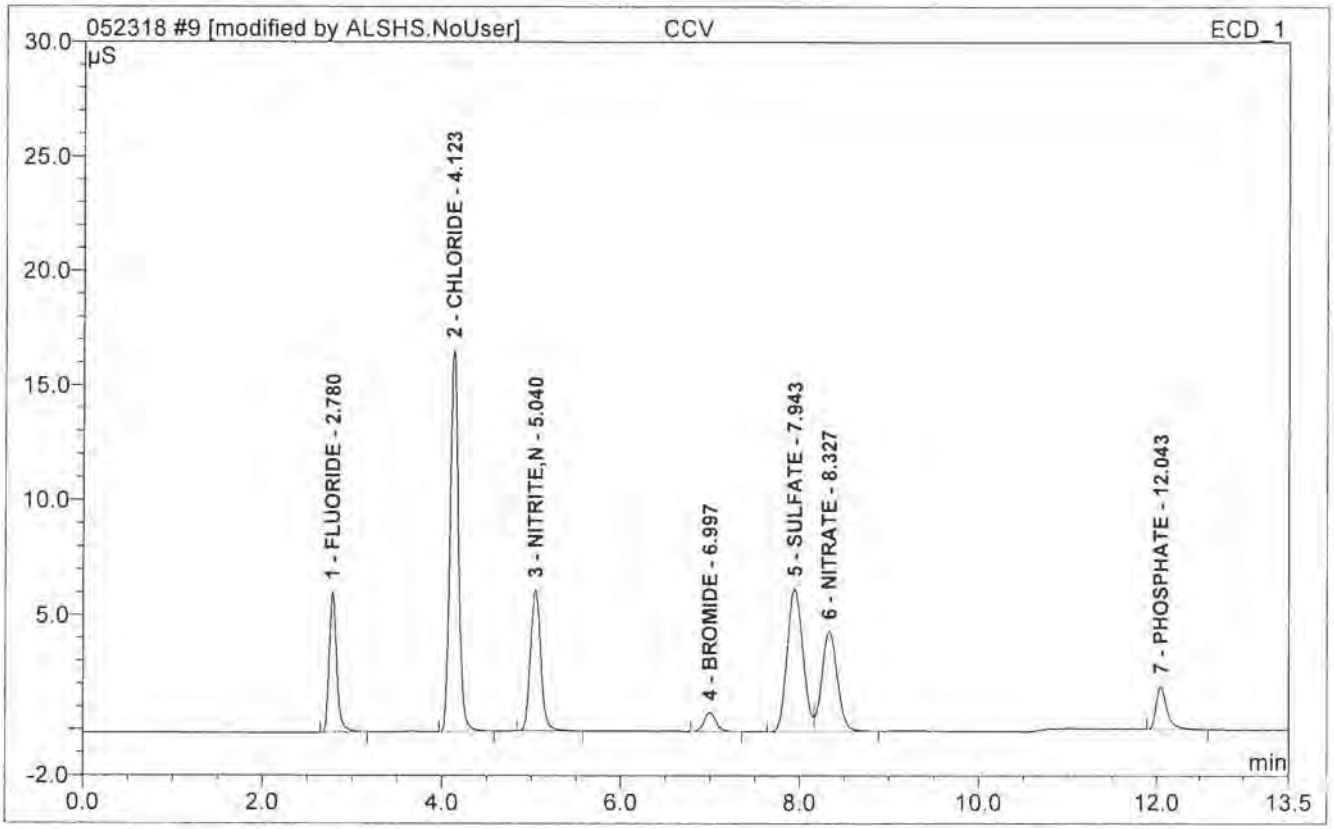
Sample Name:	**ICB**	*Injection Volume:*	**10.0**
Vial Number:	**8**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**4/26/2018 16:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.17	CHLORIDE	0.016	0.002	0.60	0.153	1.
2	8.22	SULFATE	0.008	0.002	0.50	0.237	1.
Total:			0.025	0.004	1.10	0.391	

9 CCV

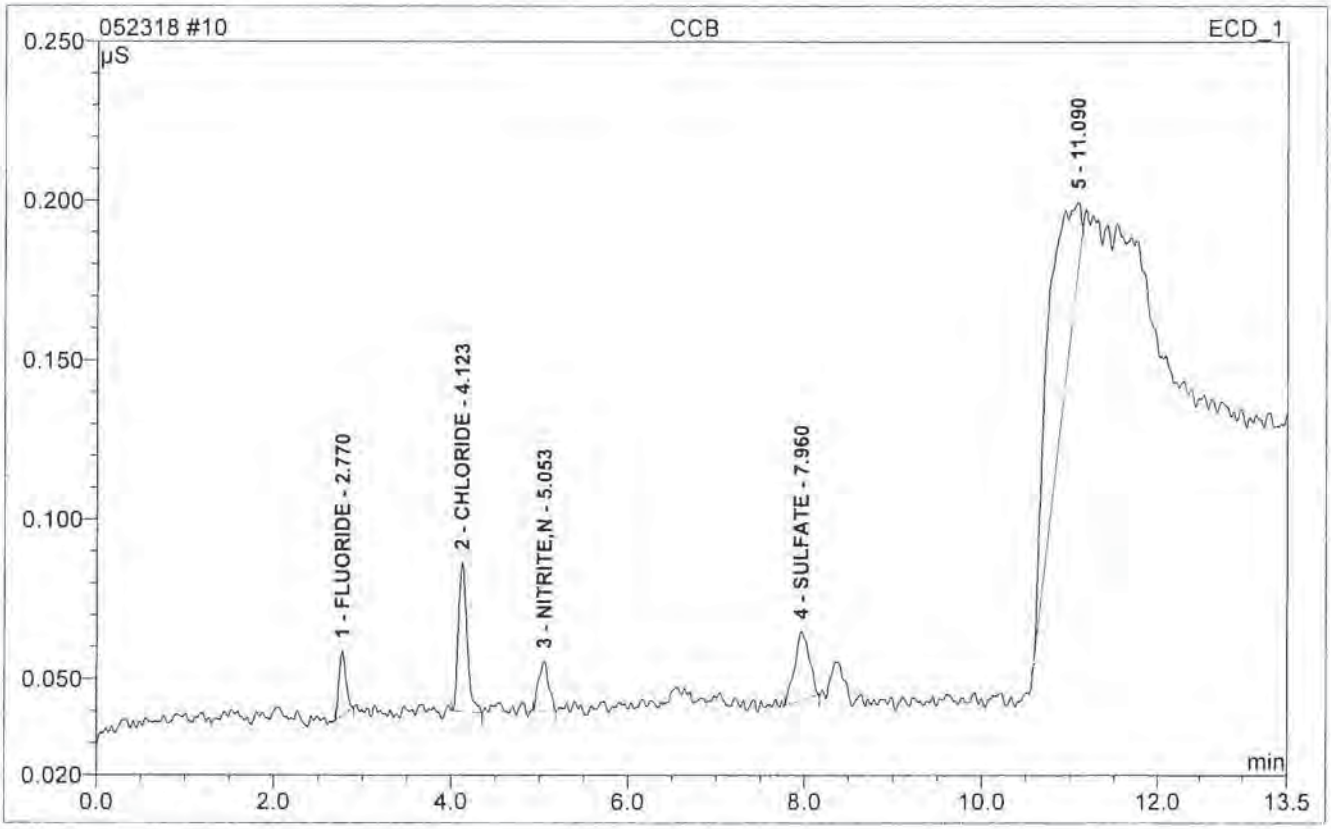
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 19:18**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	6.149	0.593	10.26	4.278	1.
2	4.12	CHLORIDE	16.619	1.794	31.03	20.504	1.
3	5.04	NITRITE,N	6.172	0.828	14.31	4.340	1.
4	7.00	BROMIDE	0.835	0.131	2.26	3.668	1.
5	7.94	SULFATE	6.255	1.278	22.10	20.503	1.
6	8.33	NITRATE	4.381	0.884	15.29	4.016	1.
7	12.04	PHOSPHATE	1.894	0.275	4.75	4.003	1.
Total:			42.305	5.783	100.00	61.311	

10 CCB

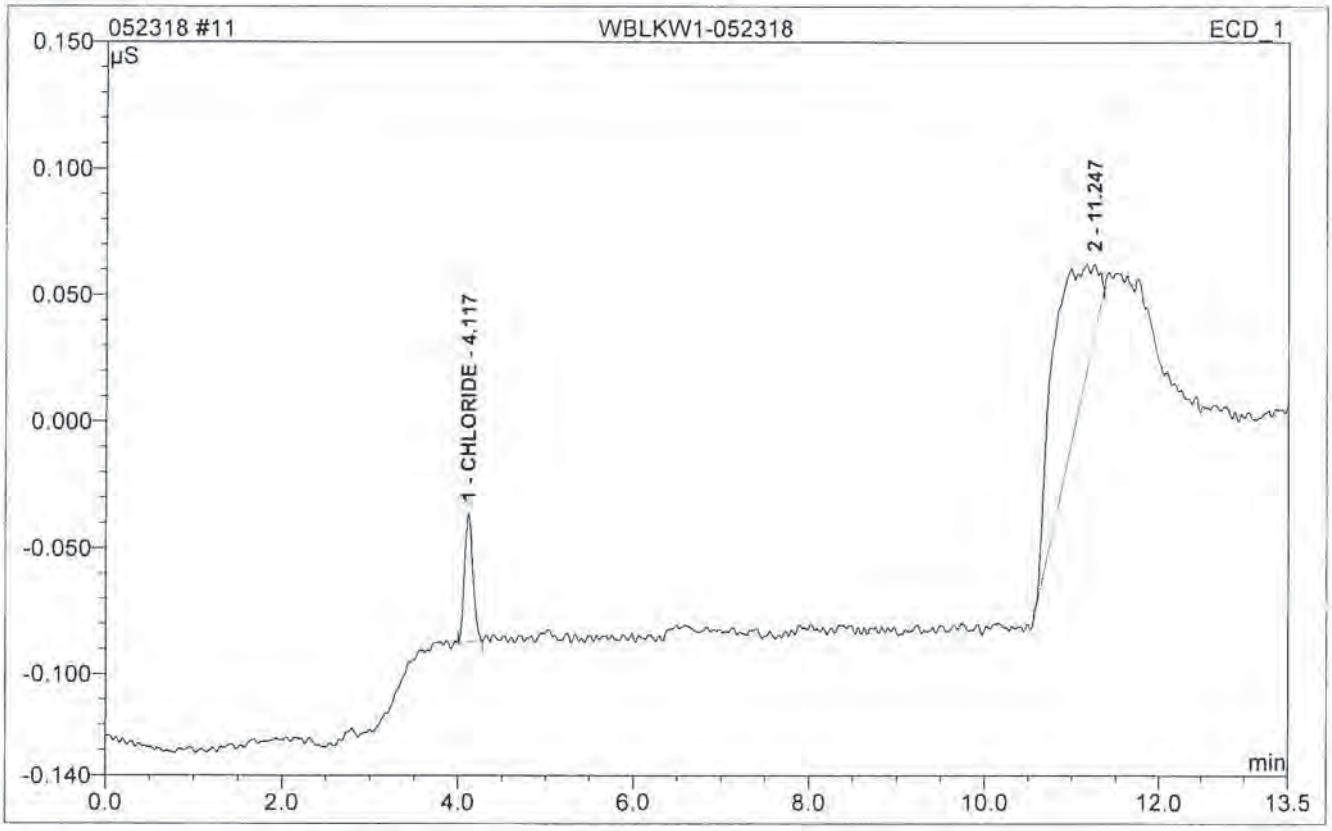
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 19:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	0.020	0.002	4.65	0.041	1.
2	4.12	CHLORIDE	0.047	0.005	13.84	0.190	1.
3	5.05	NITRITE,N	0.016	0.002	5.39	0.019	1.
4	7.96	SULFATE	0.022	0.004	10.76	0.275	1.
Total:			0.104	0.013	34.64	0.525	

11 WBLKW1-052318

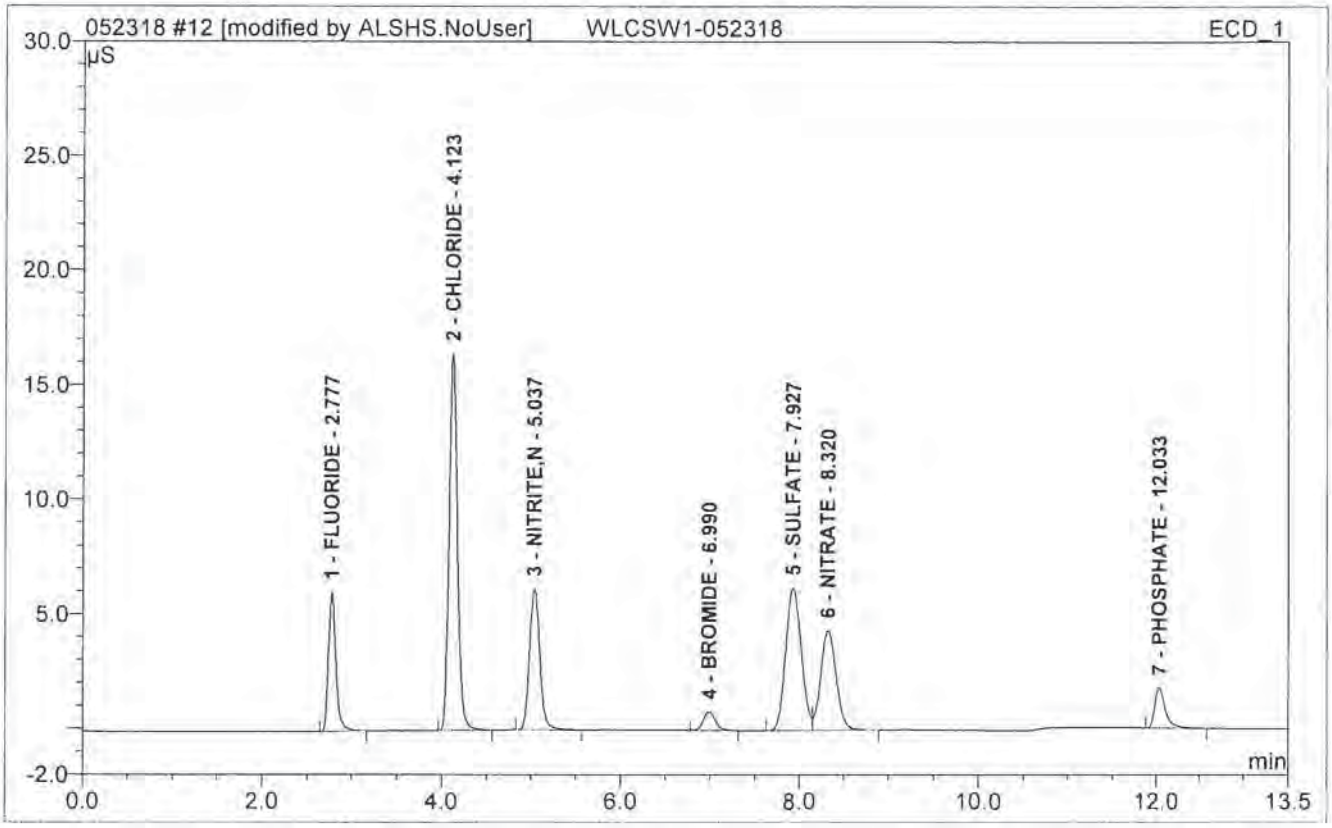
Sample Name:	**WBLKW1-052318**	*Injection Volume:*	**10.0**
Vial Number:	**5**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 19:50**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.12	CHLORIDE	0.051	0.006	13.32	0.194	1.
Total:			0.051	0.006	13.32	0.194	

12 WLCSW1-052318

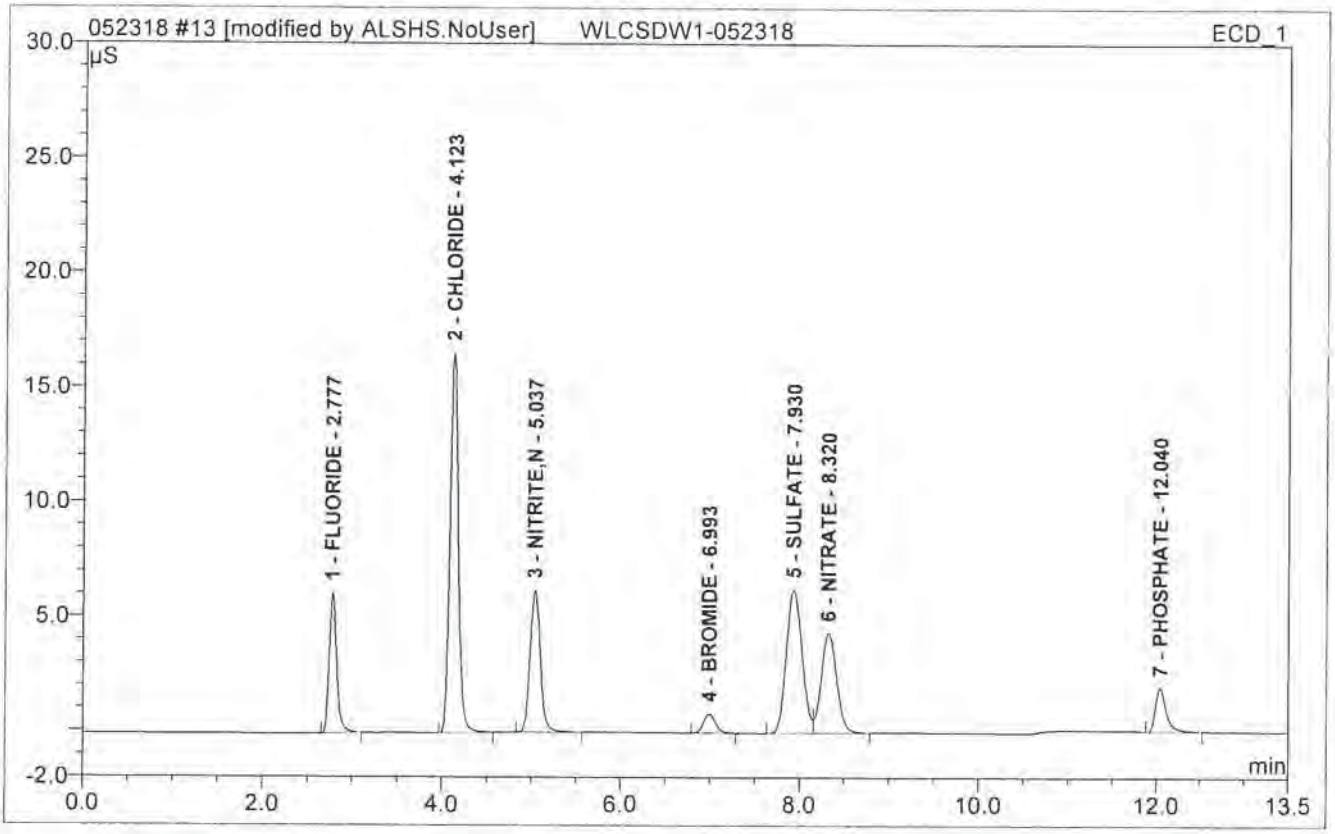
Sample Name:	**WLCSW1-052318**	*Injection Volume:*	**10.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 20:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	6.072	0.587	10.25	4.228	1.
2	4.12	CHLORIDE	16.436	1.773	31.00	20.266	1.
3	5.04	NITRITE,N	6.159	0.824	14.41	4.321	1.
4	6.99	BROMIDE	0.830	0.130	2.27	3.639	1.
5	7.93	SULFATE	6.217	1.269	22.19	20.366	1.
6	8.32	NITRATE	4.366	0.880	15.38	3.998	1.
7	12.03	PHOSPHATE	1.782	0.257	4.50	3.772	1.
Total:			41.861	5.720	100.00	60.591	

13 WLCSDW1-052318

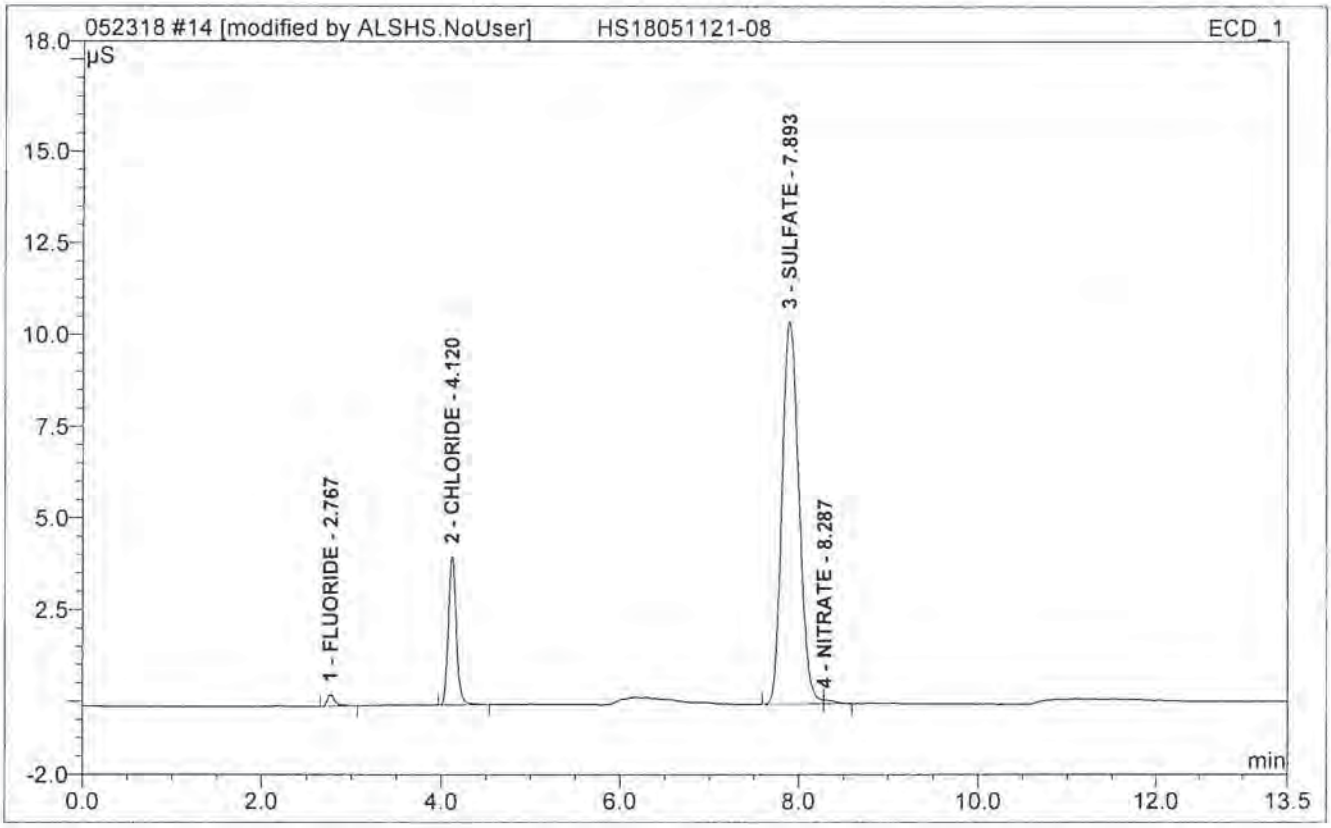
Sample Name:	**WLCSDW1-052318**	*Injection Volume:*	**10.0**
Vial Number:	**7**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 20:19**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	6.130	0.592	10.24	4.267	1.
2	4.12	CHLORIDE	16.557	1.797	31.09	20.529	1.
3	5.04	NITRITE,N	6.170	0.828	14.32	4.340	1.
4	6.99	BROMIDE	0.832	0.130	2.24	3.635	1.
5	7.93	SULFATE	6.265	1.280	22.15	20.535	1.
6	8.32	NITRATE	4.379	0.879	15.22	3.995	1.
7	12.04	PHOSPHATE	1.907	0.274	4.74	3.991	1.
Total:			42.240	5.779	100.00	61.292	

14 HS18051121-08

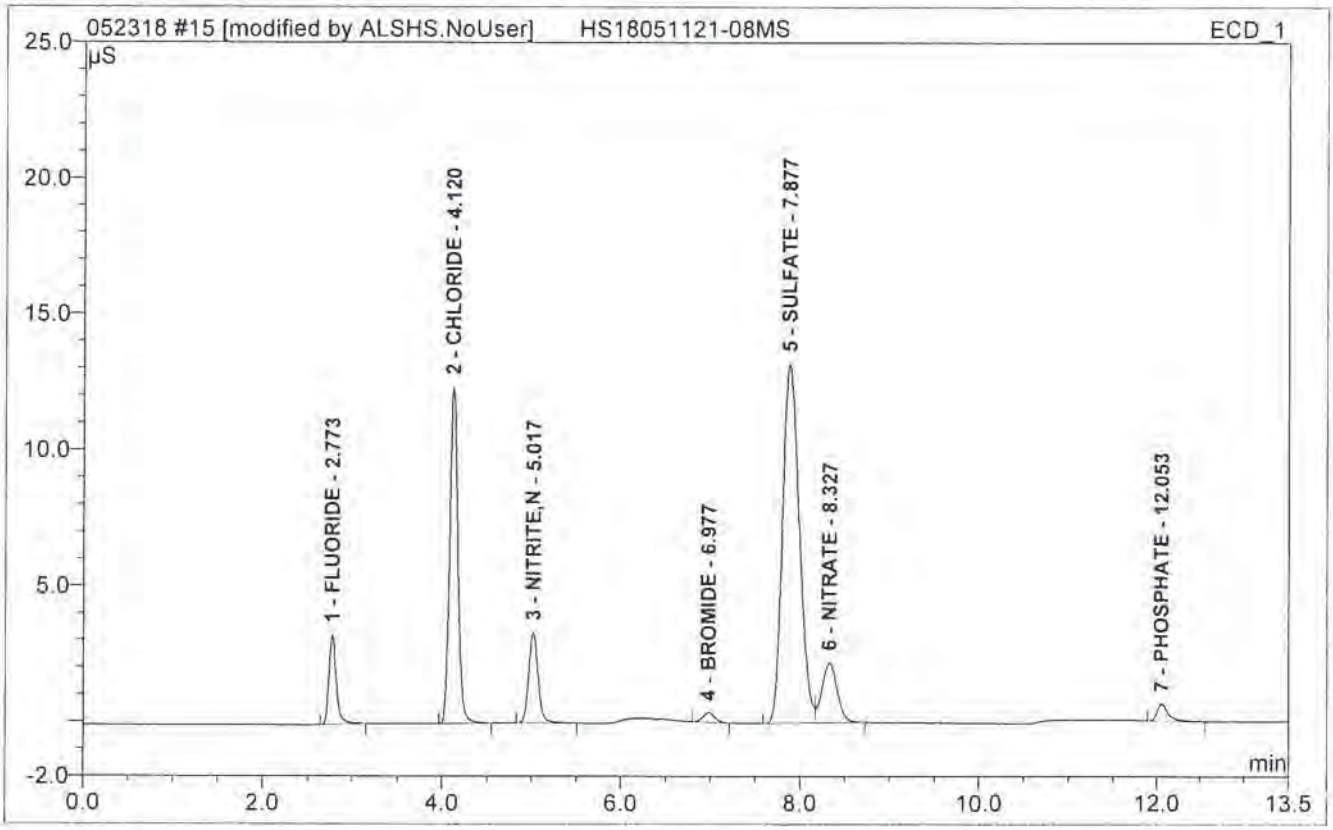
Sample Name:	**HS18051121-08**	*Injection Volume:*	**10.0**
Vial Number:	**11**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 20:34**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	0.333	0.032	1.15	0.255	1.
2	4.12	CHLORIDE	4.053	0.417	15.20	4.869	1.
3	7.89	SULFATE	10.462	2.284	83.17	36.475	1.
4	8.29	NITRATE	0.095	0.013	0.47	0.099	1.
Total:			14.942	2.745	100.00	41.698	

15 HS18051121-08MS

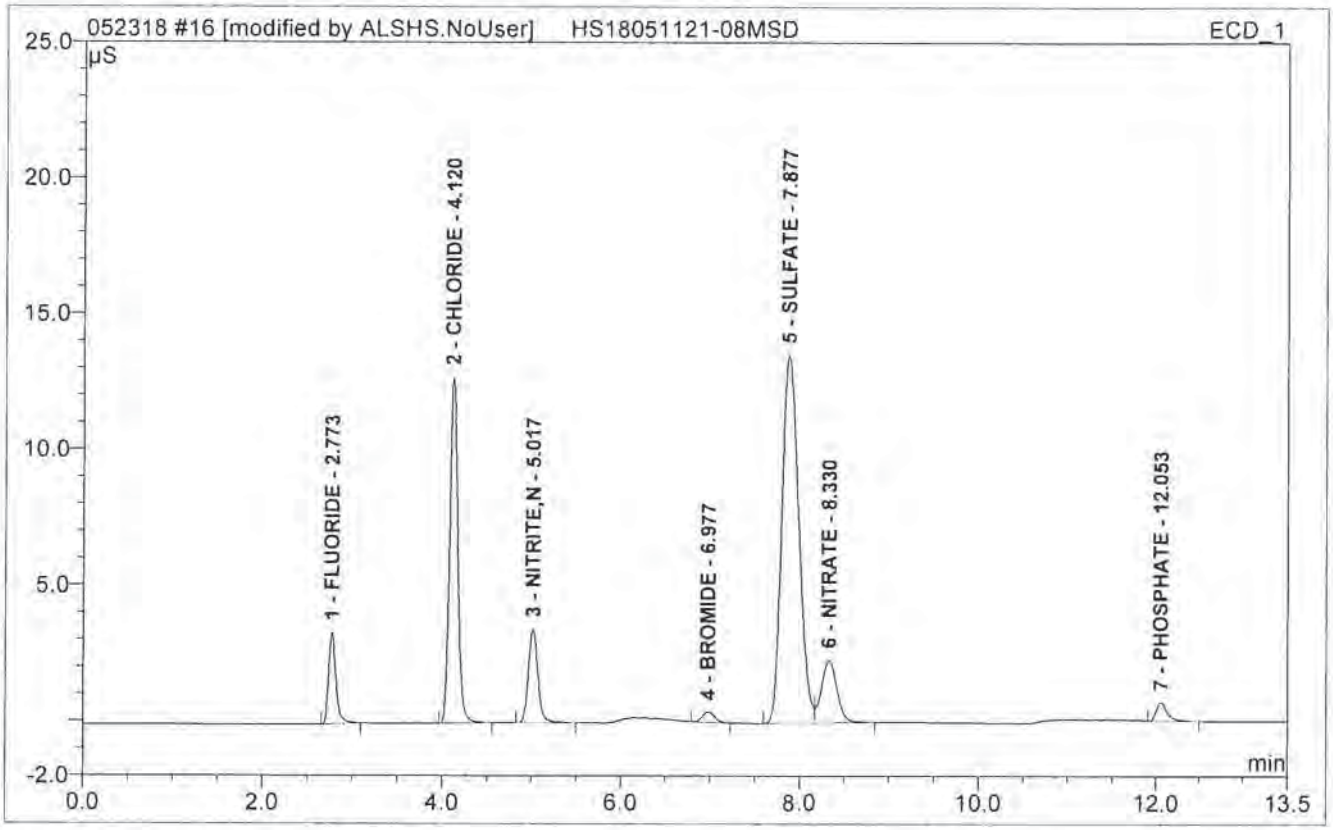
Sample Name:	**HS18051121-08MS**	*Injection Volume:*	**10.0**
Vial Number:	**12**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 20:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	3.302	0.309	5.61	2.238	1.
2	4.12	CHLORIDE	12.376	1.300	23.64	14.896	1.
3	5.02	NITRITE,N	3.334	0.408	7.41	2.142	1.
4	6.98	BROMIDE	0.367	0.057	1.03	1.612	1.
5	7.88	SULFATE	13.224	2.892	52.56	46.131	1.
6	8.33	NITRATE	2.217	0.441	8.02	2.025	1.
7	12.05	PHOSPHATE	0.638	0.096	1.74	1.663	1.
Total:			35.458	5.502	100.00	70.706	

16 HS18051121-08MSD

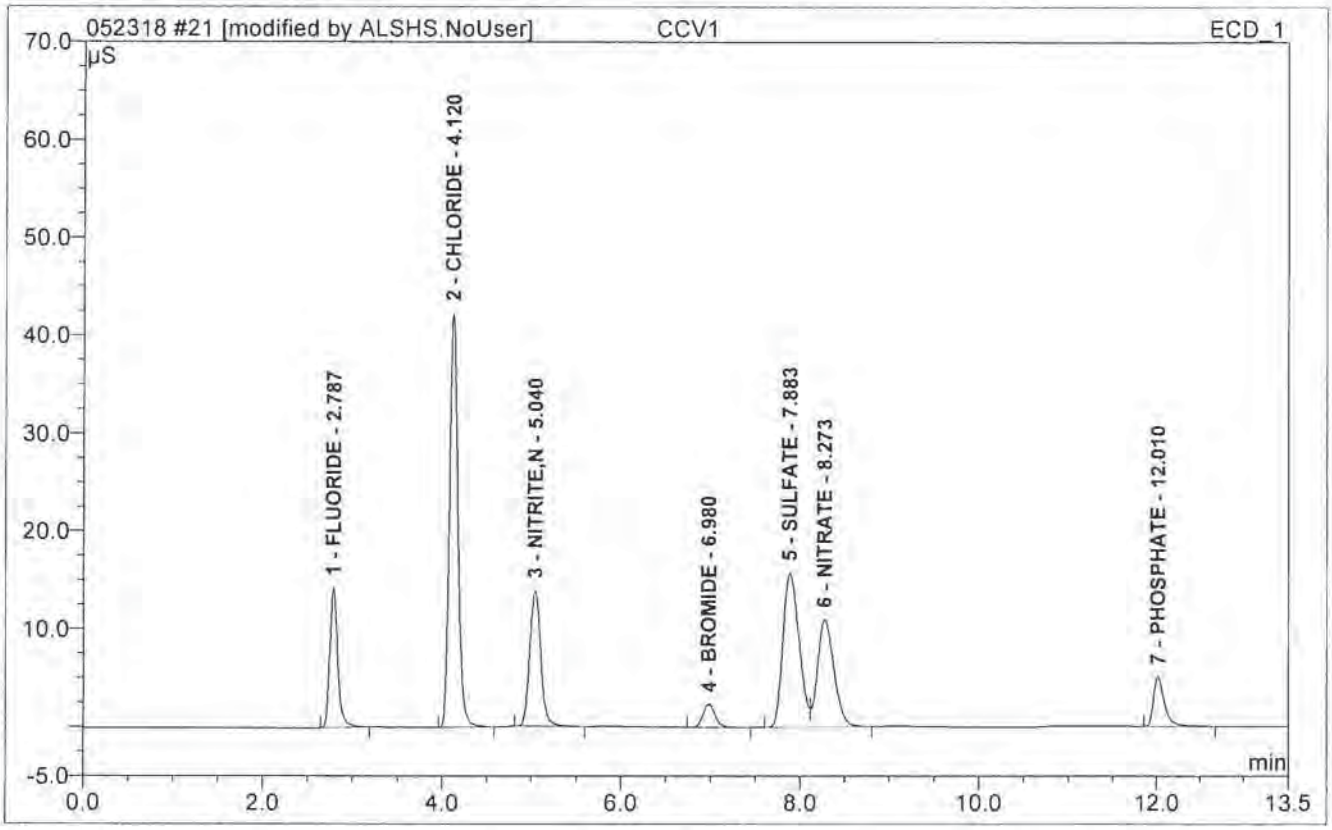
Sample Name:	**HS18051121-08MSD**	*Injection Volume:*	**10.0**
Vial Number:	**13**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 21:03**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.77	FLUORIDE	3.390	0.319	5.61	2.309	1.
2	4.12	CHLORIDE	12.738	1.340	23.60	15.346	1.
3	5.02	NITRITE,N	3.442	0.422	7.44	2.219	1.
4	6.98	BROMIDE	0.384	0.059	1.05	1.689	1.
5	7.88	SULFATE	13.576	2.972	52.33	47.401	1.
6	8.33	NITRATE	2.308	0.464	8.17	2.126	1.
7	12.05	PHOSPHATE	0.698	0.103	1.81	1.755	1.
Total:			36.536	5.678	100.00	72.845	

21 CCV1

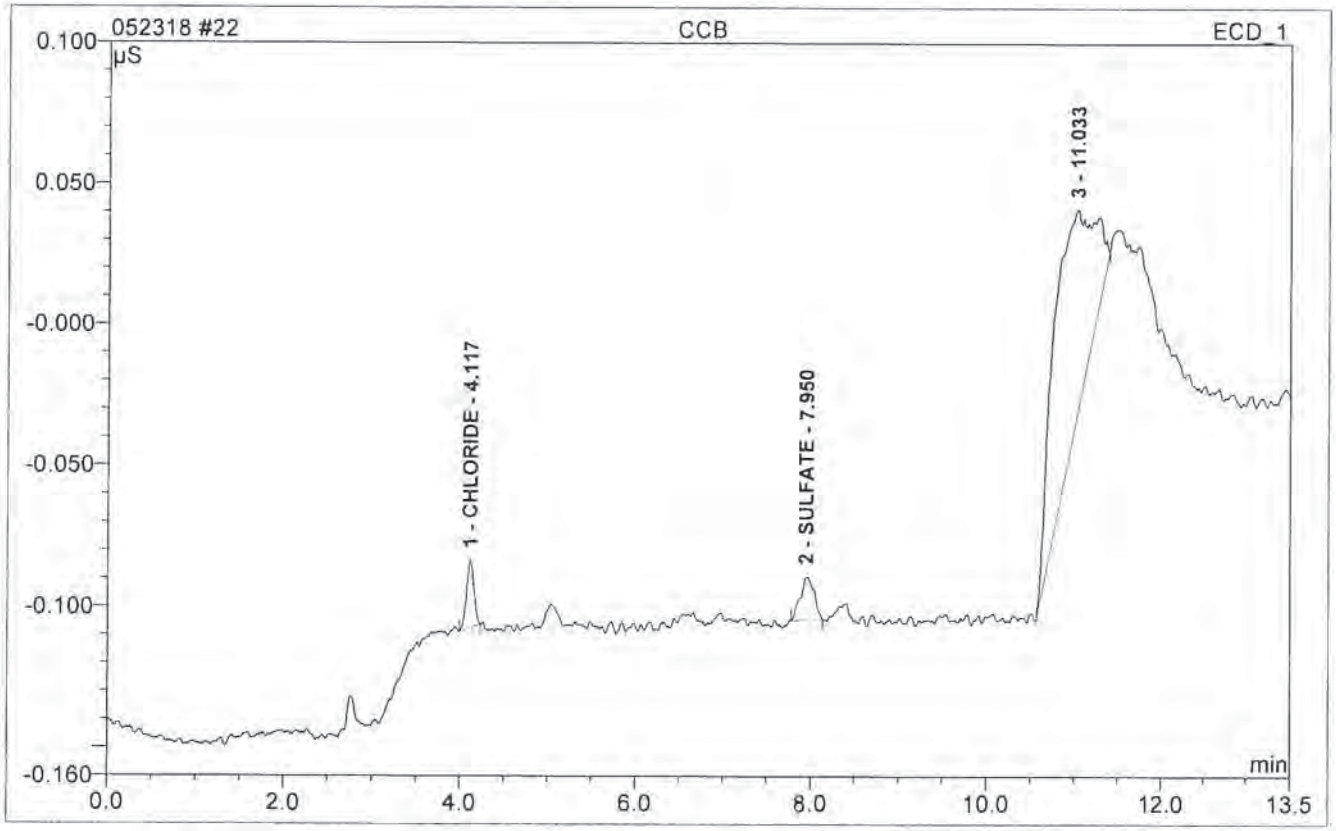
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 22:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.79	FLUORIDE	14.286	1.484	9.94	10.652	1.
2	4.12	CHLORIDE	42.291	4.623	30.97	52.618	1.
3	5.04	NITRITE,N	13.876	2.012	13.48	10.536	1.
4	6.98	BROMIDE	2.363	0.375	2.51	10.437	1.
5	7.88	SULFATE	15.771	3.322	22.26	52.961	1.
6	8.27	NITRATE	10.990	2.350	15.74	10.607	1.
7	12.01	PHOSPHATE	5.112	0.760	5.09	10.340	1.
Total:			104.689	14.924	100.00	158.151	

22 CCB

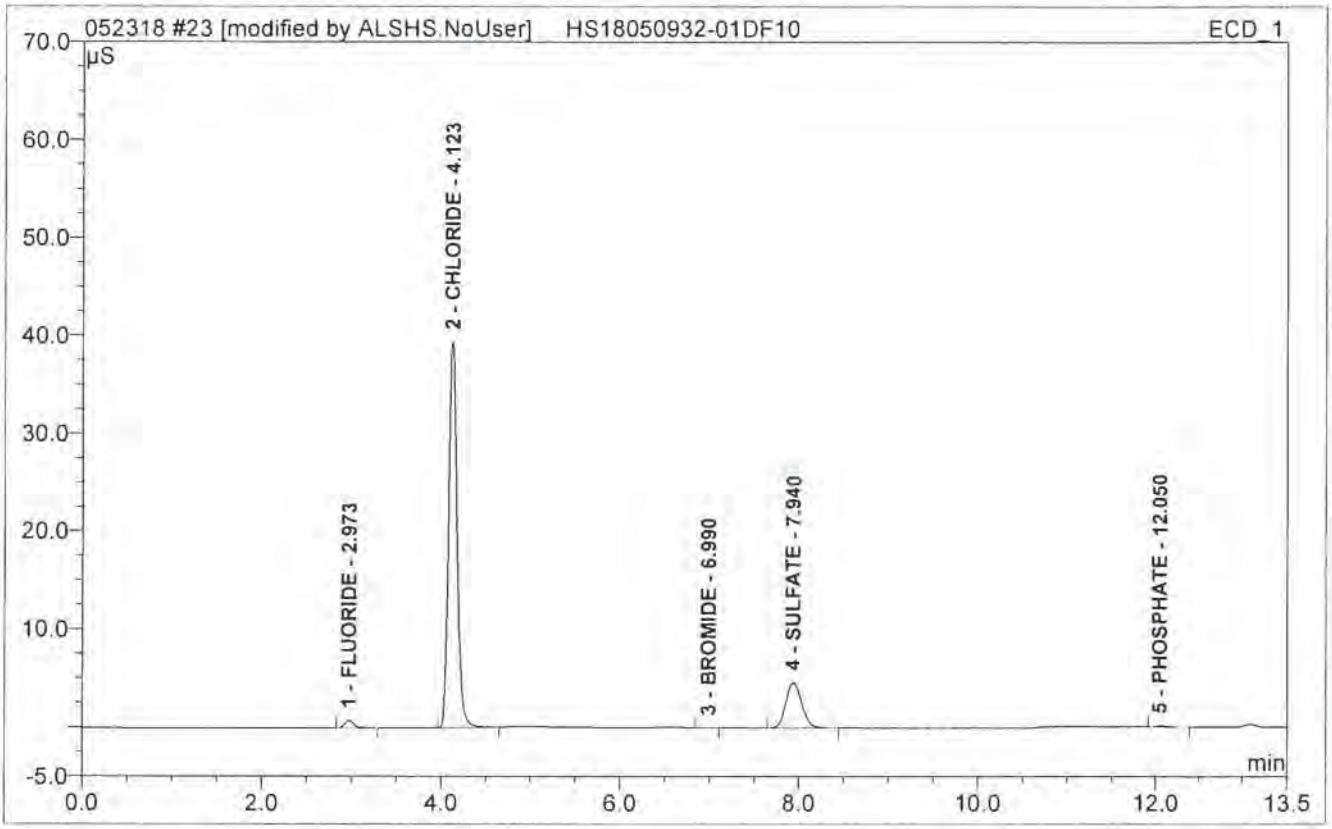
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 22:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.12	CHLORIDE	0.024	0.002	4.96	0.156	1.
2	7.95	SULFATE	0.015	0.003	5.86	0.254	1.
Total:			0.039	0.005	10.81	0.410	

23 HS18050932-01DF10

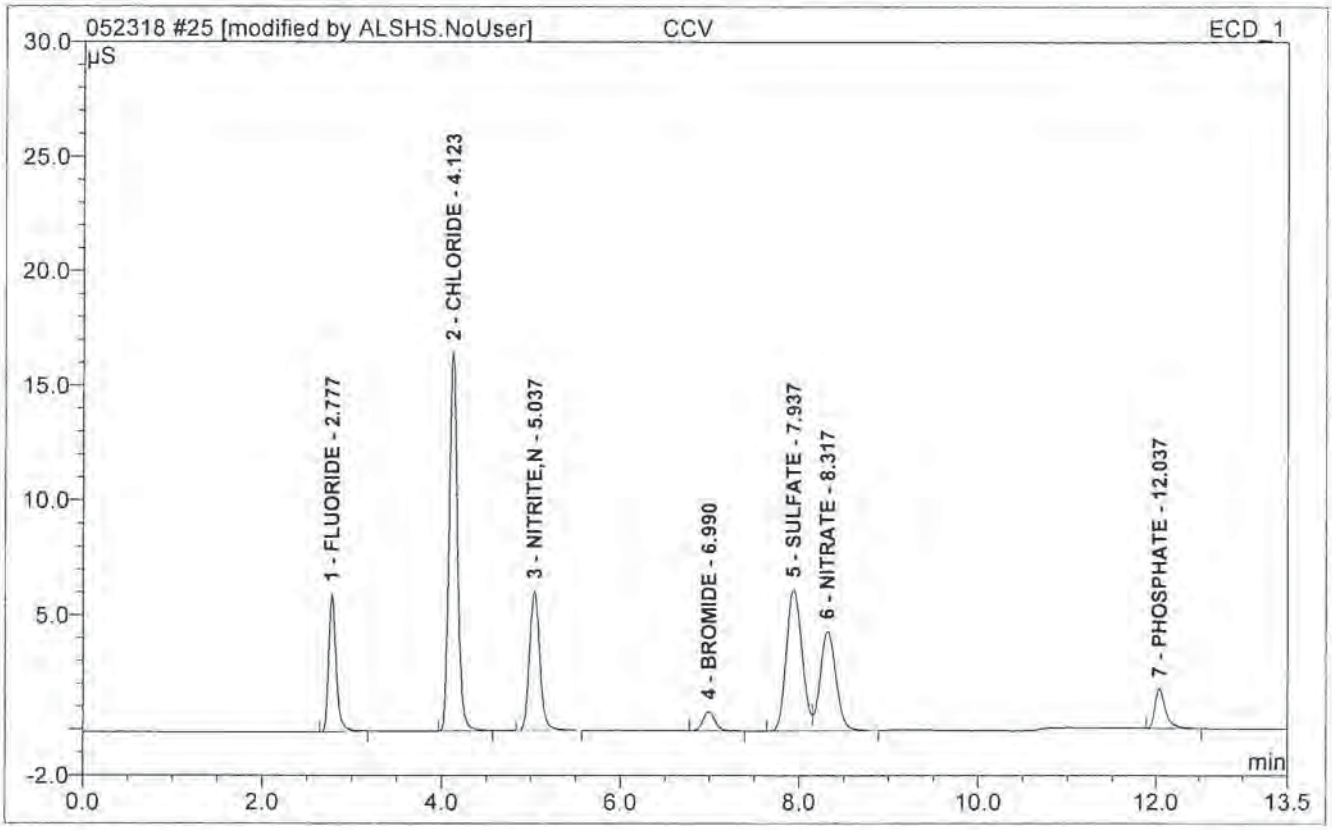
Sample Name:	**HS18050932-01DF10**	*Injection Volume:*	**10.0**
Vial Number:	**18**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**10.**
Recording Time:	**5/23/2018 22:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.97	FLUORIDE	0.778	0.094	1.74	7.008	10.
2	4.12	CHLORIDE	39.412	4.323	80.20	492.191	10.
3	6.99	BROMIDE	0.022	0.003	0.05	1.192	10.
4	7.94	SULFATE	4.610	0.952	17.65	153.233	10.
5	12.05	PHOSPHATE	0.125	0.019	0.35	6.578	10.
Total:			44.948	5.390	100.00	660.203	

25 CCV

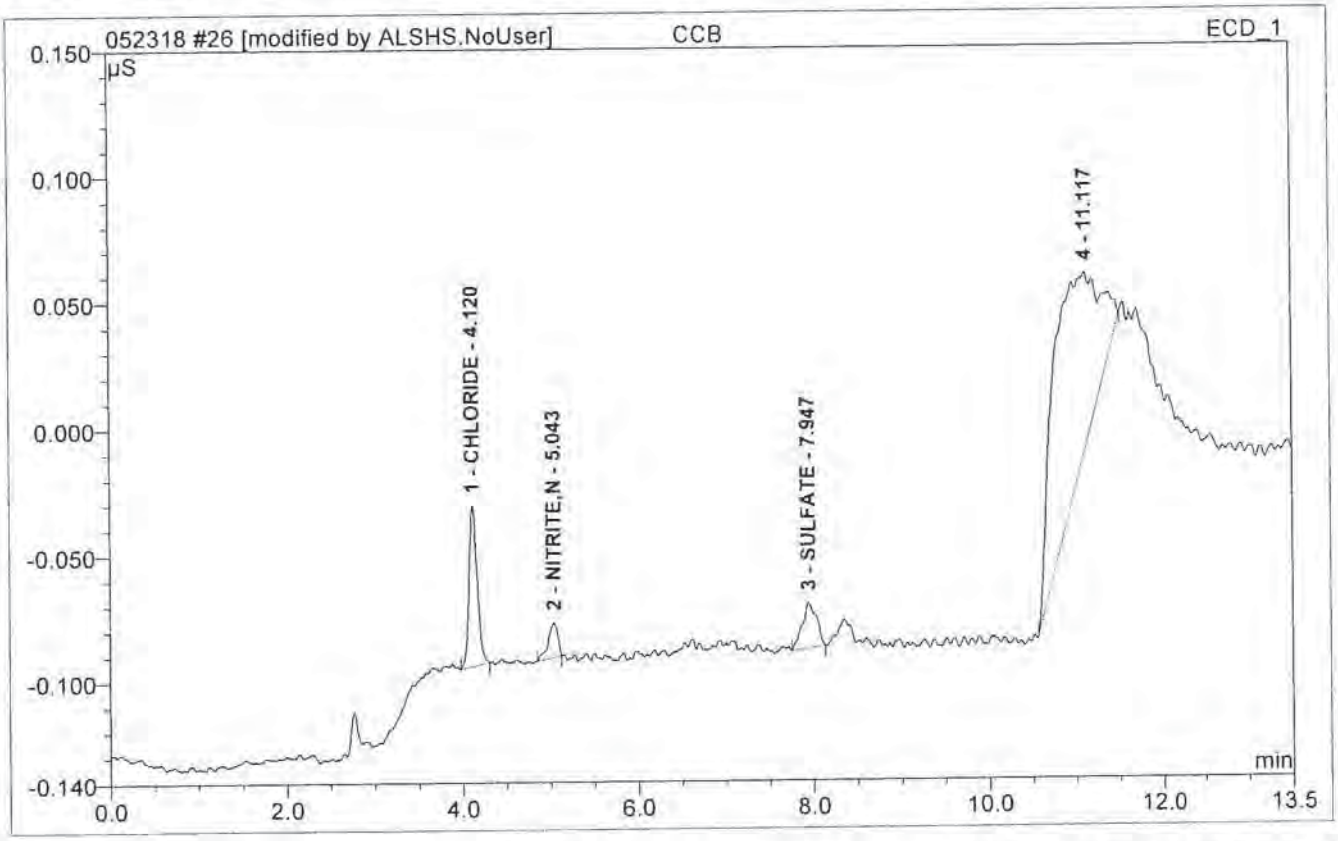
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 23:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.78	FLUORIDE	6.036	0.584	10.21	4.211	1.
2	4.12	CHLORIDE	16.509	1.781	31.13	20.356	1.
3	5.04	NITRITE,N	6.109	0.820	14.34	4.302	1.
4	6.99	BROMIDE	0.839	0.132	2.30	3.693	1.
5	7.94	SULFATE	6.200	1.267	22.15	20.335	1.
6	8.32	NITRATE	4.370	0.886	15.49	4.025	1.
7	12.04	PHOSPHATE	1.742	0.251	4.38	3.689	1.
Total:			41.805	5.722	100.00	60.611	

26 CCB

Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**042618**	*Dilution Factor:*	**1.**
Recording Time:	**5/23/2018 23:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.12	CHLORIDE	0.064	0.007	10.90	0.208	1.
2	5.04	NITRITE,N	0.014	0.002	2.77	0.018	1.
3	7.95	SULFATE	0.018	0.003	5.41	0.264	1.
Total:			0.096	0.012	19.08	0.490	

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

WorkOrder: HS18051255

Longhorn GW Treatment Plant

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

12-Jun-2018

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

June 05, 2018

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

Work Order: **HS18051255**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

ALS Environmental received 1 sample(s) on May 25, 2018 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 Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18051255

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18051255-01	LH18/24-SP140_052418	Water		24-May-2018 14:00	25-May-2018 08:45	☐

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order:

CASE NARRATIVE

Work Order Comments

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

Metals by Method SW6020

Batch ID: 128909

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

WetChemistry by Method SW7196

Batch ID: R317167

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

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP140_052418
Collection Date: 24-May-2018 14:00

ANALYTICAL REPORT
WorkOrder:HS18051255
Lab ID:HS18051255-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 30-May-2018		Analyst: JDE
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	05-Jun-2018 14:14
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Jun-2018 14:14
HEXAVALENT CHROMIUM BY SW7196A		**Method:SW7196**				Prep:SW7196		Analyst: JHD
Chromium, Hexavalent	0.0100	U	0.00600	0.0100	0.0100	mg/L	1	25-May-2018 12:20
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-May-2018 16:53

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

ALS Group Houston, Corp

Date: 05-Jun-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Batch ID: 128909 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18051255-01	1	10	10 (mL)	1

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 128909	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS18051255-01	LH18/24-SP140_052418	24 May 2018 14:00		30 May 2018 09:33	05 Jun 2018 14:14	1
Batch ID R317167	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A			**Matrix:** Water		
HS18051255-01	LH18/24-SP140_052418	24 May 2018 14:00			25 May 2018 12:20	1
Batch ID R317193	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18051255-01	LH18/24-SP140_052418	24 May 2018 14:00			31 May 2018 16:53	1

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

QC BATCH REPORT

Batch ID: 128909 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-128909** Units: **mg/L** Analysis Date: **05-Jun-2018 14:10**
Client ID: Run ID: **ICPMS05_317395** SeqNo: **4587771** PrepDate: **30-May-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U

LCS Sample ID: **LCS-128909** Units: **mg/L** Analysis Date: **05-Jun-2018 14:12**
Client ID: Run ID: **ICPMS05_317395** SeqNo: **4587772** PrepDate: **30-May-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.049	0.00200	0.05	0	98.0	80 - 120				
Silver	0.04897	0.00200	0.05	0	97.9	80 - 120				

MS Sample ID: **HS18051255-01MS** Units: **mg/L** Analysis Date: **05-Jun-2018 14:18**
Client ID: **LH18/24-SP140_052418** Run ID: **ICPMS05_317395** SeqNo: **4587775** PrepDate: **30-May-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04847	0.00200	0.05	0.00078	95.4	80 - 120				
Silver	0.04637	0.00200	0.05	0.000054	92.6	80 - 120				

MSD Sample ID: **HS18051255-01MSD** Units: **mg/L** Analysis Date: **05-Jun-2018 14:20**
Client ID: **LH18/24-SP140_052418** Run ID: **ICPMS05_317395** SeqNo: **4587776** PrepDate: **30-May-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04812	0.00200	0.05	0.00078	94.7	80 - 120	0.04847	0.712	20	
Silver	0.04685	0.00200	0.05	0.000054	93.6	80 - 120	0.04637	1.03	20	

PDS Sample ID: **HS18051255-01PDS** Units: **mg/L** Analysis Date: **05-Jun-2018 14:22**
Client ID: **LH18/24-SP140_052418** Run ID: **ICPMS05_317395** SeqNo: **4587777** PrepDate: **30-May-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.1075	0.00200	0.1	0.00078	107	75 - 125				
Silver	0.104	0.00200	0.1	0.000054	104	75 - 125				

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

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

QC BATCH REPORT

Batch ID: 128909 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18051255-01SD** Units: **mg/L** Analysis Date: **05-Jun-2018 14:16**
Client ID: **LH18/24-SP140_052418** Run ID: **ICPMS05_317395** SeqNo: **4587774** PrepDate: **30-May-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Selenium	0.0100	0.0100					0.00078	0	10	U
Silver	0.00500	0.0100					0.000054	0	10	U

The following samples were analyzed in this batch: HS18051255-01

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

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

QC BATCH REPORT

Batch ID: R317167 **Instrument: UV-2450** **Method: SW7196**

MBLK Sample ID: **MBLK-317167** Units: **mg/L** Analysis Date: **25-May-2018 12:20**
Client ID: Run ID: **UV-2450_317167** SeqNo: **4582038** 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-317167** Units: **mg/L** Analysis Date: **25-May-2018 12:20**
Client ID: Run ID: **UV-2450_317167** SeqNo: **4582039** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.233	0.0100	0.25	0	93.2	80 - 120				

LCSD Sample ID: **LCSD-317167** Units: **mg/L** Analysis Date: **25-May-2018 12:20**
Client ID: Run ID: **UV-2450_317167** SeqNo: **4582040** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.231	0.0100	0.25	0	92.4	80 - 120	0.233	0.862	20	

MS Sample ID: **HS18051255-01MS** Units: **mg/L** Analysis Date: **25-May-2018 12:20**
Client ID: **LH18/24-SP140_052418** Run ID: **UV-2450_317167** SeqNo: **4582042** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.205	0.0100	0.25	-0.003	83.2	75 - 125				

MSD Sample ID: **HS18051255-01MSD** Units: **mg/L** Analysis Date: **25-May-2018 12:20**
Client ID: **LH18/24-SP140_052418** Run ID: **UV-2450_317167** SeqNo: **4582043** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.204	0.0100	0.25	-0.003	82.8	75 - 125	0.205	0.489	20	

The following samples were analyzed in this batch: HS18051255-01

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

ALS Group Houston, Corp Date: 05-Jun-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18051255**

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
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 05-Jun-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18051255
Date/Time Received: **25-May-2018 08:45**
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 25-May-2018 Date
Reviewed by: *RJ Modashia* eSignature — 25-May-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	3.5c/3.0c U/c	IR11	
Cooler(s)/Kit(s):	3847		
Date/Time sample(s) sent to storage:	5/25/18 10:30		
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: SONIA WEST

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 MONTHLY INFLUENT SAMPLES

Prepared By: Scott Beesinger

P.O. Number

HS18051255
Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	SILVER & SELENIUM	HEXAVALENT CHROMIUM	PERCHLORATE								Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP140_052418	Water	05/24/18 / 14:00		1	X										HNO3	
LH18/24-SP140_052418	Water	05/24/18 / 14:00		2		X	X								NONE	

Additional Remarks: **STANDARD TURN AROUND TIME**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	05/24/18	14:30	RC	5/25/18	08:45						

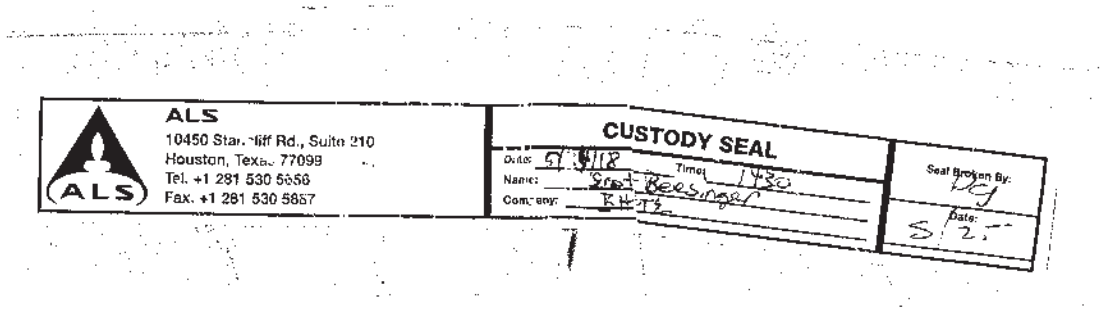
For Lab Use Only

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

Remarks:

3847 clc. 3.50 #11 clf - 0.50

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

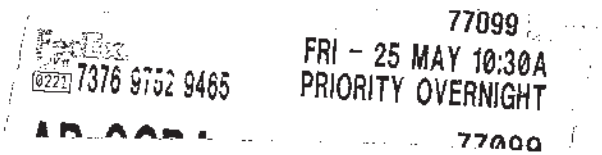


ALS
10450 Stanhiff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5857

CUSTODY SEAL

Date: 5/4/18 Time: 1430
Name: Scot Beesinger
Company: RHTS

Seal Broken By: DG
Date: 5/25



FedEx
0221 7376 9752 9465

77099
FRI - 25 MAY 10:30A
PRIORITY OVERNIGHT

77099

Metals Raw Data

Bhate Environmental Associates, Inc.
Project: LONGHORN GW TREATMENT PLANT
ALS WO# HS18051255

ALS Group Houston, Corp

Date: 11-Jun-18

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

ICV	Date: 05-Jun-2018 12:17		Seq: 4587340	ICV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	101.416	101	90-110	
Silver	100	105.396	105	90-110	

CCV1	Date: 05-Jun-2018 12:54		Seq: 4587353	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	103.667	104	90-110	
Silver	100	108.462	108	90-110	

CCV2	Date: 05-Jun-2018 13:16		Seq: 4587722	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	98.176	98	90-110	
Silver	100	103.331	103	90-110	

CCV3	Date: 05-Jun-2018 13:34		Seq: 4587731	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	99.627	100	90-110	
Silver	100	103.662	104	90-110	

CCV4	Date: 05-Jun-2018 13:46		Seq: 4587737	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	101.559	102	90-110	
Silver	100	103.553	104	90-110	

CCV5	Date: 05-Jun-2018 14:06		Seq: 4587747	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	99.993	100	90-110	
Silver	100	105.347	105	90-110	

CCV6	Date: 05-Jun-2018 14:28		Seq: 4587780	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	99.409	99	90-110	
Silver	100	102.769	103	90-110	

CCV7	Date: 05-Jun-2018 14:46		Seq: 4587789	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	99.012	99	90-110	
Silver	100	103.105	103	90-110	

CCV8	Date: 05-Jun-2018 15:10		Seq: 4588128	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	98.882	99	90-110	
Silver	100	101.901	102	90-110	

CCV9	Date: 05-Jun-2018 15:40		Seq: 4588143	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	101.894	102	90-110	
Silver	100	96.61	97	90-110	

CCV10	Date: 05-Jun-2018 15:52		Seq: 4588155	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	102.415	102	90-110	
Silver	100	95.63	96	90-110	

ICCV11	Date: 05-Jun-2018 16:29		Seq: 4588323	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Selenium	100	93.884	94	90-110	
Silver	100	90.63	91	90-110	

ALS Group Houston, Corp

Date: 11-Jun-18

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

CCV12 Date: 05-Jun-2018 16:53 Seq: 4588335 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	96.626	97	90-110	
Silver	100	94.728	95	90-110	

CCV13 Date: 05-Jun-2018 17:17 Seq: 4588347 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	98.206	98	90-110	
Silver	100	98.328	98	90-110	

CCV14 Date: 05-Jun-2018 17:41 Seq: 4588359 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	107.553	108	90-110	
Silver	100	97.402	97	90-110	

CCV15 Date: 05-Jun-2018 17:59 Seq: 4588368 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	97.042	97	90-110	
Silver	100	96.637	97	90-110	

CCV16 Date: 05-Jun-2018 21:40 Seq: 4588415 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	97.22	97	90-110	
Silver	100	94.711	95	90-110	

CCV17 Date: 05-Jun-2018 21:56 Seq: 4588419 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	97.213	97	90-110	
Silver	100	95.939	96	90-110	

ICCV18 Date: 05-Jun-2018 22:36 Seq: 4588429 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	96.853	97	90-110	
Silver	100	90.138	90	90-110	

CCV19 Date: 05-Jun-2018 22:54 Seq: 4588438 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	102.856	103	90-110	
Silver	100	93.422	93	90-110	

CCV20 Date: 05-Jun-2018 23:06 Seq: 4588444 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	102.778	103	90-110	
Silver	100	98.147	98	90-110	

CCV21 Date: 05-Jun-2018 23:18 Seq: 4588479 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	103.398	103	90-110	
Silver	100	92.542	93	90-110	

CCV22 Date: 05-Jun-2018 23:48 Seq: 4589035 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	96.417	96	90-110	
Silver	100	91.726	92	90-110	

CCV23 Date: 06-Jun-2018 00:12 Seq: 4589047 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	100.205	100	90-110	
Silver	100	93.862	94	90-110	

ALS Group Houston, Corp

Date: 11-Jun-18

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

CCV24 | Date: 06-Jun-2018 00:22 | Seq: 4589052 | CCV | Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Selenium	100	96.943	97	90-110	
Silver	100	92.149	92	90-110	

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

ICB	Date: 05-Jun-2018 12:15		Seq: 4587339	ICB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB1	Date: 05-Jun-2018 12:56		Seq: 4587354	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB2	Date: 05-Jun-2018 13:18		Seq: 4587723	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB3	Date: 05-Jun-2018 13:36		Seq: 4587732	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB4	Date: 05-Jun-2018 13:48		Seq: 4587738	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB5	Date: 05-Jun-2018 14:08		Seq: 4587748	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
MBLK-128909	Date: 05-Jun-2018 14:10		Seq: 4587771	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB6	Date: 05-Jun-2018 14:30		Seq: 4587781	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB7	Date: 05-Jun-2018 14:48		Seq: 4587790	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB8	Date: 05-Jun-2018 15:12		Seq: 4588129	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB9	Date: 05-Jun-2018 15:36		Seq: 4588141	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB10	Date: 05-Jun-2018 15:54		Seq: 4588156	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

ICCB11	Date: 05-Jun-2018 16:35		Seq: 4588326	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	1.037	0.2	2	J	
CCB12	Date: 05-Jun-2018 16:55		Seq: 4588336	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	1.208	1.1	2	J	
Silver	2	0.2	2	U	
CCB13	Date: 05-Jun-2018 17:19		Seq: 4588348	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB14	Date: 05-Jun-2018 17:43		Seq: 4588360	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB15	Date: 05-Jun-2018 18:01		Seq: 4588369	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB16	Date: 05-Jun-2018 21:42		Seq: 4588416	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB17	Date: 05-Jun-2018 21:58		Seq: 4588420	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
ICCB18	Date: 05-Jun-2018 22:42		Seq: 4588432	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB19	Date: 05-Jun-2018 22:56		Seq: 4588439	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB20	Date: 05-Jun-2018 23:08		Seq: 4588445	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB21	Date: 05-Jun-2018 23:20		Seq: 4588480	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
CCB22	Date: 05-Jun-2018 23:50		Seq: 4589036	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	

ALS Group Houston, Corp

Date: 11-Jun-18

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

CCB23	Date: 06-Jun-2018 00:14		Seq: 4589048	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	

CCB24	Date: 06-Jun-2018 00:24		Seq: 4589053	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	

ALS Group Houston, Corp

Date: 11-Jun-18

Form 4 - ICP Interference Check Sample

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Run ID: ICPMS05_317395
Instrument: ICPMS05
Method: SW6020

ICSA	Date: 05-Jun-2018 12:20	Seq: 4587341	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Selenium		-0.258	0	
Silver		0.071	0	

ICSAB	Date: 05-Jun-2018 12:22	Seq: 4587342	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Selenium	100	98.3	98.3	
Silver	100	98.99	99.0	

ICSA	Date: 06-Jun-2018 00:30	Seq: 4589056	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Selenium		-0.039	0	
Silver		0.029	0	

ICSAB	Date: 06-Jun-2018 00:32	Seq: 4589057	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Selenium	100	103	103	
Silver	100	93.51	93.5	

ALS Group Houston, Corp

Date: 11-Jun-18

Form 5A - Matrix Spike/Matrix Spike Duplicate Recovery

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Date Analyzed: 05-Jun-2018 14:20
Date Extracted: 30-May-2018 09:33
Units: ug/L

Matrix Spike: HS18051255-01MS
Client Sample ID: LH18/24-SP140_052418

Analysis Method: SW6020

Analyte	Sample Result	MS Result	Spike Amount	% Rec	MSD Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Selenium	2.000	48.47	50.00	95.4	48.12	50.00	94.7	80-120	0.712	20
Silver	2.000	46.37	50.00	92.6	46.85	50.00	93.6	80-120	1.03	20

ALS Group Houston, Corp

Date: 11-Jun-18

Form 5B - Post Digest Sample Recovery

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Date Analyzed: 05-Jun-2018 14:22
Date Extracted: 30-May-2018 09:33
Units: ug/L

Lab Sample ID: HS18051255-01PDS
Client Sample ID: LH18/24-SP140_052418

Analysis Method: SW6020

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Selenium	0	107.5	100	107	75-125
Silver	0	104	100	104	75-125

ALS Group Houston, Corp

Date: 11-Jun-18

Form 7 - Laboratory Control Sample

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Date Analyzed: 05-Jun-2018 14:12
Date Extracted: 30-May-2018 09:33
Units: ug/L

Lab Sample ID: LCS-128909

Analysis Method: SW6020

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Selenium	50	49	98	80-120
Silver	50	48.97	98	80-120

ALS Group Houston, Corp

Date: 11-Jun-18

Form 8 - ICP Serial Dilutions

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255

Date Analyzed: 05-Jun-2018 14:16
Date Extracted: 30-May-2018 09:33
Units: ug/L

Lab Sample ID: HS18051255-01SD
Client Sample ID:LH18/24-SP140_052418

Analysis Method: SW6020

Analyte	Sample Result	C	SD Result	C	RPD	Q
Selenium	0	U	0	U	0	
Silver	0	U	0	U	0	

ALS Group Houston, Corp

Date: 11-Jun-18

Form 11 - INTERNAL STANDARD ASSOCIATION

Client: Bhate Environmental Associates, Inc.

