LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 24

2019

Bate Stamp Numbers
00948289 – 00949986

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2019

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

VOLUME 24

2019

A. Title: Report (cont'd) – Draft Final Year 5 Annual Remedial Action Operation Report (September 2018–August 2019), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Bhate Environmental Associates, Inc.
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: December 5, 2019
Bate Stamp: 00948289 – 00949900

B. Title: Report – Draft Final Remedial Design/Remedial Action Work Plan, Contingency Remedy, LHAAP-50 Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, December 2019
Author(s): Department of the Army
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: December 26, 2019
Bate Stamp: 00949901 – 00949986

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335378 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190326** Units: **UG/L** Analysis Date: **26-Mar-2019 13:26**
Client ID: Run ID: **VOA6_335378** SeqNo: **5008736** 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	59.18	1.0	50	0	118	78 - 124				
1,1,1-Trichloroethane	49.91	1.0	50	0	99.8	74 - 131				
1,1,2,2-Tetrachloroethane	56.51	1.0	50	0	113	71 - 121				
1,1,2-Trichloroethane	56.76	1.0	50	0	114	80 - 119				
1,1-Dichloroethane	48.82	1.0	50	0	97.6	77 - 125				
1,1-Dichloroethene	48.97	1.0	50	0	97.9	71 - 131				
1,1-Dichloropropene	50.25	1.0	50	0	100	78 - 125				
1,2,3-Trichlorobenzene	62.38	1.0	50	0	125	69 - 129				
1,2,3-Trichloropropane	60.16	1.0	50	0	120	73 - 122				
1,2,4-Trichlorobenzene	62.08	1.0	50	0	124	69 - 130				
1,2,4-Trimethylbenzene	62.05	1.0	50	0	124	76 - 124				S
1,2-Dibromo-3-chloropropane	60.85	1.0	50	0	122	62 - 128				
1,2-Dibromoethane	59.41	1.0	50	0	119	77 - 121				
1,2-Dichlorobenzene	57.13	1.0	50	0	114	80 - 119				
1,2-Dichloroethane	53.57	1.0	50	0	107	73 - 128				
1,2-Dichloropropane	52.36	1.0	50	0	105	78 - 122				
1,3,5-Trimethylbenzene	60.55	1.0	50	0	121	75 - 124				
1,3-Dichlorobenzene	57.8	1.0	50	0	116	80 - 119				
1,3-Dichloropropane	57.1	1.0	50	0	114	80 - 119				
1,4-Dichlorobenzene	56.85	1.0	50	0	114	79 - 118				
2,2-Dichloropropane	51.22	1.0	50	0	102	60 - 139				
2-Butanone	109.7	2.0	100	0	110	56 - 143				
2-Chlorotoluene	56	1.0	50	0	112	79 - 122				
2-Hexanone	117.1	2.0	100	0	117	57 - 139				
4-Chlorotoluene	57.36	1.0	50	0	115	78 - 122				
4-Isopropyltoluene	60.43	1.0	50	0	121	77 - 127				
4-Methyl-2-pentanone	115.8	2.0	100	0	116	67 - 130				
Acetone	104.5	2.0	100	0	104	39 - 160				
Benzene	54.3	1.0	50	0	109	79 - 120				
Bromobenzene	59.62	1.0	50	0	119	80 - 120				
Bromochloromethane	51.72	1.0	50	0	103	78 - 123				
Bromodichloromethane	56.5	1.0	50	0	113	79 - 125				
Bromoform	60.49	1.0	50	0	121	66 - 130				
Bromomethane	52.77	1.0	50	0	106	53 - 141				

ALS Houston, US Date: 12-Apr-19

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Project: LHAAP-58
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QC BATCH REPORT NEW

Batch ID: R335378 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190326** Units: **UG/L** Analysis Date: **26-Mar-2019 13:26**
Client ID: Run ID: **VOA6_335378** SeqNo: **5008736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	94.6	2.0	100	0	94.6	64 - 133				
Carbon tetrachloride	55.46	1.0	50	0	111	72 - 136				
Chlorobenzene	54.64	1.0	50	0	109	82 - 118				
Chloroethane	47.94	1.0	50	0	95.9	60 - 138				
Chloroform	50.48	1.0	50	0	101	79 - 124				
Chloromethane	51.79	1.0	50	0	104	50 - 139				
cis-1,2-Dichloroethene	50.02	1.0	50	0	100	78 - 123				
cis-1,3-Dichloropropene	53.85	1.0	50	0	108	75 - 124				
Dibromochloromethane	59.63	1.0	50	0	119	74 - 126				
Dibromomethane	55.72	1.0	50	0	111	79 - 123				
Dichlorodifluoromethane	59.44	1.0	50	0	119	32 - 152				
Ethylbenzene	58.6	1.0	50	0	117	79 - 121				
Hexachlorobutadiene	62.03	1.0	50	0	124	66 - 134				
Isopropylbenzene	58.17	1.0	50	0	116	72 - 131				
m,p-Xylene	114.5	2.0	100	0	115	80 - 121				
Methylene chloride	50.68	2.0	50	0	101	74 - 124				
Naphthalene	63.48	1.0	50	0	127	61 - 128				
n-Butylbenzene	62.6	1.0	50	0	125	75 - 128				
n-Propylbenzene	58.67	1.0	50	0	117	76 - 126				
o-Xylene	56.01	1.0	50	0	112	78 - 122				
sec-Butylbenzene	58.01	1.0	50	0	116	77 - 126				
Styrene	59.49	1.0	50	0	119	78 - 123				
tert-Butylbenzene	57.39	1.0	50	0	115	78 - 124				
Tetrachloroethene	57.94	1.0	50	0	116	74 - 129				
Toluene	57.21	1.0	50	0	114	80 - 121				
trans-1,2-Dichloroethene	49.24	1.0	50	0	98.5	75 - 124				
trans-1,3-Dichloropropene	58.56	1.0	50	0	117	73 - 127				
Trichloroethene	51.9	1.0	50	0	104	79 - 123				
Trichlorofluoromethane	49.99	1.0	50	0	100.0	65 - 141				
Vinyl chloride	48.66	1.0	50	0	97.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.08*	*1.0*	*50*	*0*	*90.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.32*	*1.0*	*50*	*0*	*98.6*	*85 - 114*				
Surr: Dibromofluoromethane	*46.14*	*1.0*	*50*	*0*	*92.3*	*80 - 119*				
Surr: Toluene-d8	*52.93*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335378 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19031013-07MS** Units: **UG/L** Analysis Date: **26-Mar-2019 17:03**
Client ID: **35AWW20_031919** Run ID: **VOA6_335378** SeqNo: **5008743** 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	11.16	1.0	20	0	55.8	78 - 124				S
1,1,1-Trichloroethane	11.15	1.0	20	0	55.7	74 - 131				S
1,1,2,2-Tetrachloroethane	15.76	1.0	20	0	78.8	71 - 121				
1,1,2-Trichloroethane	53.04	1.0	20	37.94	75.5	80 - 119				S
1,1-Dichloroethane	185.5	1.0	20	186	-2.54	77 - 125				SO
1,1-Dichloroethene	1050	1.0	20	1097	-235	71 - 131				SEO
1,1-Dichloropropene	11.14	1.0	20	0	55.7	78 - 125				S
1,2,3-Trichlorobenzene	10.79	1.0	20	0	53.9	69 - 129				S
1,2,3-Trichloropropane	16.08	1.0	20	0	80.4	73 - 122				
1,2,4-Trichlorobenzene	10.13	1.0	20	0	50.7	69 - 130				S
1,2,4-Trimethylbenzene	11.2	1.0	20	0	56.0	76 - 124				S
1,2-Dibromo-3-chloropropane	19.5	1.0	20	0	97.5	62 - 128				
1,2-Dibromoethane	12.4	1.0	20	0	62.0	77 - 121				S
1,2-Dichlorobenzene	20.35	1.0	20	7.577	63.9	80 - 119				S
1,2-Dichloroethane	23.92	1.0	20	13.75	50.8	73 - 128				S
1,2-Dichloropropane	9.635	1.0	20	0	48.2	78 - 122				S
1,3,5-Trimethylbenzene	10.98	1.0	20	0	54.9	75 - 124				S
1,3-Dichlorobenzene	10.86	1.0	20	0	54.3	80 - 119				S
1,3-Dichloropropane	11.74	1.0	20	0	58.7	80 - 119				S
1,4-Dichlorobenzene	11.93	1.0	20	0	59.7	79 - 118				S
2,2-Dichloropropane	10.85	1.0	20	0	54.2	60 - 139				S
2-Butanone	33.46	2.0	40	0	83.6	56 - 143				
2-Chlorotoluene	10.92	1.0	20	0	54.6	79 - 122				S
2-Hexanone	38.21	2.0	40	0	95.5	57 - 139				
4-Chlorotoluene	10.67	1.0	20	0	53.4	78 - 122				S
4-Isopropyltoluene	10.47	1.0	20	0	52.3	77 - 127				S
4-Methyl-2-pentanone	35.59	2.0	40	0	89.0	67 - 130				
Acetone	31.41	2.0	40	0	78.5	39 - 160				
Benzene	13.32	1.0	20	3.04	51.4	79 - 120				S
Bromobenzene	11.36	1.0	20	0	56.8	80 - 120				S
Bromochloromethane	9.213	1.0	20	0	46.1	78 - 123				S
Bromodichloromethane	9.838	1.0	20	0	49.2	79 - 125				S
Bromoform	13.52	1.0	20	0	67.6	66 - 130				
Bromomethane	10.32	1.0	20	0	51.6	53 - 141				S

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335378 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19031013-07MS** Units: **UG/L** Analysis Date: **26-Mar-2019 17:03**
Client ID: **35AWW20_031919** Run ID: **VOA6_335378** SeqNo: **5008743** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	23.57	2.0	40	0	58.9	64 - 133				S
Carbon tetrachloride	13.73	1.0	20	0	68.6	72 - 136				S
Chlorobenzene	10.51	1.0	20	0	52.6	82 - 118				S
Chloroethane	175	1.0	20	0	875	60 - 138				S
Chloroform	9.489	1.0	20	0	47.4	79 - 124				S
Chloromethane	7.613	1.0	20	0	38.1	50 - 139				S
cis-1,2-Dichloroethene	55.42	1.0	20	49.43	30.0	78 - 123				S
cis-1,3-Dichloropropene	9.595	1.0	20	0	48.0	75 - 124				S
Dibromochloromethane	11.47	1.0	20	0	57.4	74 - 126				S
Dibromomethane	10.62	1.0	20	0	53.1	79 - 123				S
Dichlorodifluoromethane	13.94	1.0	20	0	69.7	32 - 152				
Ethylbenzene	10.95	1.0	20	0	54.8	79 - 121				S
Hexachlorobutadiene	8.847	1.0	20	0	44.2	66 - 134				S
Isopropylbenzene	10.98	1.0	20	0	54.9	72 - 131				S
m,p-Xylene	21.6	2.0	40	0	54.0	80 - 121				S
Methylene chloride	9.478	2.0	20	0	47.4	74 - 124				S
Naphthalene	14.29	1.0	20	0	71.4	61 - 128				
n-Butylbenzene	9.619	1.0	20	0	48.1	75 - 128				S
n-Propylbenzene	11.04	1.0	20	0	55.2	76 - 126				S
o-Xylene	11.05	1.0	20	0	55.2	78 - 122				S
sec-Butylbenzene	10.57	1.0	20	0	52.8	77 - 126				S
Styrene	10.37	1.0	20	0	51.8	78 - 123				S
tert-Butylbenzene	11.34	1.0	20	0	56.7	78 - 124				S
Tetrachloroethene	12.65	1.0	20	0	63.3	74 - 129				S
Toluene	11.44	1.0	20	0	57.2	80 - 121				S
trans-1,2-Dichloroethene	14.44	1.0	20	4.915	47.6	75 - 124				S
trans-1,3-Dichloropropene	10.16	1.0	20	0	50.8	73 - 127				S
Trichloroethene	178.6	1.0	20	177.3	6.25	79 - 123				SO
Trichlorofluoromethane	13.2	1.0	20	0	66.0	65 - 141				
Vinyl chloride	61.81	1.0	20	53.81	40.0	58 - 137				S
Surr: 1,2-Dichloroethane-d4	*47.29*	*1.0*	*50*	*0*	*94.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*47.34*	*1.0*	*50*	*0*	*94.7*	*85 - 114*				
Surr: Dibromofluoromethane	*45.97*	*1.0*	*50*	*0*	*91.9*	*80 - 119*				
Surr: Toluene-d8	*54.67*	*1.0*	*50*	*0*	*109*	*89 - 112*				

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335378 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19031013-07MSD** Units: **UG/L** Analysis Date: **26-Mar-2019 17:27**
Client ID: **35AWW20_031919** Run ID: **VOA6_335378** SeqNo: **5008744** 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	14.29	1.0	20	0	71.5	78 - 124	11.16	24.6	20	SR
1,1,1-Trichloroethane	13.73	1.0	20	0	68.7	74 - 131	11.15	20.7	20	SR
1,1,2,2-Tetrachloroethane	16.44	1.0	20	0	82.2	71 - 121	15.76	4.24	20	
1,1,2-Trichloroethane	66.89	1.0	20	37.94	145	80 - 119	53.04	23.1	20	SR
1,1-Dichloroethane	248.9	1.0	20	186	315	77 - 125	185.5	29.2	20	SREO
1,1-Dichloroethene	1262	1.0	20	1097	824	71 - 131	1050	18.3	20	SEO
1,1-Dichloropropene	13.99	1.0	20	0	70.0	78 - 125	11.14	22.7	20	SR
1,2,3-Trichlorobenzene	13.99	1.0	20	0	69.9	69 - 129	10.79	25.8	20	R
1,2,3-Trichloropropane	16.44	1.0	20	0	82.2	73 - 122	16.08	2.23	20	
1,2,4-Trichlorobenzene	13.67	1.0	20	0	68.3	69 - 130	10.13	29.7	20	SR
1,2,4-Trimethylbenzene	13.83	1.0	20	0	69.1	76 - 124	11.2	21	20	SR
1,2-Dibromo-3-chloropropane	18.23	1.0	20	0	91.1	62 - 128	19.5	6.76	20	
1,2-Dibromoethane	15.92	1.0	20	0	79.6	77 - 121	12.4	24.9	20	R
1,2-Dichlorobenzene	25.18	1.0	20	7.577	88.0	80 - 119	20.35	21.2	20	R
1,2-Dichloroethane	33.16	1.0	20	13.75	97.1	73 - 128	23.92	32.4	20	R
1,2-Dichloropropane	13.43	1.0	20	0	67.1	78 - 122	9.635	32.9	20	SR
1,3,5-Trimethylbenzene	13.61	1.0	20	0	68.1	75 - 124	10.98	21.4	20	SR
1,3-Dichlorobenzene	13.83	1.0	20	0	69.1	80 - 119	10.86	24.1	20	SR
1,3-Dichloropropane	14.82	1.0	20	0	74.1	80 - 119	11.74	23.2	20	SR
1,4-Dichlorobenzene	14.9	1.0	20	0	74.5	79 - 118	11.93	22.1	20	SR
2,2-Dichloropropane	13.44	1.0	20	0	67.2	60 - 139	10.85	21.4	20	R
2-Butanone	35.67	2.0	40	0	89.2	56 - 143	33.46	6.39	20	
2-Chlorotoluene	13.5	1.0	20	0	67.5	79 - 122	10.92	21.1	20	SR
2-Hexanone	38.9	2.0	40	0	97.2	57 - 139	38.21	1.77	20	
4-Chlorotoluene	13.3	1.0	20	0	66.5	78 - 122	10.67	22	20	SR
4-Isopropyltoluene	13.64	1.0	20	0	68.2	77 - 127	10.47	26.3	20	SR
4-Methyl-2-pentanone	37.71	2.0	40	0	94.3	67 - 130	35.59	5.77	20	
Acetone	31.97	2.0	40	0	79.9	39 - 160	31.41	1.77	20	
Benzene	17.94	1.0	20	3.04	74.5	79 - 120	13.32	29.6	20	SR
Bromobenzene	13.7	1.0	20	0	68.5	80 - 120	11.36	18.7	20	S
Bromochloromethane	13.51	1.0	20	0	67.5	78 - 123	9.213	37.8	20	SR
Bromodichloromethane	14.1	1.0	20	0	70.5	79 - 125	9.838	35.6	20	SR
Bromoform	16.39	1.0	20	0	82.0	66 - 130	13.52	19.2	20	
Bromomethane	13.02	1.0	20	0	65.1	53 - 141	10.32	23.1	20	R

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335378 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19031013-07MSD** Units: **UG/L** Analysis Date: **26-Mar-2019 17:27**
Client ID: **35AWW20_031919** Run ID: **VOA6_335378** SeqNo: **5008744** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	29.42	2.0	40	0	73.5	64 - 133	23.57	22.1	20	R
Carbon tetrachloride	15.62	1.0	20	0	78.1	72 - 136	13.73	12.9	20	
Chlorobenzene	13.94	1.0	20	0	69.7	82 - 118	10.51	28	20	SR
Chloroethane	213.7	1.0	20	0	1070	60 - 138	175	19.9	20	SE
Chloroform	13.25	1.0	20	0	66.3	79 - 124	9.489	33.1	20	SR
Chloromethane	11.04	1.0	20	0	55.2	50 - 139	7.613	36.7	20	R
cis-1,2-Dichloroethene	77.1	1.0	20	49.43	138	78 - 123	55.42	32.7	20	SR
cis-1,3-Dichloropropene	13.7	1.0	20	0	68.5	75 - 124	9.595	35.2	20	SR
Dibromochloromethane	14.83	1.0	20	0	74.2	74 - 126	11.47	25.6	20	R
Dibromomethane	14.69	1.0	20	0	73.4	79 - 123	10.62	32.1	20	SR
Dichlorodifluoromethane	14.89	1.0	20	0	74.5	32 - 152	13.94	6.58	20	
Ethylbenzene	14.37	1.0	20	0	71.9	79 - 121	10.95	27	20	SR
Hexachlorobutadiene	12.89	1.0	20	0	64.4	66 - 134	8.847	37.2	20	SR
Isopropylbenzene	14.32	1.0	20	0	71.6	72 - 131	10.98	26.4	20	SR
m,p-Xylene	28.13	2.0	40	0	70.3	80 - 121	21.6	26.2	20	SR
Methylene chloride	13.2	2.0	20	0	66.0	74 - 124	9.478	32.8	20	SR
Naphthalene	16.74	1.0	20	0	83.7	61 - 128	14.29	15.8	20	
n-Butylbenzene	13.53	1.0	20	0	67.7	75 - 128	9.619	33.8	20	SR
n-Propylbenzene	13.92	1.0	20	0	69.6	76 - 126	11.04	23.1	20	SR
o-Xylene	14.08	1.0	20	0	70.4	78 - 122	11.05	24.1	20	SR
sec-Butylbenzene	13.79	1.0	20	0	68.9	77 - 126	10.57	26.5	20	SR
Styrene	13.9	1.0	20	0	69.5	78 - 123	10.37	29.1	20	SR
tert-Butylbenzene	13.72	1.0	20	0	68.6	78 - 124	11.34	19	20	S
Tetrachloroethene	15.63	1.0	20	0	78.1	74 - 129	12.65	21.1	20	R
Toluene	14.2	1.0	20	0	71.0	80 - 121	11.44	21.5	20	SR
trans-1,2-Dichloroethene	19.45	1.0	20	4.915	72.7	75 - 124	14.44	29.6	20	SR
trans-1,3-Dichloropropene	14.54	1.0	20	0	72.7	73 - 127	10.16	35.5	20	SR
Trichloroethene	235.7	1.0	20	177.3	292	79 - 123	178.6	27.6	20	SREO
Trichlorofluoromethane	14.65	1.0	20	0	73.2	65 - 141	13.2	10.4	20	
Vinyl chloride	74.06	1.0	20	53.81	101	58 - 137	61.81	18	20	
Surr: 1,2-Dichloroethane-d4	*46.8*	*1.0*	*50*	*0*	*93.6*	*81 - 118*	*47.29*	*1.04*	*20*	
Surr: 4-Bromofluorobenzene	*50.69*	*1.0*	*50*	*0*	*101*	*85 - 114*	*47.34*	*6.83*	*20*	
Surr: Dibromofluoromethane	*46.32*	*1.0*	*50*	*0*	*92.6*	*80 - 119*	*45.97*	*0.744*	*20*	
Surr: Toluene-d8	*50.95*	*1.0*	*50*	*0*	*102*	*89 - 112*	*54.67*	*7.05*	*20*	

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335378 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS19031013-01	HS19031013-02	HS19031013-03	HS19031013-04
HS19031013-05	HS19031013-06	HS19031013-07	HS19031013-08

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335714 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-032019** Units: **mg/L** Analysis Date: **20-Mar-2019 12:55**
Client ID: Run ID: **ICS2100_335714** SeqNo: **5016596** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-032019** Units: **mg/L** Analysis Date: **20-Mar-2019 13:10**
Client ID: Run ID: **ICS2100_335714** SeqNo: **5016597** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.758	0.100	4	0	94.0	80 - 120				
Sulfate	19.03	0.500	20	0	95.2	80 - 120				

LCSD Sample ID: **WLCSDW1-032019** Units: **mg/L** Analysis Date: **20-Mar-2019 13:25**
Client ID: Run ID: **ICS2100_335714** SeqNo: **5016598** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.948	0.100	4	0	98.7	80 - 120	3.758	4.93	20	
Sulfate	19.65	0.500	20	0	98.2	80 - 120	19.03	3.18	20	

MS Sample ID: **HS19031013-07MS** Units: **mg/L** Analysis Date: **20-Mar-2019 21:23**
Client ID: **35AWW20_031919** Run ID: **ICS2100_335714** SeqNo: **5016611** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	10.69	0.500	10	0	107	80 - 120				
Sulfate	1195	2.50	50	1126	138	80 - 120				SEO

MSD Sample ID: **HS19031013-07MSD** Units: **mg/L** Analysis Date: **20-Mar-2019 21:38**
Client ID: **35AWW20_031919** Run ID: **ICS2100_335714** SeqNo: **5016612** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	10.5	0.500	10	0	105	80 - 120	10.69	1.82	20	
Sulfate	1159	2.50	50	1126	67.7	80 - 120	1195	2.99	20	SEO

The following samples were analyzed in this batch:

HS19031013-01	HS19031013-02	HS19031013-03	HS19031013-04
HS19031013-05	HS19031013-06	HS19031013-07	

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R335875 (0) **Instrument:** ICS2100 **Method:** ANIONS BY SW9056A

MBLK Sample ID: **WBLKW2-040219** Units: **mg/L** Analysis Date: **03-Apr-2019 01:16**
Client ID: Run ID: **ICS2100_335875** SeqNo: **5020414** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW2-040219** Units: **mg/L** Analysis Date: **03-Apr-2019 01:31**
Client ID: Run ID: **ICS2100_335875** SeqNo: **5020415** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.22	0.500	20	0	101	80 - 120				
Sulfate	19.98	0.500	20	0	99.9	80 - 120				

LCSD Sample ID: **WLCSDW2-040219** Units: **mg/L** Analysis Date: **03-Apr-2019 01:46**
Client ID: Run ID: **ICS2100_335875** SeqNo: **5020416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.95	0.500	20	0	94.8	80 - 120	20.22	6.51	20	
Sulfate	18.67	0.500	20	0	93.3	80 - 120	19.98	6.79	20	

MS Sample ID: **HS19031013-07MS** Units: **mg/L** Analysis Date: **03-Apr-2019 04:28**
Client ID: **35AWW20_031919** Run ID: **ICS2100_335875** SeqNo: **5020427** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1535	25.0	500	1090	89.1	80 - 120				
Sulfate	1565	25.0	500	1119	89.2	80 - 120				

MSD Sample ID: **HS19031013-07MSD** Units: **mg/L** Analysis Date: **03-Apr-2019 04:43**
Client ID: **35AWW20_031919** Run ID: **ICS2100_335875** SeqNo: **5020428** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1605	25.0	500	1090	103	80 - 120	1535	4.46	20	
Sulfate	1638	25.0	500	1119	104	80 - 120	1565	4.57	20	

The following samples were analyzed in this batch: HS19031013-01 HS19031013-02 HS19031013-03 HS19031013-04 HS19031013-05 HS19031013-06 HS19031013-07

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031013

QC BATCH REPORT NEW

Batch ID: R336085 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-040519** Units: **mg/L** Analysis Date: **05-Apr-2019 14:09**
Client ID: Run ID: **ICS2100_336085** SeqNo: **5024557** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-040519** Units: **mg/L** Analysis Date: **05-Apr-2019 14:24**
Client ID: Run ID: **ICS2100_336085** SeqNo: **5024558** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	18.84	0.500	20	0	94.2	80 - 120				

LCSD Sample ID: **WLCSDW1-040519** Units: **mg/L** Analysis Date: **05-Apr-2019 14:39**
Client ID: Run ID: **ICS2100_336085** SeqNo: **5024559** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	18.86	0.500	20	0	94.3	80 - 120	18.84	0.0902	20	

MS Sample ID: **HS19040017-01MS** Units: **mg/L** Analysis Date: **05-Apr-2019 15:38**
Client ID: Run ID: **ICS2100_336085** SeqNo: **5024563** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	128.5	5.00	100	33.54	95.0	80 - 120				

MSD Sample ID: **HS19040017-01MSD** Units: **mg/L** Analysis Date: **05-Apr-2019 15:53**
Client ID: Run ID: **ICS2100_336085** SeqNo: **5024564** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	130.6	5.00	100	33.54	97.0	80 - 120	128.5	1.59	20	

The following samples were analyzed in this batch: HS19031013-05 HS19031013-06

ALS Houston, US Date: 12-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19031013**

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
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	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020

ALS Houston, US Date: 12-Apr-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19031013
Date/Time Received: **20-Mar-2019 09:30**
Received by: **NDR**

Checklist completed by: *Raegen Giga* eSignature 20-Mar-2019 Date
Reviewed by: *Corey Grandits* eSignature 20-Mar-2019 Date

Matrices: **GW**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.8c uc/c	IR 11
Cooler(s)/Kit(s):	44697	
Date/Time sample(s) sent to storage:	03/20/2019 16:33	

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

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 / Site 58

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	MEE	TOC	Carbon Dioxide	Anions						Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW11-031919		19 MAR 2019	0815	-	N		WG	10	X	X	X	X	X									
35AWW24-031919		19 MAR 2019	0915	-	N		WG	10	X	X	X	X	X									
35AWW19-031919		19 MAR 2019	1010	-	N		WG	10	X	X	X	X	X									
HSMW07-031919		19 MAR 2019	1105		N		WG	10	X	X	X	X	X									
35AWW06-031919		19 MAR 2019	1205		N		WG	10	X	X	X	X	X									
35AWW06-031919_a		19 MAR 2019	1205	-	FD		WG	10	X	X	X	X	X									
35AWW20-031919		19 MAR 2019	1315	-	N		WG	10	X	X	X	X	X									
35AWW20-031919_MS		19 MAR 2019	1315	-	MS		WG	10	X	X	X	X	X									
35AWW20-031919_MSD		19 MAR 2019	1315	-	SD		WG	10	X	X	X	X	X									
TRIP BLANK		19 MAR 2019		-	TB		W	2	X													
				-																		

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

COMMENTS: ____

HS19031013

Bhate Environmental Associates, Inc.
LHAAP-58

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	3/19/19	1430	1. NR	3-20-19	0830
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

TCLP VOC 0-8
in XX 11 6/F-O

444697

00948302

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5667

44697

CUSTODY SEAL

Date: 3/19/19 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By: SM
Date: 03/20/19

44697 MAR 2 0 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

44697

ORIGIN ID:SGRA (303) 597-2450
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 06MAR19
ACTWGT: 1.00 LB MAN
CAD: 3001307CAFE3211
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: 1HAAP-58-BO 64113-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7831 3410

WED - 20 MAR 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

TED 162705 19MAR19 GGGA 5631/4603/8C0A

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T 1 360 577 7222
F 1 360 636 1068
alsglo al co

March 28, 2019

Anal tical Report for Ser ice Re uest o K1902435

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

RE S

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 21, 2019
For your reference, these analyses have been assigned our service request number **K**

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

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

Respectfully submitted,

ALS Group SA Corp d a ALS En iron ental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T 1 360 577 7222
F 1 360 636 1068
alsglo al co

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Acronyms

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

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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