Project: Longhorn GW Treatment Plant

WorkOrder: HS18051255

Instrument:ICPMS05

Mass	Analyte	Assoc Int Standard 1	Assoc Int Standard 2	Mode
9	Beryllium	Lithium		Ar
11	Boron	Lithium		Ar
23	Sodium	Germanium		Ar
24	Magnesium	Germanium		Ar
27	Aluminum	Germanium		Ar
39	Potassium	Germanium		Ar
44	Calcium	Germanium		Ar
47	Titanium	Germanium		Ar
51	Vanadium	Germanium		ArHe
52	Chromium	Germanium		ArHe
55	Manganese	Germanium		ArHe
56	Iron	Germanium		ArHe
59	Cobalt	Germanium		ArHe
60	Nickel	Germanium		ArHe
63	Copper	Germanium		ArHe
66	Zinc	Germanium		ArHe
75	Arsenic	Germanium		ArHe
78	Selenium	Germanium		ArHe
88	Strontium	Germanium		Ar
95	Molybdenum	Germanium		Ar
105	Palladium	Germanium		Ar
107	Silver	Germanium		Ar
114	Cadmium	Indium		Ar
118	Tin	Germanium		Ar
121	Antimony	Germanium		ArHe
137	Barium	Indium		Ar
205	Thallium	Bismuth		Ar
208	Lead	Bismuth		Ar

ALS Group Houston, Corp

Date: 11-Jun-18

FORM 12 - PREPARATION LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255
Start Date: 30-May-2018 09:33 End Date: 30-May-2018 13:00

Batch ID: 128909
Prep Code: 3010A
Method: SW3010A
Technician:

SampID	ClientID	Matrix	Init Wt	Init Vol	FinalVol (mL)	PrepFac
HS18051255-01	LH18/24-SP140_052418	Water		10	10	1
HS18051255-01MS				10	10	1
HS18051255-01MSD				10	10	1
HS18051255-01PDS				10	10	1
HS18051255-01SD				10	10	1
LCS-128909				10	10	1
MBLK-128909				10	10	1

ALS Group Houston, Corp

Date: 11-Jun-18

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255
Start Date: 05-Jun-2018 End Date: 06-Jun-2018

Run ID:ICPMS05_317395
Instrument:ICPMS05
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS05_317395_Tune	1	05-Jun-2018 00:00	ICPMS05_317395_Tune_1	
CAL BLK	1	05-Jun-2018 11:55	004CALB.d_4587329	AG SE
2/10/200	1	05-Jun-2018 11:57	005CALS.d_4587330	AG SE
5/25/500	1	05-Jun-2018 11:59	006CALS.d_4587331	AG SE
10/50/1000	1	05-Jun-2018 12:01	007CALS.d_4587332	AG SE
100/500/10K	1	05-Jun-2018 12:03	008CALS.d_4587333	AG SE
200/1000/20K	1	05-Jun-2018 12:05	009CALS.d_4587334	AG SE
LLICV2	1	05-Jun-2018 12:11	012SMPL.d_4587337	AG SE
LLICV5	1	05-Jun-2018 12:13	013LICV.d_4587338	AG SE
ICB	1	05-Jun-2018 12:15	014_ICB.d_4587339	AG SE
ICV	1	05-Jun-2018 12:17	015_ICV.d_4587340	AG SE
ICSA	1	05-Jun-2018 12:20	016ICSA.d_4587341	AG SE
ICSAB	1	05-Jun-2018 12:22	017ICSB.d_4587342	AG SE
CCV 1	1	05-Jun-2018 12:54	028_CCV.d_4587353	AG SE
CCB 1	1	05-Jun-2018 12:56	029_CCB.d_4587354	AG SE
CCV 2	1	05-Jun-2018 13:16	039_CCV.d_4587722	AG SE
CCB 2	1	05-Jun-2018 13:18	040_CCB.d_4587723	AG SE
CCV 3	1	05-Jun-2018 13:34	048_CCV.d_4587731	AG SE
CCB 3	1	05-Jun-2018 13:36	049_CCB.d_4587732	AG SE
CCV 4	1	05-Jun-2018 13:46	054_CCV.d_4587737	AG SE
CCB 4	1	05-Jun-2018 13:48	055_CCB.d_4587738	AG SE
CCV 5	1	05-Jun-2018 14:06	064_CCV.d_4587747	AG SE
CCB 5	1	05-Jun-2018 14:08	065_CCB.d_4587748	AG SE
MBLK-128909	1	05-Jun-2018 14:10	066SMPL.d_4587771	AG SE
LCS-128909	1	05-Jun-2018 14:12	067SMPL.d_4587772	AG SE
LH18/24-SP140_052418	1	05-Jun-2018 14:14	068SMPL.d_4587773	AG SE
LH18/24-SP140_052418SD	5	05-Jun-2018 14:16	069SMPL.d_4587774	AG SE
LH18/24-SP140_052418MS	1	05-Jun-2018 14:18	070SMPL.d_4587775	AG SE
LH18/24-SP140_052418MSD	1	05-Jun-2018 14:20	071SMPL.d_4587776	AG SE
LH18/24-SP140_052418PDS	1	05-Jun-2018 14:22	072SMPL.d_4587777	AG SE
CCV 6	1	05-Jun-2018 14:28	075_CCV.d_4587780	AG SE
CCB 6	1	05-Jun-2018 14:30	076_CCB.d_4587781	AG SE
CCV 7	1	05-Jun-2018 14:46	084_CCV.d_4587789	AG SE
CCB 7	1	05-Jun-2018 14:48	085_CCB.d_4587790	AG SE
CCV 8	1	05-Jun-2018 15:10	096_CCV.d_4588128	AG SE
CCB 8	1	05-Jun-2018 15:12	097_CCB.d_4588129	AG SE
CCB 9	1	05-Jun-2018 15:36	109_CCB.d_4588141	AG SE
CCV 9	1	05-Jun-2018 15:40	111_CCV.d_4588143	AG SE
CCV 10	1	05-Jun-2018 15:52	117_CCV.d_4588155	AG SE
CCB 10	1	05-Jun-2018 15:54	118_CCB.d_4588156	AG SE
CAL BLK	1	05-Jun-2018 16:15	128CALB.d_4588316	AG SE
2/10/200	1	05-Jun-2018 16:17	129CALS.d_4588317	AG SE
5/25/500	1	05-Jun-2018 16:19	130CALS.d_4588318	AG SE
10/50/1000	1	05-Jun-2018 16:21	131CALS.d_4588319	AG SE
100/500/10K	1	05-Jun-2018 16:23	132CALS.d_4588320	AG SE
200/1000/20K	1	05-Jun-2018 16:25	133CALS.d_4588321	AG SE
ICCV 11	1	05-Jun-2018 16:29	135_ICV.d_4588323	AG SE
LLCCV2	1	05-Jun-2018 16:31	136SMPL.d_4588324	AG SE
LLCCV5	1	05-Jun-2018 16:33	137LICV.d_4588325	AG SE
ICCB 11	1	05-Jun-2018 16:35	138_ICB.d_4588326	AG SE
CCV 12	1	05-Jun-2018 16:53	147_CCV.d_4588335	AG SE
CCB 12	1	05-Jun-2018 16:55	148_CCB.d_4588336	AG SE
CCV 13	1	05-Jun-2018 17:17	159_CCV.d_4588347	AG SE
13	1	05-Jun-2018 17:19	160_CCB.d_4588348	AG SE

ALS Group Houston, Corp

Date: 11-Jun-18

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18051255
Start Date: 05-Jun-2018 End Date: 06-Jun-2018

Run ID:ICPMS05_317395
Instrument:ICPMS05
Method:

Sample No.	D/F	Time	FileID	Analytes
CCV 14	1	05-Jun-2018 17:41	171_CCV.d_4588359	AG SE
CCB 14	1	05-Jun-2018 17:43	172_CCB.d_4588360	AG SE
CCV 15	1	05-Jun-2018 17:59	180_CCV.d_4588368	AG SE
CCB 15	1	05-Jun-2018 18:01	181_CCB.d_4588369	AG SE
CCV 16	1	05-Jun-2018 21:40	184_CCV.d_4588415	AG SE
CCB 16	1	05-Jun-2018 21:42	185_CCB.d_4588416	AG SE
CCV 17	1	05-Jun-2018 21:56	192_CCV.d_4588419	AG SE
CCB 17	1	05-Jun-2018 21:58	193_CCB.d_4588420	AG SE
CAL BLK	1	05-Jun-2018 22:22	198CALB.d_4588422	AG SE
2/10/200	1	05-Jun-2018 22:24	199CALS.d_4588423	AG SE
5/25/500	1	05-Jun-2018 22:26	200CALS.d_4588424	AG SE
10/50/1000	1	05-Jun-2018 22:28	201CALS.d_4588425	AG SE
100/500/10K	1	05-Jun-2018 22:30	202CALS.d_4588426	AG SE
200/1000/20K	1	05-Jun-2018 22:32	203CALS.d_4588427	AG SE
ICCV 18	1	05-Jun-2018 22:36	205_ICV.d_4588429	AG SE
LLCCV2	1	05-Jun-2018 22:38	206SMPL.d_4588430	AG SE
LLCCV5	1	05-Jun-2018 22:40	207LICV.d_4588431	AG SE
ICCB 18	1	05-Jun-2018 22:42	208_ICB.d_4588432	AG SE
CCV 19	1	05-Jun-2018 22:54	214_CCV.d_4588438	AG SE
CCB 19	1	05-Jun-2018 22:56	215_CCB.d_4588439	AG SE
CCV 20	1	05-Jun-2018 23:06	220_CCV.d_4588444	AG SE
CCB 20	1	05-Jun-2018 23:08	221_CCB.d_4588445	AG SE
CCV 21	1	05-Jun-2018 23:18	226_CCV.d_4588479	AG SE
CCB 21	1	05-Jun-2018 23:20	227_CCB.d_4588480	AG SE
CCV 22	1	05-Jun-2018 23:48	230_CCV.d_4589035	AG SE
CCB 22	1	05-Jun-2018 23:50	231_CCB.d_4589036	AG SE
CCV 23	1	06-Jun-2018 00:12	242_CCV.d_4589047	AG SE
CCB 23	1	06-Jun-2018 00:14	243_CCB.d_4589048	AG SE
CCV 24	1	06-Jun-2018 00:22	247_CCV.d_4589052	AG SE
CCB 24	1	06-Jun-2018 00:24	248_CCB.d_4589053	AG SE
LLCCV5	1	06-Jun-2018 00:26	249LICV.d_4589054	AG SE
LLCCV2	1	06-Jun-2018 00:28	250SMPL.d_4589055	AG SE
ICSA	1	06-Jun-2018 00:30	251ICSA.d_4589056	AG SE
ICSAB	1	06-Jun-2018 00:32	252ICSB.d_4589057	AG SE

Tune Report

Batch Folder C:\Agilent\ICPMH\1\DATA\060518A.b
Report Comment
Instrument Name G3281A JP11080910

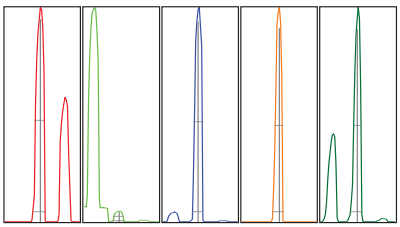
[nogas]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
9		8613				NaN	-	
24		24606				NaN	-	
59		27464				NaN	-	
115		25517				NaN	-	
208		11801				NaN	-	

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
9	0.75	5.00				
24	0.59	5.00				
59	0.37	5.00				
115	0.56	5.00				
208	0.79	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	8545	8658	8558	8697	8606
24	24859	24567	24494	24571	24537
59	27435	27419	27643	27431	27391
115	25509	25446	25436	25766	25426
208	11765	11872	11846	11869	11654

Integration Time [sec] 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
9	2362.44	8.95	8.9 - 9.1		0.38	0.479	0.750	
24	6744.88	23.95	23.9 - 24.1		0.38	0.464	0.750	
59	8105.69	58.95	58.9 - 59.1		0.34	0.440	0.750	
115	8074.08	115.05	114.9 - 115.1		0.30	0.436	0.750	
208	3575.34	208.00	207.9 - 208.1		0.32	0.489	0.750	

X = 5 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 168.5 **Y Axis** Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Carrier Gas	0.35 L/min	S/C Temp	2 ℃
RF Matching	1.70 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.50 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	15.0 V
Extract 2	-200.0 V	Cell Entrance	-30 V	Plate Bias	-50 V
Omega Bias	-100 V	Cell Exit	-58 V		

Cell Parameters

OctP Bias	-8.0 V	He Flow	0.0 mL/min	Energy Discrimination	5.0 V
OctP RF	190 V	H2 Flow	0.0 mL/min		
Use Gas	true	3rd Gas Flow	0 %		

[He]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
9		180				NaN	-	
24		1742				NaN	-	
59		11555				NaN	-	

Tune Report

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
9	8.71	5.00	[F]			
24	2.06	5.00				
59	1.54	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	199	183	164	165	190
24	1783	1749	1684	1750	1745
59	11544	11350	11411	11728	11741

Integration Time [sec] 0.1

Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
9	49.00	8.90	8.9 - 9.1		0.37	0.484	0.750	
24	476.31	23.90	23.9 - 24.1		0.38	0.454	0.750	
59	3539.85	58.95	58.9 - 59.1		0.32	0.435	0.750	

X = 5 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 100.6 **Y Axis** Linear

Tune Parameters

Plasma Paramters

RF Power	1600 W	Carrier Gas	0.35 L/min	S/C Temp	2 ℃
RF Matching	1.70 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.50 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	2.0 V
Extract 2	-200.0 V	Cell Entrance	-32 V	Plate Bias	-60 V
Omega Bias	-100 V	Cell Exit	-70 V		

Cell Parameters

OctP Bias	-18.0 V	He Flow	4.0 mL/min	Energy Discrimination	5.0 V
OctP RF	190 V	H2 Flow	0.0 mL/min		
Use Gas	true	3rd Gas Flow	0 %		

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	004CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T11:55:56-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	40	108.25
Na	23	1	nogas	724227	0.00
Mg	24	1	nogas	5735	0.23
Al	27	1	nogas	19150	0.03
K	39	1	nogas	4581642	0.00
Ti	47	1	nogas	167	18.47
V	51	1	nogas	212533	0.00
Cr	52	1	nogas	19120	0.03
Mn	55	1	nogas	13308	0.01
Co	59	1	nogas	310	5.20
Ni	60	1	nogas	260	10.25
Cu	63	1	nogas	1227	0.51
Zn	66	1	nogas	903	2.62
As	75	1	nogas	41805	0.00
Sr	88	1	nogas	660	0.61
Ag	107	1	nogas	80	41.34
Cd	111	1	nogas	17	207.85
Sb	121	1	nogas	1870	0.29
Tl	205	1	nogas	97	52.79
Pb	208	1	nogas	253	4.50
[Pb]	206	1	nogas	87	30.75
[Pb]	207	1	nogas	53	20.30
Na	23	2	He	108326	0.00
Mg	24	2	He	580	1.57
Al	27	2	He	697	0.52
K	39	2	He	150677	0.00
Ca	43	2	He	40	108.25
Ca	44	2	He	1213	1.39
V	51	2	He	4000	0.02
Cr	52	2	He	2437	0.62
Mn	55	2	He	427	4.16
Fe	56	2	He	16371	0.03
Co	59	2	He	73	28.40
Ni	60	2	He	197	13.27
Cu	63	2	He	543	4.81
Zn	66	2	He	217	7.48
As	75	2	He	287	4.68
Se	78	2	He	339	1.40
B	11	1	nogas	179420	0.00
Si	28	1	nogas	3864538	0.00
Ca	43	1	nogas	1177	0.82
Ca	44	1	nogas	44396	0.00

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	1771914	0.00
Se	77	1	nogas	13542	0.02
Se	82	1	nogas	267	10.37
Mo	95	1	nogas	370	10.96
Sn	118	1	nogas	720	1.58
Ba	137	1	nogas	147	34.89
Sb	121	2	He	863	1.88
Li	7	1	nogas	27440	0.01
P	31	1	nogas	20505	0.02
La	139	1	nogas	67	51.96

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	316349	2.89
Ge	72	1	nogas	1739233	1.07
In	115	1	nogas	1398647	3.89
Bi	209	1	nogas	952288	1.25
Ge	72	2	He	487241	1.91

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	005CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T11:57:55-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	5501	0.03
Na	23	1	nogas	3157416	0.00
Mg	24	1	nogas	1689367	0.00
Al	27	1	nogas	45944	0.03
K	39	1	nogas	6986310	0.00
Ti	47	1	nogas	2490	0.57
V	51	1	nogas	264961	0.00
Cr	52	1	nogas	45700	0.01
Mn	55	1	nogas	46148	0.01
Co	59	1	nogas	27624	0.01
Ni	60	1	nogas	6618	0.07
Cu	63	1	nogas	15931	0.02
Zn	66	1	nogas	5201	0.07
As	75	1	nogas	50433	0.01
Sr	88	1	nogas	35729	0.01
Ag	107	1	nogas	16671	0.02
Cd	111	1	nogas	3507	0.22
Sb	121	1	nogas	17225	0.02
Tl	205	1	nogas	21194	0.02
Pb	208	1	nogas	29981	0.01
[Pb]	206	1	nogas	7579	0.07
[Pb]	207	1	nogas	6855	0.02
Na	23	2	He	313093	0.00
Mg	24	2	He	115241	0.00
Al	27	2	He	1573	0.94
K	39	2	He	285926	0.00
Ca	43	2	He	417	0.88
Ca	44	2	He	7705	0.06
V	51	2	He	12510	0.02
Cr	52	2	He	10587	0.04
Mn	55	2	He	6945	0.06
Fe	56	2	He	799441	0.00
Co	59	2	He	11984	0.02
Ni	60	2	He	3347	0.26
Cu	63	2	He	8049	0.07
Zn	66	2	He	1933	0.26
As	75	2	He	1991	0.06
Se	78	2	He	479	2.07
B	11	1	nogas	199628	0.00
Si	28	1	nogas	4519101	0.00

Calibration Standard Report

Ca	43	1	nogas	5724	0.03
Ca	44	1	nogas	116910	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	4666962	0.00
Se	77	1	nogas	14686	0.04
Se	82	1	nogas	527	1.36
Mo	95	1	nogas	6851	0.08
Sn	118	1	nogas	10310	0.03
Ba	137	1	nogas	5158	0.18
Sb	121	2	He	6978	0.11
P	31	1	nogas	29917	0.00
La	139	1	nogas	83	29.98

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	322760	6.52	316349	102.03	70	125	
Ge	72	1	nogas	1779177	8.25	1739233	102.30	70	125	
In	115	1	nogas	1488621	9.18	1398647	106.43	70	125	
Bi	209	1	nogas	1005166	12.26	952288	105.55	70	125	
Ge	72	2	He	484422	1.09	487241	99.42	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	006CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T11:59:55-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	13348	0.03
Na	23	1	nogas	6882835	0.00
Mg	24	1	nogas	4289141	0.00
Al	27	1	nogas	73686	0.00
K	39	1	nogas	10918577	0.00
Ti	47	1	nogas	5864	0.12
V	51	1	nogas	318015	0.00
Cr	52	1	nogas	86040	0.00
Mn	55	1	nogas	97982	0.00
Co	59	1	nogas	70662	0.00
Ni	60	1	nogas	15727	0.03
Cu	63	1	nogas	38537	0.00
Zn	66	1	nogas	12588	0.01
As	75	1	nogas	61955	0.01
Sr	88	1	nogas	90505	0.00
Ag	107	1	nogas	42388	0.00
Cd	111	1	nogas	8579	0.03
Sb	121	1	nogas	40624	0.01
Tl	205	1	nogas	52913	0.00
Pb	208	1	nogas	75830	0.00
[Pb]	206	1	nogas	18968	0.03
[Pb]	207	1	nogas	16989	0.01
Na	23	2	He	616151	0.00
Mg	24	2	He	286479	0.00
Al	27	2	He	2294	0.32
K	39	2	He	491660	0.00
Ca	43	2	He	970	0.55
Ca	44	2	He	17285	0.01
V	51	2	He	25377	0.01
Cr	52	2	He	25254	0.00
Mn	55	2	He	17469	0.01
Fe	56	2	He	2062303	0.00
Co	59	2	He	29941	0.01
Ni	60	2	He	7672	0.06
Cu	63	2	He	19494	0.01
Zn	66	2	He	4744	0.17
As	75	2	He	4782	0.06
Se	78	2	He	725	0.55
B	11	1	nogas	217691	0.00
Si	28	1	nogas	5264029	0.00

Calibration Standard Report

Ca	43	1	nogas	12885	0.02
Ca	44	1	nogas	230550	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	9143677	0.00
Se	77	1	nogas	15767	0.02
Se	82	1	nogas	777	1.49
Mo	95	1	nogas	17372	0.01
Sn	118	1	nogas	24554	0.01
Ba	137	1	nogas	12908	0.02
Sb	121	2	He	17639	0.03
P	31	1	nogas	43567	0.01
La	139	1	nogas	57	35.96

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	317128	1.83	316349	100.25	70	125	
Ge	72	1	nogas	1711426	3.52	1739233	98.40	70	125	
In	115	1	nogas	1383178	0.88	1398647	98.89	70	125	
Bi	209	1	nogas	934249	0.78	952288	98.11	70	125	
Ge	72	2	He	484514	1.10	487241	99.44	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	007CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:01:56-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	26916	0.01
Na	23	1	nogas	13161397	0.00
Mg	24	1	nogas	8544561	0.00
Al	27	1	nogas	128152	0.00
K	39	1	nogas	17363665	0.00
Ti	47	1	nogas	12268	0.04
V	51	1	nogas	422177	0.00
Cr	52	1	nogas	155870	0.00
Mn	55	1	nogas	185678	0.00
Co	59	1	nogas	141139	0.00
Ni	60	1	nogas	31771	0.01
Cu	63	1	nogas	78347	0.00
Zn	66	1	nogas	24420	0.01
As	75	1	nogas	79051	0.00
Sr	88	1	nogas	187437	0.00
Ag	107	1	nogas	87352	0.00
Cd	111	1	nogas	17839	0.01
Sb	121	1	nogas	80003	0.00
Tl	205	1	nogas	108765	0.00
Pb	208	1	nogas	153619	0.00
[Pb]	206	1	nogas	37761	0.00
[Pb]	207	1	nogas	34223	0.01
Na	23	2	He	1129108	0.00
Mg	24	2	He	583408	0.00
Al	27	2	He	4171	0.15
K	39	2	He	845130	0.00
Ca	43	2	He	1780	0.54
Ca	44	2	He	33434	0.01
V	51	2	He	47082	0.00
Cr	52	2	He	47478	0.01
Mn	55	2	He	33795	0.01
Fe	56	2	He	4066392	0.00
Co	59	2	He	59136	0.00
Ni	60	2	He	14983	0.02
Cu	63	2	He	38948	0.01
Zn	66	2	He	9006	0.03
As	75	2	He	9315	0.03
Se	78	2	He	1057	0.35
B	11	1	nogas	261124	0.00
Si	28	1	nogas	6760365	0.00

Calibration Standard Report

Ca	43	1	nogas	25361	0.00
Ca	44	1	nogas	416881	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	16619288	0.00
Se	77	1	nogas	17275	0.04
Se	82	1	nogas	1817	0.48
Mo	95	1	nogas	34360	0.01
Sn	118	1	nogas	49975	0.00
Ba	137	1	nogas	25319	0.01
Sb	121	2	He	34230	0.01
P	31	1	nogas	65507	0.00
La	139	1	nogas	117	22.45

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	314297	1.66	316349	99.35	70	125	
Ge	72	1	nogas	1722810	1.15	1739233	99.06	70	125	
In	115	1	nogas	1422106	2.19	1398647	101.68	70	125	
Bi	209	1	nogas	976223	2.00	952288	102.51	70	125	
Ge	72	2	He	485966	1.77	487241	99.74	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	008CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:03:55-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	268544	0.00
Na	23	1	nogas	120665090	0.00
Mg	24	1	nogas	80900200	0.00
Al	27	1	nogas	1035330	0.00
K	39	1	nogas	125040782	0.00
Ti	47	1	nogas	110306	0.00
V	51	1	nogas	1843830	0.00
Cr	52	1	nogas	1358226	0.00
Mn	55	1	nogas	1694533	0.00
Co	59	1	nogas	1382403	0.00
Ni	60	1	nogas	301108	0.00
Cu	63	1	nogas	734659	0.00
Zn	66	1	nogas	232436	0.00
As	75	1	nogas	336234	0.00
Sr	88	1	nogas	1869571	0.00
Ag	107	1	nogas	826429	0.00
Cd	111	1	nogas	169093	0.00
Sb	121	1	nogas	765405	0.00
Tl	205	1	nogas	1077101	0.00
Pb	208	1	nogas	1495309	0.00
[Pb]	206	1	nogas	369821	0.00
[Pb]	207	1	nogas	334115	0.00
Na	23	2	He	9863446	0.00
Mg	24	2	He	5528051	0.00
Al	27	2	He	33013	0.00
K	39	2	He	6769811	0.00
Ca	43	2	He	17986	0.01
Ca	44	2	He	305932	0.00
V	51	2	He	409873	0.00
Cr	52	2	He	433108	0.00
Mn	55	2	He	315147	0.00
Fe	56	2	He	38592276	0.00
Co	59	2	He	563134	0.00
Ni	60	2	He	143126	0.00
Cu	63	2	He	366700	0.00
Zn	66	2	He	86145	0.00
As	75	2	He	86134	0.00
Se	78	2	He	6843	0.03
B	11	1	nogas	968736	0.00
Si	28	1	nogas	31459175	0.00

Calibration Standard Report

Ca	43	1	nogas	226934	0.00
Ca	44	1	nogas	3644360	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	140758986	0.00
Se	77	1	nogas	28169	0.02
Se	82	1	nogas	14169	0.01
Mo	95	1	nogas	332894	0.00
Sn	118	1	nogas	489922	0.00
Ba	137	1	nogas	243975	0.00
Sb	121	2	He	328118	0.00
P	31	1	nogas	435073	0.00
La	139	1	nogas	570	1.54

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	312095	1.40	316349	98.66	70	125	
Ge	72	1	nogas	1747976	0.83	1739233	100.50	70	125	
In	115	1	nogas	1420730	7.97	1398647	101.58	70	125	
Bi	209	1	nogas	951949	1.01	952288	99.96	70	125	
Ge	72	2	He	473712	1.12	487241	97.22	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	009CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:05:53-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	538599	0.00
Na	23	1	nogas	237327339	0.00
Mg	24	1	nogas	158509345	0.00
Al	27	1	nogas	2033788	0.00
K	39	1	nogas	243493264	0.00
Ti	47	1	nogas	217541	0.00
V	51	1	nogas	3242263	0.00
Cr	52	1	nogas	2583693	0.00
Mn	55	1	nogas	3191444	0.00
Co	59	1	nogas	2694632	0.00
Ni	60	1	nogas	593216	0.00
Cu	63	1	nogas	1436425	0.00
Zn	66	1	nogas	448877	0.00
As	75	1	nogas	625579	0.00
Sr	88	1	nogas	3682551	0.00
Ag	107	1	nogas	1722850	0.00
Cd	111	1	nogas	337768	0.00
Sb	121	1	nogas	1569704	0.00
Tl	205	1	nogas	2258750	0.00
Pb	208	1	nogas	3050674	0.00
[Pb]	206	1	nogas	733307	0.00
[Pb]	207	1	nogas	670930	0.00
Na	23	2	He	18639900	0.00
Mg	24	2	He	10692491	0.00
Al	27	2	He	63978	0.00
K	39	2	He	13206975	0.00
Ca	43	2	He	35213	0.00
Ca	44	2	He	596075	0.00
V	51	2	He	805827	0.00
Cr	52	2	He	855680	0.00
Mn	55	2	He	625023	0.00
Fe	56	2	He	75737789	0.00
Co	59	2	He	1108605	0.00
Ni	60	2	He	282534	0.00
Cu	63	2	He	707401	0.00
Zn	66	2	He	167028	0.00
As	75	2	He	170061	0.00
Se	78	2	He	13320	0.01
B	11	1	nogas	1848241	0.00
Si	28	1	nogas	55814233	0.00

Calibration Standard Report

Ca	43	1	nogas	442942	0.00
Ca	44	1	nogas	7144967	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	277888473	0.00
Se	77	1	nogas	40134	0.01
Se	82	1	nogas	28326	0.01
Mo	95	1	nogas	672659	0.00
Sn	118	1	nogas	967055	0.00
Ba	137	1	nogas	490830	0.00
Sb	121	2	He	646378	0.00
P	31	1	nogas	829375	0.00
La	139	1	nogas	510	3.52

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	289577	2.33	316349	91.54	70	125	
Ge	72	1	nogas	1642157	1.90	1739233	94.42	70	125	
In	115	1	nogas	1323531	2.58	1398647	94.63	70	125	
Bi	209	1	nogas	941935	1.39	952288	98.91	70	125	
Ge	72	2	He	465954	2.11	487241	95.63	70	125	

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	012SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:11:51-05:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.961	1.961	6.57	5644	0.03	2000	
Na	23	1	nogas	216.533	216.533	4.16	3338560	0.01	200000	
Mg	24	1	nogas	213.680	213.680	1.52	1734670	0.01	200000	
Al	27	1	nogas	2.229	2.229	7.04	42632	0.01	2000	
K	39	1	nogas	194.204	194.204	14.65	6999239	0.00	200000	
Ti	47	1	nogas	2.111	2.111	9.55	2570	0.08	2000	
V	51	1	nogas	0.247	0.247	361.27	215939	0.00	2000	
Cr	52	1	nogas	1.901	1.901	3.33	44791	0.00	2000	
Mn	55	1	nogas	2.130	2.130	4.90	49045	0.00	2000	
Co	59	1	nogas	2.019	2.019	2.58	28876	0.01	2000	
Ni	60	1	nogas	2.489	2.489	2.33	6751	0.04	2000	
Cu	63	1	nogas	2.046	2.046	3.14	16631	0.01	2000	
Zn	66	1	nogas	2.246	2.246	7.99	5441	0.04	2000	
As	75	1	nogas	1.395	1.395	71.75	47739	0.00	2000	
Sr	88	1	nogas	1.939	1.939	4.55	38034	0.01	2000	
Ag	107	1	nogas	2.109	2.109	6.68	17392	0.01	2000	
Cd	111	1	nogas	1.959	1.959	4.68	3610	0.05	2000	
Sb	121	1	nogas	1.873	1.873	7.31	17115	0.01	2000	
Tl	205	1	nogas	2.221	2.221	7.55	26275	0.01	2000	
Pb	208	1	nogas	2.156	2.156	2.62	33007	0.01	2000	
U	238	1	nogas	1.979	1.979	3.35	30126	0.01	2000	
[Pb]	206	1	nogas	2.049	2.049	5.19	8015	0.03	2000	
[Pb]	207	1	nogas	1.986	1.986	4.95	7065	0.03	2000	
Na	23	2	He	202.872	202.872	1.24	308191	0.07	200000	
Mg	24	2	He	201.644	201.644	1.13	114386	0.18	200000	
Al	27	2	He	2.089	2.089	13.65	1497	0.14	2000	
K	39	2	He	205.924	205.924	2.53	285502	0.07	200000	
Ca	43	2	He	205.227	205.227	28.34	420	48.86	200000	
Ca	44	2	He	207.703	207.703	1.67	7732	2.69	200000	
V	51	2	He	1.808	1.808	2.17	11953	0.02	2000	
Cr	52	2	He	1.995	1.995	8.22	11387	0.02	2000	
Mn	55	2	He	2.111	2.111	1.55	7355	0.03	2000	
Fe	56	2	He	200.321	200.321	1.46	814741	0.02	200000	
Co	59	2	He	2.010	2.010	1.08	11797	0.02	2000	
Ni	60	2	He	1.867	1.867	5.32	3007	0.06	2000	
Cu	63	2	He	1.847	1.847	2.51	8619	0.02	2000	
Zn	66	2	He	1.837	1.837	4.67	2003	0.09	2000	
As	75	2	He	1.982	1.982	0.97	2057	0.10	2000	
Se	78	2	He	2.267	2.267	21.15	510	0.44	2000	
B	11	1	nogas	27.514	27.514	6.74	234831	0.01	2000	

Sample Report

Si	28	1	nogas	119.948	119.948	26.42	4518180	0.00	2000	
Ca	43	1	nogas	193.342	193.342	10.82	5658	3.42	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ca	44	1	nogas	205.085	205.085	8.14	120540	0.17	200000	
Fe	56	1	nogas	188.289	188.289	5.17	4490165	0.00	200000	
Se	77	1	nogas	3.607	3.607	121.62	14046	0.03	2000	
Se	82	1	nogas	1.311	1.311	37.69	457	0.29	2000	
Mo	95	1	nogas	2.143	2.143	14.17	7855	0.03	2000	
Sn	118	1	nogas	1.999	1.999	7.05	11257	0.02	2000	
Ba	137	1	nogas	2.052	2.052	3.55	5604	0.04	2000	
Sb	121	2	He	1.919	1.919	5.28	7382	0.03	2000	
La	139	1	nogas	-12.242	-12.242	-57.21	33	-36.73	2000	
Au	197	1	nogas	-50.949	-50.949	-253.04	27	-191.06	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	332162	1.16	316349	105.00	70	125	
Ge	72	1	nogas	1737700	4.34	1739233	99.91	70	125	
In	115	1	nogas	1454290	1.59	1398647	103.98	70	125	
Bi	209	1	nogas	993751	0.65	952288	104.35	70	125	
Ge	72	2	He	490071	0.54	487241	100.58	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLICV5
Data File Name	013LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:13:50-05:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	5.030	2.013	14052	3.01	5	100.6	70	130	
Na	23	1	nogas	511.998	1.167	6887683	2.48	500	102.4	70	130	
Mg	24	1	nogas	510.682	1.674	4127952	1.24	500	102.1	70	130	
Al	27	1	nogas	5.060	3.721	71682	1.05	5	101.2	70	130	
K	39	1	nogas	523.701	10.321	10991396	2.71	500	104.7	70	130	
Ti	47	1	nogas	4.921	1.946	5704	2.49	5	98.4	70	130	
V	51	1	nogas	5.210	7.863	292930	3.17	5	104.2	70	130	
Cr	52	1	nogas	5.050	2.831	86347	1.55	5	101.0	70	130	
Mn	55	1	nogas	5.126	5.183	98180	1.23	5	102.5	70	130	
Co	59	1	nogas	4.974	4.046	69850	1.39	5	99.5	70	130	
Ni	60	1	nogas	5.396	2.489	15630	3.14	5	107.9	70	130	
Cu	63	1	nogas	5.092	3.487	39119	3.47	5	101.8	70	130	
Zn	66	1	nogas	5.250	5.135	12388	2.32	5	105.0	70	130	
As	75	1	nogas	5.910	10.490	60868	1.04	5	118.2	70	130	
Sr	88	1	nogas	4.683	3.478	89958	3.24	5	93.7	70	130	
Ag	107	1	nogas	5.261	3.340	42803	0.47	5	105.2	70	130	
Cd	111	1	nogas	4.936	5.548	8872	4.22	5	98.7	70	130	
Sb	121	1	nogas	4.762	1.416	40227	2.47	5	95.2	70	130	
Tl	205	1	nogas	4.745	6.701	55392	3.05	5	94.9	70	130	
Pb	208	1	nogas	4.966	1.705	75704	1.70	5	99.3	70	130	
U	238	1	nogas	4.970	4.697	74820	3.35	5	99.4	70	130	
[Pb]	206	1	nogas	4.945	6.114	19008	2.08	5	98.9	70	130	
[Pb]	207	1	nogas	4.720	4.107	16545	1.83	5	94.4	70	130	
Na	23	2	He	523.889	0.137	612244	0.16	500	104.8	70	130	
Mg	24	2	He	513.726	0.787	285295	0.69	500	102.7	70	130	
Al	27	2	He	5.446	10.227	2567	7.15	5	108.9	70	130	
K	39	2	He	508.593	1.211	483668	0.83	500	101.7	70	130	
Ca	43	2	He	489.677	5.954	930	5.69	500	97.9	70	130	
Ca	44	2	He	477.557	3.601	15900	3.27	500	95.5	70	130	
V	51	2	He	4.944	0.272	24715	0.20	5	98.9	70	130	
Cr	52	2	He	4.937	3.572	24139	3.19	5	98.7	70	130	
Mn	55	2	He	5.026	3.352	16611	3.14	5	100.5	70	130	
Fe	56	2	He	524.377	1.139	2068363	1.01	500	104.9	70	130	
Co	59	2	He	5.181	1.117	29744	0.99	5	103.6	70	130	
Ni	60	2	He	5.155	8.157	7745	8.02	5	103.1	70	130	
Cu	63	2	He	4.784	1.809	19207	1.70	5	95.7	70	130	
Zn	66	2	He	4.710	7.298	4447	6.77	5	94.2	70	130	
As	75	2	He	5.109	2.252	4760	2.00	5	102.2	70	130	
Se	78	2	He	4.318	18.353	638	8.29	5	86.4	70	130	
B	11	1	nogas	36.458	9.784	243536	1.98	25	145.8	70	130	LLICV Main CR1 Failed
Si	28	1	nogas	263.788	12.887	5250838	0.23	25	1055.2	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	513.582	3.207	12931	0.74	500	102.7	70	130	
Ca	44	1	nogas	503.628	2.559	229096	1.90	500	100.7	70	130	
Fe	56	1	nogas	499.315	6.032	8878177	2.05	500	99.9	70	130	
Se	77	1	nogas	13.956	20.534	15370	1.17	5	279.1	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	5.169	8.643	1013	10.08	5	103.4	70	130	
Mo	95	1	nogas	4.915	4.085	17389	2.58	5	98.3	70	130	
Sn	118	1	nogas	4.871	1.883	25793	0.72	5	97.4	70	130	
Ba	137	1	nogas	4.700	2.341	12381	1.10	5	94.0	70	130	
Sb	121	2	He	4.749	1.524	16682	1.41	5	95.0	70	130	
Li	7	1	nogas	4.943	2.098	60320	1.65	5	98.9	70	130	
P	31	1	nogas	28.336	9.874	44035	3.11	25	113.3	70	130	
La	139	1	nogas	6.049	367.768	87	76.83	5	121.0	70	130	
Au	197	1	nogas	-272.824	-23.183	7	86.60	5	-5456.5	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	323759	2.02	316349	102.34	70	125	
Ge	72	1	nogas	1717670	3.58	1739233	98.76	70	125	
In	115	1	nogas	1424270	1.43	1398647	101.83	70	125	
Bi	209	1	nogas	984774	4.10	952288	103.41	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Ge	72	2	He	481283	0.13	487241	98.78	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	014_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:15:50-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.001	875.3	47	81.1	1	
Na	23	1	nogas	-5.212	-20.5	688943	1.4	100	
Mg	24	1	nogas	0.148	55.1	7203	8.5	100	
Al	27	1	nogas	-0.030	-167.3	18593	1.2	5	
K	39	1	nogas	5.912	121.7	4594239	0.4	100	
Ti	47	1	nogas	0.014	80.8	180	5.6	2.5	
V	51	1	nogas	1.026	84.6	225993	4.5	2.5	
Cr	52	1	nogas	0.130	49.7	20602	2.7	2.5	
Mn	55	1	nogas	0.056	107.2	14062	6.8	2.5	
Co	59	1	nogas	0.004	75.6	357	11.7	2.5	
Ni	60	1	nogas	0.409	5.2	270	24.3	2.5	
Cu	63	1	nogas	-0.041	-25.6	903	7.1	2.5	
Zn	66	1	nogas	0.074	18.7	317	9.1	2.5	
As	75	1	nogas	1.464	43.7	47429	2.9	2.5	
Sr	88	1	nogas	0.007	23.0	777	5.2	2.5	
Ag	107	1	nogas	0.019	41.2	233	27.6	2.5	
Cd	111	1	nogas	0.000	-2702.2	17	91.7	1	
Sb	121	1	nogas	-0.069	-32.0	1287	13.0	2.5	
Tl	205	1	nogas	0.043	45.6	603	38.3	1	
Pb	208	1	nogas	0.024	34.8	620	20.6	2.5	
U	238	1	nogas	0.008	34.7	190	22.9	2.5	
[Pb]	206	1	nogas	0.016	65.1	150	26.7	2.5	
[Pb]	207	1	nogas	0.030	24.5	160	16.5	2.5	
Na	23	2	He	-3.592	-44.4	104133	1.6	100	
Mg	24	2	He	0.080	144.8	620	9.7	100	
Al	27	2	He	-0.687	-38.1	567	16.4	5	
K	39	2	He	-4.577	-41.5	147681	0.8	100	
Ca	43	2	He	1.878	601.5	43	48.0	100	
Ca	44	2	He	-2.036	-167.5	1143	10.7	100	
V	51	2	He	-0.017	-119.7	4209	0.4	2.5	
Cr	52	2	He	0.004	2053.2	2434	14.0	2.5	
Mn	55	2	He	0.007	123.9	447	6.8	2.5	
Fe	56	2	He	-0.071	-68.3	15994	1.5	100	
Co	59	2	He	0.002	142.0	87	24.0	2.5	
Ni	60	2	He	-0.014	-150.1	213	16.5	2.5	
Cu	63	2	He	-0.293	-4.2	637	6.3	2.5	
Zn	66	2	He	-0.331	-12.9	97	36.3	2.5	
As	75	2	He	0.106	64.1	379	17.7	2.5	
Se	78	2	He	-0.679	-47.8	305	5.6	2.5	
B	11	1	nogas	8.654	43.5	204828	2.2	10	
Si	28	1	nogas	19.528	43.9	3920809	1.4	5	ICB Main CR1 Failed
Ca	43	1	nogas	1.256	438.8	1190	9.5	100	
Ca	44	1	nogas	-2.456	-59.7	42916	2.1	100	
Fe	56	1	nogas	-0.345	-611.6	1743967	1.8	100	
Se	77	1	nogas	11.750	35.2	15046	2.3	2.5	ICB Main CR1 Failed
Se	82	1	nogas	-0.386	-133.4	207	35.0	2.5	

Initial Calibration Blank (ICB) Report

Mo	95	1	nogas	-0.034	-60.8	247	31.0	2.5	
Sn	118	1	nogas	0.038	46.8	940	12.3	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.004	720.2	163	49.9	2.5	
Sb	121	2	He	-0.091	-12.5	553	5.5	2.5	
P	31	1	nogas	3.877	19.7	23488	1.4	10	
La	139	1	nogas	-5.400	-86.3	53	28.6	2.5	
Au	197	1	nogas	-160.259	-79.9	17	69.3	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	335206	1.81	316349	105.96	70	125	
Ge	72	1	nogas	1716598	1.68	1739233	98.70	70	125	
In	115	1	nogas	1435297	2.64	1398647	102.62	70	125	
Bi	209	1	nogas	984907	0.54	952288	103.43	70	125	
Ge	72	2	He	484023	2.06	487241	99.34	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	015_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:17:50-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	102.021	3.805	272390	1.41	100	102.0	90	110	
Na	23	1	nogas	9959.852	0.851	120637936	2.19	10000	99.6	90	110	
Mg	24	1	nogas	9888.385	1.205	79857937	0.81	10000	98.9	90	110	
Al	27	1	nogas	98.652	1.988	1022145	0.81	100	98.7	90	110	
K	39	1	nogas	10039.912	2.347	125557649	1.13	10000	100.4	90	110	
Ti	47	1	nogas	100.665	3.135	110672	2.01	100	100.7	90	110	
V	51	1	nogas	101.116	2.657	1776578	1.40	100	101.1	90	110	
Cr	52	1	nogas	96.242	2.047	1272615	0.90	100	96.2	90	110	
Mn	55	1	nogas	102.096	1.410	1666175	0.42	100	102.1	90	110	
Co	59	1	nogas	100.029	2.777	1364921	2.53	100	100.0	90	110	
Ni	60	1	nogas	100.477	1.164	300835	0.67	100	100.5	90	110	
Cu	63	1	nogas	101.045	1.150	734924	0.92	100	101.0	90	110	
Zn	66	1	nogas	100.898	1.950	229776	1.03	100	100.9	90	110	
As	75	1	nogas	99.993	0.696	336590	0.77	100	100.0	90	110	
Sr	88	1	nogas	99.939	1.244	1859646	1.21	100	99.9	90	110	
Ag	107	1	nogas	105.396	2.465	835143	1.40	100	105.4	90	110	
Cd	111	1	nogas	98.731	2.209	171342	2.12	100	98.7	90	110	
Sb	121	1	nogas	97.042	1.077	764505	0.84	100	97.0	90	110	
Tl	205	1	nogas	94.520	4.969	1078466	1.91	100	94.5	90	110	
Pb	208	1	nogas	99.310	0.876	1508974	0.88	100	99.3	90	110	
U	238	1	nogas	103.539	6.702	1523793	5.50	100	103.5	90	110	
[Pb]	206	1	nogas	99.735	4.914	373657	1.84	100	99.7	90	110	
[Pb]	207	1	nogas	98.960	3.917	338412	1.08	100	99.0	90	110	
Na	23	2	He	10151.008	0.908	9775731	0.62	10000	101.5	90	110	
Mg	24	2	He	9922.722	2.405	5433099	2.39	10000	99.2	90	110	
Al	27	2	He	98.680	0.629	32628	1.47	100	98.7	90	110	
K	39	2	He	9951.900	0.414	6666479	0.40	10000	99.5	90	110	
Ca	43	2	He	9642.783	5.854	17355	5.21	10000	96.4	90	110	
Ca	44	2	He	9911.025	1.157	302588	1.12	10000	99.1	90	110	
V	51	2	He	98.525	0.786	406939	1.14	100	98.5	90	110	
Cr	52	2	He	98.594	1.583	431108	0.47	100	98.6	90	110	
Mn	55	2	He	99.564	1.555	317266	2.64	100	99.6	90	110	
Fe	56	2	He	9815.620	0.386	37963887	1.06	10000	98.2	90	110	
Co	59	2	He	99.404	0.015	562428	1.10	100	99.4	90	110	
Ni	60	2	He	99.881	2.042	144003	1.20	100	99.9	90	110	
Cu	63	2	He	101.058	1.441	366901	1.06	100	101.1	90	110	
Zn	66	2	He	101.148	1.183	86597	1.36	100	101.1	90	110	
As	75	2	He	99.605	0.832	86483	0.81	100	99.6	90	110	
Se	78	2	He	100.599	2.363	6991	1.98	100	100.6	90	110	
B	11	1	nogas	515.125	3.610	987579	0.48	500	103.0	90	110	
Si	28	1	nogas	5196.422	1.358	31342794	0.77	5000	103.9	90	110	
Ca	43	1	nogas	10060.568	1.886	226048	0.79	10000	100.6	90	110	
Ca	44	1	nogas	10304.429	0.214	3740412	1.09	10000	103.0	90	110	
Fe	56	1	nogas	10083.904	2.723	142225691	1.55	10000	100.8	90	110	
Se	77	1	nogas	111.832	4.373	28710	1.66	100	111.8	90	110	ICV Main CR1 Failed
Se	82	1	nogas	101.416	2.019	14579	1.76	100	101.4	90	110	
Mo	95	1	nogas	98.053	1.476	331723	0.50	100	98.1	90	110	
Sn	118	1	nogas	96.267	0.556	479561	0.78	100	96.3	90	110	
Ba	137	1	nogas	97.710	1.214	246021	0.30	100	97.7	90	110	
Sb	121	2	He	98.985	0.354	326750	1.40	100	99.0	90	110	
Li	7	1	nogas	99.980	3.327	651835	0.52	100	100.0	90	110	
P	31	1	nogas	511.549	0.705	439228	0.68	500	102.3	90	110	
La	139	1	nogas	174.409	4.507	560	3.09	100	174.4	90	110	ICV Main CR1 Failed
Au	197	1	nogas	109.290	101.947	40	25.00	100	109.3	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	310512	3.12	316349	98.15	70	125	
Ge	72	1	nogas	1674781	1.14	1739233	96.29	70	125	
In	115	1	nogas	1377023	0.91	1398647	98.45	70	125	
Bi	209	1	nogas	963489	3.15	952288	101.18	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	475443	1.09	487241	97.58	70	125	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	016ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:20:00-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.005	94.0	53	21.7	0	ICSA Main CR1 Failed
Na	23	1	nogas	100861.246	2.2	1140852659	0.3	0	
Mg	24	1	nogas	99713.708	1.4	756342667	1.8	0	
Al	27	1	nogas	91898.595	1.3	920074493	0.9	0	
K	39	1	nogas	97233.341	0.3	1158946193	0.8	0	
Ti	47	1	nogas	1927.623	0.9	2082853	1.5	0	
V	51	1	nogas	-1.113	-65.3	184305	5.2	0	ICSA Main CR1 Failed
Cr	52	1	nogas	0.839	2.6	28876	1.8	0	ICSA Main CR1 Failed
Mn	55	1	nogas	0.378	13.6	18630	4.9	0	ICSA Main CR1 Failed
Co	59	1	nogas	0.142	9.1	2207	8.7	0	ICSA Main CR1 Failed
Ni	60	1	nogas	1.084	2.6	2254	4.5	0	ICSA Main CR1 Failed
Cu	63	1	nogas	1.023	4.6	8469	3.3	0	ICSA Main CR1 Failed
Zn	66	1	nogas	1.208	2.4	2844	1.7	0	ICSA Main CR1 Failed
As	75	1	nogas	2.646	5.1	48972	0.3	0	ICSA Main CR1 Failed
Sr	88	1	nogas	0.854	3.5	16244	2.6	0	ICSA Main CR1 Failed
Ag	107	1	nogas	0.071	20.7	627	19.0	0	ICSA Main CR1 Failed
Cd	111	1	nogas	0.747	4.0	1223	4.5	0	ICSA Main CR1 Failed
Sb	121	1	nogas	0.026	69.2	1970	6.2	0	ICSA Main CR1 Failed
Tl	205	1	nogas	0.275	85.7	3084	83.6	0	ICSA Main CR1 Failed
Pb	208	1	nogas	0.185	15.4	3060	14.1	0	ICSA Main CR1 Failed
[Pb]	206	1	nogas	0.206	13.3	817	12.3	0	ICSA Main CR1 Failed
[Pb]	207	1	nogas	0.216	16.3	753	15.7	0	ICSA Main CR1 Failed
Na	23	2	He	97151.622	0.9	89731969	1.1	0	
Mg	24	2	He	95898.424	2.2	50843563	1.8	0	
Al	27	2	He	91021.442	2.7	28449260	2.5	0	
K	39	2	He	93981.008	1.5	61682801	1.5	0	
Ca	43	2	He	93104.254	1.2	161987	1.2	0	
Ca	44	2	He	93221.551	0.4	2746656	0.7	0	
V	51	2	He	-0.110	-24.8	3637	2.3	0	ICSA Main CR1 Failed
Cr	52	2	He	0.230	30.9	3267	8.7	0	ICSA Main CR1 Failed
Mn	55	2	He	0.377	8.9	1567	5.9	0	ICSA Main CR1 Failed
Fe	56	2	He	95566.623	1.0	357826875	1.6	0	
Co	59	2	He	0.043	31.0	307	24.5	0	ICSA Main CR1 Failed
Ni	60	2	He	0.223	17.4	533	9.6	0	ICSA Main CR1 Failed
Cu	63	2	He	0.135	21.7	2103	4.3	0	ICSA Main CR1 Failed
Zn	66	2	He	0.150	50.2	490	13.4	0	ICSA Main CR1 Failed
As	75	2	He	0.151	18.9	398	6.4	0	ICSA Main CR1 Failed
Se	78	2	He	0.103	313.9	341	5.5	0	ICSA Main CR1 Failed
B	11	1	nogas	10.326	39.8	200447	4.1	0	ICSA Main CR1 Failed
Si	28	1	nogas	63.395	24.7	3993105	1.2	0	
Ca	43	1	nogas	95888.013	0.3	2110608	0.6	0	
Ca	44	1	nogas	94872.825	0.7	33538210	0.2	0	
Fe	56	1	nogas	95092.619	1.3	1305688229	0.7	0	
Se	77	1	nogas	21.115	13.1	15740	1.9	0	
Se	82	1	nogas	-0.258	-107.7	217	18.7	0	ICSA Main CR1 Failed
Mo	95	1	nogas	1937.589	2.5	6443309	2.1	0	
Sn	118	1	nogas	0.160	36.4	1407	20.0	0	ICSA Main CR1 Failed
Ba	137	1	nogas	0.081	33.4	327	19.7	0	ICSA Main CR1 Failed
Sb	121	2	He	-0.020	-180.7	753	14.6	0	ICSA Main CR1 Failed

Interference Check Solution A (ICS-A) Report

P	31	1	nogas	95666.964	0.8	77209927	0.8	0	
La	139	1	nogas	42.298	22.1	173	14.5	0	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	323414	1.16	316349	102.23	70	125	
Ge	72	1	nogas	1647866	0.82	1739233	94.75	70	125	
In	115	1	nogas	1282869	0.83	1398647	91.72	70	125	
Bi	209	1	nogas	913698	1.22	952288	95.95	70	125	
Ge	72	2	He	460425	0.70	487241	94.50	70	125	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	017ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:22:06-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	106.707	3.077	256080	2.43	100	106.7	80	120	
Na	23	1	nogas	108084.802	3.480	1225676194	2.39	100	108084.8	80	120	ICSB Main CR1 Failed
Mg	24	1	nogas	103795.636	2.507	789241601	1.54	100	103795.6	80	120	ICSB Main CR1 Failed
Al	27	1	nogas	88198.585	0.486	898196707	2.49	100	88198.6	80	120	ICSB Main CR1 Failed
K	39	1	nogas	103702.766	3.759	1256279195	2.08	100	103702.8	80	120	ICSB Main CR1 Failed
Ti	47	1	nogas	2051.210	1.159	2254134	2.29	100	2051.2	80	120	ICSB Main CR1 Failed
V	51	1	nogas	99.988	0.410	1760849	2.96	100	100.0	80	120	
Cr	52	1	nogas	92.706	2.843	1227214	1.53	100	92.7	80	120	
Mn	55	1	nogas	100.741	4.292	1645109	3.74	100	100.7	80	120	
Co	59	1	nogas	91.678	2.442	1251640	1.26	100	91.7	80	120	
Ni	60	1	nogas	95.110	1.237	284910	1.62	100	95.1	80	120	
Cu	63	1	nogas	94.906	2.829	690602	0.18	100	94.9	80	120	
Zn	66	1	nogas	98.920	1.969	225413	0.96	100	98.9	80	120	
As	75	1	nogas	98.877	3.141	333424	0.40	100	98.9	80	120	
Sr	88	1	nogas	98.190	0.886	1828650	2.71	100	98.2	80	120	
Ag	107	1	nogas	98.992	2.696	784822	0.45	100	99.0	80	120	
Cd	111	1	nogas	97.521	4.145	168958	0.77	100	97.5	80	120	
Sb	121	1	nogas	94.764	1.706	747132	2.28	100	94.8	80	120	
Tl	205	1	nogas	94.715	1.774	1026529	1.44	100	94.7	80	120	
Pb	208	1	nogas	94.566	2.590	1436903	2.59	100	94.6	80	120	
U	238	1	nogas	105.481	0.313	1474297	0.07	100	105.5	80	120	
[Pb]	206	1	nogas	99.656	3.879	354622	3.54	100	99.7	80	120	
[Pb]	207	1	nogas	98.445	3.824	319684	3.50	100	98.4	80	120	
Na	23	2	He	106486.020	0.564	98324745	0.98	100	106486.0	80	120	
Mg	24	2	He	104468.380	0.909	55378239	0.54	100	104468.4	80	120	
Al	27	2	He	90827.211	1.114	28383443	0.86	100	90827.2	80	120	ICSB Main CR1 Failed
K	39	2	He	104969.907	1.818	68877556	1.81	100	104969.9	80	120	
Ca	43	2	He	105464.763	1.288	183446	0.80	100	105464.8	80	120	ICSB Main CR1 Failed
Ca	44	2	He	106061.500	2.106	3123753	0.74	100	106061.5	80	120	ICSB Main CR1 Failed
V	51	2	He	99.741	1.769	398781	0.57	100	99.7	80	120	
Cr	52	2	He	97.642	1.569	413434	1.35	100	97.6	80	120	
Mn	55	2	He	98.144	1.011	302769	0.93	100	98.1	80	120	
Fe	56	2	He	103827.092	1.791	388625928	0.81	100	103827.1	80	120	
Co	59	2	He	98.629	1.947	540240	0.69	100	98.6	80	120	
Ni	60	2	He	98.939	2.894	138103	1.54	100	98.9	80	120	
Cu	63	2	He	98.653	2.240	346799	0.93	100	98.7	80	120	
Zn	66	2	He	100.457	2.286	83269	1.65	100	100.5	80	120	
As	75	2	He	100.087	1.545	84134	0.34	100	100.1	80	120	
Se	78	2	He	100.617	1.188	6770	0.78	100	100.6	80	120	
B	11	1	nogas	546.521	4.436	931882	2.34	100	546.5	80	120	
Si	28	1	nogas	4837.824	1.194	29459960	2.30	100	4837.8	80	120	ICSB Main CR1 Failed
Ca	43	1	nogas	102509.544	3.990	2293775	2.58	100	102509.5	80	120	ICSB Main CR1 Failed
Ca	44	1	nogas	101648.068	2.795	36535992	2.21	100	101648.1	80	120	ICSB Main CR1 Failed
Fe	56	1	nogas	102450.850	5.984	1429448032	3.68	100	102450.9	80	120	ICSB Main CR1 Failed
Se	77	1	nogas	106.438	9.085	27968	4.25	100	106.4	80	120	
Se	82	1	nogas	98.301	2.676	14146	0.82	100	98.3	80	120	
Mo	95	1	nogas	1982.452	3.150	6702962	1.63	100	1982.5	80	120	ICSB Main CR1 Failed
Sn	118	1	nogas	94.486	6.351	469626	2.33	100	94.5	80	120	
Ba	137	1	nogas	95.753	3.067	240787	1.95	100	95.8	80	120	
Sb	121	2	He	98.772	1.735	315647	0.35	100	98.8	80	120	
La	139	1	nogas	155.900	18.384	507	15.33	100	155.9	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	278949	1.49	316349	88.18	70	125	
Ge	72	1	nogas	1676133	2.60	1739233	96.37	70	125	
In	115	1	nogas	1376377	4.56	1398647	98.41	70	125	
Bi	209	1	nogas	914277	0.34	952288	96.01	70	125	
Ge	72	2	He	460356	1.41	487241	94.48	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	028_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:54:04-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	108.354	4.990	255551	1.72	100	108.4	90	110	
Na	23	1	nogas	10745.080	6.463	121425303	2.11	10000	107.5	90	110	
Mg	24	1	nogas	10690.672	7.243	80562060	1.32	10000	106.9	90	110	
Al	27	1	nogas	104.270	10.347	1046209	0.59	100	104.3	90	110	
K	39	1	nogas	10596.867	9.978	128278603	1.89	10000	106.0	90	110	
Ti	47	1	nogas	103.111	10.706	109856	0.77	100	103.1	90	110	
V	51	1	nogas	97.683	14.021	1667991	2.39	100	97.7	90	110	
Cr	52	1	nogas	101.993	13.842	1303328	3.75	100	102.0	90	110	
Mn	55	1	nogas	108.830	11.045	1719792	1.14	100	108.8	90	110	
Co	59	1	nogas	105.198	9.263	1393510	5.03	100	105.2	90	110	
Ni	60	1	nogas	103.568	10.241	300604	1.37	100	103.6	90	110	
Cu	63	1	nogas	102.997	9.865	726348	1.78	100	103.0	90	110	
Zn	66	1	nogas	103.886	9.546	229473	2.25	100	103.9	90	110	
As	75	1	nogas	99.792	10.622	325870	1.16	100	99.8	90	110	
Sr	88	1	nogas	104.784	10.008	1891727	4.77	100	104.8	90	110	
Ag	107	1	nogas	108.462	11.346	832451	1.52	100	108.5	90	110	
Cd	111	1	nogas	107.615	8.434	171887	0.86	100	107.6	90	110	
Sb	121	1	nogas	99.652	10.414	760832	1.02	100	99.7	90	110	
Tl	205	1	nogas	103.133	3.974	1077446	2.60	100	103.1	90	110	
Pb	208	1	nogas	98.167	0.720	1491609	0.72	100	98.2	90	110	
U	238	1	nogas	109.895	6.664	1479018	2.08	100	109.9	90	110	
[Pb]	206	1	nogas	108.311	4.538	371457	2.30	100	108.3	90	110	
[Pb]	207	1	nogas	106.070	6.569	331706	1.93	100	106.1	90	110	
Na	23	2	He	10457.523	2.269	10085676	1.41	10000	104.6	90	110	
Mg	24	2	He	10189.898	3.427	5588355	1.92	10000	101.9	90	110	
Al	27	2	He	102.464	2.517	33908	1.68	100	102.5	90	110	
K	39	2	He	10324.316	0.869	6910310	0.85	10000	103.2	90	110	
Ca	43	2	He	10226.109	6.031	18443	6.27	10000	102.3	90	110	
Ca	44	2	He	10070.956	1.431	308008	0.17	10000	100.7	90	110	
V	51	2	He	99.875	2.593	413178	1.92	100	99.9	90	110	
Cr	52	2	He	99.349	4.042	435107	2.65	100	99.3	90	110	
Mn	55	2	He	101.519	2.420	323994	0.97	100	101.5	90	110	
Fe	56	2	He	10028.612	0.633	38859149	0.87	10000	100.3	90	110	
Co	59	2	He	101.401	0.833	574799	1.31	100	101.4	90	110	
Ni	60	2	He	99.380	1.803	143554	1.05	100	99.4	90	110	
Cu	63	2	He	99.840	2.317	363136	0.82	100	99.8	90	110	
Zn	66	2	He	100.953	2.015	86591	1.95	100	101.0	90	110	
As	75	2	He	100.014	1.899	86996	1.60	100	100.0	90	110	
Se	78	2	He	100.276	4.477	6983	4.31	100	100.3	90	110	
B	11	1	nogas	566.024	2.549	943866	2.68	500	113.2	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	5337.440	11.557	31105035	0.82	5000	106.7	90	110	
Ca	43	1	nogas	10652.492	9.228	232098	1.12	10000	106.5	90	110	
Ca	44	1	nogas	10569.627	8.405	3722257	1.85	10000	105.7	90	110	
Fe	56	1	nogas	10712.818	11.099	146302099	1.35	10000	107.1	90	110	
Se	77	1	nogas	74.679	21.405	22798	3.22	100	74.7	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	103.667	11.044	14436	2.07	100	103.7	90	110	
Mo	95	1	nogas	103.555	9.036	339844	2.01	100	103.6	90	110	
Sn	118	1	nogas	106.922	9.753	489765	1.09	100	106.9	90	110	
Ba	137	1	nogas	109.148	8.258	252958	1.16	100	109.1	90	110	
Sb	121	2	He	99.678	2.791	329566	1.37	100	99.7	90	110	
Li	7	1	nogas	104.344	7.316	599619	3.95	100	104.3	90	110	
P	31	1	nogas	528.677	12.227	438891	1.73	500	105.7	90	110	
La	139	1	nogas	192.624	18.284	563	15.51	100	192.6	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	117.546	152.162	37	31.49	100	117.5	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	274394	3.39	316349	86.74	70	125	
Ge	72	1	nogas	1634330	10.05	1739233	93.97	70	125	
In	115	1	nogas	1273503	8.67	1398647	91.05	70	125	
Bi	209	1	nogas	882733	6.32	952288	92.70	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	476349	1.48	487241	97.76	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	029_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T12:56:02-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.053	28.9	187	24.2	1	
Na	23	1	nogas	14.199	15.3	893541	1.5	100	
Mg	24	1	nogas	5.080	21.1	46534	17.3	100	
Al	27	1	nogas	0.208	16.4	20972	1.5	5	
K	39	1	nogas	28.312	19.0	4847388	0.7	100	
Ti	47	1	nogas	0.047	169.1	217	41.9	2.5	
V	51	1	nogas	-5.062	-8.0	128423	3.9	2.5	
Cr	52	1	nogas	-0.165	-27.1	16584	3.7	2.5	
Mn	55	1	nogas	-0.039	-83.2	12424	4.5	2.5	
Co	59	1	nogas	0.046	2.1	947	1.6	2.5	
Ni	60	1	nogas	0.440	6.0	363	21.4	2.5	
Cu	63	1	nogas	0.035	44.1	1467	8.8	2.5	
Zn	66	1	nogas	0.162	6.1	520	3.3	2.5	
As	75	1	nogas	-4.137	-10.0	30372	3.3	2.5	
Sr	88	1	nogas	0.051	26.7	1610	15.3	2.5	
Ag	107	1	nogas	0.049	47.6	477	40.9	2.5	
Cd	111	1	nogas	0.036	4.4	80	0.0	1	
Sb	121	1	nogas	-0.012	-169.4	1740	8.8	2.5	
Tl	205	1	nogas	0.260	63.8	3074	61.6	1	
Pb	208	1	nogas	0.072	9.7	1340	7.9	2.5	
U	238	1	nogas	0.075	40.8	1180	38.3	2.5	
[Pb]	206	1	nogas	0.059	11.7	310	8.5	2.5	
[Pb]	207	1	nogas	0.072	9.5	303	7.6	2.5	
Na	23	2	He	11.700	1.1	119941	1.6	100	
Mg	24	2	He	4.611	8.3	3174	8.3	100	
Al	27	2	He	-0.561	-41.8	613	14.1	5	
K	39	2	He	10.569	24.4	157597	1.1	100	
Ca	43	2	He	1.629	488.6	43	35.3	100	
Ca	44	2	He	4.739	146.7	1363	16.2	100	
V	51	2	He	-0.443	-2.0	2458	3.0	2.5	
Cr	52	2	He	-0.040	-61.6	2260	3.5	2.5	
Mn	55	2	He	0.068	19.3	650	5.5	2.5	
Fe	56	2	He	3.448	6.2	30081	1.7	100	
Co	59	2	He	0.038	8.4	293	7.1	2.5	
Ni	60	2	He	-0.001	-3526.1	233	28.5	2.5	
Cu	63	2	He	-0.252	-5.0	793	5.8	2.5	
Zn	66	2	He	-0.299	-13.0	127	27.7	2.5	
As	75	2	He	-0.048	-86.9	244	13.8	2.5	
Se	78	2	He	0.043	1213.2	357	8.5	2.5	
B	11	1	nogas	4.878	83.4	190041	3.2	10	
Si	28	1	nogas	10.022	56.8	3849847	1.3	5	CCB Main CR1 Failed
Ca	43	1	nogas	3.191	165.0	1230	10.9	100	
Ca	44	1	nogas	1.521	203.7	44149	1.8	100	
Fe	56	1	nogas	-21.399	-19.2	1436357	4.9	100	
Se	77	1	nogas	-22.888	-14.1	10026	4.7	2.5	
Se	82	1	nogas	-0.015	-3622.1	260	31.5	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.139	33.4	843	19.6	2.5	
Sn	118	1	nogas	0.116	19.4	1313	10.4	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.486	9.1	1400	10.1	2.5	
Sb	121	2	He	-0.073	-37.3	617	13.5	2.5	
P	31	1	nogas	3.194	35.6	22811	5.1	10	
La	139	1	nogas	-2.836	-347.8	60	50.0	2.5	
Au	197	1	nogas	372.409	47.1	63	24.1	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	321055	1.97	316349	101.49	70	125	
Ge	72	1	nogas	1707969	1.14	1739233	98.20	70	125	
In	115	1	nogas	1406644	3.36	1398647	100.57	70	125	
Bi	209	1	nogas	968349	0.40	952288	101.69	70	125	
Ge	72	2	He	487931	1.51	487241	100.14	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	039_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T13:16:52-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	103.862	1.393	266069	1.25	100	103.9	90	110	
Na	23	1	nogas	10282.121	0.627	123315636	0.90	10000	102.8	90	110	
Mg	24	1	nogas	10261.700	0.539	82087356	1.15	10000	102.6	90	110	
Al	27	1	nogas	98.571	3.593	1045418	0.57	100	98.6	90	110	
K	39	1	nogas	10015.487	3.599	128238424	1.92	10000	100.2	90	110	
Ti	47	1	nogas	99.838	4.780	112325	0.91	100	99.8	90	110	
V	51	1	nogas	107.303	1.673	1918126	2.86	100	107.3	90	110	
Cr	52	1	nogas	97.856	5.016	1323666	1.01	100	97.9	90	110	
Mn	55	1	nogas	105.125	1.350	1757133	3.95	100	105.1	90	110	
Co	59	1	nogas	99.710	3.019	1392937	2.11	100	99.7	90	110	
Ni	60	1	nogas	97.322	5.513	298049	1.61	100	97.3	90	110	
Cu	63	1	nogas	96.955	3.805	721765	1.02	100	97.0	90	110	
Zn	66	1	nogas	98.066	4.929	228510	1.02	100	98.1	90	110	
As	75	1	nogas	99.543	4.663	343100	1.24	100	99.5	90	110	
Sr	88	1	nogas	98.924	1.558	1885973	4.67	100	98.9	90	110	
Ag	107	1	nogas	103.331	3.203	838206	0.85	100	103.3	90	110	
Cd	111	1	nogas	100.650	2.991	172595	0.75	100	100.7	90	110	
Sb	121	1	nogas	93.142	5.202	750784	1.53	100	93.1	90	110	
Tl	205	1	nogas	95.574	2.485	1077523	2.03	100	95.6	90	110	
Pb	208	1	nogas	98.690	0.788	1499549	0.79	100	98.7	90	110	
U	238	1	nogas	101.706	8.344	1478899	8.43	100	101.7	90	110	
[Pb]	206	1	nogas	98.917	1.579	366194	1.29	100	98.9	90	110	
[Pb]	207	1	nogas	98.373	2.383	332331	2.10	100	98.4	90	110	
Na	23	2	He	10182.029	0.696	9901705	0.99	10000	101.8	90	110	
Mg	24	2	He	9948.644	0.313	5500950	1.19	10000	99.5	90	110	
Al	27	2	He	100.464	6.818	33517	5.93	100	100.5	90	110	
K	39	2	He	10340.020	1.087	6920592	1.06	10000	103.4	90	110	
Ca	43	2	He	10286.214	1.324	18696	1.48	10000	102.9	90	110	
Ca	44	2	He	9894.586	1.966	305050	1.95	10000	98.9	90	110	
V	51	2	He	99.676	2.311	415620	1.32	100	99.7	90	110	
Cr	52	2	He	98.890	1.893	436628	0.91	100	98.9	90	110	
Mn	55	2	He	98.665	1.669	317418	0.77	100	98.7	90	110	
Fe	56	2	He	9868.131	2.534	38534719	1.59	10000	98.7	90	110	
Co	59	2	He	100.191	2.217	572356	1.33	100	100.2	90	110	
Ni	60	2	He	98.849	3.002	143914	2.48	100	98.8	90	110	
Cu	63	2	He	101.537	2.674	372283	2.98	100	101.5	90	110	
Zn	66	2	He	102.432	1.726	88557	2.31	100	102.4	90	110	
As	75	2	He	99.089	0.448	86880	0.66	100	99.1	90	110	
Se	78	2	He	97.481	4.547	6850	3.48	100	97.5	90	110	
B	11	1	nogas	483.094	3.001	984043	0.91	500	96.6	90	110	
Si	28	1	nogas	5060.501	5.289	31331694	1.18	5000	101.2	90	110	
Ca	43	1	nogas	9918.519	3.816	228114	0.62	10000	99.2	90	110	
Ca	44	1	nogas	9997.045	2.765	3716440	2.23	10000	100.0	90	110	
Fe	56	1	nogas	9928.925	4.703	143334737	0.67	10000	99.3	90	110	
Se	77	1	nogas	118.638	2.135	30382	2.87	100	118.6	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	98.176	4.094	14453	1.10	100	98.2	90	110	
Mo	95	1	nogas	96.498	5.742	333992	2.50	100	96.5	90	110	
Sn	118	1	nogas	97.906	0.984	482094	2.09	100	97.9	90	110	
Ba	137	1	nogas	99.852	3.462	248407	1.04	100	99.9	90	110	
Sb	121	2	He	97.743	1.672	325782	0.71	100	97.7	90	110	
Li	7	1	nogas	99.703	0.414	623794	1.98	100	99.7	90	110	
P	31	1	nogas	493.690	4.316	434506	1.19	500	98.7	90	110	
La	139	1	nogas	189.400	12.112	597	13.02	100	189.4	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	38.667	342.893	33	34.64	100	38.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	297739	1.60	316349	94.12	70	125	
Ge	72	1	nogas	1715682	4.08	1739233	98.65	70	125	
In	115	1	nogas	1361337	2.82	1398647	97.33	70	125	
Bi	209	1	nogas	951111	0.48	952288	99.88	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	480099	0.99	487241	98.53	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	040_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T13:18:49-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.052	28.1	187	20.3	1	
Na	23	1	nogas	23.436	4.1	1020601	0.6	100	
Mg	24	1	nogas	6.241	27.5	56698	23.0	100	
Al	27	1	nogas	0.184	30.3	21072	2.6	5	
K	39	1	nogas	17.683	78.4	4795634	1.1	100	
Ti	47	1	nogas	0.079	173.6	257	60.5	2.5	
V	51	1	nogas	-0.254	-176.3	208396	6.4	2.5	
Cr	52	1	nogas	0.029	147.8	19491	2.5	2.5	
Mn	55	1	nogas	0.014	117.6	13532	2.7	2.5	
Co	59	1	nogas	0.053	6.1	1063	0.5	2.5	
Ni	60	1	nogas	0.509	2.9	587	11.0	2.5	
Cu	63	1	nogas	0.053	50.6	1623	10.9	2.5	
Zn	66	1	nogas	0.131	10.5	457	3.3	2.5	
As	75	1	nogas	-0.358	-237.0	42443	5.8	2.5	
Sr	88	1	nogas	0.079	9.6	2177	5.7	2.5	
Ag	107	1	nogas	0.073	18.1	677	14.2	2.5	
Cd	111	1	nogas	0.062	73.1	130	63.0	1	
Sb	121	1	nogas	-0.015	-214.7	1743	11.7	2.5	
Tl	205	1	nogas	0.348	73.4	4241	71.5	1	
Pb	208	1	nogas	0.088	27.8	1590	23.4	2.5	
U	238	1	nogas	0.091	38.9	1460	37.3	2.5	
[Pb]	206	1	nogas	0.076	25.6	387	19.8	2.5	
[Pb]	207	1	nogas	0.094	31.5	390	26.8	2.5	
Na	23	2	He	23.326	8.9	128406	1.1	100	
Mg	24	2	He	5.744	7.1	3724	5.8	100	
Al	27	2	He	-0.403	-88.9	650	17.5	5	
K	39	2	He	8.197	41.4	156044	1.4	100	
Ca	43	2	He	2.245	516.9	43	48.0	100	
Ca	44	2	He	4.209	67.7	1317	6.5	100	
V	51	2	He	-0.020	-89.8	4140	1.4	2.5	
Cr	52	2	He	-0.060	-56.6	2124	6.8	2.5	
Mn	55	2	He	0.098	34.9	730	14.5	2.5	
Fe	56	2	He	4.493	4.6	33481	2.7	100	
Co	59	2	He	0.051	22.1	360	17.3	2.5	
Ni	60	2	He	0.018	152.6	257	15.7	2.5	
Cu	63	2	He	-0.264	-8.8	733	11.8	2.5	
Zn	66	2	He	-0.303	-25.4	120	54.6	2.5	
As	75	2	He	0.026	190.1	303	14.0	2.5	
Se	78	2	He	-0.085	-613.3	341	10.3	2.5	
B	11	1	nogas	6.846	43.7	197068	0.1	10	
Si	28	1	nogas	5.244	598.4	3886758	0.6	5	CCB Main CR1 Failed
Ca	43	1	nogas	3.877	108.3	1267	8.7	100	
Ca	44	1	nogas	-4.633	-88.0	42602	0.7	100	
Fe	56	1	nogas	-12.124	-20.8	1595217	3.9	100	
Se	77	1	nogas	-1.674	-177.3	13285	4.3	2.5	
Se	82	1	nogas	-0.232	-248.5	230	32.8	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.203	82.0	1080	53.7	2.5	
Sn	118	1	nogas	0.128	13.2	1413	5.5	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.120	28.2	470	20.3	2.5	
Sb	121	2	He	-0.037	-36.3	723	5.8	2.5	
P	31	1	nogas	2.712	32.8	22777	0.8	10	
La	139	1	nogas	-4.291	-123.9	57	27.0	2.5	
Au	197	1	nogas	-89.570	-187.6	23	65.5	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	325313	2.72	316349	102.83	70	125	
Ge	72	1	nogas	1738002	3.87	1739233	99.93	70	125	
In	115	1	nogas	1446069	1.42	1398647	103.39	70	125	
Bi	209	1	nogas	1001726	1.21	952288	105.19	70	125	
Ge	72	2	He	477175	0.43	487241	97.93	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	048_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T13:34:46-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	107.796	2.714	268180	3.04	100	107.8	90	110	
Na	23	1	nogas	10244.999	5.042	119427494	1.85	10000	102.4	90	110	
Mg	24	1	nogas	10262.979	4.147	79810008	1.31	10000	102.6	90	110	
Al	27	1	nogas	98.146	1.085	1040492	0.70	100	98.1	90	110	
K	39	1	nogas	9798.549	1.932	125471099	0.47	10000	98.0	90	110	
Ti	47	1	nogas	100.206	2.691	112708	1.61	100	100.2	90	110	
V	51	1	nogas	107.051	3.582	1912274	3.60	100	107.1	90	110	
Cr	52	1	nogas	99.033	2.660	1339569	3.69	100	99.0	90	110	
Mn	55	1	nogas	103.401	2.572	1726408	3.00	100	103.4	90	110	
Co	59	1	nogas	99.416	5.168	1387636	4.69	100	99.4	90	110	
Ni	60	1	nogas	100.344	3.362	307293	2.17	100	100.3	90	110	
Cu	63	1	nogas	98.101	4.754	729702	3.35	100	98.1	90	110	
Zn	66	1	nogas	100.574	3.960	234270	2.81	100	100.6	90	110	
As	75	1	nogas	100.064	1.871	344524	0.68	100	100.1	90	110	
Sr	88	1	nogas	96.000	2.090	1827732	2.84	100	96.0	90	110	
Ag	107	1	nogas	103.662	1.646	840475	2.05	100	103.7	90	110	
Cd	111	1	nogas	103.465	4.789	175720	1.41	100	103.5	90	110	
Sb	121	1	nogas	95.133	3.870	766545	2.53	100	95.1	90	110	
Tl	205	1	nogas	99.064	6.728	1080244	2.86	100	99.1	90	110	
Pb	208	1	nogas	99.783	1.369	1516151	1.37	100	99.8	90	110	
U	238	1	nogas	108.088	2.295	1523038	5.27	100	108.1	90	110	
[Pb]	206	1	nogas	104.695	5.742	374955	1.84	100	104.7	90	110	
[Pb]	207	1	nogas	103.840	3.832	339555	0.51	100	103.8	90	110	
Na	23	2	He	10303.308	2.082	10157903	2.87	10000	103.0	90	110	
Mg	24	2	He	9796.689	2.503	5490520	0.89	10000	98.0	90	110	
Al	27	2	He	94.800	3.714	32114	2.84	100	94.8	90	110	
K	39	2	He	10325.307	0.677	6910959	0.66	10000	103.3	90	110	
Ca	43	2	He	9940.318	3.735	18313	2.14	10000	99.4	90	110	
Ca	44	2	He	9854.472	1.064	308013	1.00	10000	98.5	90	110	
V	51	2	He	98.948	1.397	418343	0.48	100	98.9	90	110	
Cr	52	2	He	98.327	3.013	440161	2.60	100	98.3	90	110	
Mn	55	2	He	98.648	1.765	321735	0.15	100	98.6	90	110	
Fe	56	2	He	9821.720	2.651	38881659	1.32	10000	98.2	90	110	
Co	59	2	He	99.075	2.577	573779	1.54	100	99.1	90	110	
Ni	60	2	He	97.301	3.258	143593	1.44	100	97.3	90	110	
Cu	63	2	He	100.705	2.602	374246	0.78	100	100.7	90	110	
Zn	66	2	He	100.478	2.143	88058	1.16	100	100.5	90	110	
As	75	2	He	98.082	1.058	87186	0.89	100	98.1	90	110	
Se	78	2	He	99.094	2.155	7055	2.27	100	99.1	90	110	
B	11	1	nogas	490.769	5.669	967810	2.52	500	98.2	90	110	
Si	28	1	nogas	5118.985	1.896	31643092	1.33	5000	102.4	90	110	
Ca	43	1	nogas	9803.531	0.841	225393	0.61	10000	98.0	90	110	
Ca	44	1	nogas	9932.262	1.385	3689930	1.81	10000	99.3	90	110	
Fe	56	1	nogas	9958.276	1.726	143722874	0.99	10000	99.6	90	110	
Se	77	1	nogas	105.511	0.540	28469	1.53	100	105.5	90	110	
Se	82	1	nogas	99.627	2.012	14656	1.39	100	99.6	90	110	
Mo	95	1	nogas	96.920	3.535	335372	2.13	100	96.9	90	110	
Sn	118	1	nogas	98.890	3.439	482292	2.12	100	98.9	90	110	
Ba	137	1	nogas	103.186	5.269	254204	0.35	100	103.2	90	110	
Sb	121	2	He	97.689	2.623	330120	2.53	100	97.7	90	110	
Li	7	1	nogas	103.570	2.587	628514	4.60	100	103.6	90	110	
P	31	1	nogas	499.468	1.792	439168	0.65	500	99.9	90	110	
La	139	1	nogas	194.237	4.351	603	2.53	100	194.2	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	215.328	122.944	47	44.61	100	215.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	289182	2.85	316349	91.41	70	125	
Ge	72	1	nogas	1713378	1.43	1739233	98.51	70	125	
In	115	1	nogas	1349644	5.02	1398647	96.50	70	125	
Bi	209	1	nogas	921524	4.04	952288	96.77	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	486771	1.85	487241	99.90	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	049_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T13:36:44-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.058	84.2	197	63.6	1	
Na	23	1	nogas	24.084	7.8	1035644	2.3	100	
Mg	24	1	nogas	6.167	22.7	56597	20.0	100	
Al	27	1	nogas	0.139	46.1	21266	4.5	5	
K	39	1	nogas	-0.087	-6302.4	4719670	0.4	100	
Ti	47	1	nogas	0.054	159.7	237	45.2	2.5	
V	51	1	nogas	-1.573	-38.6	192755	3.6	2.5	
Cr	52	1	nogas	-0.135	-3.9	17815	2.0	2.5	
Mn	55	1	nogas	0.000	18282.9	13715	1.8	2.5	
Co	59	1	nogas	0.048	41.8	1027	30.6	2.5	
Ni	60	1	nogas	0.450	1.1	413	5.6	2.5	
Cu	63	1	nogas	0.031	61.9	1510	11.0	2.5	
Zn	66	1	nogas	0.124	29.1	453	21.0	2.5	
As	75	1	nogas	-1.986	-27.2	38641	2.7	2.5	
Sr	88	1	nogas	0.063	13.7	1933	10.5	2.5	
Ag	107	1	nogas	0.059	17.5	587	16.1	2.5	
Cd	111	1	nogas	0.050	48.0	110	39.6	1	
Sb	121	1	nogas	0.036	97.2	2227	13.0	2.5	
Tl	205	1	nogas	0.357	68.8	4444	70.5	1	
Pb	208	1	nogas	0.081	17.8	1487	14.8	2.5	
U	238	1	nogas	0.099	48.1	1613	49.1	2.5	
[Pb]	206	1	nogas	0.061	16.7	333	14.2	2.5	
[Pb]	207	1	nogas	0.081	29.0	350	27.3	2.5	
Na	23	2	He	16.173	11.1	126671	1.4	100	
Mg	24	2	He	5.121	1.5	3524	1.6	100	
Al	27	2	He	-0.603	-18.1	610	5.7	5	
K	39	2	He	6.251	26.7	154770	0.7	100	
Ca	43	2	He	-7.617	-40.9	27	21.7	100	
Ca	44	2	He	5.923	60.2	1427	8.2	100	
V	51	2	He	-0.136	-26.1	3817	3.7	2.5	
Cr	52	2	He	-0.048	-169.5	2267	15.8	2.5	
Mn	55	2	He	0.071	58.2	673	20.6	2.5	
Fe	56	2	He	3.879	3.7	32399	1.6	100	
Co	59	2	He	0.041	34.3	317	26.5	2.5	
Ni	60	2	He	0.020	196.8	270	22.2	2.5	
Cu	63	2	He	-0.265	-6.3	760	8.0	2.5	
Zn	66	2	He	-0.219	-15.8	200	15.0	2.5	
As	75	2	He	0.006	279.9	298	4.5	2.5	
Se	78	2	He	-0.484	-56.2	327	5.7	2.5	
B	11	1	nogas	17.418	55.1	211792	4.8	10	CCB Main CR1 Failed
Si	28	1	nogas	-17.226	-62.5	3884294	0.1	5	
Ca	43	1	nogas	7.942	25.1	1403	3.4	100	
Ca	44	1	nogas	-10.757	-8.9	41623	2.2	100	
Fe	56	1	nogas	-15.820	-22.6	1590037	3.2	100	
Se	77	1	nogas	-10.316	-64.6	12401	7.2	2.5	
Se	82	1	nogas	0.120	362.6	293	24.2	2.5	
Mo	95	1	nogas	0.209	45.1	1140	31.8	2.5	
Sn	118	1	nogas	0.118	33.7	1387	18.4	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.087	7.5	390	7.7	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.020	171.7	950	12.8	2.5	
P	31	1	nogas	2.515	46.7	23328	3.4	10	
La	139	1	nogas	-5.668	-125.8	53	39.0	2.5	
Au	197	1	nogas	-136.702	-264.9	20	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	318585	3.47	316349	100.71	70	125	
Ge	72	1	nogas	1792324	1.73	1739233	103.05	70	125	
In	115	1	nogas	1467575	3.21	1398647	104.93	70	125	
Bi	209	1	nogas	1011554	3.29	952288	106.22	70	125	
Ge	72	2	He	497190	0.38	487241	102.04	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	054_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T13:46:48-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	102.351	3.766	305379	1.89	100	102.4	90	110	
Na	23	1	nogas	10603.019	0.199	134966832	1.75	10000	106.0	90	110	
Mg	24	1	nogas	10269.726	2.802	87186225	2.00	10000	102.7	90	110	
Al	27	1	nogas	101.381	2.256	1111812	1.21	100	101.4	90	110	
K	39	1	nogas	10337.537	0.623	136792153	1.62	10000	103.4	90	110	
Ti	47	1	nogas	99.985	0.323	116436	1.36	100	100.0	90	110	
V	51	1	nogas	128.066	6.699	2325020	5.82	100	128.1	90	110	CCV Main CR1-2 Failed
Cr	52	1	nogas	97.446	1.075	1364445	1.25	100	97.4	90	110	
Mn	55	1	nogas	104.939	0.557	1813371	1.27	100	104.9	90	110	
Co	59	1	nogas	99.478	2.396	1437501	2.38	100	99.5	90	110	
Ni	60	1	nogas	100.955	2.814	320056	1.89	100	101.0	90	110	
Cu	63	1	nogas	97.811	2.219	753309	1.18	100	97.8	90	110	
Zn	66	1	nogas	100.850	2.865	243244	3.15	100	100.8	90	110	
As	75	1	nogas	112.259	2.598	394658	1.36	100	112.3	90	110	CCV Main CR1-2 Failed
Sr	88	1	nogas	98.737	4.407	1945391	3.95	100	98.7	90	110	
Ag	107	1	nogas	103.553	0.685	869043	0.54	100	103.6	90	110	
Cd	111	1	nogas	96.092	0.796	180727	2.91	100	96.1	90	110	
Sb	121	1	nogas	95.903	1.943	800045	0.96	100	95.9	90	110	
Tl	205	1	nogas	94.130	2.336	1130530	1.66	100	94.1	90	110	
Pb	208	1	nogas	102.382	0.387	1555640	0.39	100	102.4	90	110	
U	238	1	nogas	106.508	3.693	1649686	3.53	100	106.5	90	110	
[Pb]	206	1	nogas	97.703	1.689	385319	1.29	100	97.7	90	110	
[Pb]	207	1	nogas	96.411	1.600	346981	1.31	100	96.4	90	110	
Na	23	2	He	10302.107	2.546	10614127	1.61	10000	103.0	90	110	
Mg	24	2	He	9955.430	4.714	5829779	1.97	10000	99.6	90	110	
Al	27	2	He	99.023	2.742	35039	3.57	100	99.0	90	110	
K	39	2	He	10794.012	2.897	7217834	2.84	10000	107.9	90	110	
Ca	43	2	He	10113.229	4.545	19484	5.07	10000	101.1	90	110	
Ca	44	2	He	10017.569	1.811	327256	1.18	10000	100.2	90	110	
V	51	2	He	100.357	2.753	443372	0.28	100	100.4	90	110	
Cr	52	2	He	97.583	0.979	456739	2.29	100	97.6	90	110	
Mn	55	2	He	99.058	1.132	337782	2.20	100	99.1	90	110	
Fe	56	2	He	9782.979	0.392	40499246	2.66	10000	97.8	90	110	
Co	59	2	He	98.364	2.803	595395	0.26	100	98.4	90	110	
Ni	60	2	He	96.249	3.716	148458	1.18	100	96.2	90	110	
Cu	63	2	He	98.514	3.147	382689	0.77	100	98.5	90	110	
Zn	66	2	He	99.335	0.672	91032	2.45	100	99.3	90	110	
As	75	2	He	98.491	3.925	91474	1.27	100	98.5	90	110	
Se	78	2	He	98.365	2.412	7322	0.78	100	98.4	90	110	
B	11	1	nogas	459.944	7.432	1100418	4.00	500	92.0	90	110	
Si	28	1	nogas	5327.396	5.198	33919560	3.57	5000	106.5	90	110	
Ca	43	1	nogas	10148.926	1.511	241476	0.48	10000	101.5	90	110	
Ca	44	1	nogas	10215.151	0.683	3927205	1.69	10000	102.2	90	110	
Fe	56	1	nogas	10213.140	2.078	152539591	1.83	10000	102.1	90	110	
Se	77	1	nogas	188.244	7.176	41738	4.17	100	188.2	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	101.559	8.264	15453	7.22	100	101.6	90	110	
Mo	95	1	nogas	99.173	1.684	355348	2.45	100	99.2	90	110	
Sn	118	1	nogas	92.807	3.096	500766	0.59	100	92.8	90	110	
Ba	137	1	nogas	95.494	2.411	260473	0.76	100	95.5	90	110	
Sb	121	2	He	96.745	3.042	341648	0.16	100	96.7	90	110	
Li	7	1	nogas	99.692	2.751	726450	0.71	100	99.7	90	110	
P	31	1	nogas	513.707	1.457	466973	0.38	500	102.7	90	110	
La	139	1	nogas	179.705	9.302	623	8.84	100	179.7	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	-128.442	-146.577	20	86.60	100	-128.4	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	346926	2.36	316349	109.67	70	125	
Ge	72	1	nogas	1773523	1.04	1739233	101.97	70	125	
In	115	1	nogas	1492383	3.20	1398647	106.70	70	125	
Bi	209	1	nogas	1013273	1.25	952288	106.40	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	508915	2.98	487241	104.45	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	055_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T13:48:45-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.046	7.5	183	6.3	1	
Na	23	1	nogas	97.749	3.4	2012503	1.8	100	
Mg	24	1	nogas	7.668	12.4	71580	11.5	100	
Al	27	1	nogas	0.138	28.5	21095	0.9	5	
K	39	1	nogas	13.051	34.9	4855128	1.2	100	
Ti	47	1	nogas	0.054	89.4	233	23.6	2.5	
V	51	1	nogas	3.426	29.1	274004	5.4	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	0.030	128.4	19971	1.7	2.5	
Mn	55	1	nogas	0.097	23.4	15283	2.8	2.5	
Co	59	1	nogas	0.051	33.6	1057	24.2	2.5	
Ni	60	1	nogas	0.547	15.9	720	38.5	2.5	
Cu	63	1	nogas	0.107	13.2	2077	3.6	2.5	
Zn	66	1	nogas	0.147	6.6	507	6.3	2.5	
As	75	1	nogas	1.786	45.3	50176	3.9	2.5	
Sr	88	1	nogas	0.084	16.5	2334	12.4	2.5	
Ag	107	1	nogas	0.058	22.3	570	18.5	2.5	
Cd	111	1	nogas	0.035	62.3	83	48.5	1	
Sb	121	1	nogas	0.017	129.3	2060	10.5	2.5	
Tl	205	1	nogas	0.276	52.4	3367	51.6	1	
Pb	208	1	nogas	0.064	23.8	1230	18.9	2.5	
U	238	1	nogas	0.088	35.8	1400	34.8	2.5	
[Pb]	206	1	nogas	0.057	54.2	310	39.2	2.5	
[Pb]	207	1	nogas	0.081	30.1	343	24.4	2.5	
Na	23	2	He	93.337	3.0	204411	0.6	100	
Mg	24	2	He	6.559	8.1	4364	6.0	100	
Al	27	2	He	-0.306	-92.1	713	13.6	5	
K	39	2	He	9.969	19.0	157205	0.8	100	
Ca	43	2	He	1.225	691.1	43	35.3	100	
Ca	44	2	He	3.733	128.8	1363	11.9	100	
V	51	2	He	0.238	6.8	5438	2.4	2.5	
Cr	52	2	He	-0.057	-7.1	2234	2.1	2.5	
Mn	55	2	He	0.111	20.3	810	9.3	2.5	
Fe	56	2	He	3.942	6.0	32796	2.7	100	
Co	59	2	He	0.033	15.3	273	11.8	2.5	
Ni	60	2	He	-0.014	-83.1	220	9.1	2.5	
Cu	63	2	He	-0.249	-10.4	823	12.2	2.5	
Zn	66	2	He	-0.246	-24.8	177	31.2	2.5	
As	75	2	He	0.072	51.8	359	8.0	2.5	
Se	78	2	He	-0.284	-26.1	343	1.3	2.5	
B	11	1	nogas	9.466	51.0	216564	2.4	10	
Si	28	1	nogas	12.859	25.2	4027724	2.2	5	CCB Main CR1 Failed
Ca	43	1	nogas	5.930	60.4	1347	8.0	100	
Ca	44	1	nogas	-3.917	-47.7	43928	0.9	100	
Fe	56	1	nogas	-0.752	-576.0	1801710	2.9	100	
Se	77	1	nogas	19.280	42.4	16715	5.6	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.144	298.3	293	20.0	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.154	38.4	933	23.6	2.5	
Sn	118	1	nogas	0.139	20.1	1500	9.0	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.084	18.8	383	12.3	2.5	
Sb	121	2	He	-0.019	-174.4	820	12.4	2.5	
P	31	1	nogas	3.753	38.1	24236	3.6	10	
La	139	1	nogas	2.948	280.7	80	33.1	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-51.916	-442.5	27	78.1	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	348993	2.30	316349	110.32	70	125	
Ge	72	1	nogas	1779690	1.85	1739233	102.33	70	125	
In	115	1	nogas	1472580	1.59	1398647	105.29	70	125	
Bi	209	1	nogas	995148	0.84	952288	104.50	70	125	
Ge	72	2	He	499365	1.46	487241	102.49	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	064_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:06:48-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	105.226	1.922	250404	2.69	100	105.2	90	110	
Na	23	1	nogas	9642.607	1.972	126285740	2.00	10000	96.4	90	110	
Mg	24	1	nogas	9647.533	1.715	84239287	1.59	10000	96.5	90	110	
Al	27	1	nogas	95.741	0.877	1090241	1.27	100	95.7	90	110	
K	39	1	nogas	9978.936	1.203	137107091	0.89	10000	99.8	90	110	
Ti	47	1	nogas	99.874	2.758	120608	2.08	100	99.9	90	110	
V	51	1	nogas	119.263	1.095	2261256	0.27	100	119.3	90	110	CCV Main CR1-2 Failed
Cr	52	1	nogas	98.430	2.720	1429002	1.81	100	98.4	90	110	
Mn	55	1	nogas	102.543	0.966	1838172	1.84	100	102.5	90	110	
Co	59	1	nogas	98.231	2.092	1472143	1.66	100	98.2	90	110	
Ni	60	1	nogas	97.945	2.781	322012	1.72	100	97.9	90	110	
Cu	63	1	nogas	98.372	2.112	785789	1.34	100	98.4	90	110	
Zn	66	1	nogas	100.933	1.645	252466	1.42	100	100.9	90	110	
As	75	1	nogas	107.627	0.523	394381	0.79	100	107.6	90	110	
Sr	88	1	nogas	97.527	1.081	1993373	2.02	100	97.5	90	110	
Ag	107	1	nogas	105.347	1.941	916865	1.11	100	105.3	90	110	
Cd	111	1	nogas	99.075	3.359	192460	1.84	100	99.1	90	110	
Sb	121	1	nogas	97.628	2.529	844642	1.83	100	97.6	90	110	
Tl	205	1	nogas	93.098	2.734	1146182	2.65	100	93.1	90	110	
Pb	208	1	nogas	108.421	2.562	1647392	2.56	100	108.4	90	110	
U	238	1	nogas	102.409	4.613	1625889	4.49	100	102.4	90	110	
[Pb]	206	1	nogas	99.472	4.621	402087	4.35	100	99.5	90	110	
[Pb]	207	1	nogas	99.345	4.224	366456	3.88	100	99.3	90	110	
Na	23	2	He	10391.748	3.078	11185329	1.69	10000	103.9	90	110	
Mg	24	2	He	9896.097	2.457	6058743	2.20	10000	99.0	90	110	
Al	27	2	He	98.257	1.193	36339	2.96	100	98.3	90	110	
K	39	2	He	11340.451	3.627	7575603	3.56	10000	113.4	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10116.196	1.263	20361	1.15	10000	101.2	90	110	
Ca	44	2	He	9748.502	1.293	332877	2.50	10000	97.5	90	110	
V	51	2	He	99.608	2.517	459894	0.93	100	99.6	90	110	
Cr	52	2	He	97.573	1.755	477103	0.99	100	97.6	90	110	
Mn	55	2	He	97.316	1.086	346719	1.31	100	97.3	90	110	
Fe	56	2	He	9630.818	1.098	41650709	1.11	10000	96.3	90	110	
Co	59	2	He	97.476	1.234	616659	0.57	100	97.5	90	110	
Ni	60	2	He	97.365	3.427	156940	1.67	100	97.4	90	110	
Cu	63	2	He	98.574	3.147	400142	1.53	100	98.6	90	110	
Zn	66	2	He	101.312	1.546	96984	1.06	100	101.3	90	110	
As	75	2	He	99.615	1.871	96733	3.11	100	99.6	90	110	
Se	78	2	He	99.808	4.588	7756	3.11	100	99.8	90	110	
B	11	1	nogas	508.439	5.312	953555	3.10	500	101.7	90	110	
Si	28	1	nogas	4962.482	1.882	33062332	2.39	5000	99.2	90	110	
Ca	43	1	nogas	10032.697	1.992	247582	0.86	10000	100.3	90	110	
Ca	44	1	nogas	10071.086	2.758	4015962	2.69	10000	100.7	90	110	
Fe	56	1	nogas	10039.196	1.331	155555920	1.84	10000	100.4	90	110	
Se	77	1	nogas	164.527	5.391	39640	2.66	100	164.5	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	99.993	5.249	15787	4.11	100	100.0	90	110	
Mo	95	1	nogas	98.504	2.554	365976	1.55	100	98.5	90	110	
Sn	118	1	nogas	95.513	3.520	532520	1.02	100	95.5	90	110	
Ba	137	1	nogas	94.955	2.483	267661	1.32	100	95.0	90	110	
Sb	121	2	He	95.862	2.330	353801	1.02	100	95.9	90	110	
Li	7	1	nogas	99.221	1.359	576788	3.15	100	99.2	90	110	
P	31	1	nogas	489.711	1.071	462724	0.52	500	97.9	90	110	
La	139	1	nogas	183.089	17.560	653	13.72	100	183.1	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	7.072	3785.655	33	75.50	100	7.1	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	276618	3.27	316349	87.44	70	125	
Ge	72	1	nogas	1839412	1.14	1739233	105.76	70	125	
In	115	1	nogas	1542111	2.79	1398647	110.26	70	125	
Bi	209	1	nogas	1038567	0.44	952288	109.06	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	531673	1.81	487241	109.12	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	065_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:08:45-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.074	21.7	217	16.2	1	
Na	23	1	nogas	131.705	5.6	2400570	0.6	100	CCB Main CR1 Failed
Mg	24	1	nogas	6.627	16.8	61378	11.2	100	
Al	27	1	nogas	0.129	99.0	20792	7.4	5	
K	39	1	nogas	20.225	66.8	4895320	0.2	100	
Ti	47	1	nogas	0.018	170.7	190	19.0	2.5	
V	51	1	nogas	3.018	6.6	264800	4.4	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	-0.041	-149.2	18790	1.2	2.5	
Mn	55	1	nogas	0.244	27.4	17612	3.4	2.5	
Co	59	1	nogas	0.051	23.7	1047	14.8	2.5	
Ni	60	1	nogas	0.577	6.6	807	12.5	2.5	
Cu	63	1	nogas	0.113	26.8	2103	11.0	2.5	
Zn	66	1	nogas	0.290	21.3	843	17.4	2.5	
As	75	1	nogas	0.556	7.4	45891	3.2	2.5	
Sr	88	1	nogas	0.104	11.0	2694	4.9	2.5	
Ag	107	1	nogas	0.068	3.5	650	4.6	2.5	
Cd	111	1	nogas	0.061	47.7	130	40.7	1	
Sb	121	1	nogas	0.008	296.8	1960	8.9	2.5	
Tl	205	1	nogas	0.295	55.7	3654	53.6	1	
Pb	208	1	nogas	0.074	25.4	1380	20.7	2.5	
U	238	1	nogas	0.090	31.1	1460	29.1	2.5	
[Pb]	206	1	nogas	0.074	19.5	383	14.4	2.5	
[Pb]	207	1	nogas	0.075	20.2	327	16.9	2.5	
Na	23	2	He	140.545	4.3	264436	0.5	100	CCB Main CR1 Failed
Mg	24	2	He	6.327	1.9	4451	4.4	100	
Al	27	2	He	-0.529	-15.1	670	2.6	5	
K	39	2	He	22.466	5.3	165386	0.5	100	
Ca	43	2	He	5.391	318.9	53	60.3	100	
Ca	44	2	He	7.253	88.5	1550	13.8	100	
V	51	2	He	0.095	41.9	5070	1.6	2.5	
Cr	52	2	He	-0.020	-299.9	2520	9.0	2.5	
Mn	55	2	He	0.163	39.9	1030	20.2	2.5	
Fe	56	2	He	4.461	11.4	36663	4.3	100	
Co	59	2	He	0.039	23.2	323	17.0	2.5	
Ni	60	2	He	-0.011	-205.3	237	17.6	2.5	
Cu	63	2	He	-0.239	-18.9	910	21.5	2.5	
Zn	66	2	He	-0.217	-12.9	213	14.3	2.5	
As	75	2	He	0.014	453.1	322	18.8	2.5	
Se	78	2	He	-0.334	-54.6	357	5.4	2.5	
B	11	1	nogas	26.295	24.8	204335	4.0	10	CCB Main CR1 Failed
Si	28	1	nogas	-40.560	-51.1	3687247	2.2	5	
Ca	43	1	nogas	3.449	69.1	1273	3.3	100	
Ca	44	1	nogas	-12.395	-45.8	40257	2.0	100	
Fe	56	1	nogas	1.335	267.9	1814270	2.4	100	
Se	77	1	nogas	4.792	33.5	14426	3.4	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.304	-147.5	223	26.2	2.5	
Mo	95	1	nogas	0.160	76.2	933	42.6	2.5	
Sn	118	1	nogas	0.117	35.3	1373	11.6	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.079	38.1	367	18.2	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	-0.012	-243.2	887	9.5	2.5	
P	31	1	nogas	4.360	45.7	24500	4.0	10	
La	139	1	nogas	-1.278	-764.6	67	43.3	2.5	
Au	197	1	nogas	-202.051	-81.6	13	114.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	285392	2.08	316349	90.21	70	125	
Ge	72	1	nogas	1762193	3.24	1739233	101.32	70	125	
In	115	1	nogas	1471162	4.57	1398647	105.18	70	125	
Bi	209	1	nogas	1016013	0.53	952288	106.69	70	125	
Ge	72	2	He	524925	2.82	487241	107.73	70	125	