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

Case Narrative

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

ALS Environmental

Client: ALS Environmental - US
Project: HS19031013
Sample Matrix: Ground Water

Service Request: K1902435
Date Received: 03/21/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Group. This report contains analytical results and quality control parameters for samples designated for Tier IV validation deliverables, which includes summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Seven ground water samples were received for analysis at ALS Environmental on 03/21/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

Method SM 5310 C, 03/27/2019: The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in sample 35AWW24_031919 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by Kelley Lovejoy Date 03/28/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

KI902435

Subcontract Chain of Custody

COC ID: 10947

SUBCONTRACT TO:

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

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

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

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19031013
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19031013-01**	**35AWWLL_031919**	**Groundwater**	**19 Mar 2019 08:15**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019
2.	**HS19031013-02**	**35AWW24_031919**	**Groundwater**	**19 Mar 2019 09:15**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019
3.	**HS19031013-03**	**35AWW19_031919**	**Groundwater**	**19 Mar 2019 10:10**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019
4.	**HS19031013-04**	**LHSMW07_031919**	**Groundwater**	**19 Mar 2019 11:05**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019
5.	**HS19031013-05**	**35AWW06_031919**	**Groundwater**	**19 Mar 2019 12:05**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019
6.	**HS19031013-06**	**35AWW06_031919_a**	**Groundwater**	**19 Mar 2019 12:05**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019
7.	**HS19031013-07**	**35AWW20_031919**	**Groundwater**	**19 Mar 2019 13:15**
	TOC Analysis for DOD Level IV/Excel EDD			28 Mar 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS19031013-07 designated MS/MSD

RIGHT SOLUTIONS | RIGHT PARTNER

Subcontract Chain of Custody

COC ID: 10947

QC Level: DOD IV (DoD Data Package)

Relinquished By: R Ciss Date/Time: 3/20/19 1800

Received By: R Morrow ALS Date/Time: 3/21/19 0940

Cooler ID(s): Temperature(s):

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request *K19* 02435

Received: 3/21/19 Opened: 3/21/19 By: [illegible] Unloaded: 3/21/19 By: [illegible]

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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
2.4	2.1	1.4	1.1	-0.3	322	10147	449978318721	

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1902435
Project:	HS19031013	**Date Collected:**	03/19/19
Sample Matrix:	Ground Water	**Date Received:**	03/21/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35AAWW11_031919	K1902435-001	**485**	10	4	2	20	03/27/19 00:00	
35AWW24_031919	K1902435-002	**1.68**	0.50	0.20	0.07	1	03/27/19 00:29	
35AWW19_031919	K1902435-003	**2.20**	0.50	0.20	0.07	1	03/27/19 00:57	
LHSMW07_031919	K1902435-004	**4.11**	0.50	0.20	0.07	1	03/27/19 01:25	
35AWW06_031919	K1902435-005	**407**	10	4	2	20	03/27/19 01:53	
35AWW06_031919_a	K1902435-006	**386**	10	4	2	20	03/27/19 02:21	
35AWW20_031919	K1902435-007	**12.0**	0.50	0.20	0.07	1	03/27/19 02:49	
Method Blank	K1902435-MB	ND U	0.50	0.20	0.07	1	03/26/19 23:31	

ALS Group USA, Corp.
d a ALS En iron ental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1902435
Project	HS19031013	**Date Collected:**	03/19/19
Sample Matrix:	Ground Water	**Date Received:**	03/21/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1902121-001DUP	0.50	0.20	0.07	ND U	ND U	NC	NC	10	03/26/19
Batch QC	K1902147-001DUP	1.0	0.4	0.2	19.6	19.6	19.6	<1	10	03/27/19
Batch QC	K1902232-002DUP	0.50	0.20	0.07	9.74	9.65	9.70	<1	10	03/27/19
Batch QC	K1902232-003DUP	0.50	0.20	0.07	13.7	13.5	13.6	2	10	03/27/19
Batch QC	K1902254-001DUP	0.50	0.20	0.07	6.16	6.19	6.17	<1	10	03/26/19
Batch QC	K1902254-002DUP	0.50	0.20	0.07	18.2	18.3	18.3	<1	10	03/26/19
Batch QC	K1902254-003DUP	0.50	0.20	0.07	21.8	22.2	22.0	2	10	03/26/19
Batch QC	K1902257-001DUP	0.50	0.20	0.07	ND U	0.30 J	NC	NC	10	03/27/19
Batch QC	K1902257-002DUP	0.50	0.20	0.07	1.85	1.83	1.84	2	10	03/27/19
Batch QC	K1902257-003DUP	0.50	0.20	0.07	ND U	0.17 J	NC	NC	10	03/27/19
Batch QC	K1902257-004DUP	0.50	0.20	0.07	ND U	0.15 J	NC	NC	10	03/27/19
Batch QC	K1902257-005DUP	0.50	0.20	0.07	ND U	0.21 J	NC	NC	10	03/27/19
35AAWW11_031919	K1902435-001DUP	10	4	2	485	490	488	<1	10	03/27/19
35AWW24_031919	K1902435-002DUP	0.50	0.20	0.07	1.68	1.42	1.55	17 *	10	03/27/19
35AWW19_031919	K1902435-003DUP	0.50	0.20	0.07	2.20	2.14	2.17	3	10	03/27/19
LHSMW07_031919	K1902435-004DUP	0.50	0.20	0.07	4.11	4.03	4.07	2	10	03/27/19
35AWW06_031919	K1902435-005DUP	10	4	2	407	408	407	<1	10	03/27/19
35AWW06_031919_a	K1902435-006DUP	10	4	2	386	386	386	<1	10	03/27/19
35AWW20_031919	K1902435-007DUP	0.50	0.20	0.07	12.0	11.8	11.9	1	10	03/27/19

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

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

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

ALS Group USA, Corp.
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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1902435
Project:	HS19031013	**Date Collected:**	03/19/19
Sample Matrix:	Ground Water	**Date Received:**	03/21/19
		Date Analyzed:	03/27/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	35AWW20_031919	**Units:**	mg/L
Lab Code:	K1902435-007	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1902435-007MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	12.0	34.6	25.0	90	83-117

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

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

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

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1902435
Project:	HS19031013	**Date Analyzed:**	03/26/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	629615

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1902435-LCS	26.5	25.0	106	83-117

ALS Group USA, Corp.
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QA/QC Report

Client: ALS Environmental - US **Service Request:** K1902435
Project: HS19031013

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

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

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	629615	KQ1904012-05	03/26/19 18:05	25.0	26.7	107	90-110
CCV2	629615	KQ1904012-06	03/26/19 23:02	25.0	26.0	104	90-110
CCV3	629615	KQ1904012-07	03/27/19 03:31	25.0	27.2	109	90-110
CCV4	629615	KQ1904012-08	03/27/19 09:10	25.0	26.2	105	90-110

ALS Group USA, Corp.
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QA/QC Report

Client: ALS Environmental - US **Service Request:**K1902435
Project: HS19031013

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

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

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	629615	KQ1904012-01	03/26/19 18:20	0.50	0.20	0.07	ND	U
CCB2	629615	KQ1904012-02	03/26/19 23:16	0.50	0.20	0.07	ND	U
CCB3	629615	KQ1904012-03	03/27/19 03:46	0.50	0.20	0.07	ND	U
CCB4	629615	KQ1904012-04	03/27/19 09:24	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # (Original) K1902074, 2/02, 2436, 2437, 2513, 2121, 2147, 2232, 2254, 2257, 2435, 2258, 2334, 2348, 2495, 2381, 2418 RV

Tier: II II I I III I II II II I IV II II II I II

Date Analyzed: 3/26/19

Analyst: BCD

Run # DOC: 629614, TOC: 629615, 629616, 629617

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: K1902418-5 requires minimum dilution due to dirty sample.
K1902435-2/20 report a high %RSD, but these samples are less than 5x the MRL.

Final Approved by: _____ Date: 03/28/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 629614 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	T
K1902074-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.55 mg/L	10 ml	1.55 mg/L	1	0.07	0.50			3/26/19 14:48	N	I
K1902074-002	Carbon, Dissolved Organic (DOC)	N/A		Water	1.53 mg/L	10 ml	1.53 mg/L	1	0.07	0.50			3/26/19 15:17	N	I
K1902102-001	Carbon, Dissolved Organic (DOC)	N/A		Water	8.25 mg/L	10 ml	82.5 mg/L	10	0.7	5.0			3/26/19 18:35	N	I
K1902436-001	Carbon, Dissolved Organic (DOC)	N/A		Water	11.78 mg/L	10 ml	11.8 mg/L	1	0.07	0.50			3/26/19 15:45	N	I
K1902437-001	Carbon, Dissolved Organic (DOC)	N/A		Water	15.73 mg/L	10 ml	15.7 mg/L	1	0.07	0.50			3/26/19 16:13	N	I
K1902437-002	Carbon, Dissolved Organic (DOC)	N/A		Water	2.71 mg/L	10 ml	2.71 mg/L	1	0.07	0.50			3/26/19 16:41	N	I
K1902513-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	9.61 mg/L	10 ml	9.61 mg/L	1	0.07	0.50			3/26/19 17:37	N	II
KQ1904011-01	Carbon, Dissolved Organic (DOC)	CCB		Effluent	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 13:49	N	II
KQ1904011-02	Carbon, Dissolved Organic (DOC)	CCB		Effluent	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 18:20	N	II
KQ1904011-03	Carbon, Dissolved Organic (DOC)	CCV		Effluent	26.87 mg/L	10 ml	26.9 mg/L	1			108		3/26/19 13:26	N	II
KQ1904011-04	Carbon, Dissolved Organic (DOC)	CCV		Effluent	26.71 mg/L	10 ml	26.7 mg/L	1			107		3/26/19 18:05	N	II
KQ1904011-05	Carbon, Dissolved Organic (DOC)	MB		Effluent	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 14:04	N	II
KQ1904011-06	Carbon, Dissolved Organic (DOC)	LCS		Effluent	26.93 mg/L	10 ml	26.9 mg/L	1	0.07	0.50	108		3/26/19 14:19	N	II
KQ1904011-07	Carbon, Dissolved Organic (DOC)	MS	K1902102-001	Water	35.38 mg/L	10 ml	354 mg/L	10	0.7	5.0	109		3/26/19 19:03	N	II
KQ1904011-08	Carbon, Dissolved Organic (DOC)	DUP	K1902074-001	Effluent	1.63 mg/L	10 ml	1.63 mg/L	1	0.07	0.50		5	3/26/19 14:48	N	II
KQ1904011-09	Carbon, Dissolved Organic (DOC)	DUP	K1902074-002	Water	1.53 mg/L	10 ml	1.53 mg/L	1	0.07	0.50		<1	3/26/19 15:17	N	II
KQ1904011-10	Carbon, Dissolved Organic (DOC)	DUP	K1902436-001	Water	12.20 mg/L	10 ml	12.2 mg/L	1	0.07	0.50		3	3/26/19 15:45	N	I
KQ1904011-11	Carbon, Dissolved Organic (DOC)	DUP	K1902437-001	Water	15.68 mg/L	10 ml	15.7 mg/L	1	0.07	0.50		<1	3/26/19 16:13	N	I
KQ1904011-12	Carbon, Dissolved Organic (DOC)	DUP	K1902437-002	Water	2.55 mg/L	10 ml	2.55 mg/L	1	0.07	0.50		6	3/26/19 16:41	N	I
KQ1904011-13	Carbon, Dissolved Organic (DOC)	DUP	K1902513-001	Surface Water	9.82 mg/L	10 ml	9.82 mg/L	1	0.07	0.50		2	3/26/19 17:37	N	III
KQ1904011-14	Carbon, Dissolved Organic (DOC)	DUP	K1902102-001	Water	8.24 mg/L	10 ml	82.4 mg/L	10	0.7	5.0		<1	3/26/19 18:35	N	II
KQ1904011-15	Carbon, Dissolved Organic (DOC)	CCB		Effluent	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 23:16	N	II
KQ1904011-16	Carbon, Dissolved Organic (DOC)	CCV		Effluent	25.97 mg/L	10 ml	26.0 mg/L	1			104		3/26/19 23:02	N	II

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

Printed 3/28/19 10:12

03/28/19

Results Summary

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 629615 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1902121-001	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 20:14	N	I
K1902147-001	Carbon, Total Organic	N/A		Water	9.78 mg/L	10 ml	19.6 mg/L	2	0.2	1.0			3/27/19 04:29	N	II
K1902232-002	Carbon, Total Organic	N/A		Water	9.74 mg/L	10 ml	9.74 mg/L	1	0.07	0.50			3/27/19 04:57	N	II
K1902232-003	Carbon, Total Organic	N/A		Water	13.73 mg/L	10 ml	13.7 mg/L	1	0.07	0.50			3/27/19 05:25	N	II
K1902254-001	Carbon, Total Organic	N/A		Water	6.16 mg/L	10 ml	6.16 mg/L	1	0.07	0.50			3/26/19 21:10	N	II
K1902254-002	Carbon, Total Organic	N/A		Water	18.23 mg/L	10 ml	18.2 mg/L	1	0.07	0.50			3/26/19 21:38	N	II
K1902254-003	Carbon, Total Organic	N/A		Water	21.81 mg/L	10 ml	21.8 mg/L	1	0.07	0.50			3/26/19 22:06	N	II
K1902257-001	Carbon, Total Organic	N/A		Water	0.30 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 05:53	N	I
K1902257-002	Carbon, Total Organic	N/A		Water	1.85 mg/L	10 ml	1.85 mg/L	1	0.07	0.50			3/27/19 06:21	N	I
K1902257-003	Carbon, Total Organic	N/A		Water	0.17 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 06:50	N	I
K1902257-004	Carbon, Total Organic	N/A		Water	0.16 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 07:18	N	I
K1902257-005	Carbon, Total Organic	N/A		Water	0.24 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 07:46	N	I
K1902435-001	Carbon, Total Organic	N/A		Ground Water	24.27 mg/L	10 ml	485 mg/L	20	2	10			3/27/19 00:00	N	IV
K1902435-002	Carbon, Total Organic	N/A		Ground Water	1.68 mg/L	10 ml	1.68 mg/L	1	0.07	0.50			3/27/19 00:29	N	IV
K1902435-003	Carbon, Total Organic	N/A		Ground Water	2.20 mg/L	10 ml	2.20 mg/L	1	0.07	0.50			3/27/19 00:57	N	IV
K1902435-004	Carbon, Total Organic	N/A		Ground Water	4.11 mg/L	10 ml	4.11 mg/L	1	0.07	0.50			3/27/19 01:25	N	IV
K1902435-005	Carbon, Total Organic	N/A		Ground Water	20.33 mg/L	10 ml	407 mg/L	20	2	10			3/27/19 01:53	N	IV
K1902435-006	Carbon, Total Organic	N/A		Ground Water	19.29 mg/L	10 ml	386 mg/L	20	2	10			3/27/19 02:21	N	IV
K1902435-007	Carbon, Total Organic	N/A		Ground Water	11.98 mg/L	10 ml	12.0 mg/L	1	0.07	0.50			3/27/19 02:49	Y	IV
KQ1904012-01	Carbon, Total Organic	CCB		Reagent Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 18:20	N	I
KQ1904012-02	Carbon, Total Organic	CCB		Reagent Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 23:16	N	I
KQ1904012-03	Carbon, Total Organic	CCB		Reagent Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 03:46	N	I
KQ1904012-04	Carbon, Total Organic	CCB		Reagent Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 09:24	N	I
KQ1904012-05	Carbon, Total Organic	CCV		Reagent Water	26.71 mg/L	10 ml	26.7 mg/L	1			107		3/26/19 18:05	N	I
KQ1904012-06	Carbon, Total Organic	CCV		Reagent Water	25.97 mg/L	10 ml	26.0 mg/L	1			104		3/26/19 23:02	N	I
KQ1904012-07	Carbon, Total Organic	CCV		Reagent Water	27.18 mg/L	10 ml	27.2 mg/L	1			109		3/27/19 03:31	N	I
KQ1904012-08	Carbon, Total Organic	CCV		Reagent Water	26.22 mg/L	10 ml	26.2 mg/L	1			105		3/27/19 09:10	N	I

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

03/28/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 6296I5 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tie
KQ1904012-09	Carbon, Total Organic	MB		Reagent Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/26/19 23:31	N	I
KQ1904012-10	Carbon, Total Organic	LCS		Reagent Water	26.46 mg/L	10 ml	26.5 mg/L	1	0.07	0.50	106		3/26/19 23:46	N	I
KQ1904012-11	Carbon, Total Organic	MS	K1902435-007	Ground Water	34.60 mg/L	10 ml	34.6 mg/L	1	0.07	0.50	90		3/27/19 03:17	N	I
KQ1904012-12	Carbon, Total Organic	DUP	K1902121-001	Reagent Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	3/26/19 20:14	N	I
KQ1904012-13	Carbon, Total Organic	DUP	K1902254-001	Water	6.19 mg/L	10 ml	6.19 mg/L	1	0.07	0.50		<1	3/26/19 21:10	N	II
KQ1904012-14	Carbon, Total Organic	DUP	K1902254-002	Water	18.30 mg/L	10 ml	18.3 mg/L	1	0.07	0.50		<1	3/26/19 21:38	N	II
KQ1904012-15	Carbon, Total Organic	DUP	K1902254-003	Water	22.16 mg/L	10 ml	22.2 mg/L	1	0.07	0.50		2	3/26/19 22:06	N	II
KQ1904012-16	Carbon, Total Organic	DUP	K1902435-001	Ground Water	24.50 mg/L	10 ml	490 mg/L	20	2	10		<1	3/27/19 00:00	N	IV
KQ1904012-17	Carbon, Total Organic	DUP	K1902435-002	Ground Water	1.42 mg/L	10 ml	1.42 mg/L	1	0.07	0.50		17*	3/27/19 00:29	N	IV
KQ1904012-18	Carbon, Total Organic	DUP	K1902435-003	Ground Water	2.14 mg/L	10 ml	2.14 mg/L	1	0.07	0.50		3	3/27/19 00:57	N	IV
KQ1904012-19	Carbon, Total Organic	DUP	K1902435-004	Ground Water	4.03 mg/L	10 ml	4.03 mg/L	1	0.07	0.50		2	3/27/19 01:25	N	IV
KQ1904012-20	Carbon, Total Organic	DUP	K1902435-005	Ground Water	20.38 mg/L	10 ml	408 mg/L	20	2	10		<1	3/27/19 01:53	N	IV
KQ1904012-21	Carbon, Total Organic	DUP	K1902435-006	Ground Water	19.31 mg/L	10 ml	386 mg/L	20	2	10		<1	3/27/19 02:21	N	IV
KQ1904012-22	Carbon, Total Organic	DUP	K1902435-007	Ground Water	11.85 mg/L	10 ml	11.8 mg/L	1	0.07	0.50		1	3/27/19 02:49	N	IV
KQ1904012-23	Carbon, Total Organic	DUP	K1902147-001	Water	9.79 mg/L	10 ml	19.6 mg/L	2	0.2	1.0		<1	3/27/19 04:29	N	II
KQ1904012-24	Carbon, Total Organic	DUP	K1902232-002	Water	9.65 mg/L	10 ml	9.65 mg/L	1	0.07	0.50		<1	3/27/19 04:57	N	II
KQ1904012-25	Carbon, Total Organic	DUP	K1902232-003	Water	13.50 mg/L	10 ml	13.5 mg/L	1	0.07	0.50		2	3/27/19 05:25	N	II
KQ1904012-26	Carbon, Total Organic	DUP	K1902257-001	Water	0.30 mg/L	10 ml	0.30 mg/L J	1	0.07	0.50		NC	3/27/19 05:53	N	I
KQ1904012-27	Carbon, Total Organic	DUP	K1902257-002	Water	1.83 mg/L	10 ml	1.83 mg/L	1	0.07	0.50		2	3/27/19 06:21	N	I
KQ1904012-28	Carbon, Total Organic	DUP	K1902257-003	Water	0.17 mg/L	10 ml	0.17 mg/L J	1	0.07	0.50		NC	3/27/19 06:50	N	I
KQ1904012-29	Carbon, Total Organic	DUP	K1902257-004	Water	0.15 mg/L	10 ml	0.15 mg/L J	1	0.07	0.50		NC	3/27/19 07:18	N	I
KQ1904012-30	Carbon, Total Organic	DUP	K1902257-005	Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50		NC	3/27/19 07:46	N	I

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 629616 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Ti
K1902257-006	Carbon, Total Organic	N/A		Water	0.34 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 10:08	N	I
K1902286-001	Carbon, Total Organic	N/A		Water	2.18 mg/L	10 ml	2.18 mg/L	1	0.07	0.50			3/27/19 11:19	N	II
K1902286-002	Carbon, Total Organic	N/A		Water	1.48 mg/L	10 ml	1.48 mg/L	1	0.07	0.50			3/27/19 11:47	N	II
K1902286-003	Carbon, Total Organic	N/A		Water	1.82 mg/L	10 ml	1.82 mg/L	1	0.07	0.50			3/27/19 12:15	N	II
K1902286-004	Carbon, Total Organic	N/A		Water	1.88 mg/L	10 ml	1.88 mg/L	1	0.07	0.50			3/27/19 12:43	N	II
K1902286-005	Carbon, Total Organic	N/A		Water	1.91 mg/L	10 ml	1.91 mg/L	1	0.07	0.50			3/27/19 13:11	N	II
K1902334-001	Carbon, Total Organic	N/A		Water	1.24 mg/L	10 ml	124 mg/L	100	7	50			3/27/19 14:09	N	II
K1902334-002	Carbon, Total Organic	N/A		Water	3.16 mg/L	10 ml	316 mg/L	100	7	50			3/27/19 14:37	N	II
K1902334-003	Carbon, Total Organic	N/A		Water	2.71 mg/L	10 ml	271 mg/L	100	7	50			3/27/19 15:05	N	II
K1902334-004	Carbon, Total Organic	N/A		Water	1.62 mg/L	10 ml	162 mg/L	100	7	50			3/27/19 15:33	N	II
K1902334-005	Carbon, Total Organic	N/A		Water	1.74 mg/L	10 ml	174 mg/L	100	7	50			3/27/19 16:01	N	II
K1902348-001	Carbon, Total Organic	N/A		Water	7.24 mg/L	10 ml	72.4 mg/L	10	0.7	5.0			3/27/19 17:53	N	II
K1902448-008	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 16:57	N	II
K1902495-002	Carbon, Total Organic	N/A		Drinking Water	0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 17:25	N	I
KQ1904013-01	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 09:24	N	I
KQ1904013-02	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 13:54	N	I
KQ1904013-03	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 19:04	N	I
KQ1904013-04	Carbon, Total Organic	CCV		Water	26.22 mg/L	10 ml	26.2 mg/L	1			105		3/27/19 09:10	N	I
KQ1904013-05	Carbon, Total Organic	CCV		Water	26.02 mg/L	10 ml	26.0 mg/L	1			104		3/27/19 13:39	N	I
KQ1904013-06	Carbon, Total Organic	CCV		Water	25.79 mg/L	10 ml	25.8 mg/L	1			103		3/27/19 18:50	N	I
KQ1904013-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 09:39	N	I
KQ1904013-08	Carbon, Total Organic	LCS		Water	26.32 mg/L	10 ml	26.3 mg/L	1	0.07	0.50	105		3/27/19 09:54	N	I
KQ1904013-09	Carbon, Total Organic	MS	K1902257-006	Water	28.23 mg/L	10 ml	28.2 mg/L	1	0.07	0.50	113		3/27/19 10:36	N	I
KQ1904013-10	Carbon, Total Organic	DUP	K1902257-006	Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50		NC	3/27/19 10:08	N	I
KQ1904013-11	Carbon, Total Organic	DUP	K1902286-001	Water	2.12 mg/L	10 ml	2.12 mg/L	1	0.07	0.50		2	3/27/19 11:19	N	II
KQ1904013-12	Carbon, Total Organic	DUP	K1902286-002	Water	1.48 mg/L	10 ml	1.48 mg/L	1	0.07	0.50		<1	3/27/19 11:47	N	II
KQ1904013-13	Carbon, Total Organic	DUP	K1902286-003	Water	1.74 mg/L	10 ml	1.74 mg/L	1	0.07	0.50		5	3/27/19 12:15	N	II
KQ1904013-14	Carbon, Total Organic	DUP	K1902286-004	Water	1.79 mg/L	10 ml	1.79 mg/L	1	0.07	0.50		5	3/27/19 12:43	N	II
KQ1904013-15	Carbon, Total Organic	DUP	K1902286-005	Water	1.89 mg/L	10 ml	1.89 mg/L	1	0.07	0.50		<1	3/27/19 13:11	N	II
KQ1904013-16	Carbon, Total Organic	DUP	K1902334-001	Water	1.24 mg/L	10 ml	124 mg/L	100	7	50		<1	3/27/19 14:09	N	II
KQ1904013-17	Carbon, Total Organic	DUP	K1902334-002	Water	3.10 mg/L	10 ml	310 mg/L	100	7	50		2	3/27/19 14:37	N	II
KQ1904013-18	Carbon, Total Organic	DUP	K1902334-003	Water	2.70 mg/L	10 ml	270 mg/L	100	7	50		<1	3/27/19 15:05	N	II
KQ1904013-19	Carbon, Total Organic	DUP	K1902334-004	Water	1.57 mg/L	10 ml	157 mg/L	100	7	50		3	3/27/19 15:33	N	II
KQ1904013-20	Carbon, Total Organic	DUP	K1902334-005	Water	1.71 mg/L	10 ml	171 mg/L	100	7	50		1	3/27/19 16:01	N	II
KQ1904013-21	Carbon, Total Organic	DUP	K1902448-008	Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	3/27/19 16:57	N	II

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

03/28/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 629616 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1904013-22	Carbon, Total Organic	DUP	K1902495-002	Drinking Water	0.33 mg/L	10 ml	0.33 mg/L J	1	0.07	0.50		NC	3/27/19 17:25	N	I
KQ1904013-23	Carbon, Total Organic	DUP	K1902348-001	Water	7.27 mg/L	10 ml	72.7 mg/L	10	0.7	5.0		<1	3/27/19 17:53	N	II

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 629617 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	i
K1902381-001	Carbon, Total Organic	N/A		Water	0.50 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 19:49	N	II
K1902381-002	Carbon, Total Organic	N/A		Water	0.51 mg/L	10 ml	0.51 mg/L	1	0.07	0.50			3/27/19 20:46	N	II
K1902381-003	Carbon, Total Organic	N/A		Water	0.49 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 21:14	N	II
K1902381-004	Carbon, Total Organic	N/A		Water	3.06 mg/L	10 ml	3.06 mg/L	1	0.07	0.50			3/27/19 21:42	N	II
K1902381-005	Carbon, Total Organic	N/A		Water	22.31 mg/L	10 ml	223 mg/L	10	0.7	5.0			3/27/19 22:11	N	II
K1902418-001	Carbon, Total Organic	N/A		Water	2.84 mg/L	10 ml	57 mg/L	20	2	10			3/27/19 23:36	N	IV
K1902418-002	Carbon, Total Organic	N/A		Water	3.02 mg/L	10 ml	60 mg/L	20	2	10			3/28/19 00:04	N	IV
K1902418-003	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 ml	12 mg/L	20	2	10			3/28/19 00:32	N	IV
K1902418-004	Carbon, Total Organic	N/A		Water	1.86 mg/L	10 ml	9.3 mg/L	5	0.4	2.5			3/28/19 01:01	N	IV
K1902418-005	Carbon, Total Organic	N/A		Water	0.33 mg/L	10 ml	3.3 mg/L J	10	0.7	5.0			3/28/19 01:29	N	IV
K1902418-006	Carbon, Total Organic	N/A		Water	1.82 mg/L	10 ml	36 mg/L	20	2	10			3/28/19 01:57	N	IV
K1902418-007	Carbon, Total Organic	N/A		Water	4.28 mg/L	10 ml	86 mg/L	20	2	10			3/28/19 02:25	N	IV
KQ1904014-01	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 19:04	N	II
KQ1904014-02	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 23:21	N	II
KQ1904014-03	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/28/19 03:36	N	II
KQ1904014-04	Carbon, Total Organic	CCV		Water	25.79 mg/L	10 ml	25.8 mg/L	1			103		3/27/19 18:50	N	II
KQ1904014-05	Carbon, Total Organic	CCV		Water	25.99 mg/L	10 ml	26.0 mg/L	1			104		3/27/19 23:07	N	II
KQ1904014-06	Carbon, Total Organic	CCV		Water	25.83 mg/L	10 ml	25.8 mg/L	1			103		3/28/19 03:21	N	II
KQ1904014-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/19 19:20	N	II
KQ1904014-08	Carbon, Total Organic	LCS		Water	26.35 mg/L	10 ml	26.4 mg/L	1	0.07	0.50	105		3/27/19 19:34	N	II
KQ1904014-10	Carbon, Total Organic	DUP	K1902381-001	Water	0.40 mg/L	10 ml	0.40 mg/L J	1	0.07	0.50		NC	3/27/19 19:49	N	II
KQ1904014-11	Carbon, Total Organic	MS	K1902381-001	Water	28.76 mg/L	10 ml	28.8 mg/L	1	0.07	0.50	115		3/27/19 20:17	N	II
KQ1904014-12	Carbon, Total Organic	DUP	K1902381-002	Water	0.51 mg/L	10 ml	0.51 mg/L	1	0.07	0.50		2	3/27/19 20:46	N	II
KQ1904014-13	Carbon, Total Organic	DUP	K1902381-003	Water	0.49 mg/L	10 ml	0.49 mg/L J	1	0.07	0.50		NC	3/27/19 21:14	N	II
KQ1904014-14	Carbon, Total Organic	DUP	K1902381-004	Water	3.01 mg/L	10 ml	3.01 mg/L	1	0.07	0.50		2	3/27/19 21:42	N	II
KQ1904014-15	Carbon, Total Organic	DUP	K1902381-005	Water	22.65 mg/L	10 ml	226 mg/L	10	0.7	5.0		2	3/27/19 22:11	N	II
KQ1904014-16	Carbon, Total Organic	DUP	K1902418-001	Water	2.93 mg/L	10 ml	59 mg/L	20	2	10		3	3/27/19 23:36	N	IV
KQ1904014-17	Carbon, Total Organic	DUP	K1902418-002	Water	3.00 mg/L	10 ml	60 mg/L	20	2	10		<1	3/28/19 00:04	N	IV
KQ1904014-18	Carbon, Total Organic	DUP	K1902418-003	Water	0.62 mg/L	10 ml	12 mg/L	20	2	10		2	3/28/19 00:32	N	IV
KQ1904014-19	Carbon, Total Organic	DUP	K1902418-004	Water	1.78 mg/L	10 ml	8.9 mg/L	5	0.4	2.5		4	3/28/19 01:01	N	IV
KQ1904014-20	Carbon, Total Organic	DUP	K1902418-005	Water	0.33 mg/L	10 ml	3.3 mg/L J	10	0.7	5.0		<1	3/28/19 01:29	N	IV
KQ1904014-21	Carbon, Total Organic	DUP	K1902418-006	Water	1.77 mg/L	10 ml	35 mg/L	20	2	10		3	3/28/19 01:57	N	IV
KQ1904014-22	Carbon, Total Organic	DUP	K1902418-007	Water	4.25 mg/L	10 ml	85 mg/L	20	2	10		<1	3/28/19 02:25	N	IV

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

03/28/19

Printed 3/28/19 10:23

Doc: 629614
Toc: 629615,
629616,
629617

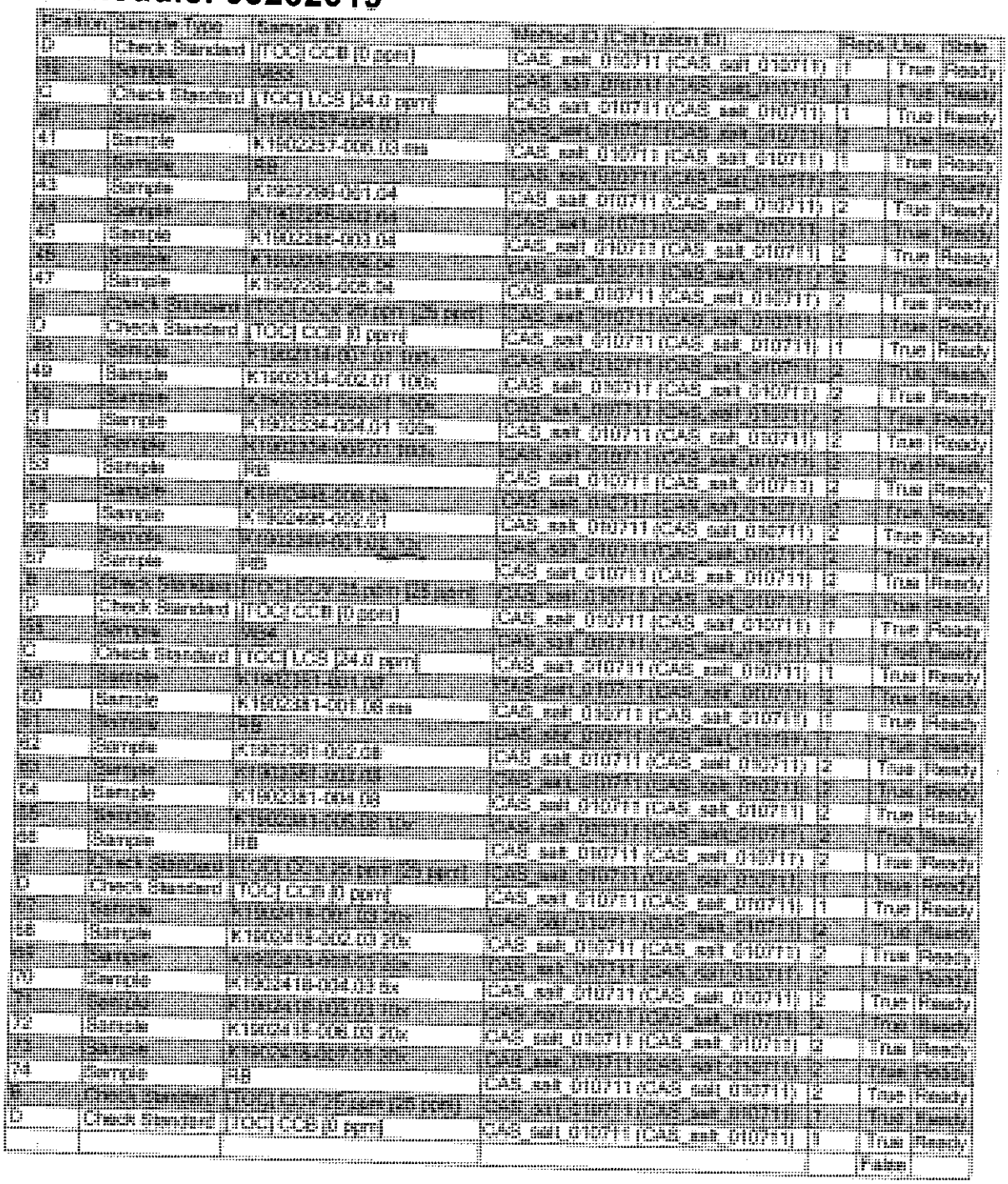
Schedule: 03262019

Version: 7
Instrument: Fusion1 .
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/03/26 13:49 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1902074-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1902074-002.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K1902436-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K1902437-001.06 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1902437-002.06 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1902513-001.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1902102-001.01 doc 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1902102-001.01 ms doc 10x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
12	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	FB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1902121-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1902121-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1902254-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1902254-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1902254-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1902435-001.02 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1902435-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1902435-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1902435-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1902435-005.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1902435-006.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1902435-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1902435-007.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1902102-001.02 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1902147-001.01 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1902232-002.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1902232-003.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1902257-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1902257-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1902257-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1902257-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1902257-005.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

03/28/19

Schedule: 03262019



Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	Sample	K1902257-006.03 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	Sample	K1902286-001.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	Sample	K1902285-003.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	Sample	K1902286-005.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
49	Sample	K1902334-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
51	Sample	K1902334-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
53	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
55	Sample	K1902495-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
57	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
60	Sample	K1902381-001.08 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
62	Sample	K1902381-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
64	Sample	K1902381-004.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
66	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
68	Sample	K1902418-002.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70	Sample	K1902418-004.03 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
72	Sample	K1902418-006.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
74	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Printed on: March 28, 2019 09:24:17

Fusion Report - 03262019
Tuesday, March 26, 2019 11:07 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/03/28 09:24 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03262019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)		
Comment:			

03/28/19

Avr. MDL = 0.00222

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/03/26 11:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	14.37	17.60	3.23	49.74	05:28
2	TC Clean	23.82	26.85	3.03	49.98	04:02
3	TC Clean	3.24	6.26	3.01	50.05	03:45
4	TC Clean	2.34	5.32	2.98	49.99	03:45

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/03/26 11:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.24	15.20	2.95	49.76	05:13
2	TC Clean	5.03	8.04	3.00	50.03	04:05

3	TC Clean	2.00	5.18	3.17	50.02	03:47
4	TC Clean	1.98	4.99	3.01	50.01	03:45

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/03/26 12:13

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.15	15.03	2.88	49.73	05:15
2	TC Clean	4.80	7.79	2.99	49.99	04:04
3	TC Clean	1.63	4.72	3.08	50.03	03:47
4	TC Clean	1.20	4.26	3.06	50.01	03:49

Sample Type: Blank (Creating v1239) — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/03/26 12:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.93	14.79	2.87	49.74	05:17
2	TC Clean	3.96	6.97	3.01	49.99	04:03
3	TC Clean	1.42	4.57	3.15	49.99	03:48
4	TC Clean	1.55	4.42	2.88	50.04	03:47
5	Reagent Blank	3.59	6.59	3.00	50.04	05:05
6	Acid Blank	1.07	3.95	2.88	49.69	05:30

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.1243 ppm	0.0000 ppm	0.0000%	2019/03/26 13:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1243	1.2426	9.60	12.61	3.01	50.06	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.8692 ppm (PASS)	0.0000 ppm	0%	2019/03/26 13:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.8692	268.6920	191.85	194.94	3.09	50.09	10:33

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/26 13:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.88	10.57	2.68	50.02	10:30

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 14:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.01	9.99	2.98	50.06	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.9345 ppm (PASS)	0.0000 ppm	0%	2019/03/26 14:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.9345	269.3446	192.29	195.11	2.82	50.07	10:34

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.1604 ppm	0.0000 ppm	0.0000%	2019/03/26 14:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1604	1.6036	9.84	12.86	3.02	50.07	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1902074-001.03 doc	1.5934 ppm	0.0541 ppm	3.3900%	2019/03/26 14:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5552	15.5518	19.31	22.20	2.89	50.06	10:29
2	TOC	1.6316	16.3164	19.83	22.65	2.82	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1902074-002.03 doc	1.5308 ppm	0.0032 ppm	0.2100%	2019/03/26 15:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5331	15.3309	19.16	22.15	2.98	50.06	10:27
2	TOC	1.5285	15.2852	19.13	22.06	2.93	50.04	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1902436-001.01 doc	11.9907 ppm	0.2954 ppm	2.4600%	2019/03/26 15:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.7818	117.8185	88.73	91.68	2.95	50.03	10:29
2	TOC	12.1996	121.9965	91.57	94.39	2.83	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1902437-001.06 doc	15.7084 ppm	0.0353 ppm	0.2200%	2019/03/26 16:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.7334	157.3342	115.55	118.36	2.80	49.98	10:27
2	TOC	15.6835	156.8347	115.21	118.21	2.99	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1902437-002.06 doc	2.6315 ppm	0.1090 ppm	4.1400%	2019/03/26 16:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7086	27.0855	27.14	29.96	2.82	49.96	10:24
2	TOC	2.5545	25.5446	26.10	28.97	2.87	49.95	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 17:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.92	10.75	2.83	49.93	10:28
2	TOC	0.0000	0.0000	7.60	10.59	2.99	49.93	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1902513-001.04 doc	9.7192 ppm	0.1469 ppm	1.5100%	2019/03/26 17:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.6154	96.1536	74.02	76.90	2.88	49.92	10:28
2	TOC	9.8231	98.2308	75.43	78.39	2.96	49.93	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.7138 ppm (PASS)	0.0000 ppm	0%	2019/03/26 18:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.7138	267.1377	190.79	193.63	2.83	49.92	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/26 18:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.05	11.10	3.06	49.92	10:31

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1902102-001.01 doc 10x	8.2468 ppm	0.0038 ppm	0.0500%	2019/03/26 18:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.2494	82.4941	64.75	67.79	3.04	49.94	10:30
2	TOC	8.2441	82.4410	64.72	67.81	3.09	49.94	10:26

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1902102-001.01 ms doc 10x	35.3783 ppm	0.0000 ppm	0.0000%	2019/03/26 19:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	35.3783	353.7825	248.90	251.95	3.05	49.94	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 19:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.17	11.21	3.04	49.96	10:28
2	TOC	0.0000	0.0000	7.38	10.19	2.81	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	FB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 19:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.84	9.73	2.89	50.00	10:27
2	TOC	0.0000	0.0000	6.82	9.65	2.83	50.01	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1902121-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 20:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.96	9.77	2.81	50.03	10:27
2	TOC	0.0000	0.0000	6.70	9.61	2.91	50.07	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1902121-002.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 20:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.58	9.51	2.93	50.10	10:29
2	TOC	0.0000	0.0000	6.66	9.66	3.00	50.20	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1902254-001.01	6.1737 ppm	0.0224 ppm	0.3600%	2019/03/26 21:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.1579	61.5790	50.56	53.63	3.07	50.05	10:27
2	TOC	6.1896	61.8958	50.77	53.84	3.07	50.15	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1902254-002.01	18.2691 ppm	0.0456 ppm	0.2500%	2019/03/26 21:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.2368	182.3683	132.55	135.41	2.86	50.16	10:30
2	TOC	18.3014	183.0135	132.98	135.88	2.89	50.16	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1902254-003.01	21.9911 ppm	0.2459 ppm	1.1200%	2019/03/26 22:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.8171	218.1715	156.85	159.85	3.00	50.16	10:27
2	TOC	22.1650	221.6497	159.21	162.01	2.80	50.13	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 22:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.02	10.93	2.91	50.05	10:25
2	TOC	0.0000	0.0000	7.05	9.88	2.83	50.08	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.9770 ppm (PASS)	0.0000 ppm	0%	2019/03/26 23:02

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

	Type		#							Time
B	TOC	25 ppm	1	25.9770	259.7703	185.79	188.57	2.78	50.11	10:30

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/26 23:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.26	9.93	2.67	50.12	10:33

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/26 23:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.65	9.43	2.78	50.10	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.4596 ppm (PASS)	0.0000 ppm	0%	2019/03/26 23:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.4596	264.5965	189.07	191.89	2.82	50.10	10:30

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1902435-001.02 20x	24.3833 ppm	0.1633 ppm	0.6700%	2019/03/27 00:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	24.2678	242.6782	173.48	176.33	2.85	50.11	10:28
2	TOC	24.4988	244.9881	175.05	177.89	2.84	50.13	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1902435-002.01	1.5497 ppm	0.1862 ppm	12.0100%	2019/03/27 00:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6813	16.8129	20.17	22.94	2.77	50.13	10:25
2	TOC	1.4180	14.1803	18.38	21.37	2.99	50.12	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1902435-003.01	2.1747 ppm	0.0439 ppm	2.0200%	2019/03/27 00:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2057	22.0575	23.73	26.51	2.78	50.10	10:28
2	TOC	2.1437	21.4373	23.31	26.05	2.74	50.10	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1902435-004.01	4.0710 ppm	0.0538 ppm	1.3200%	2019/03/27 01:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1090	41.0898	36.65	39.51	2.86	50.11	10:26
2	TOC	4.0330	40.3296	36.13	39.09	2.96	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1902435-005.01 20x	20.3602 ppm	0.0335 ppm	0.1600%	2019/03/27 01:53

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

1	TOC	20.3364	203.3643	146.80	149.55	2.75	50.10	10:28
2	TOC	20.3839	203.8387	147.12	150.01	2.89	50.13	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K1902435-006.01 20x	19.3035 ppm	0.0118 ppm	0.0600%	2019/03/27 02:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	19.2952	192.9517	139.73	142.67	2.94	50.05	10:26
2	TOC	19.3118	193.1182	139.84	142.82	2.98	50.13	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K1902435-007.01	11.9147 ppm	0.0927 ppm	0.7800%	2019/03/27 02:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.9803	119.8029	90.08	93.00	2.92	50.11	10:28
2	TOC	11.8492	118.4917	89.19	92.20	3.02	50.10	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K1902435-007.01 ms	34.5989 ppm	0.0000 ppm	0.0000%	2019/03/27 03:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	34.5989	345.9893	243.61	246.68	3.07	50.10	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	27.1839 ppm (PASS)	0.0000 ppm	0%	2019/03/27 03:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	27.1839	271.8387	193.98	197.05	3.06	50.12	10:31

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

Sample Type: Check Standard --> CCB

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0289 ppm (PASS)	0.0000 ppm	0%	2019/03/27 03:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0289	0.2895	9.66	12.65	3.00	50.11	10:29

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1902102-001.02 10x	8.7029 ppm	0.0840 ppm	0.9600%	2019/03/27 04:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.7622	87.6223	68.23	71.22	2.99	50.11	10:29
2	TOC	8.6435	86.4349	67.43	70.52	3.09	50.12	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1902147-001.01 2x	9.7909 ppm	0.0061 ppm	0.0600%	2019/03/27 04:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.7865	97.8655	75.19	78.09	2.90	50.12	10:27
2	TOC	9.7952	97.9524	75.24	78.11	2.87	50.12	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1902232-002.12	9.6974 ppm	0.0588 ppm	0.6100%	2019/03/27 04:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.7390	97.3896	74.86	77.79	2.93	50.13	10:29

2	TOC	9.6559	96.5587	74.30	77.16	2.86	50.13	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1902232-003.12	13.6163 ppm	0.1631 ppm	1.2000%	2019/03/27 05:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.7316	137.3163	101.96	104.96	2.99	50.11	10:30
2	TOC	13.5009	135.0093	100.40	103.43	3.03	50.12	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1902257-001.03	0.3006 ppm	0.0010 ppm	0.3500%	2019/03/27 05:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2999	2.9987	10.79	13.71	2.92	50.11	10:28
2	TOC	0.3013	3.0134	10.80	13.95	3.15	50.11	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1902257-002.03	1.8416 ppm	0.0201 ppm	1.0900%	2019/03/27 06:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8559	18.5586	21.35	24.28	2.93	50.12	10:31
2	TOC	1.8274	18.2743	21.16	24.14	2.98	50.11	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1902257-003.03	0.1685 ppm	0.0003 ppm	0.1900%	2019/03/27 06:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1683	1.6831	9.90	12.89	2.99	50.06	10:30
2	TOC	0.1688	1.6875	9.90	12.93	3.03	50.12	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈ 36	TOC	K1902257-004.03	0.1572 ppm	0.0076 ppm	4.8400%	2019/03/27 07:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1626	1.6257	9.86	12.73	2.87	50.12	10:26
2	TOC	0.1518	1.5181	9.79	12.70	2.91	50.12	10:29

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1902257-005.03	0.2277 ppm	0.0260 ppm	11.4400%	2019/03/27 07:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2461	2.4610	10.43	13.41	2.99	50.12	10:29
2	TOC	0.2093	2.0927	10.18	13.18	3.00	50.11	10:28

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 08:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.00	8.87	2.87	50.10	10:27
2	TOC	0.0000	0.0000	6.34	9.20	2.86	50.10	10:29
3	TOC	0.0000	0.0000	5.91	8.95	3.03	50.08	10:24
4	TOC	0.0000	0.0000	6.07	8.94	2.87	50.11	10:28

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm
From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.2176 ppm (PASS)	0.0000 ppm	0%	2019/03/27 09:10

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.2176	262.1760	187.43	190.23	2.80	50.10	10:30

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

Sample Type: Check Standard --> CCB

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/27 09:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.96	9.79	2.82	50.09	10:29

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 09:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.30	9.03	2.73	50.08	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.3215 ppm (PASS)	0.0000 ppm	0%	2019/03/27 09:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.3215	263.2146	188.13	191.01	2.88	50.08	10:32

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1902257-006.03	0.2922 ppm	0.0719 ppm	24.6000%	2019/03/27 10:08

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

1	TOC	0.3430	3.4303	11.08	14.03	2.95	50.09	10:27
2	TOC	0.2414	2.4138	10.39	13.31	2.91	50.11	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1902257-006.03 ms	28.2285 ppm	0.0000 ppm	0.0000%	2019/03/27 10:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2285	282.2852	200.37	203.23	2.86	50.08	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 10:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.17	10.08	2.91	50.04	10:28
2	TOC	0.0000	0.0000	6.42	9.42	2.99	50.05	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1902286-001.04	2.1507 ppm	0.0378 ppm	1.7600%	2019/03/27 11:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1775	21.7746	23.54	26.33	2.80	50.02	10:26
2	TOC	2.1240	21.2399	23.17	26.02	2.85	50.07	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1902286-002.04	1.4814 ppm	0.0044 ppm	0.3000%	2019/03/27 11:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4845	14.8447	18.83	21.80	2.97	50.06	10:29
2	TOC	1.4783	14.7828	18.79	21.61	2.82	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈	45	TOC	K1902286-003.04	1.7819 ppm	0.0610 ppm	3.4300%	2019/03/27 12:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8251	18.2507	21.14	24.08	2.93	50.09	10:28
2	TOC	1.7387	17.3874	20.56	23.66	3.10	50.10	10:27

Dilution 1:10
Blank Contribution (TC) 8.7555 (IC) (v1239)
Method CAS_salt_010711 (v4)
Calibration CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1902286-004.04	1.8414 ppm	0.0631 ppm	3.4300%	2019/03/27 12:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8861	18.8606	21.56	24.48	2.92	50.08	10:26
2	TOC	1.7968	17.9679	20.95	24.02	3.07	50.09	10:26

Dilution 1:10
Blank Contribution (TC) 8.7555 (IC) (v1239)
Method CAS_salt_010711 (v4)
Calibration CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1902286-005.04	1.8995 ppm	0.0125 ppm	0.6600%	2019/03/27 13:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9083	19.0831	21.71	24.69	2.98	50.12	10:30
2	TOC	1.8906	18.9063	21.59	24.54	2.95	50.13	10:31

Dilution 1:10
Blank Contribution (TC) 8.7555 (IC) (v1239)
Method CAS_salt_010711 (v4)
Calibration CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm
From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.0227 ppm (PASS)	0.0000 ppm	0%	2019/03/27 13:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.0227	260.2269	186.10	188.96	2.86	50.15	10:30

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

Sample Type: Check Standard --> CCB
From Schedule Version 7

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/27 13:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.99	9.90	2.91	50.16	10:31

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1902334-001.01 100x	1.2436 ppm	0.0040 ppm	0.3200%	2019/03/27 14:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2464	12.4640	17.22	20.08	2.86	50.16	10:27
2	TOC	1.2408	12.4080	17.18	19.93	2.75	50.16	10:27

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1902334-002.01 100x	3.1335 ppm	0.0386 ppm	1.2300%	2019/03/27 14:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1608	31.6083	30.21	32.94	2.73	50.17	10:26
2	TOC	3.1062	31.0617	29.84	32.74	2.90	50.20	10:30

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1902334-003.01 100x	2.7063 ppm	0.0063 ppm	0.2300%	2019/03/27 15:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7108	27.1076	27.16	30.15	3.00	50.19	10:25
2	TOC	2.7019	27.0192	27.10	29.98	2.89	50.21	10:26

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1902334-004.01 100x	1.5953 ppm	0.0330 ppm	2.0700%	2019/03/27 15:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6187	16.1868	19.74	22.65	2.90	50.22	10:30
2	TOC	1.5720	15.7198	19.43	22.30	2.87	50.24	10:26

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1902334-005.01 100x	1.7289 ppm	0.0171 ppm	0.9900%	2019/03/27 16:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7410	17.4095	20.57	23.51	2.93	50.23	10:31
2	TOC	1.7168	17.1679	20.41	23.28	2.87	50.23	10:26

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 16:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.55	9.35	2.80	50.24	10:29
2	TOC	0.0000	0.0000	6.24	9.12	2.88	50.23	10:26

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1902448-008.04	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 16:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.38	9.49	3.11	50.24	10:30
2	TOC	0.0000	0.0000	6.60	9.56	2.95	50.22	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1902495-002.01	0.3265 ppm	0.0120 ppm	3.6700%	2019/03/27 17:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3180	3.1799	10.91	13.83	2.92	50.25	10:28
2	TOC	0.3349	3.3493	11.03	13.96	2.93	50.22	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) | **Method** CAS_salt_010711 | **Calibration** CAS_salt_010711

(v1239) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1902348-001.02 10x	7.2570 ppm	0.0236 ppm	0.3300%	2019/03/27 17:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.2403	72.4027	57.90	60.92	3.02	50.18	10:29
2	TOC	7.2737	72.7371	58.13	61.14	3.01	50.25	10:28

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.35	10.14	2.79	50.18	10:26
2	TOC	0.0000	0.0000	7.06	10.07	3.01	50.15	10:27

Dilution: 1:10
Blank Contribution: (TC) 8.7555 (IC) (v1239)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm
From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.7911 ppm (PASS)	0.0000 ppm	0%	2019/03/27 18:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.7911	257.9111	184.53	187.52	2.99	50.15	10:32

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

Sample Type: Check Standard --> CCB
From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/27 19:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.92	9.90	2.98	50.14	10:29

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 19:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.23	9.14	2.91	50.24	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.3540 ppm (PASS)	0.0000 ppm	0%	2019/03/27 19:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.3540	263.5402	188.35	191.42	3.07	50.20	10:31

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K1902381-001.08	0.4518 ppm	0.0691 ppm	15.2900%	2019/03/27 19:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5007	5.0067	12.15	14.98	2.83	50.19	10:28
2	TOC	0.4030	4.0299	11.49	14.33	2.84	50.19	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K1902381-001.08 ms	28.7662 ppm	0.0000 ppm	0.0000%	2019/03/27 20:17

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	28.7662	287.6623	204.02	206.95	2.93	50.20	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 20:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.53	10.23	2.70	50.18	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1902381-002.08	0.5130 ppm	0.0054 ppm	1.0600%	2019/03/27 20:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5092	5.0921	12.21	15.09	2.88	50.12	10:28
2	TOC	0.5169	5.1687	12.26	15.20	2.94	50.10	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1902381-003.08	0.4906 ppm	0.0028 ppm	0.5700%	2019/03/27 21:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4886	4.8859	12.07	14.98	2.90	50.04	10:28
2	TOC	0.4926	4.9256	12.10	14.77	2.68	50.08	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1902381-004.08	3.0360 ppm	0.0405 ppm	1.3300%	2019/03/27 21:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0646	30.6463	29.56	32.38	2.83	50.07	10:29
2	TOC	3.0073	30.0732	29.17	32.13	2.96	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈	65	TOC	K1902381-005.08 10x	22.4782 ppm	0.2402 ppm	1.0700%	2019/03/27 22:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.3083	223.0831	160.18	162.95	2.76	50.03	10:28
2	TOC	22.6480	226.4803	162.49	165.42	2.93	50.04	10:27

Dilution 1:10
Blank Contribution (TC) 8.7555 (IC) (v1239)
Method CAS_salt_010711 (v4)
Calibration CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/27 22:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.38	11.37	3.00	49.98	10:27
2	TOC	0.0000	0.0000	7.03	9.93	2.90	50.06	10:26

Dilution 1:10
Blank Contribution (TC) 8.7555 (IC) (v1239)
Method CAS_salt_010711 (v4)
Calibration CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm
From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.9895 ppm (PASS)	0.0000 ppm	0%	2019/03/27 23:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.9895	259.8955	185.88	188.91	3.03	50.07	10:32

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

Sample Type: Check Standard --> CCB
From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/27 23:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.94	9.94	3.00	50.12	10:31

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

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1902418-001.03 20x	2.8902 ppm	0.0644 ppm	2.2300%	2019/03/27 23:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8447	28.4468	28.06	31.06	3.00	50.13	10:29
2	TOC	2.9357	29.3572	28.68	31.48	2.80	50.14	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1902418-002.03 20x	3.0139 ppm	0.0111 ppm	0.3700%	2019/03/28 00:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0218	30.2175	29.27	32.13	2.86	50.14	10:29
2	TOC	3.0060	30.0599	29.16	32.09	2.93	50.14	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1902418-003.03 20x	0.6151 ppm	0.0069 ppm	1.1200%	2019/03/28 00:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6103	6.1027	12.90	15.92	3.03	50.13	10:28
2	TOC	0.6200	6.2000	12.96	15.74	2.78	50.11	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	K1902418-004.03 5x	1.8228 ppm	0.0561 ppm	3.0800%	2019/03/28 01:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8625	18.6249	21.40	24.27	2.87	50.13	10:29
2	TOC	1.7831	17.8309	20.86	23.77	2.91	50.12	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7555 (IC) (v1239)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	71	TOC	K1902418-005.03 10x	0.3352 ppm	0.0003 ppm	0.0900%	2019/03/28 01:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3349	3.3493	11.03	13.97	2.94	50.11	10:32
2	TOC	0.3354	3.3537	11.03	14.09	3.06	50.10	10:25

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1902418-006.03 20x	1.7954 ppm	0.0378 ppm	2.1100%	2019/03/28 01:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8221	18.2213	21.12	23.85	2.73	50.12	10:31
2	TOC	1.7687	17.6865	20.76	23.80	3.03	50.15	10:26

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1902418-007.03 20x	4.2674 ppm	0.0180 ppm	0.4200%	2019/03/28 02:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2802	42.8016	37.81	40.59	2.78	50.11	10:26
2	TOC	4.2547	42.5468	37.64	40.64	3.00	50.11	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/03/28 02:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.49	9.46	2.97	50.13	10:30
2	TOC	0.0000	0.0000	6.55	9.55	3.00	50.13	10:28

Dilution 1:10 | **Blank Contribution** (TC) 8.7555 (IC) (v1239) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8349 ppm (PASS)	0.0000 ppm	0%	2019/03/28 03:21

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

	Type		#							Time
B	TOC	25 ppm	1	25.8349	258.3486	184.83	187.84	3.01	50.12	10:29

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

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/03/28 03:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.86	9.90	3.05	50.14	10:32

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1238	2.8787	1.7600	0.0000	0.0000	0.0000	2019/03/21 19:27	Fusion1 (Fusion1)
v1239	1.1963	1.0700	0.0000	0.0000	0.0000	2019/03/26 13:09	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15

0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4
Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/03/28 03:53

00948361

StarLIMS Run: 629614, 629615, 629616, 629617

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77C 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-77B

21 % H3PO4: 11-GEN-05-77A

Equipment ID: K-TOC-03

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

FILTER ID: NA

Analyzed By:	BCP	Date Analyzed:	3/26/19
Reviewed By:	[signature]	Date Reviewed:	03/28/19

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LABORATORY REPORT

April 4, 2019

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

RE: HS19031013

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on March 21, 2019. For your reference, these analyses have been assigned our service request number P1901501.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 3:21, April 04, 2019

Hayden Akers
Project Manager

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Client: ALS Laboratory Group
Project: HS19031013

Service Request No: P1901501

CASE NARRATIVE

The samples were received intact under chain of custody on March 21, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1901501-005	Carbon dioxide
P1901501-007MSD	Carbon dioxide

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The recovery for methane, ethene and ethane were outside the DOD control limits for the matrix spike and it's duplicate. However all control parameters for the laboratory control sample and its duplicate are within DOD criteria.