Sample Report

Sample Table

Sample Name	MBLK-128909
Data File Name	066SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:10:47-05:00
Sample Type	Sample
Dilution	1
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.000	0.000	-3341.52	37	0.00	2000	
Na	23	1	nogas	105.726	105.726	2.81	2197541	0.00	200000	
Mg	24	1	nogas	14.311	14.311	0.63	133391	0.01	200000	
Al	27	1	nogas	3.802	3.802	3.46	65310	0.01	2000	
K	39	1	nogas	-6.445	-6.445	-150.99	4953464	0.00	200000	
Ti	47	1	nogas	-0.040	-0.040	-46.54	133	-0.03	2000	
V	51	1	nogas	1.673	1.673	26.15	263792	0.00	2000	
Cr	52	1	nogas	-0.189	-0.189	-8.82	18242	0.00	2000	
Mn	55	1	nogas	0.167	0.167	8.54	17745	0.00	2000	
Co	59	1	nogas	0.004	0.004	184.58	407	0.00	2000	
Ni	60	1	nogas	0.472	0.472	8.44	517	0.09	2000	
Cu	63	1	nogas	0.029	0.029	32.13	1597	0.00	2000	
Zn	66	1	nogas	0.834	0.834	10.29	2330	0.04	2000	
As	75	1	nogas	-0.817	-0.817	-25.72	45253	0.00	2000	
Sr	88	1	nogas	0.051	0.051	15.24	1803	0.00	2000	
Ag	107	1	nogas	0.018	0.018	20.21	250	0.01	2000	
Cd	111	1	nogas	-0.003	-0.003	-102.59	13	-0.02	2000	
Sb	121	1	nogas	-0.082	-0.082	-16.49	1320	-0.01	2000	
Tl	205	1	nogas	0.016	0.016	14.42	310	0.01	2000	
Pb	208	1	nogas	0.008	0.008	39.28	370	0.00	2000	
U	238	1	nogas	0.008	0.008	61.51	200	0.00	2000	
[Pb]	206	1	nogas	0.002	0.002	275.31	103	0.00	2000	
[Pb]	207	1	nogas	0.014	0.014	69.93	110	0.01	2000	
Na	23	2	He	120.988	120.988	1.79	246398	0.05	200000	
Mg	24	2	He	15.978	15.978	1.05	10386	0.15	200000	
Al	27	2	He	3.327	3.327	17.32	2063	0.16	2000	
K	39	2	He	24.572	24.572	6.00	166765	0.01	200000	
Ca	43	2	He	8.088	8.088	161.26	60	13.48	200000	
Ca	44	2	He	0.624	0.624	1190.26	1343	0.05	200000	
V	51	2	He	0.066	0.066	17.76	4992	0.00	2000	
Cr	52	2	He	0.015	0.015	354.14	2720	0.00	2000	
Mn	55	2	He	0.420	0.420	6.19	1957	0.02	2000	
Fe	56	2	He	1.112	1.112	12.51	22621	0.00	200000	
Co	59	2	He	0.011	0.011	73.03	150	0.01	2000	
Ni	60	2	He	0.002	0.002	1798.41	260	0.00	2000	
Cu	63	2	He	-0.280	-0.280	-12.03	750	-0.04	2000	
Zn	66	2	He	0.321	0.321	54.30	727	0.04	2000	
As	75	2	He	-0.034	-0.034	-22.69	279	-0.01	2000	
Se	78	2	He	-0.306	-0.306	-193.63	362	-0.08	2000	
B	11	1	nogas	14.025	14.025	46.39	197134	0.01	2000	
Si	28	1	nogas	-37.944	-37.944	-68.69	4022804	0.00	2000	
Ca	43	1	nogas	-6.348	-6.348	-48.18	1133	-0.56	200000	

Sample Report

Ca	44	1	nogas	-26.713	-26.713	-9.91	37905	-0.07	200000	
Fe	56	1	nogas	-13.432	-13.432	-11.84	1736687	0.00	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Se	77	1	nogas	-2.927	-2.927	-60.55	14439	-0.02	2000	
Se	82	1	nogas	-0.270	-0.270	-73.31	250	-0.11	2000	
Mo	95	1	nogas	-0.040	-0.040	-29.53	250	-0.02	2000	
Sn	118	1	nogas	-0.014	-0.014	-19.56	733	0.00	2000	
Ba	137	1	nogas	0.144	0.144	14.38	583	0.02	2000	
Sb	121	2	He	-0.108	-0.108	-16.20	543	-0.02	2000	
La	139	1	nogas	-8.040	-8.040	-33.65	50	-16.08	2000	
Au	197	1	nogas	-345.792	-345.792	0.00	0	#DIV/0!	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	305393	5.21	316349	96.54	70	125	
Ge	72	1	nogas	1914913	2.40	1739233	110.10	70	125	
In	115	1	nogas	1579620	2.43	1398647	112.94	70	125	
Bi	209	1	nogas	1046313	0.45	952288	109.87	70	125	
Ge	72	2	He	530152	1.16	487241	108.81	70	125	

Sample Report

Sample Table

Sample Name	LCS-128909
Data File Name	067SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:12:47-05:00
Sample Type	Sample
Dilution	1
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	48.754	48.754	6.51	124610	0.04	2000	
Na	23	1	nogas	4423.146	4423.146	1.18	60751672	0.01	200000	
Mg	24	1	nogas	4342.368	4342.368	2.77	39474944	0.01	200000	
Al	27	1	nogas	47.141	47.141	5.05	565341	0.01	2000	
K	39	1	nogas	4825.263	4825.263	3.96	71111285	0.01	200000	
Ti	47	1	nogas	46.485	46.485	5.18	58108	0.08	2000	
V	51	1	nogas	49.754	49.754	5.74	1110651	0.00	2000	
Cr	52	1	nogas	46.129	46.129	4.69	703273	0.01	2000	
Mn	55	1	nogas	48.197	48.197	5.16	900440	0.01	2000	
Co	59	1	nogas	46.827	46.827	3.22	725612	0.01	2000	
Ni	60	1	nogas	48.116	48.116	1.01	163055	0.03	2000	
Cu	63	1	nogas	46.867	46.867	3.08	387723	0.01	2000	
Zn	66	1	nogas	48.333	48.333	4.99	125013	0.04	2000	
As	75	1	nogas	45.599	45.599	5.45	200143	0.02	2000	
Sr	88	1	nogas	0.078	0.078	16.05	2360	0.00	2000	
Ag	107	1	nogas	48.973	48.973	4.66	440543	0.01	2000	
Cd	111	1	nogas	46.804	46.804	1.90	94910	0.05	2000	
Sb	121	1	nogas	46.108	46.108	5.47	413313	0.01	2000	
Tl	205	1	nogas	42.515	42.515	4.06	530195	0.01	2000	
Pb	208	1	nogas	50.110	50.110	3.22	761518	0.01	2000	
U	238	1	nogas	0.001	0.001	239.96	87	0.00	2000	
[Pb]	206	1	nogas	46.166	46.166	2.69	189099	0.02	2000	
[Pb]	207	1	nogas	45.554	45.554	3.61	170286	0.03	2000	
Na	23	2	He	5009.882	5009.882	1.08	5537043	0.09	200000	
Mg	24	2	He	4826.383	4826.383	1.03	2999838	0.16	200000	
Al	27	2	He	49.313	49.313	2.51	18946	0.26	2000	
K	39	2	He	5620.955	5620.955	1.17	3830881	0.15	200000	
Ca	43	2	He	4830.125	4830.125	4.69	9889	48.84	200000	
Ca	44	2	He	4716.537	4716.537	0.95	164140	2.87	200000	
V	51	2	He	48.216	48.216	2.32	228445	0.02	2000	
Cr	52	2	He	47.884	47.884	1.11	239047	0.02	2000	
Mn	55	2	He	47.806	47.806	0.47	173130	0.03	2000	
Fe	56	2	He	4796.927	4796.927	1.61	21066783	0.02	200000	
Co	59	2	He	49.347	49.347	0.96	316918	0.02	2000	
Ni	60	2	He	48.427	48.427	2.38	79385	0.06	2000	
Cu	63	2	He	49.466	49.466	2.78	204825	0.02	2000	
Zn	66	2	He	50.358	50.358	0.50	49150	0.10	2000	
As	75	2	He	48.742	48.742	1.28	48195	0.10	2000	
Se	78	2	He	48.903	48.903	6.50	4058	1.21	2000	
B	11	1	nogas	10.773	10.773	41.41	186673	0.01	2000	
Si	28	1	nogas	-29.772	-29.772	-62.94	4046550	0.00	2000	
Ca	43	1	nogas	4620.143	4620.143	3.42	118556	3.90	200000	
Ca	44	1	nogas	4731.298	4731.298	6.15	1975001	0.24	200000	
Fe	56	1	nogas	4870.218	4870.218	5.45	78967131	0.01	200000	

Sample Report

Se	77	1	nogas	38.042	38.042	15.33	20852	0.18	2000	
Se	82	1	nogas	49.000	49.000	4.16	8149	0.60	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	46.395	46.395	4.58	178391	0.03	2000	
Sn	118	1	nogas	-0.038	-0.038	-33.69	607	-0.01	2000	
Ba	137	1	nogas	44.550	44.550	1.06	131158	0.03	2000	
Sb	121	2	He	47.359	47.359	2.12	177951	0.03	2000	
La	139	1	nogas	1.806	1.806	259.50	83	2.17	2000	
Au	197	1	nogas	-100.606	-100.606	-218.80	23	-431.17	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	297410	4.27	316349	94.01	70	125	
Ge	72	1	nogas	1902416	2.83	1739233	109.38	70	125	
In	115	1	nogas	1608841	0.62	1398647	115.03	70	125	
Bi	209	1	nogas	1052340	1.76	952288	110.51	70	125	
Ge	72	2	He	539624	0.84	487241	110.75	70	125	

Sample Report

Sample Table

Sample Name	HS18051255-01
Data File Name	068SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:14:46-05:00
Sample Type	Sample
Dilution	1
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.207	0.207	19.52	543	0.04	2000	
Na	23	1	nogas	218720.856	218720.856	4.44	3019678401	0.01	200000	>LDR
Mg	24	1	nogas	36054.430	36054.430	1.96	333924549	0.01	200000	
Al	27	1	nogas	86.858	86.858	1.07	980144	0.01	2000	
K	39	1	nogas	1711.007	1711.007	6.21	27196715	0.01	200000	
Ti	47	1	nogas	1.839	1.839	3.82	2370	0.08	2000	
V	51	1	nogas	4.674	4.674	29.89	300888	0.00	2000	
Cr	52	1	nogas	9.233	9.233	6.10	150563	0.01	2000	
Mn	55	1	nogas	1077.386	1077.386	4.61	18954236	0.01	2000	
Co	59	1	nogas	19.363	19.363	4.93	287031	0.01	2000	
Ni	60	1	nogas	47.028	47.028	4.64	152272	0.03	2000	
Cu	63	1	nogas	22.187	22.187	4.60	176154	0.01	2000	
Zn	66	1	nogas	1496.883	1496.883	4.71	3698602	0.04	2000	
As	75	1	nogas	4.449	4.449	33.08	59741	0.01	2000	
Sr	88	1	nogas	922.787	922.787	1.23	18651192	0.00	2000	
Ag	107	1	nogas	0.054	0.054	21.11	547	0.01	2000	
Cd	111	1	nogas	2.123	2.123	8.39	4114	0.05	2000	
Sb	121	1	nogas	0.151	0.151	16.80	3250	0.00	2000	
Tl	205	1	nogas	0.481	0.481	73.59	5765	0.01	2000	
Pb	208	1	nogas	0.339	0.339	6.34	5407	0.01	2000	
U	238	1	nogas	0.706	0.706	8.26	10707	0.01	2000	
[Pb]	206	1	nogas	0.346	0.346	6.38	1417	0.02	2000	
[Pb]	207	1	nogas	0.323	0.323	11.43	1190	0.03	2000	
Na	23	2	He	250501.937	250501.937	2.14	261242263	0.10	200000	>LDR
Mg	24	2	He	40944.532	40944.532	2.46	24532237	0.17	200000	
Al	27	2	He	87.585	87.585	4.73	31771	0.28	2000	
K	39	2	He	2069.927	2069.927	3.10	1505920	0.14	200000	
Ca	43	2	He	65879.712	65879.712	2.27	129568	50.85	200000	
Ca	44	2	He	66046.240	66046.240	2.22	2199851	3.00	200000	
V	51	2	He	0.633	0.633	6.48	7433	0.01	2000	
Cr	52	2	He	9.487	9.487	3.08	47735	0.02	2000	
Mn	55	2	He	1079.232	1079.232	2.10	3757765	0.03	2000	
Fe	56	2	He	2179.594	2179.594	3.36	9236151	0.02	200000	
Co	59	2	He	20.404	20.404	2.60	126375	0.02	2000	
Ni	60	2	He	47.942	47.942	3.48	75753	0.06	2000	
Cu	63	2	He	21.564	21.564	1.06	87127	0.02	2000	
Zn	66	2	He	1541.593	1541.593	1.35	1438573	0.11	2000	
As	75	2	He	0.997	0.997	7.27	1250	0.08	2000	
Se	78	2	He	0.016	0.016	562.17	379	0.00	2000	
B	11	1	nogas	71.489	71.489	9.71	276794	0.03	2000	
Si	28	1	nogas	21279.460	21279.460	4.60	126829298	0.02	2000	>LDR
Ca	43	1	nogas	63760.345	63760.345	11.05	1546161	4.12	200000	
Ca	44	1	nogas	63938.225	63938.225	5.06	24946281	0.26	200000	
Fe	56	1	nogas	2142.622	2142.622	4.95	34265991	0.01	200000	

Sample Report

Se	77	1	nogas	27.660	27.660	28.74	18353	0.15	2000	
Se	82	1	nogas	0.780	0.780	75.33	400	0.19	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	18.706	18.706	2.29	69050	0.03	2000	
Sn	118	1	nogas	0.027	0.027	88.34	937	0.00	2000	
Ba	137	1	nogas	423.797	423.797	8.66	1185617	0.04	2000	
Sb	121	2	He	0.128	0.128	17.51	1383	0.01	2000	
La	139	1	nogas	4793.212	4793.212	7.58	15170	31.60	2000	>LDR
Au	197	1	nogas	135.283	135.283	119.60	43	312.19	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	284769	2.15	316349	90.02	70	125	
Ge	72	1	nogas	1819723	3.61	1739233	104.63	70	125	
In	115	1	nogas	1536933	7.20	1398647	109.89	70	125	
Bi	209	1	nogas	986239	2.76	952288	103.57	70	125	
Ge	72	2	He	520315	1.80	487241	106.79	70	125	

Sample Report

Sample Table

Sample Name	HS18051255-01SD
Data File Name	069SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:16:45-05:00
Sample Type	Sample
Dilution	5
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	0.037	0.185	40.89	130	0.03	2000	
Na	23	1	nogas	50313.321	251566.606	8.19	621154747	0.01	200000	
Mg	24	1	nogas	8305.559	41527.794	8.20	68712220	0.01	200000	
Al	27	1	nogas	17.946	89.732	2.40	228139	0.01	2000	
K	39	1	nogas	314.149	1570.744	3.10	9308342	0.00	200000	
Ti	47	1	nogas	0.327	1.635	22.35	590	0.06	2000	
V	51	1	nogas	6.526	32.628	12.01	347346	0.00	2000	
Cr	52	1	nogas	1.808	9.039	2.48	47632	0.00	2000	
Mn	55	1	nogas	215.829	1079.143	0.65	3981185	0.01	2000	
Co	59	1	nogas	3.809	19.045	2.09	59306	0.01	2000	
Ni	60	1	nogas	9.920	49.600	0.86	32719	0.03	2000	
Cu	63	1	nogas	4.463	22.314	1.20	38117	0.01	2000	
Zn	66	1	nogas	289.623	1448.115	2.29	748239	0.04	2000	
As	75	1	nogas	2.108	10.540	17.12	54686	0.00	2000	
Sr	88	1	nogas	186.667	933.336	2.42	3941325	0.00	2000	
Ag	107	1	nogas	0.011	0.053	40.91	183	0.01	2000	
Cd	111	1	nogas	0.423	2.116	19.73	843	0.05	2000	
Sb	121	1	nogas	-0.026	-0.129	-62.41	1813	0.00	2000	
Tl	205	1	nogas	0.023	0.116	21.95	387	0.01	2000	
Pb	208	1	nogas	0.064	0.319	15.65	1223	0.01	2000	
U	238	1	nogas	0.143	0.716	2.64	2310	0.01	2000	
[Pb]	206	1	nogas	0.068	0.339	18.99	363	0.02	2000	
[Pb]	207	1	nogas	0.060	0.301	40.43	277	0.02	2000	
Na	23	2	He	51198.892	255994.460	2.53	53172414	0.10	200000	
Mg	24	2	He	8288.475	41442.374	2.38	4937056	0.17	200000	
Al	27	2	He	19.063	95.316	1.85	7542	0.25	2000	
K	39	2	He	393.302	1966.508	2.84	408184	0.10	200000	
Ca	43	2	He	13468.460	67342.298	5.12	26376	51.06	200000	
Ca	44	2	He	13073.892	65369.458	1.52	433958	3.01	200000	
V	51	2	He	0.477	2.385	3.12	6698	0.01	2000	
Cr	52	2	He	1.993	9.963	5.03	12007	0.02	2000	
Mn	55	2	He	216.019	1080.097	1.23	748362	0.03	2000	
Fe	56	2	He	450.062	2250.312	1.67	1910416	0.02	200000	
Co	59	2	He	4.298	21.491	5.78	26513	0.02	2000	
Ni	60	2	He	10.239	51.194	4.71	16277	0.06	2000	
Cu	63	2	He	4.246	21.232	1.01	18533	0.02	2000	
Zn	66	2	He	303.789	1518.945	2.36	282131	0.11	2000	
As	75	2	He	0.208	1.041	28.14	500	0.04	2000	
Se	78	2	He	-0.587	-2.934	-97.13	333	-0.18	2000	
B	11	1	nogas	22.264	111.319	19.26	203873	0.01	2000	
Si	28	1	nogas	3963.067	19815.337	3.23	28127995	0.01	2000	>LDR
Ca	43	1	nogas	12309.513	61547.564	0.91	313601	3.93	200000	
Ca	44	1	nogas	12006.126	60030.630	4.14	4937151	0.24	200000	
Fe	56	1	nogas	423.424	2117.121	1.62	8633400	0.00	200000	

Sample Report

Se	77	1	nogas	16.139	80.694	16.44	17365	0.09	2000	
Se	82	1	nogas	-0.174	-0.869	-194.53	263	-0.07	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	3.657	18.284	2.51	14429	0.03	2000	
Sn	118	1	nogas	-0.026	-0.132	-9.77	647	0.00	2000	
Ba	137	1	nogas	84.279	421.394	6.39	236360	0.04	2000	
Sb	121	2	He	-0.047	-0.235	-47.48	750	-0.01	2000	
La	139	1	nogas	929.431	4647.153	7.42	3007	30.91	2000	
Au	197	1	nogas	-95.572	-477.861	-360.29	23	-409.59	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	294149	2.45	316349	92.98	70	125	
Ge	72	1	nogas	1900514	0.75	1739233	109.27	70	125	
In	115	1	nogas	1536812	5.05	1398647	109.88	70	125	
Bi	209	1	nogas	1024611	0.59	952288	107.59	70	125	
Ge	72	2	He	517421	2.86	487241	106.19	70	125	

Sample Report

Sample Table

Sample Name	HS18051255-01MS
Data File Name	070SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:18:47-05:00
Sample Type	Sample
Dilution	1
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	49.415	49.415	4.41	123184	0.04	2000	
Na	23	1	nogas	235118.135	235118.135	3.48	2915034998	0.01	200000	>LDR
Mg	24	1	nogas	42184.079	42184.079	0.94	350834175	0.01	200000	
Al	27	1	nogas	129.913	129.913	7.56	1431230	0.01	2000	
K	39	1	nogas	5984.508	5984.508	3.01	81919748	0.01	200000	
Ti	47	1	nogas	47.231	47.231	2.54	55614	0.08	2000	
V	51	1	nogas	56.159	56.159	8.98	1151898	0.00	2000	
Cr	52	1	nogas	53.429	53.429	3.03	764154	0.01	2000	
Mn	55	1	nogas	1058.125	1058.125	3.40	18330528	0.01	2000	
Co	59	1	nogas	60.789	60.789	1.35	887200	0.01	2000	
Ni	60	1	nogas	87.909	87.909	1.55	281329	0.03	2000	
Cu	63	1	nogas	55.892	55.892	3.52	435065	0.01	2000	
Zn	66	1	nogas	1477.735	1477.735	2.33	3596138	0.04	2000	
As	75	1	nogas	51.669	51.669	1.64	207696	0.02	2000	
Sr	88	1	nogas	891.165	891.165	4.44	17714259	0.01	2000	
Ag	107	1	nogas	46.370	46.370	2.62	392954	0.01	2000	
Cd	111	1	nogas	48.604	48.604	0.44	88013	0.06	2000	
Sb	121	1	nogas	45.322	45.322	6.07	382542	0.01	2000	
Tl	205	1	nogas	40.044	40.044	2.48	468875	0.01	2000	
Pb	208	1	nogas	46.718	46.718	3.10	709999	0.01	2000	
U	238	1	nogas	0.665	0.665	2.80	10107	0.01	2000	
[Pb]	206	1	nogas	44.860	44.860	0.87	172509	0.03	2000	
[Pb]	207	1	nogas	44.830	44.830	1.20	157317	0.03	2000	
Na	23	2	He	244202.319	244202.319	1.10	241847050	0.10	200000	>LDR
Mg	24	2	He	43429.705	43429.705	2.44	24707574	0.18	200000	
Al	27	2	He	128.061	128.061	1.26	43758	0.29	2000	
K	39	2	He	6734.773	6734.773	1.79	4560131	0.15	200000	
Ca	43	2	He	66978.053	66978.053	2.04	125053	53.56	200000	
Ca	44	2	He	66614.114	66614.114	0.98	2106143	3.16	200000	
V	51	2	He	47.258	47.258	0.60	205091	0.02	2000	
Cr	52	2	He	54.375	54.375	0.37	248183	0.02	2000	
Mn	55	2	He	1071.301	1071.301	1.49	3542775	0.03	2000	
Fe	56	2	He	6669.523	6669.523	0.50	26809430	0.02	200000	
Co	59	2	He	65.351	65.351	0.41	384223	0.02	2000	
Ni	60	2	He	90.922	90.922	1.37	136235	0.07	2000	
Cu	63	2	He	57.917	57.917	1.67	219231	0.03	2000	
Zn	66	2	He	1470.619	1470.619	1.99	1303107	0.11	2000	
As	75	2	He	48.958	48.958	1.67	44316	0.11	2000	
Se	78	2	He	47.958	47.958	2.68	3650	1.31	2000	
B	11	1	nogas	59.623	59.623	12.28	262201	0.02	2000	
Si	28	1	nogas	19790.830	19790.830	5.11	116383135	0.02	2000	>LDR
Ca	43	1	nogas	63063.377	63063.377	3.22	1510296	4.18	200000	
Ca	44	1	nogas	64596.202	64596.202	4.36	24814961	0.26	200000	
Fe	56	1	nogas	6628.305	6628.305	2.03	100597348	0.01	200000	
Se	77	1	nogas	81.636	81.636	5.33	26172	0.31	2000	
Se	82	1	nogas	48.467	48.467	6.38	7592	0.64	2000	

Sample Report

Mo	95	1	nogas	63.842	63.842	3.76	230975	0.03	2000	
Sn	118	1	nogas	0.012	0.012	262.39	807	0.00	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	468.847	468.847	1.62	1230758	0.04	2000	
Sb	121	2	He	45.981	45.981	1.24	158166	0.03	2000	
La	139	1	nogas	4865.266	4865.266	2.94	14440	33.69	2000	>LDR
Au	197	1	nogas	-197.075	-197.075	-33.74	13	-1478.07	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	290086	5.09	316349	91.70	70	125	
Ge	72	1	nogas	1791443	3.61	1739233	103.00	70	125	
In	115	1	nogas	1436554	2.49	1398647	102.71	70	125	
Bi	209	1	nogas	987718	1.46	952288	103.72	70	125	
Ge	72	2	He	494011	0.91	487241	101.39	70	125	

Sample Report

Sample Table

Sample Name	HS18051255-01MSD
Data File Name	071SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:20:47-05:00
Sample Type	Sample
Dilution	1
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	50.412	50.412	1.32	124861	0.04	2000	
Na	23	1	nogas	225006.685	225006.685	0.84	2858922664	0.01	200000	>LDR
Mg	24	1	nogas	40418.830	40418.830	0.96	344457441	0.01	200000	
Al	27	1	nogas	133.267	133.267	11.15	1455719	0.01	2000	
K	39	1	nogas	6126.169	6126.169	5.82	83100596	0.01	200000	
Ti	47	1	nogas	47.924	47.924	6.22	55975	0.09	2000	
V	51	1	nogas	58.783	58.783	13.81	1184383	0.00	2000	
Cr	52	1	nogas	53.532	53.532	6.34	759415	0.01	2000	
Mn	55	1	nogas	1042.912	1042.912	3.90	17939773	0.01	2000	
Co	59	1	nogas	61.673	61.673	6.50	892538	0.01	2000	
Ni	60	1	nogas	87.286	87.286	6.35	277031	0.03	2000	
Cu	63	1	nogas	56.537	56.537	4.05	436961	0.01	2000	
Zn	66	1	nogas	1449.972	1449.972	3.03	3504316	0.04	2000	
As	75	1	nogas	52.886	52.886	9.18	209678	0.03	2000	
Sr	88	1	nogas	854.554	854.554	3.91	16875959	0.01	2000	
Ag	107	1	nogas	46.852	46.852	6.11	393845	0.01	2000	
Cd	111	1	nogas	48.366	48.366	0.99	88010	0.05	2000	
Sb	121	1	nogas	46.152	46.152	6.24	386589	0.01	2000	
Tl	205	1	nogas	42.455	42.455	2.22	486016	0.01	2000	
Pb	208	1	nogas	46.529	46.529	2.18	707117	0.01	2000	
U	238	1	nogas	0.679	0.679	4.39	10080	0.01	2000	
[Pb]	206	1	nogas	46.312	46.312	4.21	174057	0.03	2000	
[Pb]	207	1	nogas	45.678	45.678	3.53	156663	0.03	2000	
Na	23	2	He	241427.459	241427.459	0.40	238456910	0.10	200000	>LDR
Mg	24	2	He	42490.730	42490.730	1.01	24110410	0.18	200000	
Al	27	2	He	130.362	130.362	2.63	44403	0.29	2000	
K	39	2	He	6770.306	6770.306	1.84	4583395	0.15	200000	
Ca	43	2	He	67293.844	67293.844	2.97	125285	53.71	200000	
Ca	44	2	He	69365.527	69365.527	5.48	2186621	3.17	200000	
V	51	2	He	48.548	48.548	0.68	210012	0.02	2000	
Cr	52	2	He	55.455	55.455	1.13	252384	0.02	2000	
Mn	55	2	He	1072.584	1072.584	3.70	3536721	0.03	2000	
Fe	56	2	He	6666.805	6666.805	0.57	26726415	0.02	200000	
Co	59	2	He	65.392	65.392	1.19	383463	0.02	2000	
Ni	60	2	He	88.937	88.937	1.45	132926	0.07	2000	
Cu	63	2	He	57.626	57.626	1.70	217560	0.03	2000	
Zn	66	2	He	1450.317	1450.317	1.56	1281455	0.11	2000	
As	75	2	He	49.574	49.574	0.87	44755	0.11	2000	
Se	78	2	He	49.641	49.641	3.43	3756	1.32	2000	
B	11	1	nogas	59.910	59.910	2.50	260990	0.02	2000	
Si	28	1	nogas	19761.604	19761.604	4.37	115423928	0.02	2000	>LDR
Ca	43	1	nogas	63754.386	63754.386	7.83	1512080	4.22	200000	
Ca	44	1	nogas	62834.117	62834.117	5.77	23959515	0.26	200000	
Fe	56	1	nogas	6613.221	6613.221	5.72	99574313	0.01	200000	
Se	77	1	nogas	84.281	84.281	14.06	26349	0.32	2000	
Se	82	1	nogas	48.123	48.123	6.21	7485	0.64	2000	

Sample Report

Mo	95	1	nogas	62.830	62.830	4.67	225706	0.03	2000	
Sn	118	1	nogas	0.029	0.029	90.03	893	0.00	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ba	137	1	nogas	459.645	459.645	0.78	1212899	0.04	2000	
Sb	121	2	He	46.507	46.507	1.46	159540	0.03	2000	
La	139	1	nogas	4579.443	4579.443	4.25	13662	33.52	2000	>LDR
Au	197	1	nogas	-269.034	-269.034	-49.42	7	-4035.50	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	287801	1.07	316349	90.98	70	125	
Ge	72	1	nogas	1779868	5.30	1739233	102.34	70	125	
In	115	1	nogas	1443780	1.27	1398647	103.23	70	125	
Bi	209	1	nogas	965929	2.47	952288	101.43	70	125	
Ge	72	2	He	492710	0.99	487241	101.12	70	125	

Sample Report

Sample Table

Sample Name	HS18051255-01PDS
Data File Name	072SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:22:48-05:00
Sample Type	Sample
Dilution	1
Comment	TW B128909
ISTD Ref FileName	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	111.520	111.520	3.20	274339	0.04	2000	
Na	23	1	nogas	240199.220	240199.220	3.39	3038028401	0.01	200000	>LDR
Mg	24	1	nogas	47686.457	47686.457	3.42	404509767	0.01	200000	
Al	27	1	nogas	181.906	181.906	2.07	2008498	0.01	2000	
K	39	1	nogas	11379.272	11379.272	1.83	152260287	0.01	200000	
Ti	47	1	nogas	101.890	101.890	0.38	120369	0.08	2000	
V	51	1	nogas	107.517	107.517	0.80	2015945	0.01	2000	
Cr	52	1	nogas	108.093	108.093	2.02	1533377	0.01	2000	
Mn	55	1	nogas	1126.738	1126.738	2.27	19620714	0.01	2000	
Co	59	1	nogas	118.204	118.204	2.41	1733235	0.01	2000	
Ni	60	1	nogas	139.460	139.460	1.35	449040	0.03	2000	
Cu	63	1	nogas	108.648	108.648	2.12	848822	0.01	2000	
Zn	66	1	nogas	1554.396	1554.396	1.62	3800992	0.04	2000	
As	75	1	nogas	105.590	105.590	3.16	379286	0.03	2000	
Sr	88	1	nogas	892.768	892.768	1.20	17841478	0.01	2000	
Ag	107	1	nogas	103.960	103.960	2.06	885288	0.01	2000	
Cd	111	1	nogas	103.587	103.587	4.76	190867	0.05	2000	
Sb	121	1	nogas	88.391	88.391	2.39	748291	0.01	2000	
Tl	205	1	nogas	99.765	99.765	0.81	1133173	0.01	2000	
Pb	208	1	nogas	101.994	101.994	0.42	1549744	0.01	2000	
U	238	1	nogas	0.725	0.725	6.92	10680	0.01	2000	
[Pb]	206	1	nogas	104.377	104.377	2.06	389230	0.03	2000	
[Pb]	207	1	nogas	98.980	98.980	0.13	336883	0.03	2000	
Na	23	2	He	256716.569	256716.569	0.99	258669843	0.10	200000	>LDR
Mg	24	2	He	50605.395	50605.395	1.45	29296973	0.17	200000	
Al	27	2	He	190.095	190.095	2.10	65699	0.29	2000	
K	39	2	He	12744.920	12744.920	1.04	8495151	0.15	200000	
Ca	43	2	He	74271.743	74271.743	1.03	141090	52.64	200000	
Ca	44	2	He	74057.451	74057.451	1.64	2382357	3.11	200000	
V	51	2	He	104.718	104.718	0.40	457014	0.02	2000	
Cr	52	2	He	111.808	111.808	2.12	516558	0.02	2000	
Mn	55	2	He	1151.743	1151.743	2.15	3874893	0.03	2000	
Fe	56	2	He	12334.535	12334.535	1.79	50428116	0.02	200000	
Co	59	2	He	122.739	122.739	0.23	734198	0.02	2000	
Ni	60	2	He	146.968	146.968	1.18	223921	0.07	2000	
Cu	63	2	He	115.004	115.004	0.13	441230	0.03	2000	
Zn	66	2	He	1670.601	1670.601	1.01	1505927	0.11	2000	
As	75	2	He	105.379	105.379	0.46	96724	0.11	2000	
Se	78	2	He	110.288	110.288	1.17	8068	1.37	2000	
B	11	1	nogas	59.387	59.387	8.65	258417	0.02	2000	
Si	28	1	nogas	20269.293	20269.293	1.32	119744478	0.02	2000	>LDR
Ca	43	1	nogas	71813.114	71813.114	3.74	1725765	4.16	200000	
Ca	44	1	nogas	72138.952	72138.952	1.97	27852897	0.26	200000	
Fe	56	1	nogas	12129.247	12129.247	2.98	183491887	0.01	200000	

Sample Report

Se	77	1	nogas	130.127	130.127	5.80	33601	0.39	2000	
Se	82	1	nogas	107.532	107.532	1.82	16591	0.65	2000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Mo	95	1	nogas	117.343	117.343	0.44	426462	0.03	2000	
Sn	118	1	nogas	0.148	0.148	12.52	1537	0.01	2000	
Ba	137	1	nogas	537.244	537.244	1.50	1436656	0.04	2000	
Sb	121	2	He	92.570	92.570	0.98	323107	0.03	2000	
La	139	1	nogas	5178.282	5178.282	19.36	15597	33.20	2000	>LDR
Au	197	1	nogas	-39.214	-39.214	-450.76	27	-147.05	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	285934	0.94	316349	90.39	70	125	
Ge	72	1	nogas	1799281	1.16	1739233	103.45	70	125	
In	115	1	nogas	1463217	2.76	1398647	104.62	70	125	
Bi	209	1	nogas	958188	1.19	952288	100.62	70	125	
Ge	72	2	He	502671	1.13	487241	103.17	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	075_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:28:50-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	103.877	1.294	253130	1.65	100	103.9	90	110	
Na	23	1	nogas	9750.092	3.183	124588299	1.07	10000	97.5	90	110	
Mg	24	1	nogas	9541.104	4.976	81272341	2.93	10000	95.4	90	110	
Al	27	1	nogas	94.575	3.074	1036060	1.82	100	94.6	90	110	
K	39	1	nogas	9952.018	0.848	131559632	1.07	10000	99.5	90	110	
Ti	47	1	nogas	97.958	4.166	113774	2.54	100	98.0	90	110	
V	51	1	nogas	114.391	3.626	2094822	1.56	100	114.4	90	110	CCV Main CR1-2 Failed
Cr	52	1	nogas	98.251	4.086	1371946	2.36	100	98.3	90	110	
Mn	55	1	nogas	100.225	0.288	1728648	1.47	100	100.2	90	110	
Co	59	1	nogas	96.700	0.929	1394232	1.15	100	96.7	90	110	
Ni	60	1	nogas	96.485	1.523	305174	0.23	100	96.5	90	110	
Cu	63	1	nogas	96.072	2.424	738233	0.93	100	96.1	90	110	
Zn	66	1	nogas	99.394	2.267	239141	0.54	100	99.4	90	110	
As	75	1	nogas	102.989	1.243	364964	1.41	100	103.0	90	110	
Sr	88	1	nogas	99.175	2.409	1949952	2.73	100	99.2	90	110	
Ag	107	1	nogas	102.769	2.878	860330	1.24	100	102.8	90	110	
Cd	111	1	nogas	95.964	1.278	179372	1.99	100	96.0	90	110	
Sb	121	1	nogas	96.664	2.610	804473	0.90	100	96.7	90	110	
Tl	205	1	nogas	92.519	2.382	1098608	1.24	100	92.5	90	110	
Pb	208	1	nogas	102.103	0.612	1551403	0.61	100	102.1	90	110	
U	238	1	nogas	102.516	3.637	1570919	5.50	100	102.5	90	110	
[Pb]	206	1	nogas	97.398	2.200	379746	0.40	100	97.4	90	110	
[Pb]	207	1	nogas	96.721	3.099	344078	0.53	100	96.7	90	110	
Na	23	2	He	10246.521	1.778	10378016	0.16	10000	102.5	90	110	
Mg	24	2	He	9902.869	3.795	5702018	2.29	10000	99.0	90	110	
Al	27	2	He	96.186	1.900	33470	0.40	100	96.2	90	110	
K	39	2	He	10625.089	3.341	7107235	3.27	10000	106.3	90	110	
Ca	43	2	He	9833.156	0.925	18623	2.40	10000	98.3	90	110	
Ca	44	2	He	9739.753	0.217	312856	1.93	10000	97.4	90	110	
V	51	2	He	98.963	2.677	429873	1.51	100	99.0	90	110	
Cr	52	2	He	97.333	2.399	447718	1.83	100	97.3	90	110	
Mn	55	2	He	98.017	3.364	328475	2.88	100	98.0	90	110	
Fe	56	2	He	9833.752	1.463	40006084	1.16	10000	98.3	90	110	
Co	59	2	He	98.749	1.155	587686	0.58	100	98.7	90	110	
Ni	60	2	He	98.329	2.336	149118	0.61	100	98.3	90	110	
Cu	63	2	He	99.584	0.891	380363	1.06	100	99.6	90	110	
Zn	66	2	He	100.013	1.594	90098	3.26	100	100.0	90	110	
As	75	2	He	98.430	1.850	89894	0.73	100	98.4	90	110	
Se	78	2	He	94.233	3.154	6911	2.37	100	94.2	90	110	
B	11	1	nogas	484.836	3.589	939061	3.37	500	97.0	90	110	
Si	28	1	nogas	4852.635	3.154	31179666	1.14	5000	97.1	90	110	
Ca	43	1	nogas	9903.924	1.520	235144	0.51	10000	99.0	90	110	
Ca	44	1	nogas	10069.903	4.269	3861471	2.45	10000	100.7	90	110	
Fe	56	1	nogas	9870.523	1.506	147159053	1.79	10000	98.7	90	110	
Se	77	1	nogas	136.902	3.026	34059	3.41	100	136.9	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	99.409	3.922	15107	4.22	100	99.4	90	110	
Mo	95	1	nogas	97.979	3.193	350235	3.03	100	98.0	90	110	
Sn	118	1	nogas	93.431	1.953	501225	1.11	100	93.4	90	110	
Ba	137	1	nogas	95.807	3.877	259689	1.28	100	95.8	90	110	
Sb	121	2	He	97.420	1.975	338232	0.41	100	97.4	90	110	
Li	7	1	nogas	97.709	1.261	581885	0.81	100	97.7	90	110	
P	31	1	nogas	490.245	1.348	445601	0.68	500	98.0	90	110	
La	139	1	nogas	152.775	17.884	537	14.23	100	152.8	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	50.983	638.280	37	83.32	100	51.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	283185	0.40	316349	89.52	70	125	
Ge	72	1	nogas	1769634	1.73	1739233	101.75	70	125	
In	115	1	nogas	1483355	2.88	1398647	106.06	70	125	
Bi	209	1	nogas	1002019	2.54	952288	105.22	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	500154	1.73	487241	102.65	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	076_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:30:46-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.061	61.8	197	52.2	1	
Na	23	1	nogas	119.457	4.5	2198087	1.1	100	CCB Main CR1 Failed
Mg	24	1	nogas	7.472	19.7	66996	15.9	100	
Al	27	1	nogas	0.051	71.1	20051	2.9	5	
K	39	1	nogas	6.153	33.9	4742171	0.5	100	
Ti	47	1	nogas	0.107	35.3	293	14.2	2.5	
V	51	1	nogas	3.715	11.6	277456	3.3	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	-0.026	-50.8	19110	1.8	2.5	
Mn	55	1	nogas	0.202	16.5	17005	2.5	2.5	
Co	59	1	nogas	0.064	30.5	1233	21.9	2.5	
Ni	60	1	nogas	0.518	9.0	623	23.4	2.5	
Cu	63	1	nogas	0.105	32.9	2050	12.0	2.5	
Zn	66	1	nogas	0.240	17.8	727	13.8	2.5	
As	75	1	nogas	1.227	48.0	48197	4.1	2.5	
Sr	88	1	nogas	0.087	22.5	2387	16.2	2.5	
Ag	107	1	nogas	0.057	37.9	557	31.7	2.5	
Cd	111	1	nogas	0.080	24.3	167	18.3	1	
Sb	121	1	nogas	0.158	5.7	3217	2.4	2.5	
Tl	205	1	nogas	0.367	70.7	4404	69.6	1	
Pb	208	1	nogas	0.073	13.3	1360	10.8	2.5	
U	238	1	nogas	0.085	23.0	1350	22.5	2.5	
[Pb]	206	1	nogas	0.055	32.4	300	23.3	2.5	
[Pb]	207	1	nogas	0.077	28.4	327	23.8	2.5	
Na	23	2	He	133.824	5.0	239890	1.2	100	CCB Main CR1 Failed
Mg	24	2	He	6.701	5.0	4357	4.8	100	
Al	27	2	He	-0.614	-10.3	597	4.2	5	
K	39	2	He	11.927	19.8	158486	1.0	100	
Ca	43	2	He	5.206	100.6	50	20.0	100	
Ca	44	2	He	9.675	51.3	1520	9.3	100	
V	51	2	He	0.252	4.5	5385	1.4	2.5	
Cr	52	2	He	-0.008	-788.6	2404	10.2	2.5	
Mn	55	2	He	0.214	61.4	1134	39.9	2.5	
Fe	56	2	He	4.575	3.9	34646	2.3	100	
Co	59	2	He	0.048	24.1	350	17.8	2.5	
Ni	60	2	He	0.084	54.7	360	18.2	2.5	
Cu	63	2	He	-0.215	-3.8	933	4.5	2.5	
Zn	66	2	He	-0.200	-23.3	213	17.7	2.5	
As	75	2	He	0.059	71.2	340	9.4	2.5	
Se	78	2	He	-0.039	-1666.5	352	11.4	2.5	
B	11	1	nogas	14.510	34.7	194094	0.9	10	CCB Main CR1 Failed
Si	28	1	nogas	-41.077	-36.9	3703186	2.0	5	
Ca	43	1	nogas	7.955	18.7	1387	2.9	100	
Ca	44	1	nogas	-14.011	-7.0	39876	0.3	100	
Fe	56	1	nogas	-7.801	-16.3	1689010	1.9	100	
Se	77	1	nogas	10.763	18.9	15380	2.8	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.340	-101.8	220	22.7	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.188	68.8	1047	43.6	2.5	
Sn	118	1	nogas	0.095	16.8	1277	5.6	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.072	40.2	350	18.7	2.5	
Sb	121	2	He	0.130	23.3	1307	7.2	2.5	
P	31	1	nogas	2.891	32.9	23371	2.6	10	
La	139	1	nogas	-1.257	-894.2	67	48.2	2.5	
Au	197	1	nogas	-86.294	-72.6	23	24.7	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	299130	3.54	316349	94.56	70	125	
Ge	72	1	nogas	1770406	0.97	1739233	101.79	70	125	
In	115	1	nogas	1488025	4.67	1398647	106.39	70	125	
Bi	209	1	nogas	985994	0.57	952288	103.54	70	125	
Ge	72	2	He	489214	1.88	487241	100.40	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	084_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:46:38-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	104.575	0.470	278306	0.64	100	104.6	90	110	
Na	23	1	nogas	10134.212	4.396	129262649	1.42	10000	101.3	90	110	
Mg	24	1	nogas	9731.384	5.911	82737960	1.34	10000	97.3	90	110	
Al	27	1	nogas	99.623	1.261	1064600	1.42	100	99.6	90	110	
K	39	1	nogas	10017.304	2.729	129216224	1.18	10000	100.2	90	110	
Ti	47	1	nogas	100.456	1.107	113932	0.61	100	100.5	90	110	
V	51	1	nogas	122.295	2.896	2172165	2.34	100	122.3	90	110	CCV Main CR1-2 Failed
Cr	52	1	nogas	100.418	2.075	1368728	0.58	100	100.4	90	110	
Mn	55	1	nogas	104.833	1.499	1764249	0.20	100	104.8	90	110	
Co	59	1	nogas	101.047	2.779	1421937	1.38	100	101.0	90	110	
Ni	60	1	nogas	99.479	3.254	307138	1.90	100	99.5	90	110	
Cu	63	1	nogas	98.098	2.428	735920	2.05	100	98.1	90	110	
Zn	66	1	nogas	99.835	1.543	234506	0.11	100	99.8	90	110	
As	75	1	nogas	109.452	2.387	375863	0.64	100	109.5	90	110	
Sr	88	1	nogas	98.770	0.903	1895957	2.29	100	98.8	90	110	
Ag	107	1	nogas	103.105	2.378	842656	0.92	100	103.1	90	110	
Cd	111	1	nogas	100.168	0.345	174275	0.70	100	100.2	90	110	
Sb	121	1	nogas	98.047	2.878	796562	1.73	100	98.0	90	110	
Tl	205	1	nogas	94.477	1.483	1087752	1.96	100	94.5	90	110	
Pb	208	1	nogas	101.461	1.630	1541647	1.63	100	101.5	90	110	
U	238	1	nogas	107.150	2.207	1590953	2.76	100	107.1	90	110	
[Pb]	206	1	nogas	99.801	0.800	377293	1.66	100	99.8	90	110	
[Pb]	207	1	nogas	100.201	0.973	345668	1.39	100	100.2	90	110	
Na	23	2	He	10432.641	1.157	10476631	1.44	10000	104.3	90	110	
Mg	24	2	He	9964.922	1.714	5691070	1.81	10000	99.6	90	110	
Al	27	2	He	99.761	0.855	34395	1.18	100	99.8	90	110	
K	39	2	He	10719.089	2.294	7168780	2.25	10000	107.2	90	110	
Ca	43	2	He	10012.533	2.045	18800	2.41	10000	100.1	90	110	
Ca	44	2	He	9841.797	1.104	313417	1.25	10000	98.4	90	110	
V	51	2	He	100.256	0.479	431824	0.67	100	100.3	90	110	
Cr	52	2	He	96.910	2.145	442035	1.78	100	96.9	90	110	
Mn	55	2	He	98.487	0.410	327297	0.69	100	98.5	90	110	
Fe	56	2	He	9745.890	1.418	39316038	1.66	10000	97.5	90	110	
Co	59	2	He	98.350	0.648	580396	0.84	100	98.4	90	110	
Ni	60	2	He	98.147	0.829	147609	0.67	100	98.1	90	110	
Cu	63	2	He	102.426	1.384	387854	1.20	100	102.4	90	110	
Zn	66	2	He	100.403	1.103	89659	0.81	100	100.4	90	110	
As	75	2	He	97.758	1.142	88537	1.29	100	97.8	90	110	
Se	78	2	He	97.574	0.613	7083	0.89	100	97.6	90	110	
B	11	1	nogas	469.144	1.595	997971	1.01	500	93.8	90	110	
Si	28	1	nogas	5200.303	1.786	32349215	1.24	5000	104.0	90	110	
Ca	43	1	nogas	10085.872	0.344	233769	1.13	10000	100.9	90	110	
Ca	44	1	nogas	10188.440	0.742	3815441	2.15	10000	101.9	90	110	
Fe	56	1	nogas	10190.202	2.919	148217324	1.41	10000	101.9	90	110	
Se	77	1	nogas	180.094	1.112	39483	0.73	100	180.1	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	99.012	1.016	14689	2.03	100	99.0	90	110	
Mo	95	1	nogas	97.738	2.651	341011	1.25	100	97.7	90	110	
Sn	118	1	nogas	100.022	1.983	499490	2.15	100	100.0	90	110	
Ba	137	1	nogas	100.209	1.187	252949	1.14	100	100.2	90	110	
Sb	121	2	He	95.387	0.390	328435	0.50	100	95.4	90	110	
Li	7	1	nogas	100.630	0.659	653744	1.20	100	100.6	90	110	
P	31	1	nogas	506.385	2.767	448590	1.36	500	101.3	90	110	
La	139	1	nogas	166.706	13.922	540	12.96	100	166.7	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	219.054	102.308	50	40.00	100	219.1	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	309290	1.06	316349	97.77	70	125	
Ge	72	1	nogas	1727477	1.46	1739233	99.32	70	125	
In	115	1	nogas	1380454	0.81	1398647	98.70	70	125	
Bi	209	1	nogas	971182	0.86	952288	101.98	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	495884	0.36	487241	101.77	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	085_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T14:48:36-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.068	33.9	233	24.7	1	
Na	23	1	nogas	168.950	5.1	2800316	1.4	100	CCB Main CR1 Failed
Mg	24	1	nogas	6.723	28.8	60843	25.2	100	
Al	27	1	nogas	0.153	77.4	20495	3.6	5	
K	39	1	nogas	32.019	39.8	4917357	0.8	100	
Ti	47	1	nogas	0.020	197.0	187	21.7	2.5	
V	51	1	nogas	7.472	10.1	328787	1.4	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	0.025	63.3	19203	1.4	2.5	
Mn	55	1	nogas	0.263	9.1	17502	0.6	2.5	
Co	59	1	nogas	0.059	15.7	1127	10.7	2.5	
Ni	60	1	nogas	0.552	12.8	707	28.1	2.5	
Cu	63	1	nogas	0.076	24.1	1777	8.5	2.5	
Zn	66	1	nogas	0.167	34.2	533	22.4	2.5	
As	75	1	nogas	3.926	9.2	54886	0.8	2.5	CCB Main CR1 Failed
Sr	88	1	nogas	0.078	9.9	2144	4.7	2.5	
Ag	107	1	nogas	0.051	13.7	490	11.4	2.5	
Cd	111	1	nogas	0.053	5.6	117	4.9	1	
Sb	121	1	nogas	-0.021	-75.4	1680	9.9	2.5	
Tl	205	1	nogas	0.318	63.1	3961	66.4	1	
Pb	208	1	nogas	0.061	35.3	1177	27.7	2.5	
U	238	1	nogas	0.096	35.1	1567	38.7	2.5	
[Pb]	206	1	nogas	0.049	7.4	283	5.4	2.5	
[Pb]	207	1	nogas	0.058	29.5	267	28.6	2.5	
Na	23	2	He	175.563	2.5	281620	1.2	100	CCB Main CR1 Failed
Mg	24	2	He	5.878	6.6	3904	5.7	100	
Al	27	2	He	-0.398	-36.7	670	7.5	5	
K	39	2	He	13.994	19.4	159840	1.1	100	
Ca	43	2	He	-3.804	-166.5	33	34.6	100	
Ca	44	2	He	6.649	19.7	1430	2.4	100	
V	51	2	He	0.326	7.0	5715	0.8	2.5	
Cr	52	2	He	-0.056	-77.5	2200	8.0	2.5	
Mn	55	2	He	0.103	25.0	767	10.0	2.5	
Fe	56	2	He	4.142	10.3	33010	4.7	100	
Co	59	2	He	0.056	23.1	403	18.9	2.5	
Ni	60	2	He	0.018	164.2	263	15.8	2.5	
Cu	63	2	He	-0.235	-9.8	863	9.0	2.5	
Zn	66	2	He	-0.189	-19.5	223	13.7	2.5	
As	75	2	He	0.086	49.9	366	11.4	2.5	
Se	78	2	He	0.091	598.4	362	9.4	2.5	
B	11	1	nogas	10.292	89.5	206335	4.6	10	CCB Main CR1 Failed
Si	28	1	nogas	-4.187	-571.2	3791362	1.7	5	
Ca	43	1	nogas	10.515	49.6	1403	8.6	100	
Ca	44	1	nogas	-9.829	-40.4	40200	2.3	100	
Fe	56	1	nogas	-0.949	-415.9	1735506	2.5	100	
Se	77	1	nogas	28.677	12.8	17499	5.3	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.366	-36.9	210	9.5	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.197	80.4	1040	50.1	2.5	
Sn	118	1	nogas	0.123	35.6	1430	17.2	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.072	28.3	353	16.1	2.5	
Sb	121	2	He	-0.070	-32.0	633	12.9	2.5	
P	31	1	nogas	6.374	29.5	25578	3.7	10	
La	139	1	nogas	-10.358	-54.1	40	43.3	2.5	
Au	197	1	nogas	122.088	176.1	43	48.0	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	330537	4.16	316349	104.48	70	125	
Ge	72	1	nogas	1717196	2.41	1739233	98.73	70	125	
In	115	1	nogas	1490766	0.76	1398647	106.59	70	125	
Bi	209	1	nogas	1004184	5.60	952288	105.45	70	125	
Ge	72	2	He	490527	0.99	487241	100.67	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	096_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T15:10:50-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	107.560	5.120	287424	2.92	100	107.6	90	110	
Na	23	1	nogas	11026.052	4.597	142261941	0.71	10000	110.3	90	110	CCV Main CR1-2 Failed
Mg	24	1	nogas	10126.258	4.534	87180408	1.22	10000	101.3	90	110	
Al	27	1	nogas	97.795	0.494	1119377	1.70	100	97.8	90	110	
K	39	1	nogas	9815.588	2.990	135656874	1.45	10000	98.2	90	110	
Ti	47	1	nogas	97.441	2.265	118353	3.23	100	97.4	90	110	
V	51	1	nogas	102.290	2.406	1982087	0.99	100	102.3	90	110	
Cr	52	1	nogas	95.799	3.025	1399646	4.35	100	95.8	90	110	
Mn	55	1	nogas	101.507	1.197	1829905	2.62	100	101.5	90	110	
Co	59	1	nogas	96.562	0.402	1455330	1.92	100	96.6	90	110	
Ni	60	1	nogas	97.441	1.962	322127	0.85	100	97.4	90	110	
Cu	63	1	nogas	96.758	2.693	777121	1.80	100	96.8	90	110	
Zn	66	1	nogas	100.430	2.079	252563	0.73	100	100.4	90	110	
As	75	1	nogas	101.437	0.731	376414	1.21	100	101.4	90	110	
Sr	88	1	nogas	100.297	1.663	2060877	0.86	100	100.3	90	110	
Ag	107	1	nogas	101.901	0.342	891923	1.95	100	101.9	90	110	
Cd	111	1	nogas	98.791	3.175	187319	1.27	100	98.8	90	110	
Sb	121	1	nogas	96.948	2.206	843369	1.17	100	96.9	90	110	
Tl	205	1	nogas	94.193	3.977	1123286	1.06	100	94.2	90	110	
Pb	208	1	nogas	104.506	1.765	1587910	1.76	100	104.5	90	110	
U	238	1	nogas	108.262	4.346	1664808	1.49	100	108.3	90	110	
[Pb]	206	1	nogas	98.678	4.523	386393	2.35	100	98.7	90	110	
[Pb]	207	1	nogas	98.720	2.913	352865	1.76	100	98.7	90	110	
Na	23	2	He	10766.201	2.079	11300614	1.90	10000	107.7	90	110	
Mg	24	2	He	9824.258	0.406	5866717	0.75	10000	98.2	90	110	
Al	27	2	He	97.371	1.972	35123	2.10	100	97.4	90	110	
K	39	2	He	11029.222	1.988	7371833	1.95	10000	110.3	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10158.461	2.906	19944	3.42	10000	101.6	90	110	
Ca	44	2	He	10155.937	0.802	338130	0.78	10000	101.6	90	110	
V	51	2	He	99.333	0.763	447400	0.29	100	99.3	90	110	
Cr	52	2	He	97.485	2.395	464936	2.23	100	97.5	90	110	
Mn	55	2	He	98.460	2.662	342104	2.12	100	98.5	90	110	
Fe	56	2	He	9876.823	2.796	41657008	2.27	10000	98.8	90	110	
Co	59	2	He	99.115	1.827	611549	1.28	100	99.1	90	110	
Ni	60	2	He	98.491	2.039	154880	1.82	100	98.5	90	110	
Cu	63	2	He	99.957	0.347	395822	0.22	100	100.0	90	110	
Zn	66	2	He	99.319	2.277	92751	2.79	100	99.3	90	110	
As	75	2	He	99.445	2.064	94169	2.16	100	99.4	90	110	
Se	78	2	He	98.126	0.362	7446	0.31	100	98.1	90	110	
B	11	1	nogas	580.896	4.713	1198998	1.65	500	116.2	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	5185.716	1.457	34554160	2.12	5000	103.7	90	110	
Ca	43	1	nogas	9958.215	4.480	247028	2.78	10000	99.6	90	110	
Ca	44	1	nogas	10025.639	3.181	4019110	1.79	10000	100.3	90	110	
Fe	56	1	nogas	9921.282	1.597	154575062	0.53	10000	99.2	90	110	
Se	77	1	nogas	118.390	4.713	32720	1.99	100	118.4	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	98.882	3.354	15704	2.60	100	98.9	90	110	
Mo	95	1	nogas	96.304	2.368	359776	1.16	100	96.3	90	110	
Sn	118	1	nogas	93.068	2.022	506776	2.88	100	93.1	90	110	
Ba	137	1	nogas	98.380	4.700	270587	2.61	100	98.4	90	110	
Sb	121	2	He	98.153	0.918	353356	1.11	100	98.2	90	110	
Li	7	1	nogas	102.285	1.993	667156	2.00	100	102.3	90	110	
P	31	1	nogas	493.017	0.600	468315	1.79	500	98.6	90	110	
La	139	1	nogas	181.004	18.048	633	17.03	100	181.0	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	58.396	442.574	37	62.98	100	58.4	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	310804	2.66	316349	98.25	70	125	
Ge	72	1	nogas	1849618	1.74	1739233	106.35	70	125	
In	115	1	nogas	1505153	2.34	1398647	107.61	70	125	
Bi	209	1	nogas	1006747	2.92	952288	105.72	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	518509	0.55	487241	106.42	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	097_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T15:12:48-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.051	55.8	193	43.4	1	
Na	23	1	nogas	230.229	3.8	3827000	2.6	100	CCB Main CR1 Failed
Mg	24	1	nogas	5.518	15.0	55024	12.8	100	
Al	27	1	nogas	0.360	25.5	23795	3.3	5	
K	39	1	nogas	29.433	26.2	5129920	1.2	100	
Ti	47	1	nogas	0.018	130.0	193	13.0	2.5	
V	51	1	nogas	0.679	70.8	231693	4.4	2.5	
Cr	52	1	nogas	-0.029	-74.6	19410	2.5	2.5	
Mn	55	1	nogas	0.233	10.9	17846	1.5	2.5	
Co	59	1	nogas	0.040	22.8	913	14.0	2.5	
Ni	60	1	nogas	0.579	12.3	833	26.7	2.5	
Cu	63	1	nogas	0.111	41.4	2140	16.2	2.5	
Zn	66	1	nogas	0.161	13.4	547	9.2	2.5	
As	75	1	nogas	0.527	34.8	46850	2.0	2.5	
Sr	88	1	nogas	0.187	12.7	4421	10.9	2.5	
Ag	107	1	nogas	0.059	6.5	590	5.1	2.5	
Cd	111	1	nogas	0.048	53.5	113	45.3	1	
Sb	121	1	nogas	0.269	22.1	4207	10.9	2.5	
Tl	205	1	nogas	0.273	54.9	3397	55.2	1	
Pb	208	1	nogas	0.054	28.8	1077	22.0	2.5	
U	238	1	nogas	0.090	35.4	1463	35.9	2.5	
[Pb]	206	1	nogas	0.051	43.7	293	30.7	2.5	
[Pb]	207	1	nogas	0.051	62.0	240	49.1	2.5	
Na	23	2	He	244.388	1.3	374746	0.8	100	CCB Main CR1 Failed
Mg	24	2	He	4.875	4.7	3580	3.7	100	
Al	27	2	He	-0.050	-451.3	843	9.5	5	
K	39	2	He	32.529	8.5	171975	1.1	100	
Ca	43	2	He	30.135	67.2	103	39.1	100	
Ca	44	2	He	18.405	15.5	1930	4.7	100	
V	51	2	He	-0.047	-84.5	4444	4.2	2.5	
Cr	52	2	He	-0.056	-59.0	2360	6.6	2.5	
Mn	55	2	He	0.060	30.2	673	9.7	2.5	
Fe	56	2	He	2.868	2.0	29971	0.7	100	
Co	59	2	He	0.026	49.2	240	33.1	2.5	
Ni	60	2	He	-0.021	-29.5	220	4.5	2.5	
Cu	63	2	He	-0.247	-5.1	877	5.6	2.5	
Zn	66	2	He	-0.302	-11.4	133	24.1	2.5	
As	75	2	He	0.003	472.3	312	3.8	2.5	
Se	78	2	He	-0.018	-2371.6	381	8.2	2.5	
B	11	1	nogas	37.308	12.0	265919	3.3	10	CCB Main CR1 Failed
Si	28	1	nogas	9.411	71.1	4059285	1.3	5	CCB Main CR1 Failed
Ca	43	1	nogas	16.956	77.5	1630	20.3	100	
Ca	44	1	nogas	-2.733	-86.6	44958	2.5	100	
Fe	56	1	nogas	-2.489	-95.0	1798993	1.4	100	
Se	77	1	nogas	3.539	173.0	14573	7.2	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.882	13.5	410	4.2	2.5	
Mo	95	1	nogas	0.229	26.9	1213	17.5	2.5	
Sn	118	1	nogas	0.142	21.4	1597	11.7	5	

Continuing Calibration Blank (CCB) Report

Ba	137	1	nogas	0.041	27.5	280	10.7	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Sb	121	2	He	0.202	12.8	1670	5.8	2.5	
P	31	1	nogas	6.678	4.6	27140	0.3	10	
La	139	1	nogas	-4.464	-152.3	60	33.3	2.5	
Au	197	1	nogas	-308.400	-21.0	3	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	341479	1.51	316349	107.94	70	125	
Ge	72	1	nogas	1802438	0.99	1739233	103.63	70	125	
In	115	1	nogas	1551449	2.72	1398647	110.92	70	125	
Bi	209	1	nogas	1012375	2.97	952288	106.31	70	125	
Ge	72	2	He	526287	0.23	487241	108.01	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	109_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T15:36:44-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.042	72.6	113	53.9	1	
Na	23	1	nogas	459.718	0.8	5805329	1.6	100	CCB Main CR1 Failed
Mg	24	1	nogas	5.972	10.7	50075	10.4	100	
Al	27	1	nogas	0.164	26.3	19577	1.5	5	
K	39	1	nogas	49.810	19.6	4877271	1.1	100	
Ti	47	1	nogas	0.025	265.7	183	39.5	2.5	
V	51	1	nogas	-1.925	-24.0	170057	4.6	2.5	
Cr	52	1	nogas	-0.118	-33.0	16414	1.3	2.5	
Mn	55	1	nogas	0.554	17.4	21212	8.8	2.5	
Co	59	1	nogas	0.044	41.3	867	25.7	2.5	
Ni	60	1	nogas	0.765	7.6	1297	11.9	2.5	
Cu	63	1	nogas	0.179	25.1	2410	11.4	2.5	
Zn	66	1	nogas	0.396	12.9	1017	12.8	2.5	
As	75	1	nogas	-1.299	-29.0	37132	4.0	2.5	
Sr	88	1	nogas	0.175	20.9	3800	19.1	2.5	
Ag	107	1	nogas	0.056	47.9	503	39.1	2.5	
Cd	111	1	nogas	0.048	21.2	97	15.8	1	
Sb	121	1	nogas	-0.072	-22.3	1200	10.1	2.5	
Tl	205	1	nogas	0.293	78.8	3164	77.0	1	
Pb	208	1	nogas	0.042	45.9	893	32.9	2.5	
U	238	1	nogas	0.073	47.5	1050	45.2	2.5	
[Pb]	206	1	nogas	0.055	49.9	270	35.3	2.5	
[Pb]	207	1	nogas	0.044	25.3	187	18.8	2.5	
Na	23	2	He	537.151	2.0	612684	0.3	100	CCB Main CR1 Failed
Mg	24	2	He	6.460	5.4	4074	6.3	100	
Al	27	2	He	-0.349	-63.3	660	10.5	5	
K	39	2	He	29.851	7.8	170222	0.9	100	
Ca	43	2	He	15.828	139.3	67	56.8	100	
Ca	44	2	He	23.655	34.8	1887	11.7	100	
V	51	2	He	-0.191	-7.6	3400	2.6	2.5	
Cr	52	2	He	-0.031	-91.7	2224	3.8	2.5	
Mn	55	2	He	0.518	6.8	2050	4.4	2.5	
Fe	56	2	He	3.659	13.4	29884	4.6	100	
Co	59	2	He	0.037	19.5	280	12.9	2.5	
Ni	60	2	He	0.030	123.4	270	19.6	2.5	
Cu	63	2	He	-0.236	-7.9	827	9.9	2.5	
Zn	66	2	He	-0.301	-4.8	120	8.3	2.5	
As	75	2	He	-0.015	-219.6	264	10.2	2.5	
Se	78	2	He	0.154	128.7	353	5.1	2.5	
B	11	1	nogas	77.756	10.2	234457	3.6	10	CCB Main CR1 Failed
Si	28	1	nogas	-18.304	-99.3	3526249	1.5	5	
Ca	43	1	nogas	20.683	1.7	1553	1.3	100	
Ca	44	1	nogas	-1.671	-92.4	41025	2.9	100	
Fe	56	1	nogas	14.802	15.9	1861216	1.8	100	
Se	77	1	nogas	-9.140	-49.5	11444	5.9	2.5	
Se	82	1	nogas	0.183	532.1	273	47.0	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.142	74.6	810	41.2	2.5	
Sn	118	1	nogas	0.113	38.7	1247	17.2	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.052	27.3	270	14.8	2.5	
Sb	121	2	He	-0.087	-38.6	553	21.1	2.5	
P	31	1	nogas	4.409	2.3	22731	1.4	10	
La	139	1	nogas	-5.335	-6.9	50	0.0	2.5	
Au	197	1	nogas	-56.343	-127.7	23	24.7	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	232663	1.93	316349	73.55	70	125	
Ge	72	1	nogas	1629799	1.70	1739233	93.71	70	125	
In	115	1	nogas	1347180	2.06	1398647	96.32	70	125	
Bi	209	1	nogas	884913	0.37	952288	92.92	70	125	
Ge	72	2	He	471867	1.84	487241	96.84	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	111_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T15:40:45-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	107.542	1.499	220640	0.67	100	107.5	90	110	
Na	23	1	nogas	10005.158	3.219	117395344	2.67	10000	100.1	90	110	
Mg	24	1	nogas	9835.205	3.715	76933970	1.15	10000	98.4	90	110	
Al	27	1	nogas	91.460	5.925	947793	1.81	100	91.5	90	110	
K	39	1	nogas	10077.315	5.734	125890669	2.80	10000	100.8	90	110	
Ti	47	1	nogas	92.087	2.994	101222	1.63	100	92.1	90	110	
V	51	1	nogas	92.481	3.035	1641777	1.60	100	92.5	90	110	
Cr	52	1	nogas	91.196	4.509	1205818	0.40	100	91.2	90	110	
Mn	55	1	nogas	100.687	6.332	1641067	2.47	100	100.7	90	110	
Co	59	1	nogas	94.201	6.129	1283641	2.23	100	94.2	90	110	
Ni	60	1	nogas	96.503	6.596	288456	2.69	100	96.5	90	110	
Cu	63	1	nogas	94.179	5.971	684151	2.23	100	94.2	90	110	
Zn	66	1	nogas	97.696	5.256	222245	1.40	100	97.7	90	110	
As	75	1	nogas	94.586	4.373	320418	1.19	100	94.6	90	110	
Sr	88	1	nogas	94.962	2.937	1766373	2.40	100	95.0	90	110	
Ag	107	1	nogas	96.610	5.254	764743	1.50	100	96.6	90	110	
Cd	111	1	nogas	99.952	2.128	168141	1.70	100	100.0	90	110	
Sb	121	1	nogas	94.121	4.281	740883	0.44	100	94.1	90	110	
Tl	205	1	nogas	97.885	3.994	1029470	1.95	100	97.9	90	110	
Pb	208	1	nogas	90.568	0.597	1376166	0.60	100	90.6	90	110	
U	238	1	nogas	98.747	2.962	1339606	2.01	100	98.7	90	110	
[Pb]	206	1	nogas	102.261	2.406	353214	0.58	100	102.3	90	110	
[Pb]	207	1	nogas	93.563	3.314	294880	1.35	100	93.6	90	110	
Na	23	2	He	10714.970	3.572	10399671	2.29	10000	107.1	90	110	
Mg	24	2	He	10174.874	2.518	5618557	1.56	10000	101.7	90	110	
Al	27	2	He	93.167	5.891	31103	4.77	100	93.2	90	110	
K	39	2	He	10640.900	1.222	7117587	1.20	10000	106.4	90	110	
Ca	43	2	He	10430.732	4.488	18930	3.09	10000	104.3	90	110	
Ca	44	2	He	10148.793	3.230	312423	1.83	10000	101.5	90	110	
V	51	2	He	97.216	2.067	405000	0.67	100	97.2	90	110	
Cr	52	2	He	98.128	2.856	432737	1.47	100	98.1	90	110	
Mn	55	2	He	99.129	2.654	318506	1.26	100	99.1	90	110	
Fe	56	2	He	10057.706	1.978	39230082	0.67	10000	100.6	90	110	
Co	59	2	He	97.400	2.331	555760	1.32	100	97.4	90	110	
Ni	60	2	He	96.317	3.687	140047	2.32	100	96.3	90	110	
Cu	63	2	He	98.760	1.515	361680	0.30	100	98.8	90	110	
Zn	66	2	He	98.446	2.075	85010	0.69	100	98.4	90	110	
As	75	2	He	101.679	1.858	89035	1.33	100	101.7	90	110	
Se	78	2	He	99.862	3.506	7001	2.16	100	99.9	90	110	
B	11	1	nogas	579.365	6.917	917827	3.88	500	115.9	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	528.176	11.454	6522753	2.02	5000	10.6	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	9954.880	4.068	223525	1.15	10000	99.5	90	110	
Ca	44	1	nogas	10051.474	4.234	3648907	4.61	10000	100.5	90	110	
Fe	56	1	nogas	10064.870	5.251	141817403	1.26	10000	100.6	90	110	
Se	77	1	nogas	75.498	14.030	23586	2.39	100	75.5	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	101.894	4.596	14633	0.48	100	101.9	90	110	
Mo	95	1	nogas	92.503	3.053	312817	1.56	100	92.5	90	110	
Sn	118	1	nogas	92.616	3.441	447253	3.36	100	92.6	90	110	
Ba	137	1	nogas	98.561	1.073	240565	0.22	100	98.6	90	110	
Sb	121	2	He	95.113	2.156	316655	0.78	100	95.1	90	110	
Li	7	1	nogas	96.514	1.049	484373	3.09	100	96.5	90	110	
P	31	1	nogas	539.219	5.803	461332	1.62	500	107.8	90	110	
La	139	1	nogas	83.516	13.355	293	9.84	100	83.5	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	559.276	69.313	73	43.83	100	559.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	238483	2.10	316349	75.39	70	125	
Ge	72	1	nogas	1675147	4.16	1739233	96.32	70	125	
In	115	1	nogas	1334890	1.26	1398647	95.44	70	125	
Bi	209	1	nogas	887672	2.18	952288	93.21	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	479562	1.39	487241	98.42	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	117_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T15:52:50-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	112.025	5.467	183306	2.46	100	112.0	90	110	CCV Main CR1-2 Failed
Na	23	1	nogas	9859.362	3.650	102760315	2.51	10000	98.6	90	110	
Mg	24	1	nogas	9475.815	0.998	65869564	0.34	10000	94.8	90	110	
Al	27	1	nogas	85.585	2.133	803111	1.29	100	85.6	90	110	CCV Main CR1-2 Failed
K	39	1	nogas	10148.492	3.410	114574553	2.18	10000	101.5	90	110	
Ti	47	1	nogas	90.831	1.515	90216	0.46	100	90.8	90	110	
V	51	1	nogas	93.319	3.184	1494940	1.32	100	93.3	90	110	
Cr	52	1	nogas	90.727	1.464	1084532	0.52	100	90.7	90	110	
Mn	55	1	nogas	101.710	1.453	1499195	0.43	100	101.7	90	110	
Co	59	1	nogas	91.492	2.136	1127473	0.91	100	91.5	90	110	
Ni	60	1	nogas	95.608	2.488	258461	1.07	100	95.6	90	110	
Cu	63	1	nogas	93.485	1.977	614127	0.94	100	93.5	90	110	
Zn	66	1	nogas	97.277	2.001	200079	0.81	100	97.3	90	110	
As	75	1	nogas	96.523	2.783	294725	1.48	100	96.5	90	110	
Sr	88	1	nogas	93.196	2.725	1566210	2.41	100	93.2	90	110	
Ag	107	1	nogas	95.630	1.274	684451	0.24	100	95.6	90	110	
Cd	111	1	nogas	96.708	0.471	147772	0.83	100	96.7	90	110	
Sb	121	1	nogas	94.035	3.140	668994	1.79	100	94.0	90	110	
Tl	205	1	nogas	94.210	1.884	905102	0.83	100	94.2	90	110	
Pb	208	1	nogas	80.884	0.675	1229037	0.67	100	80.9	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	92.494	2.053	1146078	2.24	100	92.5	90	110	
[Pb]	206	1	nogas	99.647	0.504	314369	0.63	100	99.6	90	110	
[Pb]	207	1	nogas	90.996	1.410	261960	0.36	100	91.0	90	110	
Na	23	2	He	11026.001	3.628	9852724	1.42	10000	110.3	90	110	CCV Main CR1-2 Failed
Mg	24	2	He	10227.031	2.873	5201085	1.35	10000	102.3	90	110	
Al	27	2	He	92.277	7.657	28362	5.13	100	92.3	90	110	
K	39	2	He	9693.421	0.697	6497245	0.68	10000	96.9	90	110	
Ca	43	2	He	9681.040	2.527	16187	0.54	10000	96.8	90	110	
Ca	44	2	He	9922.122	3.921	281297	1.44	10000	99.2	90	110	
V	51	2	He	96.399	2.451	369923	1.43	100	96.4	90	110	
Cr	52	2	He	95.683	4.574	388578	2.32	100	95.7	90	110	
Mn	55	2	He	95.757	3.291	283352	0.88	100	95.8	90	110	
Fe	56	2	He	9799.069	1.922	35204523	0.65	10000	98.0	90	110	
Co	59	2	He	96.352	3.482	506253	1.00	100	96.4	90	110	
Ni	60	2	He	96.565	1.739	129350	1.00	100	96.6	90	110	
Cu	63	2	He	97.964	1.318	330479	1.29	100	98.0	90	110	
Zn	66	2	He	96.483	1.135	76757	1.45	100	96.5	90	110	
As	75	2	He	100.107	2.540	80733	1.14	100	100.1	90	110	
Se	78	2	He	101.209	3.447	6530	0.74	100	101.2	90	110	
B	11	1	nogas	632.509	5.337	789884	1.69	500	126.5	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	494.418	7.128	5733875	1.83	5000	9.9	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	9793.090	2.019	198754	0.61	10000	97.9	90	110	
Ca	44	1	nogas	9946.608	2.385	3261628	0.96	10000	99.5	90	110	
Fe	56	1	nogas	9979.833	2.239	127147974	0.98	10000	99.8	90	110	
Se	77	1	nogas	87.932	3.762	22905	0.66	100	87.9	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	102.415	3.640	13295	3.39	100	102.4	90	110	
Mo	95	1	nogas	91.008	2.046	278083	0.82	100	91.0	90	110	
Sn	118	1	nogas	91.058	1.374	399432	1.77	100	91.1	90	110	
Ba	137	1	nogas	96.559	2.396	214068	2.35	100	96.6	90	110	
Sb	121	2	He	95.040	1.329	291474	1.42	100	95.0	90	110	
Li	7	1	nogas	94.311	2.453	377985	0.78	100	94.3	90	110	
P	31	1	nogas	525.535	1.735	407039	1.22	500	105.1	90	110	
La	139	1	nogas	67.481	18.463	227	14.18	100	67.5	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	516.945	156.038	63	92.52	100	516.9	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	190379	3.16	316349	60.18	70	125	ISTD Failed
Ge	72	1	nogas	1512659	1.50	1739233	86.97	70	125	
In	115	1	nogas	1212407	0.86	1398647	86.68	70	125	
Bi	209	1	nogas	810527	1.07	952288	85.11	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	441773	2.58	487241	90.67	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	118_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T15:54:49-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	004CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.045	93.6	110	72.2	1	
Na	23	1	nogas	267.058	2.1	3480823	0.9	100	CCB Main CR1 Failed
Mg	24	1	nogas	7.097	20.9	55561	17.2	100	
Al	27	1	nogas	0.258	48.9	19334	2.6	5	
K	39	1	nogas	58.702	23.2	4701445	0.6	100	
Ti	47	1	nogas	0.051	75.3	200	21.8	2.5	
V	51	1	nogas	-4.258	-5.1	127187	2.6	2.5	
Cr	52	1	nogas	-0.196	-23.5	14556	0.8	2.5	
Mn	55	1	nogas	0.594	6.8	20602	2.3	2.5	
Co	59	1	nogas	0.055	38.6	960	25.6	2.5	
Ni	60	1	nogas	0.585	10.0	723	18.8	2.5	
Cu	63	1	nogas	0.195	5.0	2387	3.2	2.5	
Zn	66	1	nogas	0.332	12.1	823	7.4	2.5	
As	75	1	nogas	-1.965	-18.4	33251	4.6	2.5	
Sr	88	1	nogas	0.151	6.7	3174	7.2	2.5	
Ag	107	1	nogas	0.059	38.3	500	32.2	2.5	
Cd	111	1	nogas	0.074	53.8	130	46.2	1	
Sb	121	1	nogas	-0.072	-61.4	1127	25.1	2.5	
Tl	205	1	nogas	0.302	58.5	3080	58.8	1	
Pb	208	1	nogas	0.045	54.5	937	39.8	2.5	
U	238	1	nogas	0.088	27.1	1173	27.4	2.5	
[Pb]	206	1	nogas	0.051	109.6	243	77.1	2.5	
[Pb]	207	1	nogas	0.064	3.3	237	2.4	2.5	
Na	23	2	He	318.895	2.6	391039	0.7	100	CCB Main CR1 Failed
Mg	24	2	He	6.856	11.8	4124	9.9	100	
Al	27	2	He	-0.395	-108.6	623	23.4	5	
K	39	2	He	21.793	11.2	164946	1.0	100	
Ca	43	2	He	15.065	111.3	63	45.6	100	
Ca	44	2	He	18.528	9.6	1670	5.7	100	
V	51	2	He	-0.316	-10.5	2782	4.9	2.5	
Cr	52	2	He	-0.013	-174.5	2217	5.4	2.5	
Mn	55	2	He	0.416	15.0	1660	8.9	2.5	
Fe	56	2	He	5.021	6.0	33794	0.9	100	
Co	59	2	He	0.030	35.7	230	27.2	2.5	
Ni	60	2	He	0.032	122.7	263	20.9	2.5	
Cu	63	2	He	-0.180	-14.7	987	6.7	2.5	
Zn	66	2	He	-0.218	-33.1	183	31.5	2.5	
As	75	2	He	0.006	367.4	272	7.5	2.5	
Se	78	2	He	1.284	40.3	410	5.4	2.5	
B	11	1	nogas	82.047	3.9	220516	2.8	10	CCB Main CR1 Failed
Si	28	1	nogas	-15.826	-181.3	3339248	0.9	5	
Ca	43	1	nogas	10.866	39.0	1267	9.9	100	
Ca	44	1	nogas	1.452	349.6	39739	3.5	100	
Fe	56	1	nogas	7.974	112.4	1667293	3.2	100	
Se	77	1	nogas	-11.715	-14.1	10473	4.2	2.5	
Se	82	1	nogas	0.278	255.3	270	31.6	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.138	92.7	750	50.9	2.5	
Sn	118	1	nogas	0.148	34.7	1297	16.0	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.035	30.3	210	12.6	2.5	
Sb	121	2	He	-0.109	-18.8	463	16.3	2.5	
P	31	1	nogas	6.050	7.1	22694	2.5	10	
La	139	1	nogas	5.570	187.0	73	34.3	2.5	CCB Main CR1 Failed
Au	197	1	nogas	6.526	2367.6	27	43.3	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	213578	1.49	316349	67.51	70	125	ISTD Failed
Ge	72	1	nogas	1539033	3.89	1739233	88.49	70	125	
In	115	1	nogas	1235924	1.70	1398647	88.37	70	125	
Bi	209	1	nogas	832039	1.86	952288	87.37	70	125	
Ge	72	2	He	454137	2.63	487241	93.21	70	125	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	128CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:15:28-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	17	549.91
Na	23	1	nogas	2161598	0.00
Mg	24	1	nogas	6836	0.27
Al	27	1	nogas	16501	0.01
K	39	1	nogas	5198925	0.00
Ti	47	1	nogas	130	17.75
V	51	1	nogas	188045	0.00
Cr	52	1	nogas	16681	0.01
Mn	55	1	nogas	20852	0.00
Co	59	1	nogas	373	8.16
Ni	60	1	nogas	347	4.19
Cu	63	1	nogas	1460	0.81
Zn	66	1	nogas	1220	1.34
As	75	1	nogas	37205	0.01
Sr	88	1	nogas	877	2.16
Ag	107	1	nogas	110	14.31
Cd	111	1	nogas	20	433.01
Sb	121	1	nogas	760	0.17
Tl	205	1	nogas	57	78.37
Pb	208	1	nogas	267	8.93
[Pb]	206	1	nogas	77	51.98
[Pb]	207	1	nogas	70	88.96
Na	23	2	He	249279	0.00
Mg	24	2	He	823	1.55
Al	27	2	He	623	1.83
K	39	2	He	171964	0.00
Ca	43	2	He	23	280.57
Ca	44	2	He	1223	0.96
V	51	2	He	3487	0.04
Cr	52	2	He	2100	0.33
Mn	55	2	He	957	0.99
Fe	56	2	He	16261	0.01
Co	59	2	He	67	93.67
Ni	60	2	He	207	5.41
Cu	63	2	He	800	0.68
Zn	66	2	He	517	3.68
As	75	2	He	226	4.96
Se	78	2	He	353	1.31
B	11	1	nogas	206171	0.00
Si	28	1	nogas	3684636	0.00
Ca	43	1	nogas	1050	0.87
Ca	44	1	nogas	36887	0.01