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Client: ALS Laboratory Group
Project: HS19031013

Service Request No: P1901501

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1901501-007MS	Ethene, Ethane

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-006
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS19031013

Service Request: P1901501

Date Received: 3/21/2019
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35AWW11_031919	P1901501-001	Water	3/19/2019	08:15	X	X
35AWW24_031919	P1901501-002	Water	3/19/2019	09:15	X	X
35AWW19_031919	P1901501-003	Water	3/19/2019	10:10	X	X
LHSMW07_031919	P1901501-004	Water	3/19/2019	11:05	X	X
35AWW06_031919	P1901501-005	Water	3/19/2019	12:05	X	X
35AWW06_031919_a	P1901501-006	Water	3/19/2019	12:05	X	X
35AWW20_031919	P1901501-007	Water	3/19/2019	13:15	X	X

10450 Stancliff Rd, Ste 210
Houston, TX 77099
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www.alsglobal.com

Subcontract Chain of Custody

COC ID: 10948

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

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:	HS19031013
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19031013-01**	**35AWWLL_031919**	**Groundwater**	**19 Mar 2019 08:15**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019
2.	**HS19031013-02**	**35AWW24_031919**	**Groundwater**	**19 Mar 2019 09:15**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019
3.	**HS19031013-03**	**35AWW19_031919**	**Groundwater**	**19 Mar 2019 10:10**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019
4.	**HS19031013-04**	**LHSMW07_031919**	**Groundwater**	**19 Mar 2019 11:05**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019
5.	**HS19031013-05**	**35AWW06_031919**	**Groundwater**	**19 Mar 2019 12:05**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019
6.	**HS19031013-06**	**35AWW06_031919_a**	**Groundwater**	**19 Mar 2019 12:05**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019
7.	**HS19031013-07**	**35AWW20_031919**	**Groundwater**	**19 Mar 2019 13:15**
	MEE plus CO2 Sub to ALS SimiValley			28 Mar 2019

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS19031013-07 designated MS/MSD

RIGHT SOLUTIONS | RIGHT PARTNER

P190150

Subcontract Chain of Custody

COC ID: 10948

QC Level: DOD IV (DoD Data Package)

Relinquished By: R Cross Date/Time: 3/20/19 1800

Received By: Date/Time: 3/21/19 0930

Cooler ID(s): Temperature(s): 1°C

not ICE

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1901501

Project: HS19031013

Sample(s) received on: 3/21/19 Date opened: 3/21/19 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 1° C Blank Temperature: ° C Thermometer ID CO907034581 Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1901501-001.01	40mL VOA NP		7		A	wh 3/28/19
P1901501-001.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-001.07	40mL VOA NP				A	
P1901501-001.08	40ml VOA HCL				A	
P1901501-002.01	40mL VOA NP		6		A	wh 3/28/19
P1901501-002.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-002.07	40mL VOA NP				A	
P1901501-002.08	40ml VOA HCL				A	
P1901501-003.01	40mL VOA NP		6		A	wh 3/28/19
P1901501-003.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-003.07	40mL VOA NP				A	
P1901501-003.08	40ml VOA HCL				A	
P1901501-004.01	40mL VOA NP					Received Broken
P1901501-004.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-004.07	40mL VOA NP		7		A	wh 3/28/19

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1901501

Project: HS19031013

Sample(s) received on: 3/21/19 Date opened: 3/21/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1901501-004.08	40ml VOA HCL				A	
P1901501-005.01	40mL VOA NP		6		A	wh 3/28/19
P1901501-005.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-005.07	40mL VOA NP				A	
P1901501-005.08	40ml VOA HCL				A	
P1901501-006.01	40mL VOA NP		6		A	wh 3/28/19
P1901501-006.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-006.07	40mL VOA NP				A	
P1901501-006.08	40ml VOA HCL				A	
P1901501-007.01	40mL VOA NP		6		A	wh 3/28/19
P1901501-007.04	40ml VOA HCL		1		A	wh 3/28/19
P1901501-007.07	40mL VOA NP		6		A	wh 3/28/19
P1901501-007.08	40ml VOA HCL		1		A	wh 3/28/19
P1901501-007.09	40ml VOA HCL		1		A	wh 3/28/19
P1901501-007.10	40ml VOA HCL				A	
P1901501-007.11	40ml VOA HCL				A	
P1901501-007.12	40ml VOA HCL				A	
P1901501-007.13	40mL VOA NP		6		A	wh 3/28/19
P1901501-007.14	40mL VOA NP				A	
P1901501-007.15	40mL VOA NP				A	
P1901501-007.16	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19031013** ALS Project ID: P1901501

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 3/19/19
Date Received: 3/21/19
Date Analyzed: 3/28/19

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35AWW11_031919	P1901501-001	0.050	**940,000**	2,000	1,700	740	
35AWW24_031919	P1901501-002	0.050	**680,000**	2,000	1,700	740	
35AWW19_031919	P1901501-003	0.050	**790,000**	2,000	1,700	740	
LHSMW07_031919	P1901501-004	0.050	**440,000**	2,000	1,700	740	
35AWW06_031919	P1901501-005	0.050	**720,000**	2,000	1,700	740	
35AWW06_031919_a	P1901501-006	0.050	**670,000**	2,000	1,700	740	
35AWW20_031919	P1901501-007	0.050	**890,000**	2,000	1,700	740	
Method Control Sample	P190328-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW20_031919**
Client Project ID: **HS19031013**

ALS Project ID: P1901501
ALS Sample ID: P1901501-007MS
P1901501-007DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 3/19/19
Date Received: 3/21/19
Date Analyzed: 3/28/19
Volume(s) Analyzed: 0.050 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	892,000	941,000	937,000	**107**	**98**	80-122	9	30	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P190328-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	20,800	20,200	**91**	**88**	80-122	3	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW11_031919** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P1901501-001

Test Code: RSK 175 Date Collected: 3/19/19
Instrument ID: HP5890A/GC10/FID Date Received: 3/21/19
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**450**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW24_031919** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P1901501-002

Test Code: RSK 175 Date Collected: 3/19/19
Instrument ID: HP5890A/GC10/FID Date Received: 3/21/19
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**7.8**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW19_031919** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P1901501-003

Test Code: RSK 175 Date Collected: 3/19/19
Instrument ID: HP5890A/GC10/FID Date Received: 3/21/19
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.3**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **LHSMW07_031919** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P1901501-004

Test Code: RSK 175 Date Collected: 3/19/19
Instrument ID: HP5890A/GC10/FID Date Received: 3/21/19
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**270**	1.3	1.0	0.51	
74-85-1	Ethene	**25**	1.0	0.55	0.24	
74-84-0	Ethane	**0.52**	0.60	0.47	0.16	**J**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW06_031919** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P1901501-005

Test Code: RSK 175 Date Collected: 3/19/19
Instrument ID: HP5890A/GC10/FID Date Received: 3/21/19
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**3,100**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW06_031919_a** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P1901501-006

Test Code: RSK 175 Date Collected: 3/19/19
Instrument ID: HP5890A/GC10/FID Date Received: 3/21/19
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2,900**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW20_031919**
Client Project ID: **HS19031013**

ALS Project ID: P1901501
ALS Sample ID: P1901501-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 3/19/19
Date Received: 3/21/19
Date Analyzed: 3/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**840**	1.3	1.0	0.51	
74-85-1	Ethene	**0.94**	1.0	0.55	0.24	**J**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample** ALS Project ID: P1901501
Client Project ID: **HS19031013** ALS Sample ID: P190328-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 3/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW20_031919**
Client Project ID: **HS19031013**

ALS Project ID: P1901501
ALS Sample ID: P1901501-007MS
P1901501-007DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 3/19/19
Date Received: 3/21/19
Date Analyzed: 3/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	835	532	623	**0**	**0**	73-125	0	30	**N**
74-85-1	Ethene	4.40	0.942	3.21	3.21	**52**	**52**	72-133	0	30	**N**
74-84-0	Ethane	4.72	ND	2.58	2.51	**55**	**53**	74-131	4	30	**N**

N = The matrix spike recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19031013**

ALS Project ID: P1901501
ALS Sample ID: P190328-LCS
P190328-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.38	2.38	**95**	**95**	73-125	0	26	
74-85-1	Ethene	4.37	4.38	4.29	**100**	**98**	72-133	2	11	
74-84-0	Ethane	4.69	4.62	4.57	**99**	**97**	74-131	2	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281922.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:46:07
Operator : WH
Sample : P1901501-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:56:48 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.984f	93139	0.020	ppm
2)	Carbon monoxide	1.984f	93139	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.016	5048130	21506.185	ppm
6)	Methane (FID)	1.112	1182998	125.214	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

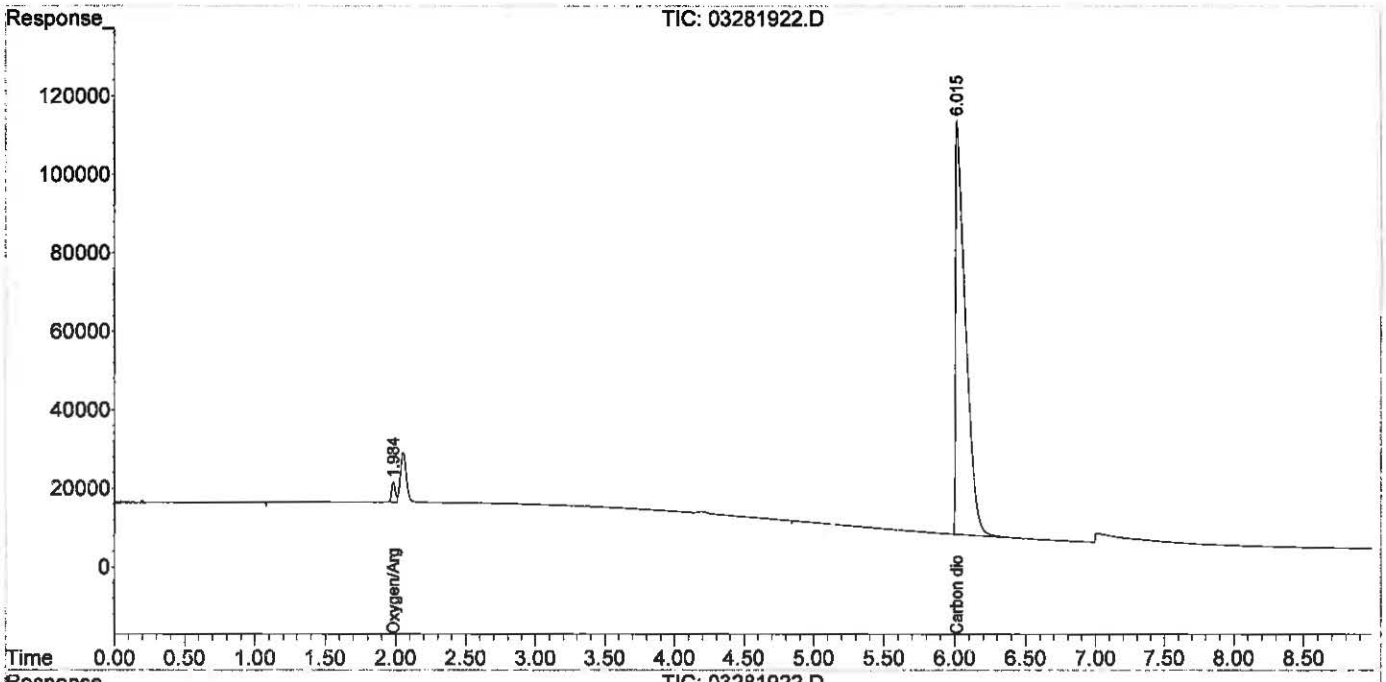
(f)=RT Delta > 1/2 Window (m)=manual int.

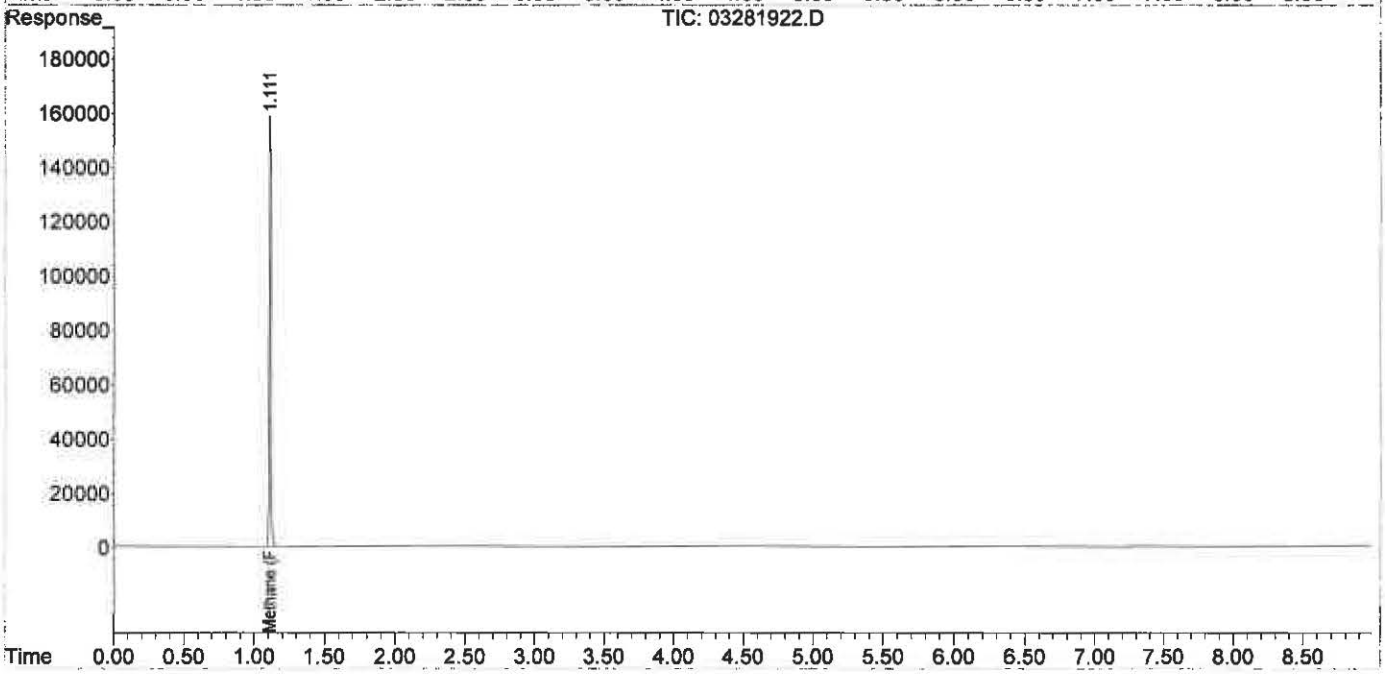
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281922.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:46:07
Operator : WH
Sample : P1901501-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:56:48 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281923.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:59:14
Operator : WH
Sample : P1901501-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:12:59 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.786	2917	0.001	ppm
2)	Carbon monoxide	1.786	2917	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.031	3633935	15481.393	ppm
6)	Methane (FID)	1.118	11567	1.224	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

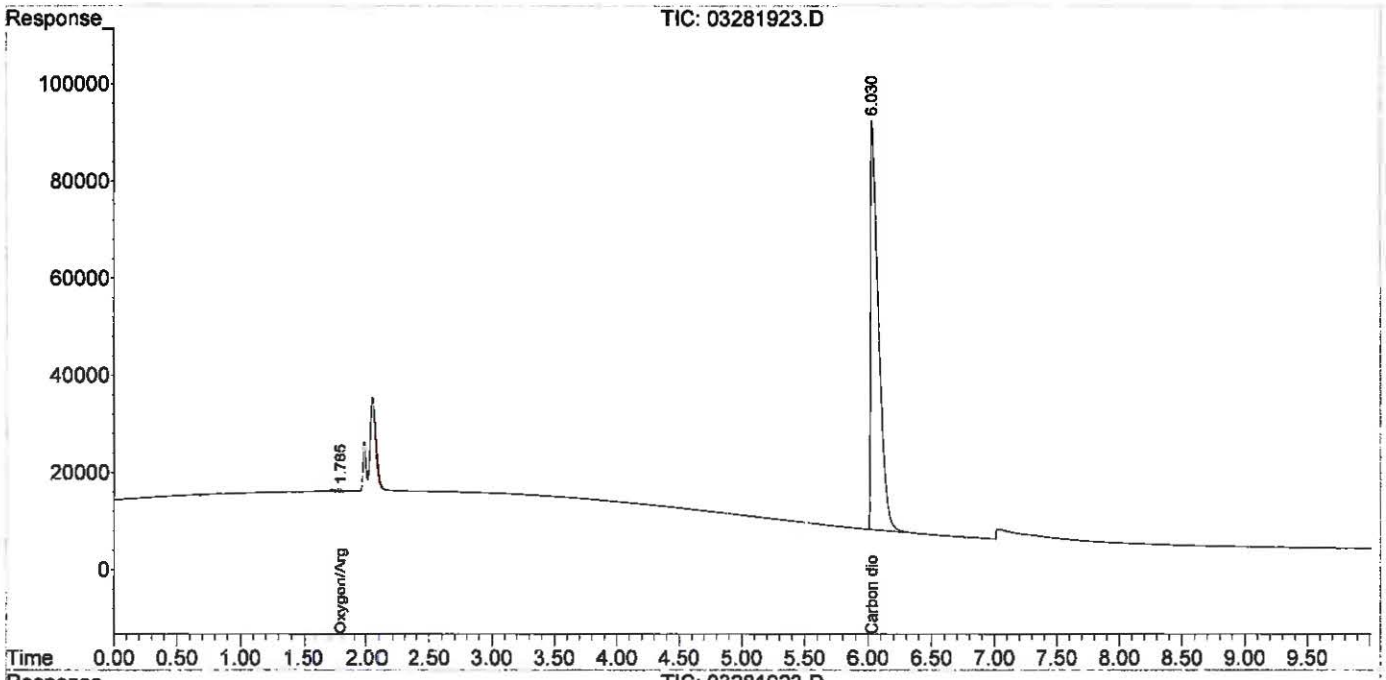
(f)=RT Delta > 1/2 Window (m)=manual int.

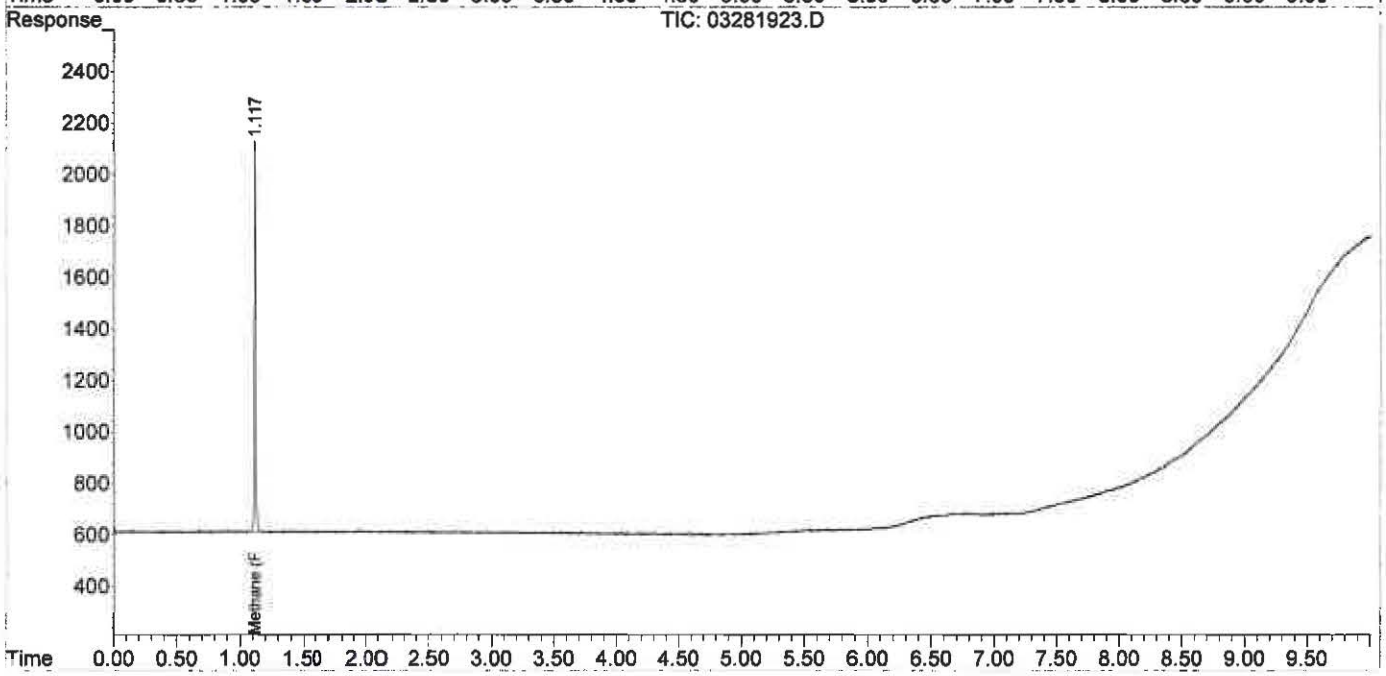
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281923.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:59:14
Operator : WH
Sample : P1901501-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:12:59 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281924.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:12:57
Operator : WH
Sample : P1901501-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:22:49 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.989f	891871	0.187	ppm
2)	Carbon monoxide	1.989f	891871	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.024	4252575	18116.941	ppm
6)	Methane (FID)	1.118	3552	0.376	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

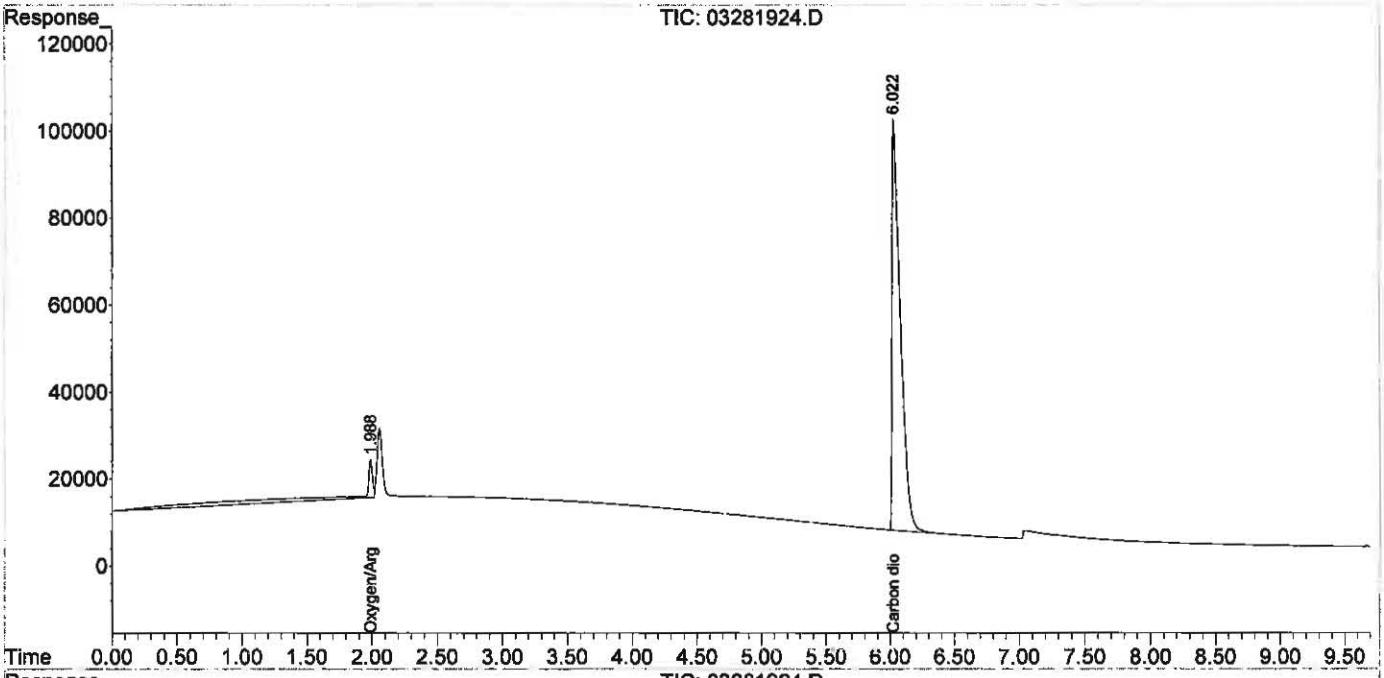
(f)=RT Delta > 1/2 Window (m)=manual int.

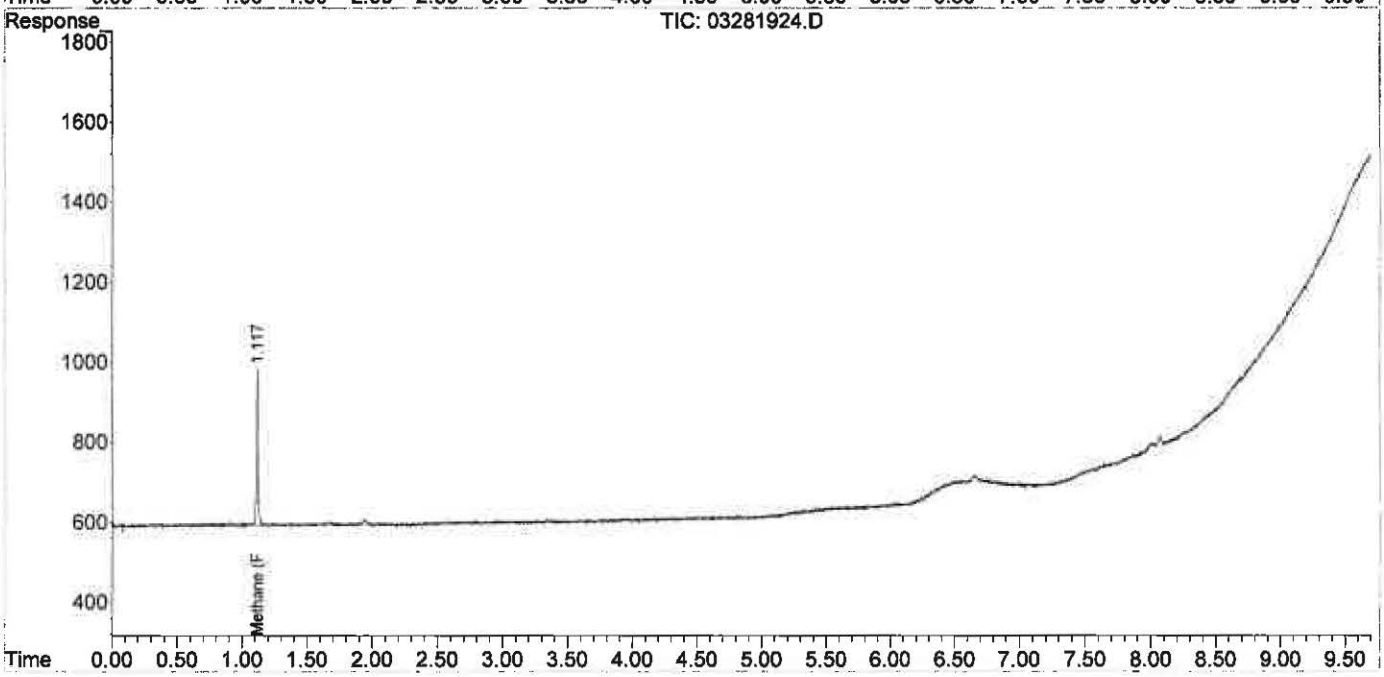
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281924.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:12:57
Operator : WH
Sample : P1901501-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:22:49 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281925.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:25:25
Operator : WH
Sample : P1901501-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:57:55 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

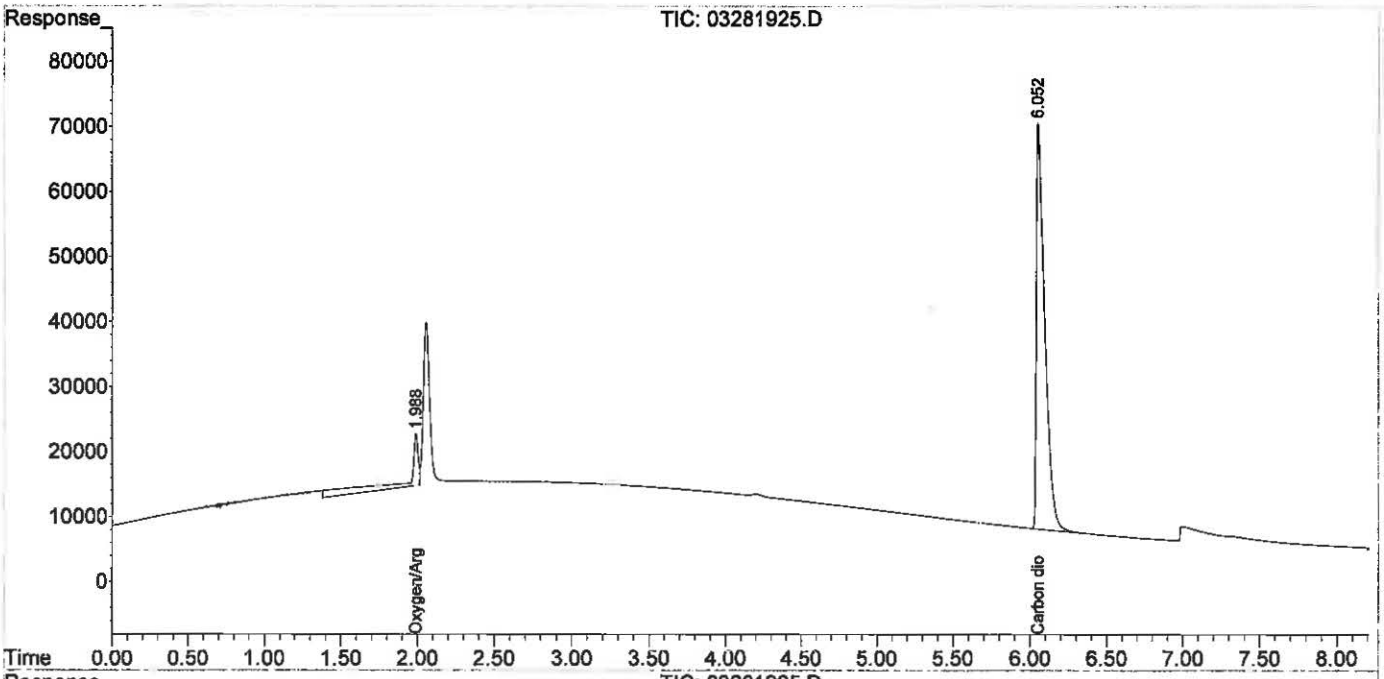
	Compound	R.T.	Response	Conc	Units
Target	Compounds				
1)	Oxygen/Argon	1.989f	422487	0.089	ppm
2)	Carbon monoxide	1.989f	422487	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.053	2358654	10048.403	ppm
6)	Methane (FID)	1.116	819751	86.766	ppm
7)	Ethylene	1.669	63322	3.760	ppm
8)	Ethane	1.931	1626	0.094	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	6.218	5990	NoCal	ppm
12)	Isobutane	6.653	50588	NoCal	ppm
13)	n-Butane	6.653	50588	NoCal	ppm

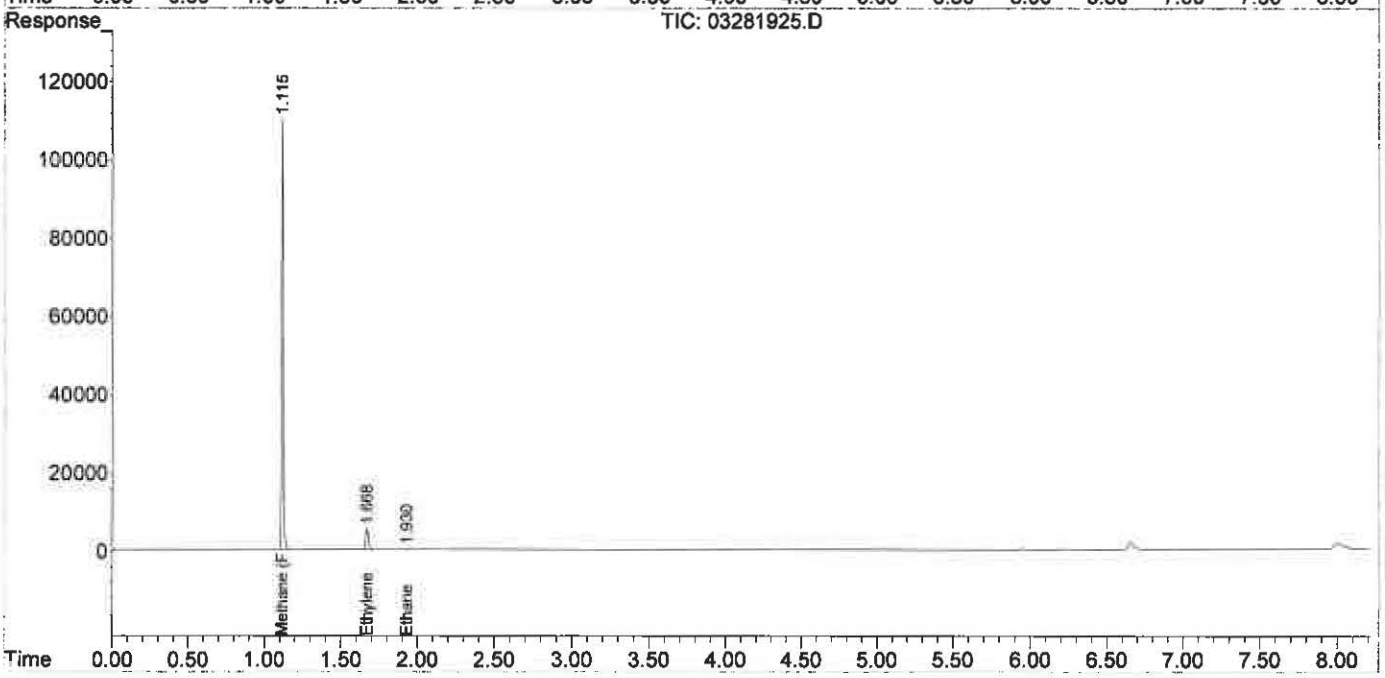
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281925.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:25:25
Operator : WH
Sample : P1901501-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:57:55 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281926.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:36:07
Operator : WH
Sample : P1901501-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:58:20 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.992f	268346	0.056	ppm	
2)	Carbon monoxide	1.992f	268346	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.027	3864438	16463.391	ppm	m
6)	Methane (FID)	1.115	12254299	1297.051	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

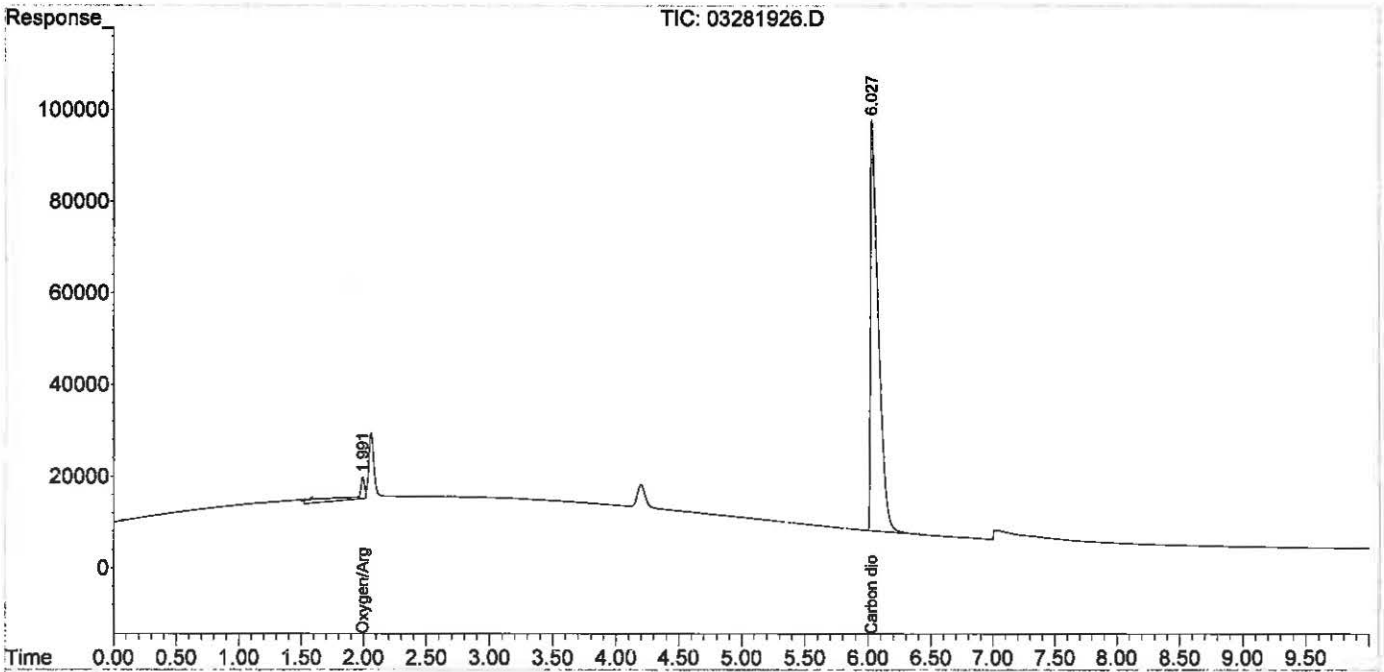
(f)=RT Delta > 1/2 Window (m)=manual int.

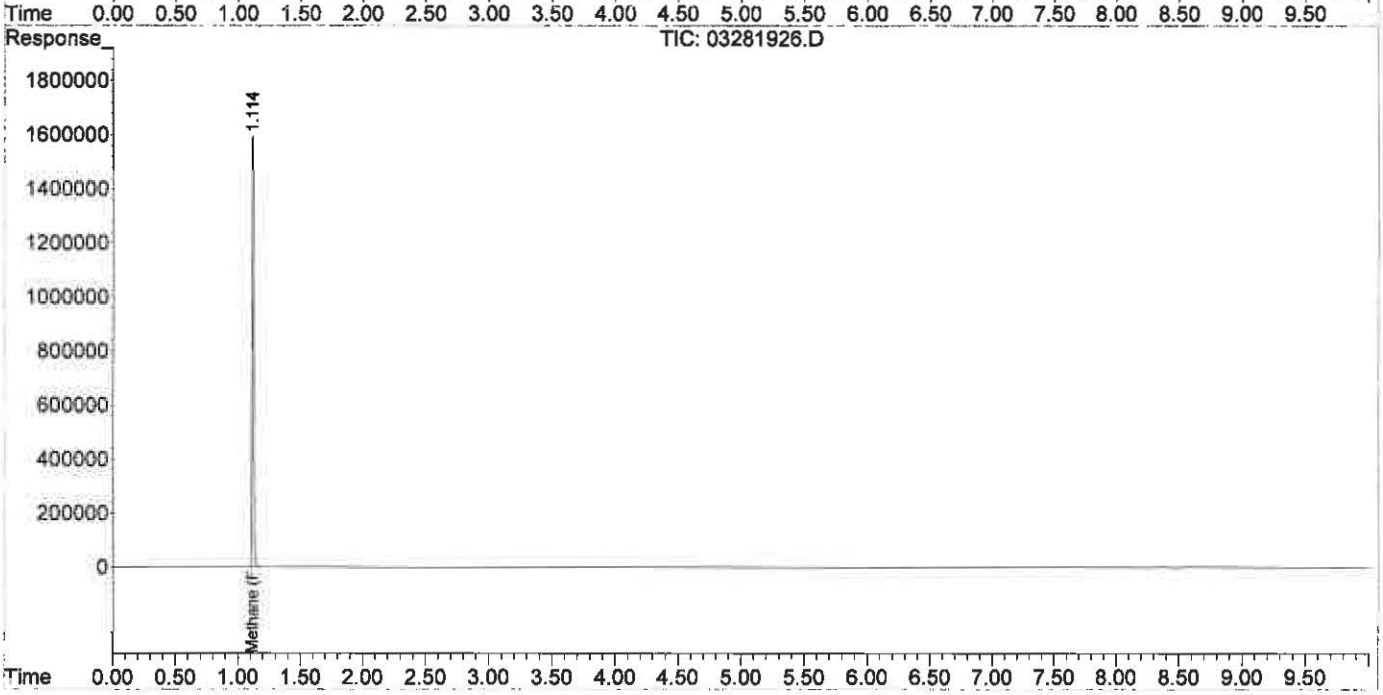
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281926.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:36:07
Operator : WH
Sample : P1901501-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:58:20 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



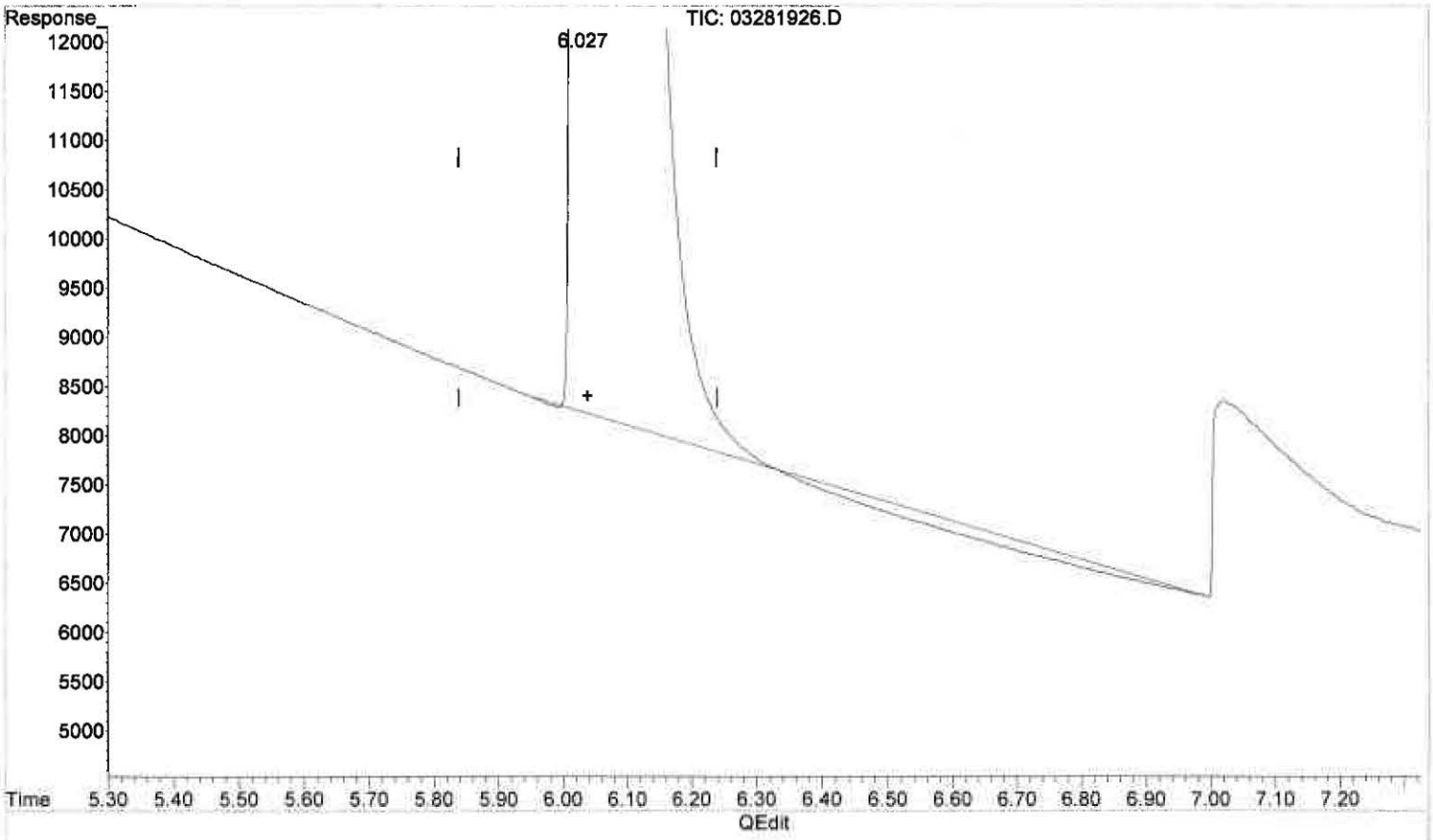


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281926.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:36:07
Operator : WH
Sample : P1901501-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:58:20 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.029min 16294.602 ppm

response 3824819

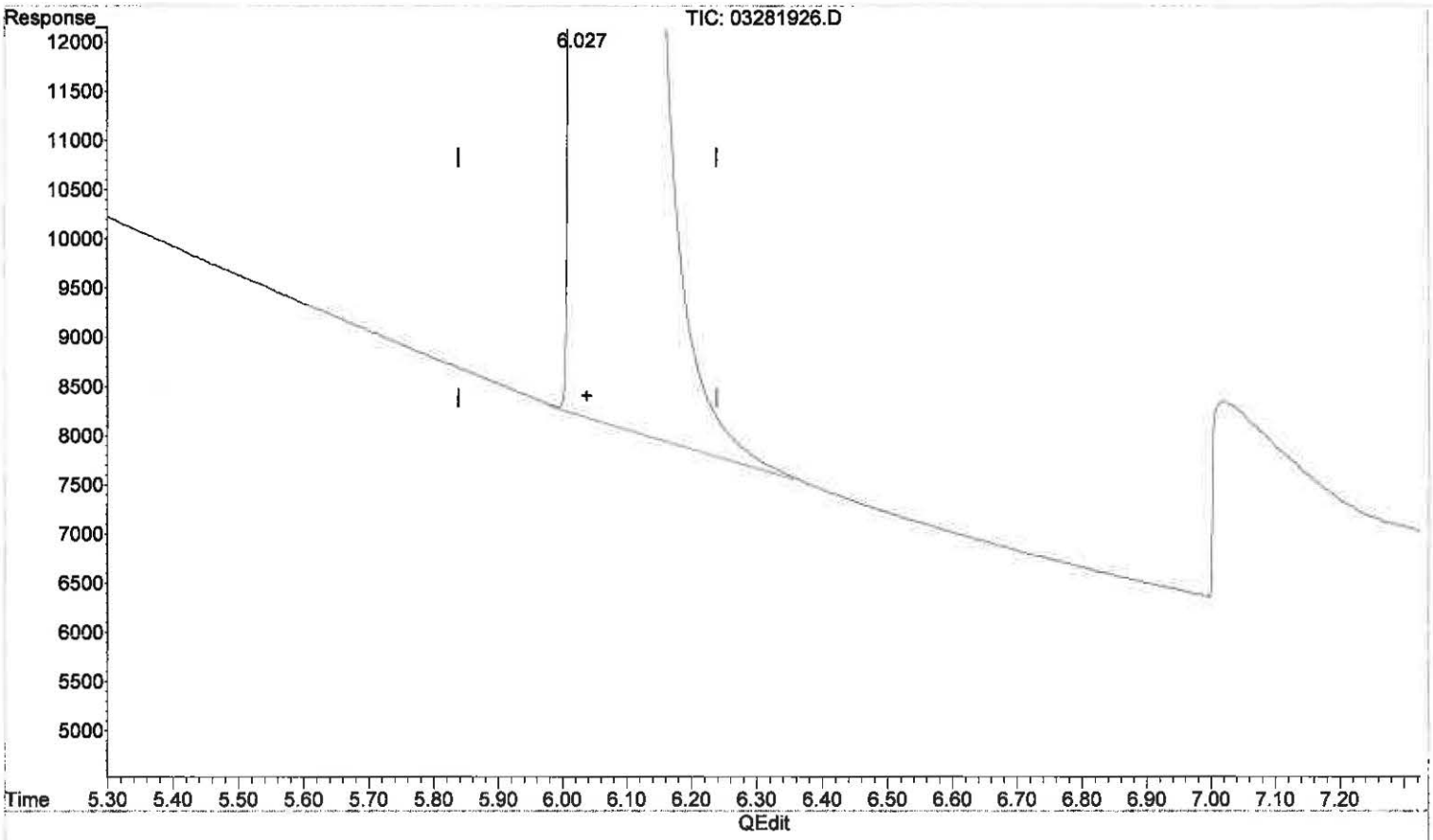
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281926.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:36:07
Operator : WH
Sample : P1901501-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 16:58:20 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.027min 16463.391 ppm m

response 3864438

MA 3/29/19

WJ 3/28/19 BLC

(+) = Expected Retention Time

RS082817_CO2.M Thu Mar 28 20:06:32 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281927.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:56:58
Operator : WH
Sample : P1901501-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:06:54 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.991f	90961	0.019	ppm
2)	Carbon monoxide	1.991f	90961	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.036	3594802	15314.677	ppm
6)	Methane (FID)	1.117	7747082	819.987	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

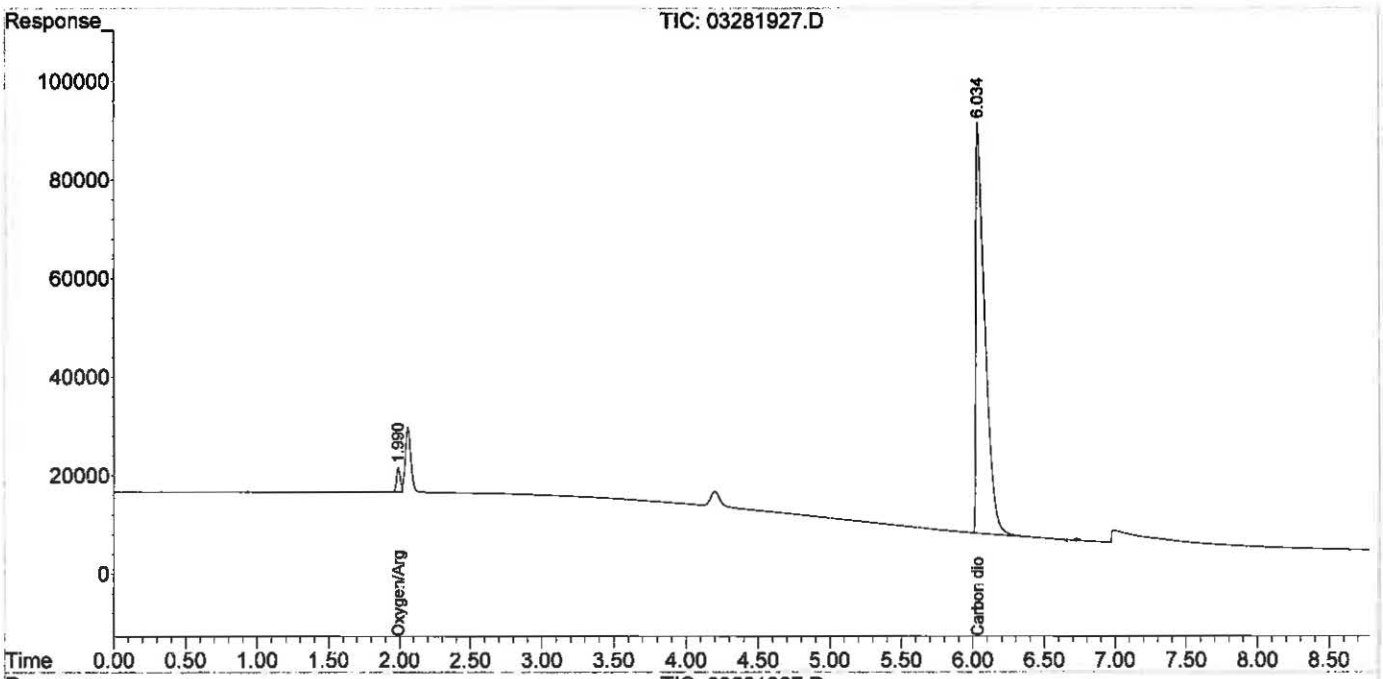
(f)=RT Delta > 1/2 Window (m)=manual int.