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	1842985	0.00
Se	77	1	nogas	11717	0.06
Se	82	1	nogas	197	21.06
Mo	95	1	nogas	93	47.79
Sn	118	1	nogas	680	2.06
Ba	137	1	nogas	190	16.85
Sb	121	2	He	370	4.38
Li	7	1	nogas	24533	0.01
P	31	1	nogas	23779	0.02
La	139	1	nogas	27	292.73

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	270377	3.15
Ge	72	1	nogas	1753051	0.64
In	115	1	nogas	1461102	0.46
Bi	209	1	nogas	945669	2.19
Ge	72	2	He	511870	1.62

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	129CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:17:28-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	4951	0.11
Na	23	1	nogas	4497811	0.00
Mg	24	1	nogas	1700202	0.00
Al	27	1	nogas	40891	0.01
K	39	1	nogas	7724588	0.00
Ti	47	1	nogas	2247	0.33
V	51	1	nogas	223931	0.00
Cr	52	1	nogas	43779	0.00
Mn	55	1	nogas	54644	0.00
Co	59	1	nogas	27871	0.01
Ni	60	1	nogas	6595	0.12
Cu	63	1	nogas	16037	0.04
Zn	66	1	nogas	5207	0.14
As	75	1	nogas	44582	0.01
Sr	88	1	nogas	37102	0.00
Ag	107	1	nogas	16648	0.01
Cd	111	1	nogas	3304	0.13
Sb	121	1	nogas	16328	0.02
Tl	205	1	nogas	20523	0.02
Pb	208	1	nogas	29574	0.01
[Pb]	206	1	nogas	7162	0.09
[Pb]	207	1	nogas	6621	0.09
Na	23	2	He	453958	0.00
Mg	24	2	He	119544	0.00
Al	27	2	He	1337	1.53
K	39	2	He	314939	0.00
Ca	43	2	He	377	3.26
Ca	44	2	He	7708	0.03
V	51	2	He	12271	0.02
Cr	52	2	He	10960	0.03
Mn	55	2	He	7602	0.05
Fe	56	2	He	831151	0.00
Co	59	2	He	12074	0.02
Ni	60	2	He	3380	0.16
Cu	63	2	He	8856	0.05
Zn	66	2	He	2090	0.38
As	75	2	He	2139	0.07
Se	78	2	He	517	0.72
B	11	1	nogas	217131	0.00
Si	28	1	nogas	4229148	0.00

Calibration Standard Report

Ca	43	1	nogas	5698	0.12
Ca	44	1	nogas	109707	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	4825164	0.00
Se	77	1	nogas	12551	0.04
Se	82	1	nogas	597	1.91
Mo	95	1	nogas	6515	0.04
Sn	118	1	nogas	10774	0.02
Ba	137	1	nogas	5124	0.10
Sb	121	2	He	6908	0.10
P	31	1	nogas	34088	0.01
La	139	1	nogas	23	382.35

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	272931	3.67	270377	100.94	70	125	
Ge	72	1	nogas	1747531	0.73	1753051	99.69	70	125	
In	115	1	nogas	1410395	3.72	1461102	96.53	70	125	
Bi	209	1	nogas	927207	1.93	945669	98.05	70	125	
Ge	72	2	He	502927	2.02	511870	98.25	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	130CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:19:27-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	12074	0.02
Na	23	1	nogas	8084546	0.00
Mg	24	1	nogas	4232840	0.00
Al	27	1	nogas	71981	0.00
K	39	1	nogas	11396203	0.00
Ti	47	1	nogas	5588	0.09
V	51	1	nogas	276917	0.00
Cr	52	1	nogas	83877	0.00
Mn	55	1	nogas	106432	0.00
Co	59	1	nogas	69682	0.00
Ni	60	1	nogas	15517	0.03
Cu	63	1	nogas	39169	0.00
Zn	66	1	nogas	12881	0.02
As	75	1	nogas	55404	0.01
Sr	88	1	nogas	93431	0.00
Ag	107	1	nogas	43370	0.01
Cd	111	1	nogas	8599	0.06
Sb	121	1	nogas	39502	0.01
Tl	205	1	nogas	50954	0.00
Pb	208	1	nogas	71470	0.00
[Pb]	206	1	nogas	17883	0.01
[Pb]	207	1	nogas	15598	0.02
Na	23	2	He	763973	0.00
Mg	24	2	He	296366	0.00
Al	27	2	He	2207	0.28
K	39	2	He	531262	0.00
Ca	43	2	He	1067	0.97
Ca	44	2	He	17238	0.01
V	51	2	He	25337	0.00
Cr	52	2	He	24587	0.03
Mn	55	2	He	17989	0.02
Fe	56	2	He	2127175	0.00
Co	59	2	He	30759	0.01
Ni	60	2	He	7695	0.08
Cu	63	2	He	20545	0.02
Zn	66	2	He	5007	0.09
As	75	2	He	4916	0.07
Se	78	2	He	749	0.59
B	11	1	nogas	239428	0.00
Si	28	1	nogas	5057625	0.00

Calibration Standard Report

Ca	43	1	nogas	12955	0.05
Ca	44	1	nogas	222926	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	9232834	0.00
Se	77	1	nogas	13872	0.04
Se	82	1	nogas	927	1.05
Mo	95	1	nogas	16785	0.01
Sn	118	1	nogas	24444	0.02
Ba	137	1	nogas	12178	0.06
Sb	121	2	He	17182	0.01
P	31	1	nogas	46611	0.00
La	139	1	nogas	60	27.78

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	283814	2.23	270377	104.97	70	125	
Ge	72	1	nogas	1733333	1.44	1753051	98.88	70	125	
In	115	1	nogas	1399125	2.28	1461102	95.76	70	125	
Bi	209	1	nogas	929859	3.16	945669	98.33	70	125	
Ge	72	2	He	507395	2.84	511870	99.13	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	131CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:21:26-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	24693	0.00
Na	23	1	nogas	14083647	0.00
Mg	24	1	nogas	8294847	0.00
Al	27	1	nogas	121178	0.00
K	39	1	nogas	17868045	0.00
Ti	47	1	nogas	11630	0.02
V	51	1	nogas	360739	0.00
Cr	52	1	nogas	147932	0.00
Mn	55	1	nogas	188452	0.00
Co	59	1	nogas	138605	0.00
Ni	60	1	nogas	30492	0.01
Cu	63	1	nogas	75282	0.00
Zn	66	1	nogas	24610	0.01
As	75	1	nogas	72200	0.00
Sr	88	1	nogas	185757	0.00
Ag	107	1	nogas	83066	0.00
Cd	111	1	nogas	17392	0.01
Sb	121	1	nogas	77888	0.00
Tl	205	1	nogas	104851	0.00
Pb	208	1	nogas	145811	0.00
[Pb]	206	1	nogas	36120	0.01
[Pb]	207	1	nogas	32202	0.01
Na	23	2	He	1293285	0.00
Mg	24	2	He	580288	0.00
Al	27	2	He	3920	0.03
K	39	2	He	870310	0.00
Ca	43	2	He	2040	0.40
Ca	44	2	He	33347	0.00
V	51	2	He	46627	0.00
Cr	52	2	He	47919	0.00
Mn	55	2	He	34352	0.01
Fe	56	2	He	4080633	0.00
Co	59	2	He	59065	0.01
Ni	60	2	He	15150	0.02
Cu	63	2	He	38872	0.00
Zn	66	2	He	8849	0.03
As	75	2	He	9225	0.02
Se	78	2	He	1063	0.37
B	11	1	nogas	277334	0.00
Si	28	1	nogas	6340914	0.00

Calibration Standard Report

Ca	43	1	nogas	24410	0.00
Ca	44	1	nogas	408820	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	16427177	0.00
Se	77	1	nogas	14339	0.04
Se	82	1	nogas	1733	0.46
Mo	95	1	nogas	34230	0.00
Sn	118	1	nogas	49023	0.01
Ba	137	1	nogas	24952	0.01
Sb	121	2	He	33950	0.00
P	31	1	nogas	69010	0.00
La	139	1	nogas	53	73.18

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	267551	4.10	270377	98.95	70	125	
Ge	72	1	nogas	1749307	2.80	1753051	99.79	70	125	
In	115	1	nogas	1381354	6.13	1461102	94.54	70	125	
Bi	209	1	nogas	928457	1.52	945669	98.18	70	125	
Ge	72	2	He	477421	3.77	511870	93.27	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	132CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:23:24-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	236172	0.00
Na	23	1	nogas	119313582	0.00
Mg	24	1	nogas	78371668	0.00
Al	27	1	nogas	970036	0.00
K	39	1	nogas	127962307	0.00
Ti	47	1	nogas	102081	0.00
V	51	1	nogas	1660233	0.00
Cr	52	1	nogas	1233140	0.00
Mn	55	1	nogas	1620538	0.00
Co	59	1	nogas	1304264	0.00
Ni	60	1	nogas	287863	0.00
Cu	63	1	nogas	698144	0.00
Zn	66	1	nogas	227679	0.00
As	75	1	nogas	324215	0.00
Sr	88	1	nogas	1727470	0.00
Ag	107	1	nogas	776448	0.00
Cd	111	1	nogas	165395	0.00
Sb	121	1	nogas	741489	0.00
Tl	205	1	nogas	1024699	0.00
Pb	208	1	nogas	1416700	0.00
[Pb]	206	1	nogas	361133	0.00
[Pb]	207	1	nogas	308244	0.00
Na	23	2	He	10213412	0.00
Mg	24	2	He	5610743	0.00
Al	27	2	He	32001	0.00
K	39	2	He	7082603	0.00
Ca	43	2	He	18426	0.01
Ca	44	2	He	305119	0.00
V	51	2	He	411144	0.00
Cr	52	2	He	429890	0.00
Mn	55	2	He	311832	0.00
Fe	56	2	He	38439962	0.00
Co	59	2	He	563576	0.00
Ni	60	2	He	143469	0.00
Cu	63	2	He	361907	0.00
Zn	66	2	He	86859	0.00
As	75	2	He	89600	0.00
Se	78	2	He	7123	0.02
B	11	1	nogas	933128	0.00
Si	28	1	nogas	12045899	0.00

Calibration Standard Report

Ca	43	1	nogas	226267	0.00
Ca	44	1	nogas	3646768	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	143784741	0.00
Se	77	1	nogas	24003	0.01
Se	82	1	nogas	14576	0.01
Mo	95	1	nogas	316271	0.00
Sn	118	1	nogas	442468	0.00
Ba	137	1	nogas	241620	0.00
Sb	121	2	He	324111	0.00
P	31	1	nogas	465907	0.00
La	139	1	nogas	410	2.59

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	253880	1.00	270377	93.90	70	125	
Ge	72	1	nogas	1665691	0.96	1753051	95.02	70	125	
In	115	1	nogas	1336873	3.74	1461102	91.50	70	125	
Bi	209	1	nogas	911219	0.56	945669	96.36	70	125	
Ge	72	2	He	480561	1.62	511870	93.88	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	133CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:25:22-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	465981	0.00
Na	23	1	nogas	223159497	0.00
Mg	24	1	nogas	147764220	0.00
Al	27	1	nogas	1927396	0.00
K	39	1	nogas	237134197	0.00
Ti	47	1	nogas	208031	0.00
V	51	1	nogas	3080470	0.00
Cr	52	1	nogas	2582721	0.00
Mn	55	1	nogas	3232804	0.00
Co	59	1	nogas	2557127	0.00
Ni	60	1	nogas	563588	0.00
Cu	63	1	nogas	1382921	0.00
Zn	66	1	nogas	441355	0.00
As	75	1	nogas	608988	0.00
Sr	88	1	nogas	3528592	0.00
Ag	107	1	nogas	1645120	0.00
Cd	111	1	nogas	336689	0.00
Sb	121	1	nogas	1563129	0.00
Tl	205	1	nogas	2148175	0.00
Pb	208	1	nogas	2893590	0.00
[Pb]	206	1	nogas	691518	0.00
[Pb]	207	1	nogas	627682	0.00
Na	23	2	He	18637428	0.00
Mg	24	2	He	10601158	0.00
Al	27	2	He	61791	0.00
K	39	2	He	13435719	0.00
Ca	43	2	He	35267	0.00
Ca	44	2	He	595326	0.00
V	51	2	He	803164	0.00
Cr	52	2	He	878216	0.00
Mn	55	2	He	624254	0.00
Fe	56	2	He	75815229	0.00
Co	59	2	He	1105263	0.00
Ni	60	2	He	277799	0.00
Cu	63	2	He	700041	0.00
Zn	66	2	He	171168	0.00
As	75	2	He	175758	0.00
Se	78	2	He	13739	0.02
B	11	1	nogas	1674984	0.00
Si	28	1	nogas	53061131	0.00

Calibration Standard Report

Ca	43	1	nogas	431694	0.00
Ca	44	1	nogas	6914448	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	279542690	0.00
Se	77	1	nogas	38010	0.01
Se	82	1	nogas	28750	0.01
Mo	95	1	nogas	652288	0.00
Sn	118	1	nogas	938673	0.00
Ba	137	1	nogas	486053	0.00
Sb	121	2	He	641567	0.00
P	31	1	nogas	822909	0.00
La	139	1	nogas	507	3.53

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	233560	4.91	270377	86.38	70	125	
Ge	72	1	nogas	1646105	2.34	1753051	93.90	70	125	
In	115	1	nogas	1298486	2.88	1461102	88.87	70	125	
Bi	209	1	nogas	895556	2.11	945669	94.70	70	125	
Ge	72	2	He	474088	0.35	511870	92.62	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICCV
Data File Name	135_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:29:24-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	101.444	4.102	227590	2.03	100	101.4	90	110	
Na	23	1	nogas	9581.803	0.994	116014403	1.49	10000	95.8	90	110	
Mg	24	1	nogas	9562.854	0.435	75954354	2.47	10000	95.6	90	110	
Al	27	1	nogas	93.365	8.160	971589	3.85	100	93.4	90	110	
K	39	1	nogas	9761.543	3.948	128161186	0.74	10000	97.6	90	110	
Ti	47	1	nogas	93.883	5.024	104286	1.11	100	93.9	90	110	
V	51	1	nogas	92.241	6.036	1630471	1.94	100	92.2	90	110	
Cr	52	1	nogas	90.605	3.139	1250531	1.43	100	90.6	90	110	
Mn	55	1	nogas	96.935	2.715	1689122	2.47	100	96.9	90	110	
Co	59	1	nogas	100.154	3.916	1378128	0.96	100	100.2	90	110	
Ni	60	1	nogas	97.344	4.619	295506	0.72	100	97.3	90	110	
Cu	63	1	nogas	94.240	3.975	700482	0.45	100	94.2	90	110	
Zn	66	1	nogas	97.022	4.467	231384	0.54	100	97.0	90	110	
As	75	1	nogas	93.533	3.116	326703	2.15	100	93.5	90	110	
Sr	88	1	nogas	97.790	2.635	1841785	1.47	100	97.8	90	110	
Ag	107	1	nogas	90.630	6.370	789328	2.25	100	90.6	90	110	
Cd	111	1	nogas	94.798	3.805	171936	1.80	100	94.8	90	110	
Sb	121	1	nogas	91.856	3.741	761767	0.39	100	91.9	90	110	
Tl	205	1	nogas	97.070	0.678	1054318	1.24	100	97.1	90	110	
Pb	208	1	nogas	99.383	0.822	1432012	0.82	100	99.4	90	110	
U	238	1	nogas	100.060	5.290	1415908	4.04	100	100.1	90	110	
[Pb]	206	1	nogas	102.098	1.344	363428	0.28	100	102.1	90	110	
[Pb]	207	1	nogas	96.973	1.033	309474	1.24	100	97.0	90	110	
Na	23	2	He	9978.855	0.999	9964138	0.40	10000	99.8	90	110	
Mg	24	2	He	9876.272	0.616	5514396	1.03	10000	98.8	90	110	
Al	27	2	He	99.782	4.682	32604	4.11	100	99.8	90	110	
K	39	2	He	10324.576	2.035	7077562	1.99	10000	103.2	90	110	
Ca	43	2	He	9773.517	3.480	18116	3.05	10000	97.7	90	110	
Ca	44	2	He	10057.023	1.784	313699	1.18	10000	100.6	90	110	
V	51	2	He	97.041	0.637	409570	0.24	100	97.0	90	110	
Cr	52	2	He	94.169	1.200	429624	0.54	100	94.2	90	110	
Mn	55	2	He	98.966	3.576	321920	3.12	100	99.0	90	110	
Fe	56	2	He	10041.249	3.484	39746973	3.23	10000	100.4	90	110	
Co	59	2	He	98.648	2.574	569843	2.26	100	98.6	90	110	
Ni	60	2	He	97.051	2.612	141576	2.36	100	97.1	90	110	
Cu	63	2	He	99.407	0.893	365717	0.24	100	99.4	90	110	
Zn	66	2	He	99.177	1.082	88782	1.74	100	99.2	90	110	
As	75	2	He	98.434	2.034	90491	1.42	100	98.4	90	110	
Se	78	2	He	96.465	1.649	7107	2.23	100	96.5	90	110	
B	11	1	nogas	469.037	5.581	897138	2.30	500	93.8	90	110	
Si	28	1	nogas	1777.628	7.105	11935753	1.11	5000	35.6	90	110	ICV Main CR1 Failed
Ca	43	1	nogas	9618.487	5.346	224959	1.75	10000	96.2	90	110	
Ca	44	1	nogas	9778.655	6.601	3674644	2.50	10000	97.8	90	110	
Fe	56	1	nogas	9529.726	3.247	144363207	0.96	10000	95.3	90	110	
Se	77	1	nogas	84.141	3.689	23943	5.44	100	84.1	90	110	ICV Main CR1 Failed
Se	82	1	nogas	93.884	4.100	14583	1.22	100	93.9	90	110	
Mo	95	1	nogas	92.999	3.456	323104	0.92	100	93.0	90	110	
Sn	118	1	nogas	92.462	0.585	464507	2.71	100	92.5	90	110	
Ba	137	1	nogas	92.634	2.153	243210	0.89	100	92.6	90	110	
Sb	121	2	He	97.881	1.355	327729	0.80	100	97.9	90	110	
Li	7	1	nogas	99.846	1.948	487753	0.35	100	99.8	90	110	
P	31	1	nogas	494.788	3.227	457652	1.38	500	99.0	90	110	
La	139	1	nogas	153.289	12.374	473	9.76	100	153.3	90	110	ICV Main CR1 Failed
Au	197	1	nogas	282.705	51.625	67	37.75	100	282.7	90	110	ICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	241368	2.12	270377	89.27	70	125	
Ge	72	1	nogas	1769390	4.01	1753051	100.93	70	125	
In	115	1	nogas	1412254	2.89	1461102	96.66	70	125	
Bi	209	1	nogas	916895	1.58	945669	96.96	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	494887	0.66	511870	96.68	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	136SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:31:20-05:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	128CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	2.026	2.026	5.04	4784	0.04	2000	
Na	23	1	nogas	171.538	171.538	4.67	4058578	0.00	200000	
Mg	24	1	nogas	207.368	207.368	4.24	1606621	0.01	200000	
Al	27	1	nogas	2.290	2.290	5.29	39001	0.01	2000	
K	39	1	nogas	174.736	174.736	4.99	7242010	0.00	200000	
Ti	47	1	nogas	2.033	2.033	6.99	2324	0.09	2000	
V	51	1	nogas	-1.514	-1.514	-49.77	161357	0.00	2000	
Cr	52	1	nogas	1.887	1.887	6.08	41357	0.00	2000	
Mn	55	1	nogas	1.868	1.868	7.42	51723	0.00	2000	
Co	59	1	nogas	2.035	2.035	2.13	27611	0.01	2000	
Ni	60	1	nogas	1.918	1.918	1.81	6425	0.03	2000	
Cu	63	1	nogas	2.118	2.118	3.23	16718	0.01	2000	
Zn	66	1	nogas	1.651	1.651	4.19	5224	0.03	2000	
As	75	1	nogas	0.185	0.185	211.46	39122	0.00	2000	
Sr	88	1	nogas	1.983	1.983	2.80	37162	0.01	2000	
Ag	107	1	nogas	1.957	1.957	4.57	16701	0.01	2000	
Cd	111	1	nogas	1.986	1.986	5.49	3617	0.05	2000	
Sb	121	1	nogas	1.927	1.927	2.79	16281	0.01	2000	
Tl	205	1	nogas	2.099	2.099	9.40	23047	0.01	2000	
Pb	208	1	nogas	2.002	2.002	3.66	29114	0.01	2000	
U	238	1	nogas	1.973	1.973	2.31	28192	0.01	2000	
[Pb]	206	1	nogas	2.004	2.004	7.26	7268	0.03	2000	
[Pb]	207	1	nogas	2.040	2.040	2.20	6631	0.03	2000	
Na	23	2	He	175.087	175.087	4.01	407372	0.04	200000	
Mg	24	2	He	206.688	206.688	3.43	114959	0.18	200000	
Al	27	2	He	1.820	1.820	9.63	1280	0.14	2000	
K	39	2	He	193.278	193.278	2.55	301239	0.06	200000	
Ca	43	2	He	213.219	213.219	23.53	413	51.58	200000	
Ca	44	2	He	204.163	204.163	4.56	7448	2.74	200000	
V	51	2	He	1.595	1.595	0.54	11124	0.01	2000	
Cr	52	2	He	2.069	2.069	2.52	11307	0.02	2000	
Mn	55	2	He	1.964	1.964	4.27	7222	0.03	2000	
Fe	56	2	He	208.777	208.777	4.13	833023	0.03	200000	
Co	59	2	He	2.132	2.132	2.92	12258	0.02	2000	
Ni	60	2	He	1.768	1.768	5.44	3294	0.05	2000	
Cu	63	2	He	1.596	1.596	5.47	8285	0.02	2000	
Zn	66	2	He	1.802	1.802	9.81	1950	0.09	2000	
As	75	2	He	2.035	2.035	6.09	2063	0.10	2000	
Se	78	2	He	2.608	2.608	23.81	548	0.48	2000	
B	11	1	nogas	24.035	24.035	26.46	231428	0.01	2000	

Sample Report

Si	28	1	nogas	109.639	109.639	26.90	4108102	0.00	2000	
Ca	43	1	nogas	198.524	198.524	15.51	5528	3.59	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ca	44	1	nogas	203.570	203.570	2.80	109939	0.19	200000	
Fe	56	1	nogas	180.814	180.814	4.46	4438616	0.00	200000	
Se	77	1	nogas	-4.461	-4.461	-89.00	10867	-0.04	2000	
Se	82	1	nogas	2.384	2.384	47.45	550	0.43	2000	
Mo	95	1	nogas	2.213	2.213	1.33	7572	0.03	2000	
Sn	118	1	nogas	2.069	2.069	2.70	11007	0.02	2000	
Ba	137	1	nogas	1.838	1.838	13.39	4984	0.04	2000	
Sb	121	2	He	1.940	1.940	5.39	6778	0.03	2000	
La	139	1	nogas	27.679	27.679	49.42	107	25.95	2000	
Au	197	1	nogas	22.788	22.788	158.19	23	97.66	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	253272	3.37	270377	93.67	70	125	
Ge	72	1	nogas	1720129	1.13	1753051	98.12	70	125	
In	115	1	nogas	1409000	2.49	1461102	96.43	70	125	
Bi	209	1	nogas	924331	1.08	945669	97.74	70	125	
Ge	72	2	He	489847	1.50	511870	95.70	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	137LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:33:21-05:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.588	4.356	11153	2.14	5	91.8	70	130	
Na	23	1	nogas	442.824	2.850	7217190	1.07	500	88.6	70	130	
Mg	24	1	nogas	491.110	1.444	3810145	1.23	500	98.2	70	130	
Al	27	1	nogas	5.448	5.050	67899	2.20	5	109.0	70	130	
K	39	1	nogas	501.428	2.957	10837134	0.85	500	100.3	70	130	
Ti	47	1	nogas	5.143	3.711	5474	1.60	5	102.9	70	130	
V	51	1	nogas	2.636	32.236	216272	3.71	5	52.7	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	4.975	2.967	79280	0.36	5	99.5	70	130	
Mn	55	1	nogas	5.041	5.089	101006	2.79	5	100.8	70	130	
Co	59	1	nogas	5.124	1.859	66454	0.17	5	102.5	70	130	
Ni	60	1	nogas	5.196	2.222	15503	3.10	5	103.9	70	130	
Cu	63	1	nogas	5.337	5.488	38498	4.52	5	106.7	70	130	
Zn	66	1	nogas	4.965	4.591	12398	2.38	5	99.3	70	130	
As	75	1	nogas	4.271	18.281	49441	2.50	5	85.4	70	130	
Sr	88	1	nogas	5.142	4.121	91555	2.78	5	102.8	70	130	
Ag	107	1	nogas	4.901	2.630	40166	3.96	5	98.0	70	130	
Cd	111	1	nogas	4.795	3.097	8422	1.37	5	95.9	70	130	
Sb	121	1	nogas	4.751	4.715	37618	3.01	5	95.0	70	130	
Tl	205	1	nogas	4.705	8.698	50122	2.78	5	94.1	70	130	
Pb	208	1	nogas	4.889	0.463	70695	0.46	5	97.8	70	130	
U	238	1	nogas	4.656	5.147	64743	3.39	5	93.1	70	130	
[Pb]	206	1	nogas	5.035	10.967	17613	4.45	5	100.7	70	130	
[Pb]	207	1	nogas	5.005	11.491	15695	4.78	5	100.1	70	130	
Na	23	2	He	471.707	1.032	692934	0.79	500	94.3	70	130	
Mg	24	2	He	504.324	1.373	279245	2.01	500	100.9	70	130	
Al	27	2	He	4.889	24.599	2247	16.08	5	97.8	70	130	
K	39	2	He	497.118	2.446	504462	1.61	500	99.4	70	130	
Ca	43	2	He	495.485	9.121	930	9.56	500	99.1	70	130	
Ca	44	2	He	505.075	2.021	16691	0.96	500	101.0	70	130	
V	51	2	He	4.616	2.422	23580	0.98	5	92.3	70	130	
Cr	52	2	He	4.839	3.757	23732	2.47	5	96.8	70	130	
Mn	55	2	He	4.995	3.588	16941	3.69	5	99.9	70	130	
Fe	56	2	He	510.397	2.163	2012843	1.77	500	102.1	70	130	
Co	59	2	He	5.231	2.985	29941	2.05	5	104.6	70	130	
Ni	60	2	He	4.610	5.585	7372	5.51	5	92.2	70	130	
Cu	63	2	He	4.416	3.882	18466	2.69	5	88.3	70	130	
Zn	66	2	He	5.012	3.430	4777	2.26	5	100.2	70	130	
As	75	2	He	4.996	3.856	4747	3.93	5	99.9	70	130	
Se	78	2	He	5.689	6.828	761	3.96	5	113.8	70	130	
B	11	1	nogas	22.312	35.202	235872	4.16	25	89.2	70	130	
Si	28	1	nogas	335.935	3.646	4941827	0.95	25	1343.7	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	518.527	2.108	12318	1.92	500	103.7	70	130	
Ca	44	1	nogas	516.932	3.646	215318	2.09	500	103.4	70	130	
Fe	56	1	nogas	492.759	3.254	8650941	1.20	500	98.6	70	130	
Se	77	1	nogas	7.835	75.033	12128	5.23	5	156.7	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	5.430	8.490	967	7.27	5	108.6	70	130	
Mo	95	1	nogas	5.039	5.712	16491	3.83	5	100.8	70	130	
Sn	118	1	nogas	4.774	1.796	23773	2.42	5	95.5	70	130	
Ba	137	1	nogas	4.807	0.908	12365	1.90	5	96.1	70	130	
Sb	121	2	He	5.002	4.512	16895	3.46	5	100.0	70	130	
Li	7	1	nogas	4.736	3.181	47641	3.24	5	94.7	70	130	
P	31	1	nogas	28.076	4.815	45549	0.43	25	112.3	70	130	
La	139	1	nogas	21.928	35.542	87	24.02	5	438.6	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	108.885	92.233	37	41.66	5	2177.7	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	261177	2.24	270377	96.60	70	125	
Ge	72	1	nogas	1657969	2.00	1753051	94.58	70	125	
In	115	1	nogas	1364327	1.80	1461102	93.38	70	125	
Bi	209	1	nogas	901954	6.96	945669	95.38	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	489443	1.00	511870	95.62	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICCB
Data File Name	138_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:35:21-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.037	37.4	100	34.6	1	
Na	23	1	nogas	-32.437	-18.2	1652183	2.1	100	
Mg	24	1	nogas	0.435	21.4	9637	5.3	100	
Al	27	1	nogas	0.156	36.7	17198	2.0	5	
K	39	1	nogas	-13.157	-77.4	4786816	1.5	100	
Ti	47	1	nogas	0.028	101.7	153	19.9	2.5	
V	51	1	nogas	-2.411	-36.7	143103	7.5	2.5	
Cr	52	1	nogas	-0.030	-100.0	15477	1.0	2.5	
Mn	55	1	nogas	-0.107	-22.6	18102	2.6	2.5	
Co	59	1	nogas	0.001	286.0	373	14.8	2.5	
Ni	60	1	nogas	-0.153	-4.7	313	8.0	2.5	
Cu	63	1	nogas	0.009	421.5	1450	17.5	2.5	
Zn	66	1	nogas	-0.400	-11.2	477	19.5	2.5	
As	75	1	nogas	-0.946	-103.0	34623	6.7	2.5	
Sr	88	1	nogas	0.001	213.2	847	3.0	2.5	
Ag	107	1	nogas	1.037	170.9	8561	168.8	2.5	
Cd	111	1	nogas	0.013	118.6	40	66.1	1	
Sb	121	1	nogas	0.008	206.5	783	14.8	2.5	
Tl	205	1	nogas	0.043	45.7	500	41.3	1	
Pb	208	1	nogas	0.008	64.5	377	18.8	2.5	
U	238	1	nogas	0.009	79.2	157	63.0	2.5	
[Pb]	206	1	nogas	0.011	77.7	107	27.1	2.5	
[Pb]	207	1	nogas	0.017	62.4	117	30.1	2.5	
Na	23	2	He	-40.071	-4.0	197924	1.2	100	
Mg	24	2	He	0.264	78.7	923	11.7	100	
Al	27	2	He	-0.434	-98.5	560	23.2	5	
K	39	2	He	-9.353	-16.6	165709	0.6	100	
Ca	43	2	He	18.981	17.8	57	10.2	100	
Ca	44	2	He	3.630	126.9	1270	11.8	100	
V	51	2	He	-0.399	-5.1	2857	3.0	2.5	
Cr	52	2	He	0.008	893.9	2023	15.3	2.5	
Mn	55	2	He	-0.042	-42.8	773	7.8	2.5	
Fe	56	2	He	0.270	38.8	16454	2.0	100	
Co	59	2	He	0.003	181.0	80	37.5	2.5	
Ni	60	2	He	-0.367	-13.8	227	31.0	2.5	
Cu	63	2	He	-0.491	-2.5	730	6.8	2.5	
Zn	66	2	He	-0.274	-4.5	117	9.9	2.5	
As	75	2	He	0.033	90.9	243	11.7	2.5	
Se	78	2	He	0.109	397.2	372	8.7	2.5	
B	11	1	nogas	3.510	232.6	193058	1.9	10	
Si	28	1	nogas	11.659	85.0	3554535	0.6	5	ICB Main CR1 Failed
Ca	43	1	nogas	7.398	80.8	1160	9.8	100	
Ca	44	1	nogas	5.093	8.2	36873	1.9	100	
Fe	56	1	nogas	-4.501	-44.7	1689337	2.2	100	

Initial Calibration Blank (ICB) Report

Se	77	1	nogas	0.693	899.2	11227	6.3	2.5	
Se	82	1	nogas	0.800	39.8	303	16.6	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Mo	95	1	nogas	0.021	33.7	157	13.3	2.5	
Sn	118	1	nogas	0.044	74.2	807	18.3	5	
Ba	137	1	nogas	0.008	210.7	187	21.7	2.5	
Sb	121	2	He	0.008	425.6	377	28.6	2.5	
P	31	1	nogas	2.333	34.2	24533	1.1	10	
La	139	1	nogas	11.032	68.9	53	39.0	2.5	ICB Main CR1 Failed
Au	197	1	nogas	7.540	1425.9	20	86.6	2.5	ICB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	246384	4.57	270377	91.13	70	125	
Ge	72	1	nogas	1667173	1.68	1753051	95.10	70	125	
In	115	1	nogas	1294548	1.52	1461102	88.60	70	125	
Bi	209	1	nogas	873977	2.83	945669	92.42	70	125	
Ge	72	2	He	484949	0.73	511870	94.74	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	147_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:53:33-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	100.920	1.815	220146	1.43	100	100.9	90	110	
Na	23	1	nogas	9555.438	1.495	108752782	1.45	10000	95.6	90	110	
Mg	24	1	nogas	9653.041	3.358	72046197	2.74	10000	96.5	90	110	
Al	27	1	nogas	96.133	3.975	912230	2.65	100	96.1	90	110	
K	39	1	nogas	10027.709	0.532	119879736	0.82	10000	100.3	90	110	
Ti	47	1	nogas	99.731	3.797	100981	2.64	100	99.7	90	110	
V	51	1	nogas	96.170	0.687	1542752	1.01	100	96.2	90	110	
Cr	52	1	nogas	94.468	3.575	1187291	2.22	100	94.5	90	110	
Mn	55	1	nogas	100.665	1.627	1597524	1.49	100	100.7	90	110	
Co	59	1	nogas	99.590	3.352	1249012	2.74	100	99.6	90	110	
Ni	60	1	nogas	101.548	1.515	281026	1.37	100	101.5	90	110	
Cu	63	1	nogas	97.244	3.582	658688	2.30	100	97.2	90	110	
Zn	66	1	nogas	99.561	3.537	216391	2.38	100	99.6	90	110	
As	75	1	nogas	99.923	2.022	315535	0.80	100	99.9	90	110	
Sr	88	1	nogas	98.015	3.251	1681934	2.42	100	98.0	90	110	
Ag	107	1	nogas	94.728	2.288	752455	1.15	100	94.7	90	110	
Cd	111	1	nogas	96.113	3.706	158105	2.64	100	96.1	90	110	
Sb	121	1	nogas	97.212	2.706	734872	3.05	100	97.2	90	110	
Tl	205	1	nogas	93.701	4.879	957330	1.70	100	93.7	90	110	
Pb	208	1	nogas	93.407	1.119	1345926	1.12	100	93.4	90	110	
U	238	1	nogas	94.228	2.935	1255313	0.50	100	94.2	90	110	
[Pb]	206	1	nogas	99.609	4.391	333629	2.21	100	99.6	90	110	
[Pb]	207	1	nogas	98.006	4.006	294291	1.72	100	98.0	90	110	
Na	23	2	He	10172.106	2.304	9571284	1.40	10000	101.7	90	110	
Mg	24	2	He	9984.101	1.067	5255573	0.10	10000	99.8	90	110	
Al	27	2	He	96.673	3.950	29801	2.96	100	96.7	90	110	
K	39	2	He	9660.201	1.021	6633195	0.99	10000	96.6	90	110	
Ca	43	2	He	9952.917	3.991	17398	4.69	10000	99.5	90	110	
Ca	44	2	He	10043.561	0.854	295409	1.71	10000	100.4	90	110	
V	51	2	He	97.174	0.973	386681	0.92	100	97.2	90	110	
Cr	52	2	He	97.707	2.216	420185	1.41	100	97.7	90	110	
Mn	55	2	He	99.527	0.939	305274	1.51	100	99.5	90	110	
Fe	56	2	He	9958.778	0.930	37168816	0.87	10000	99.6	90	110	
Co	59	2	He	99.609	0.334	542553	1.25	100	99.6	90	110	
Ni	60	2	He	99.789	2.269	137232	2.19	100	99.8	90	110	
Cu	63	2	He	98.790	1.386	342681	1.08	100	98.8	90	110	
Zn	66	2	He	98.379	0.616	83035	1.50	100	98.4	90	110	
As	75	2	He	99.106	1.003	85911	1.82	100	99.1	90	110	
Se	78	2	He	99.601	1.383	6907	1.80	100	99.6	90	110	
B	11	1	nogas	477.314	0.998	884627	0.60	500	95.5	90	110	
Si	28	1	nogas	3544.003	4.282	18327493	2.24	5000	70.9	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10041.261	3.267	214074	2.42	10000	100.4	90	110	
Ca	44	1	nogas	10167.640	1.451	3484052	1.59	10000	101.7	90	110	
Fe	56	1	nogas	9885.530	1.200	136417491	0.71	10000	98.9	90	110	
Se	77	1	nogas	93.952	6.616	23078	2.92	100	94.0	90	110	
Se	82	1	nogas	96.626	1.319	13675	0.15	100	96.6	90	110	
Mo	95	1	nogas	95.084	4.363	301035	3.65	100	95.1	90	110	
Sn	118	1	nogas	96.623	1.668	440028	0.23	100	96.6	90	110	
Ba	137	1	nogas	95.161	3.510	226550	2.46	100	95.2	90	110	
Sb	121	2	He	102.328	0.542	323036	1.04	100	102.3	90	110	
Li	7	1	nogas	103.521	0.791	490836	1.74	100	103.5	90	110	
P	31	1	nogas	509.804	0.672	429081	1.03	500	102.0	90	110	
La	139	1	nogas	123.262	9.437	350	7.56	100	123.3	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	50.954	247.375	27	78.06	100	51.0	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	234575	1.18	270377	86.76	70	125	
Ge	72	1	nogas	1611339	1.33	1753051	91.92	70	125	
In	115	1	nogas	1280496	1.86	1461102	87.64	70	125	
Bi	209	1	nogas	863350	3.25	945669	91.30	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	466602	0.97	511870	91.16	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	148_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T16:55:30-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.076	20.2	193	19.6	1	
Na	23	1	nogas	-31.036	-5.4	1691068	0.8	100	
Mg	24	1	nogas	5.020	18.1	44662	17.1	100	
Al	27	1	nogas	0.687	7.3	21580	1.4	5	
K	39	1	nogas	5.740	156.0	4844355	0.9	100	
Ti	47	1	nogas	0.060	33.2	180	9.6	2.5	
V	51	1	nogas	-3.065	-21.2	129033	5.3	2.5	
Cr	52	1	nogas	0.081	46.8	16341	1.8	2.5	
Mn	55	1	nogas	-0.076	-28.8	17972	0.3	2.5	
Co	59	1	nogas	0.053	20.0	1010	15.0	2.5	
Ni	60	1	nogas	-0.107	-29.5	430	21.3	2.5	
Cu	63	1	nogas	0.072	23.7	1833	8.3	2.5	
Zn	66	1	nogas	-0.371	-10.2	527	17.6	2.5	
As	75	1	nogas	-0.603	-87.5	34436	2.4	2.5	
Sr	88	1	nogas	0.049	27.7	1650	16.0	2.5	
Ag	107	1	nogas	0.059	12.7	570	11.5	2.5	
Cd	111	1	nogas	0.051	47.0	107	37.9	1	
Sb	121	1	nogas	0.635	1.8	5498	3.5	2.5	
Tl	205	1	nogas	0.303	50.3	3250	52.4	1	
Pb	208	1	nogas	0.064	18.9	1190	14.7	2.5	
U	238	1	nogas	0.090	25.1	1267	27.4	2.5	
[Pb]	206	1	nogas	0.064	12.0	290	11.9	2.5	
[Pb]	207	1	nogas	0.063	28.4	260	24.0	2.5	
Na	23	2	He	-35.385	-6.6	195611	0.7	100	
Mg	24	2	He	4.147	10.7	2947	8.6	100	
Al	27	2	He	0.023	452.1	680	3.9	5	
K	39	2	He	-11.709	-35.1	164133	1.7	100	
Ca	43	2	He	23.772	75.8	63	50.8	100	
Ca	44	2	He	6.566	6.5	1313	1.6	100	
V	51	2	He	-0.401	-1.9	2754	1.1	2.5	
Cr	52	2	He	0.071	9.6	2227	1.6	2.5	
Mn	55	2	He	-0.011	-57.4	843	2.5	2.5	
Fe	56	2	He	4.578	4.6	32048	1.8	100	
Co	59	2	He	0.034	20.5	247	15.3	2.5	
Ni	60	2	He	-0.330	-5.6	270	9.8	2.5	
Cu	63	2	He	-0.410	-3.1	987	5.2	2.5	
Zn	66	2	He	-0.269	-15.2	117	30.1	2.5	
As	75	2	He	0.149	29.7	336	10.9	2.5	
Se	78	2	He	0.331	116.0	374	6.3	2.5	
B	11	1	nogas	9.421	74.2	206736	6.6	10	
Si	28	1	nogas	73.480	15.4	3696871	0.8	5	CCB Main CR1 Failed
Ca	43	1	nogas	6.964	15.0	1113	1.0	100	
Ca	44	1	nogas	14.715	16.3	38901	0.4	100	
Fe	56	1	nogas	-6.461	-28.1	1606160	1.0	100	
Se	77	1	nogas	1.085	537.6	10903	5.4	2.5	
Se	82	1	nogas	1.208	30.2	350	14.8	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.306	32.6	1060	32.0	2.5	
Sn	118	1	nogas	0.151	39.4	1357	21.5	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.012	126.3	207	19.6	2.5	
Sb	121	2	He	0.642	9.4	2374	7.9	2.5	
P	31	1	nogas	2.658	19.5	23979	1.1	10	
La	139	1	nogas	11.485	48.9	57	27.0	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-34.661	-265.9	13	114.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	251287	1.76	270377	92.94	70	125	
Ge	72	1	nogas	1611691	1.97	1753051	91.94	70	125	
In	115	1	nogas	1351390	1.80	1461102	92.49	70	125	
Bi	209	1	nogas	881346	2.92	945669	93.20	70	125	
Ge	72	2	He	468709	0.76	511870	91.57	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	159_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T17:17:24-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	103.598	0.974	253544	3.45	100	103.6	90	110	
Na	23	1	nogas	10441.416	3.111	122725024	0.57	10000	104.4	90	110	
Mg	24	1	nogas	10408.435	3.751	80348856	0.57	10000	104.1	90	110	
Al	27	1	nogas	100.259	1.201	998987	1.03	100	100.3	90	110	
K	39	1	nogas	10204.438	1.403	128071703	2.17	10000	102.0	90	110	
Ti	47	1	nogas	101.900	4.705	108362	2.91	100	101.9	90	110	
V	51	1	nogas	100.756	1.769	1689091	0.43	100	100.8	90	110	
Cr	52	1	nogas	100.767	7.267	1329134	6.40	100	100.8	90	110	
Mn	55	1	nogas	100.887	4.808	1681241	3.55	100	100.9	90	110	
Co	59	1	nogas	102.929	1.168	1356183	0.99	100	102.9	90	110	
Ni	60	1	nogas	102.198	1.675	297093	1.47	100	102.2	90	110	
Cu	63	1	nogas	99.375	3.230	707179	2.77	100	99.4	90	110	
Zn	66	1	nogas	99.978	3.460	228259	2.25	100	100.0	90	110	
As	75	1	nogas	101.635	3.249	336444	1.22	100	101.6	90	110	
Sr	88	1	nogas	103.916	4.752	1873027	4.03	100	103.9	90	110	
Ag	107	1	nogas	98.328	2.336	820467	1.11	100	98.3	90	110	
Cd	111	1	nogas	95.203	3.518	172219	1.40	100	95.2	90	110	
Sb	121	1	nogas	96.804	2.168	768580	1.02	100	96.8	90	110	
Tl	205	1	nogas	94.194	3.600	1088826	2.67	100	94.2	90	110	
Pb	208	1	nogas	105.596	0.718	1521522	0.72	100	105.6	90	110	
U	238	1	nogas	103.459	3.550	1558689	2.36	100	103.5	90	110	
[Pb]	206	1	nogas	99.237	3.715	375966	2.58	100	99.2	90	110	
[Pb]	207	1	nogas	97.725	1.947	331966	1.44	100	97.7	90	110	
Na	23	2	He	10529.284	3.289	10285840	1.85	10000	105.3	90	110	
Mg	24	2	He	10223.948	3.032	5591873	1.99	10000	102.2	90	110	
Al	27	2	He	101.328	3.238	32425	1.77	100	101.3	90	110	
K	39	2	He	9999.892	2.981	6860397	2.91	10000	100.0	90	110	
Ca	43	2	He	10088.964	6.335	18316	5.38	10000	100.9	90	110	
Ca	44	2	He	10122.166	2.477	309300	1.05	10000	101.2	90	110	
V	51	2	He	98.454	3.319	406962	1.87	100	98.5	90	110	
Cr	52	2	He	98.156	2.565	438607	1.11	100	98.2	90	110	
Mn	55	2	He	102.158	2.183	325538	0.95	100	102.2	90	110	
Fe	56	2	He	10077.761	3.130	39078014	1.87	10000	100.8	90	110	
Co	59	2	He	101.543	2.683	574613	1.24	100	101.5	90	110	
Ni	60	2	He	101.645	3.891	145202	2.44	100	101.6	90	110	
Cu	63	2	He	101.805	1.876	366868	0.66	100	101.8	90	110	
Zn	66	2	He	98.866	1.234	86718	2.25	100	98.9	90	110	
As	75	2	He	98.395	3.124	88614	2.10	100	98.4	90	110	
Se	78	2	He	95.663	4.669	6906	3.23	100	95.7	90	110	
B	11	1	nogas	519.476	4.775	1061606	1.97	500	103.9	90	110	
Si	28	1	nogas	3639.454	4.264	19676021	2.46	5000	72.8	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10287.329	3.055	230339	1.03	10000	102.9	90	110	
Ca	44	1	nogas	10203.592	2.687	3672349	2.15	10000	102.0	90	110	
Fe	56	1	nogas	10123.338	1.367	146709428	1.17	10000	101.2	90	110	
Se	77	1	nogas	105.964	9.575	25895	4.87	100	106.0	90	110	
Se	82	1	nogas	98.206	3.988	14596	3.41	100	98.2	90	110	
Mo	95	1	nogas	99.187	1.632	329908	0.41	100	99.2	90	110	
Sn	118	1	nogas	94.476	2.496	473171	1.04	100	94.5	90	110	
Ba	137	1	nogas	96.689	2.956	253153	1.41	100	96.7	90	110	
Sb	121	2	He	102.364	3.597	335737	2.66	100	102.4	90	110	
Li	7	1	nogas	105.100	1.580	558675	3.79	100	105.1	90	110	
P	31	1	nogas	508.069	3.212	449235	2.63	500	101.6	90	110	
La	139	1	nogas	142.128	13.899	440	12.65	100	142.1	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	203.658	17.365	57	10.19	100	203.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	263116	2.58	270377	97.31	70	125	
Ge	72	1	nogas	1692791	1.99	1753051	96.56	70	125	
In	115	1	nogas	1408361	2.20	1461102	96.39	70	125	
Bi	209	1	nogas	976026	1.40	945669	103.21	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	484899	1.46	511870	94.73	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	160_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T17:19:21-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.052	22.6	167	21.1	1	
Na	23	1	nogas	143.052	6.8	3907839	1.5	100	CCB Main CR1 Failed
Mg	24	1	nogas	5.982	13.1	55189	9.5	100	
Al	27	1	nogas	0.628	5.6	22600	0.5	5	
K	39	1	nogas	-3.892	-230.2	5088546	1.5	100	
Ti	47	1	nogas	0.078	111.5	213	44.6	2.5	
V	51	1	nogas	-1.164	-88.3	168022	10.2	2.5	
Cr	52	1	nogas	0.120	36.1	18086	2.3	2.5	
Mn	55	1	nogas	0.328	8.1	26135	2.7	2.5	
Co	59	1	nogas	0.054	32.2	1090	20.4	2.5	
Ni	60	1	nogas	-0.014	-74.2	737	4.1	2.5	
Cu	63	1	nogas	0.537	4.6	5348	2.5	2.5	
Zn	66	1	nogas	-0.328	-12.6	663	13.7	2.5	
As	75	1	nogas	0.039	492.8	38965	2.0	2.5	
Sr	88	1	nogas	0.190	10.3	4381	9.0	2.5	
Ag	107	1	nogas	0.054	3.9	567	2.0	2.5	
Cd	111	1	nogas	0.056	57.9	127	47.6	1	
Sb	121	1	nogas	0.070	35.2	1320	14.6	2.5	
Tl	205	1	nogas	0.330	64.8	3944	63.8	1	
Pb	208	1	nogas	0.057	32.4	1090	24.5	2.5	
U	238	1	nogas	0.074	34.8	1177	33.5	2.5	
[Pb]	206	1	nogas	0.053	25.0	287	17.2	2.5	
[Pb]	207	1	nogas	0.046	69.8	233	47.8	2.5	
Na	23	2	He	148.374	10.3	384173	0.6	100	CCB Main CR1 Failed
Mg	24	2	He	6.339	8.3	4317	4.9	100	
Al	27	2	He	0.095	305.1	740	14.2	5	
K	39	2	He	-7.900	-30.9	166681	1.0	100	
Ca	43	2	He	25.574	71.9	70	49.5	100	
Ca	44	2	He	22.478	20.8	1873	5.9	100	
V	51	2	He	-0.265	-2.2	3464	3.5	2.5	
Cr	52	2	He	0.037	110.3	2187	5.0	2.5	
Mn	55	2	He	0.710	5.3	3217	2.3	2.5	
Fe	56	2	He	3.917	5.5	31120	1.1	100	
Co	59	2	He	0.058	10.3	397	7.7	2.5	
Ni	60	2	He	-0.360	-9.1	240	18.2	2.5	
Cu	63	2	He	0.008	868.1	2557	7.5	2.5	
Zn	66	2	He	-0.261	-4.1	130	7.7	2.5	
As	75	2	He	0.097	47.6	308	17.1	2.5	
Se	78	2	He	0.213	108.5	385	2.2	2.5	
B	11	1	nogas	12.817	37.8	257318	3.3	10	CCB Main CR1 Failed
Si	28	1	nogas	29.422	53.6	3774036	1.6	5	CCB Main CR1 Failed
Ca	43	1	nogas	32.040	20.3	1770	9.3	100	
Ca	44	1	nogas	20.443	12.6	43915	2.8	100	
Fe	56	1	nogas	8.798	38.9	1950532	3.6	100	
Se	77	1	nogas	9.929	37.1	12978	5.0	2.5	CCB Main CR1 Failed
Se	82	1	nogas	1.012	29.4	347	13.0	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.275	30.2	1027	26.4	2.5	
Sn	118	1	nogas	0.178	23.5	1627	12.4	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.045	22.2	317	9.6	2.5	
Sb	121	2	He	0.060	62.9	560	24.0	2.5	
P	31	1	nogas	4.081	17.6	26996	1.8	10	
La	139	1	nogas	9.642	38.3	57	20.4	2.5	CCB Main CR1 Failed
Au	197	1	nogas	49.921	224.4	30	66.7	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	305006	1.77	270377	112.81	70	125	
Ge	72	1	nogas	1732259	1.08	1753051	98.81	70	125	
In	115	1	nogas	1482894	1.09	1461102	101.49	70	125	
Bi	209	1	nogas	994987	0.90	945669	105.22	70	125	
Ge	72	2	He	493499	3.52	511870	96.41	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	171_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T17:41:30-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	112.619	2.688	187236	1.26	100	112.6	90	110	CCV Main CR1-2 Failed
Na	23	1	nogas	9920.660	2.577	106222123	1.95	10000	99.2	90	110	
Mg	24	1	nogas	9553.246	2.121	67136904	1.97	10000	95.5	90	110	
Al	27	1	nogas	93.451	2.432	875370	1.35	100	93.5	90	110	
K	39	1	nogas	9856.787	2.448	116312182	1.48	10000	98.6	90	110	
Ti	47	1	nogas	98.066	0.548	97982	0.50	100	98.1	90	110	
V	51	1	nogas	95.879	1.109	1517841	1.14	100	95.9	90	110	
Cr	52	1	nogas	93.673	1.346	1161794	0.70	100	93.7	90	110	
Mn	55	1	nogas	104.357	1.020	1633065	0.69	100	104.4	90	110	
Co	59	1	nogas	95.379	3.791	1179950	2.76	100	95.4	90	110	
Ni	60	1	nogas	97.978	4.197	267453	3.24	100	98.0	90	110	
Cu	63	1	nogas	97.963	1.479	654721	0.61	100	98.0	90	110	
Zn	66	1	nogas	103.692	1.311	222321	1.18	100	103.7	90	110	
As	75	1	nogas	102.691	3.830	318878	2.40	100	102.7	90	110	
Sr	88	1	nogas	103.971	1.221	1760218	0.52	100	104.0	90	110	
Ag	107	1	nogas	97.402	0.979	763357	0.97	100	97.4	90	110	
Cd	111	1	nogas	102.567	1.070	166530	2.97	100	102.6	90	110	
Sb	121	1	nogas	98.733	1.195	736222	0.93	100	98.7	90	110	
Tl	205	1	nogas	96.068	3.499	951130	1.69	100	96.1	90	110	
Pb	208	1	nogas	92.147	1.877	1327774	1.88	100	92.1	90	110	
U	238	1	nogas	97.583	5.938	1259371	5.30	100	97.6	90	110	
[Pb]	206	1	nogas	102.287	3.137	331935	1.34	100	102.3	90	110	
[Pb]	207	1	nogas	99.674	3.502	289941	1.16	100	99.7	90	110	
Na	23	2	He	10817.066	1.350	10287804	0.20	10000	108.2	90	110	
Mg	24	2	He	10183.807	1.880	5425545	0.78	10000	101.8	90	110	
Al	27	2	He	99.393	0.912	31002	1.97	100	99.4	90	110	
K	39	2	He	10030.691	1.052	6880997	1.03	10000	100.3	90	110	
Ca	43	2	He	9922.491	1.209	17552	0.63	10000	99.2	90	110	
Ca	44	2	He	10269.177	0.749	305684	1.38	10000	102.7	90	110	
V	51	2	He	98.952	2.254	398418	1.20	100	99.0	90	110	
Cr	52	2	He	97.988	1.796	426533	1.31	100	98.0	90	110	
Mn	55	2	He	104.013	2.184	322838	1.62	100	104.0	90	110	
Fe	56	2	He	10017.696	2.419	37838166	1.29	10000	100.2	90	110	
Co	59	2	He	100.542	2.655	554181	1.51	100	100.5	90	110	
Ni	60	2	He	101.720	2.192	141558	1.16	100	101.7	90	110	
Cu	63	2	He	103.013	2.031	361555	1.42	100	103.0	90	110	
Zn	66	2	He	102.296	0.971	87382	2.05	100	102.3	90	110	
As	75	2	He	105.650	1.370	92672	0.53	100	105.7	90	110	
Se	78	2	He	102.556	1.274	7189	2.27	100	102.6	90	110	
B	11	1	nogas	610.661	1.424	824584	0.98	500	122.1	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	3275.531	4.051	16964506	2.24	5000	65.5	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10097.168	1.700	212374	0.83	10000	101.0	90	110	
Ca	44	1	nogas	10389.528	1.645	3511258	1.61	10000	103.9	90	110	
Fe	56	1	nogas	9627.941	2.336	131101453	1.28	10000	96.3	90	110	
Se	77	1	nogas	97.391	4.254	23212	1.34	100	97.4	90	110	
Se	82	1	nogas	107.553	1.837	14996	1.41	100	107.6	90	110	
Mo	95	1	nogas	97.005	2.310	302991	1.27	100	97.0	90	110	
Sn	118	1	nogas	98.934	2.141	444469	1.25	100	98.9	90	110	
Ba	137	1	nogas	99.119	1.651	232845	1.95	100	99.1	90	110	
Sb	121	2	He	102.355	1.645	327017	0.51	100	102.4	90	110	
Li	7	1	nogas	105.974	0.169	382643	1.90	100	106.0	90	110	
P	31	1	nogas	498.202	1.678	414109	0.55	500	99.6	90	110	
La	139	1	nogas	160.374	8.956	443	11.13	100	160.4	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	57.552	166.983	27	57.28	100	57.6	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	178820	1.84	270377	66.14	70	125	ISTD Failed
Ge	72	1	nogas	1589563	1.06	1753051	90.67	70	125	
In	115	1	nogas	1263590	3.38	1461102	86.48	70	125	
Bi	209	1	nogas	836341	3.49	945669	88.44	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	472281	1.13	511870	92.27	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	172_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T17:43:28-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.066	26.2	143	22.4	1	
Na	23	1	nogas	250.085	2.9	4608870	1.1	100	CCB Main CR1 Failed
Mg	24	1	nogas	9.907	10.4	77038	8.9	100	
Al	27	1	nogas	0.503	7.7	20461	1.3	5	
K	39	1	nogas	-13.097	-80.5	4766567	0.2	100	
Ti	47	1	nogas	0.068	25.5	193	7.9	2.5	
V	51	1	nogas	-4.315	-11.7	114636	5.4	2.5	
Cr	52	1	nogas	-0.099	-5.4	14533	2.6	2.5	
Mn	55	1	nogas	0.142	60.0	22017	4.2	2.5	
Co	59	1	nogas	0.053	29.7	1043	20.0	2.5	
Ni	60	1	nogas	0.138	18.6	1137	5.6	2.5	
Cu	63	1	nogas	0.600	15.5	5558	10.5	2.5	
Zn	66	1	nogas	-0.153	-31.5	1027	12.3	2.5	
As	75	1	nogas	-1.217	-60.6	33708	5.6	2.5	
Sr	88	1	nogas	0.234	10.7	4974	9.4	2.5	
Ag	107	1	nogas	0.042	8.3	450	4.4	2.5	
Cd	111	1	nogas	0.049	55.1	100	45.8	1	
Sb	121	1	nogas	0.058	61.8	1167	23.0	2.5	
Tl	205	1	nogas	0.326	60.8	3387	60.2	1	
Pb	208	1	nogas	0.051	38.8	1000	28.5	2.5	
U	238	1	nogas	0.081	34.2	1113	33.3	2.5	
[Pb]	206	1	nogas	0.060	72.2	270	53.8	2.5	
[Pb]	207	1	nogas	0.049	29.2	210	20.8	2.5	
Na	23	2	He	304.720	2.0	507562	0.6	100	CCB Main CR1 Failed
Mg	24	2	He	10.503	4.7	6281	3.0	100	
Al	27	2	He	0.221	182.1	737	15.7	5	
K	39	2	He	-9.730	-19.9	165456	0.8	100	
Ca	43	2	He	41.295	30.8	93	22.3	100	
Ca	44	2	He	33.394	23.3	2097	12.1	100	
V	51	2	He	-0.462	-10.8	2504	7.0	2.5	
Cr	52	2	He	0.081	27.9	2260	3.5	2.5	
Mn	55	2	He	0.410	26.6	2127	14.5	2.5	
Fe	56	2	He	7.232	4.7	41828	1.4	100	
Co	59	2	He	0.049	19.7	327	14.5	2.5	
Ni	60	2	He	-0.341	-8.4	253	13.9	2.5	
Cu	63	2	He	0.140	22.1	2880	3.6	2.5	
Zn	66	2	He	-0.228	-30.3	150	37.1	2.5	
As	75	2	He	0.144	50.8	331	20.4	2.5	
Se	78	2	He	0.114	273.3	359	7.4	2.5	
B	11	1	nogas	39.231	25.4	214339	4.1	10	CCB Main CR1 Failed
Si	28	1	nogas	2.693	1149.6	3499022	1.5	5	
Ca	43	1	nogas	29.822	9.3	1647	3.7	100	
Ca	44	1	nogas	21.934	5.1	42602	2.0	100	
Fe	56	1	nogas	-6.741	-76.5	1649698	2.1	100	
Se	77	1	nogas	-0.452	-1054.6	11023	3.8	2.5	
Se	82	1	nogas	0.603	4.1	273	2.1	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.244	46.3	883	41.2	2.5	
Sn	118	1	nogas	0.171	32.4	1400	15.5	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.026	52.5	233	13.1	2.5	
Sb	121	2	He	0.025	109.6	417	19.3	2.5	
P	31	1	nogas	0.970	108.3	23301	1.2	10	
La	139	1	nogas	19.249	62.8	77	45.8	2.5	CCB Main CR1 Failed
Au	197	1	nogas	245.705	60.5	57	40.8	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	212370	2.71	270377	78.55	70	125	
Ge	72	1	nogas	1660301	2.82	1753051	94.71	70	125	
In	115	1	nogas	1307643	3.28	1461102	89.50	70	125	
Bi	209	1	nogas	863017	0.69	945669	91.26	70	125	
Ge	72	2	He	466991	1.67	511870	91.23	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	180_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T17:59:31-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	100.951	2.880	240066	1.59	100	101.0	90	110	
Na	23	1	nogas	10009.573	3.259	112531569	1.06	10000	100.1	90	110	
Mg	24	1	nogas	9812.818	2.895	72418366	0.87	10000	98.1	90	110	
Al	27	1	nogas	95.847	2.935	922390	1.04	100	95.8	90	110	
K	39	1	nogas	9845.509	1.255	119455403	2.11	10000	98.5	90	110	
Ti	47	1	nogas	99.011	3.734	101668	2.86	100	99.0	90	110	
V	51	1	nogas	104.266	5.792	1680612	3.75	100	104.3	90	110	
Cr	52	1	nogas	93.125	5.785	1186393	2.66	100	93.1	90	110	
Mn	55	1	nogas	98.337	5.071	1582022	2.68	100	98.3	90	110	
Co	59	1	nogas	97.412	3.648	1238900	3.20	100	97.4	90	110	
Ni	60	1	nogas	99.014	1.420	277909	2.06	100	99.0	90	110	
Cu	63	1	nogas	97.315	3.401	668415	1.68	100	97.3	90	110	
Zn	66	1	nogas	99.055	3.186	218333	2.08	100	99.1	90	110	
As	75	1	nogas	96.365	2.450	309884	1.38	100	96.4	90	110	
Sr	88	1	nogas	100.558	4.983	1749031	2.45	100	100.6	90	110	
Ag	107	1	nogas	96.637	4.806	778159	3.15	100	96.6	90	110	
Cd	111	1	nogas	98.392	2.142	164949	1.35	100	98.4	90	110	
Sb	121	1	nogas	94.933	3.785	727377	0.78	100	94.9	90	110	
Tl	205	1	nogas	95.835	7.201	1030724	3.46	100	95.8	90	110	
Pb	208	1	nogas	98.181	0.597	1414700	0.60	100	98.2	90	110	
U	238	1	nogas	99.561	5.742	1396273	2.71	100	99.6	90	110	
[Pb]	206	1	nogas	101.303	6.784	357184	3.51	100	101.3	90	110	
[Pb]	207	1	nogas	97.791	4.161	309280	1.16	100	97.8	90	110	
Na	23	2	He	10231.548	1.970	9320742	1.39	10000	102.3	90	110	
Mg	24	2	He	9945.753	2.283	5068945	1.61	10000	99.5	90	110	
Al	27	2	He	97.026	4.330	28963	4.09	100	97.0	90	110	
K	39	2	He	9515.512	1.542	6536420	1.50	10000	95.2	90	110	
Ca	43	2	He	10120.457	2.573	17125	2.21	10000	101.2	90	110	
Ca	44	2	He	9909.691	0.649	282223	1.21	10000	99.1	90	110	
V	51	2	He	99.897	1.929	384820	2.59	100	99.9	90	110	
Cr	52	2	He	96.891	2.252	403470	1.58	100	96.9	90	110	
Mn	55	2	He	98.664	3.782	292971	3.10	100	98.7	90	110	
Fe	56	2	He	9998.596	2.246	36129894	1.59	10000	100.0	90	110	
Co	59	2	He	100.586	0.702	530477	1.28	100	100.6	90	110	
Ni	60	2	He	101.562	1.366	135235	2.01	100	101.6	90	110	
Cu	63	2	He	101.773	0.602	341775	1.28	100	101.8	90	110	
Zn	66	2	He	96.926	0.473	79211	0.39	100	96.9	90	110	
As	75	2	He	99.093	0.954	83168	1.28	100	99.1	90	110	
Se	78	2	He	95.031	2.516	6396	2.40	100	95.0	90	110	
B	11	1	nogas	458.665	2.582	934461	2.05	500	91.7	90	110	
Si	28	1	nogas	3415.900	2.034	18042528	1.91	5000	68.3	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	9863.875	3.074	213240	0.87	10000	98.6	90	110	
Ca	44	1	nogas	10002.604	2.494	3475688	1.27	10000	100.0	90	110	
Fe	56	1	nogas	9636.968	4.656	134818153	1.26	10000	96.4	90	110	
Se	77	1	nogas	96.185	9.320	23686	1.87	100	96.2	90	110	
Se	82	1	nogas	97.042	4.512	13919	1.24	100	97.0	90	110	
Mo	95	1	nogas	95.683	2.450	307252	2.50	100	95.7	90	110	
Sn	118	1	nogas	96.409	4.095	447212	1.33	100	96.4	90	110	
Ba	137	1	nogas	98.767	0.611	239683	2.31	100	98.8	90	110	
Sb	121	2	He	99.797	2.081	305039	1.86	100	99.8	90	110	
Li	7	1	nogas	104.003	2.350	537430	1.04	100	104.0	90	110	
P	31	1	nogas	495.241	2.164	423279	1.39	500	99.0	90	110	
La	139	1	nogas	112.321	19.681	327	16.86	100	112.3	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	127.485	127.810	40	66.14	100	127.5	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	255761	1.29	270377	94.59	70	125	
Ge	72	1	nogas	1634499	3.29	1753051	93.24	70	125	
In	115	1	nogas	1305027	2.90	1461102	89.32	70	125	
Bi	209	1	nogas	909582	4.08	945669	96.18	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	451783	0.68	511870	88.26	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	181_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T18:01:31-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.052	24.4	153	22.9	1	
Na	23	1	nogas	188.288	4.4	4037490	0.4	100	CCB Main CR1 Failed
Mg	24	1	nogas	6.069	8.8	50778	9.6	100	
Al	27	1	nogas	0.502	2.7	19707	1.7	5	
K	39	1	nogas	-6.480	-131.4	4669476	0.4	100	
Ti	47	1	nogas	0.061	54.6	180	20.0	2.5	
V	51	1	nogas	-0.450	-110.6	165255	5.6	2.5	
Cr	52	1	nogas	0.026	192.7	15533	2.3	2.5	
Mn	55	1	nogas	-0.163	-13.6	16494	0.6	2.5	
Co	59	1	nogas	0.051	28.9	973	18.0	2.5	
Ni	60	1	nogas	0.010	132.1	747	6.9	2.5	
Cu	63	1	nogas	0.532	3.2	4904	1.4	2.5	
Zn	66	1	nogas	-0.276	-15.2	723	10.6	2.5	
As	75	1	nogas	-1.144	-7.1	32703	2.2	2.5	
Sr	88	1	nogas	0.087	7.6	2284	5.2	2.5	
Ag	107	1	nogas	0.041	39.1	423	28.2	2.5	
Cd	111	1	nogas	0.040	6.6	87	6.7	1	
Sb	121	1	nogas	0.045	23.6	1033	9.5	2.5	
Tl	205	1	nogas	0.369	74.7	4178	77.9	1	
Pb	208	1	nogas	0.054	37.0	1043	27.6	2.5	
U	238	1	nogas	0.080	41.1	1197	44.4	2.5	
[Pb]	206	1	nogas	0.066	34.7	313	31.0	2.5	
[Pb]	207	1	nogas	0.052	47.6	237	38.1	2.5	
Na	23	2	He	208.188	2.4	400340	0.5	100	CCB Main CR1 Failed
Mg	24	2	He	5.656	7.8	3564	5.4	100	
Al	27	2	He	-0.062	-361.3	623	10.7	5	
K	39	2	He	-30.445	-3.2	151601	0.4	100	
Ca	43	2	He	21.646	42.0	57	27.0	100	
Ca	44	2	He	14.021	24.2	1460	7.1	100	
V	51	2	He	-0.288	-4.3	3050	0.4	2.5	
Cr	52	2	He	0.013	169.6	1883	4.0	2.5	
Mn	55	2	He	0.047	57.3	973	8.9	2.5	
Fe	56	2	He	4.384	4.2	29828	2.0	100	
Co	59	2	He	0.037	31.5	250	24.3	2.5	
Ni	60	2	He	-0.335	-6.4	250	10.6	2.5	
Cu	63	2	He	0.047	38.1	2447	1.3	2.5	
Zn	66	2	He	-0.270	-13.8	110	27.3	2.5	
As	75	2	He	0.035	162.6	226	20.5	2.5	
Se	78	2	He	0.551	58.4	370	5.0	2.5	
B	11	1	nogas	17.382	28.7	244156	4.0	10	CCB Main CR1 Failed
Si	28	1	nogas	33.983	62.8	3503942	1.3	5	CCB Main CR1 Failed
Ca	43	1	nogas	13.528	13.6	1243	2.0	100	
Ca	44	1	nogas	16.007	18.8	39047	0.5	100	
Fe	56	1	nogas	8.792	49.9	1800265	1.2	100	
Se	77	1	nogas	-3.483	-35.2	10236	1.8	2.5	
Se	82	1	nogas	0.343	129.6	227	25.1	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.225	56.5	793	51.0	2.5	
Sn	118	1	nogas	0.178	37.2	1473	22.8	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.035	49.0	260	17.6	2.5	
Sb	121	2	He	0.037	85.7	433	21.3	2.5	
P	31	1	nogas	2.142	29.3	23398	3.0	10	
La	139	1	nogas	9.241	38.2	50	20.0	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-38.514	-175.8	13	86.6	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	279806	1.41	270377	103.49	70	125	
Ge	72	1	nogas	1599893	2.09	1753051	91.26	70	125	
In	115	1	nogas	1337619	1.56	1461102	91.55	70	125	
Bi	209	1	nogas	923329	4.56	945669	97.64	70	125	
Ge	72	2	He	446374	1.16	511870	87.20	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	184_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T21:40:57-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.792	1.261	259749	1.75	100	95.8	90	110	
Na	23	1	nogas	10869.277	1.459	112043048	2.10	10000	108.7	90	110	
Mg	24	1	nogas	10963.564	1.735	74277368	1.23	10000	109.6	90	110	
Al	27	1	nogas	103.160	0.891	920076	2.09	100	103.2	90	110	
K	39	1	nogas	10067.041	3.271	113143911	0.54	10000	100.7	90	110	
Ti	47	1	nogas	96.309	3.342	91723	1.60	100	96.3	90	110	
V	51	1	nogas	103.679	4.184	1550982	0.84	100	103.7	90	110	
Cr	52	1	nogas	94.444	3.414	1116377	1.01	100	94.4	90	110	
Mn	55	1	nogas	97.562	2.741	1456502	0.30	100	97.6	90	110	
Co	59	1	nogas	96.674	1.899	1140502	1.45	100	96.7	90	110	
Ni	60	1	nogas	99.468	3.559	258837	1.37	100	99.5	90	110	
Cu	63	1	nogas	97.017	3.597	618012	0.75	100	97.0	90	110	
Zn	66	1	nogas	97.244	1.690	198865	1.36	100	97.2	90	110	
As	75	1	nogas	99.018	0.862	294565	3.74	100	99.0	90	110	
Sr	88	1	nogas	96.310	3.509	1554312	1.99	100	96.3	90	110	
Ag	107	1	nogas	94.711	2.677	707641	1.98	100	94.7	90	110	
Cd	111	1	nogas	97.089	0.424	146274	0.85	100	97.1	90	110	
Sb	121	1	nogas	93.639	2.194	665710	1.16	100	93.6	90	110	
Tl	205	1	nogas	93.613	1.841	972291	2.12	100	93.6	90	110	
Pb	208	1	nogas	93.265	3.396	1343882	3.39	100	93.3	90	110	
U	238	1	nogas	98.903	2.600	1338730	2.16	100	98.9	90	110	
[Pb]	206	1	nogas	99.150	2.351	337544	2.85	100	99.2	90	110	
[Pb]	207	1	nogas	96.155	4.260	293476	4.75	100	96.2	90	110	
Na	23	2	He	10449.901	3.108	8804896	2.06	10000	104.5	90	110	
Mg	24	2	He	10322.324	4.169	4867426	2.52	10000	103.2	90	110	
Al	27	2	He	100.941	3.440	27854	1.60	100	100.9	90	110	
K	39	2	He	8893.482	2.619	6120375	2.55	10000	88.9	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10535.446	2.892	16497	2.57	10000	105.4	90	110	
Ca	44	2	He	10213.179	0.577	269160	1.29	10000	102.1	90	110	
V	51	2	He	99.184	1.748	353555	0.14	100	99.2	90	110	
Cr	52	2	He	96.913	1.237	373504	0.82	100	96.9	90	110	
Mn	55	2	He	100.453	2.435	276033	0.80	100	100.5	90	110	
Fe	56	2	He	10022.093	2.628	33512391	1.17	10000	100.2	90	110	
Co	59	2	He	98.703	2.366	481648	0.62	100	98.7	90	110	
Ni	60	2	He	97.717	1.680	120423	0.55	100	97.7	90	110	
Cu	63	2	He	99.276	2.345	308571	2.06	100	99.3	90	110	
Zn	66	2	He	96.376	1.505	72888	0.38	100	96.4	90	110	
As	75	2	He	97.039	2.842	75359	1.15	100	97.0	90	110	
Se	78	2	He	101.240	3.221	6285	2.29	100	101.2	90	110	
B	11	1	nogas	388.856	2.011	937052	2.07	500	77.8	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	3766.147	3.666	18118468	0.35	5000	75.3	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	9793.409	2.924	196391	1.11	10000	97.9	90	110	
Ca	44	1	nogas	9896.053	3.121	3190095	2.70	10000	99.0	90	110	
Fe	56	1	nogas	9611.188	3.568	124777069	2.60	10000	96.1	90	110	
Se	77	1	nogas	106.062	3.207	23205	2.44	100	106.1	90	110	
Se	82	1	nogas	97.220	6.870	12928	3.99	100	97.2	90	110	
Mo	95	1	nogas	94.863	4.162	282397	1.25	100	94.9	90	110	
Sn	118	1	nogas	98.209	0.904	409546	0.80	100	98.2	90	110	
Ba	137	1	nogas	100.151	2.254	218343	1.99	100	100.2	90	110	
Sb	121	2	He	102.248	2.107	289197	0.33	100	102.2	90	110	
Li	7	1	nogas	101.747	1.714	600042	1.91	100	101.7	90	110	
P	31	1	nogas	527.057	2.849	416452	0.89	500	105.4	90	110	
La	139	1	nogas	135.116	25.420	350	24.91	100	135.1	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	260.109	63.110	60	44.10	100	260.1	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	291555	0.92	270377	107.83	70	125	
Ge	72	1	nogas	1515958	2.97	1753051	86.48	70	125	
In	115	1	nogas	1172387	1.14	1461102	80.24	70	125	
Bi	209	1	nogas	876715	0.49	945669	92.71	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	418149	1.77	511870	81.69	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	185_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T21:42:53-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.040	42.7	137	36.1	1	
Na	23	1	nogas	-40.465	-7.8	1393540	1.6	100	
Mg	24	1	nogas	5.775	37.4	44330	33.3	100	
Al	27	1	nogas	0.852	16.9	20975	7.0	5	
K	39	1	nogas	42.887	40.2	4778076	0.8	100	
Ti	47	1	nogas	0.055	74.3	160	27.2	2.5	
V	51	1	nogas	4.197	37.4	210509	5.5	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	0.344	36.5	17755	5.5	2.5	
Mn	55	1	nogas	0.187	30.4	20038	2.2	2.5	
Co	59	1	nogas	0.054	46.1	927	34.2	2.5	
Ni	60	1	nogas	-0.115	-18.1	370	16.9	2.5	
Cu	63	1	nogas	0.250	15.0	2750	8.8	2.5	
Zn	66	1	nogas	-0.401	-11.0	417	20.1	2.5	
As	75	1	nogas	2.357	43.7	38708	3.8	2.5	
Sr	88	1	nogas	0.055	26.1	1600	18.1	2.5	
Ag	107	1	nogas	0.049	17.0	447	16.8	2.5	
Cd	111	1	nogas	0.034	63.9	67	48.2	1	
Sb	121	1	nogas	0.488	9.6	3977	9.6	2.5	
Tl	205	1	nogas	0.416	72.6	4454	73.6	1	
Pb	208	1	nogas	0.071	24.9	1287	19.8	2.5	
U	238	1	nogas	0.094	41.0	1323	42.0	2.5	
[Pb]	206	1	nogas	0.062	27.7	287	22.7	2.5	
[Pb]	207	1	nogas	0.092	43.8	347	33.8	2.5	
Na	23	2	He	-67.061	-2.6	148599	0.8	100	
Mg	24	2	He	3.863	12.3	2497	9.0	100	
Al	27	2	He	0.230	161.9	663	15.1	5	
K	39	2	He	-28.007	-7.9	153232	1.0	100	
Ca	43	2	He	21.786	73.8	53	47.2	100	
Ca	44	2	He	41.832	13.8	2100	7.4	100	
V	51	2	He	0.078	31.1	4150	2.2	2.5	
Cr	52	2	He	0.212	22.3	2530	7.0	2.5	
Mn	55	2	He	0.179	2.6	1273	1.2	2.5	
Fe	56	2	He	3.905	7.3	26369	3.4	100	
Co	59	2	He	0.035	34.9	223	26.2	2.5	
Ni	60	2	He	-0.377	-12.5	183	31.5	2.5	
Cu	63	2	He	-0.270	-12.2	1313	7.7	2.5	
Zn	66	2	He	-0.252	-8.0	117	13.1	2.5	
As	75	2	He	0.114	51.7	273	16.8	2.5	
Se	78	2	He	0.769	69.4	360	8.9	2.5	
B	11	1	nogas	-30.784	-8.0	179706	0.8	10	
Si	28	1	nogas	177.262	20.5	3747920	1.1	5	CCB Main CR1 Failed
Ca	43	1	nogas	17.818	7.6	1220	6.2	100	
Ca	44	1	nogas	23.902	23.8	38092	2.9	100	
Fe	56	1	nogas	7.295	69.9	1626000	1.9	100	
Se	77	1	nogas	22.778	34.6	12455	3.6	2.5	CCB Main CR1 Failed
Se	82	1	nogas	1.050	25.3	297	8.5	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.265	65.7	853	63.4	2.5	
Sn	118	1	nogas	0.177	39.3	1287	22.2	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.051	14.7	263	5.8	2.5	
Sb	121	2	He	0.434	12.6	1530	10.1	2.5	
P	31	1	nogas	11.750	8.1	28335	2.9	10	CCB Main CR1 Failed
La	139	1	nogas	10.367	100.0	47	53.9	2.5	CCB Main CR1 Failed
Au	197	1	nogas	-95.831	-37.6	3	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	315995	2.86	270377	116.87	70	125	
Ge	72	1	nogas	1462208	4.23	1753051	83.41	70	125	
In	115	1	nogas	1175482	0.55	1461102	80.45	70	125	
Bi	209	1	nogas	886664	2.05	945669	93.76	70	125	
Ge	72	2	He	418608	0.21	511870	81.78	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	192_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T21:56:52-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	93.285	3.491	208967	3.04	100	93.3	90	110	
Na	23	1	nogas	10589.130	0.275	102113098	1.27	10000	105.9	90	110	
Mg	24	1	nogas	10427.616	1.271	66062483	0.41	10000	104.3	90	110	
Al	27	1	nogas	98.732	2.673	817409	1.20	100	98.7	90	110	
K	39	1	nogas	9800.242	1.178	102343759	0.72	10000	98.0	90	110	
Ti	47	1	nogas	97.060	3.259	85774	1.63	100	97.1	90	110	
V	51	1	nogas	96.379	4.514	1348676	2.90	100	96.4	90	110	
Cr	52	1	nogas	92.943	2.758	1019798	1.51	100	92.9	90	110	
Mn	55	1	nogas	99.158	1.648	1373963	3.11	100	99.2	90	110	
Co	59	1	nogas	95.133	2.646	1041270	1.31	100	95.1	90	110	
Ni	60	1	nogas	98.432	4.874	237664	3.27	100	98.4	90	110	
Cu	63	1	nogas	97.328	4.406	575293	2.74	100	97.3	90	110	
Zn	66	1	nogas	97.358	3.673	184692	2.19	100	97.4	90	110	
As	75	1	nogas	94.117	3.530	261215	2.61	100	94.1	90	110	
Sr	88	1	nogas	99.688	2.220	1493299	2.63	100	99.7	90	110	
Ag	107	1	nogas	95.939	0.914	665196	0.92	100	95.9	90	110	
Cd	111	1	nogas	97.812	1.086	138443	1.04	100	97.8	90	110	
Sb	121	1	nogas	93.041	5.694	613506	4.09	100	93.0	90	110	
Tl	205	1	nogas	91.643	5.812	874218	2.30	100	91.6	90	110	
Pb	208	1	nogas	84.870	1.585	1222943	1.58	100	84.9	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	97.254	6.147	1209708	4.64	100	97.3	90	110	
[Pb]	206	1	nogas	97.001	5.674	303295	2.11	100	97.0	90	110	
[Pb]	207	1	nogas	95.593	5.462	267971	2.15	100	95.6	90	110	
Na	23	2	He	10567.614	1.153	8301023	2.43	10000	105.7	90	110	
Mg	24	2	He	10341.351	0.858	4547697	1.43	10000	103.4	90	110	
Al	27	2	He	101.730	2.472	26172	2.23	100	101.7	90	110	
K	39	2	He	8159.567	2.192	5629495	2.12	10000	81.6	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10193.051	3.389	14886	4.72	10000	101.9	90	110	
Ca	44	2	He	10233.529	1.712	251457	3.05	10000	102.3	90	110	
V	51	2	He	98.382	1.100	326986	1.01	100	98.4	90	110	
Cr	52	2	He	96.838	0.439	347938	0.98	100	96.8	90	110	
Mn	55	2	He	102.416	0.812	262413	2.06	100	102.4	90	110	
Fe	56	2	He	10028.959	0.273	31270503	1.59	10000	100.3	90	110	
Co	59	2	He	99.933	0.706	454709	1.65	100	99.9	90	110	
Ni	60	2	He	100.752	0.738	115739	0.96	100	100.8	90	110	
Cu	63	2	He	99.233	1.427	287524	0.25	100	99.2	90	110	
Zn	66	2	He	98.430	0.393	69401	1.65	100	98.4	90	110	
As	75	2	He	97.510	1.083	70610	1.55	100	97.5	90	110	
Se	78	2	He	96.689	0.748	5610	1.89	100	96.7	90	110	
B	11	1	nogas	437.976	2.744	848709	1.73	500	87.6	90	110	CCV Main CR1-2 Failed
Si	28	1	nogas	3578.852	2.541	16125614	0.65	5000	71.6	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10214.440	0.964	190102	2.31	10000	102.1	90	110	
Ca	44	1	nogas	10387.977	0.637	3106433	2.25	10000	103.9	90	110	
Fe	56	1	nogas	9713.194	0.927	117018603	1.45	10000	97.1	90	110	
Se	77	1	nogas	83.254	3.734	18923	2.81	100	83.3	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	97.213	3.373	12008	3.32	100	97.2	90	110	
Mo	95	1	nogas	94.297	4.821	260501	3.30	100	94.3	90	110	
Sn	118	1	nogas	95.209	3.159	373020	2.98	100	95.2	90	110	
Ba	137	1	nogas	97.379	3.908	199453	3.64	100	97.4	90	110	
Sb	121	2	He	99.712	1.310	262940	0.62	100	99.7	90	110	
Li	7	1	nogas	100.417	3.185	489521	2.53	100	100.4	90	110	
P	31	1	nogas	491.036	3.102	361312	1.37	500	98.2	90	110	
La	139	1	nogas	143.143	6.196	347	6.00	100	143.1	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	316.316	24.638	63	18.23	100	316.3	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	240891	0.67	270377	89.09	70	125	
Ge	72	1	nogas	1406365	1.68	1753051	80.22	70	125	
In	115	1	nogas	1101406	0.27	1461102	75.38	70	125	
Bi	209	1	nogas	806386	3.65	945669	85.27	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	389791	1.40	511870	76.15	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	193_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T21:58:49-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	128CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.059	51.3	163	46.8	1	
Na	23	1	nogas	60.276	2.9	2284655	1.2	100	
Mg	24	1	nogas	10.817	20.6	74260	20.1	100	
Al	27	1	nogas	1.198	51.4	22304	24.7	5	
K	39	1	nogas	5.722	209.9	4082243	1.1	100	
Ti	47	1	nogas	0.011	148.5	110	9.1	2.5	
V	51	1	nogas	-4.595	-10.5	90466	6.2	2.5	
Cr	52	1	nogas	0.015	789.6	13058	6.2	2.5	
Mn	55	1	nogas	0.371	17.6	21046	2.3	2.5	
Co	59	1	nogas	0.067	37.2	993	27.3	2.5	
Ni	60	1	nogas	0.017	18.3	650	3.1	2.5	
Cu	63	1	nogas	0.338	3.2	3060	3.8	2.5	
Zn	66	1	nogas	-0.201	-17.2	753	9.4	2.5	
As	75	1	nogas	-2.775	-24.1	23903	5.3	2.5	
Sr	88	1	nogas	0.206	10.2	3657	7.3	2.5	
Ag	107	1	nogas	0.045	7.1	390	9.2	2.5	
Cd	111	1	nogas	0.049	84.3	87	69.6	1	
Sb	121	1	nogas	0.254	5.7	2207	3.7	2.5	
Tl	205	1	nogas	0.361	63.2	3534	63.9	1	
Pb	208	1	nogas	0.060	36.9	1133	28.2	2.5	
U	238	1	nogas	0.098	40.6	1263	41.4	2.5	
[Pb]	206	1	nogas	0.076	24.2	303	19.9	2.5	
[Pb]	207	1	nogas	0.076	41.3	273	34.0	2.5	
Na	23	2	He	41.600	17.0	226088	0.3	100	
Mg	24	2	He	8.976	7.3	4661	4.7	100	
Al	27	2	He	-0.019	-645.9	567	8.3	5	
K	39	2	He	-57.549	-6.7	133473	1.9	100	
Ca	43	2	He	73.110	16.8	127	12.1	100	
Ca	44	2	He	31.249	25.0	1727	8.8	100	
V	51	2	He	-0.540	-1.6	1871	1.2	2.5	
Cr	52	2	He	0.114	48.5	2043	7.8	2.5	
Mn	55	2	He	0.528	9.7	2117	3.8	2.5	
Fe	56	2	He	5.387	2.8	29751	1.8	100	
Co	59	2	He	0.046	53.7	267	45.2	2.5	
Ni	60	2	He	-0.349	-19.3	207	37.0	2.5	
Cu	63	2	He	-0.208	-14.4	1430	6.2	2.5	
Zn	66	2	He	-0.299	-15.0	77	39.8	2.5	
As	75	2	He	0.039	124.2	203	15.6	2.5	
Se	78	2	He	1.176	91.1	364	14.8	2.5	
B	11	1	nogas	18.667	32.0	233145	4.7	10	CCB Main CR1 Failed
Si	28	1	nogas	146.832	36.1	3373677	2.1	5	CCB Main CR1 Failed
Ca	43	1	nogas	29.906	48.7	1343	15.5	100	
Ca	44	1	nogas	36.773	10.4	39091	1.1	100	
Fe	56	1	nogas	10.234	52.4	1544740	0.3	100	
Se	77	1	nogas	-16.064	-37.7	7292	7.0	2.5	
Se	82	1	nogas	0.811	63.3	247	20.4	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.265	62.9	787	60.1	2.5	
Sn	118	1	nogas	0.216	35.7	1390	22.3	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.062	104.1	277	49.2	2.5	
Sb	121	2	He	0.181	30.3	773	17.8	2.5	
P	31	1	nogas	3.965	37.5	21075	0.9	10	
La	139	1	nogas	9.675	198.7	43	104.1	2.5	CCB Main CR1 Failed
Au	197	1	nogas	155.456	41.8	40	25.0	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	264711	1.04	270377	97.90	70	125	
Ge	72	1	nogas	1358844	3.83	1753051	77.51	70	125	
In	115	1	nogas	1128715	0.57	1461102	77.25	70	125	
Bi	209	1	nogas	809312	1.87	945669	85.58	70	125	
Ge	72	2	He	397562	2.72	511870	77.67	70	125	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	198CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:22:36-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	27	162.38
Na	23	1	nogas	1149045	0.00
Mg	24	1	nogas	6869	0.09
Al	27	1	nogas	15160	0.02
K	39	1	nogas	4433385	0.00
Ti	47	1	nogas	160	25.61
V	51	1	nogas	105512	0.01
Cr	52	1	nogas	13635	0.02
Mn	55	1	nogas	18256	0.01
Co	59	1	nogas	340	10.52
Ni	60	1	nogas	237	21.82
Cu	63	1	nogas	2854	0.27
Zn	66	1	nogas	1033	1.46
As	75	1	nogas	24190	0.03
Sr	88	1	nogas	693	3.29
Ag	107	1	nogas	103	47.14
Cd	111	1	nogas	13	859.23
Sb	121	1	nogas	1353	0.79
Tl	205	1	nogas	123	38.52
Pb	208	1	nogas	267	1.62
[Pb]	206	1	nogas	77	39.29
[Pb]	207	1	nogas	47	185.58
Na	23	2	He	135108	0.00
Mg	24	2	He	877	2.15
Al	27	2	He	510	0.77
K	39	2	He	145182	0.00
Ca	43	2	He	23	590.43
Ca	44	2	He	1180	1.47
V	51	2	He	1991	0.16
Cr	52	2	He	2190	0.06
Mn	55	2	He	1233	0.61
Fe	56	2	He	14856	0.01
Co	59	2	He	73	21.47
Ni	60	2	He	137	16.36
Cu	63	2	He	1417	0.36
Zn	66	2	He	370	5.52
As	75	2	He	158	3.86
Se	78	2	He	337	0.41
B	11	1	nogas	179624	0.00
Si	28	1	nogas	3557241	0.00
Ca	43	1	nogas	1030	1.13
Ca	44	1	nogas	31640	0.01