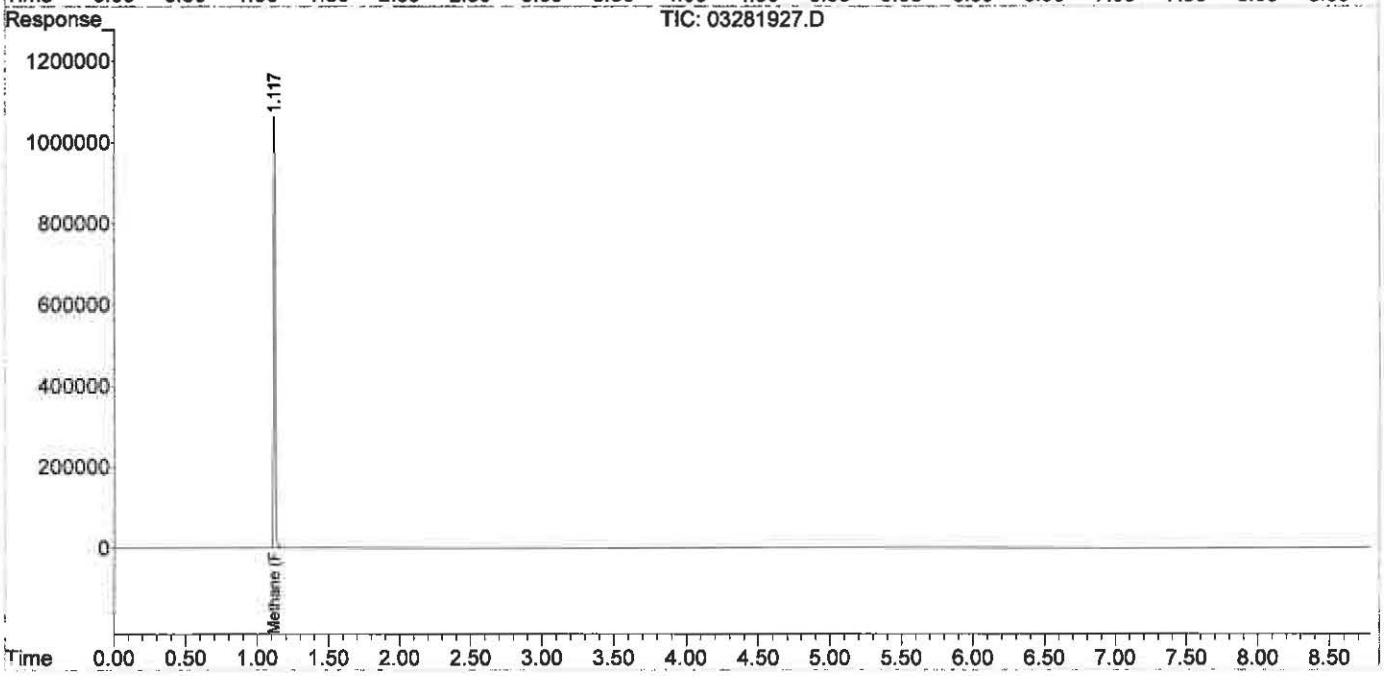
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281927.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 15:56:58
Operator : WH
Sample : P1901501-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:06:54 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281928.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:08:13
Operator : WH
Sample : P1901501-007 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 17:22:19 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.989f	356244	0.075	ppm
2)	Carbon monoxide	1.989f	356244	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.021	4794867	20427.228	ppm
6)	Methane (FID)	1.116	2017383	213.529	ppm
7)	Ethylene	1.667	1984	0.118	ppm
8)	Ethane	1.667f	1984	0.115	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.653	5911	NoCal	ppm
13)	n-Butane	6.653	5911	NoCal	ppm

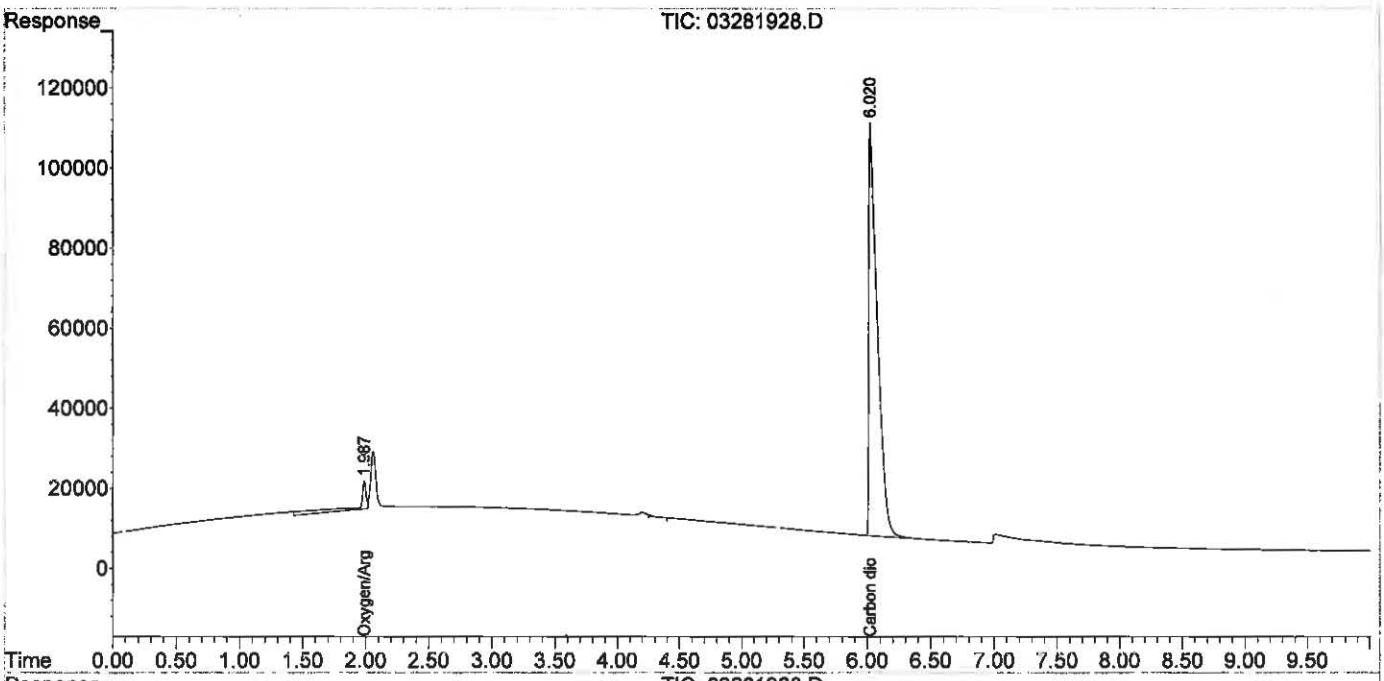
(f)=RT Delta > 1/2 Window (m)=manual int.

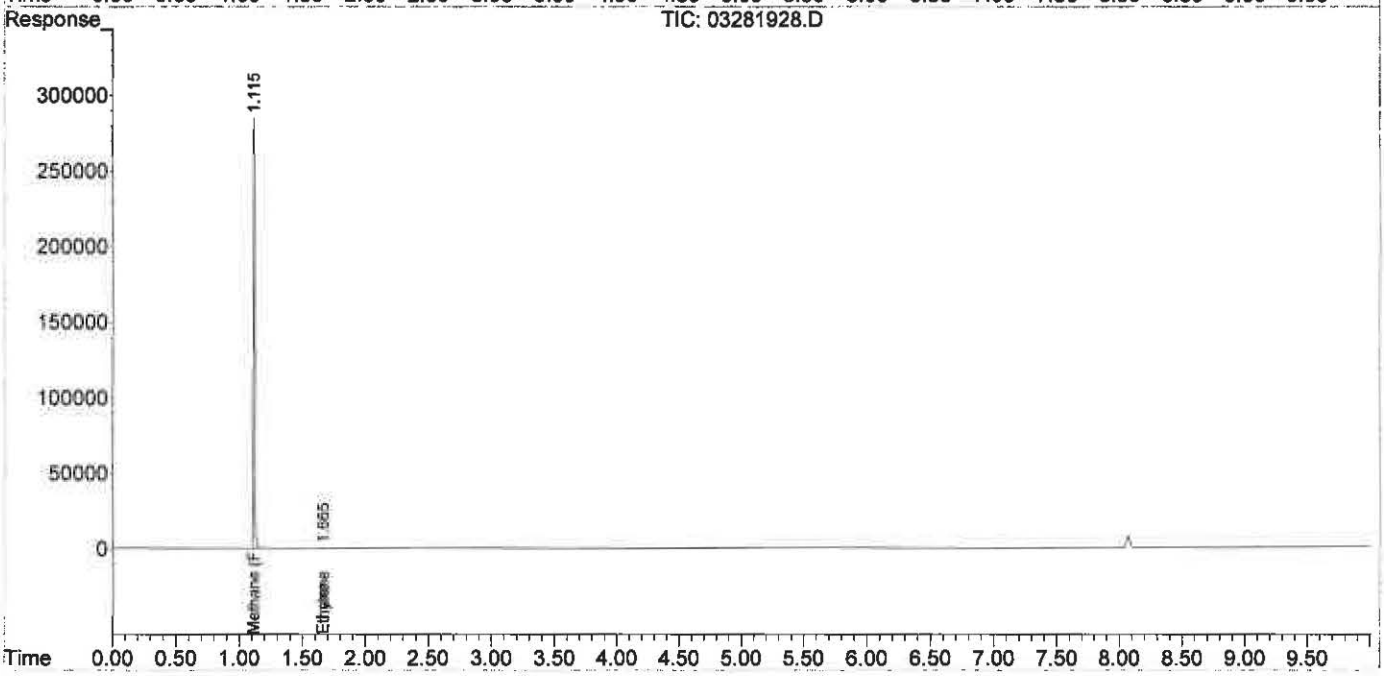
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281928.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:08:13
Operator : WH
Sample : P1901501-007 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 17:22:19 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (Not Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:36:52
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:57:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

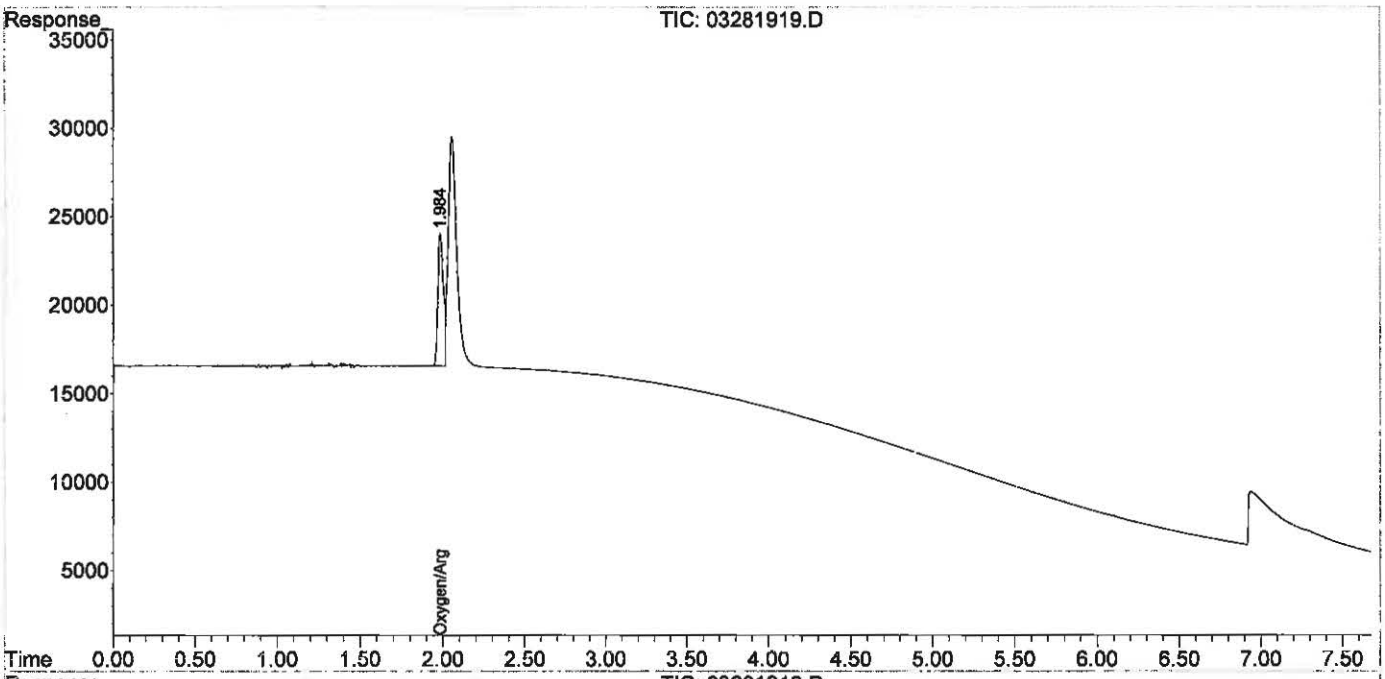
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.984f	166256	0.035	ppm
2)	Carbon monoxide	1.984f	166256	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.111	1802	0.191	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

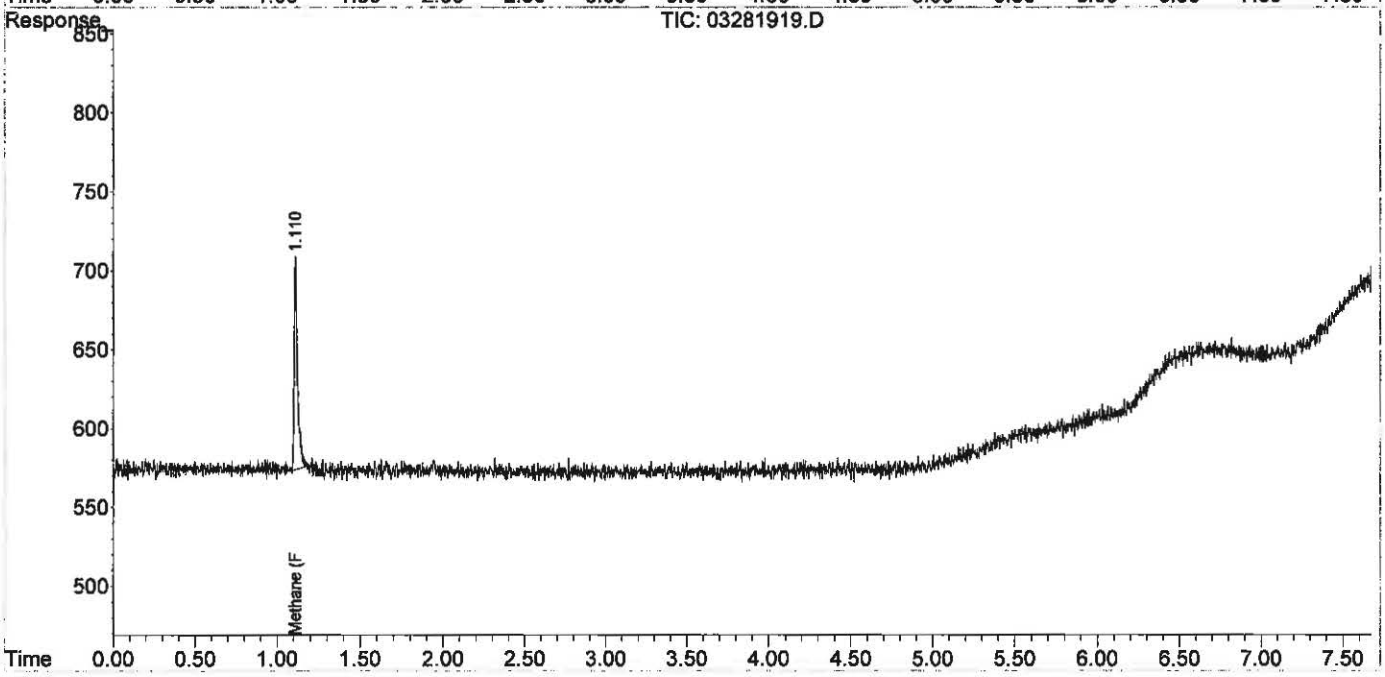
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:36:52
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:57:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281929.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:23:34
Operator : WH
Sample : P1901501-007ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:07:34 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

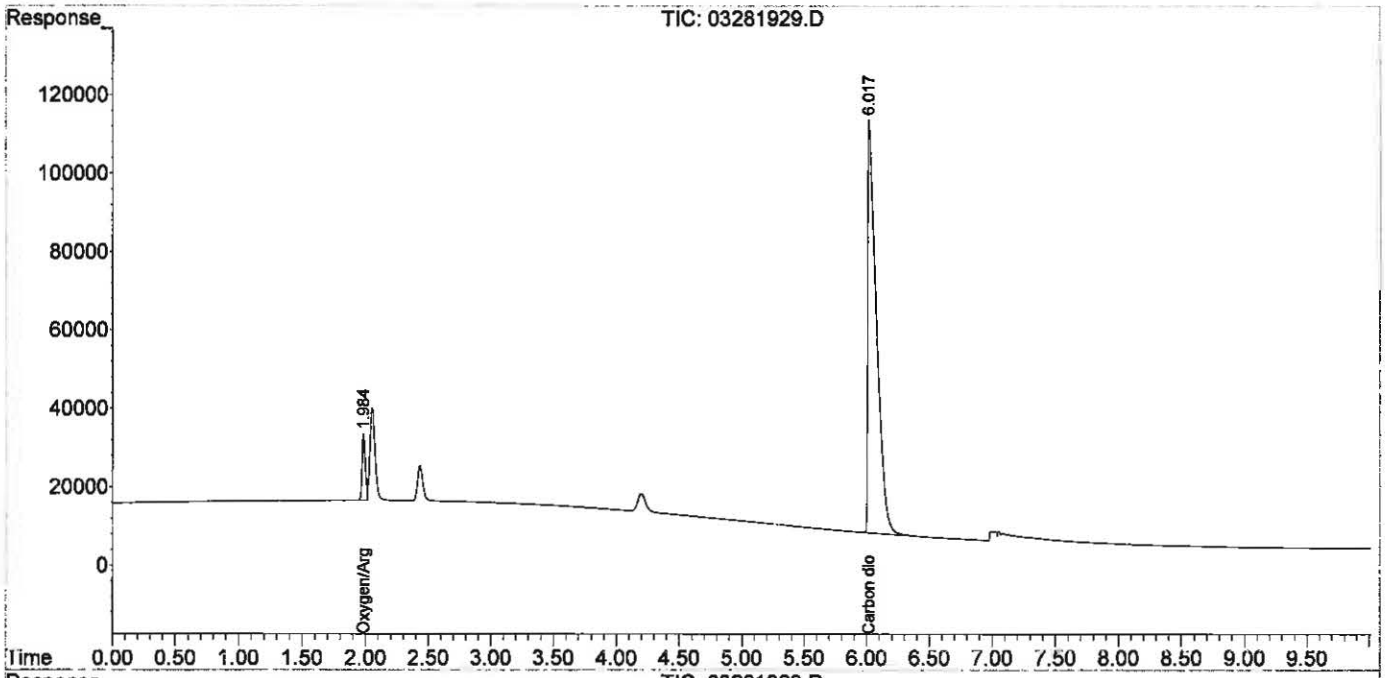
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.984f	303702	0.064	ppm
2)	Carbon monoxide	1.984f	303702	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.019	5060345	21558.228	ppm
6)	Methane (FID)	1.115	11461415	1213.129	ppm
7)	Ethylene	1.679	2199	0.131	ppm
8)	Ethane	1.679f	2199	0.128	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.653	9652	NoCal	ppm
13)	n-Butane	6.653	9652	NoCal	ppm

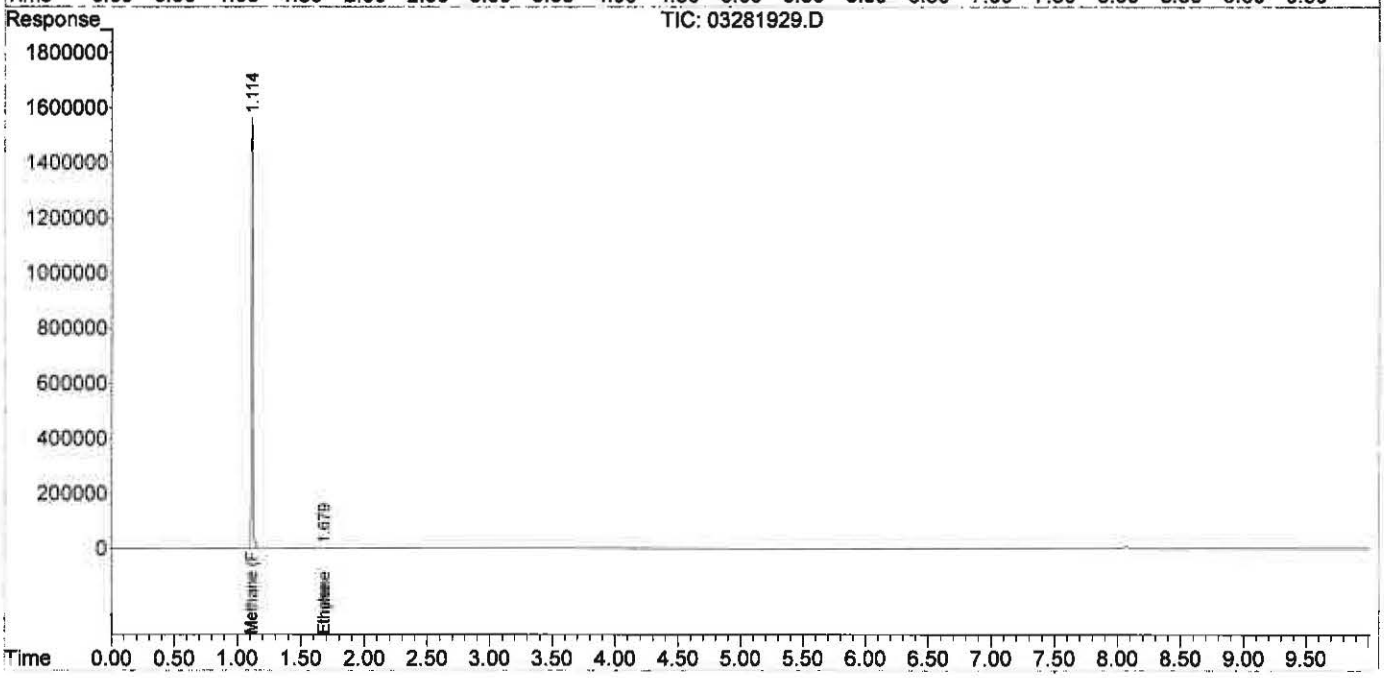
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281929.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:23:34
Operator : WH
Sample : P1901501-007ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:07:34 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281930.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:41:20
Operator : WH
Sample : P1901501-007msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:08:01 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

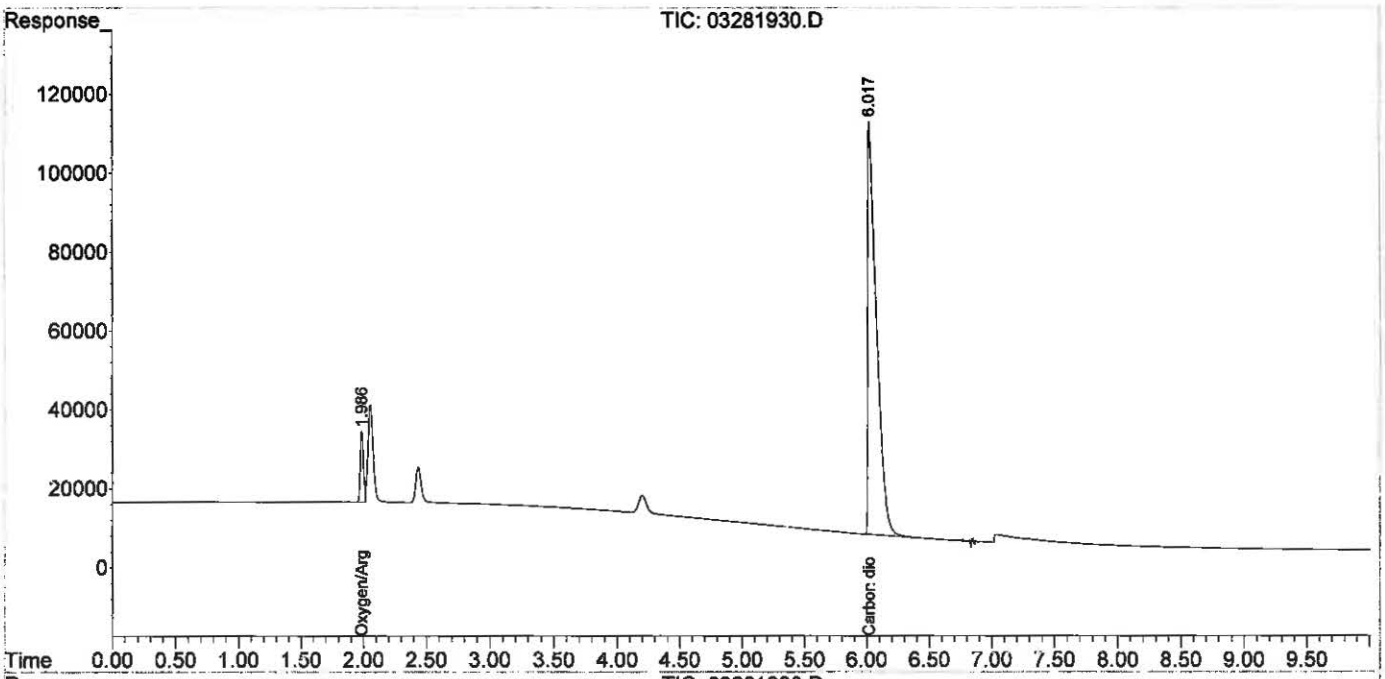
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.987f	319107	0.067	ppm	
2)	Carbon monoxide	1.987f	319107	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.017	5037213	21459.678	ppm	m
6)	Methane (FID)	1.118	11350075	1201.344	ppm	
7)	Ethylene	1.682	2071	0.123	ppm	
8)	Ethane	1.682f	2071	0.120	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.652	6520	NoCal	ppm	
13)	n-Butane	6.652	6520	NoCal	ppm	

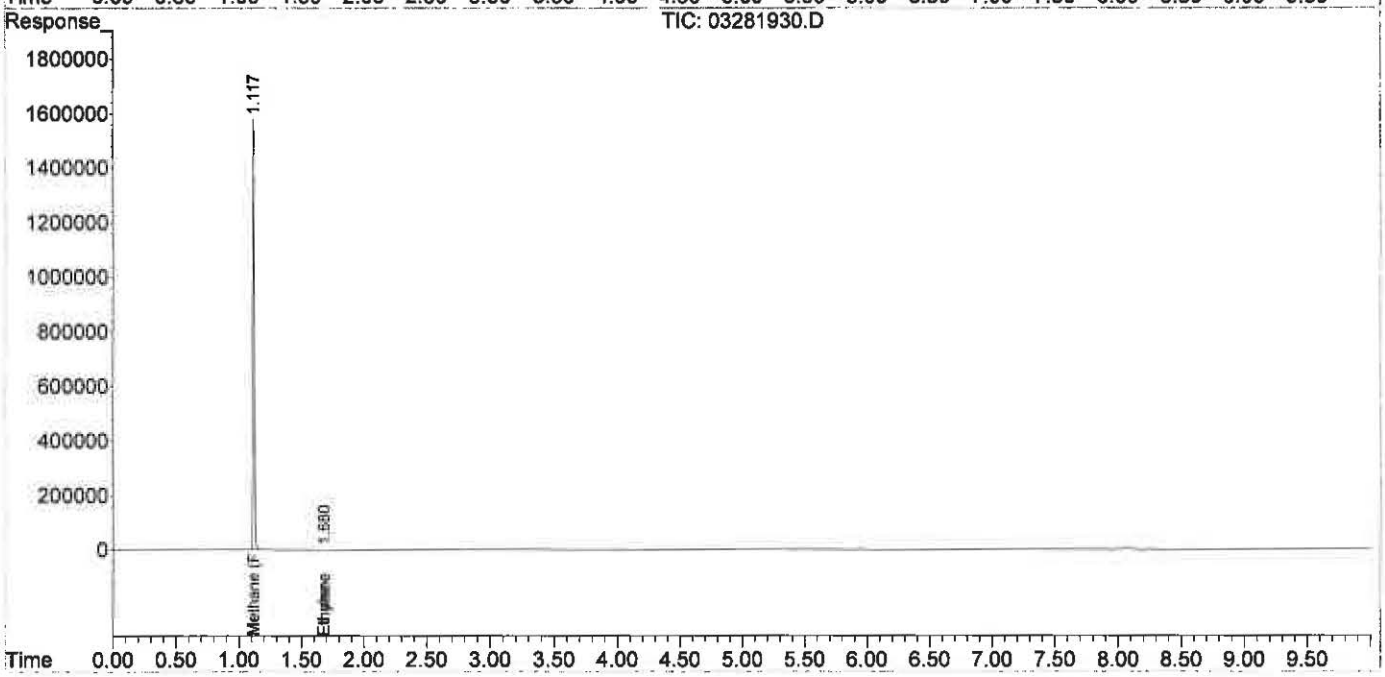
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281930.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:41:20
Operator : WH
Sample : P1901501-007msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:08:01 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