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	1678235	0.00
Se	77	1	nogas	7868	0.04
Se	82	1	nogas	243	5.93
Mo	95	1	nogas	110	29.80
Sn	118	1	nogas	743	1.81
Ba	137	1	nogas	163	22.90
Sb	121	2	He	470	1.20
Li	7	1	nogas	25624	0.01
P	31	1	nogas	22567	0.01
La	139	1	nogas	77	93.70

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	nogas	288047	1.69
Ge	72	1	nogas	1481099	0.99
In	115	1	nogas	1196447	1.31
Bi	209	1	nogas	847481	1.36
Ge	72	2	He	431431	1.30

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	199CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:24:35-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	4761	0.06
Na	23	1	nogas	3286356	0.00
Mg	24	1	nogas	1492891	0.00
Al	27	1	nogas	35086	0.01
K	39	1	nogas	6664822	0.00
Ti	47	1	nogas	2120	0.39
V	51	1	nogas	138238	0.00
Cr	52	1	nogas	36673	0.01
Mn	55	1	nogas	46298	0.00
Co	59	1	nogas	23736	0.01
Ni	60	1	nogas	5641	0.07
Cu	63	1	nogas	16057	0.03
Zn	66	1	nogas	4637	0.06
As	75	1	nogas	30122	0.01
Sr	88	1	nogas	32924	0.00
Ag	107	1	nogas	14503	0.02
Cd	111	1	nogas	3070	0.40
Sb	121	1	nogas	14960	0.04
Tl	205	1	nogas	18568	0.01
Pb	208	1	nogas	26782	0.01
[Pb]	206	1	nogas	6548	0.05
[Pb]	207	1	nogas	5961	0.05
Na	23	2	He	310462	0.00
Mg	24	2	He	100712	0.00
Al	27	2	He	1163	0.31
K	39	2	He	262003	0.00
Ca	43	2	He	433	7.61
Ca	44	2	He	6255	0.01
V	51	2	He	9387	0.01
Cr	52	2	He	9829	0.04
Mn	55	2	He	7035	0.10
Fe	56	2	He	709223	0.00
Co	59	2	He	10660	0.04
Ni	60	2	He	2910	0.16
Cu	63	2	He	8025	0.08
Zn	66	2	He	1650	0.51
As	75	2	He	1705	0.43
Se	78	2	He	505	1.00
B	11	1	nogas	185017	0.00
Si	28	1	nogas	3954066	0.00

Calibration Standard Report

Ca	43	1	nogas	5177	0.03
Ca	44	1	nogas	96405	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	4116996	0.00
Se	77	1	nogas	8539	0.05
Se	82	1	nogas	443	9.41
Mo	95	1	nogas	6158	0.07
Sn	118	1	nogas	8802	0.03
Ba	137	1	nogas	4511	0.18
Sb	121	2	He	6308	0.05
P	31	1	nogas	29513	0.01
La	139	1	nogas	60	27.78

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	285515	1.11	288047	99.12	70	125	
Ge	72	1	nogas	1522687	2.61	1481099	102.81	70	125	
In	115	1	nogas	1208953	1.89	1196447	101.05	70	125	
Bi	209	1	nogas	863223	2.23	847481	101.86	70	125	
Ge	72	2	He	418211	1.14	431431	96.94	70	125	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	200CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:26:34-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	11684	0.01
Na	23	1	nogas	6406435	0.00
Mg	24	1	nogas	3606436	0.00
Al	27	1	nogas	62123	0.00
K	39	1	nogas	9835564	0.00
Ti	47	1	nogas	4741	0.23
V	51	1	nogas	190569	0.00
Cr	52	1	nogas	69979	0.00
Mn	55	1	nogas	89171	0.00
Co	59	1	nogas	58423	0.00
Ni	60	1	nogas	13372	0.03
Cu	63	1	nogas	34847	0.00
Zn	66	1	nogas	10637	0.01
As	75	1	nogas	38484	0.01
Sr	88	1	nogas	79127	0.00
Ag	107	1	nogas	36668	0.01
Cd	111	1	nogas	7402	0.08
Sb	121	1	nogas	34033	0.01
Tl	205	1	nogas	47463	0.01
Pb	208	1	nogas	65519	0.00
[Pb]	206	1	nogas	16292	0.02
[Pb]	207	1	nogas	14560	0.01
Na	23	2	He	565987	0.00
Mg	24	2	He	248184	0.00
Al	27	2	He	2127	0.28
K	39	2	He	439878	0.00
Ca	43	2	He	887	1.45
Ca	44	2	He	14639	0.02
V	51	2	He	20162	0.00
Cr	52	2	He	20418	0.01
Mn	55	2	He	14823	0.01
Fe	56	2	He	1752863	0.00
Co	59	2	He	24714	0.00
Ni	60	2	He	7008	0.04
Cu	63	2	He	17495	0.02
Zn	66	2	He	4181	0.07
As	75	2	He	4024	0.08
Se	78	2	He	663	1.60
B	11	1	nogas	204417	0.00
Si	28	1	nogas	4718863	0.00

Calibration Standard Report

Ca	43	1	nogas	10657	0.01
Ca	44	1	nogas	190017	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	7853534	0.00
Se	77	1	nogas	8932	0.03
Se	82	1	nogas	790	1.53
Mo	95	1	nogas	14696	0.04
Sn	118	1	nogas	21664	0.01
Ba	137	1	nogas	11077	0.02
Sb	121	2	He	15127	0.02
P	31	1	nogas	41807	0.00
La	139	1	nogas	63	94.39

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	288740	0.53	288047	100.24	70	125	
Ge	72	1	nogas	1527294	0.59	1481099	103.12	70	125	
In	115	1	nogas	1210251	2.34	1196447	101.15	70	125	
Bi	209	1	nogas	853517	4.36	847481	100.71	70	125	
Ge	72	2	He	418295	1.46	431431	96.96	70	125	

Calibration Standard Report

Sample Table

Sample Name	10/50/1000
Data File Name	201CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:28:34-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	24506	0.02
Na	23	1	nogas	12080044	0.00
Mg	24	1	nogas	7409018	0.00
Al	27	1	nogas	108875	0.00
K	39	1	nogas	15445626	0.00
Ti	47	1	nogas	9970	0.05
V	51	1	nogas	251690	0.00
Cr	52	1	nogas	130269	0.00
Mn	55	1	nogas	166738	0.00
Co	59	1	nogas	117899	0.00
Ni	60	1	nogas	26806	0.00
Cu	63	1	nogas	66162	0.01
Zn	66	1	nogas	20495	0.02
As	75	1	nogas	52001	0.01
Sr	88	1	nogas	161142	0.00
Ag	107	1	nogas	75183	0.00
Cd	111	1	nogas	15527	0.02
Sb	121	1	nogas	69545	0.00
Tl	205	1	nogas	97660	0.00
Pb	208	1	nogas	136343	0.00
[Pb]	206	1	nogas	34019	0.01
[Pb]	207	1	nogas	30749	0.01
Na	23	2	He	1015636	0.00
Mg	24	2	He	497267	0.00
Al	27	2	He	3334	0.10
K	39	2	He	738573	0.00
Ca	43	2	He	1590	0.67
Ca	44	2	He	28956	0.01
V	51	2	He	38820	0.01
Cr	52	2	He	41066	0.00
Mn	55	2	He	30299	0.01
Fe	56	2	He	3591614	0.00
Co	59	2	He	52478	0.00
Ni	60	2	He	12908	0.02
Cu	63	2	He	34840	0.00
Zn	66	2	He	7708	0.02
As	75	2	He	7938	0.05
Se	78	2	He	916	0.49
B	11	1	nogas	242686	0.00
Si	28	1	nogas	5874815	0.00

Calibration Standard Report

Ca	43	1	nogas	21346	0.01
Ca	44	1	nogas	351948	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	14487515	0.00
Se	77	1	nogas	9823	0.04
Se	82	1	nogas	1373	0.11
Mo	95	1	nogas	29762	0.01
Sn	118	1	nogas	43672	0.01
Ba	137	1	nogas	22295	0.00
Sb	121	2	He	30240	0.00
P	31	1	nogas	59751	0.00
La	139	1	nogas	97	6.18

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	284090	0.52	288047	98.63	70	125	
Ge	72	1	nogas	1493006	2.00	1481099	100.80	70	125	
In	115	1	nogas	1183403	0.22	1196447	98.91	70	125	
Bi	209	1	nogas	852558	3.27	847481	100.60	70	125	
Ge	72	2	He	409825	1.08	431431	94.99	70	125	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	202CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:30:35-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	234518	0.00
Na	23	1	nogas	107500511	0.00
Mg	24	1	nogas	70903006	0.00
Al	27	1	nogas	861612	0.00
K	39	1	nogas	111321898	0.00
Ti	47	1	nogas	90219	0.00
V	51	1	nogas	1414193	0.00
Cr	52	1	nogas	1075061	0.00
Mn	55	1	nogas	1456216	0.00
Co	59	1	nogas	1112099	0.00
Ni	60	1	nogas	251375	0.00
Cu	63	1	nogas	601845	0.00
Zn	66	1	nogas	195082	0.00
As	75	1	nogas	270693	0.00
Sr	88	1	nogas	1558010	0.00
Ag	107	1	nogas	675804	0.00
Cd	111	1	nogas	142929	0.00
Sb	121	1	nogas	635214	0.00
Tl	205	1	nogas	952034	0.00
Pb	208	1	nogas	1270549	0.00
[Pb]	206	1	nogas	325201	0.00
[Pb]	207	1	nogas	275697	0.00
Na	23	2	He	8582415	0.00
Mg	24	2	He	4767526	0.00
Al	27	2	He	27337	0.00
K	39	2	He	6026869	0.00
Ca	43	2	He	15577	0.01
Ca	44	2	He	265742	0.00
V	51	2	He	346656	0.00
Cr	52	2	He	363974	0.00
Mn	55	2	He	271239	0.00
Fe	56	2	He	34027376	0.00
Co	59	2	He	486507	0.00
Ni	60	2	He	121872	0.00
Cu	63	2	He	310414	0.00
Zn	66	2	He	72474	0.00
As	75	2	He	75078	0.00
Se	78	2	He	6088	0.07
B	11	1	nogas	869396	0.00
Si	28	1	nogas	10905662	0.00

Calibration Standard Report

Ca	43	1	nogas	196846	0.00
Ca	44	1	nogas	3172636	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	124094957	0.00
Se	77	1	nogas	18199	0.03
Se	82	1	nogas	11994	0.01
Mo	95	1	nogas	277449	0.00
Sn	118	1	nogas	394368	0.00
Ba	137	1	nogas	212655	0.00
Sb	121	2	He	273045	0.00
P	31	1	nogas	393620	0.00
La	139	1	nogas	353	2.02

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	257592	2.85	288047	89.43	70	125	
Ge	72	1	nogas	1490520	1.41	1481099	100.64	70	125	
In	115	1	nogas	1171953	0.69	1196447	97.95	70	125	
Bi	209	1	nogas	847558	2.88	847481	100.01	70	125	
Ge	72	2	He	414868	0.57	431431	96.16	70	125	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	203CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:32:31-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	nogas	473939	0.00
Na	23	1	nogas	201358150	0.00
Mg	24	1	nogas	137374028	0.00
Al	27	1	nogas	1766507	0.00
K	39	1	nogas	210514442	0.00
Ti	47	1	nogas	187619	0.00
V	51	1	nogas	2749954	0.00
Cr	52	1	nogas	2246244	0.00
Mn	55	1	nogas	2794879	0.00
Co	59	1	nogas	2255978	0.00
Ni	60	1	nogas	493292	0.00
Cu	63	1	nogas	1200429	0.00
Zn	66	1	nogas	384546	0.00
As	75	1	nogas	511298	0.00
Sr	88	1	nogas	3157489	0.00
Ag	107	1	nogas	1459880	0.00
Cd	111	1	nogas	287648	0.00
Sb	121	1	nogas	1347773	0.00
Tl	205	1	nogas	1997315	0.00
Pb	208	1	nogas	2719804	0.00
[Pb]	206	1	nogas	648857	0.00
[Pb]	207	1	nogas	594403	0.00
Na	23	2	He	16233853	0.00
Mg	24	2	He	9145569	0.00
Al	27	2	He	54254	0.00
K	39	2	He	11440198	0.00
Ca	43	2	He	30605	0.01
Ca	44	2	He	505361	0.00
V	51	2	He	697109	0.00
Cr	52	2	He	755813	0.00
Mn	55	2	He	542881	0.00
Fe	56	2	He	65532297	0.00
Co	59	2	He	962511	0.00
Ni	60	2	He	243267	0.00
Cu	63	2	He	608697	0.00
Zn	66	2	He	144473	0.00
As	75	2	He	149689	0.00
Se	78	2	He	11613	0.02
B	11	1	nogas	1600900	0.00
Si	28	1	nogas	47231534	0.00

Calibration Standard Report

Ca	43	1	nogas	375543	0.00
Ca	44	1	nogas	6087859	0.00
Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Fe	56	1	nogas	238303405	0.00
Se	77	1	nogas	30065	0.02
Se	82	1	nogas	23950	0.02
Mo	95	1	nogas	568560	0.00
Sn	118	1	nogas	842068	0.00
Ba	137	1	nogas	421449	0.00
Sb	121	2	He	567185	0.00
P	31	1	nogas	711522	0.00
La	139	1	nogas	590	1.04

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	244973	3.70	288047	85.05	70	125	
Ge	72	1	nogas	1427364	0.56	1481099	96.37	70	125	
In	115	1	nogas	1131426	0.87	1196447	94.57	70	125	
Bi	209	1	nogas	837043	0.62	847481	98.77	70	125	
Ge	72	2	He	410157	2.35	431431	95.07	70	125	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICCV
Data File Name	205_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:36:32-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	95.722	2.668	236293	1.86	100	95.7	90	110	
Na	23	1	nogas	10131.238	1.927	109729711	0.19	10000	101.3	90	110	
Mg	24	1	nogas	10017.966	1.411	73205150	1.02	10000	100.2	90	110	
Al	27	1	nogas	93.191	0.808	890323	1.70	100	93.2	90	110	
K	39	1	nogas	9919.949	0.484	115714665	1.56	10000	99.2	90	110	
Ti	47	1	nogas	93.885	4.144	94306	3.00	100	93.9	90	110	
V	51	1	nogas	95.234	2.497	1467061	1.27	100	95.2	90	110	
Cr	52	1	nogas	92.078	1.498	1112100	0.52	100	92.1	90	110	
Mn	55	1	nogas	97.698	1.569	1491728	0.55	100	97.7	90	110	
Co	59	1	nogas	97.223	1.259	1179324	1.54	100	97.2	90	110	
Ni	60	1	nogas	97.676	2.164	260679	1.99	100	97.7	90	110	
Cu	63	1	nogas	97.106	1.532	630001	1.39	100	97.1	90	110	
Zn	66	1	nogas	95.952	0.452	199503	0.69	100	96.0	90	110	
As	75	1	nogas	97.549	1.064	282464	2.02	100	97.5	90	110	
Sr	88	1	nogas	94.820	1.633	1610015	1.28	100	94.8	90	110	
Ag	107	1	nogas	90.138	0.993	699350	2.08	100	90.1	90	110	
Cd	111	1	nogas	100.464	1.706	151041	4.10	100	100.5	90	110	
Sb	121	1	nogas	95.028	2.045	683257	1.25	100	95.0	90	110	
Tl	205	1	nogas	97.629	1.050	986919	2.39	100	97.6	90	110	
Pb	208	1	nogas	101.405	1.973	1361005	1.97	100	101.4	90	110	
U	238	1	nogas	105.182	1.199	1381338	1.13	100	105.2	90	110	
[Pb]	206	1	nogas	103.657	1.033	343809	2.95	100	103.7	90	110	
[Pb]	207	1	nogas	98.052	1.473	293412	1.73	100	98.1	90	110	
Na	23	2	He	10068.139	0.845	8732863	1.02	10000	100.7	90	110	
Mg	24	2	He	9968.662	1.905	4827688	1.64	10000	99.7	90	110	
Al	27	2	He	97.362	3.933	28031	3.28	100	97.4	90	110	
K	39	2	He	10774.371	1.555	6281114	1.52	10000	107.7	90	110	
Ca	43	2	He	10141.122	2.855	16357	1.94	10000	101.4	90	110	
Ca	44	2	He	10113.743	2.596	271561	2.10	10000	101.1	90	110	
V	51	2	He	96.529	0.540	353909	1.45	100	96.5	90	110	
Cr	52	2	He	96.017	1.738	379226	0.88	100	96.0	90	110	
Mn	55	2	He	98.328	1.667	280775	0.73	100	98.3	90	110	
Fe	56	2	He	9975.515	1.315	34600973	1.61	10000	99.8	90	110	
Co	59	2	He	98.304	1.348	497963	1.04	100	98.3	90	110	
Ni	60	2	He	97.755	2.491	125070	2.07	100	97.8	90	110	
Cu	63	2	He	99.719	2.544	321040	2.26	100	99.7	90	110	
Zn	66	2	He	99.699	1.783	75827	1.59	100	99.7	90	110	
As	75	2	He	98.299	1.812	77369	1.54	100	98.3	90	110	
Se	78	2	He	100.540	1.193	6338	0.20	100	100.5	90	110	
B	11	1	nogas	487.424	3.108	894462	2.00	500	97.5	90	110	
Si	28	1	nogas	1813.924	0.729	11195632	1.61	5000	36.3	90	110	ICV Main CR1 Failed
Ca	43	1	nogas	10094.558	1.636	206691	0.59	10000	100.9	90	110	
Ca	44	1	nogas	10139.658	1.739	3367523	0.65	10000	101.4	90	110	
Fe	56	1	nogas	9890.314	0.715	128803124	1.23	10000	98.9	90	110	
Se	77	1	nogas	87.770	4.902	18723	2.44	100	87.8	90	110	ICV Main CR1 Failed
Se	82	1	nogas	96.853	4.850	12618	5.85	100	96.9	90	110	
Mo	95	1	nogas	95.322	2.114	290818	1.08	100	95.3	90	110	
Sn	118	1	nogas	95.838	5.998	416779	2.53	100	95.8	90	110	
Ba	137	1	nogas	101.029	1.715	223187	2.64	100	101.0	90	110	
Sb	121	2	He	98.855	1.353	292471	0.39	100	98.9	90	110	
Li	7	1	nogas	91.284	1.562	530761	0.70	100	91.3	90	110	
P	31	1	nogas	514.323	0.458	411741	1.56	500	102.9	90	110	
La	139	1	nogas	98.432	1.263	347	4.41	100	98.4	90	110	
Au	197	1	nogas	176.288	63.323	67	48.22	100	176.3	90	110	ICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	258078	0.88	288047	89.60	70	125	
Ge	72	1	nogas	1552005	1.13	1481099	104.79	70	125	
In	115	1	nogas	1192383	4.00	1196447	99.66	70	125	
Bi	209	1	nogas	857059	1.93	847481	101.13	70	125	

Initial Calibration Verification (ICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	431556	0.96	431431	100.03	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	206SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:38:30-05:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	198CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.762	1.762	2.86	4784	0.04	2000	
Na	23	1	nogas	188.197	188.197	3.96	3178634	0.01	200000	
Mg	24	1	nogas	204.341	204.341	1.94	1490250	0.01	200000	
Al	27	1	nogas	2.252	2.252	2.00	36055	0.01	2000	
K	39	1	nogas	166.477	166.477	3.62	6341800	0.00	200000	
Ti	47	1	nogas	1.853	1.853	9.45	1973	0.09	2000	
V	51	1	nogas	1.207	1.207	32.86	124435	0.00	2000	
Cr	52	1	nogas	1.885	1.885	3.56	35808	0.01	2000	
Mn	55	1	nogas	1.913	1.913	1.34	46726	0.00	2000	
Co	59	1	nogas	2.094	2.094	4.64	25084	0.01	2000	
Ni	60	1	nogas	2.211	2.211	3.77	5614	0.04	2000	
Cu	63	1	nogas	2.076	2.076	5.36	15970	0.01	2000	
Zn	66	1	nogas	2.265	2.265	2.70	4627	0.05	2000	
As	75	1	nogas	2.463	2.463	16.20	30863	0.01	2000	
Sr	88	1	nogas	1.986	1.986	0.58	33552	0.01	2000	
Ag	107	1	nogas	1.973	1.973	3.86	15017	0.01	2000	
Cd	111	1	nogas	2.003	2.003	1.29	3104	0.06	2000	
Sb	121	1	nogas	1.894	1.894	1.12	14623	0.01	2000	
Tl	205	1	nogas	2.255	2.255	8.91	23251	0.01	2000	
Pb	208	1	nogas	2.138	2.138	4.44	28951	0.01	2000	
U	238	1	nogas	2.013	2.013	2.08	26860	0.01	2000	
[Pb]	206	1	nogas	2.114	2.114	3.22	7182	0.03	2000	
[Pb]	207	1	nogas	2.063	2.063	3.92	6298	0.03	2000	
Na	23	2	He	197.401	197.401	4.55	298199	0.07	200000	
Mg	24	2	He	205.686	205.686	0.54	98682	0.21	200000	
Al	27	2	He	1.897	1.897	37.31	1127	0.17	2000	
K	39	2	He	189.356	189.356	3.39	253019	0.07	200000	
Ca	43	2	He	166.514	166.514	26.96	287	58.08	200000	
Ca	44	2	He	209.439	209.439	2.66	6658	3.15	200000	
V	51	2	He	1.969	1.969	4.52	9082	0.02	2000	
Cr	52	2	He	1.887	1.887	4.61	9433	0.02	2000	
Mn	55	2	He	1.949	1.949	10.34	6645	0.03	2000	
Fe	56	2	He	199.255	199.255	4.27	692642	0.03	200000	
Co	59	2	He	2.014	2.014	4.04	10083	0.02	2000	
Ni	60	2	He	1.796	1.796	5.66	2660	0.07	2000	
Cu	63	2	He	1.719	1.719	9.13	7975	0.02	2000	
Zn	66	2	He	1.778	1.778	7.48	1637	0.11	2000	
As	75	2	He	2.177	2.177	5.09	1833	0.12	2000	
Se	78	2	He	1.856	1.856	12.62	479	0.39	2000	
B	11	1	nogas	26.676	26.676	14.93	220023	0.01	2000	

Sample Report

Si	28	1	nogas	114.346	114.346	15.40	4090336	0.00	2000	
Ca	43	1	nogas	200.204	200.204	8.58	5024	3.98	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ca	44	1	nogas	203.213	203.213	0.65	97406	0.21	200000	
Fe	56	1	nogas	182.895	182.895	4.04	4002164	0.00	200000	
Se	77	1	nogas	1.639	1.639	187.87	8222	0.02	2000	
Se	82	1	nogas	1.998	1.998	20.04	497	0.40	2000	
Mo	95	1	nogas	2.287	2.287	10.93	6908	0.03	2000	
Sn	118	1	nogas	2.063	2.063	3.88	9960	0.02	2000	
Ba	137	1	nogas	1.959	1.959	8.93	4604	0.04	2000	
Sb	121	2	He	1.962	1.962	4.09	6151	0.03	2000	
La	139	1	nogas	-6.619	-6.619	-247.56	60	-11.03	2000	
Au	197	1	nogas	89.373	89.373	186.05	43	206.25	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	282291	0.95	288047	98.00	70	125	
Ge	72	1	nogas	1511925	0.12	1481099	102.08	70	125	
In	115	1	nogas	1223504	1.45	1196447	102.26	70	125	
Bi	209	1	nogas	868278	2.90	847481	102.45	70	125	
Ge	72	2	He	423821	2.12	431431	98.24	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	207LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:40:31-05:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.430	5.382	11567	4.92	5	88.6	70	130	
Na	23	1	nogas	506.493	2.056	6357082	1.71	500	101.3	70	130	
Mg	24	1	nogas	514.395	2.392	3621261	2.27	500	102.9	70	130	
Al	27	1	nogas	5.485	5.412	63873	4.44	5	109.7	70	130	
K	39	1	nogas	490.438	1.089	9612526	0.56	500	98.1	70	130	
Ti	47	1	nogas	4.969	5.318	4884	4.82	5	99.4	70	130	
V	51	1	nogas	5.084	4.460	173495	1.34	5	101.7	70	130	
Cr	52	1	nogas	4.898	1.641	68932	1.58	5	98.0	70	130	
Mn	55	1	nogas	5.080	2.952	90766	2.64	5	101.6	70	130	
Co	59	1	nogas	5.194	1.896	60068	2.24	5	103.9	70	130	
Ni	60	1	nogas	5.511	5.588	13822	5.83	5	110.2	70	130	
Cu	63	1	nogas	5.152	2.658	34383	2.82	5	103.0	70	130	
Zn	66	1	nogas	5.386	2.984	10657	3.39	5	107.7	70	130	
As	75	1	nogas	5.470	3.321	37562	1.25	5	109.4	70	130	
Sr	88	1	nogas	4.870	2.379	79078	2.22	5	97.4	70	130	
Ag	107	1	nogas	5.016	2.794	36999	3.05	5	100.3	70	130	
Cd	111	1	nogas	5.132	3.360	7705	2.76	5	102.6	70	130	
Sb	121	1	nogas	4.806	2.458	34050	2.19	5	96.1	70	130	
Tl	205	1	nogas	4.732	1.789	47362	2.13	5	94.6	70	130	
Pb	208	1	nogas	4.986	2.876	67168	2.86	5	99.7	70	130	
U	238	1	nogas	4.967	2.757	64489	1.83	5	99.3	70	130	
[Pb]	206	1	nogas	4.933	5.320	16228	4.85	5	98.7	70	130	
[Pb]	207	1	nogas	5.279	3.822	15648	4.11	5	105.6	70	130	
Na	23	2	He	505.516	1.422	560998	0.36	500	101.1	70	130	
Mg	24	2	He	510.159	2.030	245332	1.35	500	102.0	70	130	
Al	27	2	He	4.681	11.816	1910	7.75	5	93.6	70	130	
K	39	2	He	509.073	2.624	435096	1.75	500	101.8	70	130	
Ca	43	2	He	552.038	11.808	903	11.84	500	110.4	70	130	
Ca	44	2	He	518.313	6.320	14883	5.64	500	103.7	70	130	
V	51	2	He	5.011	1.096	20131	1.26	5	100.2	70	130	
Cr	52	2	He	5.020	4.094	21676	2.90	5	100.4	70	130	
Mn	55	2	He	4.935	3.535	15106	2.53	5	98.7	70	130	
Fe	56	2	He	513.328	0.987	1776078	0.79	500	102.7	70	130	
Co	59	2	He	5.141	1.519	25845	1.60	5	102.8	70	130	
Ni	60	2	He	4.797	3.575	6468	3.17	5	95.9	70	130	
Cu	63	2	He	4.842	2.120	17916	2.64	5	96.8	70	130	
Zn	66	2	He	5.229	2.250	4237	2.01	5	104.6	70	130	
As	75	2	He	5.056	4.579	4087	4.80	5	101.1	70	130	
Se	78	2	He	5.430	6.781	693	2.52	5	108.6	70	130	
B	11	1	nogas	32.609	12.258	221736	3.25	25	130.4	70	130	LLICV Main CR1 Failed
Si	28	1	nogas	303.016	7.217	4717958	1.65	25	1212.1	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	515.927	2.421	10990	2.54	500	103.2	70	130	
Ca	44	1	nogas	501.855	1.009	187957	1.21	500	100.4	70	130	
Fe	56	1	nogas	503.884	2.574	7805592	2.05	500	100.8	70	130	
Se	77	1	nogas	9.683	51.831	8916	6.80	5	193.7	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	5.111	17.102	860	12.14	5	102.2	70	130	
Mo	95	1	nogas	4.997	5.048	14563	4.89	5	99.9	70	130	
Sn	118	1	nogas	4.882	3.120	21894	2.11	5	97.6	70	130	
Ba	137	1	nogas	4.914	4.092	10987	5.66	5	98.3	70	130	
Sb	121	2	He	5.065	0.761	15274	0.55	5	101.3	70	130	
Li	7	1	nogas	4.300	4.061	49478	2.03	5	86.0	70	130	
P	31	1	nogas	26.165	4.139	41145	2.00	25	104.7	70	130	
La	139	1	nogas	-1.015	-2153.757	73	79.90	5	-20.3	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	-47.412	-44.128	3	173.21	5	-948.2	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	272392	1.09	288047	94.57	70	125	
Ge	72	1	nogas	1471714	0.44	1481099	99.37	70	125	

Low Level Initial Calibration Verification (LLICV) Report

In	115	1	nogas	1188861	1.67	1196447	99.37	70	125	
Bi	209	1	nogas	846487	0.94	847481	99.88	70	125	
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	427111	0.82	431431	99.00	70	125	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICCB
Data File Name	208_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:42:32-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.017	37.1	70	24.7	1	
Na	23	1	nogas	-15.571	-20.5	984042	0.3	100	
Mg	24	1	nogas	0.138	102.9	7836	14.5	100	
Al	27	1	nogas	0.091	42.2	15780	2.1	5	
K	39	1	nogas	-11.343	-30.2	4260224	1.2	100	
Ti	47	1	nogas	1.474	176.7	1552	158.7	2.5	
V	51	1	nogas	0.028	2462.0	104577	8.6	2.5	
Cr	52	1	nogas	-0.002	-106.1	13448	0.4	2.5	
Mn	55	1	nogas	-0.049	-69.0	17345	2.4	2.5	
Co	59	1	nogas	0.004	113.7	380	13.2	2.5	
Ni	60	1	nogas	0.128	15.9	190	27.3	2.5	
Cu	63	1	nogas	-0.064	-47.3	2430	7.9	2.5	
Zn	66	1	nogas	0.219	24.0	467	21.7	2.5	
As	75	1	nogas	0.523	94.4	25041	4.6	2.5	
Sr	88	1	nogas	0.006	104.0	773	11.7	2.5	
Ag	107	1	nogas	0.008	96.3	163	35.9	2.5	
Cd	111	1	nogas	0.000	3507.5	13	114.6	1	
Sb	121	1	nogas	-0.076	-20.4	823	13.0	2.5	
Tl	205	1	nogas	0.026	69.2	367	45.7	1	
Pb	208	1	nogas	0.006	110.9	353	27.2	2.5	
U	238	1	nogas	0.008	10.9	170	5.9	2.5	
[Pb]	206	1	nogas	0.005	242.4	90	44.4	2.5	
[Pb]	207	1	nogas	0.010	77.0	73	28.4	2.5	
Na	23	2	He	-18.780	-8.2	119679	0.8	100	
Mg	24	2	He	0.013	3044.8	887	21.6	100	
Al	27	2	He	-0.230	-156.0	550	19.0	5	
K	39	2	He	-7.371	-33.5	140984	1.0	100	
Ca	43	2	He	2.040	346.2	27	43.3	100	
Ca	44	2	He	-3.455	-110.2	1093	9.2	100	
V	51	2	He	-0.004	-275.4	2071	2.5	2.5	
Cr	52	2	He	-0.053	-76.6	1990	7.3	2.5	
Mn	55	2	He	-0.115	-22.8	910	9.0	2.5	
Fe	56	2	He	0.057	487.6	15123	5.7	100	
Co	59	2	He	0.010	119.7	123	47.5	2.5	
Ni	60	2	He	-0.229	-15.3	127	35.6	2.5	
Cu	63	2	He	-0.462	-6.1	1170	8.5	2.5	
Zn	66	2	He	-0.249	-21.7	133	31.2	2.5	
As	75	2	He	0.033	224.2	184	30.8	2.5	
Se	78	2	He	0.265	299.4	395	11.2	2.5	
B	11	1	nogas	5.832	91.7	181092	3.6	10	
Si	28	1	nogas	1.057	133.5	3518641	0.6	5	
Ca	43	1	nogas	-0.373	-801.1	1010	5.5	100	
Ca	44	1	nogas	3.269	67.6	32268	2.2	100	
Fe	56	1	nogas	-11.332	-17.9	1520842	1.5	100	

Initial Calibration Blank (ICB) Report

Se	77	1	nogas	4.323	143.9	8259	8.5	2.5	ICB Main CR1 Failed
Se	82	1	nogas	-0.419	-71.1	190	19.0	2.5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Mo	95	1	nogas	0.012	93.9	143	22.4	2.5	
Sn	118	1	nogas	0.044	61.3	903	13.8	5	
Ba	137	1	nogas	-0.015	-28.9	127	4.6	2.5	
Sb	121	2	He	-0.048	-62.7	330	26.9	2.5	
P	31	1	nogas	1.157	64.4	23114	2.3	10	
La	139	1	nogas	-12.709	-65.1	40	50.0	2.5	
Au	197	1	nogas	-46.794	-47.0	3	173.2	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	275385	1.58	288047	95.60	70	125	
Ge	72	1	nogas	1463097	0.41	1481099	98.78	70	125	
In	115	1	nogas	1154348	4.55	1196447	96.48	70	125	
Bi	209	1	nogas	809685	2.25	847481	95.54	70	125	
Ge	72	2	He	433536	0.89	431431	100.49	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	214_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:54:29-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	99.079	2.418	223045	1.46	100	99.1	90	110	
Na	23	1	nogas	9913.775	0.947	112413053	1.43	10000	99.1	90	110	
Mg	24	1	nogas	9442.756	2.514	72202210	1.17	10000	94.4	90	110	
Al	27	1	nogas	89.751	2.081	899958	1.17	100	89.8	90	110	CCV Main CR1-2 Failed
K	39	1	nogas	9739.904	1.682	119253678	0.26	10000	97.4	90	110	
Ti	47	1	nogas	93.348	2.987	98373	1.91	100	93.3	90	110	
V	51	1	nogas	98.148	4.758	1582230	3.20	100	98.1	90	110	
Cr	52	1	nogas	92.902	3.090	1176774	1.85	100	92.9	90	110	
Mn	55	1	nogas	99.707	2.379	1596620	1.75	100	99.7	90	110	
Co	59	1	nogas	94.523	2.661	1202546	1.32	100	94.5	90	110	
Ni	60	1	nogas	98.109	1.687	274663	1.01	100	98.1	90	110	
Cu	63	1	nogas	97.207	0.261	661606	1.13	100	97.2	90	110	
Zn	66	1	nogas	98.986	0.803	215896	0.79	100	99.0	90	110	
As	75	1	nogas	103.892	2.927	313782	1.73	100	103.9	90	110	
Sr	88	1	nogas	98.270	0.730	1750607	1.89	100	98.3	90	110	
Ag	107	1	nogas	93.422	0.998	760311	1.55	100	93.4	90	110	
Cd	111	1	nogas	100.225	6.013	160944	3.26	100	100.2	90	110	
Sb	121	1	nogas	95.485	1.025	720238	0.48	100	95.5	90	110	
Tl	205	1	nogas	96.893	5.088	988190	1.64	100	96.9	90	110	
Pb	208	1	nogas	101.338	2.008	1360114	2.01	100	101.3	90	110	
U	238	1	nogas	101.703	7.087	1347137	3.75	100	101.7	90	110	
[Pb]	206	1	nogas	102.640	5.302	343407	1.82	100	102.6	90	110	
[Pb]	207	1	nogas	99.280	6.856	299640	3.43	100	99.3	90	110	
Na	23	2	He	10277.998	2.003	9623562	1.55	10000	102.8	90	110	
Mg	24	2	He	9950.272	1.890	5203567	1.12	10000	99.5	90	110	
Al	27	2	He	96.971	6.619	30155	6.42	100	97.0	90	110	
K	39	2	He	11682.199	1.026	6798116	1.00	10000	116.8	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10232.646	3.892	17822	2.87	10000	102.3	90	110	
Ca	44	2	He	10276.909	0.670	297996	0.90	10000	102.8	90	110	
V	51	2	He	97.262	1.619	385021	0.61	100	97.3	90	110	
Cr	52	2	He	95.187	3.262	405959	2.19	100	95.2	90	110	
Mn	55	2	He	99.587	2.222	307061	1.15	100	99.6	90	110	
Fe	56	2	He	9796.637	2.555	36689603	1.49	10000	98.0	90	110	
Co	59	2	He	98.272	0.386	537592	0.68	100	98.3	90	110	
Ni	60	2	He	97.555	0.461	134797	0.60	100	97.6	90	110	
Cu	63	2	He	99.083	2.682	344529	2.88	100	99.1	90	110	
Zn	66	2	He	100.602	0.724	82632	1.77	100	100.6	90	110	
As	75	2	He	100.483	2.076	85400	1.53	100	100.5	90	110	
Se	78	2	He	99.839	2.929	6799	1.83	100	99.8	90	110	
B	11	1	nogas	546.146	3.012	896287	1.87	500	109.2	90	110	
Si	28	1	nogas	3234.184	1.472	17875913	0.59	5000	64.7	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10185.462	1.911	218761	0.79	10000	101.9	90	110	
Ca	44	1	nogas	10184.497	2.287	3547933	1.16	10000	101.8	90	110	
Fe	56	1	nogas	9818.166	0.833	134140574	0.79	10000	98.2	90	110	
Se	77	1	nogas	114.363	10.694	22961	5.39	100	114.4	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	102.856	3.098	14039	4.26	100	102.9	90	110	
Mo	95	1	nogas	94.945	2.694	303978	3.83	100	94.9	90	110	
Sn	118	1	nogas	94.423	4.604	439367	2.03	100	94.4	90	110	
Ba	137	1	nogas	98.221	2.115	232025	1.26	100	98.2	90	110	
Sb	121	2	He	97.993	3.199	313047	2.13	100	98.0	90	110	
Li	7	1	nogas	91.775	5.129	486242	2.33	100	91.8	90	110	
P	31	1	nogas	500.425	1.613	420863	0.42	500	100.1	90	110	
La	139	1	nogas	88.821	19.869	343	17.80	100	88.8	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	117.391	55.495	50	34.64	100	117.4	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	235408	2.73	288047	81.73	70	125	
Ge	72	1	nogas	1628124	1.38	1481099	109.93	70	125	
In	115	1	nogas	1274965	2.89	1196447	106.56	70	125	
Bi	209	1	nogas	865757	3.59	847481	102.16	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	466041	1.06	431431	108.02	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	215_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T22:56:26-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.064	10.9	183	11.4	1	
Na	23	1	nogas	83.428	3.8	2301861	0.7	100	
Mg	24	1	nogas	8.415	9.9	75966	8.8	100	
Al	27	1	nogas	0.400	18.1	21476	4.8	5	
K	39	1	nogas	-19.163	-71.1	4842856	1.0	100	
Ti	47	1	nogas	0.047	218.2	233	45.8	2.5	
V	51	1	nogas	0.243	80.2	124700	4.6	2.5	
Cr	52	1	nogas	0.042	52.3	16171	3.1	2.5	
Mn	55	1	nogas	0.160	6.6	23565	4.1	2.5	
Co	59	1	nogas	0.060	47.3	1173	28.8	2.5	
Ni	60	1	nogas	0.290	9.3	690	8.1	2.5	
Cu	63	1	nogas	0.542	10.0	7098	7.0	2.5	
Zn	66	1	nogas	0.368	11.3	883	14.4	2.5	
As	75	1	nogas	1.410	21.4	31598	2.6	2.5	
Sr	88	1	nogas	0.231	10.7	5071	6.5	2.5	
Ag	107	1	nogas	0.041	35.5	460	23.9	2.5	
Cd	111	1	nogas	0.025	24.6	60	16.7	1	
Sb	121	1	nogas	-0.078	-8.0	940	4.9	2.5	
Tl	205	1	nogas	0.391	71.9	4508	70.1	1	
Pb	208	1	nogas	0.055	31.8	1003	23.4	2.5	
U	238	1	nogas	0.088	34.8	1357	33.0	2.5	
[Pb]	206	1	nogas	0.046	80.4	253	53.6	2.5	
[Pb]	207	1	nogas	0.051	15.8	220	12.0	2.5	
Na	23	2	He	94.613	8.8	242908	1.1	100	
Mg	24	2	He	8.518	2.7	5628	3.1	100	
Al	27	2	He	0.203	271.8	753	23.8	5	
K	39	2	He	38.094	5.4	166876	0.7	100	
Ca	43	2	He	38.681	51.3	97	39.2	100	
Ca	44	2	He	19.927	19.0	1927	3.8	100	
V	51	2	He	0.127	14.0	2858	4.4	2.5	
Cr	52	2	He	-0.002	-2351.9	2457	11.8	2.5	
Mn	55	2	He	0.304	9.5	2360	3.6	2.5	
Fe	56	2	He	5.740	5.8	39098	1.5	100	
Co	59	2	He	0.032	31.1	263	21.9	2.5	
Ni	60	2	He	-0.141	-52.4	270	41.2	2.5	
Cu	63	2	He	0.088	65.3	3287	8.4	2.5	
Zn	66	2	He	-0.235	-29.0	160	34.8	2.5	
As	75	2	He	0.171	7.8	329	3.8	2.5	
Se	78	2	He	-0.447	-91.6	395	5.6	2.5	
B	11	1	nogas	21.061	26.4	194923	2.4	10	CCB Main CR1 Failed
Si	28	1	nogas	-93.372	-36.5	3653395	0.9	5	
Ca	43	1	nogas	20.739	15.7	1643	7.3	100	
Ca	44	1	nogas	15.569	22.2	41834	1.5	100	
Fe	56	1	nogas	-2.161	-149.8	1892212	1.2	100	
Se	77	1	nogas	5.813	76.5	9776	6.9	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.159	301.3	300	20.3	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.260	46.2	987	37.7	2.5	
Sn	118	1	nogas	0.088	65.7	1317	20.7	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.030	64.7	270	17.0	2.5	
Sb	121	2	He	-0.043	-36.3	387	13.0	2.5	
P	31	1	nogas	-0.457	-422.4	25447	3.0	10	
La	139	1	nogas	-5.275	-192.3	73	43.8	2.5	
Au	197	1	nogas	25.327	315.0	27	94.4	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	261235	2.64	288047	90.69	70	125	
Ge	72	1	nogas	1697435	3.62	1481099	114.61	70	125	
In	115	1	nogas	1403994	1.99	1196447	117.35	70	125	
Bi	209	1	nogas	947338	1.79	847481	111.78	70	125	
Ge	72	2	He	485612	2.17	431431	112.56	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	220_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T23:06:25-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.488	2.919	222348	3.01	100	95.5	90	110	
Na	23	1	nogas	10142.505	3.312	108393219	0.98	10000	101.4	90	110	
Mg	24	1	nogas	9873.196	0.987	71209339	1.40	10000	98.7	90	110	
Al	27	1	nogas	98.491	2.612	909543	0.64	100	98.5	90	110	
K	39	1	nogas	9997.488	0.677	112838503	2.16	10000	100.0	90	110	
Ti	47	1	nogas	97.454	2.607	94745	1.55	100	97.5	90	110	
V	51	1	nogas	103.568	2.098	1534803	1.21	100	103.6	90	110	
Cr	52	1	nogas	96.902	2.558	1131823	0.56	100	96.9	90	110	
Mn	55	1	nogas	102.917	4.644	1519112	1.99	100	102.9	90	110	
Co	59	1	nogas	99.397	1.337	1166872	1.50	100	99.4	90	110	
Ni	60	1	nogas	102.390	1.044	264504	1.97	100	102.4	90	110	
Cu	63	1	nogas	99.806	0.688	626717	2.40	100	99.8	90	110	
Zn	66	1	nogas	100.211	1.252	201669	2.13	100	100.2	90	110	
As	75	1	nogas	106.078	1.675	295155	2.56	100	106.1	90	110	
Sr	88	1	nogas	98.021	1.271	1610970	2.05	100	98.0	90	110	
Ag	107	1	nogas	98.147	0.832	737062	2.76	100	98.1	90	110	
Cd	111	1	nogas	102.596	0.709	156847	1.68	100	102.6	90	110	
Sb	121	1	nogas	96.135	1.604	668995	1.23	100	96.1	90	110	
Tl	205	1	nogas	92.511	1.658	950818	1.37	100	92.5	90	110	
Pb	208	1	nogas	99.345	0.780	1333365	0.78	100	99.3	90	110	
U	238	1	nogas	100.631	7.156	1344091	7.44	100	100.6	90	110	
[Pb]	206	1	nogas	97.963	0.335	330332	0.31	100	98.0	90	110	
[Pb]	207	1	nogas	95.438	1.800	290398	1.42	100	95.4	90	110	
Na	23	2	He	10361.521	4.614	9142467	3.68	10000	103.6	90	110	
Mg	24	2	He	10070.454	5.096	4963430	4.25	10000	100.7	90	110	
Al	27	2	He	98.106	4.198	28745	3.23	100	98.1	90	110	
K	39	2	He	10796.475	0.480	6293702	0.47	10000	108.0	90	110	
Ca	43	2	He	10305.247	2.886	16921	2.36	10000	103.1	90	110	
Ca	44	2	He	10052.960	0.694	274817	1.30	10000	100.5	90	110	
V	51	2	He	98.283	1.440	366744	1.21	100	98.3	90	110	
Cr	52	2	He	97.522	2.115	392041	1.24	100	97.5	90	110	
Mn	55	2	He	99.933	1.574	290468	0.92	100	99.9	90	110	
Fe	56	2	He	9919.946	2.654	35021256	1.87	10000	99.2	90	110	
Co	59	2	He	99.605	0.948	513612	0.05	100	99.6	90	110	
Ni	60	2	He	99.693	1.608	129833	0.73	100	99.7	90	110	
Cu	63	2	He	99.720	1.482	326806	0.65	100	99.7	90	110	
Zn	66	2	He	100.712	1.279	77969	0.83	100	100.7	90	110	
As	75	2	He	98.522	2.382	78936	2.20	100	98.5	90	110	
Se	78	2	He	100.825	3.101	6469	2.96	100	100.8	90	110	
B	11	1	nogas	496.284	3.735	856297	3.26	500	99.3	90	110	
Si	28	1	nogas	3651.503	4.305	18149917	1.82	5000	73.0	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10115.106	0.903	200541	3.58	10000	101.2	90	110	
Ca	44	1	nogas	10258.854	1.131	3298051	2.75	10000	102.6	90	110	
Fe	56	1	nogas	10344.120	1.524	130293503	1.36	10000	103.4	90	110	
Se	77	1	nogas	122.186	4.191	22094	0.23	100	122.2	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	102.778	5.898	12928	2.94	100	102.8	90	110	
Mo	95	1	nogas	95.476	1.480	281976	2.35	100	95.5	90	110	
Sn	118	1	nogas	92.844	1.192	411130	0.24	100	92.8	90	110	
Ba	137	1	nogas	99.161	0.817	222816	0.93	100	99.2	90	110	
Sb	121	2	He	98.878	3.230	297761	2.34	100	98.9	90	110	
Li	7	1	nogas	90.541	0.453	496909	3.43	100	90.5	90	110	
P	31	1	nogas	522.292	2.530	404240	1.69	500	104.5	90	110	
La	139	1	nogas	92.866	19.374	337	14.04	100	92.9	90	110	
Au	197	1	nogas	80.397	43.594	40	25.00	100	80.4	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	243508	3.68	288047	84.54	70	125	
Ge	72	1	nogas	1502388	2.80	1481099	101.44	70	125	
In	115	1	nogas	1212341	0.97	1196447	101.33	70	125	
Bi	209	1	nogas	871448	0.64	847481	102.83	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	439307	0.90	431431	101.83	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	221_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T23:08:23-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.058	8.3	183	8.3	1	
Na	23	1	nogas	90.233	2.4	2217365	2.4	100	
Mg	24	1	nogas	6.388	11.8	55357	8.6	100	
Al	27	1	nogas	0.522	9.9	21246	1.7	5	
K	39	1	nogas	11.257	66.2	4877473	0.5	100	
Ti	47	1	nogas	-0.011	-486.3	160	32.5	2.5	
V	51	1	nogas	3.733	20.7	167309	6.1	2.5	CCB Main CR1 Failed
Cr	52	1	nogas	0.203	5.3	17085	2.0	2.5	
Mn	55	1	nogas	-0.076	-31.4	18386	2.0	2.5	
Co	59	1	nogas	0.044	19.2	913	12.5	2.5	
Ni	60	1	nogas	0.238	14.6	507	19.8	2.5	
Cu	63	1	nogas	0.371	4.7	5504	2.7	2.5	
Zn	66	1	nogas	0.278	11.9	633	11.9	2.5	
As	75	1	nogas	2.735	14.0	33117	2.9	2.5	CCB Main CR1 Failed
Sr	88	1	nogas	0.110	7.9	2650	4.6	2.5	
Ag	107	1	nogas	0.040	19.1	430	12.9	2.5	
Cd	111	1	nogas	0.045	47.7	90	40.1	1	
Sb	121	1	nogas	-0.087	-15.4	813	10.7	2.5	
Tl	205	1	nogas	0.337	67.0	3661	66.0	1	
Pb	208	1	nogas	0.050	18.5	940	13.3	2.5	
U	238	1	nogas	0.084	32.3	1210	31.1	2.5	
[Pb]	206	1	nogas	0.064	20.2	300	14.5	2.5	
[Pb]	207	1	nogas	0.054	42.3	217	34.0	2.5	
Na	23	2	He	94.341	6.4	229023	0.5	100	
Mg	24	2	He	6.498	3.1	4271	0.7	100	
Al	27	2	He	0.203	68.5	710	4.2	5	
K	39	2	He	25.052	6.6	159449	0.6	100	
Ca	43	2	He	34.089	35.6	83	27.7	100	
Ca	44	2	He	7.087	136.8	1460	21.4	100	
V	51	2	He	0.303	1.9	3376	2.1	2.5	
Cr	52	2	He	0.002	1551.3	2334	3.3	2.5	
Mn	55	2	He	-0.006	-592.2	1293	8.7	2.5	
Fe	56	2	He	4.650	3.2	32900	2.1	100	
Co	59	2	He	0.043	31.5	310	24.4	2.5	
Ni	60	2	He	-0.150	-50.4	243	45.1	2.5	
Cu	63	2	He	-0.021	-223.7	2730	4.4	2.5	
Zn	66	2	He	-0.308	-18.7	93	50.6	2.5	
As	75	2	He	0.150	12.2	292	3.5	2.5	
Se	78	2	He	-0.428	-138.4	374	8.1	2.5	
B	11	1	nogas	4.069	91.8	182532	2.1	10	
Si	28	1	nogas	-33.631	-41.3	3669007	0.5	5	
Ca	43	1	nogas	8.709	79.7	1283	10.1	100	
Ca	44	1	nogas	9.619	16.8	37120	0.2	100	
Fe	56	1	nogas	10.838	24.6	1940222	2.0	100	
Se	77	1	nogas	19.907	12.0	10860	4.0	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.047	332.6	267	7.8	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.253	27.6	907	24.3	2.5	
Sn	118	1	nogas	0.088	21.5	1237	2.6	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.018	135.6	223	23.0	2.5	
Sb	121	2	He	-0.053	-6.2	333	4.6	2.5	
P	31	1	nogas	1.095	97.4	25010	2.2	10	
La	139	1	nogas	-7.259	-85.2	63	32.9	2.5	
Au	197	1	nogas	20.889	95.5	23	24.7	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	281980	2.05	288047	97.89	70	125	
Ge	72	1	nogas	1586525	1.29	1481099	107.12	70	125	
In	115	1	nogas	1317382	4.92	1196447	110.11	70	125	
Bi	209	1	nogas	884616	1.45	847481	104.38	70	125	
Ge	72	2	He	458322	2.66	431431	106.23	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	226_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T23:18:17-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	94.058	2.404	242032	0.88	100	94.1	90	110	
Na	23	1	nogas	10350.133	1.915	116548253	1.69	10000	103.5	90	110	
Mg	24	1	nogas	9594.210	0.403	72903095	0.57	10000	95.9	90	110	
Al	27	1	nogas	92.452	2.614	915004	1.58	100	92.5	90	110	
K	39	1	nogas	9748.803	1.558	117880123	0.46	10000	97.5	90	110	
Ti	47	1	nogas	92.563	1.175	96352	0.88	100	92.6	90	110	
V	51	1	nogas	96.345	3.632	1536787	4.15	100	96.3	90	110	
Cr	52	1	nogas	92.492	2.884	1157223	2.22	100	92.5	90	110	
Mn	55	1	nogas	111.679	1.494	1764089	2.33	100	111.7	90	110	CCV Main CR1-2 Failed
Co	59	1	nogas	94.757	2.903	1190565	1.71	100	94.8	90	110	
Ni	60	1	nogas	98.579	2.435	272533	1.31	100	98.6	90	110	
Cu	63	1	nogas	98.558	1.502	662366	0.34	100	98.6	90	110	
Zn	66	1	nogas	97.740	2.384	210508	1.27	100	97.7	90	110	
As	75	1	nogas	99.584	2.555	298129	1.38	100	99.6	90	110	
Sr	88	1	nogas	99.445	1.814	1749271	1.24	100	99.4	90	110	
Ag	107	1	nogas	92.542	1.973	743695	0.94	100	92.5	90	110	
Cd	111	1	nogas	98.368	0.457	159276	1.21	100	98.4	90	110	
Sb	121	1	nogas	96.720	2.856	720388	1.83	100	96.7	90	110	
Tl	205	1	nogas	95.492	2.721	1031399	2.71	100	95.5	90	110	
Pb	208	1	nogas	105.822	1.571	1420281	1.57	100	105.8	90	110	
U	238	1	nogas	100.691	7.383	1413184	7.48	100	100.7	90	110	
[Pb]	206	1	nogas	100.859	1.968	357387	1.77	100	100.9	90	110	
[Pb]	207	1	nogas	97.096	1.017	310491	1.39	100	97.1	90	110	
Na	23	2	He	10616.112	1.523	9755377	1.03	10000	106.2	90	110	
Mg	24	2	He	10099.249	3.192	5185558	2.61	10000	101.0	90	110	
Al	27	2	He	98.144	0.995	29961	1.39	100	98.1	90	110	
K	39	2	He	11110.695	2.306	6472648	2.25	10000	111.1	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10298.144	6.529	17619	7.00	10000	103.0	90	110	
Ca	44	2	He	10211.786	1.744	290755	2.01	10000	102.1	90	110	
V	51	2	He	99.298	2.257	385908	1.64	100	99.3	90	110	
Cr	52	2	He	95.758	1.184	401074	1.72	100	95.8	90	110	
Mn	55	2	He	107.124	0.627	324264	1.20	100	107.1	90	110	
Fe	56	2	He	10035.096	0.790	36907815	1.33	10000	100.4	90	110	
Co	59	2	He	99.421	0.855	534014	0.76	100	99.4	90	110	
Ni	60	2	He	97.352	1.161	132075	0.58	100	97.4	90	110	
Cu	63	2	He	98.747	0.324	337132	0.28	100	98.7	90	110	
Zn	66	2	He	100.193	2.034	80795	1.54	100	100.2	90	110	
As	75	2	He	100.584	0.547	83943	0.87	100	100.6	90	110	
Se	78	2	He	101.259	4.605	6765	3.76	100	101.3	90	110	
B	11	1	nogas	518.597	5.232	980884	1.66	500	103.7	90	110	
Si	28	1	nogas	3424.640	2.312	18465236	0.65	5000	68.5	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10203.087	0.959	216447	1.29	10000	102.0	90	110	
Ca	44	1	nogas	10170.317	1.509	3500059	2.58	10000	101.7	90	110	
Fe	56	1	nogas	9688.864	3.179	130730636	1.96	10000	96.9	90	110	
Se	77	1	nogas	106.260	7.010	21680	3.07	100	106.3	90	110	
Se	82	1	nogas	103.398	5.604	13936	6.11	100	103.4	90	110	
Mo	95	1	nogas	96.094	1.248	303747	0.16	100	96.1	90	110	
Sn	118	1	nogas	94.250	1.852	442107	2.57	100	94.3	90	110	
Ba	137	1	nogas	98.159	1.909	233613	1.93	100	98.2	90	110	
Sb	121	2	He	98.745	0.384	309791	0.55	100	98.7	90	110	
Li	7	1	nogas	92.143	2.236	558287	1.83	100	92.1	90	110	
P	31	1	nogas	503.240	2.923	417809	1.72	500	100.6	90	110	
La	139	1	nogas	58.949	5.373	257	2.25	100	58.9	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	84.655	22.301	43	13.32	100	84.7	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	269103	2.92	288047	93.42	70	125	
Ge	72	1	nogas	1607907	1.19	1481099	108.56	70	125	
In	115	1	nogas	1284122	1.48	1196447	107.33	70	125	
Bi	209	1	nogas	915767	0.38	847481	108.06	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	457583	0.60	431431	106.06	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	227_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T23:20:14-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.078	17.9	247	16.4	1	
Na	23	1	nogas	198.009	3.6	3473971	2.0	100	CCB Main CR1 Failed
Mg	24	1	nogas	8.074	18.7	69476	17.1	100	
Al	27	1	nogas	0.513	10.4	21346	1.1	5	
K	39	1	nogas	-11.643	-48.5	4657984	0.5	100	
Ti	47	1	nogas	0.040	104.7	213	18.9	2.5	
V	51	1	nogas	0.262	193.9	117953	7.7	2.5	
Cr	52	1	nogas	0.027	96.5	15063	1.6	2.5	
Mn	55	1	nogas	0.794	11.4	32091	4.9	2.5	
Co	59	1	nogas	0.052	25.8	1020	15.8	2.5	
Ni	60	1	nogas	0.301	10.1	683	13.3	2.5	
Cu	63	1	nogas	0.549	9.0	6741	3.9	2.5	
Zn	66	1	nogas	0.356	5.4	807	6.4	2.5	
As	75	1	nogas	1.745	16.2	30733	3.0	2.5	
Sr	88	1	nogas	0.234	8.7	4841	7.6	2.5	
Ag	107	1	nogas	0.052	28.8	527	22.7	2.5	
Cd	111	1	nogas	0.027	47.4	60	33.3	1	
Sb	121	1	nogas	-0.080	-19.2	873	14.3	2.5	
Tl	205	1	nogas	0.399	61.6	4531	61.3	1	
Pb	208	1	nogas	0.070	27.2	1210	21.2	2.5	
U	238	1	nogas	0.099	36.0	1493	35.7	2.5	
[Pb]	206	1	nogas	0.060	19.0	300	14.5	2.5	
[Pb]	207	1	nogas	0.080	23.1	310	19.6	2.5	
Na	23	2	He	213.901	0.6	331199	0.5	100	CCB Main CR1 Failed
Mg	24	2	He	7.355	5.6	4624	4.4	100	
Al	27	2	He	0.178	104.0	690	8.1	5	
K	39	2	He	2.288	175.8	146485	1.6	100	
Ca	43	2	He	51.167	71.2	110	55.3	100	
Ca	44	2	He	23.683	35.8	1890	12.3	100	
V	51	2	He	0.070	18.4	2428	1.8	2.5	
Cr	52	2	He	-0.061	-96.7	2033	12.1	2.5	
Mn	55	2	He	1.068	14.2	4451	9.9	2.5	
Fe	56	2	He	3.917	10.7	29641	5.3	100	
Co	59	2	He	0.038	30.2	277	22.1	2.5	
Ni	60	2	He	-0.190	-12.6	183	17.5	2.5	
Cu	63	2	He	0.089	55.2	3047	5.6	2.5	
Zn	66	2	He	-0.284	-19.3	110	39.6	2.5	
As	75	2	He	0.118	51.8	261	19.4	2.5	
Se	78	2	He	-0.344	-50.9	373	2.7	2.5	
B	11	1	nogas	21.974	8.4	220746	1.6	10	CCB Main CR1 Failed
Si	28	1	nogas	-32.363	-62.6	3707839	1.0	5	
Ca	43	1	nogas	29.966	13.4	1743	5.8	100	
Ca	44	1	nogas	29.098	8.5	44079	2.8	100	
Fe	56	1	nogas	-1.949	-66.6	1788814	2.3	100	
Se	77	1	nogas	9.762	18.9	9709	3.6	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.403	135.4	317	24.1	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.258	44.0	930	38.0	2.5	
Sn	118	1	nogas	0.172	50.2	1663	23.0	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.025	54.7	247	16.4	2.5	
Sb	121	2	He	-0.054	-24.6	323	12.9	2.5	
P	31	1	nogas	0.303	117.1	24630	1.4	10	
La	139	1	nogas	-10.690	-18.1	53	10.8	2.5	
Au	197	1	nogas	16.877	104.6	23	24.7	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	293621	2.74	288047	101.94	70	125	
Ge	72	1	nogas	1601109	1.36	1481099	108.10	70	125	
In	115	1	nogas	1338469	2.41	1196447	111.87	70	125	
Bi	209	1	nogas	928784	1.50	847481	109.59	70	125	
Ge	72	2	He	449694	0.25	431431	104.23	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	230_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T23:48:30-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	95.523	3.483	256541	2.67	100	95.5	90	110	
Na	23	1	nogas	10033.447	0.492	115330073	0.55	10000	100.3	90	110	
Mg	24	1	nogas	9890.359	0.705	76689548	1.24	10000	98.9	90	110	
Al	27	1	nogas	93.338	4.447	958320	0.83	100	93.3	90	110	
K	39	1	nogas	9659.908	5.547	121205194	1.86	10000	96.6	90	110	
Ti	47	1	nogas	93.121	4.982	100548	1.45	100	93.1	90	110	
V	51	1	nogas	96.060	5.870	1589267	2.06	100	96.1	90	110	
Cr	52	1	nogas	91.706	4.672	1190532	1.13	100	91.7	90	110	
Mn	55	1	nogas	97.934	6.132	1606589	2.50	100	97.9	90	110	
Co	59	1	nogas	97.101	3.843	1266493	3.21	100	97.1	90	110	
Ni	60	1	nogas	97.656	7.056	279970	3.76	100	97.7	90	110	
Cu	63	1	nogas	95.658	5.877	666912	2.76	100	95.7	90	110	
Zn	66	1	nogas	96.319	3.937	215285	1.72	100	96.3	90	110	
As	75	1	nogas	99.696	5.976	309571	2.07	100	99.7	90	110	
Sr	88	1	nogas	94.666	3.778	1727919	0.46	100	94.7	90	110	
Ag	107	1	nogas	91.726	5.752	764684	3.04	100	91.7	90	110	
Cd	111	1	nogas	101.197	1.581	161846	2.89	100	101.2	90	110	
Sb	121	1	nogas	92.342	5.691	713495	2.19	100	92.3	90	110	
Tl	205	1	nogas	94.070	6.006	1018814	6.31	100	94.1	90	110	
Pb	208	1	nogas	106.204	2.115	1425405	2.12	100	106.2	90	110	
U	238	1	nogas	102.880	6.719	1447342	6.27	100	102.9	90	110	
[Pb]	206	1	nogas	100.258	5.737	356089	4.87	100	100.3	90	110	
[Pb]	207	1	nogas	96.923	3.484	310684	2.49	100	96.9	90	110	
Na	23	2	He	10187.156	3.450	9481395	1.94	10000	101.9	90	110	
Mg	24	2	He	10103.364	2.166	5251996	0.60	10000	101.0	90	110	
Al	27	2	He	99.425	3.624	30712	2.27	100	99.4	90	110	
K	39	2	He	11491.656	1.990	6689603	1.95	10000	114.9	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10359.087	5.171	17932	3.93	10000	103.6	90	110	
Ca	44	2	He	10349.405	2.182	298273	1.07	10000	103.5	90	110	
V	51	2	He	97.479	2.262	383605	2.01	100	97.5	90	110	
Cr	52	2	He	96.799	2.369	410357	0.57	100	96.8	90	110	
Mn	55	2	He	99.508	2.003	304998	0.27	100	99.5	90	110	
Fe	56	2	He	9967.145	1.974	37108995	1.14	10000	99.7	90	110	
Co	59	2	He	98.750	0.890	537122	2.68	100	98.8	90	110	
Ni	60	2	He	98.003	0.956	134636	2.49	100	98.0	90	110	
Cu	63	2	He	99.043	2.243	342303	1.36	100	99.0	90	110	
Zn	66	2	He	99.879	2.524	81548	2.52	100	99.9	90	110	
As	75	2	He	100.257	1.572	84710	1.61	100	100.3	90	110	
Se	78	2	He	99.614	3.426	6743	1.52	100	99.6	90	110	
B	11	1	nogas	471.400	6.754	946424	3.39	500	94.3	90	110	
Si	28	1	nogas	3390.694	8.269	18999581	3.21	5000	67.8	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	9735.848	5.438	214264	1.96	10000	97.4	90	110	
Ca	44	1	nogas	9826.585	5.105	3508711	2.03	10000	98.3	90	110	
Fe	56	1	nogas	9712.951	6.027	135933507	2.42	10000	97.1	90	110	
Se	77	1	nogas	98.119	17.903	21423	7.02	100	98.1	90	110	
Se	82	1	nogas	96.417	9.078	13482	5.38	100	96.4	90	110	
Mo	95	1	nogas	94.025	5.947	308244	2.54	100	94.0	90	110	
Sn	118	1	nogas	93.766	0.965	434354	1.61	100	93.8	90	110	
Ba	137	1	nogas	100.573	1.544	236371	0.93	100	100.6	90	110	
Sb	121	2	He	99.564	2.434	316215	1.94	100	99.6	90	110	
Li	7	1	nogas	92.101	2.960	582388	2.25	100	92.1	90	110	
P	31	1	nogas	513.137	5.833	441420	1.94	500	102.6	90	110	
La	139	1	nogas	108.952	16.632	400	15.21	100	109.0	90	110	
Au	197	1	nogas	50.936	33.957	33	17.32	100	50.9	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	280847	2.61	288047	97.50	70	125	
Ge	72	1	nogas	1669737	3.56	1481099	112.74	70	125	
In	115	1	nogas	1268345	2.47	1196447	106.01	70	125	
Bi	209	1	nogas	918320	2.24	847481	108.36	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	463316	1.80	431431	107.39	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	231_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-05T23:50:28-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.074	49.5	253	43.7	1	
Na	23	1	nogas	28.357	7.2	1602968	1.1	100	
Mg	24	1	nogas	5.477	27.7	50747	23.4	100	
Al	27	1	nogas	0.462	8.8	21232	0.9	5	
K	39	1	nogas	-10.932	-57.6	4750359	0.6	100	
Ti	47	1	nogas	0.020	171.4	197	17.9	2.5	
V	51	1	nogas	0.923	4.4	129903	0.9	2.5	
Cr	52	1	nogas	0.110	22.9	16374	1.1	2.5	
Mn	55	1	nogas	-0.046	-46.4	19360	2.7	2.5	
Co	59	1	nogas	0.053	32.9	1053	20.4	2.5	
Ni	60	1	nogas	0.225	20.2	483	25.7	2.5	
Cu	63	1	nogas	0.357	5.7	5558	2.3	2.5	
Zn	66	1	nogas	0.220	13.8	523	11.7	2.5	
As	75	1	nogas	1.220	5.1	29831	1.6	2.5	
Sr	88	1	nogas	0.069	10.6	2000	5.6	2.5	
Ag	107	1	nogas	0.038	13.7	427	9.8	2.5	
Cd	111	1	nogas	0.051	37.0	103	34.0	1	
Sb	121	1	nogas	-0.065	-12.4	1000	6.9	2.5	
Tl	205	1	nogas	0.371	67.9	4261	65.8	1	
Pb	208	1	nogas	0.063	30.9	1110	23.5	2.5	
U	238	1	nogas	0.089	33.6	1373	31.4	2.5	
[Pb]	206	1	nogas	0.050	42.2	267	28.1	2.5	
[Pb]	207	1	nogas	0.066	24.5	270	19.6	2.5	
Na	23	2	He	23.736	14.9	170259	0.3	100	
Mg	24	2	He	3.915	13.2	3034	7.0	100	
Al	27	2	He	-0.398	-69.7	547	14.2	5	
K	39	2	He	15.286	11.4	153887	0.6	100	
Ca	43	2	He	0.718	479.4	27	21.7	100	
Ca	44	2	He	-1.736	-415.9	1240	14.8	100	
V	51	2	He	0.065	63.6	2533	4.8	2.5	
Cr	52	2	He	-0.034	-148.6	2250	7.7	2.5	
Mn	55	2	He	0.062	39.0	1543	2.9	2.5	
Fe	56	2	He	3.656	6.3	30158	1.7	100	
Co	59	2	He	0.046	29.5	337	24.0	2.5	
Ni	60	2	He	-0.188	-16.6	197	23.5	2.5	
Cu	63	2	He	-0.051	-196.4	2710	12.5	2.5	
Zn	66	2	He	-0.287	-9.1	113	18.4	2.5	
As	75	2	He	0.109	7.2	267	4.5	2.5	
Se	78	2	He	0.205	140.6	427	3.2	2.5	
B	11	1	nogas	-0.651	-467.5	196311	3.1	10	
Si	28	1	nogas	-29.606	-25.1	3787149	0.3	5	
Ca	43	1	nogas	-1.964	-542.9	1090	20.0	100	
Ca	44	1	nogas	2.611	107.3	35714	1.7	100	
Fe	56	1	nogas	-2.246	-134.1	1817101	3.1	100	
Se	77	1	nogas	6.873	42.8	9523	4.9	2.5	CCB Main CR1 Failed
Se	82	1	nogas	0.165	77.1	290	6.9	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.228	51.2	850	42.9	2.5	
Sn	118	1	nogas	0.114	16.8	1417	9.5	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.038	32.0	283	10.8	2.5	
Sb	121	2	He	-0.046	-30.1	367	14.0	2.5	
P	31	1	nogas	2.846	20.7	27086	0.8	10	
La	139	1	nogas	-2.405	-498.4	80	45.1	2.5	
Au	197	1	nogas	-5.359	-717.1	17	69.3	2.5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	316598	0.84	288047	109.91	70	125	
Ge	72	1	nogas	1629963	1.00	1481099	110.05	70	125	
In	115	1	nogas	1366708	2.69	1196447	114.23	70	125	
Bi	209	1	nogas	945134	1.76	847481	111.52	70	125	
Ge	72	2	He	472806	2.06	431431	109.59	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	242_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:12:15-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	96.498	3.517	275850	1.56	100	96.5	90	110	
Na	23	1	nogas	10783.470	2.859	133076124	2.37	10000	107.8	90	110	
Mg	24	1	nogas	9853.186	0.417	82093187	0.82	10000	98.5	90	110	
Al	27	1	nogas	97.990	2.447	1018530	1.78	100	98.0	90	110	
K	39	1	nogas	10198.308	3.513	129382765	2.21	10000	102.0	90	110	
Ti	47	1	nogas	97.829	2.980	107014	0.77	100	97.8	90	110	
V	51	1	nogas	105.988	2.606	1765910	4.97	100	106.0	90	110	
Cr	52	1	nogas	96.141	0.617	1264258	2.36	100	96.1	90	110	
Mn	55	1	nogas	98.415	3.906	1635781	1.15	100	98.4	90	110	
Co	59	1	nogas	100.003	5.454	1320369	3.72	100	100.0	90	110	
Ni	60	1	nogas	101.455	1.872	294901	1.80	100	101.5	90	110	
Cu	63	1	nogas	100.102	3.234	706985	0.68	100	100.1	90	110	
Zn	66	1	nogas	100.037	3.345	226442	0.50	100	100.0	90	110	
As	75	1	nogas	108.561	3.783	339106	1.31	100	108.6	90	110	
Sr	88	1	nogas	96.705	4.032	1787673	2.06	100	96.7	90	110	
Ag	107	1	nogas	93.862	1.960	793088	2.37	100	93.9	90	110	
Cd	111	1	nogas	95.815	5.373	166750	2.93	100	95.8	90	110	
Sb	121	1	nogas	95.395	5.362	746517	2.62	100	95.4	90	110	
Tl	205	1	nogas	96.150	7.902	1073764	4.51	100	96.1	90	110	
Pb	208	1	nogas	109.057	2.222	1463686	2.22	100	109.1	90	110	
U	238	1	nogas	106.323	7.129	1543081	3.75	100	106.3	90	110	
[Pb]	206	1	nogas	101.475	7.707	371810	4.44	100	101.5	90	110	
[Pb]	207	1	nogas	97.251	4.675	321798	2.29	100	97.3	90	110	
Na	23	2	He	10717.380	1.141	10427255	0.50	10000	107.2	90	110	
Mg	24	2	He	10063.896	1.552	5472101	0.67	10000	100.6	90	110	
Al	27	2	He	98.886	0.420	31961	1.21	100	98.9	90	110	
K	39	2	He	12112.492	1.383	7043165	1.35	10000	121.1	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	10131.293	1.846	18349	0.93	10000	101.3	90	110	
Ca	44	2	He	10321.172	2.569	311117	1.62	10000	103.2	90	110	
V	51	2	He	99.279	0.506	408607	1.00	100	99.3	90	110	
Cr	52	2	He	97.299	2.416	431403	0.94	100	97.3	90	110	
Mn	55	2	He	98.798	3.025	316702	1.53	100	98.8	90	110	
Fe	56	2	He	9986.033	1.308	38887811	0.52	10000	99.9	90	110	
Co	59	2	He	100.921	1.928	573937	0.44	100	100.9	90	110	
Ni	60	2	He	99.903	3.709	143489	2.96	100	99.9	90	110	
Cu	63	2	He	99.861	3.363	360907	2.13	100	99.9	90	110	
Zn	66	2	He	100.846	1.744	86106	0.25	100	100.8	90	110	
As	75	2	He	99.804	0.751	88203	1.42	100	99.8	90	110	
Se	78	2	He	97.985	4.630	6944	3.00	100	98.0	90	110	
B	11	1	nogas	466.168	6.139	998493	2.73	500	93.2	90	110	
Si	28	1	nogas	3550.551	1.471	19981681	2.66	5000	71.0	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10363.316	3.341	231009	0.87	10000	103.6	90	110	
Ca	44	1	nogas	10215.737	2.056	3694860	1.35	10000	102.2	90	110	
Fe	56	1	nogas	10005.771	3.300	141849687	1.45	10000	100.1	90	110	
Se	77	1	nogas	147.434	3.074	28169	4.79	100	147.4	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	100.205	4.018	14196	1.09	100	100.2	90	110	
Mo	95	1	nogas	96.472	4.629	320388	1.77	100	96.5	90	110	
Sn	118	1	nogas	92.593	1.884	467135	1.92	100	92.6	90	110	
Ba	137	1	nogas	96.318	4.002	246445	1.35	100	96.3	90	110	
Sb	121	2	He	99.279	0.540	329826	1.30	100	99.3	90	110	
Li	7	1	nogas	92.412	1.891	622129	2.47	100	92.4	90	110	
P	31	1	nogas	535.919	2.749	466043	0.68	500	107.2	90	110	
La	139	1	nogas	74.303	60.937	323	42.22	100	74.3	90	110	CCV Main CR1-2 Failed
Au	197	1	nogas	122.224	90.028	57	61.97	100	122.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	298974	2.40	288047	103.79	70	125	
Ge	72	1	nogas	1690696	2.90	1481099	114.15	70	125	
In	115	1	nogas	1381535	3.11	1196447	115.47	70	125	
Bi	209	1	nogas	948506	3.32	847481	111.92	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	484571	1.50	431431	112.32	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	243_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:14:12-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.088	27.8	303	27.6	1	
Na	23	1	nogas	329.374	4.5	5280893	2.0	100	CCB Main CR1 Failed
Mg	24	1	nogas	6.389	22.0	60175	18.0	100	
Al	27	1	nogas	0.555	13.6	22711	1.8	5	
K	39	1	nogas	-17.210	-44.6	4796634	0.5	100	
Ti	47	1	nogas	0.018	316.9	200	31.2	2.5	
V	51	1	nogas	1.685	54.9	144752	7.6	2.5	
Cr	52	1	nogas	0.108	8.7	16784	1.8	2.5	
Mn	55	1	nogas	-0.298	-5.8	15767	1.1	2.5	
Co	59	1	nogas	0.054	34.8	1093	25.1	2.5	
Ni	60	1	nogas	0.386	14.1	960	18.4	2.5	
Cu	63	1	nogas	0.367	12.4	5774	7.0	2.5	
Zn	66	1	nogas	0.196	3.2	483	5.2	2.5	
As	75	1	nogas	2.672	18.8	34713	2.9	2.5	CCB Main CR1 Failed
Sr	88	1	nogas	0.118	10.9	2937	10.2	2.5	
Ag	107	1	nogas	0.041	21.8	460	18.8	2.5	
Cd	111	1	nogas	0.052	27.6	107	23.6	1	
Sb	121	1	nogas	-0.094	-18.2	797	15.3	2.5	
Tl	205	1	nogas	0.422	83.3	5121	81.1	1	
Pb	208	1	nogas	0.068	41.4	1173	32.0	2.5	
U	238	1	nogas	0.088	55.2	1430	52.2	2.5	
[Pb]	206	1	nogas	0.053	36.7	293	25.8	2.5	
[Pb]	207	1	nogas	0.057	28.8	253	22.8	2.5	
Na	23	2	He	318.550	2.7	454221	2.2	100	CCB Main CR1 Failed
Mg	24	2	He	4.604	9.2	3464	6.2	100	
Al	27	2	He	0.087	369.8	710	14.3	5	
K	39	2	He	18.632	25.6	155792	1.7	100	
Ca	43	2	He	20.788	60.9	63	36.5	100	
Ca	44	2	He	6.800	19.7	1520	2.9	100	
V	51	2	He	0.158	5.7	2959	1.7	2.5	
Cr	52	2	He	-0.051	-45.3	2220	4.9	2.5	
Mn	55	2	He	-0.207	-17.9	720	16.8	2.5	
Fe	56	2	He	3.118	3.5	28633	1.5	100	
Co	59	2	He	0.038	9.9	297	7.0	2.5	
Ni	60	2	He	-0.211	-10.6	167	19.3	2.5	
Cu	63	2	He	-0.094	-36.1	2610	4.6	2.5	
Zn	66	2	He	-0.321	-12.0	87	37.1	2.5	
As	75	2	He	0.073	100.6	240	27.1	2.5	
Se	78	2	He	-0.035	-1008.9	419	5.1	2.5	
B	11	1	nogas	-11.605	-18.4	179344	2.3	10	
Si	28	1	nogas	-45.402	-36.8	3814298	1.1	5	
Ca	43	1	nogas	14.679	27.6	1483	3.7	100	
Ca	44	1	nogas	11.618	22.6	39823	0.2	100	
Fe	56	1	nogas	-3.031	-145.1	1852151	1.3	100	
Se	77	1	nogas	16.465	14.9	10997	1.7	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.247	-133.5	240	16.7	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.319	62.5	1183	58.3	2.5	
Sn	118	1	nogas	0.106	24.8	1393	11.3	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.056	74.7	333	33.5	2.5	
Sb	121	2	He	-0.041	-20.2	390	6.8	2.5	
P	31	1	nogas	3.629	20.9	28418	0.9	10	
La	139	1	nogas	-12.190	-55.0	50	40.0	2.5	
Au	197	1	nogas	31.916	92.0	30	33.3	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	322524	2.42	288047	111.97	70	125	
Ge	72	1	nogas	1672166	2.42	1481099	112.90	70	125	
In	115	1	nogas	1381762	2.59	1196447	115.49	70	125	
Bi	209	1	nogas	997058	1.39	847481	117.65	70	125	
Ge	72	2	He	481362	0.44	431431	111.57	70	125	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	247_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:22:08-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Be	9	1	nogas	98.521	1.585	279056	1.41	100	98.5	90	110	
Na	23	1	nogas	10577.259	0.895	127758403	1.33	10000	105.8	90	110	
Mg	24	1	nogas	10028.044	0.612	81748029	0.55	10000	100.3	90	110	
Al	27	1	nogas	96.735	3.098	1023476	1.05	100	96.7	90	110	
K	39	1	nogas	9888.303	3.993	127832253	2.16	10000	98.9	90	110	
Ti	47	1	nogas	95.129	3.220	105918	0.13	100	95.1	90	110	
V	51	1	nogas	102.413	3.742	1739198	0.55	100	102.4	90	110	
Cr	52	1	nogas	93.966	4.341	1257205	1.70	100	94.0	90	110	
Mn	55	1	nogas	97.465	1.255	1650038	2.02	100	97.5	90	110	
Co	59	1	nogas	98.939	4.627	1329540	1.59	100	98.9	90	110	
Ni	60	1	nogas	100.326	2.122	296797	1.03	100	100.3	90	110	
Cu	63	1	nogas	99.549	2.894	715818	2.26	100	99.5	90	110	
Zn	66	1	nogas	98.566	3.827	227075	0.74	100	98.6	90	110	
As	75	1	nogas	104.031	3.302	331943	0.37	100	104.0	90	110	
Sr	88	1	nogas	96.129	2.720	1809228	1.73	100	96.1	90	110	
Ag	107	1	nogas	92.149	2.487	792329	0.82	100	92.1	90	110	
Cd	111	1	nogas	94.937	2.277	168601	1.19	100	94.9	90	110	
Sb	121	1	nogas	94.843	3.997	755701	1.80	100	94.8	90	110	
Tl	205	1	nogas	96.067	2.769	1112620	0.91	100	96.1	90	110	
Pb	208	1	nogas	113.111	1.404	1518097	1.40	100	113.1	90	110	CCV Main CR1-2 Failed
U	238	1	nogas	102.700	5.670	1544898	3.74	100	102.7	90	110	
[Pb]	206	1	nogas	100.772	3.426	382855	1.14	100	100.8	90	110	
[Pb]	207	1	nogas	95.726	4.067	328160	1.81	100	95.7	90	110	
Na	23	2	He	10209.523	2.184	9923342	0.91	10000	102.1	90	110	
Mg	24	2	He	9904.089	3.854	5375244	2.38	10000	99.0	90	110	
Al	27	2	He	100.007	2.217	32258	0.99	100	100.0	90	110	
K	39	2	He	11806.677	1.311	6869005	1.28	10000	118.1	90	110	CCV Main CR1-2 Failed
Ca	43	2	He	9964.452	2.451	18026	3.94	10000	99.6	90	110	
Ca	44	2	He	10225.175	0.673	307793	1.42	10000	102.3	90	110	
V	51	2	He	98.371	2.255	404173	1.05	100	98.4	90	110	
Cr	52	2	He	98.463	1.921	435883	1.60	100	98.5	90	110	
Mn	55	2	He	99.180	1.636	317485	1.73	100	99.2	90	110	
Fe	56	2	He	9861.280	1.361	38339610	0.23	10000	98.6	90	110	
Co	59	2	He	98.883	2.017	561435	0.52	100	98.9	90	110	
Ni	60	2	He	98.532	1.898	141310	1.21	100	98.5	90	110	
Cu	63	2	He	99.744	2.431	359937	1.29	100	99.7	90	110	
Zn	66	2	He	100.771	0.951	85911	0.82	100	100.8	90	110	
As	75	2	He	100.598	1.467	88749	0.22	100	100.6	90	110	
Se	78	2	He	100.171	3.897	7079	3.06	100	100.2	90	110	
B	11	1	nogas	475.709	2.855	1005991	1.64	500	95.1	90	110	
Si	28	1	nogas	3471.694	4.473	19968041	1.57	5000	69.4	90	110	CCV Main CR1-2 Failed
Ca	43	1	nogas	10059.776	3.831	228261	1.18	10000	100.6	90	110	
Ca	44	1	nogas	10027.970	5.229	3690365	2.78	10000	100.3	90	110	
Fe	56	1	nogas	9871.953	2.749	142486503	0.62	10000	98.7	90	110	
Se	77	1	nogas	129.556	5.101	26296	4.47	100	129.6	90	110	CCV Main CR1-2 Failed
Se	82	1	nogas	96.943	2.565	13992	0.87	100	96.9	90	110	
Mo	95	1	nogas	97.250	3.876	328792	1.24	100	97.2	90	110	
Sn	118	1	nogas	90.913	0.657	467830	1.77	100	90.9	90	110	
Ba	137	1	nogas	96.773	0.471	252658	0.93	100	96.8	90	110	
Sb	121	2	He	98.853	1.417	327845	0.19	100	98.9	90	110	
Li	7	1	nogas	93.688	1.452	624343	1.69	100	93.7	90	110	
P	31	1	nogas	524.556	3.207	464822	0.18	500	104.9	90	110	
La	139	1	nogas	96.530	3.534	403	2.86	100	96.5	90	110	
Au	197	1	nogas	44.152	45.459	33	17.32	100	44.2	90	110	CCV Main CR1-2 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	296094	0.78	288047	102.79	70	125	
Ge	72	1	nogas	1720993	3.18	1481099	116.20	70	125	
In	115	1	nogas	1408615	1.15	1196447	117.73	70	125	
Bi	209	1	nogas	982360	2.30	847481	115.92	70	125	