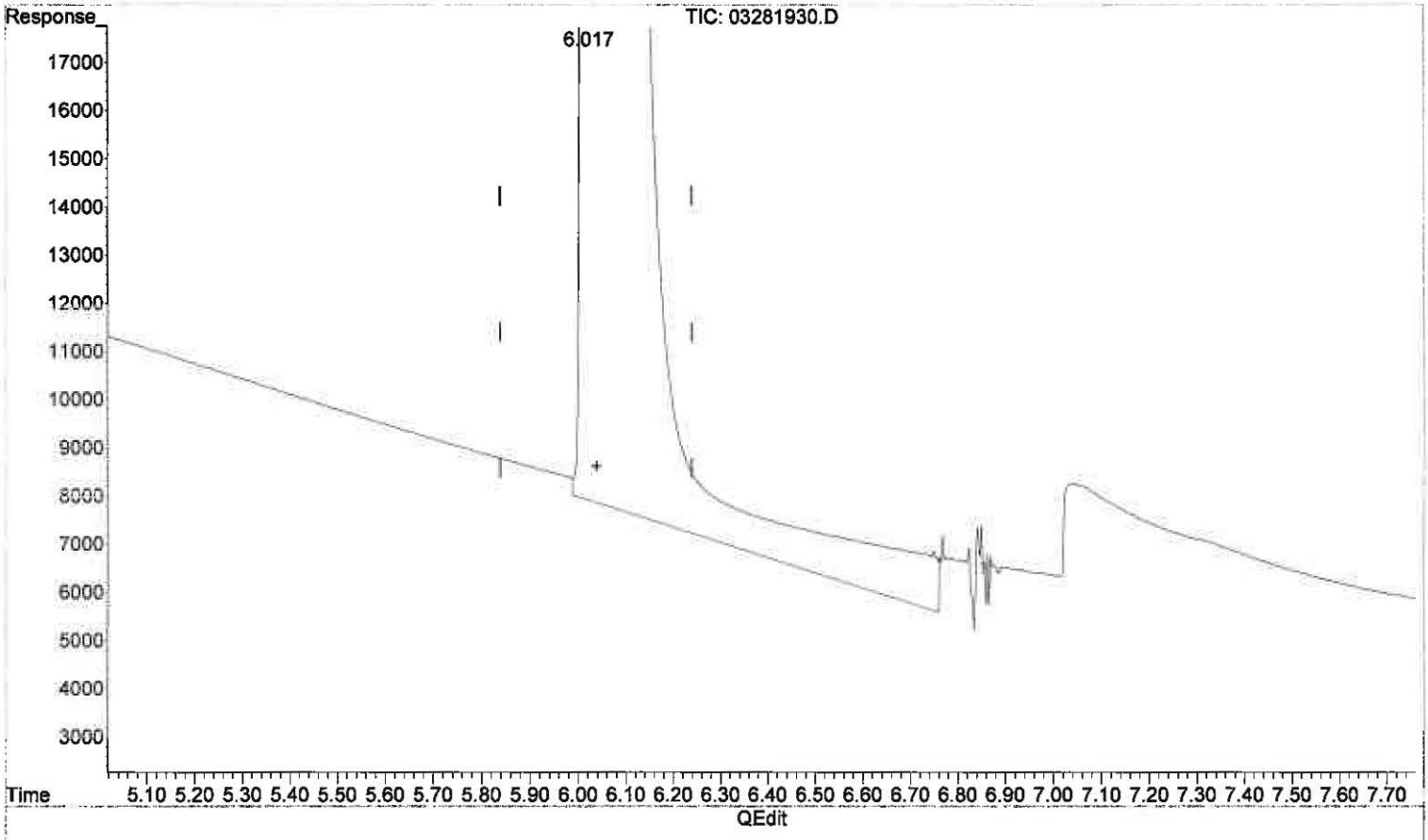


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281930.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:41:20
Operator : WH
Sample : P1901501-007msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:08:01 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.019min 22947.641 ppm

response 5386481

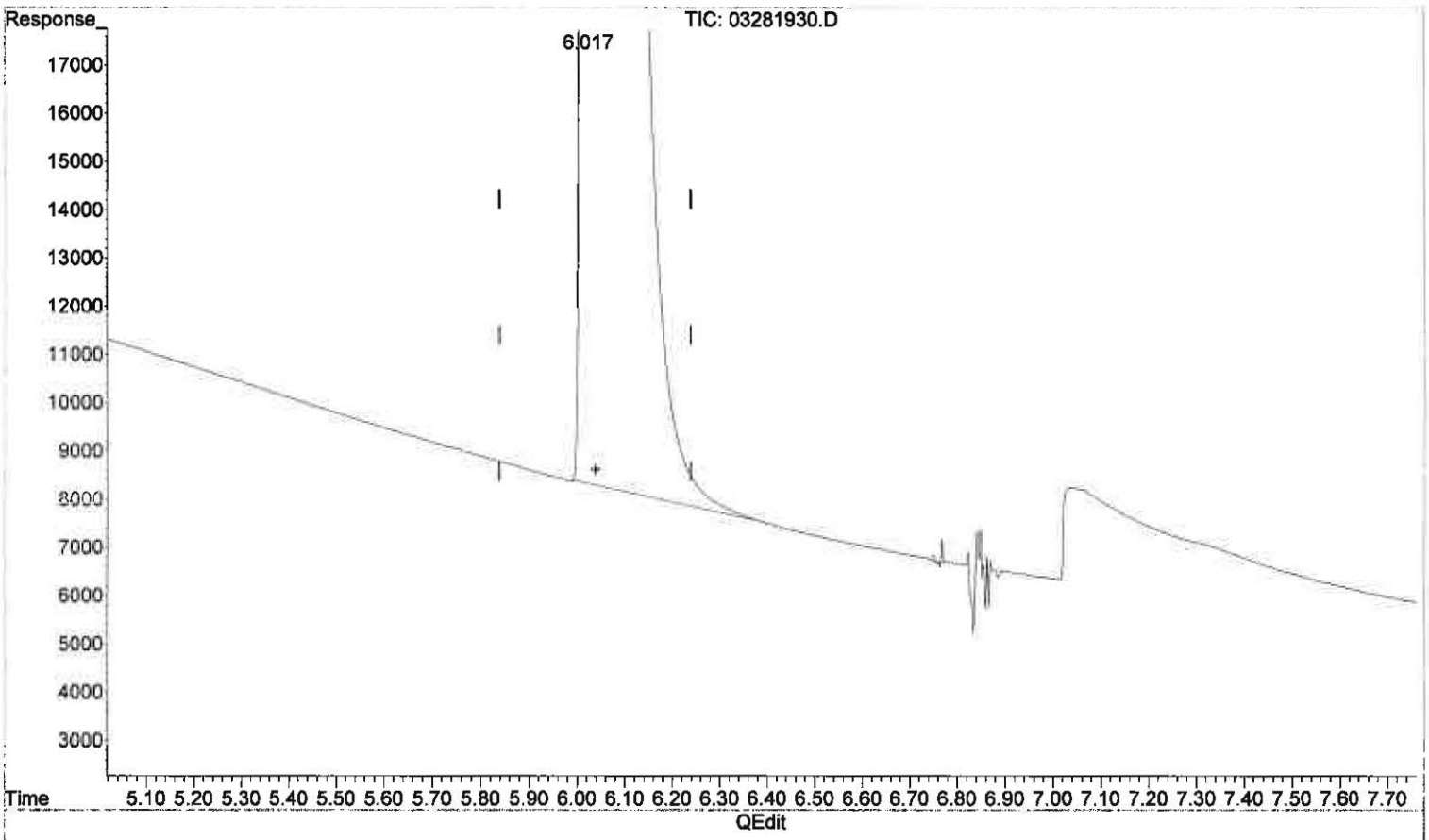
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281930.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:41:20
Operator : WH
Sample : P1901501-007msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 20:08:01 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.017min 21459.678 ppm m

response 5037213

MK 3/29/19

W 3/28/19 BLC

(+) = Expected Retention Time

RS082817_CO2.M Thu Mar 28 20:08:21 2019 46 of 150 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:46:41
Operator : WH
Sample : lcs tcd S32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:16:36 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.964f	1691213	0.355	ppm	
2)	Carbon monoxide	1.964f	1691213	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.093	224186	955.086	ppm	m
6)	Methane (FID)	1.112	32815588	3473.352	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

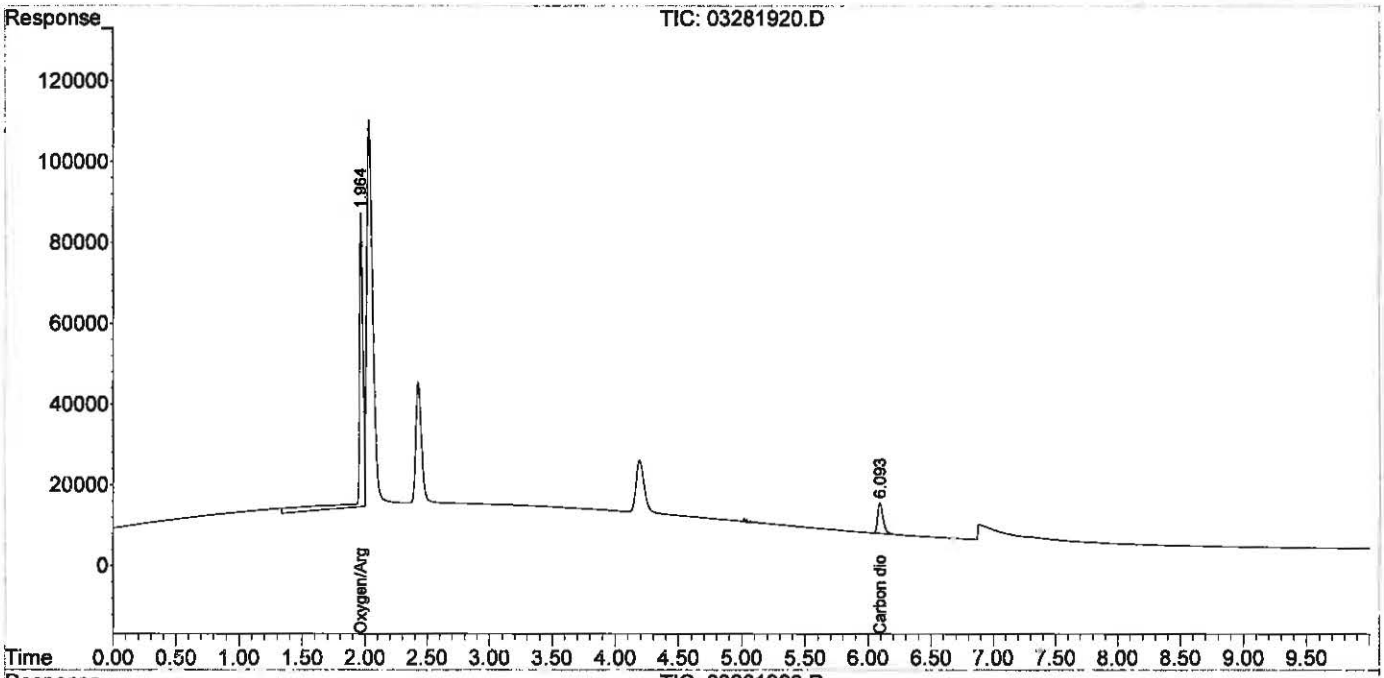
(f)=RT Delta > 1/2 Window (m)=manual int.

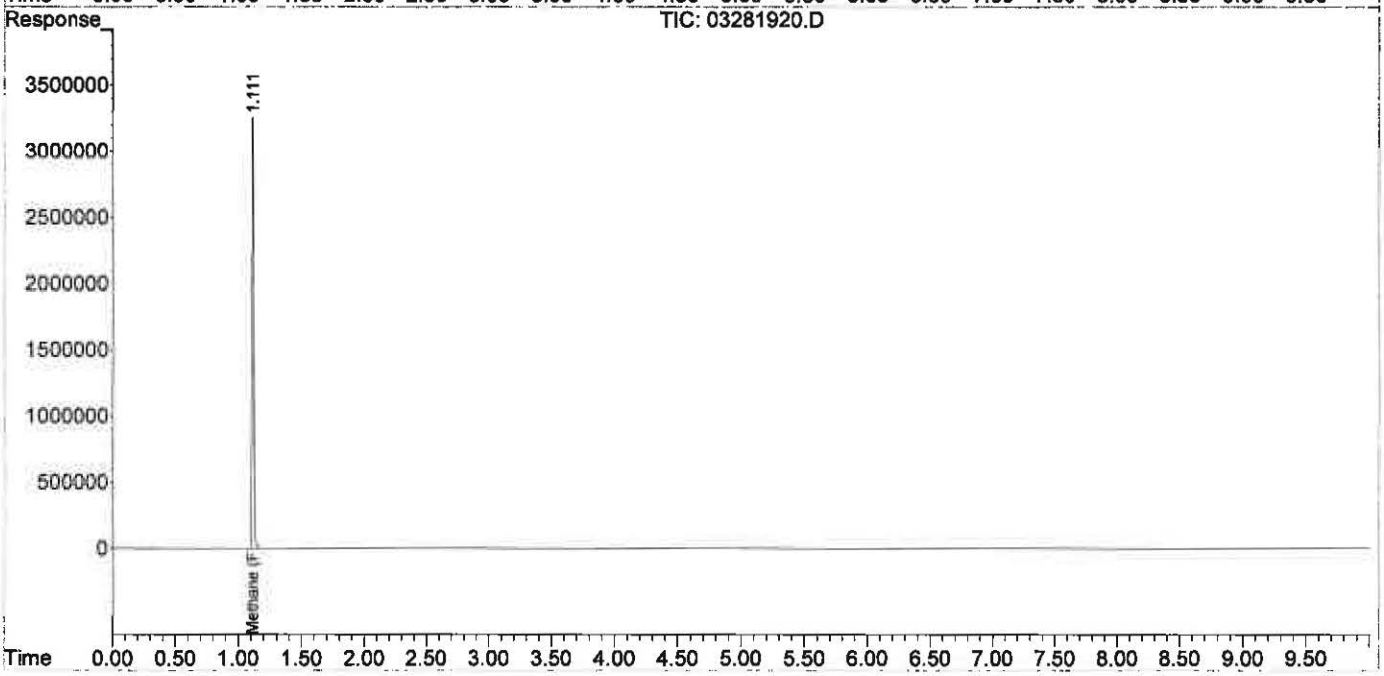
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:46:41
Operator : WH
Sample : lcs tcd S32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:16:36 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



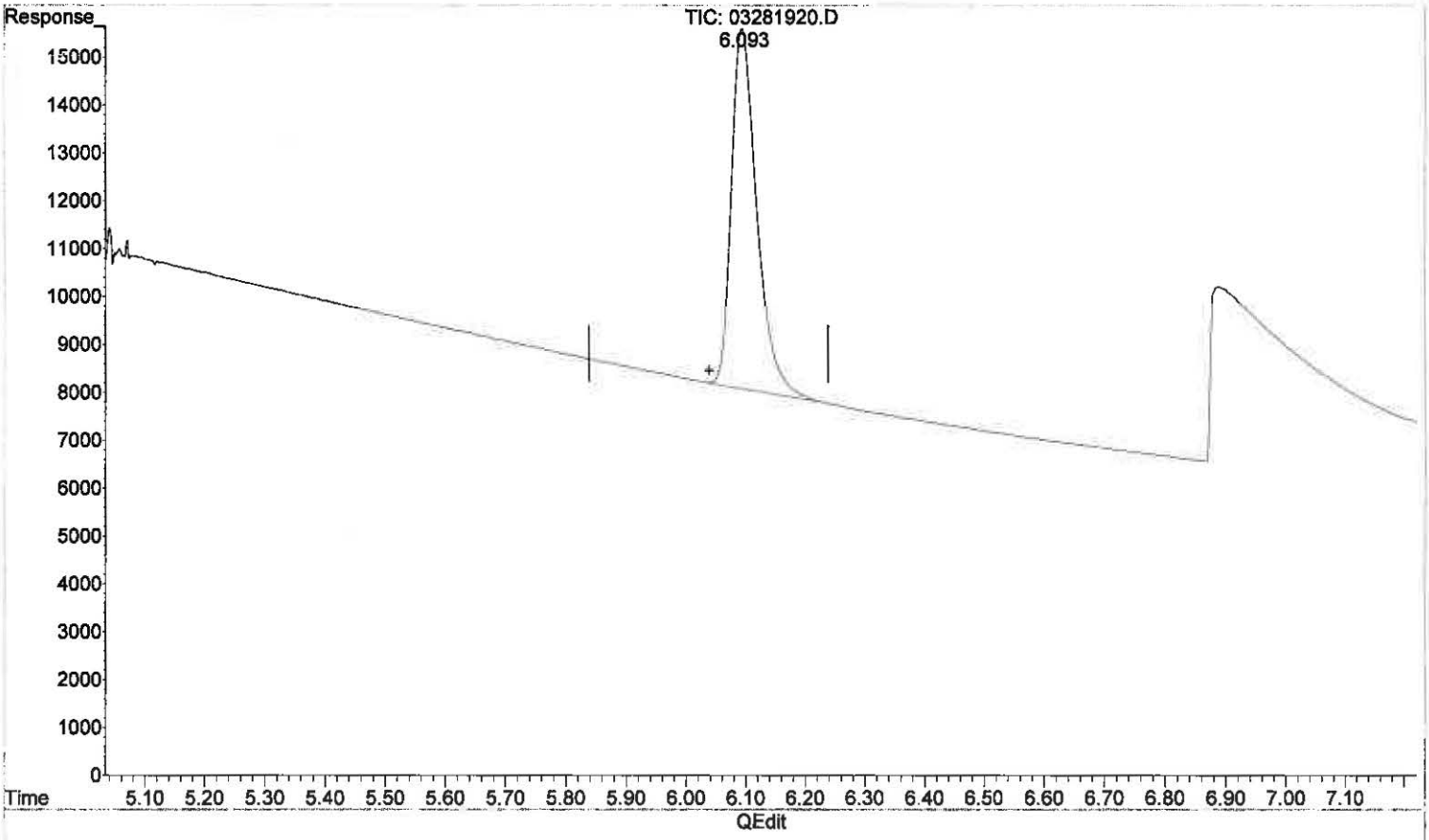


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:46:41
Operator : WH
Sample : lcs tcd S32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:16:36 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.093min 955.086 ppm m

response 224186

MK 3/29/19

(+) = Expected Retention Time

RS082817_CO2.M Thu Mar 28 19:58:03 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:17:53
Operator : WH
Sample : lcsd tcd S32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:26:49 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.963f	1333396	0.280	ppm	
2)	Carbon monoxide	1.963f	1333396	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.089	217646	927.220	ppm	m
6)	Methane (FID)	1.114	32683261	3459.346	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

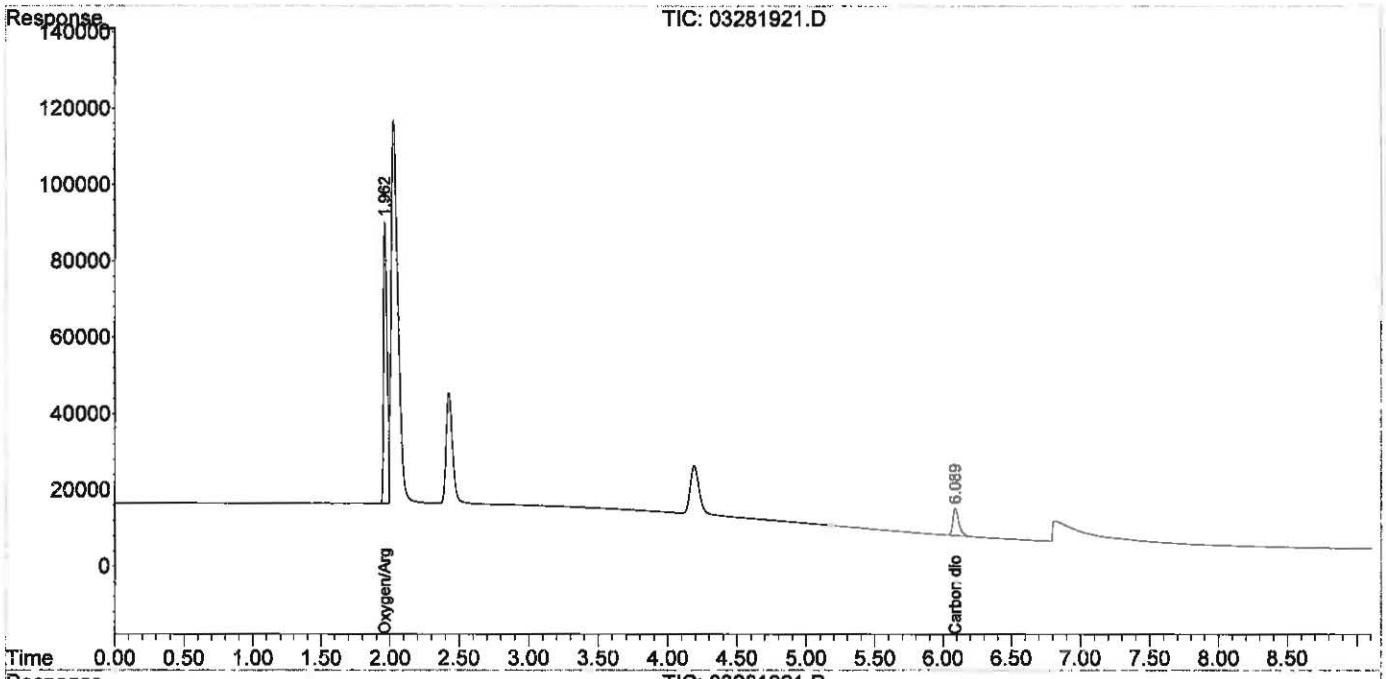
(f)=RT Delta > 1/2 Window (m)=manual int.

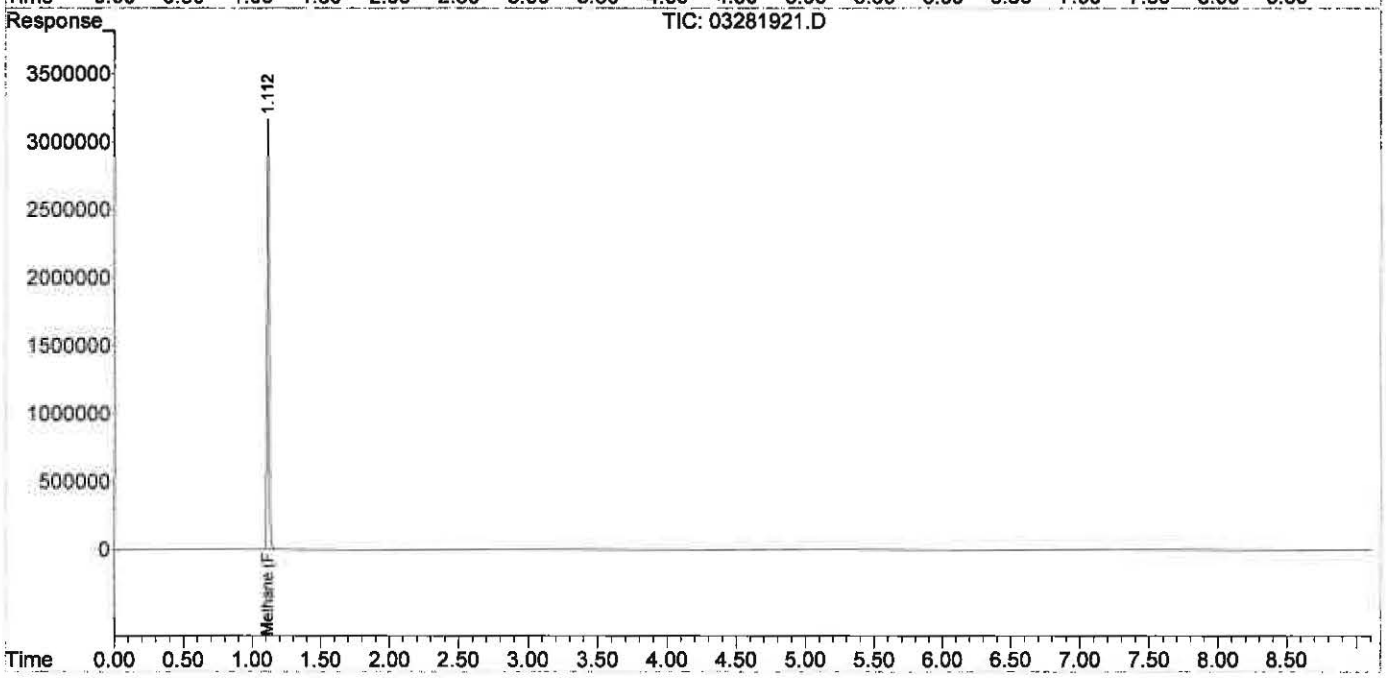
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:17:53
Operator : WH
Sample : lcsd tcd S32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:26:49 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



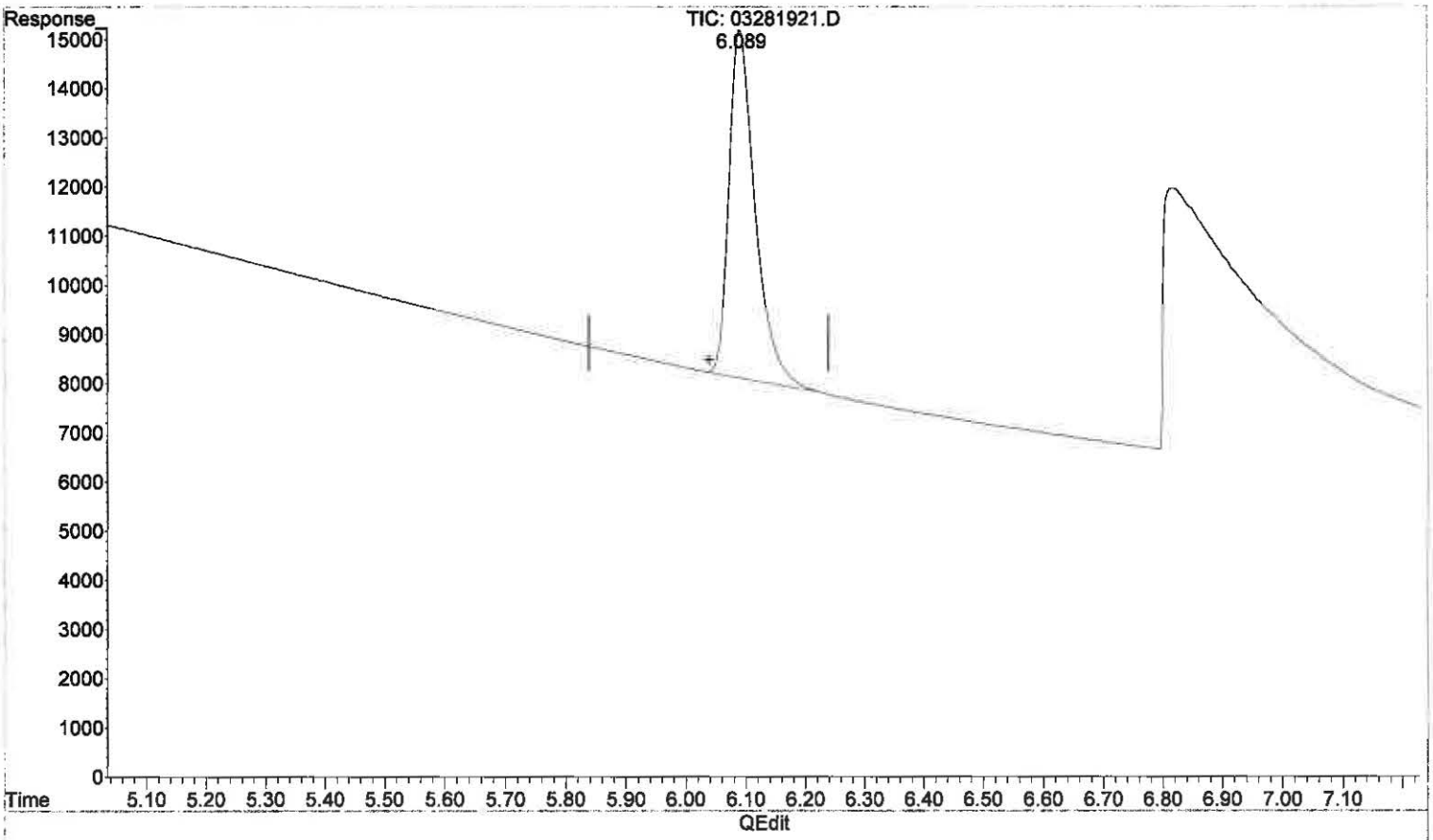


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 14:17:53
Operator : WH
Sample : lcsd tcd S32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 15:26:49 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.089min 927.220 ppm m

response 217646

MR 3/29/19

WH 3/28/19
BLC
no previous

(+) = Expected Retention Time

RS082817_CO2.M Thu Mar 28 19:58:25 2019

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

Compounds -- Compound #4 -- Carbon dioxide

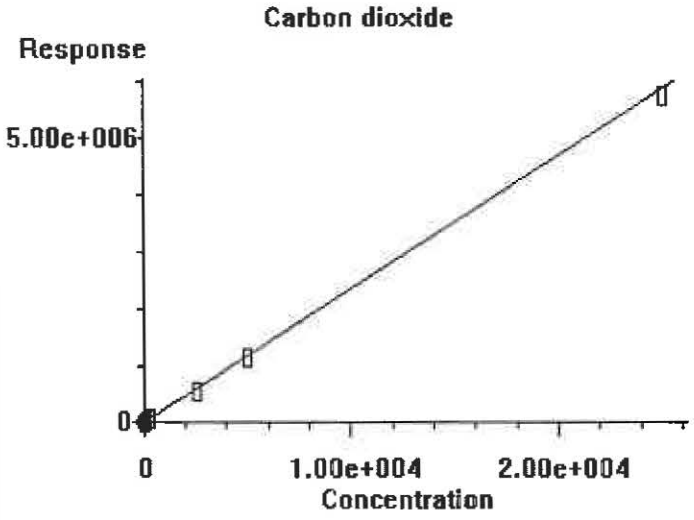
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