Continuing Calibration Verification (CCV) Report

Ge	72	2	He	483789	1.54	431431	112.14	70	125	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	248_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:24:05-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.055	36.4	203	31.2	1	
Na	23	1	nogas	190.488	3.7	3691653	0.6	100	CCB Main CR1 Failed
Mg	24	1	nogas	5.525	31.2	54158	24.6	100	
Al	27	1	nogas	0.461	14.5	22978	2.2	5	
K	39	1	nogas	-22.056	-40.7	5001001	1.4	100	
Ti	47	1	nogas	0.029	67.9	223	9.3	2.5	
V	51	1	nogas	1.849	33.7	155642	6.5	2.5	
Cr	52	1	nogas	0.087	66.7	17415	3.8	2.5	
Mn	55	1	nogas	-0.314	-6.2	16371	1.3	2.5	
Co	59	1	nogas	0.052	37.9	1117	23.7	2.5	
Ni	60	1	nogas	0.277	13.2	680	15.6	2.5	
Cu	63	1	nogas	0.280	14.5	5454	4.9	2.5	
Zn	66	1	nogas	0.179	8.2	470	7.7	2.5	
As	75	1	nogas	2.044	29.9	34773	6.0	2.5	
Sr	88	1	nogas	0.084	29.2	2447	18.7	2.5	
Ag	107	1	nogas	0.045	42.3	520	31.7	2.5	
Cd	111	1	nogas	0.060	41.4	127	35.6	1	
Sb	121	1	nogas	-0.097	-14.2	820	12.8	2.5	
Tl	205	1	nogas	0.492	89.1	6045	86.9	1	
Pb	208	1	nogas	0.069	35.3	1187	27.4	2.5	
U	238	1	nogas	0.100	60.4	1647	57.0	2.5	
[Pb]	206	1	nogas	0.054	42.8	303	29.9	2.5	
[Pb]	207	1	nogas	0.054	59.7	250	46.1	2.5	
Na	23	2	He	189.310	1.8	340846	1.8	100	CCB Main CR1 Failed
Mg	24	2	He	3.352	3.5	2870	3.3	100	
Al	27	2	He	0.181	251.5	763	21.2	5	
K	39	2	He	24.929	14.9	159378	1.3	100	
Ca	43	2	He	23.464	46.5	70	28.6	100	
Ca	44	2	He	0.320	3228.6	1370	24.9	100	
V	51	2	He	0.146	34.7	2996	7.8	2.5	
Cr	52	2	He	-0.076	-51.6	2174	8.7	2.5	
Mn	55	2	He	-0.182	-27.4	823	19.5	2.5	
Fe	56	2	He	3.125	4.7	29514	3.6	100	
Co	59	2	He	0.042	34.3	330	26.9	2.5	
Ni	60	2	He	-0.194	-18.9	197	28.0	2.5	
Cu	63	2	He	-0.136	-27.9	2530	3.6	2.5	
Zn	66	2	He	-0.256	-28.4	147	43.8	2.5	
As	75	2	He	0.094	24.7	266	5.9	2.5	
Se	78	2	He	-1.074	-33.0	361	8.5	2.5	
B	11	1	nogas	-10.769	-21.5	185006	1.6	10	
Si	28	1	nogas	-90.470	-10.9	3815091	0.6	5	
Ca	43	1	nogas	5.208	129.3	1347	10.9	100	
Ca	44	1	nogas	-0.915	-103.6	37351	0.1	100	
Fe	56	1	nogas	-6.430	-16.9	1905763	0.1	100	
Se	77	1	nogas	12.153	34.8	11027	6.1	2.5	CCB Main CR1 Failed
Se	82	1	nogas	-0.366	-42.6	237	8.8	2.5	

Continuing Calibration Blank (CCB) Report

Mo	95	1	nogas	0.317	67.2	1227	59.4	2.5	
Sn	118	1	nogas	0.098	95.2	1427	34.0	5	
Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Ba	137	1	nogas	0.041	65.6	310	22.6	2.5	
Sb	121	2	He	-0.085	-17.0	250	18.3	2.5	
P	31	1	nogas	3.874	36.9	30205	3.6	10	
La	139	1	nogas	-17.161	-49.2	37	78.7	2.5	
Au	197	1	nogas	10.088	445.6	23	65.5	2.5	CCB Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	329857	2.48	288047	114.52	70	125	
Ge	72	1	nogas	1764602	0.89	1481099	119.14	70	125	
In	115	1	nogas	1459602	1.07	1196447	121.99	70	125	
Bi	209	1	nogas	1018602	0.97	847481	120.19	70	125	
Ge	72	2	He	495561	1.99	431431	114.86	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Sample Table

Sample Name	LLCCV5
Data File Name	249LICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:26:05-05:00
Sample Type	LLICV
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	4.407	1.366	13795	1.07	5	88.1	70	130	
Na	23	1	nogas	622.643	3.730	9170875	1.12	500	124.5	70	130	
Mg	24	1	nogas	495.820	6.198	4237044	4.69	500	99.2	70	130	
Al	27	1	nogas	5.061	0.944	72539	2.20	5	101.2	70	130	
K	39	1	nogas	457.872	2.540	11184481	1.44	500	91.6	70	130	
Ti	47	1	nogas	4.969	8.207	5891	6.12	5	99.4	70	130	
V	51	1	nogas	6.995	4.957	240739	5.10	5	139.9	70	130	LLICV Main CR1 Failed
Cr	52	1	nogas	4.687	1.020	80321	2.18	5	93.7	70	130	
Mn	55	1	nogas	4.482	4.795	99203	2.84	5	89.6	70	130	
Co	59	1	nogas	5.043	4.532	70365	1.89	5	100.9	70	130	
Ni	60	1	nogas	5.234	4.306	15830	3.08	5	104.7	70	130	
Cu	63	1	nogas	5.262	1.830	42309	1.57	5	105.2	70	130	
Zn	66	1	nogas	5.261	3.163	12561	1.09	5	105.2	70	130	
As	75	1	nogas	6.635	8.000	48846	2.48	5	132.7	70	130	LLICV Main CR1 Failed
Sr	88	1	nogas	4.799	3.177	94033	1.55	5	96.0	70	130	
Ag	107	1	nogas	4.772	2.860	42475	0.86	5	95.4	70	130	
Cd	111	1	nogas	4.950	5.076	9006	4.29	5	99.0	70	130	
Sb	121	1	nogas	4.578	2.213	39215	1.63	5	91.6	70	130	
Tl	205	1	nogas	4.697	5.099	55609	3.75	5	93.9	70	130	
Pb	208	1	nogas	5.863	0.570	78947	0.57	5	117.3	70	130	
U	238	1	nogas	4.973	1.761	76432	2.15	5	99.5	70	130	
[Pb]	206	1	nogas	4.870	6.863	18955	5.50	5	97.4	70	130	
[Pb]	207	1	nogas	5.019	2.276	17607	1.11	5	100.4	70	130	
Na	23	2	He	667.431	1.627	801574	0.65	500	133.5	70	130	LLICV Main CR1 Failed
Mg	24	2	He	511.628	1.197	282629	0.89	500	102.3	70	130	
Al	27	2	He	5.110	20.262	2334	14.80	5	102.2	70	130	
K	39	2	He	626.939	1.562	502219	1.11	500	125.4	70	130	
Ca	43	2	He	550.364	10.223	1033	8.46	500	110.1	70	130	
Ca	44	2	He	495.930	4.688	16414	3.83	500	99.2	70	130	
V	51	2	He	5.202	1.412	23911	0.80	5	104.0	70	130	
Cr	52	2	He	4.791	2.879	23876	1.85	5	95.8	70	130	
Mn	55	2	He	4.893	1.467	17218	1.98	5	97.9	70	130	
Fe	56	2	He	519.517	1.310	2064582	1.52	500	103.9	70	130	
Co	59	2	He	5.195	0.971	29998	1.29	5	103.9	70	130	
Ni	60	2	He	4.950	6.355	7648	4.50	5	99.0	70	130	
Cu	63	2	He	4.929	3.990	20892	2.96	5	98.6	70	130	
Zn	66	2	He	4.978	3.479	4651	3.25	5	99.6	70	130	
As	75	2	He	5.256	4.482	4873	4.28	5	105.1	70	130	
Se	78	2	He	4.860	20.718	758	10.47	5	97.2	70	130	
B	11	1	nogas	4.620	90.157	212427	1.37	25	18.5	70	130	LLICV Main CR1 Failed
Si	28	1	nogas	201.408	20.308	5213454	1.03	25	805.6	70	130	LLICV Main CR1 Failed
Ca	43	1	nogas	475.863	7.066	12321	4.35	500	95.2	70	130	
Ca	44	1	nogas	481.771	3.892	219220	1.17	500	96.4	70	130	
Fe	56	1	nogas	485.255	4.863	9143240	1.51	500	97.1	70	130	
Se	77	1	nogas	13.378	16.287	11267	4.00	5	267.6	70	130	LLICV Main CR1 Failed
Se	82	1	nogas	4.676	16.403	977	13.98	5	93.5	70	130	
Mo	95	1	nogas	4.950	4.514	17412	4.33	5	99.0	70	130	
Sn	118	1	nogas	4.697	5.384	25542	1.68	5	93.9	70	130	
Ba	137	1	nogas	4.867	3.444	13179	1.11	5	97.3	70	130	
Sb	121	2	He	5.043	3.321	17466	1.82	5	100.9	70	130	
Li	7	1	nogas	4.626	4.191	61636	4.17	5	92.5	70	130	
P	31	1	nogas	28.659	2.665	51815	1.81	25	114.6	70	130	
La	139	1	nogas	-1.747	-308.812	87	17.63	5	-34.9	70	130	LLICV Main CR1 Failed
Au	197	1	nogas	93.010	88.444	50	52.92	5	1860.2	70	130	LLICV Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	326609	2.34	288047	113.39	70	125	
Ge	72	1	nogas	1776689	2.74	1481099	119.96	70	125	
In	115	1	nogas	1441388	4.18	1196447	120.47	70	125	
Bi	209	1	nogas	1001834	1.36	847481	118.21	70	125	

Low Level Initial Calibration Verification (LLICV) Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Ge	72	2	He	490635	1.54	431431	113.72	70	125	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	250SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:28:06-05:00
Sample Type	Sample
Dilution	1
Comment	
ISTD Ref FileName	198CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Be	9	1	nogas	1.927	1.927	7.23	5948	0.03	2000	
Na	23	1	nogas	340.826	340.826	8.33	5430137	0.01	200000	
Mg	24	1	nogas	212.469	212.469	2.84	1752943	0.01	200000	
Al	27	1	nogas	2.215	2.215	10.17	41392	0.01	2000	
K	39	1	nogas	181.301	181.301	7.17	7538936	0.00	200000	
Ti	47	1	nogas	1.901	1.901	8.86	2340	0.08	2000	
V	51	1	nogas	3.858	3.858	13.60	186859	0.00	2000	
Cr	52	1	nogas	1.965	1.965	8.68	42566	0.00	2000	
Mn	55	1	nogas	1.656	1.656	3.98	49797	0.00	2000	
Co	59	1	nogas	2.017	2.017	4.79	28018	0.01	2000	
Ni	60	1	nogas	2.150	2.150	3.50	6328	0.03	2000	
Cu	63	1	nogas	2.209	2.209	3.32	19481	0.01	2000	
Zn	66	1	nogas	2.209	2.209	4.84	5238	0.04	2000	
As	75	1	nogas	3.521	3.521	11.16	38942	0.01	2000	
Sr	88	1	nogas	1.917	1.917	2.86	37556	0.01	2000	
Ag	107	1	nogas	2.021	2.021	2.60	17829	0.01	2000	
Cd	111	1	nogas	1.841	1.841	7.76	3240	0.06	2000	
Sb	121	1	nogas	1.794	1.794	6.80	16131	0.01	2000	
Tl	205	1	nogas	1.959	1.959	2.34	22997	0.01	2000	
Pb	208	1	nogas	2.362	2.362	2.32	31966	0.01	2000	
U	238	1	nogas	1.966	1.966	4.02	29895	0.01	2000	
[Pb]	206	1	nogas	2.028	2.028	5.01	7852	0.03	2000	
[Pb]	207	1	nogas	2.142	2.142	5.54	7452	0.03	2000	
Na	23	2	He	340.283	340.283	3.78	482742	0.07	200000	
Mg	24	2	He	208.012	208.012	1.77	115211	0.18	200000	
Al	27	2	He	2.121	2.121	18.18	1373	0.15	2000	
K	39	2	He	259.696	259.696	1.28	293077	0.09	200000	
Ca	43	2	He	245.215	245.215	32.04	473	51.80	200000	
Ca	44	2	He	209.996	209.996	6.92	7702	2.73	200000	
V	51	2	He	2.179	2.179	0.73	11361	0.02	2000	
Cr	52	2	He	1.852	1.852	3.20	10733	0.02	2000	
Mn	55	2	He	1.694	1.694	5.02	6861	0.02	2000	
Fe	56	2	He	201.854	201.854	3.33	810273	0.02	200000	
Co	59	2	He	2.145	2.145	1.98	12404	0.02	2000	
Ni	60	2	He	1.816	1.816	8.90	3104	0.06	2000	
Cu	63	2	He	1.820	1.820	1.56	9586	0.02	2000	
Zn	66	2	He	1.699	1.699	1.68	1823	0.09	2000	
As	75	2	He	2.174	2.174	3.80	2116	0.10	2000	
Se	78	2	He	1.383	1.383	39.46	521	0.27	2000	
B	11	1	nogas	-6.890	-6.890	-49.73	187504	0.00	2000	

Sample Report

Si	28	1	nogas	31.604	31.604	121.11	4355648	0.00	2000	
Ca	43	1	nogas	198.419	198.419	4.60	5788	3.43	200000	
Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Ca	44	1	nogas	191.914	191.914	0.63	108745	0.18	200000	
Fe	56	1	nogas	196.258	196.258	8.31	4831162	0.00	200000	
Se	77	1	nogas	11.921	11.921	53.84	10923	0.11	2000	
Se	82	1	nogas	1.717	1.717	36.77	537	0.32	2000	
Mo	95	1	nogas	2.073	2.073	3.13	7272	0.03	2000	
Sn	118	1	nogas	1.981	1.981	7.22	10910	0.02	2000	
Ba	137	1	nogas	2.022	2.022	7.99	5391	0.04	2000	
Sb	121	2	He	1.853	1.853	4.98	6738	0.03	2000	
La	139	1	nogas	-8.404	-8.404	-112.81	63	-13.27	2000	
Au	197	1	nogas	52.220	52.220	175.45	37	142.42	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	321446	2.62	288047	111.59	70	125	
Ge	72	1	nogas	1753122	2.12	1481099	118.37	70	125	
In	115	1	nogas	1392597	5.25	1196447	116.39	70	125	
Bi	209	1	nogas	989429	2.06	847481	116.75	70	125	
Ge	72	2	He	489469	1.99	431431	113.45	70	125	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	251ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:30:04-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Be	9	1	nogas	0.003	319.7	37	83.3	0	ICSA Main CR1 Failed
Na	23	1	nogas	101258.675	0.5	1126263225	1.5	0	
Mg	24	1	nogas	98600.288	2.9	746919083	2.3	0	
Al	27	1	nogas	91468.643	2.5	917045266	0.9	0	
K	39	1	nogas	96322.570	0.5	1157600593	1.8	0	
Ti	47	1	nogas	1969.537	2.5	2110997	1.3	0	
V	51	1	nogas	2.174	13.0	151301	4.5	0	ICSA Main CR1 Failed
Cr	52	1	nogas	0.992	7.4	27895	1.5	0	ICSA Main CR1 Failed
Mn	55	1	nogas	0.012	405.8	20635	2.3	0	ICSA Main CR1 Failed
Co	59	1	nogas	0.120	12.1	1933	11.6	0	ICSA Main CR1 Failed
Ni	60	1	nogas	0.942	2.7	2537	2.6	0	ICSA Main CR1 Failed
Cu	63	1	nogas	1.376	0.7	12691	1.3	0	ICSA Main CR1 Failed
Zn	66	1	nogas	1.458	4.8	3284	5.4	0	ICSA Main CR1 Failed
As	75	1	nogas	6.167	10.8	44287	3.4	0	
Sr	88	1	nogas	0.887	0.7	16871	1.5	0	ICSA Main CR1 Failed
Ag	107	1	nogas	0.029	4.6	353	3.3	0	ICSA Main CR1 Failed
Cd	111	1	nogas	0.885	9.9	1433	10.6	0	ICSA Main CR1 Failed
Sb	121	1	nogas	-0.094	-14.2	793	11.6	0	ICSA Main CR1 Failed
Tl	205	1	nogas	0.014	16.9	287	10.7	0	ICSA Main CR1 Failed
Pb	208	1	nogas	0.089	3.8	1460	3.1	0	ICSA Main CR1 Failed
[Pb]	206	1	nogas	0.112	4.1	480	4.2	0	ICSA Main CR1 Failed
[Pb]	207	1	nogas	0.075	35.1	290	27.4	0	ICSA Main CR1 Failed
Na	23	2	He	95314.731	1.1	87161392	2.0	0	
Mg	24	2	He	94942.072	1.6	49151663	2.6	0	
Al	27	2	He	93412.731	0.9	28129138	1.9	0	
K	39	2	He	108237.786	0.7	61785877	0.7	0	
Ca	43	2	He	94515.904	1.8	162774	0.9	0	
Ca	44	2	He	98178.098	5.9	2806520	5.3	0	
V	51	2	He	0.183	9.9	2931	1.9	0	ICSA Main CR1 Failed
Cr	52	2	He	0.178	39.3	3087	8.6	0	ICSA Main CR1 Failed
Mn	55	2	He	0.133	13.6	1723	2.3	0	ICSA Main CR1 Failed
Fe	56	2	He	95323.749	0.4	353307781	0.5	0	
Co	59	2	He	0.025	9.8	213	7.2	0	ICSA Main CR1 Failed
Ni	60	2	He	-0.010	-732.6	433	23.6	0	ICSA Main CR1 Failed
Cu	63	2	He	0.298	29.5	3840	8.3	0	ICSA Main CR1 Failed
Zn	66	2	He	0.272	32.7	563	13.6	0	ICSA Main CR1 Failed
As	75	2	He	0.187	4.8	326	3.1	0	ICSA Main CR1 Failed
Se	78	2	He	-0.582	-52.1	367	6.0	0	ICSA Main CR1 Failed
B	11	1	nogas	-13.457	-19.9	158861	1.5	0	ICSA Main CR1 Failed
Si	28	1	nogas	-35.915	-23.0	3826188	1.0	0	ICSA Main CR1 Failed
Ca	43	1	nogas	93631.987	1.4	2039866	2.6	0	
Ca	44	1	nogas	93762.916	3.0	32984075	1.7	0	
Fe	56	1	nogas	95746.762	2.1	1316098796	0.6	0	
Se	77	1	nogas	43.683	3.2	14386	1.8	0	
Se	82	1	nogas	-0.039	-1083.8	267	20.7	0	ICSA Main CR1 Failed
Mo	95	1	nogas	1988.883	1.8	6484091	2.7	0	
Sn	118	1	nogas	0.081	14.1	1163	3.3	0	ICSA Main CR1 Failed
Ba	137	1	nogas	0.077	35.9	357	18.7	0	ICSA Main CR1 Failed
Sb	121	2	He	-0.049	-3.5	347	1.7	0	ICSA Main CR1 Failed

Interference Check Solution A (ICS-A) Report

P	31	1	nogas	96865.129	1.5	78132454	1.1	0	
La	139	1	nogas	66.553	11.0	277	9.1	0	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	291380	1.79	288047	101.16	70	125	
Ge	72	1	nogas	1658790	1.82	1481099	112.00	70	125	
In	115	1	nogas	1271585	1.43	1196447	106.28	70	125	
Bi	209	1	nogas	916534	3.61	847481	108.15	70	125	
Ge	72	2	He	461333	0.95	431431	106.93	70	125	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	252ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\060
Acq Date Time	2018-06-06T00:32:07-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	198CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Be	9	1	nogas	101.595	2.587	252578	0.61	100	101.6	80	120	
Na	23	1	nogas	107216.172	0.571	1202344060	1.08	100	107216.2	80	120	ICSB Main CR1 Failed
Mg	24	1	nogas	104667.813	2.418	799450168	1.22	100	104667.8	80	120	ICSB Main CR1 Failed
Al	27	1	nogas	88649.180	2.526	894647000	1.42	100	88649.2	80	120	ICSB Main CR1 Failed
K	39	1	nogas	103814.688	0.469	1255435895	1.82	100	103814.7	80	120	ICSB Main CR1 Failed
Ti	47	1	nogas	2087.994	1.634	2252822	0.70	100	2088.0	80	120	
V	51	1	nogas	100.630	2.850	1661112	2.77	100	100.6	80	120	
Cr	52	1	nogas	93.034	2.486	1208462	0.82	100	93.0	80	120	
Mn	55	1	nogas	99.372	1.988	1631797	0.69	100	99.4	80	120	
Co	59	1	nogas	98.094	5.230	1279257	3.27	100	98.1	80	120	
Ni	60	1	nogas	98.088	2.933	281541	0.96	100	98.1	80	120	
Cu	63	1	nogas	97.572	2.399	680847	0.68	100	97.6	80	120	
Zn	66	1	nogas	100.973	1.538	225825	0.63	100	101.0	80	120	
As	75	1	nogas	107.710	2.839	332595	1.23	100	107.7	80	120	
Sr	88	1	nogas	104.049	2.797	1900738	3.33	100	104.0	80	120	
Ag	107	1	nogas	93.509	3.196	780173	1.74	100	93.5	80	120	
Cd	111	1	nogas	101.371	3.889	170095	2.28	100	101.4	80	120	
Sb	121	1	nogas	98.321	2.765	760318	0.86	100	98.3	80	120	
Tl	205	1	nogas	92.699	2.074	1050762	1.46	100	92.7	80	120	
Pb	208	1	nogas	112.842	1.246	1514480	1.25	100	112.8	80	120	
U	238	1	nogas	108.652	2.087	1600668	3.13	100	108.7	80	120	
[Pb]	206	1	nogas	99.036	4.119	368243	3.26	100	99.0	80	120	
[Pb]	207	1	nogas	100.280	3.059	336491	2.06	100	100.3	80	120	
Na	23	2	He	105763.404	2.260	96713282	2.68	100	105763.4	80	120	
Mg	24	2	He	104376.628	1.260	54037816	1.45	100	104376.6	80	120	
Al	27	2	He	92734.550	1.571	27926151	1.40	100	92734.6	80	120	ICSB Main CR1 Failed
K	39	2	He	118701.470	1.918	67744876	1.91	100	118701.5	80	120	
Ca	43	2	He	104022.168	1.076	179184	1.06	100	104022.2	80	120	
Ca	44	2	He	106752.440	4.789	3052577	4.56	100	106752.4	80	120	
V	51	2	He	99.933	0.891	391645	1.45	100	99.9	80	120	
Cr	52	2	He	96.658	2.582	408129	1.85	100	96.7	80	120	
Mn	55	2	He	100.403	1.304	306512	0.82	100	100.4	80	120	
Fe	56	2	He	106809.510	1.654	395912727	1.03	100	106809.5	80	120	
Co	59	2	He	100.754	1.652	545694	1.88	100	100.8	80	120	
Ni	60	2	He	99.123	2.027	135603	2.46	100	99.1	80	120	
Cu	63	2	He	100.030	1.149	344310	0.51	100	100.0	80	120	
Zn	66	2	He	104.367	1.512	84849	1.05	100	104.4	80	120	
As	75	2	He	104.765	2.510	88143	1.78	100	104.8	80	120	
Se	78	2	He	103.966	3.246	6993	2.37	100	104.0	80	120	
B	11	1	nogas	494.042	4.673	910649	1.57	100	494.0	80	120	
Si	28	1	nogas	5821.694	2.638	29785757	1.07	100	5821.7	80	120	ICSB Main CR1 Failed
Ca	43	1	nogas	103294.808	2.147	2264688	2.18	100	103294.8	80	120	
Ca	44	1	nogas	103199.898	3.081	36536026	1.16	100	103199.9	80	120	
Fe	56	1	nogas	104682.923	1.052	1448385032	1.07	100	104682.9	80	120	
Se	77	1	nogas	138.075	7.656	26590	3.17	100	138.1	80	120	
Se	82	1	nogas	103.037	2.500	14423	4.20	100	103.0	80	120	
Mo	95	1	nogas	2151.110	4.085	7055673	2.59	100	2151.1	80	120	ICSB Main CR1 Failed
Sn	118	1	nogas	99.061	1.089	481613	0.72	100	99.1	80	120	
Ba	137	1	nogas	102.069	2.622	251770	0.95	100	102.1	80	120	
Sb	121	2	He	103.827	1.553	328441	2.10	100	103.8	80	120	
La	139	1	nogas	158.643	23.545	570	18.48	100	158.6	80	120	

QC ISTD Table

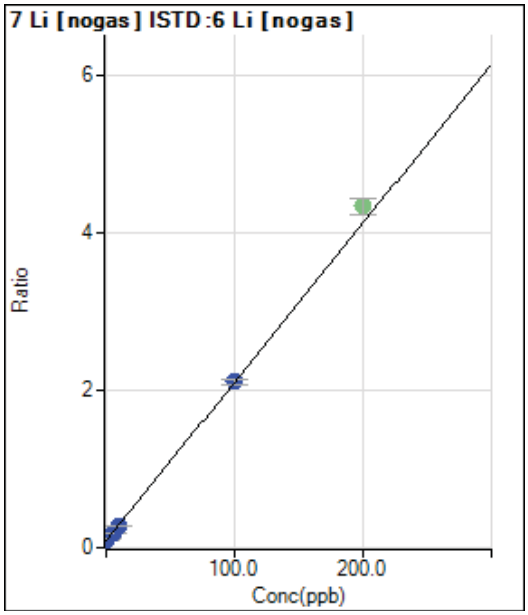
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	nogas	259982	2.35	288047	90.26	70	125	
Ge	72	1	nogas	1669715	2.02	1481099	112.73	70	125	
In	115	1	nogas	1331254	1.71	1196447	111.27	70	125	
Bi	209	1	nogas	961163	1.07	847481	113.41	70	125	
Ge	72	2	He	461396	0.72	431431	106.95	70	125	

Calibration for 015_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\060518B.b\
Analysis File: 060518B.batch.bin
DA Date-Time: 2018-06-05 16:29:20
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	004CALB.d	CAL BLK	2018-06-05 11:55:56
2	005CALS.d	2/10/200	2018-06-05 11:57:55
3	006CALS.d	5/25/500	2018-06-05 11:59:55
4	007CALS.d	10/50/1000	2018-06-05 12:01:56
5	008CALS.d	100/500/10K	2018-06-05 12:03:55
6	009CALS.d	200/1000/20K	2018-06-05 12:05:53
7			

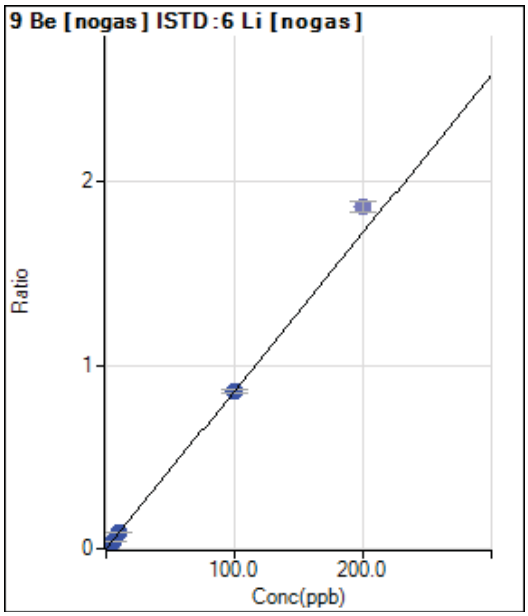
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	27440.15	0.0868	P	1.9
2	☐	2.000	1.978	40810.56	0.1266	P	2.9
3	☐	5.000	4.735	57754.34	0.1821	P	1.0
4	☐	10.000	9.586	87958.97	0.2798	P	0.5
5	☐	100.000	100.055	656135.56	2.1021	P	2.8
6	☑	200.000		1253072.58	4.3305	A	4.8
7	☐	1.000					

y = 0.0201 * x + 0.0868
R = 1.0000
DL = 0.2469
BEC = 4.308

Weight: <None>
Min Conc: <None>

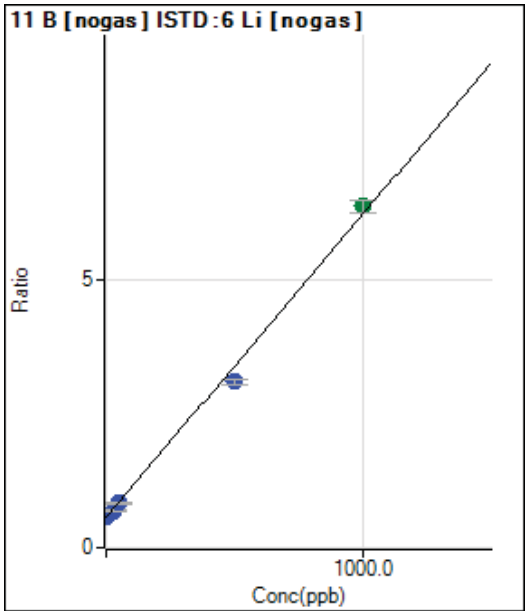


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	41.5
2	☐	2.000	1.972	5500.87	0.0171	P	6.6
3	☐	5.000	4.881	13348.17	0.0421	P	6.1
4	☐	10.000	9.941	26915.83	0.0857	P	3.8
5	☐	100.000	100.012	268544.36	0.8606	P	2.0
6	☑	200.000		538599.07	1.8609	P	3.3
7	☐	1.000					

y = 0.0086 * x + 1.2546E-004
R = 1.0000
DL = 0.01815
BEC = 0.01458

Weight: <None>
Min Conc: <None>

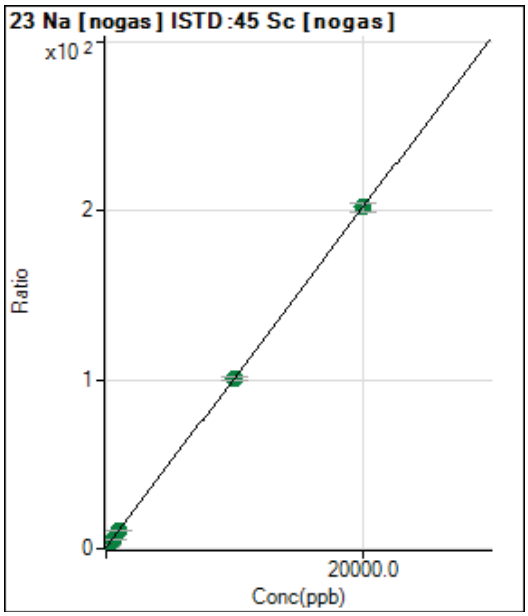
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	179419.80	0.5673	P	1.1
2	☐	10.000	9.050	199628.02	0.6186	P	0.8
3	☐	25.000	21.098	217691.47	0.6869	P	5.2
4	☐	50.000	46.523	261124.31	0.8310	P	2.2
5	☐	500.000	447.652	968736.24	3.1050	P	3.6
6	☐	1000.000	1026.455	1848240.91	6.3862	A	3.7
7	☐	5.000					

y = 0.0057 * x + 0.5673
R = 0.9981
DL = 3.37
BEC = 100.1

Weight: <None>
Min Conc: <None>

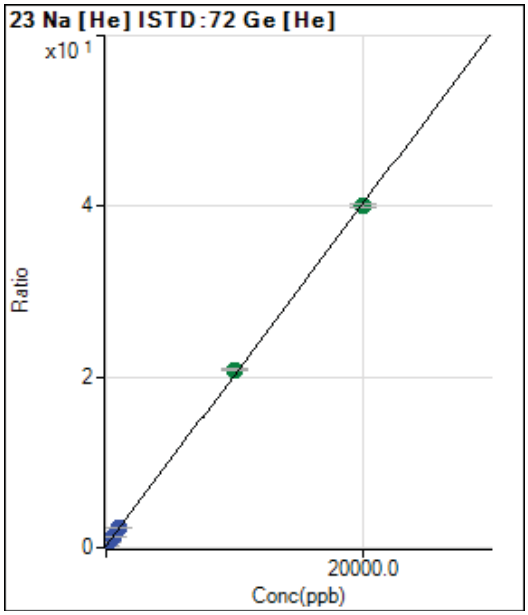


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	724226.64	0.6059	P	1.8
2	☐	200.000	188.844	3157416.22	2.5032	A	12.2
3	☐	500.000	509.499	6882835.05	5.7247	A	1.2
4	☐	1000.000	1031.448	13161396.65	10.9687	A	3.9
5	☐	10000.00	9946.542	120665090.2	100.537	A	2.5
6	☐	20000.00	20025.031	237327338.6	201.794	A	2.7
7	☐	100.000					

y = 0.0100 * x + 0.6059
R = 1.0000
DL = 3.256
BEC = 60.31

Weight: <None>
Min Conc: <None>

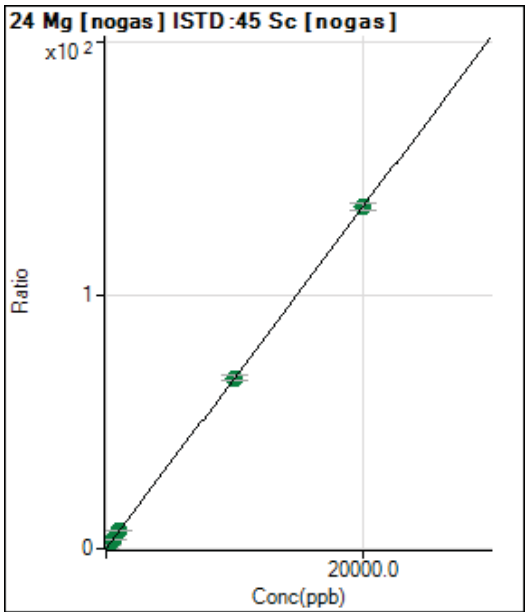
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	108326.20	0.2224	P	1.5
2	☐	200.000	211.642	313092.55	0.6464	P	2.7
3	☐	500.000	523.695	616151.46	1.2717	P	1.1
4	☐	1000.000	1048.698	1129107.72	2.3237	P	1.0
5	☐	10000.00	10280.549	9863445.89	20.8220	A	1.0
6	☐	20000.00	19856.582	18639900.14	40.0100	A	1.1
7	☐	100.000					

y = 0.0020 * x + 0.2224
R = 0.9999
DL = 5.107
BEC = 111

Weight: <None>
Min Conc: <None>

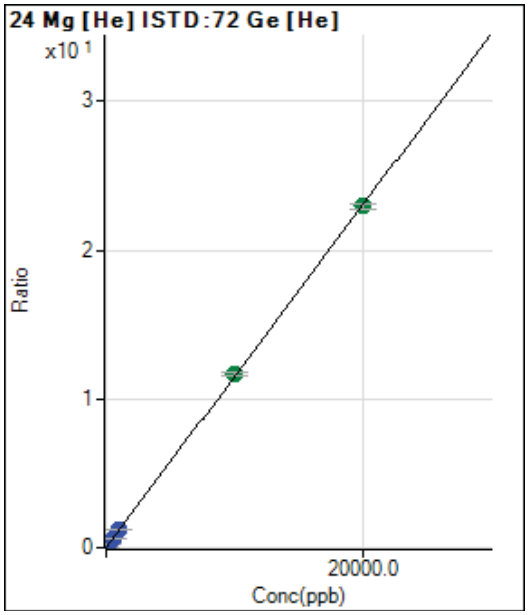


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5735.11	0.0048	P	12.0
2	☐	200.000	198.106	1689367.06	1.3400	A	13.0
3	☐	500.000	528.592	4289140.85	3.5674	A	2.8
4	☐	1000.000	1055.752	8544561.39	7.1204	A	3.3
5	☐	10000.00	10001.101	80900199.73	67.4110	A	2.6
6	☐	20000.00	19995.966	158509345.2	134.775	A	2.1
7	☐	100.000					

y = 0.0067 * x + 0.0048
R = 1.0000
DL = 0.2553
BEC = 0.7111

Weight: <None>
Min Conc: <None>

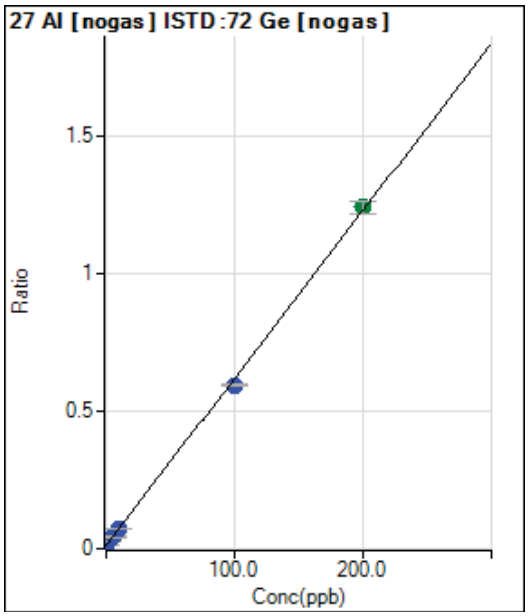
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	580.02	0.0012	P	8.3
2	☐	200.000	205.588	115240.86	0.2379	P	2.7
3	☐	500.000	512.474	286478.64	0.5913	P	1.8
4	☐	1000.000	1041.604	583408.22	1.2007	P	1.2
5	☐	10000.00	10132.795	5528051.38	11.6699	A	1.3
6	☐	20000.00	19931.154	10692491.09	22.9534	A	1.8
7	☐	100.000					

y = 0.0012 * x + 0.0012
R = 1.0000
DL = 0.2572
BEC = 1.033

Weight: <None>
Min Conc: <None>

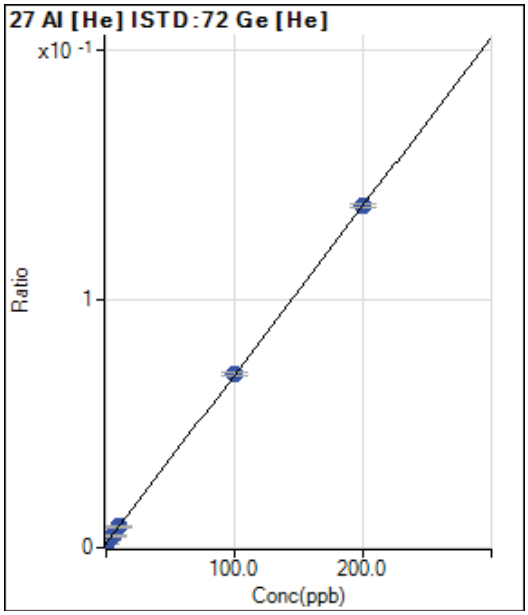


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	19149.94	0.0110	P	6.4
2	☐	2.000	2.476	45943.59	0.0261	P	18.9
3	☐	5.000	5.282	73686.32	0.0431	P	5.4
4	☐	10.000	10.431	128151.66	0.0744	P	1.5
5	☐	100.000	95.678	1035330.32	0.5923	P	1.0
6	☐	200.000	202.128	2033787.63	1.2391	A	4.0
7	☐	1.000					

y = 0.0061 * x + 0.0110
R = 0.9997
DL = 0.3472
BEC = 1.813

Weight: <None>
Min Conc: <None>

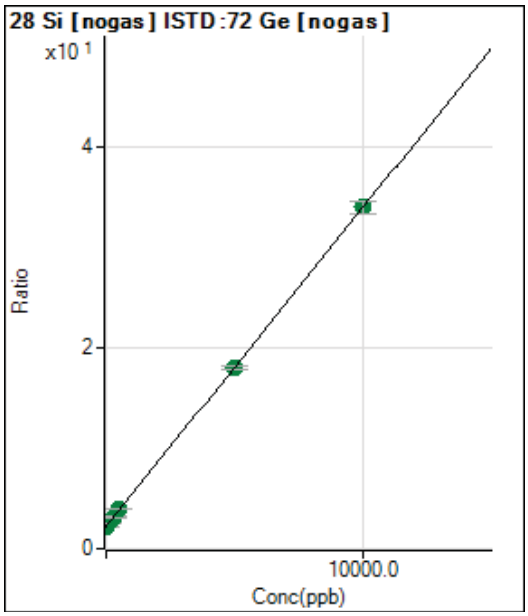
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.304	696.69	0.0014	P	3.4
2	☐	2.000	2.378	1573.42	0.0033	P	15.5
3	☐	5.000	4.560	2293.51	0.0047	P	6.4
4	☐	10.000	10.239	4170.53	0.0086	P	7.2
5	☐	100.000	100.264	33012.52	0.0697	P	2.4
6	☐	200.000	199.864	63978.10	0.1373	P	1.1
7	☐	1.000					

y = 6.7886E-004 * x + 0.0016
R = 1.0000
DL = 0.2161
BEC = 2.41

Weight: <None>
Min Conc: <None>

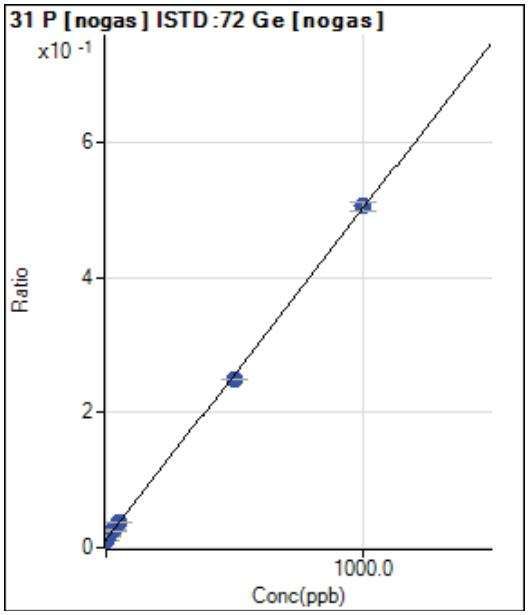


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3864537.76	2.2223	A	1.8
2	☐	100.000	101.820	4519101.39	2.5454	A	3.9
3	☐	250.000	270.416	5264029.30	3.0806	A	6.6
4	☐	500.000	536.237	6760364.69	3.9243	A	1.2
5	☐	5000.000	4970.411	31459175.36	17.9985	A	1.6
6	☐	10000.00	10012.454	55814232.50	34.0022	A	3.4
7	☐	5.000					

y = 0.0032 * x + 2.2223
R = 1.0000
DL = 37.23
BEC = 700.1

Weight: <None>
Min Conc: <None>

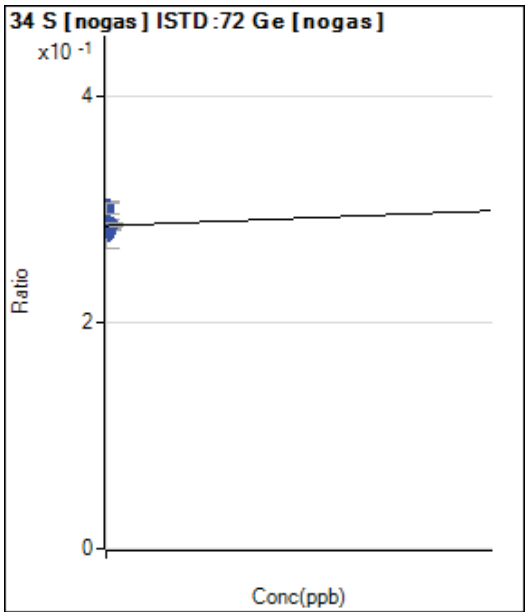
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20504.68	0.0118	P	2.5
2	☐	10.000	10.426	29917.31	0.0169	P	8.5
3	☐	25.000	28.001	43567.24	0.0255	P	7.1
4	☐	50.000	53.578	65506.92	0.0380	P	0.2
5	☐	500.000	484.241	435072.58	0.2489	P	1.0
6	☐	1000.000	1007.621	829375.12	0.5052	P	2.4
7	☐	5.000					

y = 4.8966E-004 * x + 0.0118
R = 0.9998
DL = 1.787
BEC = 24.07

Weight: <None>
Min Conc: <None>

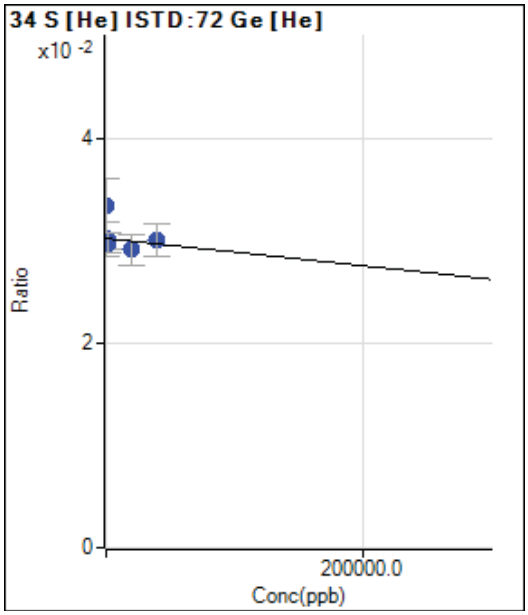


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	496946.33	0.2857	P	1.0
2	☐	400.000	-1748888.73	493791.91	0.2790	P	9.3
3	☐	1000.000	4217703.78	516619.85	0.3021	P	3.6
4	☐	2000.000	3978581.10	518771.74	0.3012	P	3.3
5	☐	20000.00	-901160.502	493381.47	0.2823	P	0.5
6	☐	40000.00	213826.489	470550.56	0.2866	P	0.9
7	☐	100.000					

y = 3.8773E-009 * x + 0.2857
R = -0.2847
DL = 2.272E+06
BEC = 7.37E+07

Weight: <None>
Min Conc: <None>

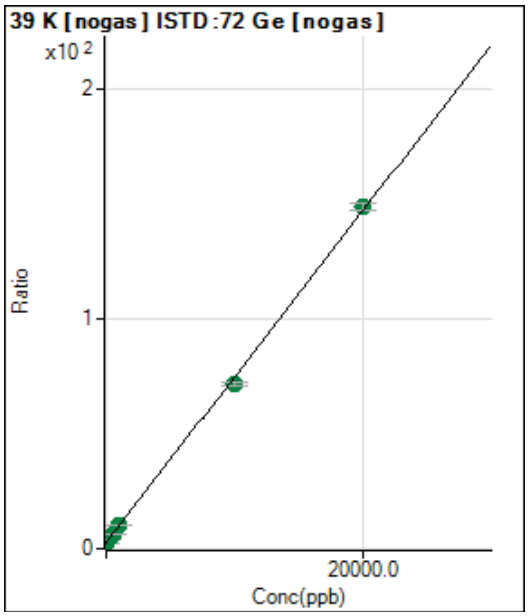
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14775.53	0.0303	P	11.2
2	☐	400.000	-234670.395	16209.64	0.0335	P	15.9
3	☐	1000.000	17967.587	14575.09	0.0301	P	4.9
4	☐	2000.000	34798.004	14508.46	0.0299	P	6.8
5	☐	20000.00	83210.299	13840.77	0.0292	P	10.2
6	☐	40000.00	8681.464	14074.81	0.0302	P	10.6
7	☐	100.000					

y = -1.3413E-008 * x + 0.0303
R = -0.3243
DL = -7.58E+05
BEC = -2.26E+06

Weight: <None>
Min Conc: <None>

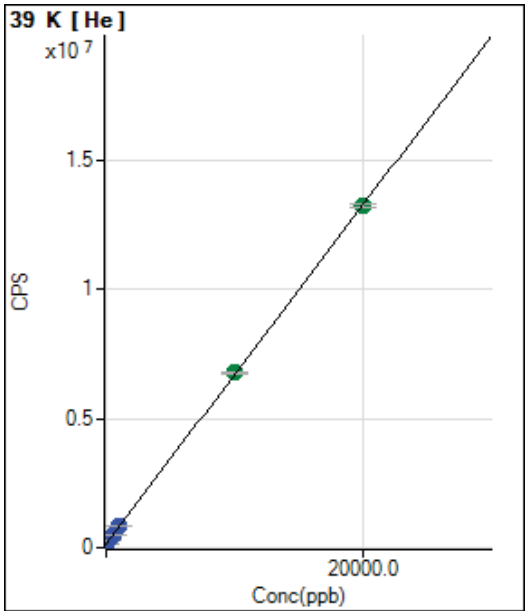


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4581642.16	2.6343	A	0.4
2	☐	200.000	182.115	6986310.05	3.9467	A	9.2
3	☐	500.000	520.471	10918577.33	6.3849	A	3.4
4	☐	1000.000	1033.099	17363665.49	10.0789	A	0.4
5	☐	10000.00	9562.765	125040781.9	71.5441	A	2.5
6	☐	20000.00	20216.630	243493263.7	148.316	A	2.1
7	☐	100.000					

y = 0.0072 * x + 2.6343
R = 0.9997
DL = 4.568
BEC = 365.6

Weight: <None>
Min Conc: <None>

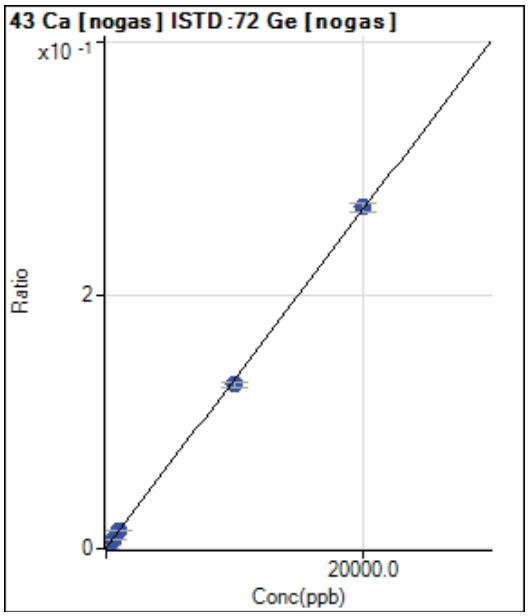
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	150677.44		P	0.7
2	☐	200.000	206.572	285926.33		P	0.4
3	☐	500.000	520.799	491659.98		P	1.1
4	☐	1000.000	1060.671	845129.60		P	1.0
5	☐	10000.00	10109.724	6769810.52		A	1.0
6	☐	20000.00	19941.519	13206974.80		A	1.1
7	☐	100.000					

y = 654.7293 * x + 150677.4367
R = 1.0000
DL = 4.804
BEC = 230.1

Weight: <None>
Min Conc: <None>

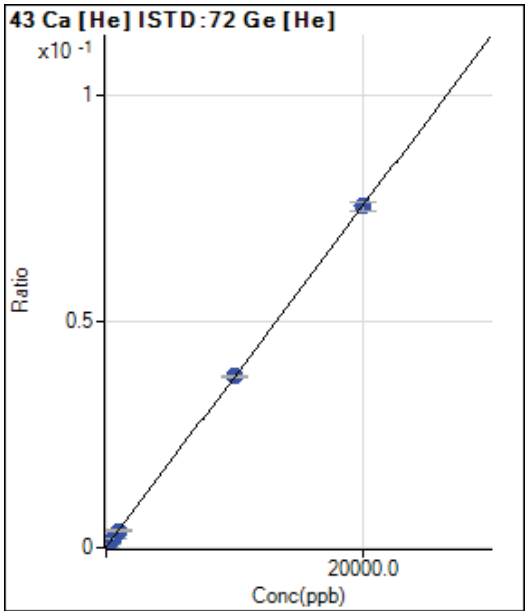


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1176.73	0.0007	P	10.6
2	☐	200.000	191.330	5724.31	0.0032	P	8.1
3	☐	500.000	513.966	12884.61	0.0075	P	6.2
4	☐	1000.000	1051.945	25360.78	0.0147	P	0.4
5	☐	10000.00	9675.325	226934.14	0.1298	P	3.4
6	☐	20000.00	20159.478	442942.47	0.2698	P	2.5
7	☐	100.000					

y = 1.3351E-005 * x + 6.7706E-004
R = 0.9998
DL = 16.17
BEC = 50.71

Weight: <None>
Min Conc: <None>

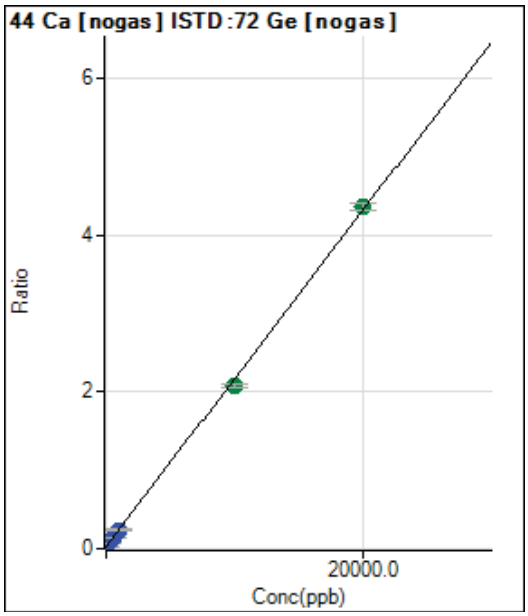
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	44.8
2	☐	200.000	205.829	416.68	0.0009	P	3.0
3	☐	500.000	507.974	970.04	0.0020	P	4.4
4	☐	1000.000	947.071	1780.12	0.0037	P	8.1
5	☐	10000.00	10026.907	17985.63	0.0380	P	1.3
6	☐	20000.00	19988.935	35213.42	0.0756	P	2.8
7	☐	100.000					

y = 3.7780E-006 * x + 8.2436E-005
R = 1.0000
DL = 29.35
BEC = 21.82

Weight: <None>
Min Conc: <None>

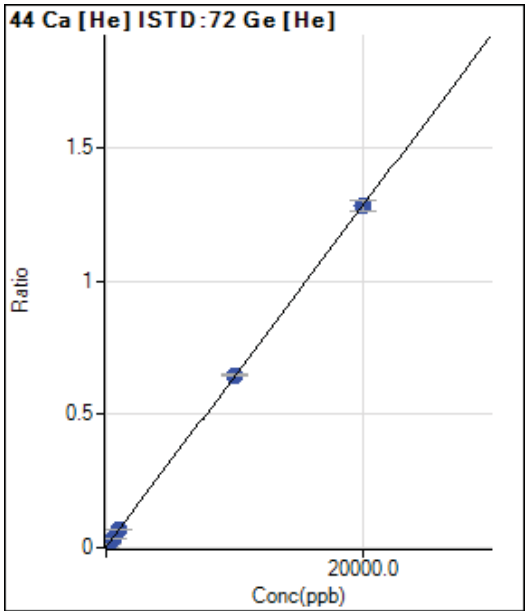


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	44396.09	0.0255	P	0.4
2	☐	200.000	189.216	116909.73	0.0661	P	10.0
3	☐	500.000	510.222	230549.66	0.1348	P	4.5
4	☐	1000.000	1010.087	416880.51	0.2420	P	1.7
5	☐	10000.00	9612.390	3644359.74	2.0851	A	2.2
6	☐	20000.00	20193.153	7144966.98	4.3522	A	2.2
7	☐	100.000					

y = 2.1426E-004 * x + 0.0255
R = 0.9997
DL = 1.479
BEC = 119.1

Weight: <None>
Min Conc: <None>

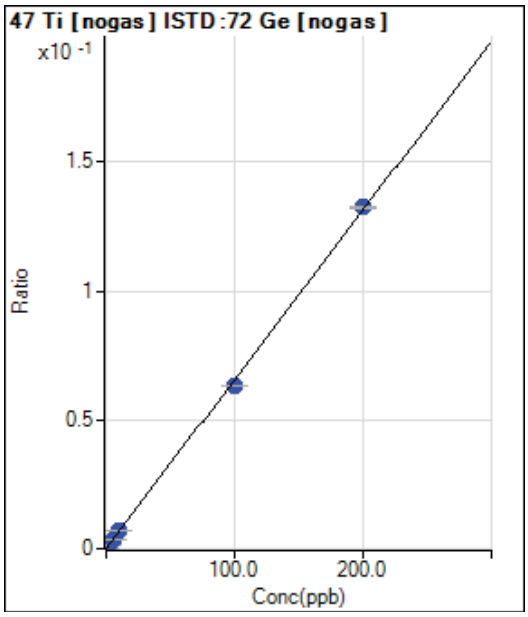
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1213.40	0.0025	P	16.9
2	☐	200.000	209.738	7705.05	0.0159	P	4.5
3	☐	500.000	518.900	17284.85	0.0357	P	3.4
4	☐	1000.000	1036.873	33433.64	0.0688	P	3.2
5	☐	10000.00	10057.621	305932.18	0.6458	P	1.3
6	☐	20000.00	19968.776	596074.63	1.2798	P	3.1
7	☐	100.000					

y = 6.3966E-005 * x + 0.0025
R = 1.0000
DL = 19.7
BEC = 38.93

Weight: <None>
Min Conc: <None>

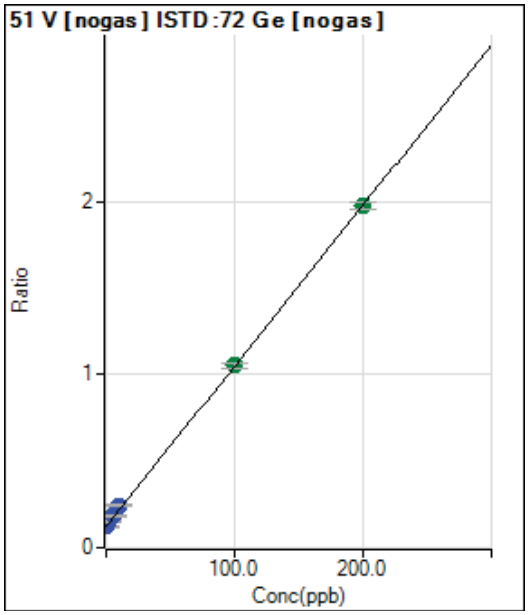


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	166.67	0.0001	P	30.6
2	☐	2.000	1.996	2490.21	0.0014	P	16.0
3	☐	5.000	5.093	5864.37	0.0034	P	10.6
4	☐	10.000	10.711	12267.57	0.0071	P	4.1
5	☐	100.000	96.105	110306.46	0.0631	P	0.8
6	☐	200.000	201.910	217541.41	0.1325	P	0.6
7	☐	1.000					

y = 6.5565E-004 * x + 9.5810E-005
R = 0.9997
DL = 0.134
BEC = 0.1461

Weight: <None>
Min Conc: <None>

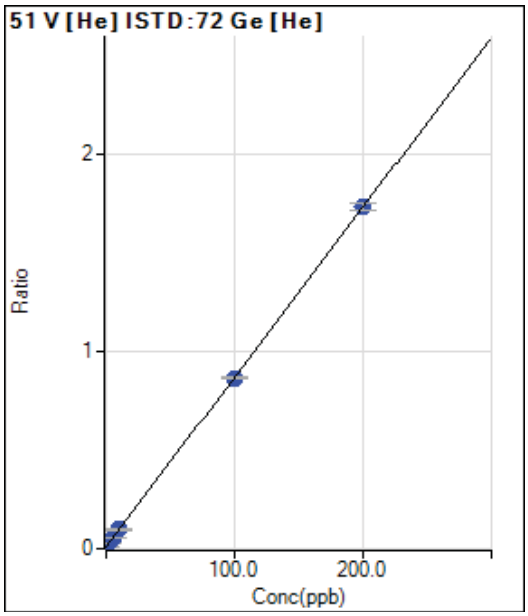
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	212532.61	0.1222	P	4.7
2	☐	2.000	2.977	264960.83	0.1498	P	11.3
3	☐	5.000	6.875	318014.71	0.1860	P	5.3
4	☐	10.000	13.231	422176.52	0.2450	P	1.5
5	☐	100.000	100.439	1843829.53	1.0547	A	3.0
6	☐	200.000	199.563	3242262.51	1.9749	A	2.1
7	☐	1.000					

y = 0.0093 * x + 0.1222
R = 0.9999
DL = 1.854
BEC = 13.16

Weight: <None>
Min Conc: <None>

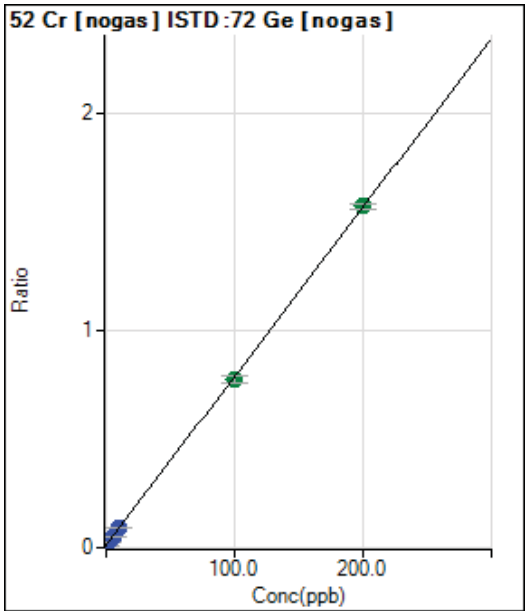


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.074	3999.77	0.0082	P	2.6
2	☐	2.000	1.975	12509.54	0.0258	P	2.5
3	☐	5.000	5.063	25377.23	0.0524	P	1.2
4	☐	10.000	10.242	47081.88	0.0969	P	2.3
5	☐	100.000	99.614	409872.53	0.8653	P	0.9
6	☐	200.000	200.180	805826.85	1.7299	P	2.1
7	☐	1.000					

y = 0.0086 * x + 0.0088
R = 1.0000
DL = 0.07541
BEC = 1.029

Weight: <None>
Min Conc: <None>

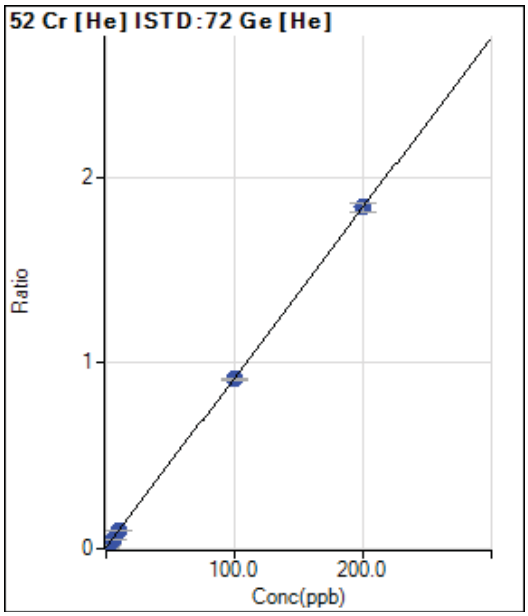
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	19120.13	0.0110	P	5.0
2	☐	2.000	1.908	45699.92	0.0258	P	11.0
3	☐	5.000	5.052	86039.78	0.0503	P	3.5
4	☐	10.000	10.214	155869.70	0.0905	P	1.0
5	☐	100.000	98.411	1358226.00	0.7769	A	3.8
6	☐	200.000	200.783	2583693.35	1.5736	A	1.4
7	☐	1.000					

y = 0.0078 * x + 0.0110
R = 1.0000
DL = 0.2102
BEC = 1.412

Weight: <None>
Min Conc: <None>

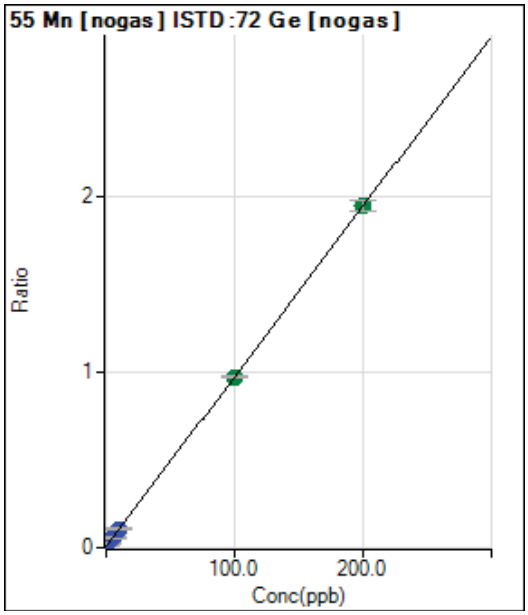


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2436.87	0.0050	P	14.0
2	☐	2.000	1.843	10586.51	0.0219	P	4.4
3	☐	5.000	5.152	25254.14	0.0521	P	0.4
4	☐	10.000	10.136	47477.71	0.0977	P	3.0
5	☐	100.000	99.413	433107.95	0.9144	P	1.0
6	☐	200.000	200.284	855680.38	1.8370	P	2.5
7	☐	1.000					

y = 0.0091 * x + 0.0050
R = 1.0000
DL = 0.2297
BEC = 0.5461

Weight: <None>
Min Conc: <None>

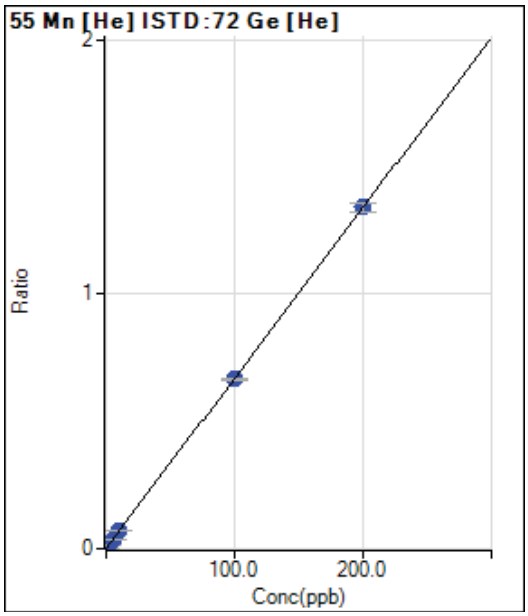
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13308.37	0.0077	P	1.1
2	☐	2.000	1.909	46147.75	0.0261	P	12.2
3	☐	5.000	5.132	97982.28	0.0573	P	3.7
4	☐	10.000	10.355	185678.41	0.1078	P	3.2
5	☐	100.000	99.450	1694533.10	0.9694	A	0.9
6	☐	200.000	200.255	3191444.33	1.9442	A	3.1
7	☐	1.000					

y = 0.0097 * x + 0.0077
R = 1.0000
DL = 0.02719
BEC = 0.7913

Weight: <None>
Min Conc: <None>

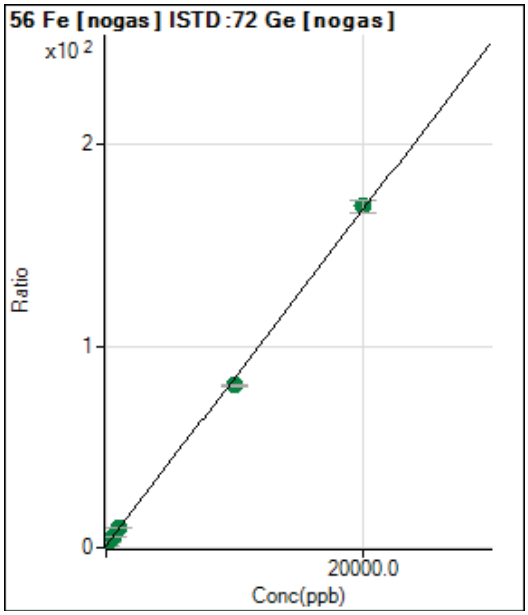


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	426.68	0.0009	P	19.3
2	☐	2.000	2.011	6944.74	0.0143	P	5.0
3	☐	5.000	5.256	17468.50	0.0361	P	2.6
4	☐	10.000	10.260	33794.78	0.0695	P	1.3
5	☐	100.000	99.262	315147.40	0.6652	P	1.4
6	☐	200.000	200.349	625022.73	1.3418	P	2.4
7	☐	1.000					

y = 0.0067 * x + 8.7773E-004
R = 1.0000
DL = 0.07582
BEC = 0.1311

Weight: <None>
Min Conc: <None>

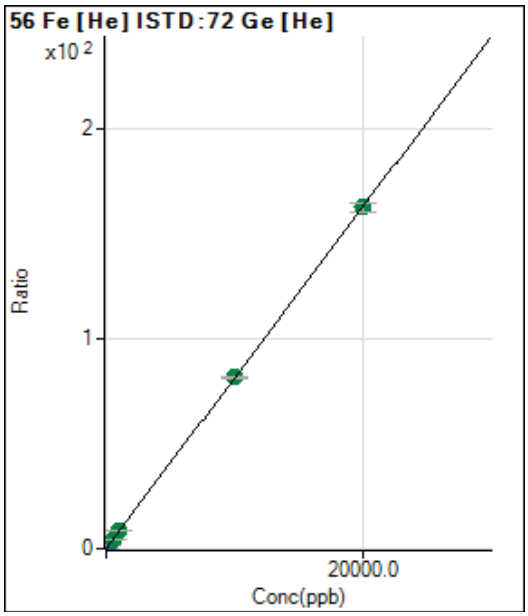
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1771913.84	1.0189	A	1.8
2	☐	200.000	194.448	4666961.95	2.6371	A	9.8
3	☐	500.000	520.101	9143676.77	5.3473	A	4.3
4	☐	1000.000	1036.806	16619288.39	9.6474	A	1.5
5	☐	10000.00	9554.219	140758986.4	80.5312	A	1.3
6	☐	20000.00	20220.603	277888472.8	169.299	A	3.6
7	☐	100.000					

y = 0.0083 * x + 1.0189
R = 0.9996
DL = 6.439
BEC = 122.4

Weight: <None>
Min Conc: <None>

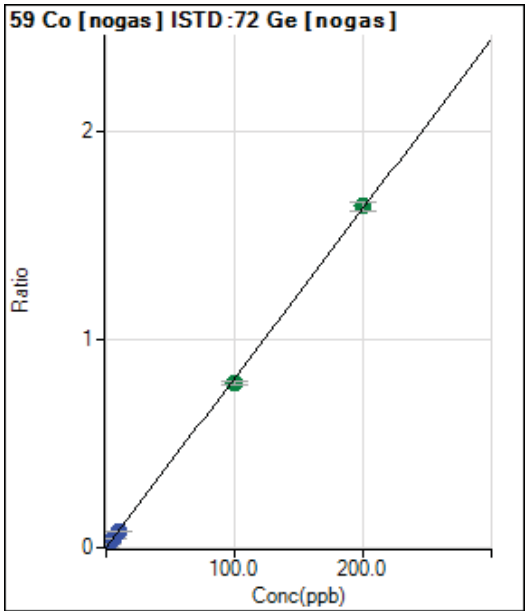


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16370.78	0.0336	P	6.4
2	☐	200.000	198.847	799440.93	1.6506	P	2.3
3	☐	500.000	519.264	2062303.30	4.2561	A	1.2
4	☐	1000.000	1025.169	4066391.92	8.3699	A	2.3
5	☐	10000.00	10013.754	38592276.09	81.4613	A	1.7
6	☐	20000.00	19991.394	75737788.87	162.595	A	2.6
7	☐	100.000					

y = 0.0081 * x + 0.0336
R = 1.0000
DL = 0.7955
BEC = 4.135

Weight: <None>
Min Conc: <None>

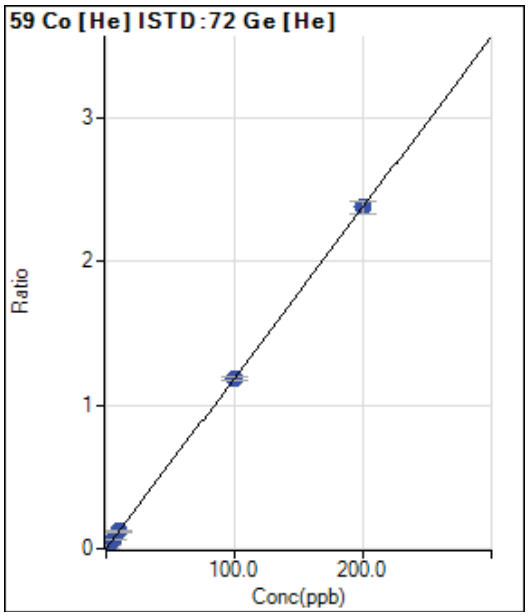
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	310.01	0.0002	P	16.9
2		2.000	1.893	27624.40	0.0156	P	8.7
3		5.000	5.051	70662.47	0.0413	P	3.9
4		10.000	10.036	141138.71	0.0819	P	1.5
5		100.000	97.071	1382403.47	0.7910	A	2.5
6		200.000	201.462	2694632.46	1.6414	A	2.4
7		1.000					

y = 0.0081 * x + 1.7839E-004
R = 0.9998
DL = 0.01111
BEC = 0.0219

Weight: <None>
Min Conc: <None>

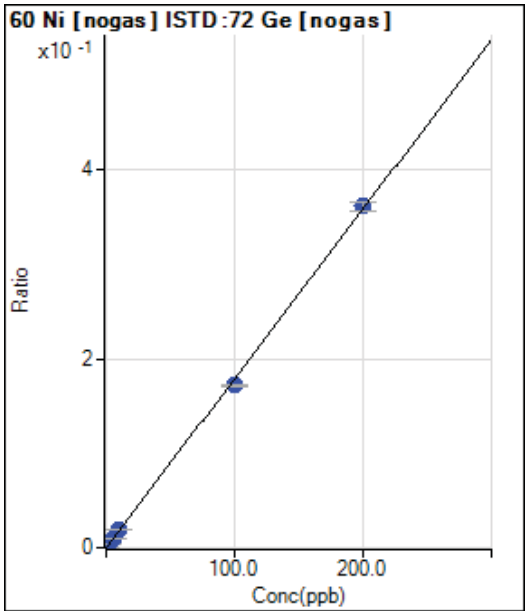


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	73.33	0.0002	P	19.1
2		2.000	2.066	11984.12	0.0247	P	2.7
3		5.000	5.181	29941.32	0.0618	P	1.5
4		10.000	10.217	59135.69	0.1217	P	3.1
5		100.000	99.891	563133.88	1.1888	P	1.7
6		200.000	200.038	1108604.59	2.3804	P	3.9
7		1.000					

y = 0.0119 * x + 1.5022E-004
R = 1.0000
DL = 0.007248
BEC = 0.01262

Weight: <None>
Min Conc: <None>

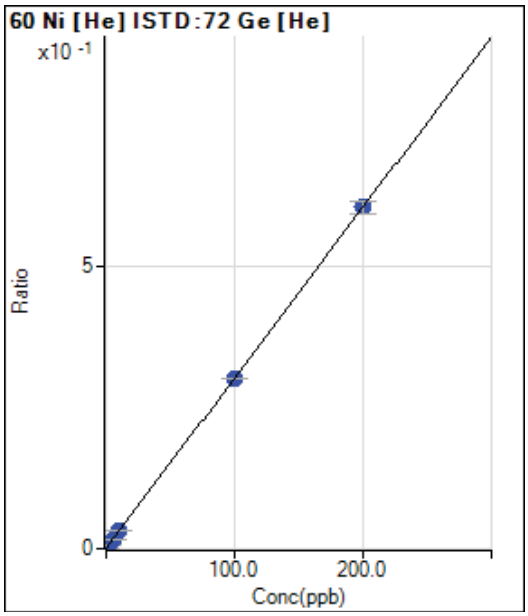
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.405	260.01	0.0001	P	27.3
2	☐	2.000	2.408	6617.94	0.0037	P	11.6
3	☐	5.000	5.446	15726.91	0.0092	P	3.6
4	☐	10.000	10.602	31771.24	0.0184	P	1.9
5	☐	100.000	96.369	301108.29	0.1723	P	1.1
6	☐	200.000	201.770	593216.24	0.3613	P	2.7
7	☐	1.000					

y = 0.0018 * x - 5.7632E-004
R = 0.9997
DL = 0.06841
BEC = -0.3213

Weight: <None>
Min Conc: <None>

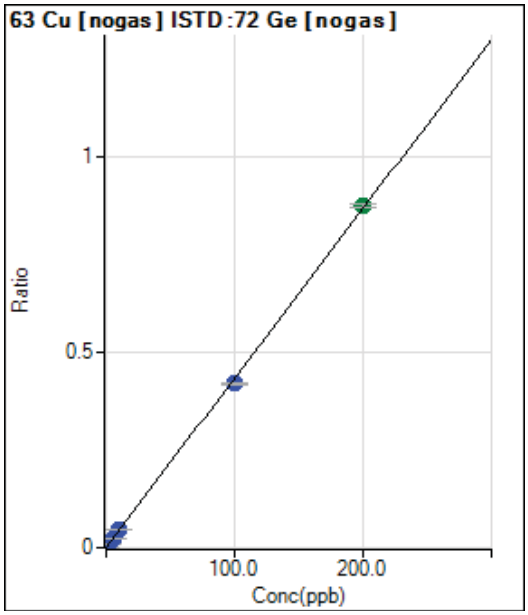


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.026	196.67	0.0004	P	27.4
2	☐	2.000	2.122	3347.03	0.0069	P	8.0
3	☐	5.000	5.071	7671.71	0.0158	P	5.4
4	☐	10.000	10.022	14983.01	0.0308	P	0.5
5	☐	100.000	99.629	143125.79	0.3022	P	1.0
6	☐	200.000	200.181	282533.84	0.6066	P	3.7
7	☐	1.000					

y = 0.0030 * x + 4.8248E-004
R = 1.0000
DL = 0.1098
BEC = 0.1593

Weight: <None>
Min Conc: <None>

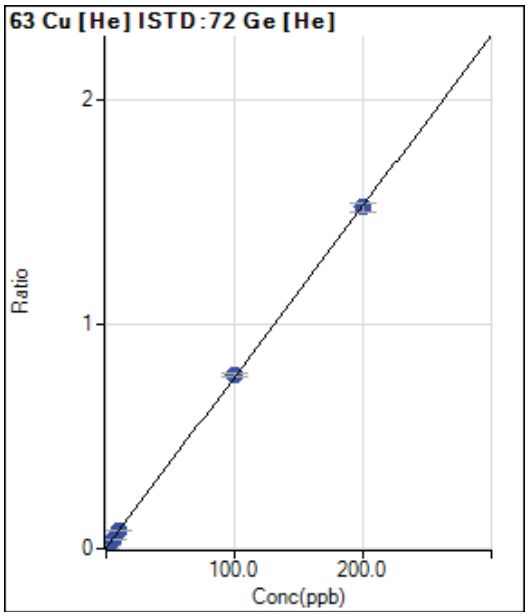
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1226.72	0.0007	P	7.3
2	☐	2.000	1.915	15930.51	0.0090	P	11.3
3	☐	5.000	5.034	38537.37	0.0225	P	3.2
4	☐	10.000	10.324	78347.03	0.0455	P	3.0
5	☐	100.000	96.772	734659.29	0.4203	P	1.2
6	☐	200.000	201.598	1436424.56	0.8748	A	1.2
7	☐	1.000					

y = 0.0043 * x + 7.0569E-004
R = 0.9998
DL = 0.03573
BEC = 0.1628

Weight: <None>
Min Conc: <None>

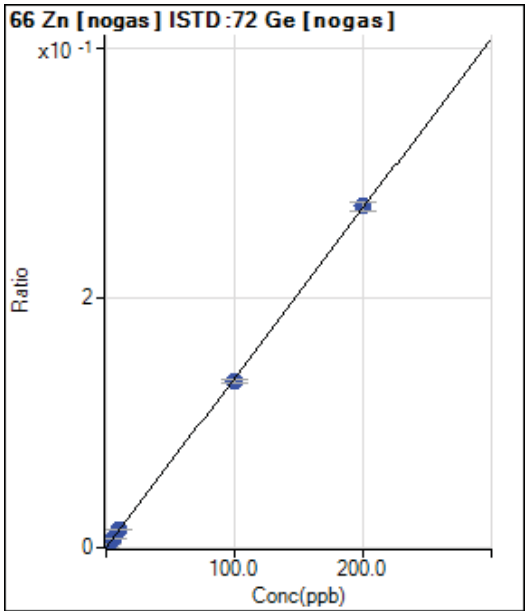


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.319	543.35	0.0011	P	26.6
2	☐	2.000	1.719	8048.55	0.0166	P	4.6
3	☐	5.000	4.827	19494.03	0.0402	P	2.3
4	☐	10.000	10.081	38948.31	0.0802	P	3.9
5	☐	100.000	101.378	366700.36	0.7742	P	2.4
6	☐	200.000	199.314	707400.56	1.5187	P	2.5
7	☐	1.000					

y = 0.0076 * x + 0.0035
R = 1.0000
DL = 0.1173
BEC = 0.4663

Weight: <None>
Min Conc: <None>

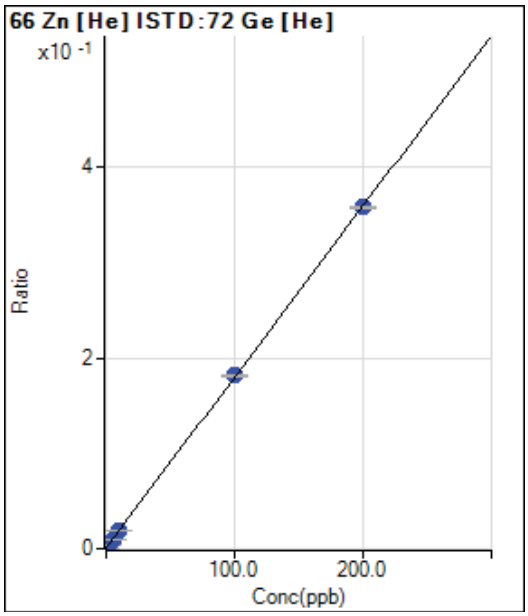
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.320	903.37	0.0005	P	22.8
2	☐	2.000	2.095	5200.82	0.0029	P	5.7
3	☐	5.000	5.354	12587.93	0.0074	P	4.0
4	☐	10.000	10.366	24419.92	0.0142	P	1.0
5	☐	100.000	97.786	232435.50	0.1330	P	2.4
6	☐	200.000	201.079	448877.12	0.2734	P	2.4
7	☐	1.000					

y = 0.0014 * x + 8.4536E-005
R = 0.9999
DL = 0.2605
BEC = 0.0622

Weight: <None>
Min Conc: <None>

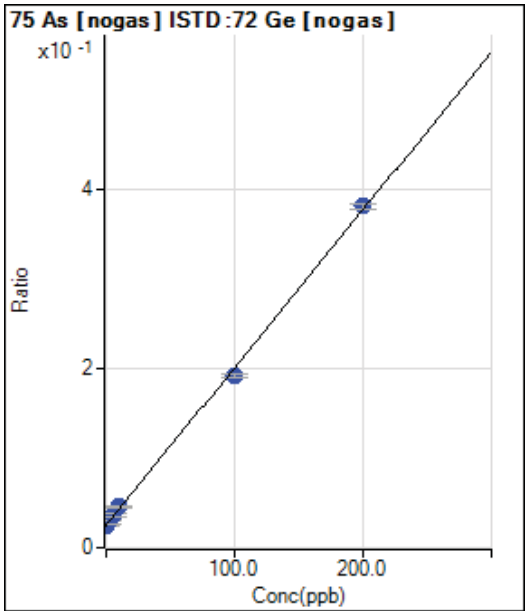


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.196	216.67	0.0004	P	14.5
2	☐	2.000	1.782	1933.47	0.0040	P	4.1
3	☐	5.000	5.019	4744.03	0.0098	P	8.3
4	☐	10.000	9.892	9005.69	0.0185	P	1.3
5	☐	100.000	100.990	86145.40	0.1819	P	0.9
6	☐	200.000	199.512	167028.38	0.3585	P	0.8
7	☐	1.000					

y = 0.0018 * x + 7.9504E-004
R = 1.0000
DL = 0.1073
BEC = 0.4434

Weight: <None>
Min Conc: <None>

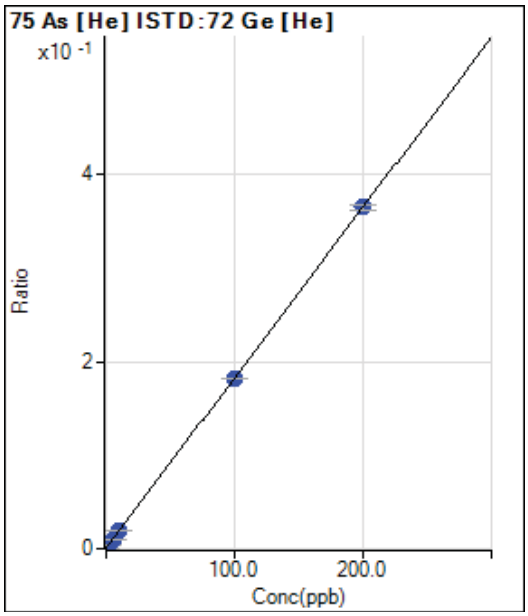
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.584	41804.69	0.0240	P	1.0
2	☐	2.000	1.966	50433.34	0.0285	P	11.4
3	☐	5.000	6.361	61955.26	0.0363	P	6.5
4	☐	10.000	11.830	79050.88	0.0459	P	2.3
5	☐	100.000	95.104	336233.57	0.1924	P	2.4
6	☐	200.000	202.323	625579.11	0.3810	P	1.3
7	☐	1.000					

y = 0.0018 * x + 0.0251
R = 0.9995
DL = 0.3905
BEC = 14.25

Weight: <None>
Min Conc: <None>

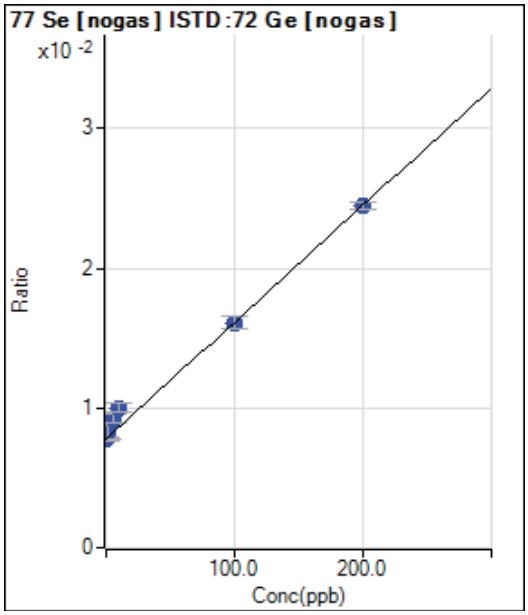


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	286.67	0.0006	P	13.7
2	☐	2.000	1.935	1991.23	0.0041	P	1.5
3	☐	5.000	5.100	4781.76	0.0099	P	3.8
4	☐	10.000	10.209	9314.64	0.0192	P	3.6
5	☐	100.000	99.560	86134.07	0.1818	P	0.3
6	☐	200.000	200.208	170061.03	0.3650	P	1.3
7	☐	1.000					

y = 0.0018 * x + 5.8853E-004
R = 1.0000
DL = 0.1327
BEC = 0.3233

Weight: <None>
Min Conc: <None>

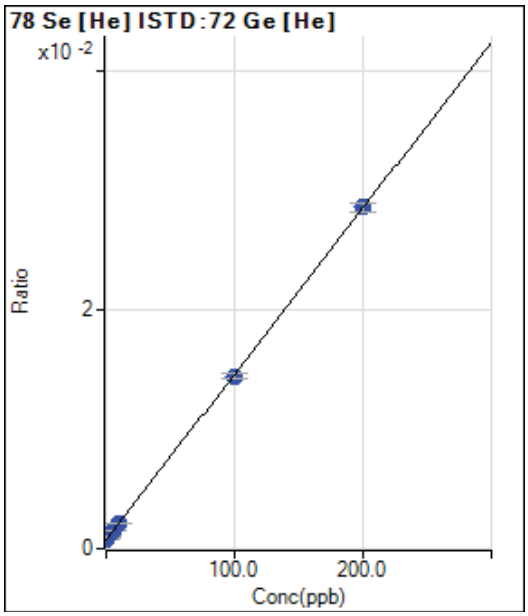
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	13541.88	0.0078	P	2.3
2		2.000	6.285	14686.11	0.0083	P	13.0
3		5.000	17.216	15767.03	0.0092	P	6.8
4		10.000	26.749	17275.12	0.0100	P	5.9
5		100.000	99.585	28168.93	0.0161	P	5.5
6		200.000	199.022	40134.50	0.0244	P	2.0
7		1.000					

y = 8.3688E-005 * x + 0.0078
R = 0.9968
DL = 6.473
BEC = 93.03

Weight: <None>
Min Conc: <None>

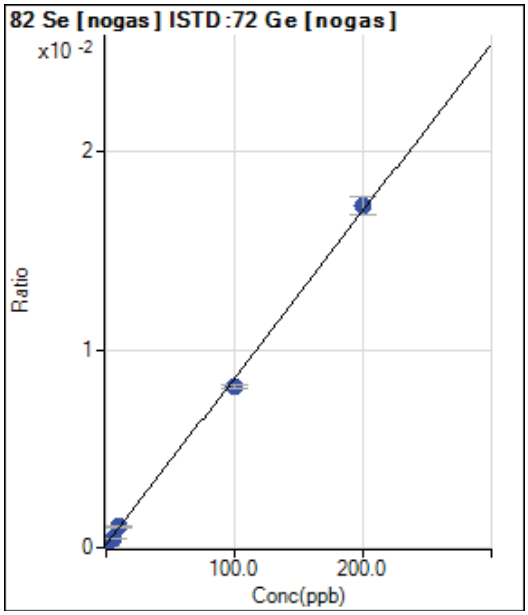


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	-0.211	339.33	0.0007	P	3.9
2		2.000	1.898	479.34	0.0010	P	9.8
3		5.000	5.543	724.68	0.0015	P	4.3
4		10.000	10.423	1056.70	0.0022	P	2.0
5		100.000	98.763	6843.30	0.0144	P	3.1
6		200.000	200.585	13320.22	0.0286	P	2.9
7		1.000					

y = 1.3896E-004 * x + 7.2570E-004
R = 1.0000
DL = 0.5937
BEC = 5.222

Weight: <None>
Min Conc: <None>

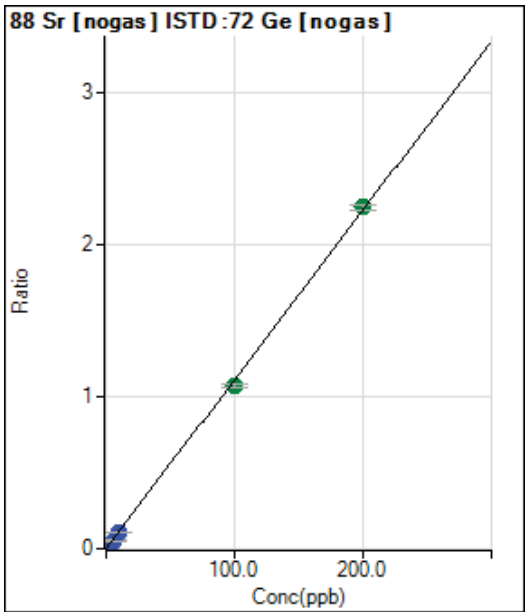
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	266.67	0.0002	P	26.9
2		2.000	1.718	526.68	0.0003	P	13.6
3		5.000	3.566	776.70	0.0005	P	11.1
4		10.000	10.681	1816.79	0.0011	P	7.7
5		100.000	94.310	14169.07	0.0081	P	2.1
6		200.000	202.849	28325.87	0.0173	P	5.2
7		1.000					

y = 8.4333E-005 * x + 1.5315E-004
R = 0.9994
DL = 1.463
BEC = 1.816

Weight: <None>
Min Conc: <None>

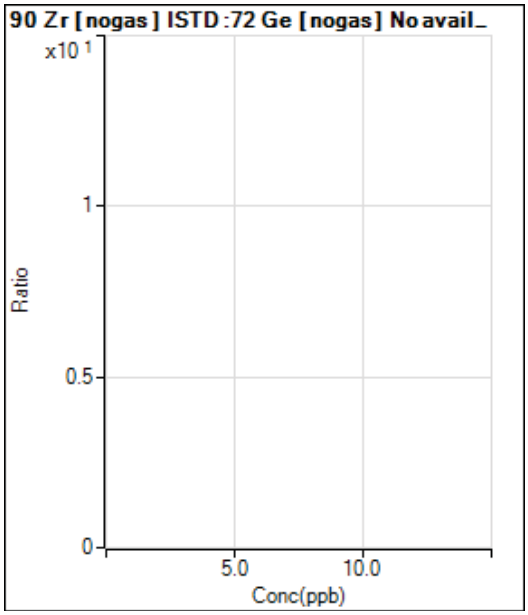


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	660.02	0.0004	P	3.0
2		2.000	1.786	35729.47	0.0202	P	12.1
3		5.000	4.730	90504.52	0.0529	P	3.5
4		10.000	9.764	187437.16	0.1088	P	4.4
5		100.000	96.248	1869570.91	1.0694	A	2.2
6		200.000	201.897	3682551.30	2.2429	A	1.4
7		1.000					

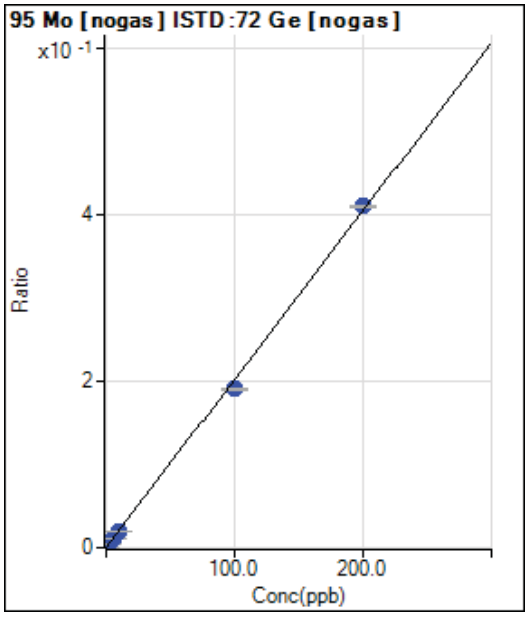
y = 0.0111 * x + 3.7941E-004
R = 0.9998
DL = 0.003045
BEC = 0.03416

Weight: <None>
Min Conc: <None>

Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

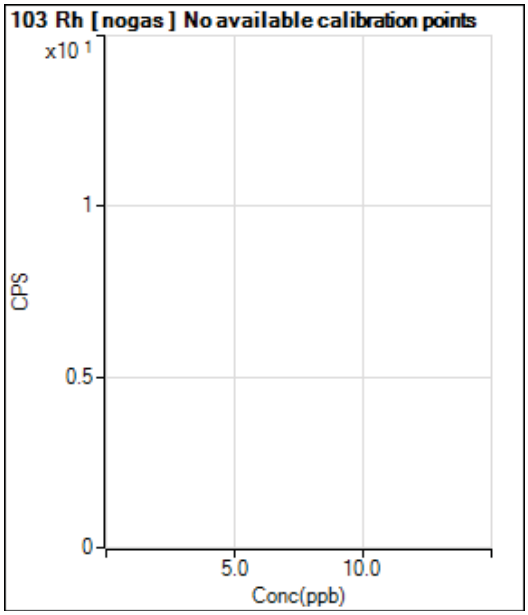


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	370.01	0.0002	P	39.6
2	☐	2.000	1.807	6851.42	0.0039	P	5.2
3	☐	5.000	4.931	17372.07	0.0102	P	5.4
4	☐	10.000	9.778	34360.14	0.0199	P	2.5
5	☐	100.000	94.270	332894.14	0.1905	P	1.1
6	☐	200.000	202.880	672659.13	0.4096	P	0.6
7	☐	1.000					

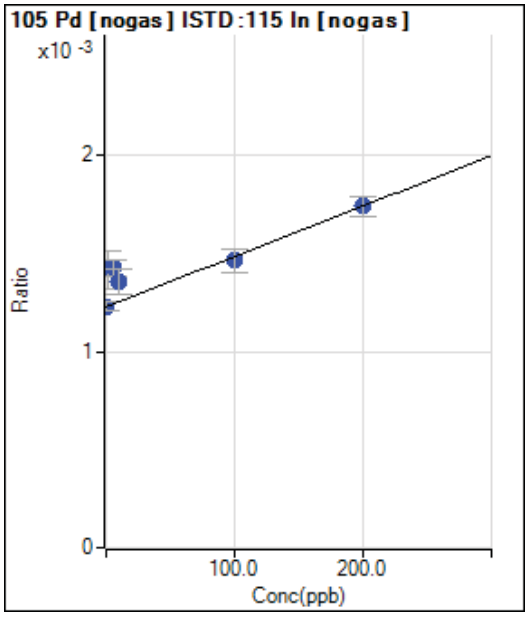
y = 0.0020 * x + 2.1215E-004
R = 0.9994
DL = 0.125
BEC = 0.1051

Weight: <None>
Min Conc: <None>

Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			16.67		P	124.
2	☐			20.00		P	50.0
3	☐			20.00		P	86.6
4	☐			46.67		P	44.6
5	☐			143.34		P	21.3
6	☐			220.00		P	9.1
7	☐						

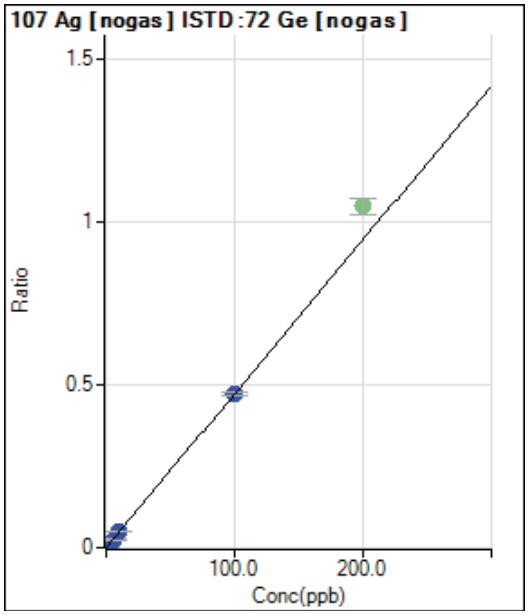


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1716.78	0.0012	P	3.6
2	☐	2.000	73.289	2093.50	0.0014	P	14.2
3	☐	5.000	77.277	1973.48	0.0014	P	6.2
4	☐	10.000	49.986	1930.14	0.0014	P	9.7
5	☐	100.000	92.220	2073.49	0.0015	P	8.0
6	☐	200.000	199.371	2303.53	0.0017	P	5.7
7	☐	1.000					

y = 2.5706E-006 * x + 0.0012
R = 0.8959
DL = 51.59
BEC = 478

Weight: <None>
Min Conc: <None>

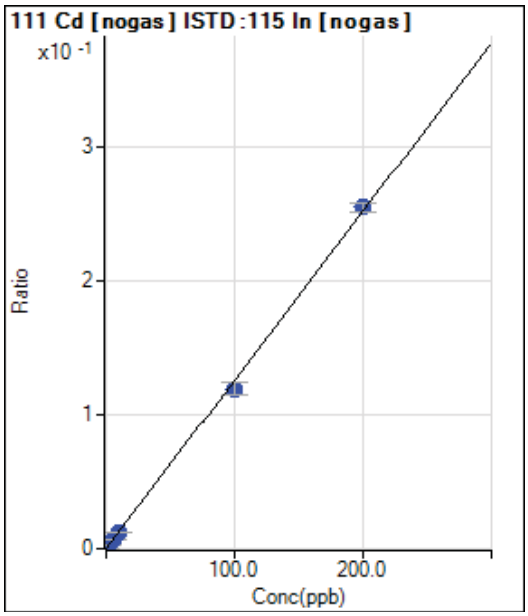
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	80.00	0.0000	P	33.5
2	☐	2.000	1.983	16671.43	0.0094	P	11.0
3	☐	5.000	5.231	42387.88	0.0248	P	5.3
4	☐	10.000	10.707	87352.30	0.0507	P	1.0
5	☐	100.000	99.918	826429.05	0.4728	P	1.6
6	☑	200.000		1722850.34	1.0498	A	4.8
7	☐	1.000					

y = 0.0047 * x + 4.6069E-005
R = 1.0000
DL = 0.009789
BEC = 0.009736

Weight: <None>
Min Conc: <None>

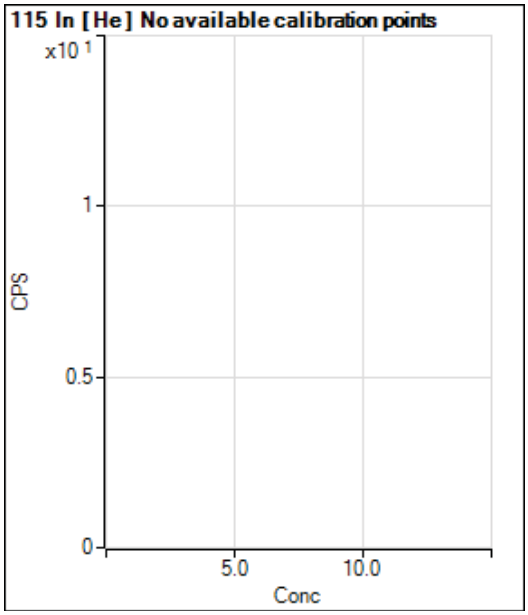


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16.67	0.0000	P	37.2
2	☐	2.000	1.875	3507.07	0.0024	P	15.1
3	☐	5.000	4.912	8578.91	0.0062	P	1.8
4	☐	10.000	9.944	17839.27	0.0125	P	0.8
5	☐	100.000	94.839	169093.07	0.1195	P	8.0
6	☐	200.000	202.587	337768.41	0.2553	P	2.9
7	☐	1.000					

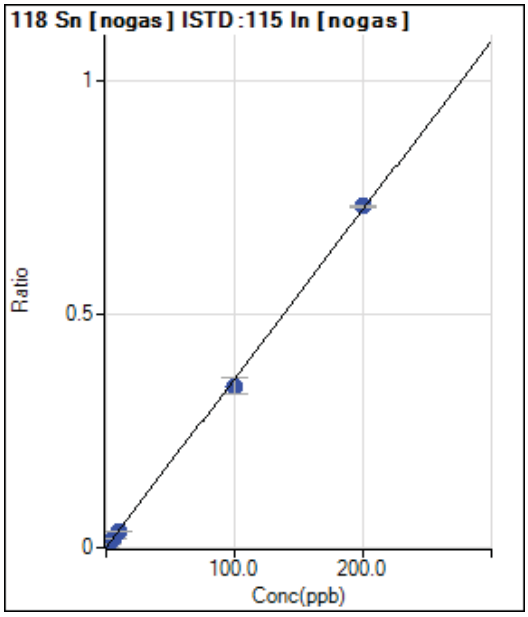
y = 0.0013 * x + 1.2024E-005
R = 0.9995
DL = 0.01064
BEC = 0.009542

Weight: <None>
Min Conc: <None>

Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			545816.28		P	0.6
2	☐			542602.14		P	0.4
3	☐			539596.65		P	0.8
4	☐			548110.99		P	0.9
5	☐			530051.81		P	2.9
6	☐			521648.48		P	0.5
7	☐						

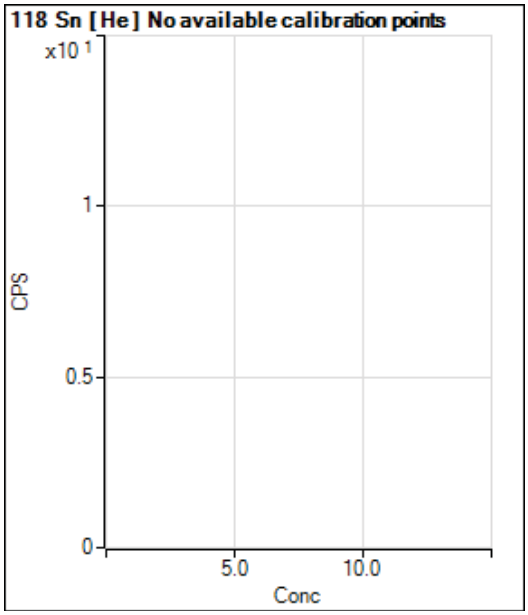


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	720.03	0.0005	P	13.0
2	☐	2.000	1.787	10309.91	0.0070	P	10.8
3	☐	5.000	4.772	24554.20	0.0178	P	2.3
4	☐	10.000	9.587	49975.42	0.0351	P	2.1
5	☐	100.000	95.779	489922.20	0.3465	P	9.1
6	☐	200.000	202.139	967055.32	0.7307	P	0.6
7	☐	1.000					

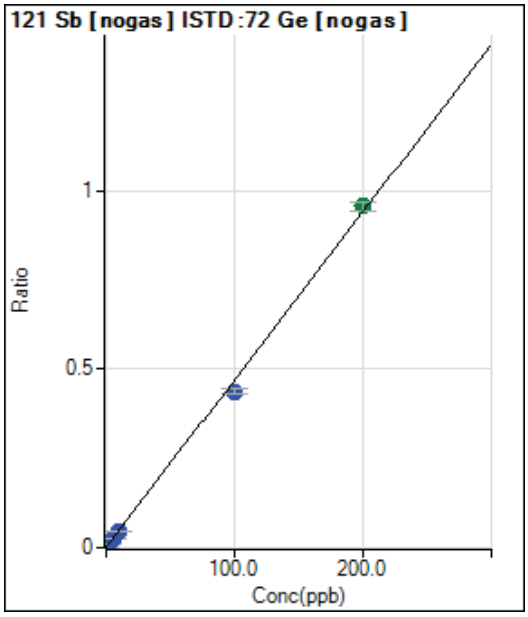
y = 0.0036 * x + 5.1568E-004
R = 0.9997
DL = 0.05588
BEC = 0.1428

Weight: <None>
Min Conc: <None>

Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			333.34		P	14.8
2	☐			4437.30		P	3.1
3	☐			11313.79		P	2.7
4	☐			22715.08		P	1.8
5	☐			208671.30		P	0.8
6	☐			416105.95		P	1.5
7	☐						

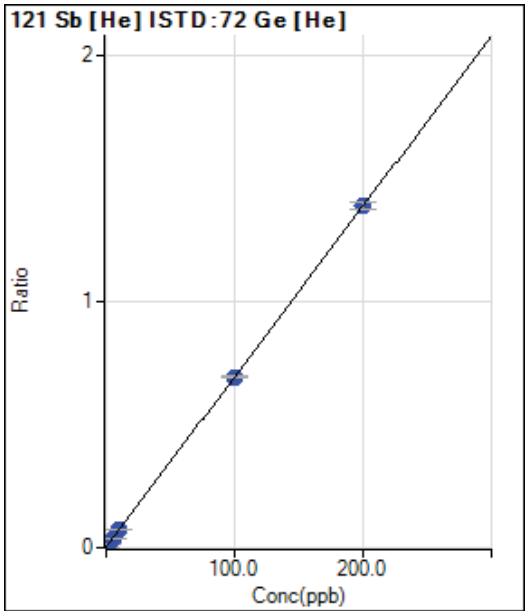


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1870.14	0.0011	P	6.5
2	☐	2.000	1.846	17225.28	0.0097	P	11.0
3	☐	5.000	4.829	40624.25	0.0237	P	2.0
4	☐	10.000	9.666	80002.64	0.0464	P	1.5
5	☐	100.000	93.089	765405.43	0.4380	P	3.5
6	☐	200.000	203.478	1569703.73	0.9560	A	2.5
7	☐	1.000					

y = 0.0047 * x + 0.0011
R = 0.9992
DL = 0.04481
BEC = 0.2292

Weight: <None>
Min Conc: <None>

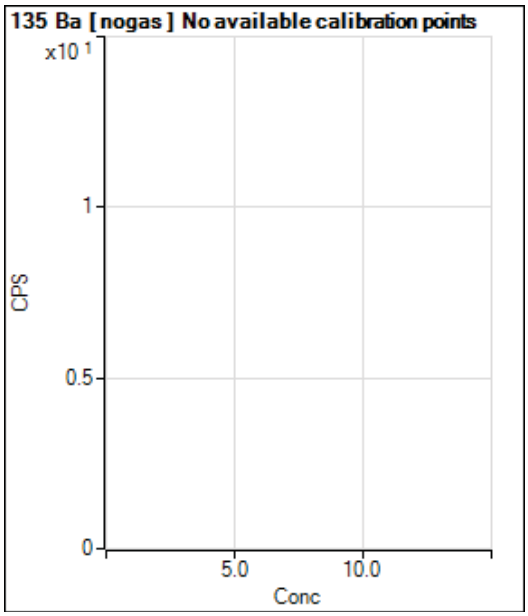
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	863.37	0.0018	P	16.4
2	☐	2.000	1.825	6978.18	0.0144	P	8.1
3	☐	5.000	5.003	17639.17	0.0364	P	5.6
4	☐	10.000	9.915	34230.40	0.0704	P	0.9
5	☐	100.000	99.775	328117.89	0.6927	P	1.4
6	☐	200.000	200.119	646377.52	1.3876	P	1.9
7	☐	1.000					

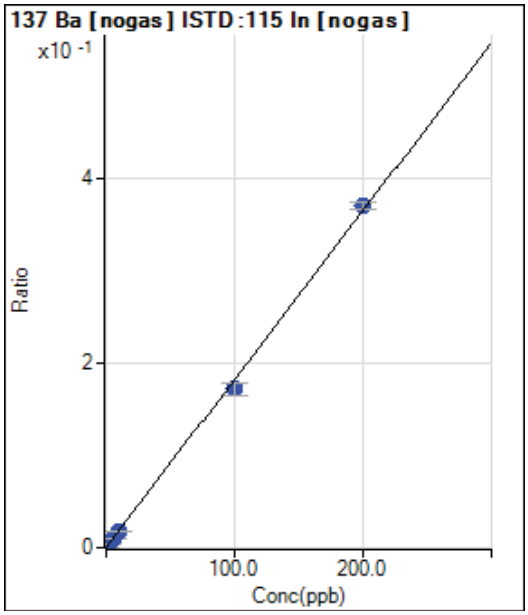
y = 0.0069 * x + 0.0018
R = 1.0000
DL = 0.1263
BEC = 0.2559

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			76.67		P	15.1
2	☐			2980.31		P	3.1
3	☐			7204.98		P	3.1
4	☐			14609.75		P	0.8
5	☐			141143.17		P	1.2
6	☐			285277.92		P	2.5
7	☐						

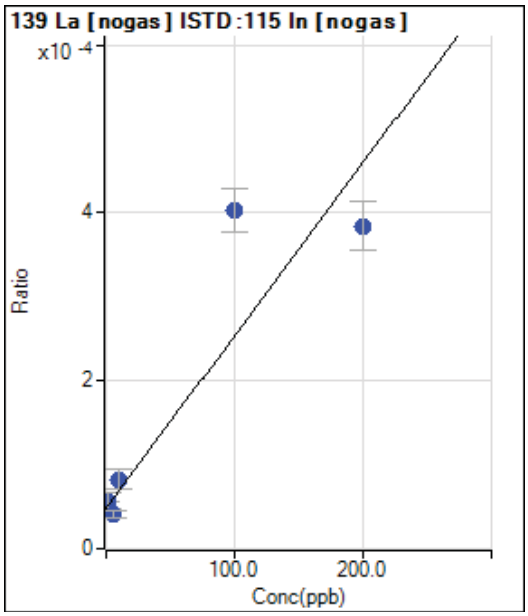
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	146.67	0.0001	P	52.1
2	☐	2.000	1.852	5157.53	0.0035	P	14.7
3	☐	5.000	5.048	12908.40	0.0093	P	2.1
4	☐	10.000	9.688	25318.95	0.0178	P	3.3
5	☐	100.000	94.316	243974.92	0.1725	P	8.1
6	☐	200.000	202.858	490829.74	0.3708	P	2.1
7	☐	1.000					

y = 0.0018 * x + 1.0579E-004
R = 0.9994
DL = 0.09054
BEC = 0.05789

Weight: <None>
Min Conc: <None>

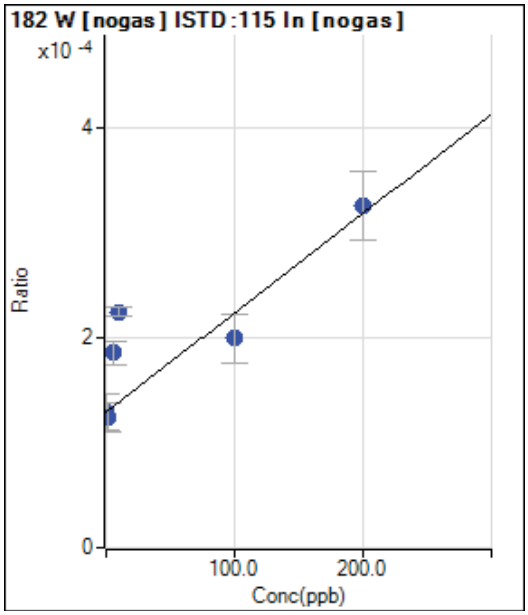


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	66.67	0.0000	P	37.2
2	☐	2.000	4.331	83.33	0.0001	P	31.3
3	☐	5.000	-3.442	56.67	0.0000	P	21.3
4	☐	10.000	16.668	116.67	0.0001	P	28.5
5	☐	100.000	172.700	570.02	0.0004	P	13.2
6	☐	200.000	163.504	510.02	0.0004	P	15.3
7	☐	100.000					

y = 2.0566E-006 * x + 4.8097E-005
R = 0.9068
DL = 26.09
BEC = 23.39

Weight: <None>
Min Conc: <None>

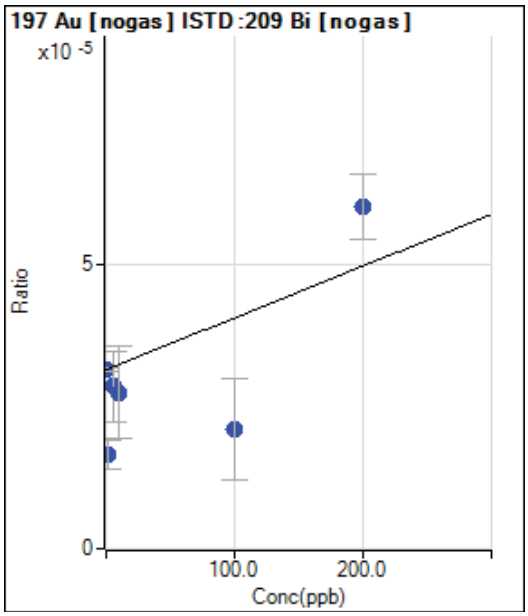
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	180.00	0.0001	P	27.6
2	☐	2.000	-5.584	186.67	0.0001	P	22.3
3	☐	5.000	59.247	256.68	0.0002	P	11.4
4	☐	10.000	101.078	320.01	0.0002	P	3.5
5	☐	100.000	73.899	280.01	0.0002	P	23.2
6	☐	200.000	207.216	430.01	0.0003	P	20.0
7	☐	1.000					

y = 9.4635E-007 * x + 1.2943E-004
R = 0.8494
DL = 113.4
BEC = 136.8

Weight: <None>
Min Conc: <None>

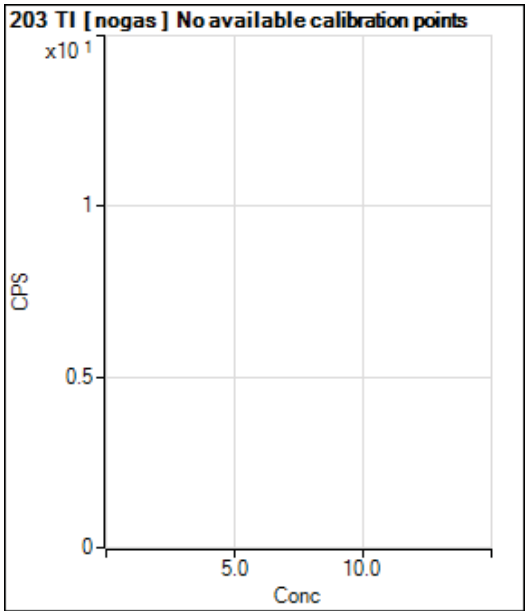


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30.00	0.0000	P	1.3
2	☐	2.000	-165.107	16.67	0.0000	P	31.4
3	☐	5.000	-32.319	26.67	0.0000	P	43.5
4	☐	10.000	-43.765	26.67	0.0000	P	58.6
5	☐	100.000	-116.143	20.00	0.0000	P	85.9
6	☐	200.000	313.364	56.67	0.0001	P	18.9
7	☐	100.000					

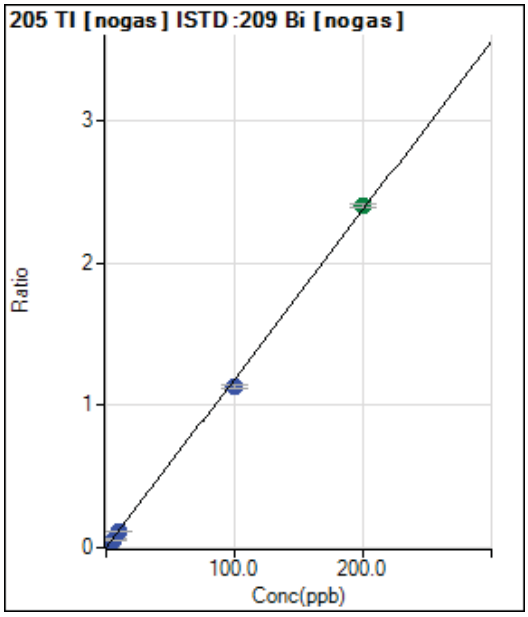
y = 9.1114E-008 * x + 3.1506E-005
R = 0.7630
DL = 13.03
BEC = 345.8

Weight: <None>
Min Conc: <None>

Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			23.33		P	89.2
2	☐			8529.06		P	6.4
3	☐			22192.00		P	1.8
4	☐			44855.45		P	2.5
5	☐			444501.39		P	1.6
6	☐			903582.64		P	0.7
7	☐						

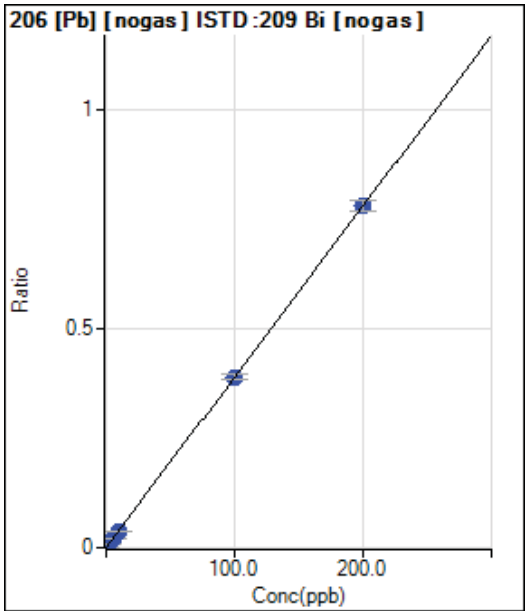


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	96.67	0.0001	P	50.9
2	☐	2.000	1.791	21194.02	0.0213	P	14.5
3	☐	5.000	4.770	52913.13	0.0566	P	2.9
4	☐	10.000	9.393	108764.56	0.1114	P	1.8
5	☐	100.000	95.459	1077100.56	1.1316	P	2.7
6	☐	200.000	202.309	2258750.28	2.3982	A	1.0
7	☐	1.000					

y = 0.0119 * x + 1.0150E-004
R = 0.9996
DL = 0.01308
BEC = 0.008563

Weight: <None>
Min Conc: <None>

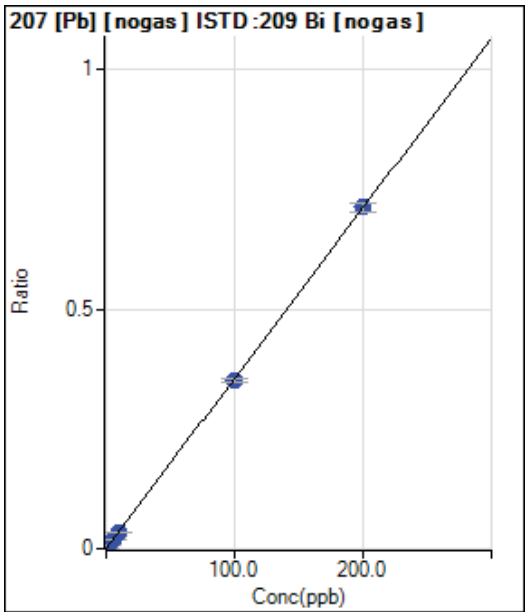
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	86.67	0.0001	P	25.8
2	☐	2.000	1.940	7578.59	0.0076	P	16.4
3	☐	5.000	5.194	18967.98	0.0203	P	5.2
4	☐	10.000	9.917	37760.80	0.0387	P	1.3
5	☐	100.000	99.828	369821.02	0.3886	P	3.3
6	☐	200.000	200.086	733307.28	0.7787	P	3.1
7	☐	1.000					

y = 0.0039 * x + 9.0837E-005
R = 1.0000
DL = 0.01804
BEC = 0.02334

Weight: <None>
Min Conc: <None>

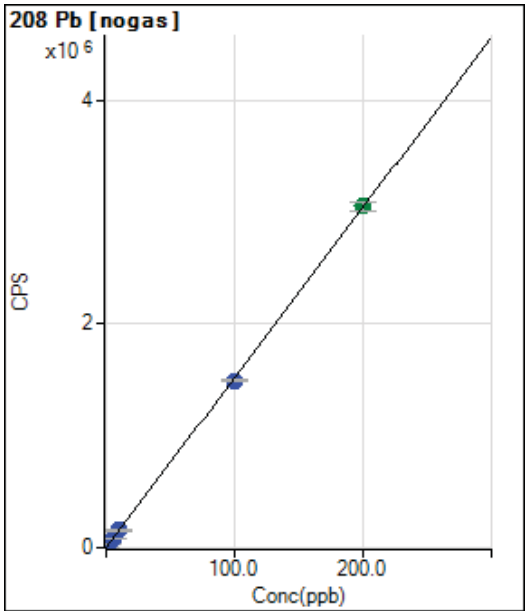


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	53.33	0.0001	P	10.8
2	☐	2.000	1.921	6854.90	0.0069	P	10.7
3	☐	5.000	5.105	16989.18	0.0182	P	1.9
4	☐	10.000	9.855	34222.97	0.0351	P	0.7
5	☐	100.000	98.824	334114.90	0.3510	P	2.2
6	☐	200.000	200.594	670930.27	0.7125	P	2.8
7	☐	1.000					

y = 0.0036 * x + 5.6009E-005
R = 1.0000
DL = 0.005119
BEC = 0.01577

Weight: <None>
Min Conc: <None>

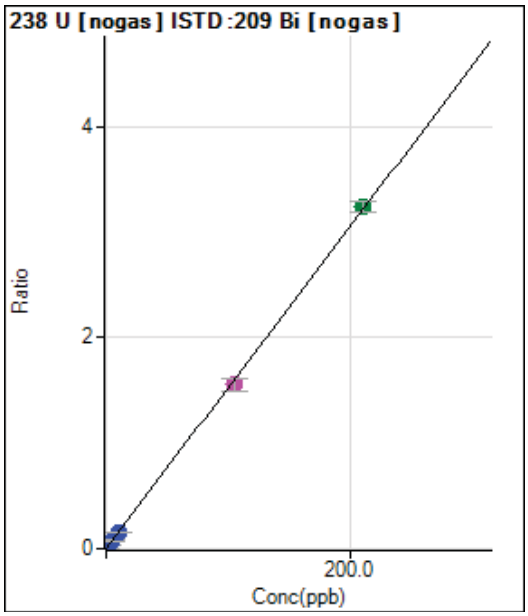
Calibration for 015_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	253.34		P	11.4
2	☐	2.000	1.957	29981.18		P	3.0
3	☐	5.000	4.975	75829.73		P	2.9
4	☐	10.000	10.095	153618.55		P	3.4
5	☐	100.000	98.411	1495309.01		P	1.0
6	☐	200.000	200.791	3050674.36		A	2.4
7	☐	1.000					

y = 15192.0198 * x + 253.3367
R = 1.0000
DL = 0.005701
BEC = 0.01668

Weight: <None>
Min Conc: <None>

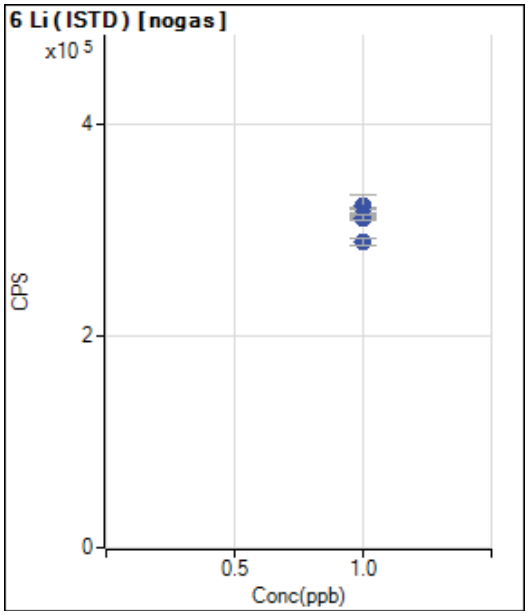


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63.33	0.0001	P	73.0
2	☐	2.000	1.847	28218.79	0.0283	P	10.0
3	☐	5.000	4.959	70879.27	0.0759	P	4.1
4	☐	10.000	10.134	151262.33	0.1550	P	1.8
5	☐	105.000	101.892	1482082.27	1.5577	M	7.6
6	☐	210.000	211.550	3045682.25	3.2340	A	3.0
7	☐	1.000					

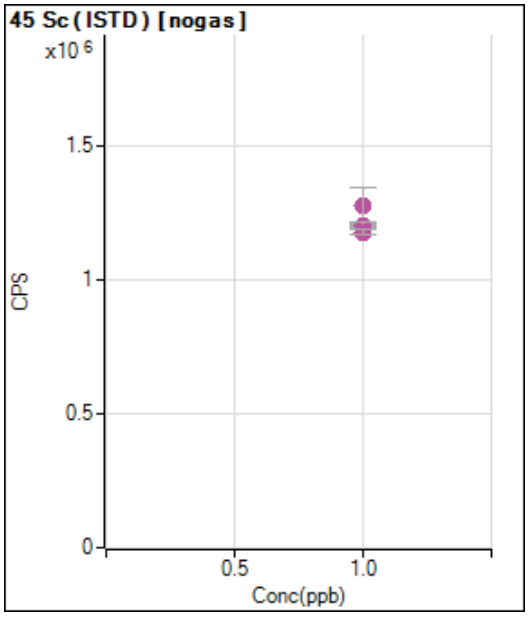
y = 0.0153 * x + 6.6535E-005
R = 0.9998
DL = 0.009527
BEC = 0.004352

Weight: <None>
Min Conc: <None>

Calibration for 015_ICV.d

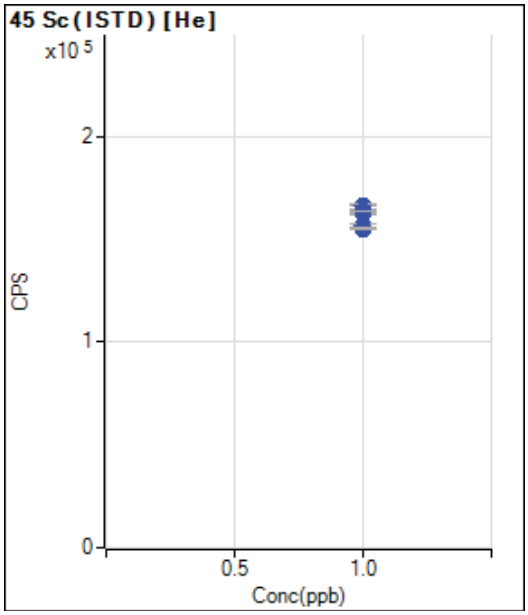


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		316348.73		P	2.9
2	☐	1.000		322759.56		P	6.5
3	☐	1.000		317128.24		P	1.8
4	☐	1.000		314296.89		P	1.7
5	☐	1.000		312094.60		P	1.4
6	☐	1.000		289577.29		P	2.3
7	☐	1.000					

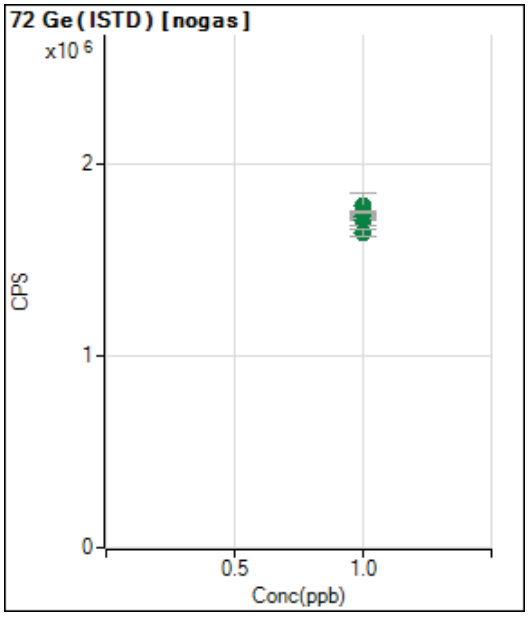


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1195508.39		M	1.2
2	☐	1.000		1272349.90		M	10.6
3	☐	1.000		1202158.86		P	1.9
4	☐	1.000		1200657.56		M	2.4
5	☐	1.000		1200476.18		M	2.1
6	☐	1.000		1176356.13		M	1.6
7	☐	1.000					

Calibration for 015_ICV.d

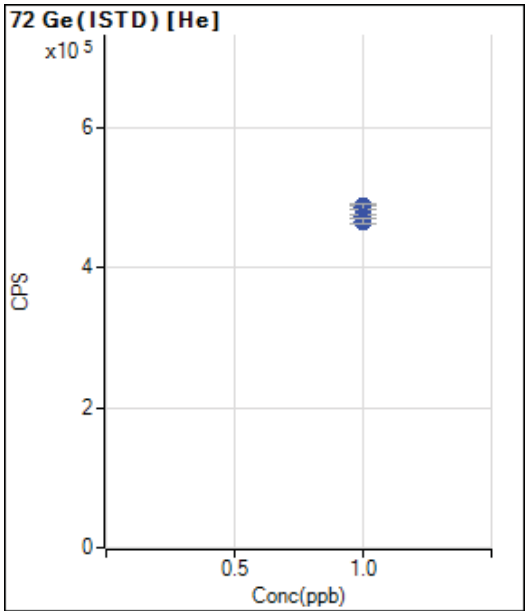


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		163197.18		P	1.8
2	☐	1.000		164545.83		P	1.9
3	☐	1.000		166126.66		P	1.8
4	☐	1.000		163778.33		P	0.0
5	☐	1.000		156606.14		P	0.9
6	☐	1.000		155335.44		P	0.4
7	☐	1.000					

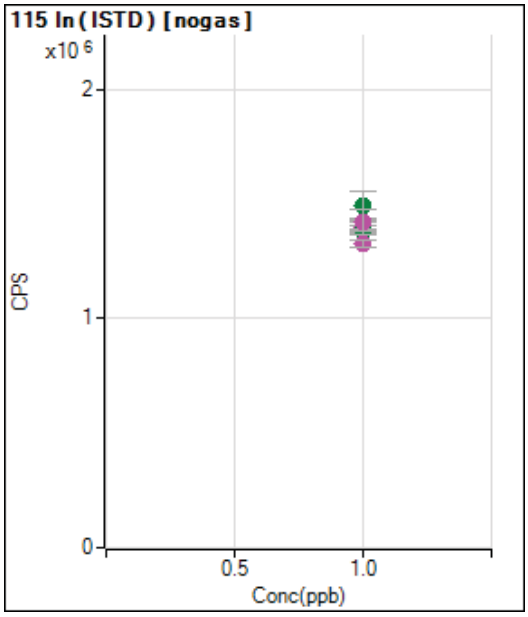


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1739232.79		A	1.1
2	☐	1.000		1779176.64		A	8.2
3	☐	1.000		1711426.43		A	3.5
4	☐	1.000		1722809.82		A	1.1
5	☐	1.000		1747976.33		A	0.8
6	☐	1.000		1642157.06		A	1.9
7	☐	1.000					

Calibration for 015_ICV.d

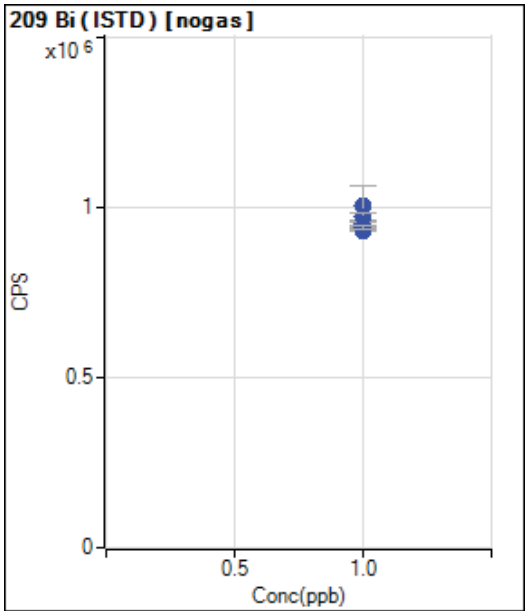


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		487241.02		P	1.9
2	☐	1.000		484421.69		P	1.1
3	☐	1.000		484513.75		P	1.1
4	☐	1.000		485966.28		P	1.8
5	☐	1.000		473712.39		P	1.1
6	☐	1.000		465953.55		P	2.1
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1398646.72		M	3.9
2	☐	1.000		1488621.16		A	9.2
3	☐	1.000		1383178.14		A	0.9
4	☐	1.000		1422105.79		A	2.2
5	☐	1.000		1420729.66		M	8.0
6	☐	1.000		1323531.10		M	2.6
7	☐	1.000					

Calibration for 015_ICV.d



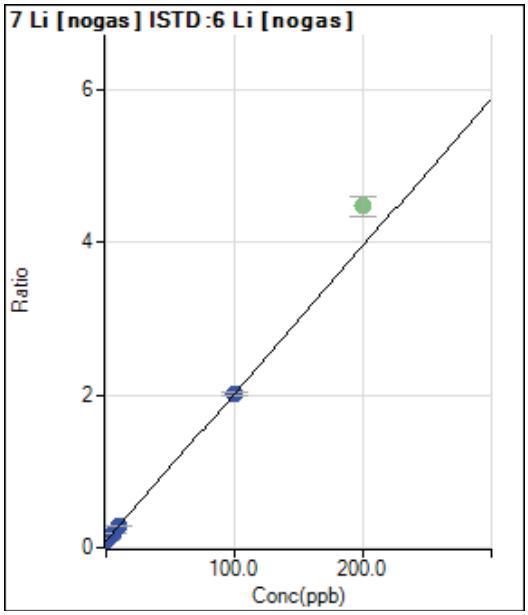
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		952287.59		P	1.3
2	☐	1.000		1005166.21		P	12.3
3	☐	1.000		934249.00		P	0.8
4	☐	1.000		976222.64		P	2.0
5	☐	1.000		951949.42		P	1.0
6	☐	1.000		941934.59		P	1.4
7	☐	1.000					

Calibration for 135_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\060518B.b\
Analysis File: 060518B.batch.bin
DA Date-Time: 2018-06-05 16:30:16
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	128CALB.d	CAL BLK	2018-06-05 16:15:28
2	129CALS.d	2/10/200	2018-06-05 16:17:28
3	130CALS.d	5/25/500	2018-06-05 16:19:27
4	131CALS.d	10/50/1000	2018-06-05 16:21:26
5	132CALS.d	100/500/10K	2018-06-05 16:23:24
6	133CALS.d	200/1000/20K	2018-06-05 16:25:22
7			

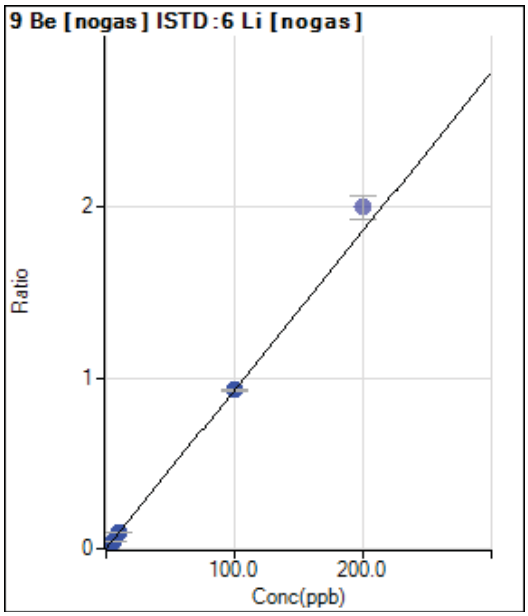
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	24532.89	0.0908	P	4.5
2	☐	2.000	1.920	34882.53	0.1279	P	5.8
3	☐	5.000	4.770	51951.41	0.1830	P	0.1
4	☐	10.000	10.108	76519.09	0.2863	P	3.3
5	☐	100.000	100.002	513917.67	2.0243	P	2.1
6	☑	200.000		1043932.62	4.4779	A	5.6
7	☐	1.000					

y = 0.0193 * x + 0.0908
R = 1.0000
DL = 0.6282
BEC = 4.697

Weight: <None>
Min Conc: <None>

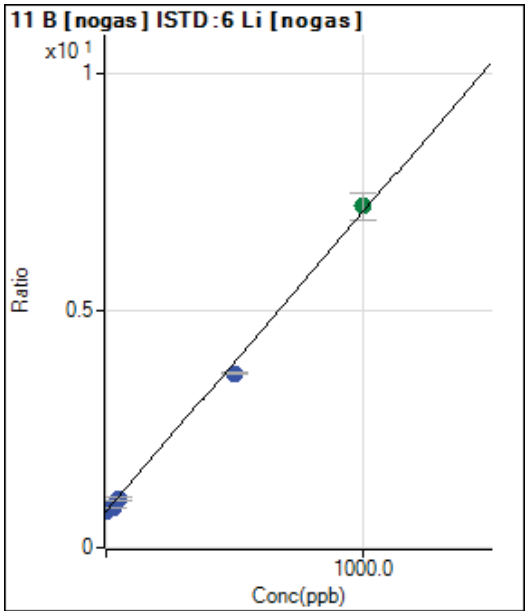


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16.67	0.0001	P	93.1
2	☐	2.000	1.948	4950.72	0.0182	P	8.5
3	☐	5.000	4.571	12074.00	0.0426	P	4.2
4	☐	10.000	9.931	24693.06	0.0924	P	4.9
5	☐	100.000	100.029	236171.83	0.9303	P	1.1
6	☑	200.000		465981.15	1.9994	P	6.6
7	☐	1.000					

y = 0.0093 * x + 6.2484E-005
R = 1.0000
DL = 0.01877
BEC = 0.006719

Weight: <None>
Min Conc: <None>

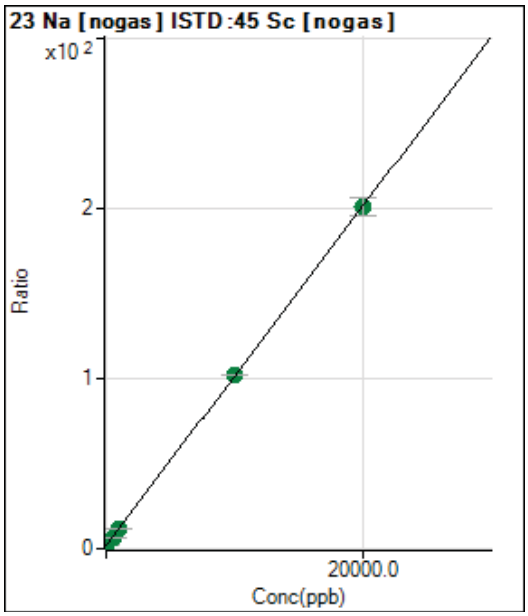
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	206170.80	0.7630	P	3.0
2	☐	10.000	5.283	217130.89	0.7963	P	3.9
3	☐	25.000	12.794	239427.54	0.8436	P	1.8
4	☐	50.000	43.654	277334.05	1.0381	P	6.0
5	☐	500.000	462.092	933128.42	3.6755	P	0.7
6	☐	1000.000	1019.624	1674983.83	7.1894	A	7.8
7	☐	5.000					

y = 0.0063 * x + 0.7630
R = 0.9991
DL = 10.8
BEC = 121.1

Weight: <None>
Min Conc: <None>

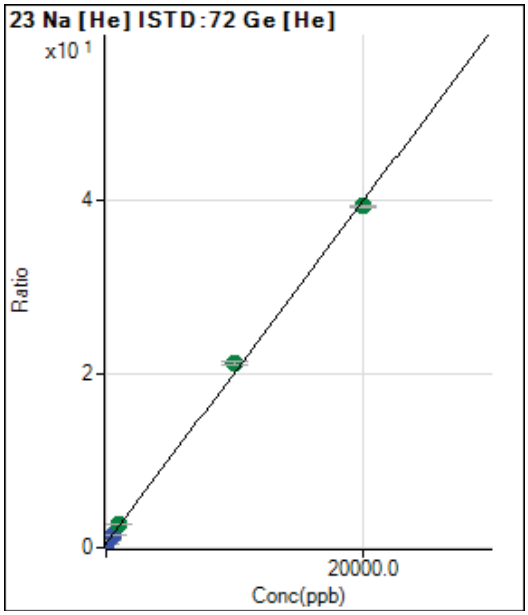


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2161597.90	1.7929	A	1.6
2	☐	200.000	205.342	4497811.04	3.8399	A	1.9
3	☐	500.000	488.599	8084545.75	6.6636	A	4.2
4	☐	1000.000	1010.474	14083647.19	11.8660	A	3.4
5	☐	10000.00	10105.846	119313581.8	102.535	A	0.2
6	☐	20000.00	19946.785	223159496.6	200.636	A	5.4
7	☐	100.000					

y = 0.0100 * x + 1.7929
R = 1.0000
DL = 8.896
BEC = 179.9

Weight: <None>
Min Conc: <None>

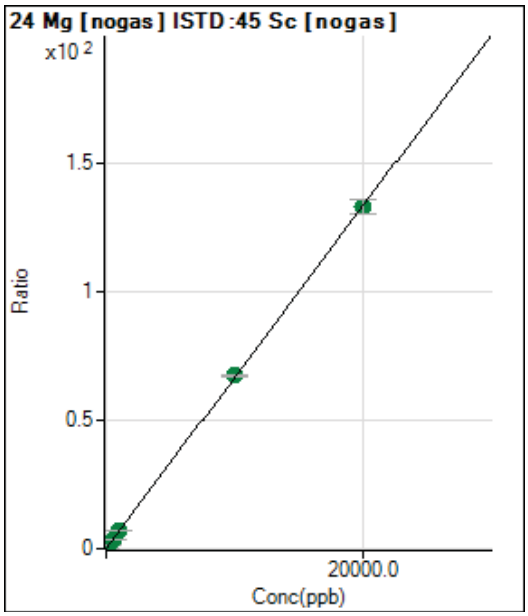
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	249278.92	0.4870	P	0.6
2	☐	200.000	211.152	453958.27	0.9028	P	1.4
3	☐	500.000	517.687	763972.72	1.5063	P	2.4
4	☐	1000.000	1129.986	1293285.14	2.7119	A	4.7
5	☐	10000.00	10547.942	10213412.14	21.2555	A	1.5
6	☐	20000.00	19718.976	18637428.05	39.3129	A	0.8
7	☐	100.000					

y = 0.0020 * x + 0.4870
R = 0.9995
DL = 4.792
BEC = 247.4

Weight: <None>
Min Conc: <None>

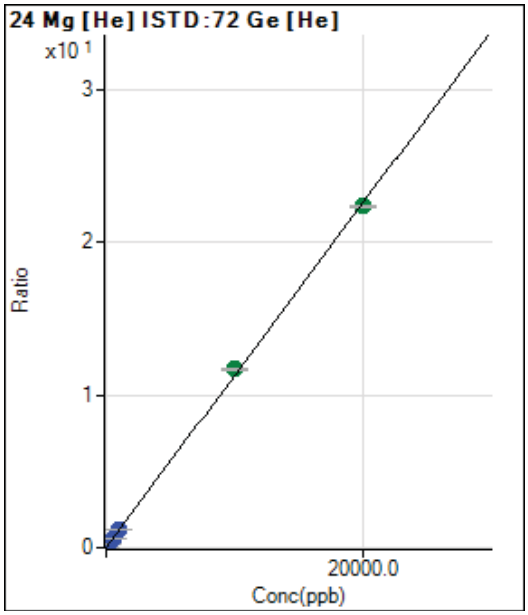


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6835.58	0.0057	P	19.8
2	☐	200.000	217.225	1700201.86	1.4525	A	4.7
3	☐	500.000	522.810	4232840.07	3.4879	A	3.0
4	☐	1000.000	1048.740	8294847.32	6.9909	A	4.8
5	☐	10000.00	10110.971	78371668.42	67.3503	A	1.6
6	☐	20000.00	19941.335	147764219.9	132.825	A	4.1
7	☐	100.000					

y = 0.0067 * x + 0.0057
R = 1.0000
DL = 0.5054
BEC = 0.8523

Weight: <None>
Min Conc: <None>

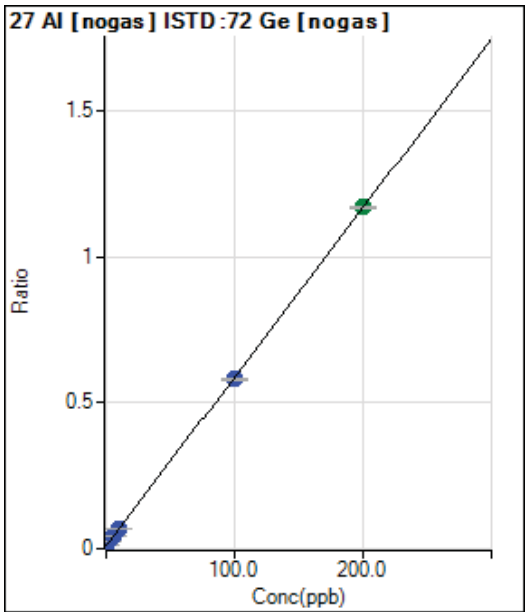
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	823.36	0.0016	P	11.4
2	☐	200.000	209.394	119543.82	0.2378	P	4.3
3	☐	500.000	516.584	296366.28	0.5843	P	2.3
4	☐	1000.000	1076.916	580288.17	1.2164	P	3.4
5	☐	10000.00	10348.591	5610743.25	11.6754	A	0.7
6	☐	20000.00	19821.350	10601157.76	22.3613	A	0.8
7	☐	100.000					

y = 0.0011 * x + 0.0016
R = 0.9998
DL = 0.4877
BEC = 1.424

Weight: <None>
Min Conc: <None>

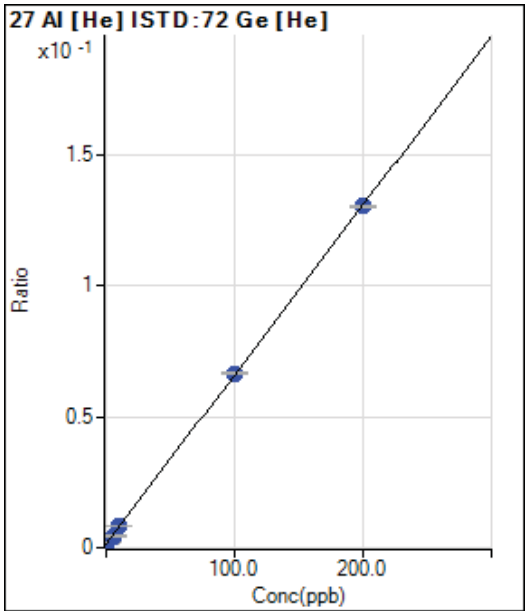


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16500.78	0.0094	P	1.2
2	☐	2.000	2.415	40891.47	0.0234	P	2.7
3	☐	5.000	5.545	71981.12	0.0415	P	2.2
4	☐	10.000	10.337	121178.12	0.0693	P	1.9
5	☐	100.000	98.909	970036.29	0.5824	P	1.4
6	☐	200.000	200.511	1927396.33	1.1710	A	0.7
7	☐	1.000					

y = 0.0058 * x + 0.0094
R = 1.0000
DL = 0.05751
BEC = 1.625

Weight: <None>
Min Conc: <None>

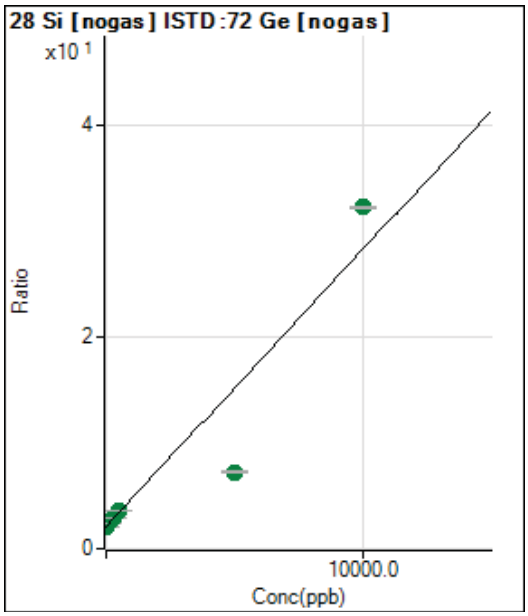
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.339	623.35	0.0012	P	11.1
2	☐	2.000	1.894	1336.74	0.0027	P	21.1
3	☐	5.000	4.521	2206.83	0.0044	P	8.9
4	☐	10.000	10.497	3920.48	0.0082	P	2.6
5	☐	100.000	100.877	32000.75	0.0666	P	1.6
6	☐	200.000	199.550	61791.05	0.1303	P	0.3
7	☐	1.000					

y = 6.4595E-004 * x + 0.0014
R = 1.0000
DL = 0.6254
BEC = 2.224

Weight: <None>
Min Conc: <None>

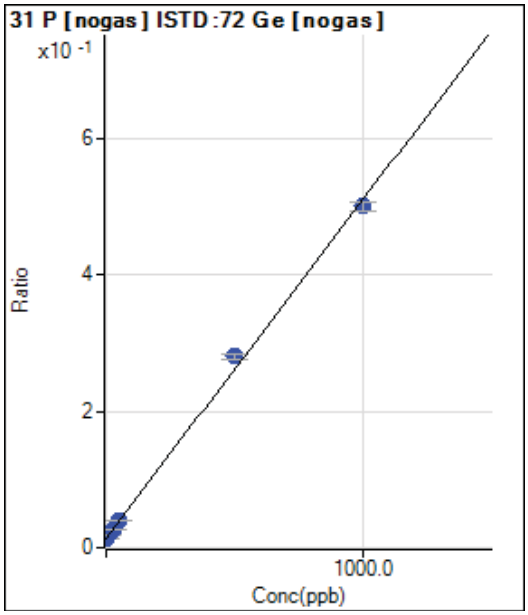


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3684636.30	2.1018	A	1.4
2	☐	100.000	121.613	4229148.27	2.4201	A	0.6
3	☐	250.000	311.922	5057625.13	2.9182	A	1.4
4	☐	500.000	582.438	6340913.66	3.6262	A	2.3
5	☐	5000.000	1960.101	12045899.40	7.2320	A	1.2
6	☐	10000.00	11514.063	53061130.88	32.2375	A	0.7
7	☐	5.000					

y = 0.0026 * x + 2.1018
R = 0.9440
DL = 33.63
BEC = 803.1

Weight: <None>
Min Conc: <None>

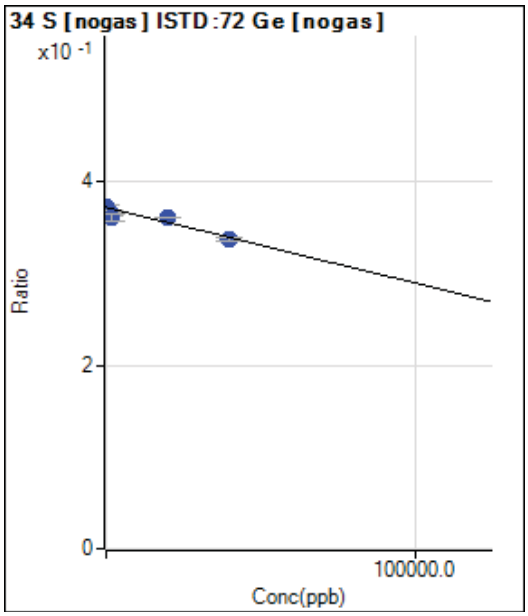
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23778.55	0.0136	P	3.3
2	☐	10.000	11.988	34087.75	0.0195	P	3.0
3	☐	25.000	26.896	46611.12	0.0269	P	2.2
4	☐	50.000	52.256	69009.61	0.0395	P	2.6
5	☐	500.000	536.908	465907.14	0.2797	P	2.2
6	☐	1000.000	981.366	822908.50	0.5001	P	2.5
7	☐	5.000					

y = 4.9575E-004 * x + 0.0136
R = 0.9990
DL = 2.731
BEC = 27.36

Weight: <None>
Min Conc: <None>

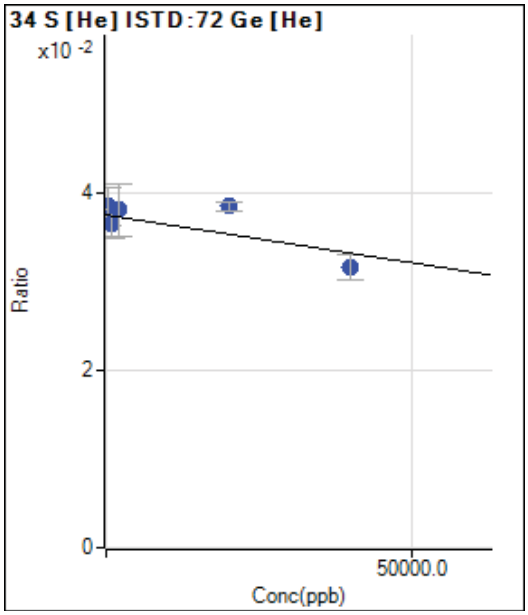


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	652224.04	0.3721	P	1.8
2	☐	400.000	5491.422	642292.98	0.3675	P	0.6
3	☐	1000.000	7152.644	634600.89	0.3662	P	1.6
4	☐	2000.000	13771.484	630765.48	0.3607	P	1.8
5	☐	20000.00	13118.249	601719.69	0.3612	P	0.3
6	☐	40000.00	42647.571	554369.67	0.3368	P	1.2
7	☐	100.000					

y = -8.2641E-007 * x + 0.3721
R = -0.9229
DL = -2.487E+04
BEC = -4.502E+05

Weight: <None>
Min Conc: <None>

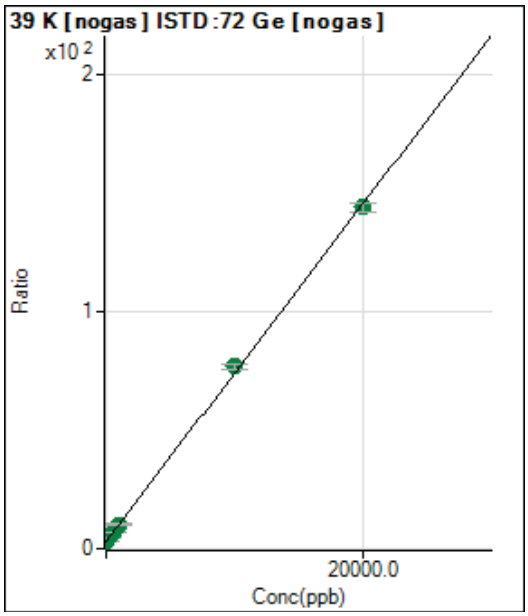
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	19180.43	0.0375	P	4.2
2	☐	400.000	-8909.431	19347.20	0.0384	P	10.8
3	☐	1000.000	9276.900	18478.41	0.0365	P	9.0
4	☐	2000.000	-5193.756	18112.10	0.0380	P	15.4
5	☐	20000.00	-9193.832	18478.78	0.0385	P	3.0
6	☐	40000.00	54842.776	14975.63	0.0316	P	9.1
7	☐	100.000					

y = -1.0742E-007 * x + 0.0375
R = -0.7854
DL = -4.424E+04
BEC = -3.489E+05

Weight: <None>
Min Conc: <None>

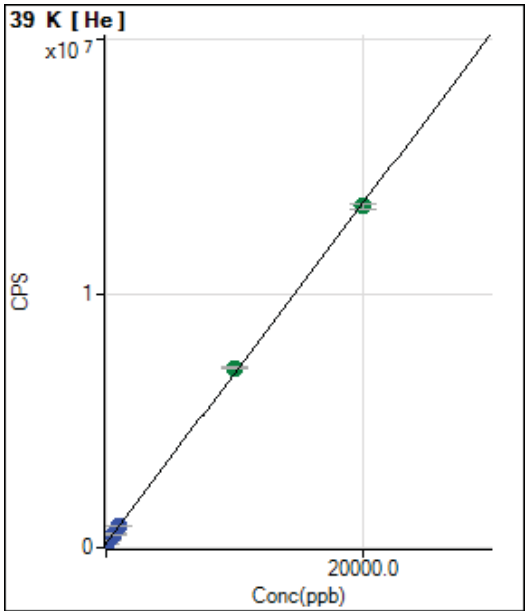


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5198925.25	2.9656	A	0.2
2	☐	200.000	204.233	7724587.93	4.4205	A	1.3
3	☐	500.000	506.720	11396202.86	6.5754	A	1.1
4	☐	1000.000	1018.368	17868044.67	10.2203	A	3.3
5	☐	10000.00	10368.731	127962307.0	76.8303	A	2.4
6	☐	20000.00	19814.506	237134196.9	144.120	A	2.9
7	☐	100.000					

y = 0.0071 * x + 2.9656
R = 0.9998
DL = 3.072
BEC = 416.3

Weight: <None>
Min Conc: <None>

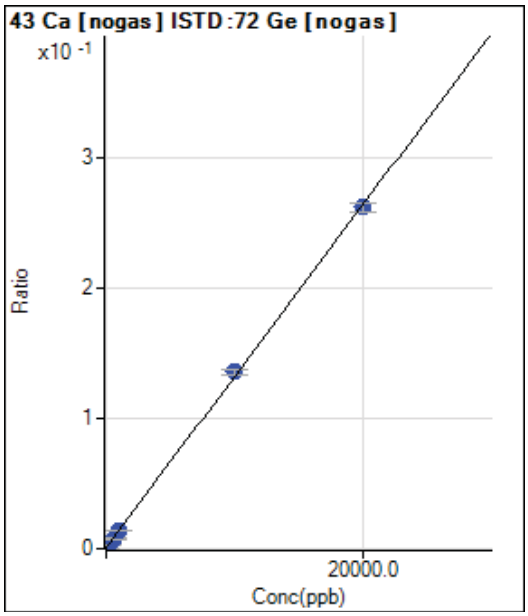
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	171964.47		P	0.4
2	☐	200.000	213.761	314938.74		P	0.7
3	☐	500.000	537.186	531261.62		P	1.2
4	☐	1000.000	1044.099	870310.33		P	0.6
5	☐	10000.00	10332.112	7082602.81		A	1.1
6	☐	20000.00	19830.672	13435719.38		A	1.7
7	☐	100.000					

y = 668.8505 * x + 171964.4667
R = 0.9998
DL = 3.131
BEC = 257.1

Weight: <None>
Min Conc: <None>

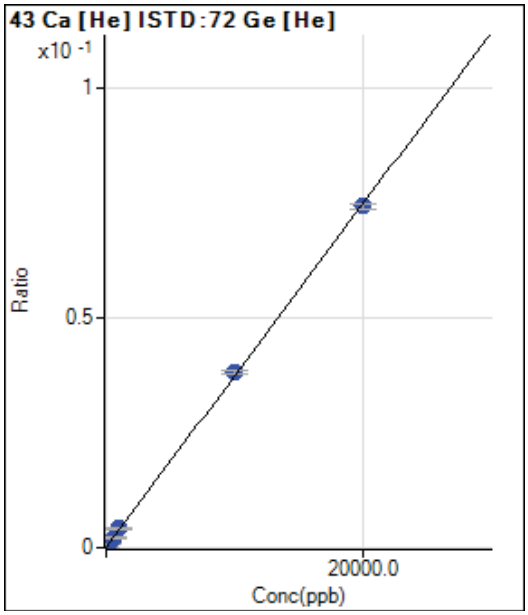


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1050.05	0.0006	P	9.8
2	☐	200.000	201.955	5697.61	0.0033	P	6.2
3	☐	500.000	521.866	12954.75	0.0075	P	6.0
4	☐	1000.000	1014.319	24409.66	0.0140	P	3.1
5	☐	10000.00	10267.430	226267.34	0.1359	P	2.9
6	☐	20000.00	19865.003	431694.21	0.2623	P	2.5
7	☐	100.000					

y = 1.3174E-005 * x + 5.9922E-004
R = 0.9999
DL = 13.4
BEC = 45.48

Weight: <None>
Min Conc: <None>

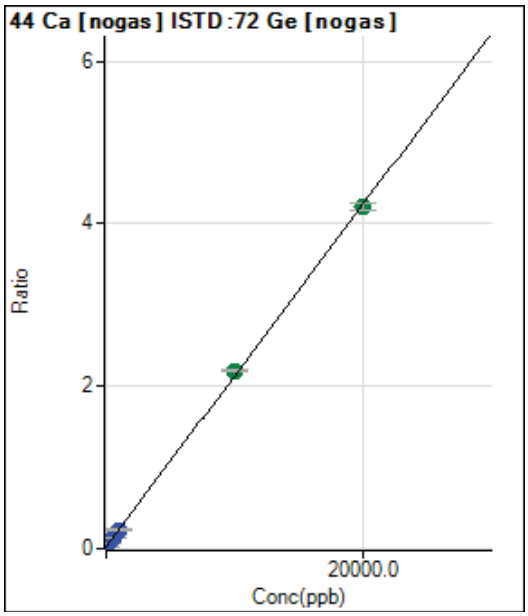
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23.33	0.0000	P	67.1
2	☐	200.000	187.659	376.68	0.0007	P	10.1
3	☐	500.000	549.153	1066.72	0.0021	P	8.5
4	☐	1000.000	1133.103	2040.15	0.0043	P	11.5
5	☐	10000.00	10239.472	18426.06	0.0384	P	2.5
6	☐	20000.00	19872.503	35266.92	0.0744	P	1.7
7	☐	100.000					

y = 3.7411E-006 * x + 4.5895E-005
R = 0.9999
DL = 24.68
BEC = 12.27

Weight: <None>
Min Conc: <None>

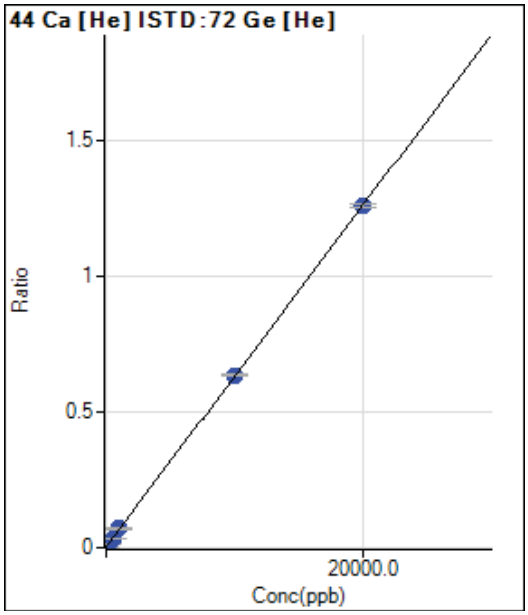


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36886.50	0.0210	P	3.7
2	☐	200.000	198.184	109707.42	0.0628	P	0.9
3	☐	500.000	510.876	222926.08	0.1286	P	2.9
4	☐	1000.000	1010.273	408820.22	0.2338	P	2.3
5	☐	10000.00	10295.643	3646768.28	2.1893	A	0.9
6	☐	20000.00	19851.411	6914448.23	4.2017	A	2.2
7	☐	100.000					

y = 2.1060E-004 * x + 0.0210
R = 0.9998
DL = 11.08
BEC = 99.93

Weight: <None>
Min Conc: <None>

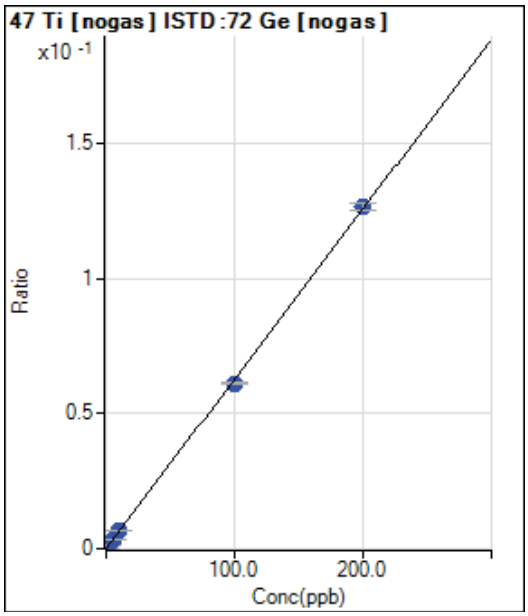
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1223.40	0.0024	P	11.3
2	☐	200.000	206.014	7708.37	0.0153	P	0.7
3	☐	500.000	503.242	17238.24	0.0340	P	3.4
4	☐	1000.000	1075.734	33346.91	0.0699	P	5.3
5	☐	10000.00	10074.170	305119.41	0.6350	P	1.2
6	☐	20000.00	19958.987	595325.83	1.2557	P	0.9
7	☐	100.000					

y = 6.2796E-005 * x + 0.0024
R = 1.0000
DL = 12.89
BEC = 38.06

Weight: <None>
Min Conc: <None>

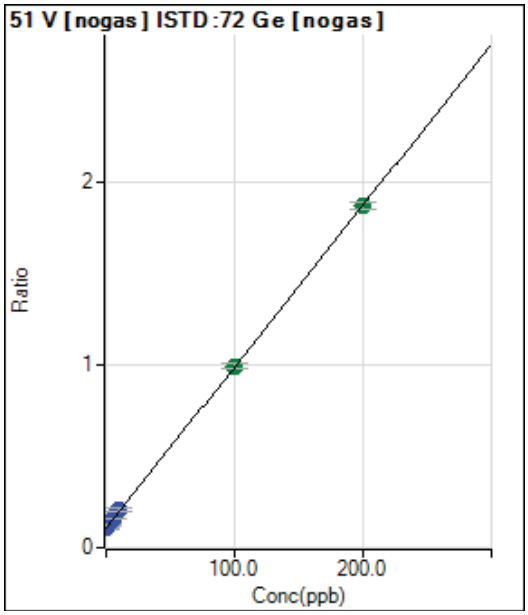


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	130.00	0.0001	P	22.9
2	☐	2.000	1.929	2246.83	0.0013	P	6.7
3	☐	5.000	5.015	5587.64	0.0032	P	3.5
4	☐	10.000	10.479	11630.45	0.0067	P	4.3
5	☐	100.000	97.489	102080.87	0.0613	P	1.5
6	☐	200.000	201.232	208030.66	0.1264	P	2.1
7	☐	1.000					

y = 6.2784E-004 * x + 7.4144E-005
R = 0.9999
DL = 0.08107
BEC = 0.1181

Weight: <None>
Min Conc: <None>

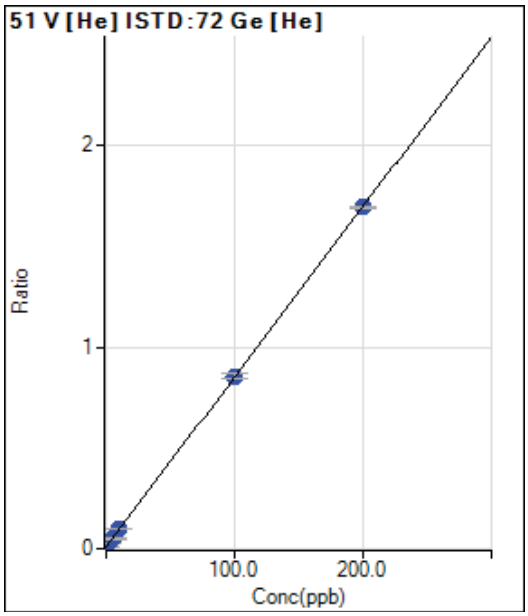
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	188045.09	0.1072	P	6.9
2	☐	2.000	2.361	223930.63	0.1281	P	6.7
3	☐	5.000	5.935	276917.30	0.1597	P	3.9
4	☐	10.000	11.223	360738.88	0.2065	P	6.7
5	☐	100.000	100.606	1660233.27	0.9967	A	2.9
6	☐	200.000	199.609	3080470.19	1.8720	A	2.2
7	☐	1.000					

y = 0.0088 * x + 0.1072
R = 1.0000
DL = 2.528
BEC = 12.13

Weight: <None>
Min Conc: <None>

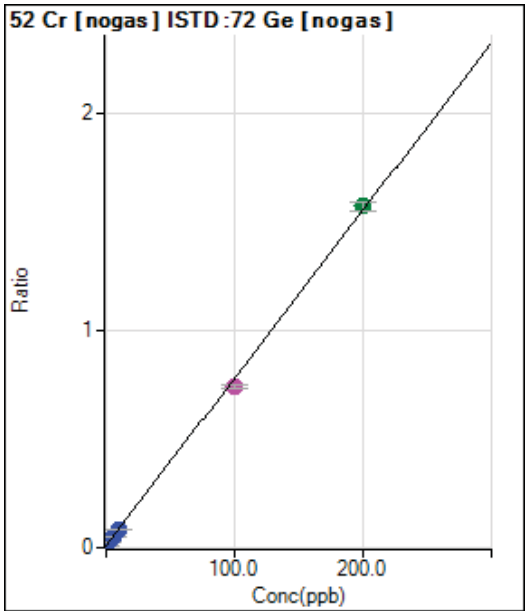


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.290	3487.00	0.0068	P	2.9
2	☐	2.000	1.797	12271.38	0.0244	P	4.6
3	☐	5.000	4.827	25336.54	0.0500	P	3.0
4	☐	10.000	10.494	46627.44	0.0978	P	3.9
5	☐	100.000	100.380	411144.00	0.8558	P	2.6
6	☐	200.000	199.792	803163.86	1.6941	P	0.5
7	☐	1.000					

y = 0.0084 * x + 0.0093
R = 1.0000
DL = 0.07025
BEC = 1.098

Weight: <None>
Min Conc: <None>

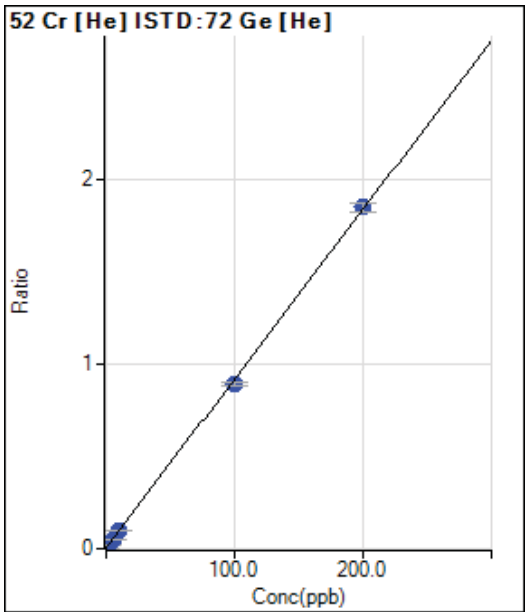
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16681.00	0.0095	P	1.5
2	☐	2.000	2.017	43778.69	0.0251	P	1.6
3	☐	5.000	5.048	83876.50	0.0484	P	1.8
4	☐	10.000	9.752	147931.94	0.0846	P	4.4
5	☐	100.000	94.901	1233140.37	0.7404	M	2.8
6	☐	200.000	202.561	2582720.85	1.5696	A	2.3
7	☐	1.000					

y = 0.0077 * x + 0.0095
R = 0.9995
DL = 0.05568
BEC = 1.236

Weight: <None>
Min Conc: <None>

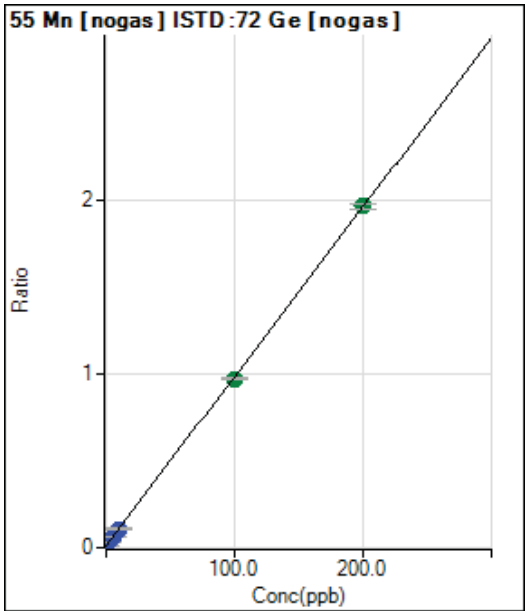


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2100.15	0.0041	P	5.9
2	☐	2.000	1.929	10960.06	0.0218	P	4.2
3	☐	5.000	4.843	24586.66	0.0485	P	9.6
4	☐	10.000	10.501	47919.12	0.1005	P	3.8
5	☐	100.000	97.064	429889.92	0.8947	P	2.0
6	☐	200.000	201.448	878216.11	1.8525	P	2.9
7	☐	1.000					

y = 0.0092 * x + 0.0041
R = 0.9998
DL = 0.0794
BEC = 0.447

Weight: <None>
Min Conc: <None>

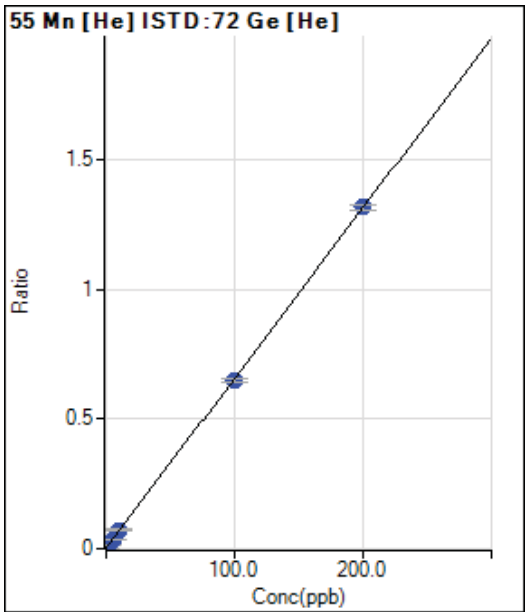
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20852.03	0.0119	P	0.9
2	☐	2.000	1.991	54644.23	0.0313	P	2.2
3	☐	5.000	5.088	106432.15	0.0614	P	1.8
4	☐	10.000	9.858	188452.16	0.1078	P	4.6
5	☐	100.000	98.745	1620538.15	0.9728	A	1.6
6	☐	200.000	200.633	3232804.22	1.9643	A	1.8
7	☐	1.000					

y = 0.0097 * x + 0.0119
R = 1.0000
DL = 0.03273
BEC = 1.222

Weight: <None>
Min Conc: <None>

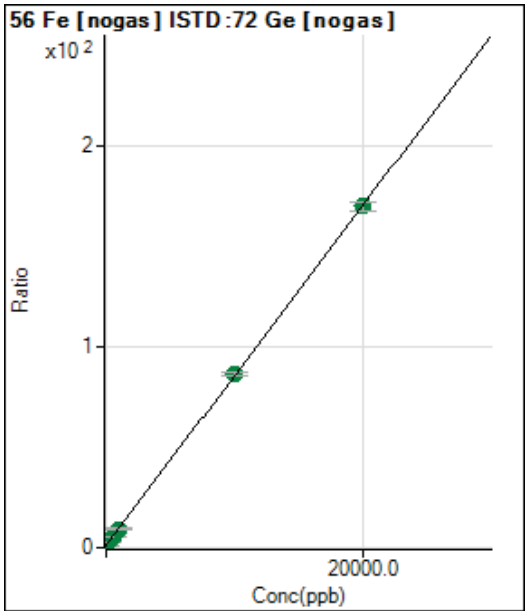


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	956.71	0.0019	P	11.2
2	☐	2.000	2.022	7601.68	0.0151	P	5.5
3	☐	5.000	5.127	17989.05	0.0355	P	5.1
4	☐	10.000	10.710	34352.28	0.0721	P	6.4
5	☐	100.000	98.726	311831.59	0.6490	P	2.7
6	☐	200.000	200.598	624253.56	1.3167	P	1.6
7	☐	1.000					

y = 0.0066 * x + 0.0019
R = 1.0000
DL = 0.09565
BEC = 0.2855

Weight: <None>
Min Conc: <None>

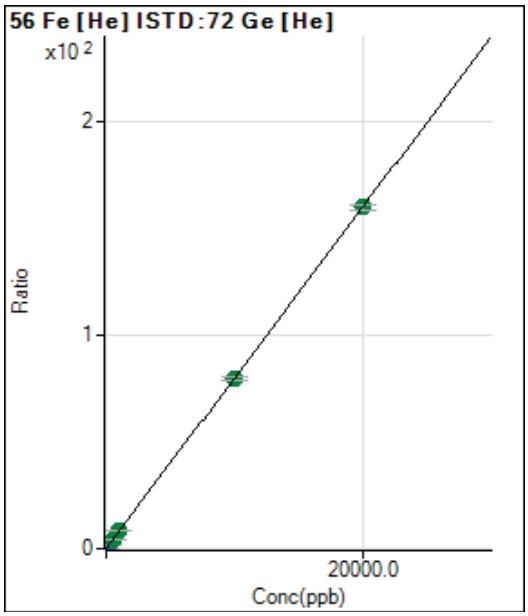
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1842985.00	1.0514	A	2.1
2	☐	200.000	202.139	4825163.65	2.7612	A	1.9
3	☐	500.000	505.503	9232833.80	5.3272	A	1.5
4	☐	1000.000	986.750	16427177.45	9.3979	A	4.4
5	☐	10000.00	10080.945	143784740.7	86.3214	A	1.6
6	☐	20000.00	19960.031	279542689.5	169.884	A	2.8
7	☐	100.000					

y = 0.0085 * x + 1.0514
R = 1.0000
DL = 7.687
BEC = 124.3

Weight: <None>
Min Conc: <None>

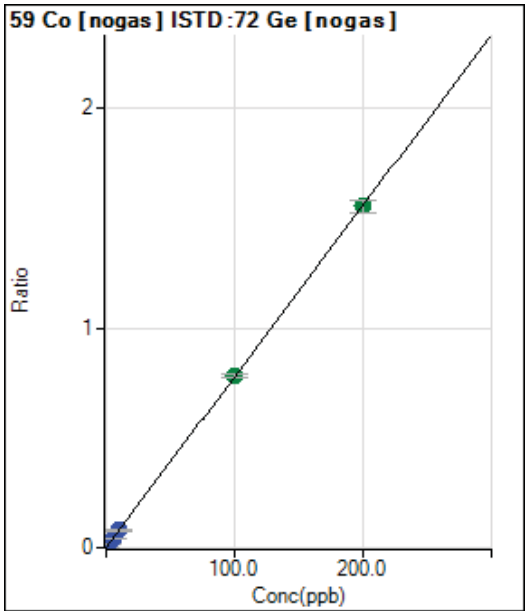


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16260.66	0.0318	P	3.2
2	☐	200.000	202.750	831150.72	1.6529	P	1.8
3	☐	500.000	520.570	2127174.50	4.1942	A	2.4
4	☐	1000.000	1066.197	4080633.27	8.5570	A	4.6
5	☐	10000.00	9999.844	38439961.93	79.9896	A	2.2
6	☐	20000.00	19996.226	75815228.87	159.919	A	1.3
7	☐	100.000					

y = 0.0080 * x + 0.0318
R = 1.0000
DL = 0.3793
BEC = 3.974

Weight: <None>
Min Conc: <None>

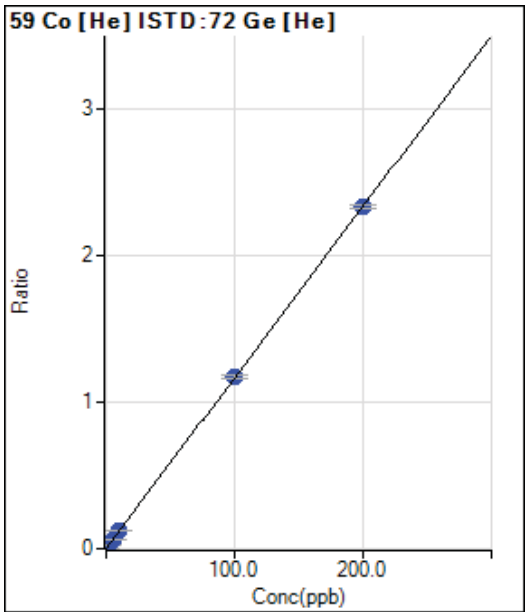
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	373.34	0.0002	P	30.3
2	☐	2.000	2.022	27871.43	0.0159	P	2.2
3	☐	5.000	5.138	69682.11	0.0402	P	0.2
4	☐	10.000	10.161	138605.29	0.0793	P	4.3
5	☐	100.000	100.594	1304263.86	0.7831	A	2.1
6	☐	200.000	199.691	2557127.36	1.5543	A	4.0
7	☐	1.000					

y = 0.0078 * x + 2.1296E-004
R = 1.0000
DL = 0.02491
BEC = 0.02736

Weight: <None>
Min Conc: <None>

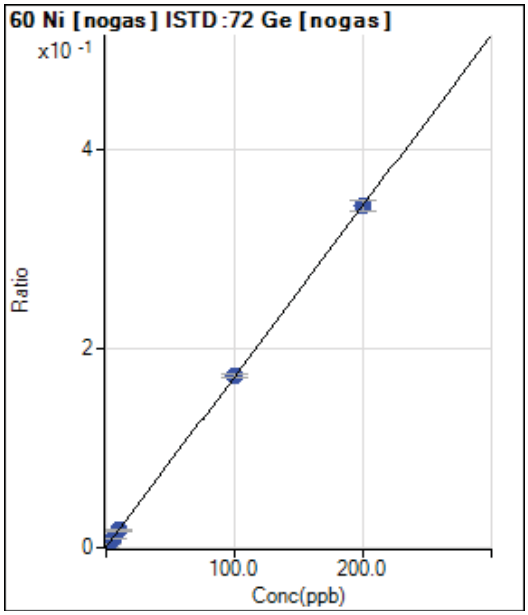


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	66.67	0.0001	P	63.3
2	☐	2.000	2.047	12074.15	0.0240	P	4.4
3	☐	5.000	5.185	30759.46	0.0607	P	3.6
4	☐	10.000	10.597	59065.19	0.1238	P	4.4
5	☐	100.000	100.479	563575.67	1.1729	P	2.0
6	☐	200.000	199.725	1105263.24	2.3313	P	1.0
7	☐	1.000					

y = 0.0117 * x + 1.3085E-004
R = 1.0000
DL = 0.02128
BEC = 0.01121

Weight: <None>
Min Conc: <None>

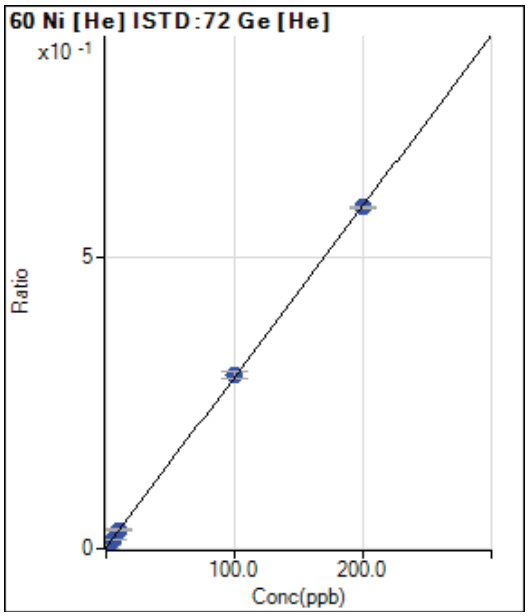
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.147	346.68	0.0002	P	14.0
2	☐	2.000	1.940	6594.61	0.0038	P	7.6
3	☐	5.000	4.962	15516.76	0.0090	P	3.2
4	☐	10.000	9.924	30492.35	0.0175	P	6.0
5	☐	100.000	100.630	287862.52	0.1728	P	2.7
6	☐	200.000	199.690	563587.98	0.3426	P	3.3
7	☐	1.000					

y = 0.0017 * x + 4.4936E-004
R = 1.0000
DL = 0.04829
BEC = 0.2623

Weight: <None>
Min Conc: <None>

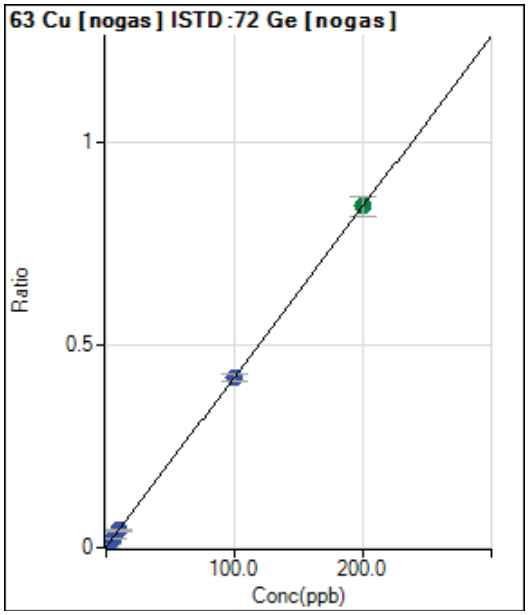


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.389	206.67	0.0004	P	12.1
2	☐	2.000	1.765	3380.36	0.0067	P	3.5
3	☐	5.000	4.649	7695.03	0.0152	P	6.4
4	☐	10.000	10.313	15149.80	0.0318	P	6.4
5	☐	100.000	101.334	143468.57	0.2986	P	3.5
6	☐	200.000	199.329	277799.34	0.5860	P	0.3
7	☐	1.000					

y = 0.0029 * x + 0.0015
R = 1.0000
DL = 0.04994
BEC = 0.5266

Weight: <None>
Min Conc: <None>

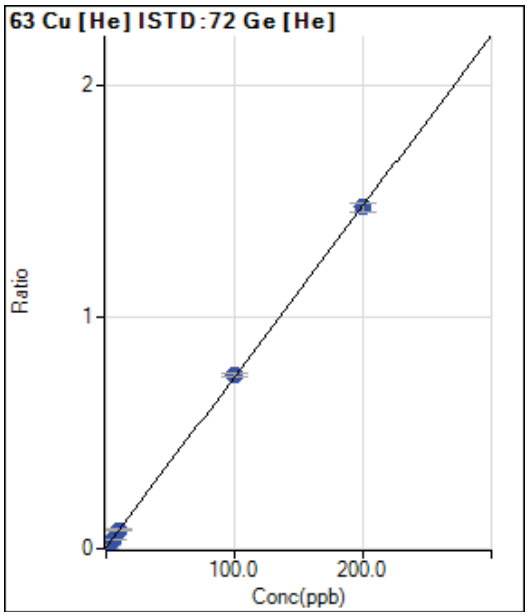
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1460.08	0.0008	P	12.1
2	☐	2.000	1.989	16037.25	0.0092	P	6.1
3	☐	5.000	5.187	39169.15	0.0226	P	2.2
4	☐	10.000	10.064	75281.57	0.0431	P	3.8
5	☐	100.000	99.692	698143.76	0.4192	P	3.4
6	☐	200.000	200.146	1382921.39	0.8407	A	5.6
7	☐	1.000					

y = 0.0042 * x + 8.3306E-004
R = 1.0000
DL = 0.07206
BEC = 0.1985

Weight: <None>
Min Conc: <None>

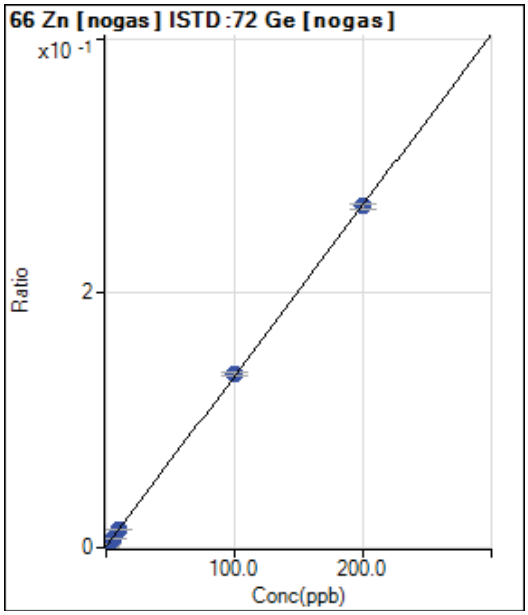


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.483	800.03	0.0016	P	4.7
2	☐	2.000	1.689	8855.60	0.0176	P	2.8
3	☐	5.000	4.797	20545.11	0.0405	P	7.3
4	☐	10.000	10.342	38871.58	0.0815	P	3.0
5	☐	100.000	101.329	361907.17	0.7532	P	1.8
6	☐	200.000	199.327	700041.08	1.4767	P	2.4
7	☐	1.000					

y = 0.0074 * x + 0.0051
R = 1.0000
DL = 0.02988
BEC = 0.6952

Weight: <None>
Min Conc: <None>

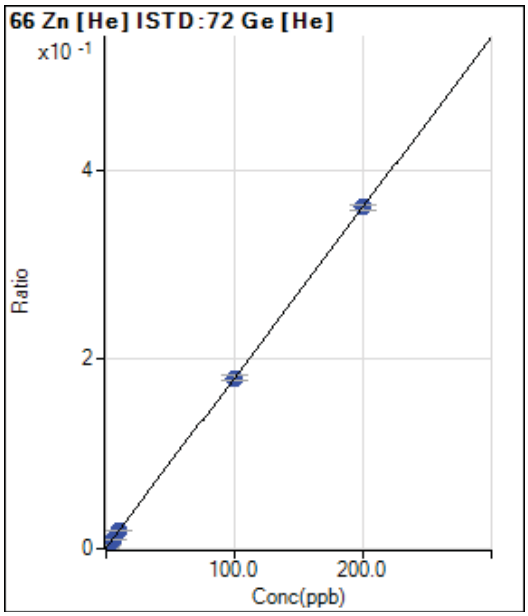
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.095	1220.06	0.0007	P	17.0
2	☐	2.000	1.608	5207.50	0.0030	P	6.7
3	☐	5.000	4.928	12881.37	0.0074	P	2.4
4	☐	10.000	9.883	24610.19	0.0141	P	3.3
5	☐	100.000	101.329	227679.46	0.1367	P	1.6
6	☐	200.000	199.347	441354.95	0.2681	P	1.3
7	☐	1.000					

y = 0.0013 * x + 8.2328E-004
R = 1.0000
DL = 0.2651
BEC = 0.614

Weight: <None>
Min Conc: <None>

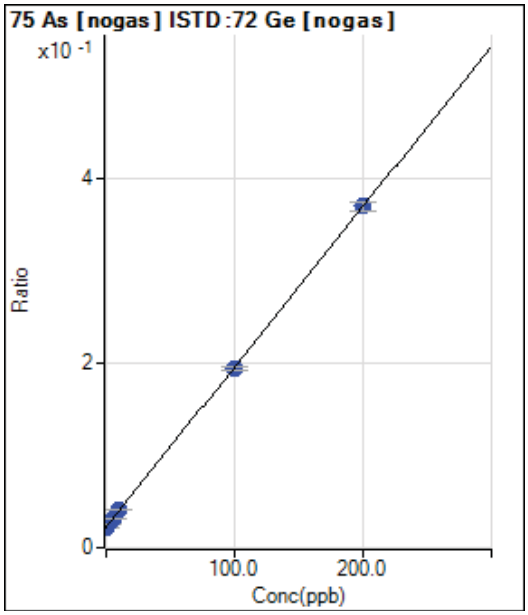


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.153	516.68	0.0010	P	18.1
2	☐	2.000	1.903	2090.15	0.0042	P	9.8
3	☐	5.000	5.077	5007.42	0.0099	P	6.7
4	☐	10.000	9.886	8848.91	0.0185	P	1.4
5	☐	100.000	99.953	86858.52	0.1808	P	2.4
6	☐	200.000	200.028	171168.11	0.3611	P	1.6
7	☐	1.000					

y = 0.0018 * x + 7.3349E-004
R = 1.0000
DL = 0.3037
BEC = 0.4072

Weight: <None>
Min Conc: <None>

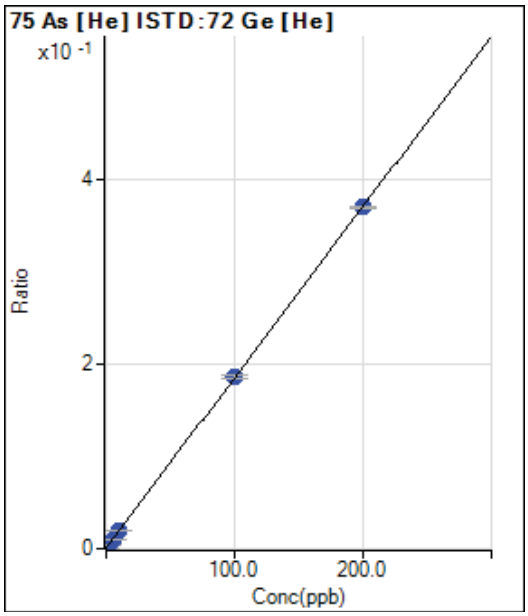
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.695	37204.89	0.0212	P	4.0
2	☐	2.000	1.775	44581.62	0.0255	P	5.7
3	☐	5.000	5.494	55404.21	0.0320	P	1.8
4	☐	10.000	10.865	72199.70	0.0413	P	2.4
5	☐	100.000	99.228	324215.25	0.1946	P	2.0
6	☐	200.000	200.333	608987.78	0.3701	P	2.9
7	☐	1.000					

y = 0.0017 * x + 0.0224
R = 1.0000
DL = 1.459
BEC = 12.92

Weight: <None>
Min Conc: <None>

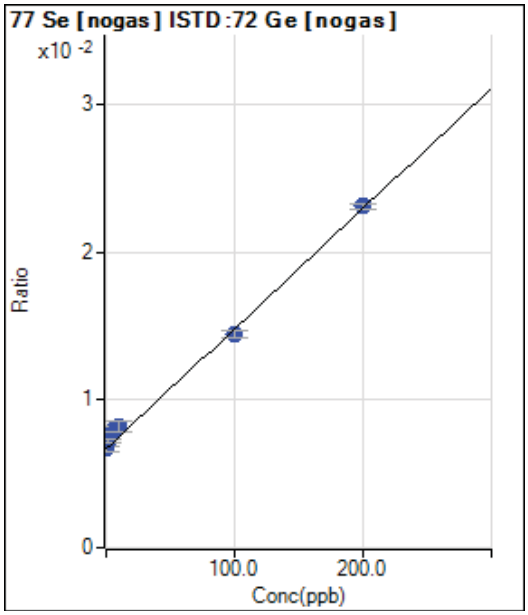


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	225.56	0.0004	P	11.9
2	☐	2.000	2.057	2139.02	0.0043	P	1.8
3	☐	5.000	4.992	4916.24	0.0097	P	4.1
4	☐	10.000	10.192	9224.59	0.0193	P	1.6
5	☐	100.000	100.383	89599.54	0.1865	P	1.6
6	☐	200.000	199.799	175758.19	0.3707	P	0.9
7	☐	1.000					

y = 0.0019 * x + 4.4096E-004
R = 1.0000
DL = 0.08493
BEC = 0.2379

Weight: <None>
Min Conc: <None>

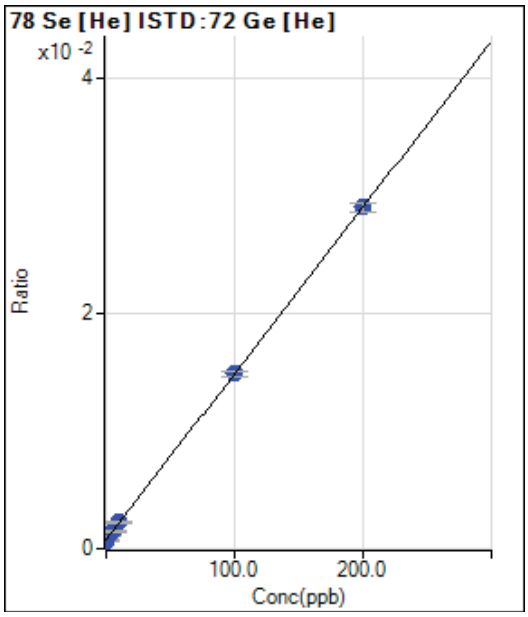
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	11717.31	0.0067	P	6.2
2	☐	2.000	6.133	12551.18	0.0072	P	4.0
3	☐	5.000	16.193	13872.17	0.0080	P	4.8
4	☐	10.000	18.775	14339.17	0.0082	P	8.9
5	☐	100.000	95.006	24002.83	0.0144	P	3.2
6	☐	200.000	201.737	38010.19	0.0231	P	1.4
7	☐	1.000					

y = 8.1349E-005 * x + 0.0067
R = 0.9978
DL = 15.18
BEC = 82.14

Weight: <None>
Min Conc: <None>

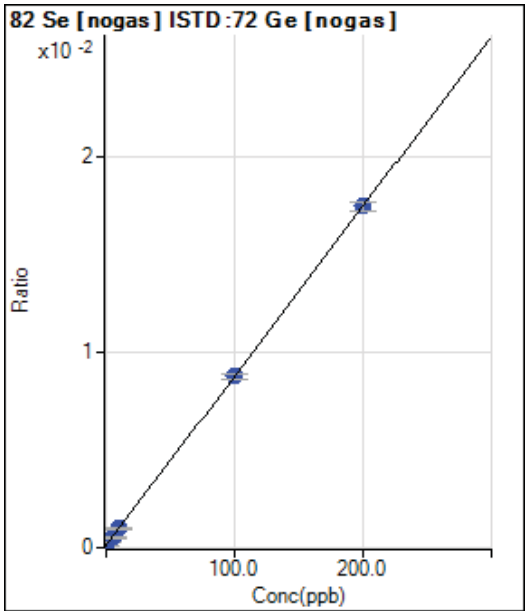


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	-0.441	352.67	0.0007	P	5.4
2	☐	2.000	1.968	517.34	0.0010	P	4.5
3	☐	5.000	5.131	748.69	0.0015	P	2.2
4	☐	10.000	10.486	1063.37	0.0022	P	7.0
5	☐	100.000	99.768	7123.41	0.0148	P	2.4
6	☐	200.000	200.089	13739.20	0.0290	P	2.4
7	☐	1.000					

y = 1.4108E-004 * x + 7.5142E-004
R = 1.0000
DL = 0.7905
BEC = 5.326

Weight: <None>
Min Conc: <None>

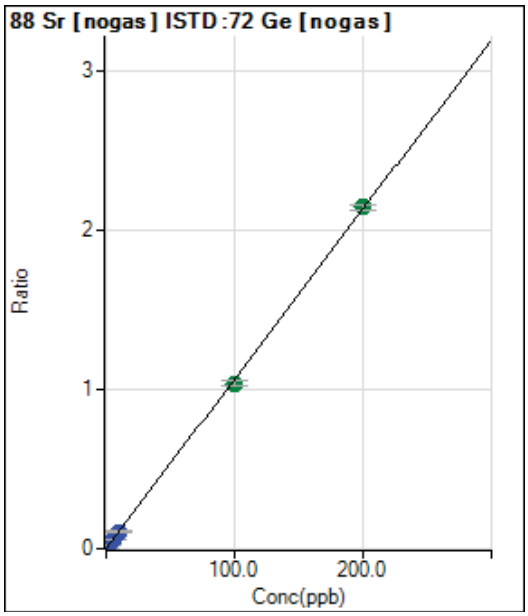
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	196.67	0.0001	P	42.1
2		2.000	2.643	596.68	0.0003	P	11.4
3		5.000	4.876	926.70	0.0005	P	10.6
4		10.000	10.130	1733.45	0.0010	P	6.2
5		100.000	99.673	14576.07	0.0088	P	2.6
6		200.000	200.154	28749.84	0.0175	P	2.4
7		1.000					

y = 8.6680E-005 * x + 1.1239E-004
R = 1.0000
DL = 1.638
BEC = 1.297

Weight: <None>
Min Conc: <None>

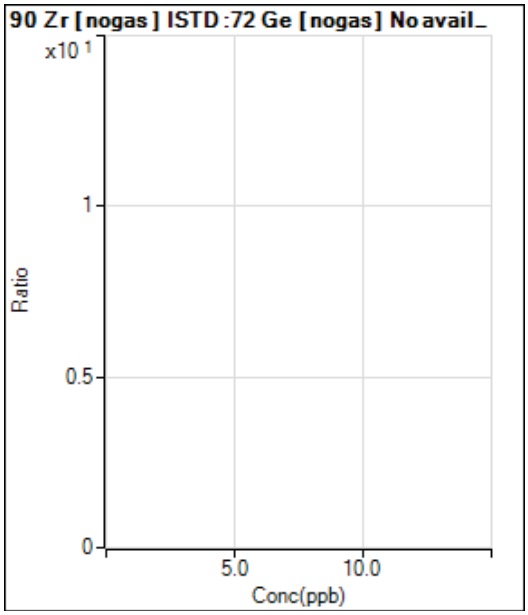


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	876.70	0.0005	P	18.3
2		2.000	1.947	37102.18	0.0212	P	2.4
3		5.000	5.017	93430.78	0.0539	P	2.3
4		10.000	9.934	185756.80	0.1063	P	3.7
5		100.000	97.378	1727469.97	1.0373	A	3.8
6		200.000	201.315	3528591.51	2.1438	A	1.5
7		1.000					

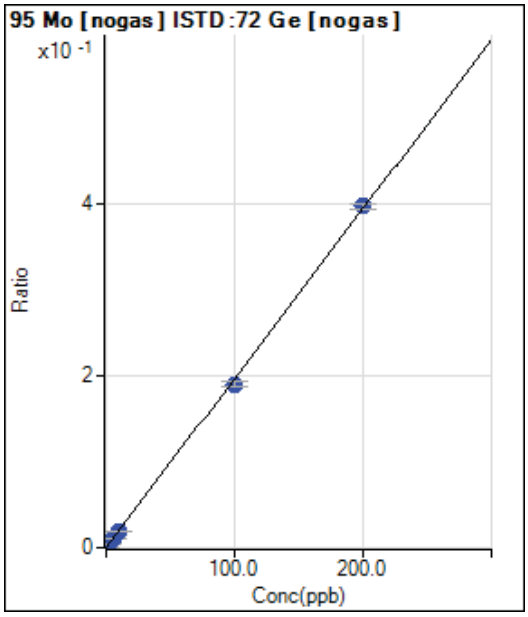
y = 0.0106 * x + 4.9974E-004
R = 0.9999
DL = 0.02581
BEC = 0.04694

Weight: <None>
Min Conc: <None>

Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000					
2	☐	2.000					
3	☐	5.000					
4	☐	10.000					
5	☐	100.000					
6	☐	200.000					
7	☐	1.000					

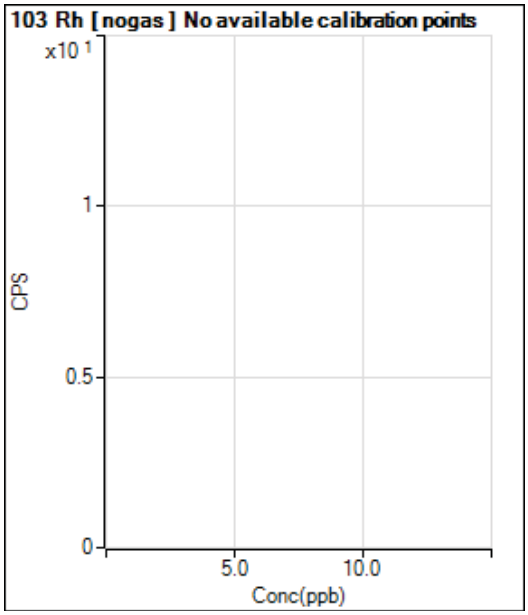


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	93.33	0.0001	P	45.3
2	☐	2.000	1.870	6514.66	0.0037	P	2.8
3	☐	5.000	4.903	16784.89	0.0097	P	3.5
4	☐	10.000	9.938	34229.79	0.0196	P	3.2
5	☐	100.000	96.635	316271.43	0.1899	P	3.6
6	☐	200.000	201.689	652287.62	0.3963	P	1.4
7	☐	1.000					

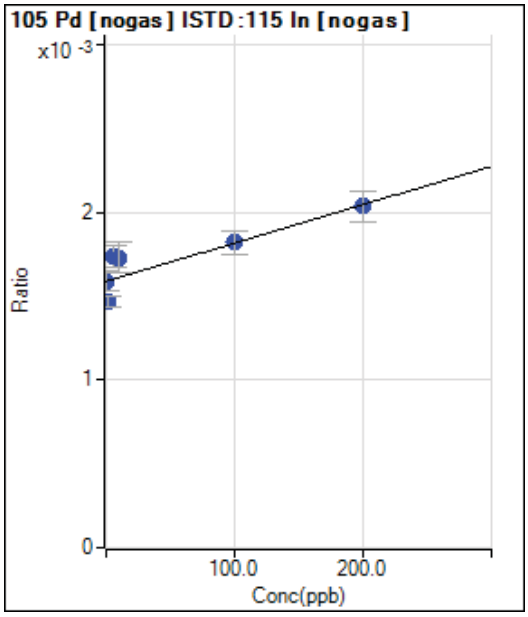
y = 0.0020 * x + 5.3344E-005
R = 0.9998
DL = 0.03689
BEC = 0.02715

Weight: <None>
Min Conc: <None>

Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			26.67		P	57.3
2	☐			10.00		P	100.
3	☐			36.67		P	41.7
4	☐			16.67		P	34.6
5	☐			123.33		P	20.4
6	☐			206.67		P	34.3
7	☐						

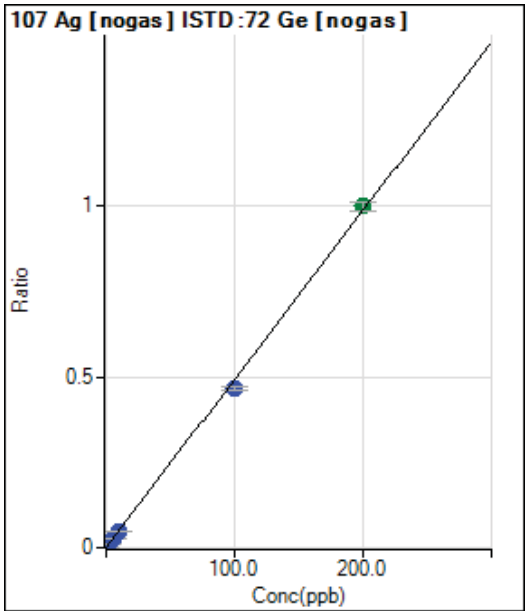


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2320.21	0.0016	P	7.7
2	☐	2.000	-52.216	2073.50	0.0015	P	3.9
3	☐	5.000	65.249	2430.21	0.0017	P	7.8
4	☐	10.000	62.388	2380.21	0.0017	P	11.1
5	☐	100.000	101.656	2430.21	0.0018	P	7.5
6	☐	200.000	195.589	2640.24	0.0020	P	8.7
7	☐	1.000					

y = 2.2865E-006 * x + 0.0016
R = 0.8742
DL = 159.7
BEC = 694.6

Weight: <None>
Min Conc: <None>

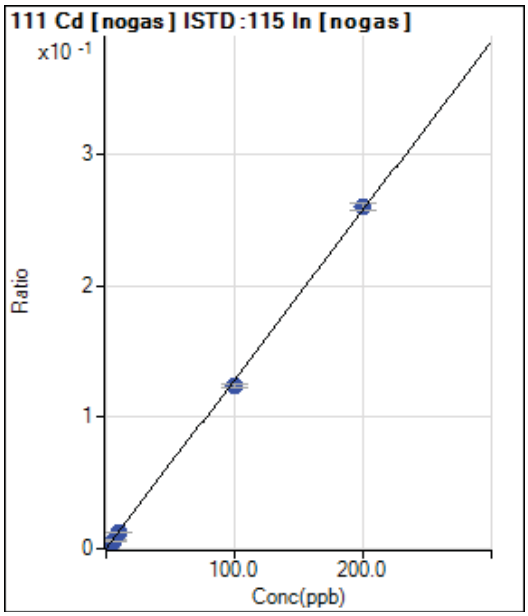
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	110.00	0.0001	P	16.4
2	☐	2.000	1.920	16648.09	0.0095	P	2.3
3	☐	5.000	5.063	43370.33	0.0250	P	3.4
4	☐	10.000	9.624	83066.07	0.0475	P	3.1
5	☐	100.000	94.545	776447.91	0.4662	P	1.2
6	☐	200.000	202.745	1645119.66	0.9996	A	2.6
7	☐	1.000					

y = 0.0049 * x + 6.2791E-005
R = 0.9995
DL = 0.006276
BEC = 0.01274

Weight: <None>
Min Conc: <None>

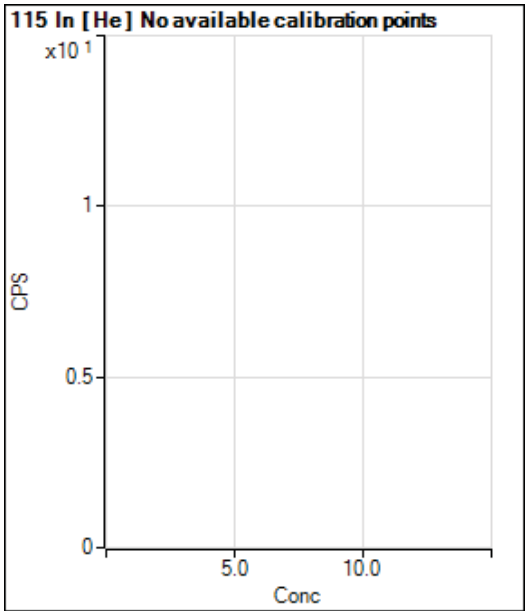


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20.00	0.0000	P	86.3
2	☐	2.000	1.815	3303.70	0.0023	P	6.3
3	☐	5.000	4.775	8598.92	0.0061	P	5.8
4	☐	10.000	9.811	17392.21	0.0126	P	5.9
5	☐	100.000	96.333	165394.86	0.1238	P	3.0
6	☐	200.000	201.851	336689.31	0.2594	P	2.2
7	☐	1.000					

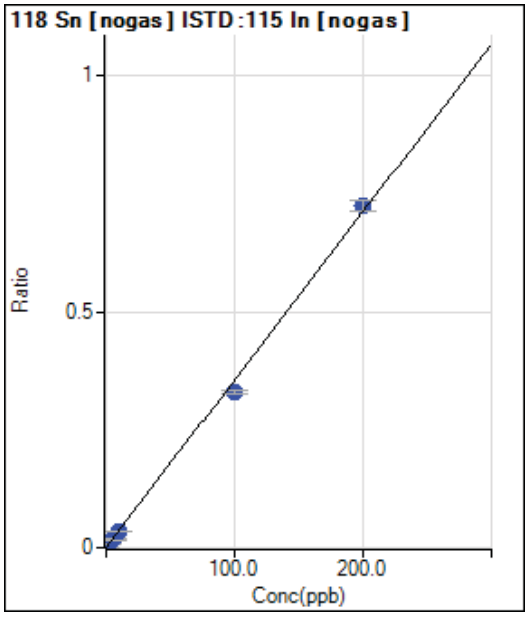
y = 0.0013 * x + 1.3662E-005
R = 0.9998
DL = 0.02752
BEC = 0.01063

Weight: <None>
Min Conc: <None>

Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			544909.19		P	1.8
2	☐			551164.69		P	1.6
3	☐			556814.92		P	2.5
4	☐			521609.68		P	6.2
5	☐			529435.41		P	1.0
6	☐			523909.58		P	1.6
7	☐						

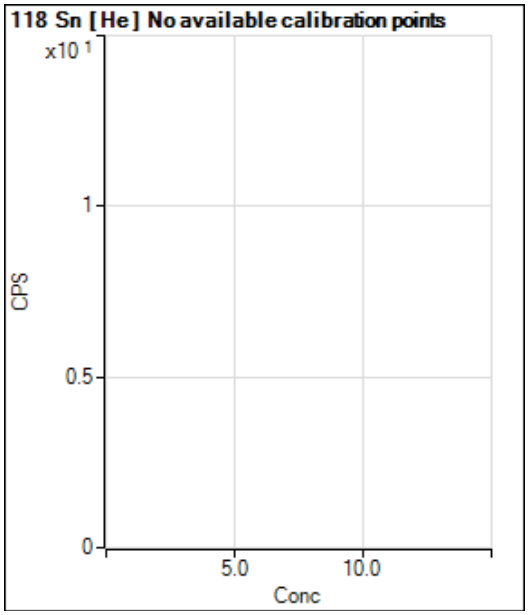


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	680.03	0.0005	P	14.4
2	☐	2.000	2.020	10773.53	0.0076	P	2.1
3	☐	5.000	4.785	24444.15	0.0175	P	3.1
4	☐	10.000	9.876	49022.57	0.0355	P	4.5
5	☐	100.000	93.072	442467.64	0.3311	P	2.3
6	☐	200.000	203.475	938672.88	0.7233	P	3.0
7	☐	1.000					

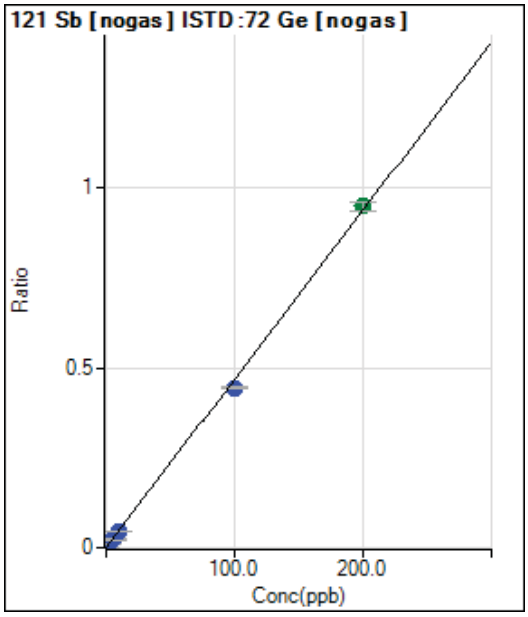
y = 0.0036 * x + 4.6558E-004
R = 0.9992
DL = 0.05645
BEC = 0.1311

Weight: <None>
Min Conc: <None>

Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			370.01		P	7.2
2	☐			4654.05		P	11.7
3	☐			11630.69		P	2.2
4	☐			22401.34		P	2.6
5	☐			199787.36		P	0.9
6	☐			409116.22		P	1.2
7	☐						

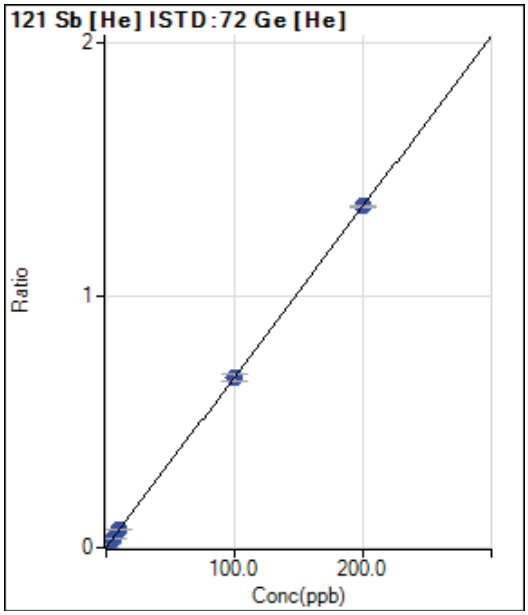


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	760.03	0.0004	P	1.9
2	☐	2.000	1.901	16327.86	0.0093	P	3.1
3	☐	5.000	4.769	39501.80	0.0228	P	2.6
4	☐	10.000	9.413	77887.50	0.0446	P	4.0
5	☐	100.000	94.893	741489.44	0.4452	P	1.4
6	☐	200.000	202.590	1563129.35	0.9500	A	2.6
7	☐	1.000					

y = 0.0047 * x + 4.3358E-004
R = 0.9996
DL = 0.005145
BEC = 0.09251

Weight: <None>
Min Conc: <None>

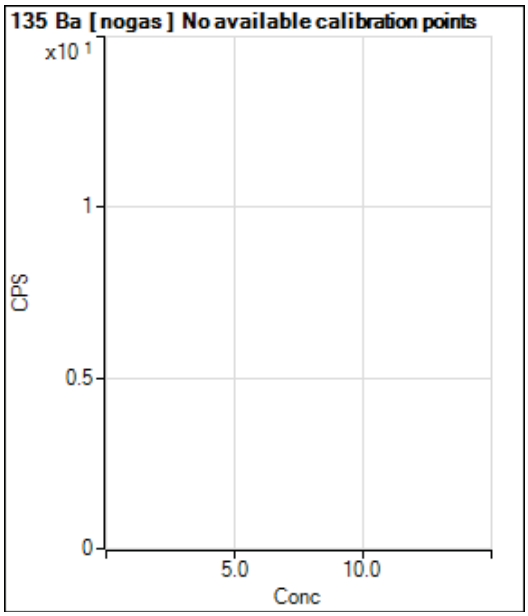
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	370.01	0.0007	P	17.7
2	☐	2.000	1.926	6908.14	0.0137	P	7.1
3	☐	5.000	4.907	17182.04	0.0339	P	4.1
4	☐	10.000	10.428	33949.92	0.0712	P	5.2
5	☐	100.000	99.721	324110.60	0.6747	P	3.7
6	☐	200.000	200.121	641566.92	1.3533	P	0.5
7	☐	1.000					

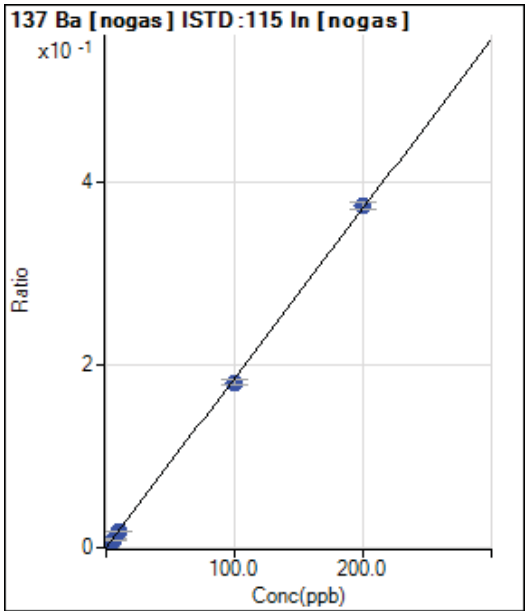
y = 0.0068 * x + 7.2412E-004
R = 1.0000
DL = 0.057
BEC = 0.1071

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			110.00		P	41.7
2	☐			3163.68		P	3.1
3	☐			7341.66		P	1.2
4	☐			14766.60		P	3.6
5	☐			139059.81		P	3.4
6	☐			278752.00		P	1.9
7	☐						

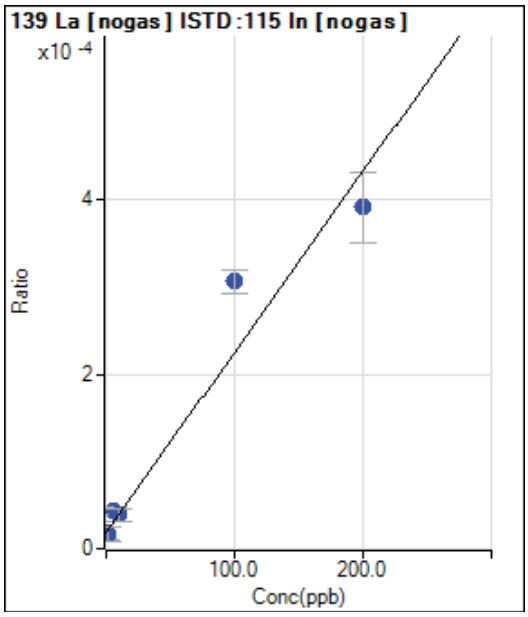
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	190.01	0.0001	P	31.7
2	☐	2.000	1.886	5124.17	0.0036	P	5.0
3	☐	5.000	4.620	12177.86	0.0087	P	9.2
4	☐	10.000	9.664	24951.91	0.0181	P	3.9
5	☐	100.000	97.255	241619.53	0.1809	P	3.4
6	☐	200.000	201.400	486052.52	0.3744	P	2.2
7	☐	1.000					

y = 0.0019 * x + 1.2993E-004
R = 0.9999
DL = 0.06649
BEC = 0.06991

Weight: <None>
Min Conc: <None>

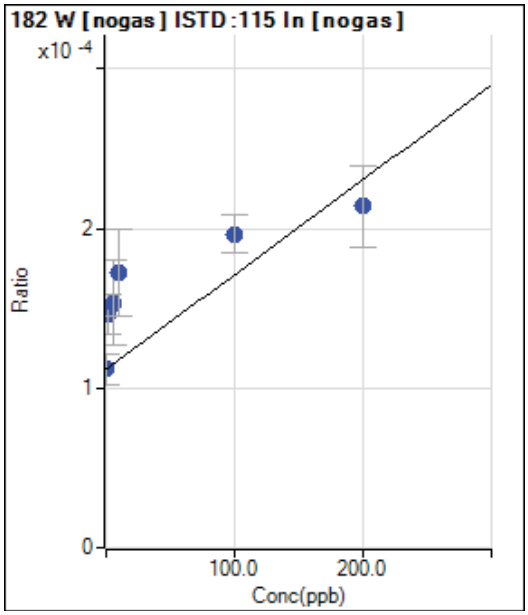


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	26.67	0.0000	P	77.7
2	☐	2.000	-0.684	23.33	0.0000	P	90.5
3	☐	5.000	11.944	60.00	0.0000	P	18.0
4	☐	10.000	9.783	53.33	0.0000	P	37.3
5	☐	100.000	139.097	410.01	0.0003	P	8.3
6	☐	200.000	180.316	506.68	0.0004	P	20.5
7	☐	100.000					

y = 2.0714E-006 * x + 1.8227E-005
R = 0.9716
DL = 20.51
BEC = 8.799

Weight: <None>
Min Conc: <None>

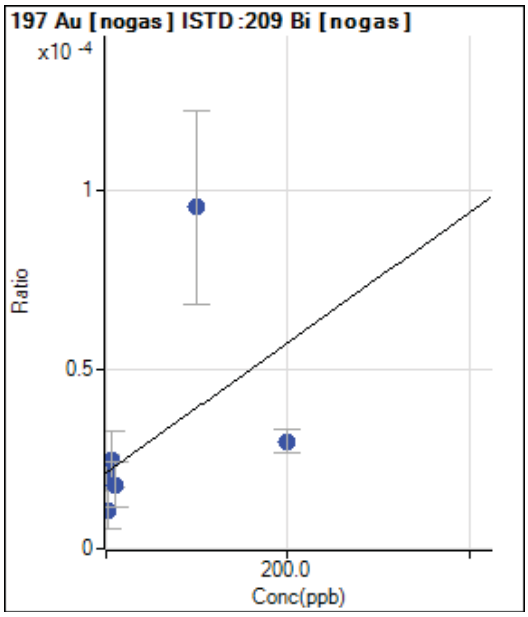
Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	163.34	0.0001	P	17.8
2	☐	2.000	57.766	206.67	0.0001	P	16.9
3	☐	5.000	69.841	213.34	0.0002	P	34.9
4	☐	10.000	101.591	236.67	0.0002	P	32.0
5	☐	100.000	142.576	263.34	0.0002	P	12.4
6	☐	200.000	171.954	276.68	0.0002	P	24.1
7	☐	1.000					

y = 5.9395E-007 * x + 1.1181E-004
R = 0.8463
DL = 100.4
BEC = 188.2

Weight: <None>
Min Conc: <None>

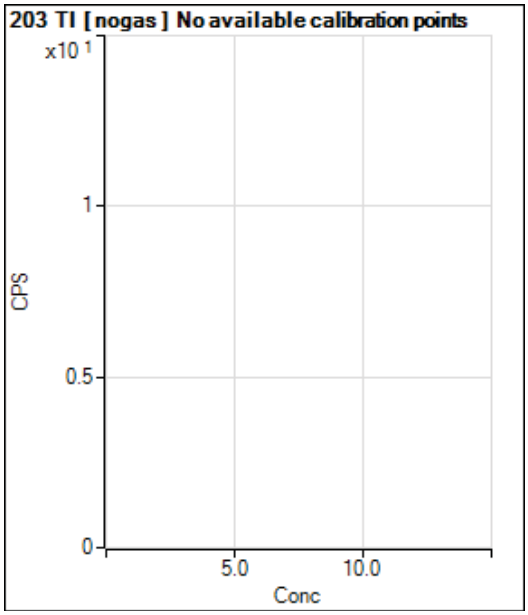


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20.00	0.0000	P	49.4
2	☐	2.000	-57.606	10.00	0.0000	P	98.7
3	☐	5.000	20.038	23.33	0.0000	P	62.4
4	☐	10.000	-18.126	16.67	0.0000	P	68.1
5	☐	100.000	407.740	86.67	0.0001	P	56.9
6	☐	200.000	47.756	26.67	0.0000	P	22.4
7	☐	100.000					

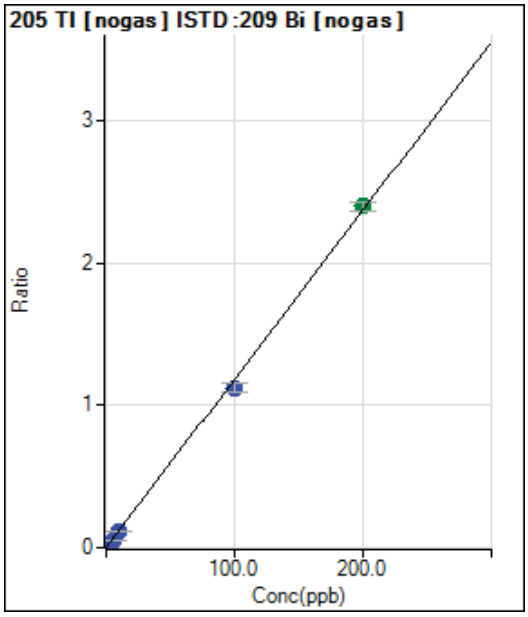
y = 1.8141E-007 * x + 2.1154E-005
R = 0.4156
DL = 172.8
BEC = 116.6

Weight: <None>
Min Conc: <None>

Calibration for 135_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐			23.33		P	49.5
2	☐			8632.43		P	3.9
3	☐			21524.53		P	1.3
4	☐			44417.97		P	1.5
5	☐			428823.11		P	3.6
6	☐			861158.24		P	2.8
7	☐						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	56.67	0.0001	P	46.2
2	☐	2.000	1.863	20523.28	0.0221	P	2.5
3	☐	5.000	4.624	50953.81	0.0548	P	4.0
4	☐	10.000	9.533	104851.37	0.1130	P	4.9
5	☐	100.000	94.944	1024699.07	1.1248	P	5.2
6	☐	200.000	202.562	2148174.65	2.3996	A	2.8
7	☐	1.000					

y = 0.0118 * x + 6.0261E-005
R = 0.9996
DL = 0.007045
BEC = 0.005087

Weight: <None>
Min Conc: <None>