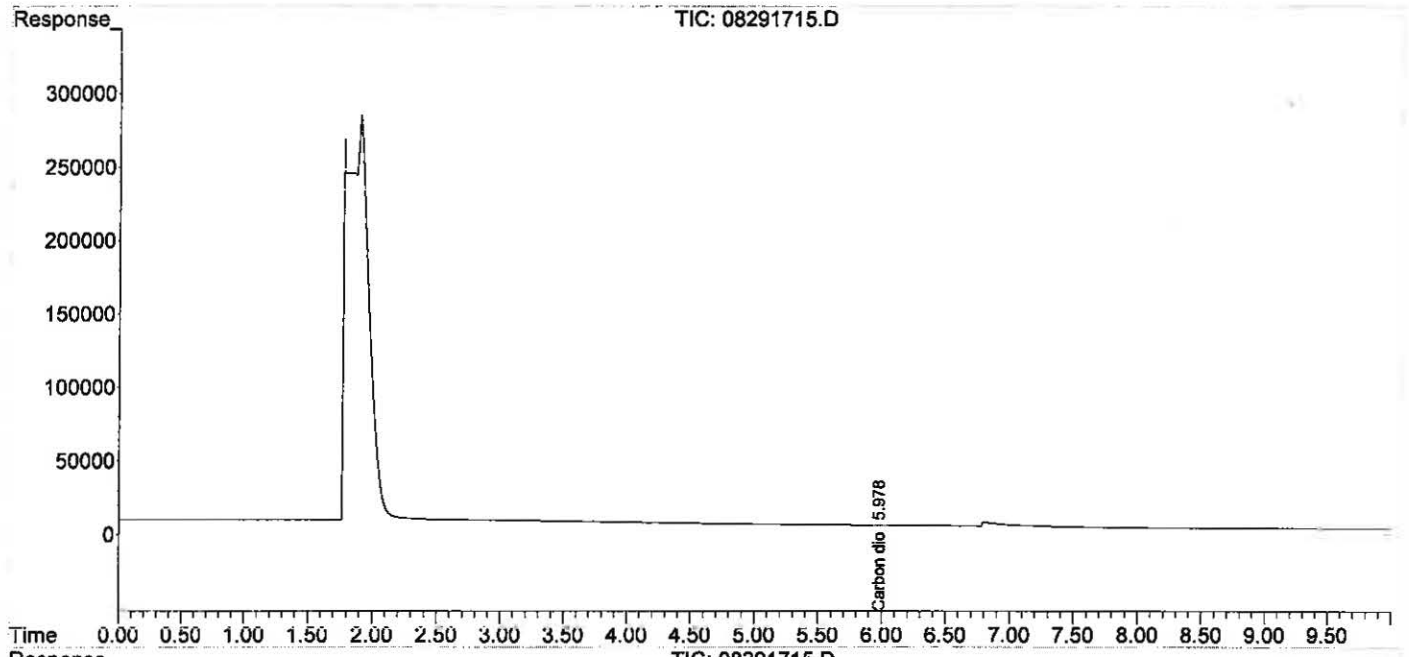
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

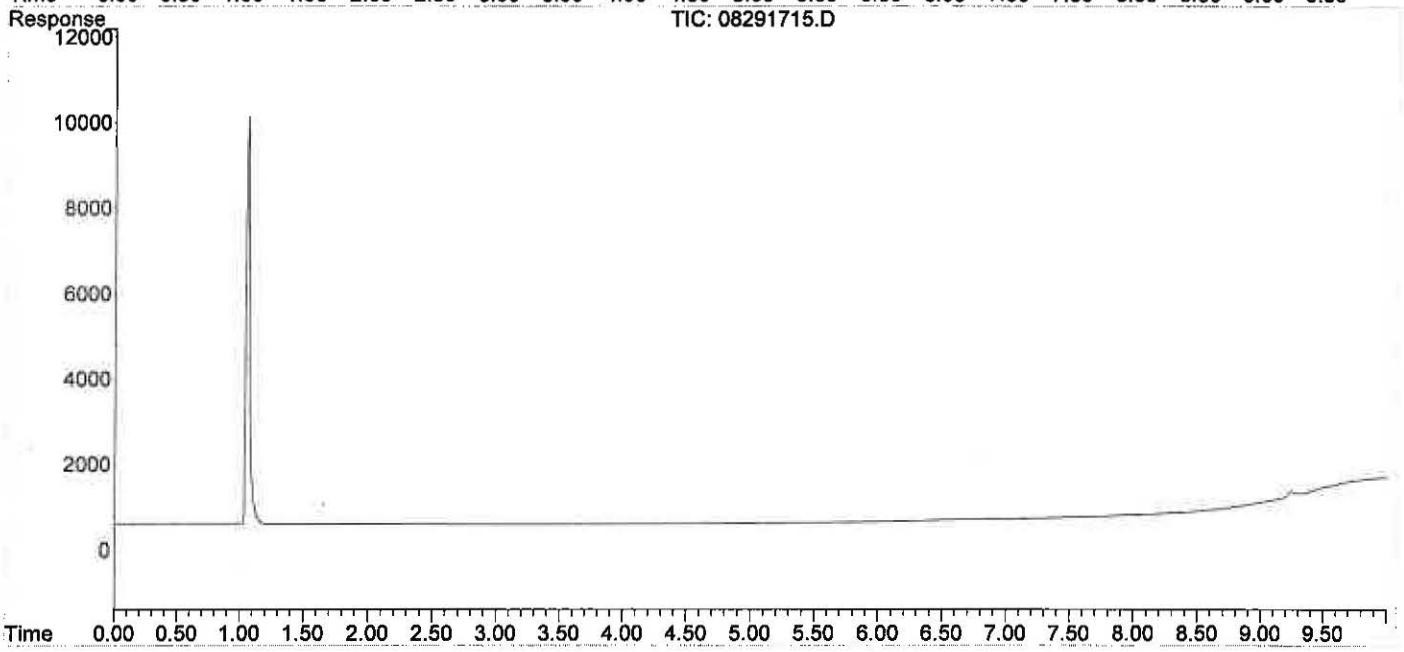
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

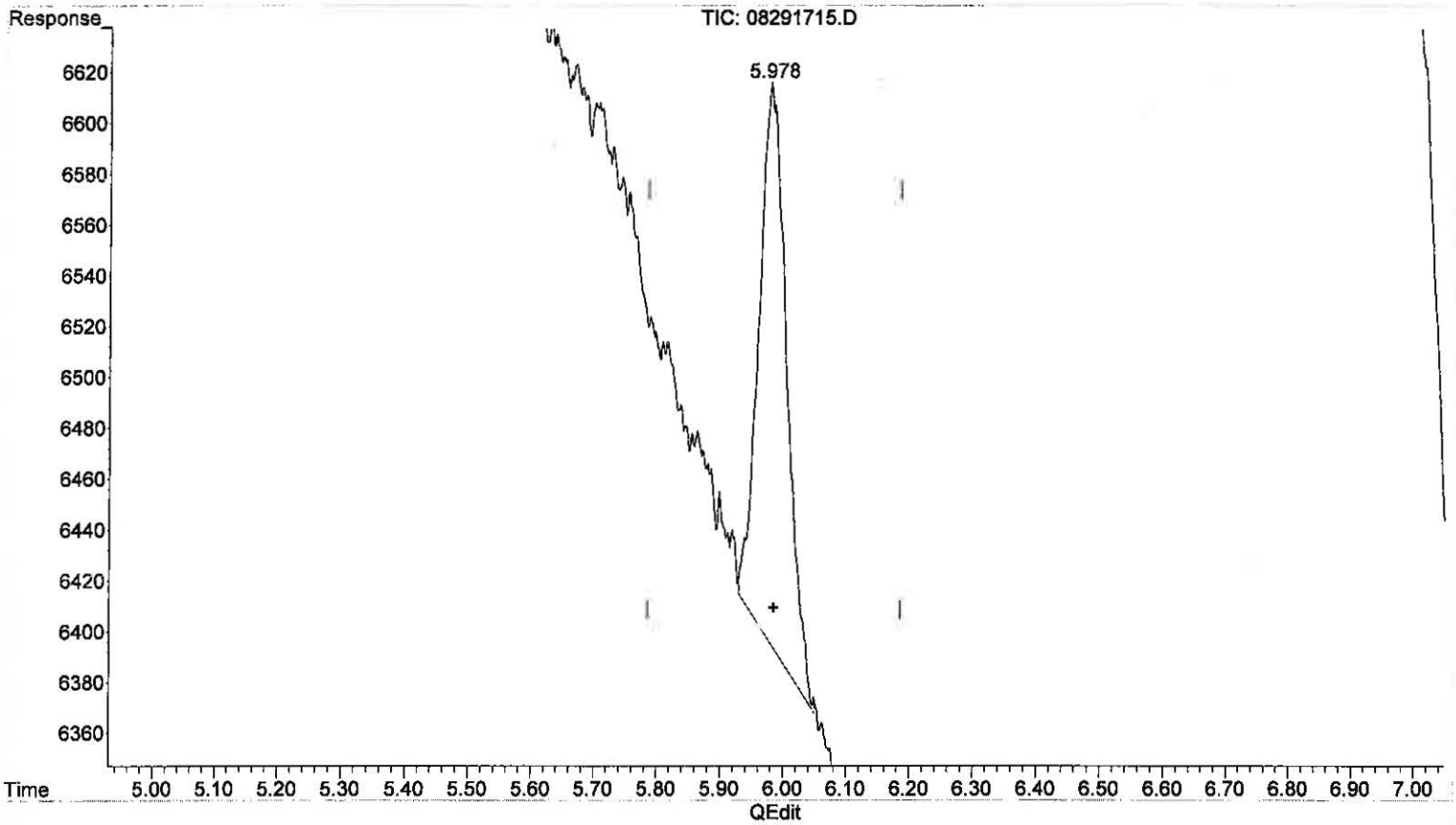




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

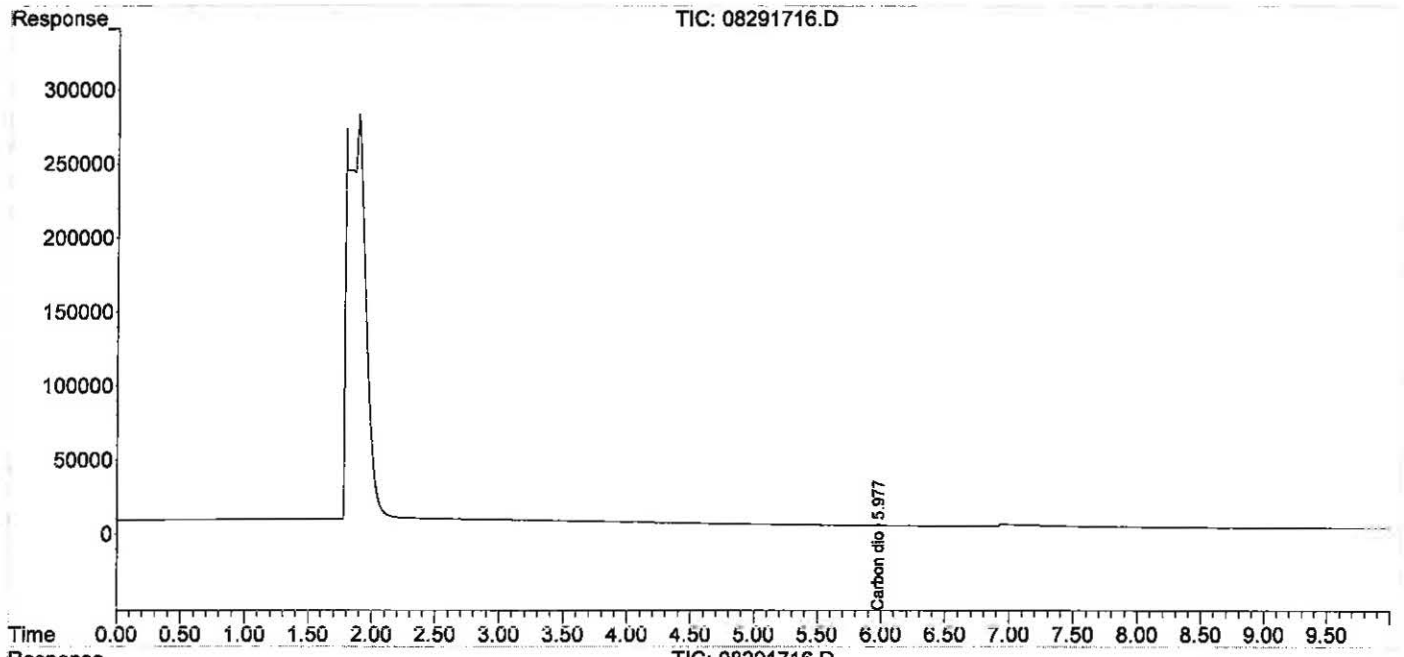
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

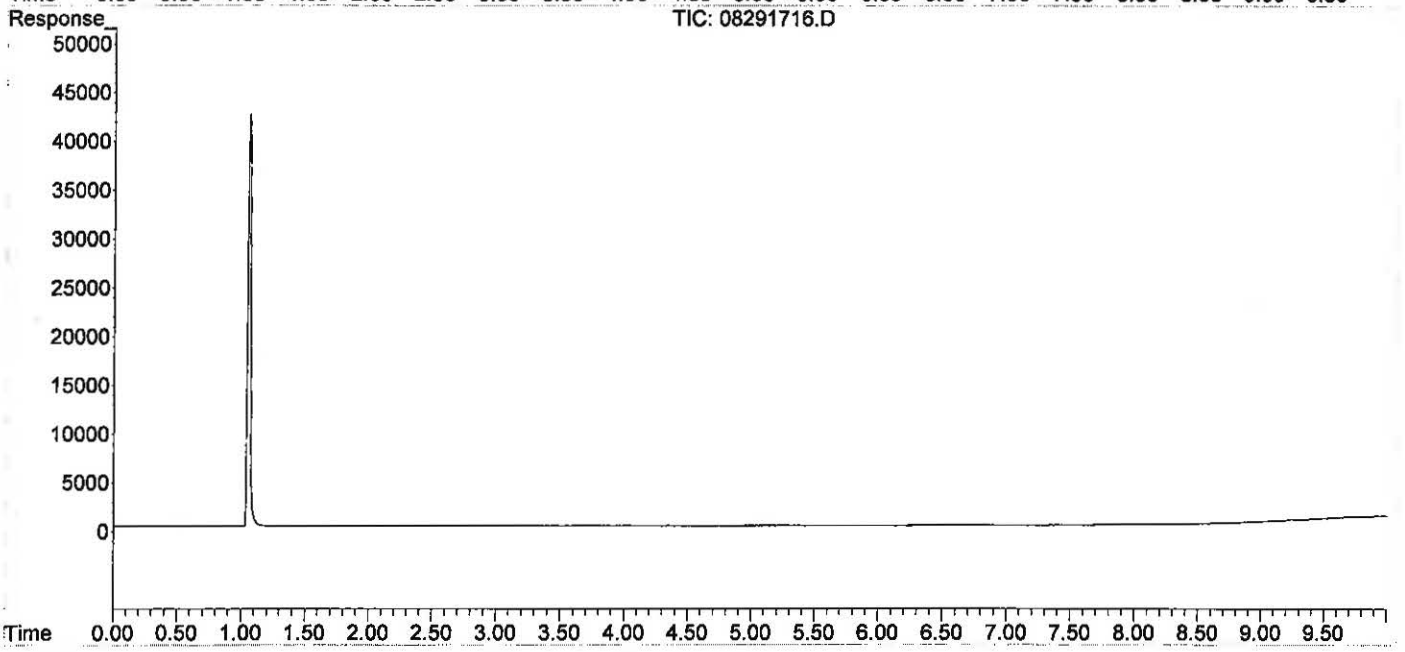
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

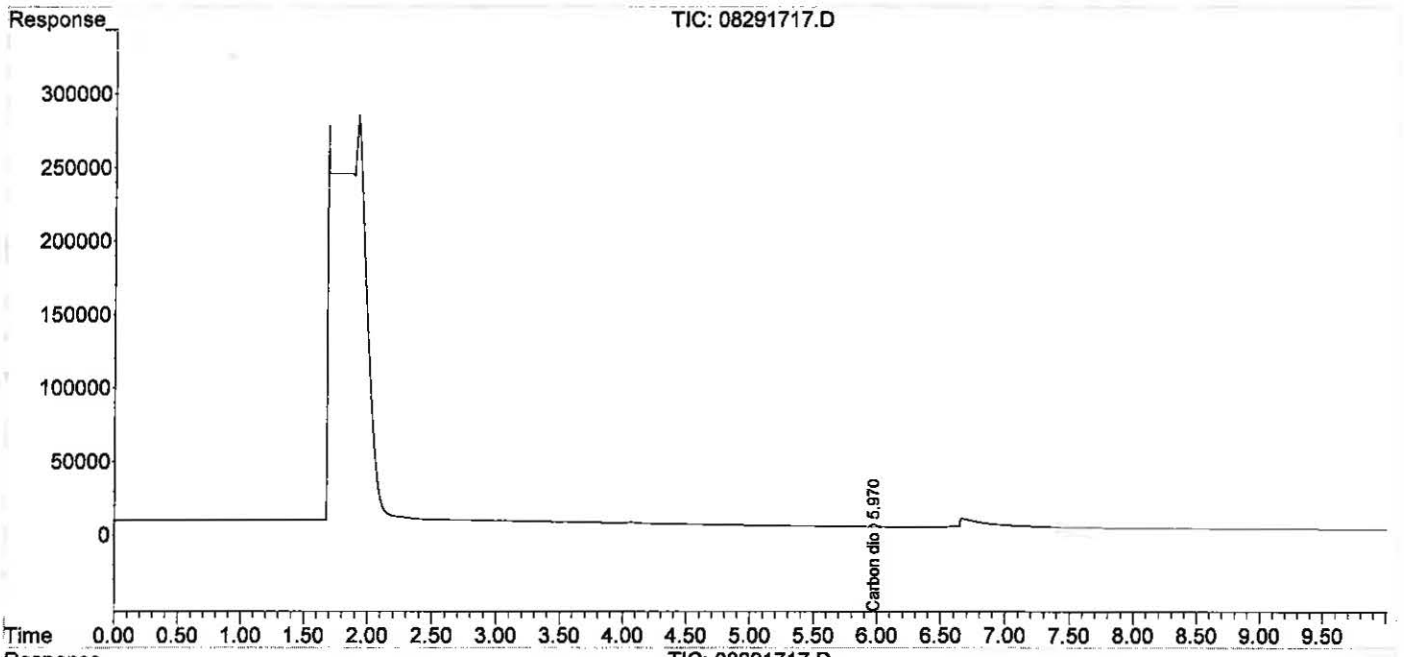
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

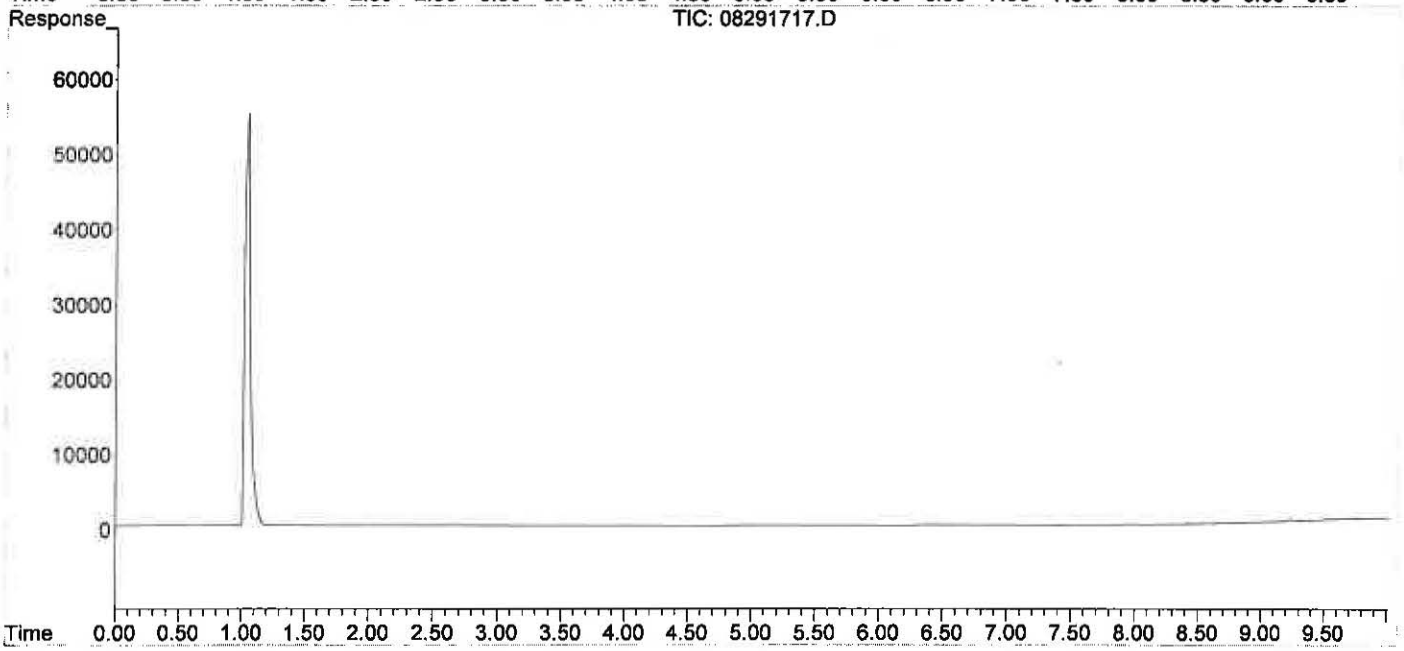
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

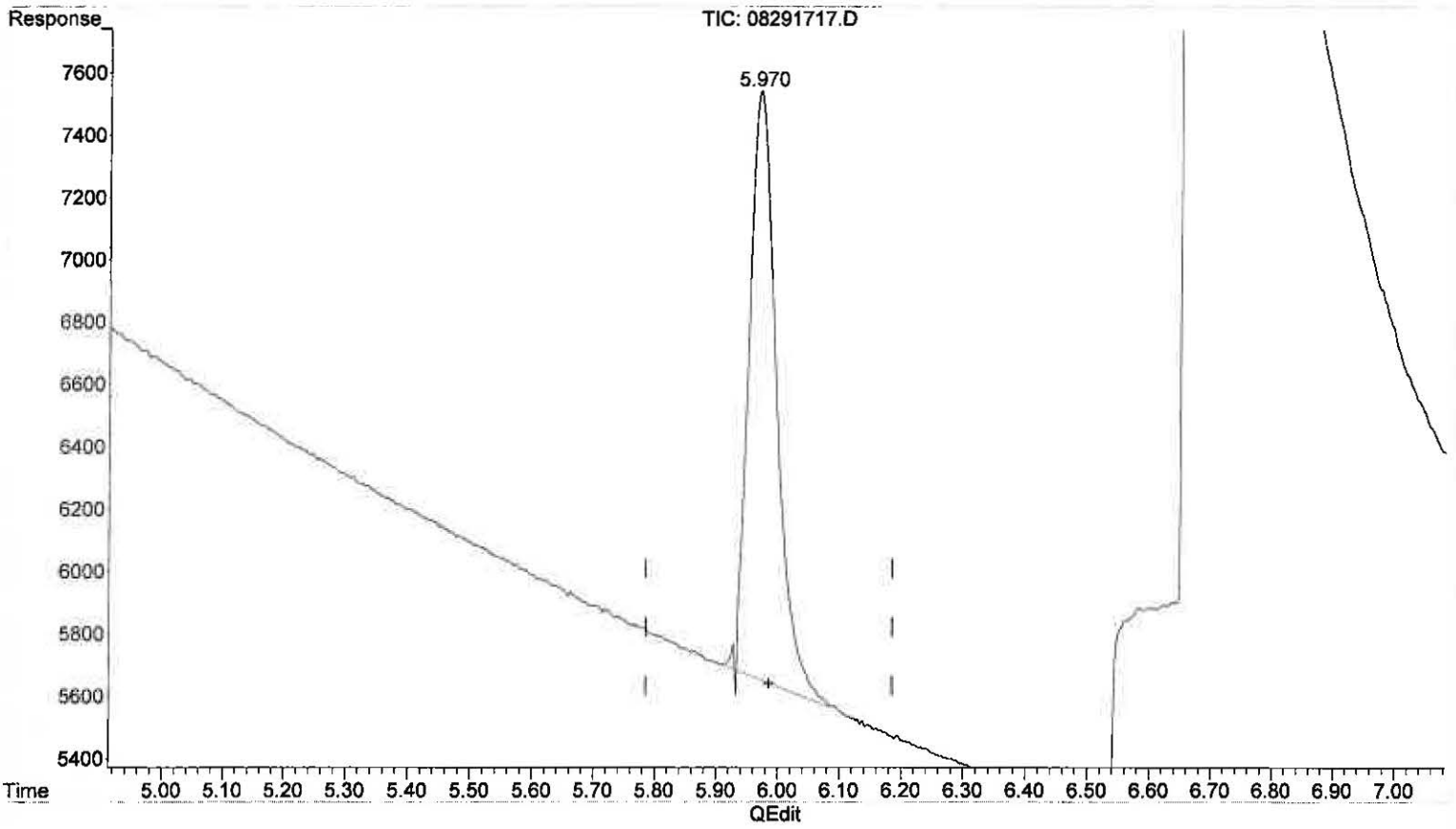




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.970min 240.204 ppm m
response 58461

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 30 13:19:20 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

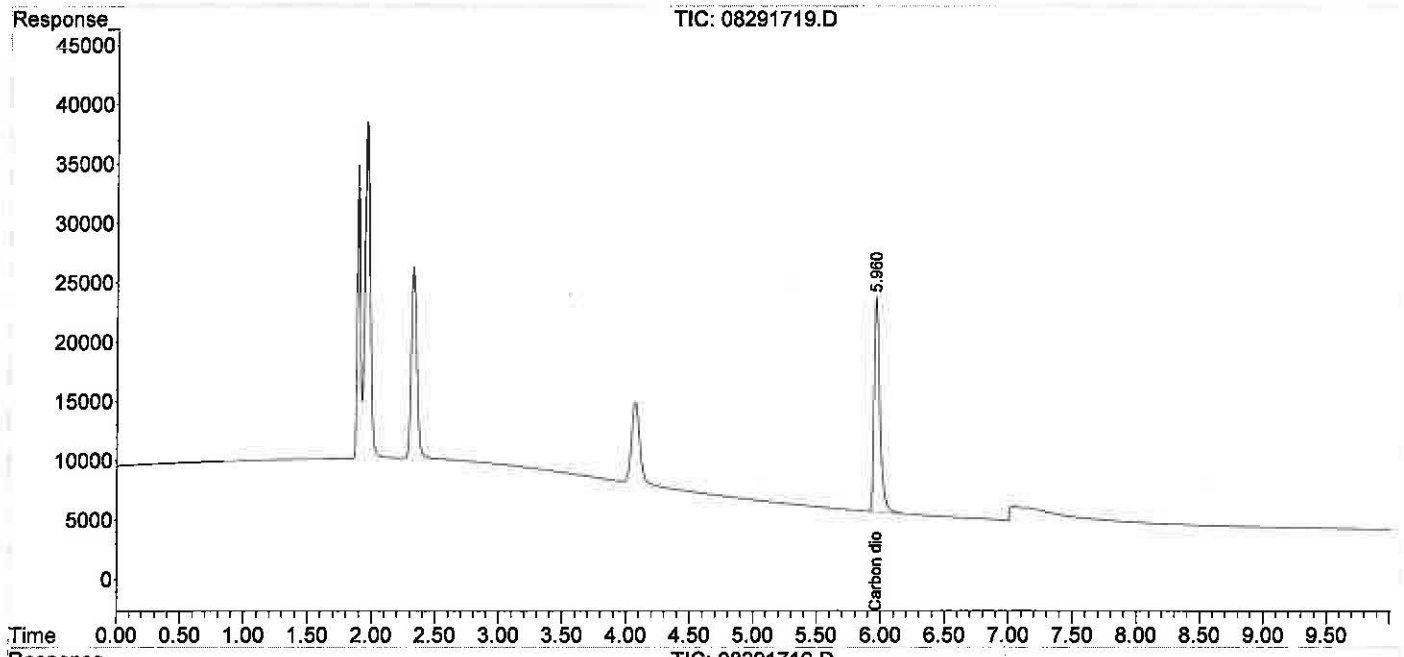
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

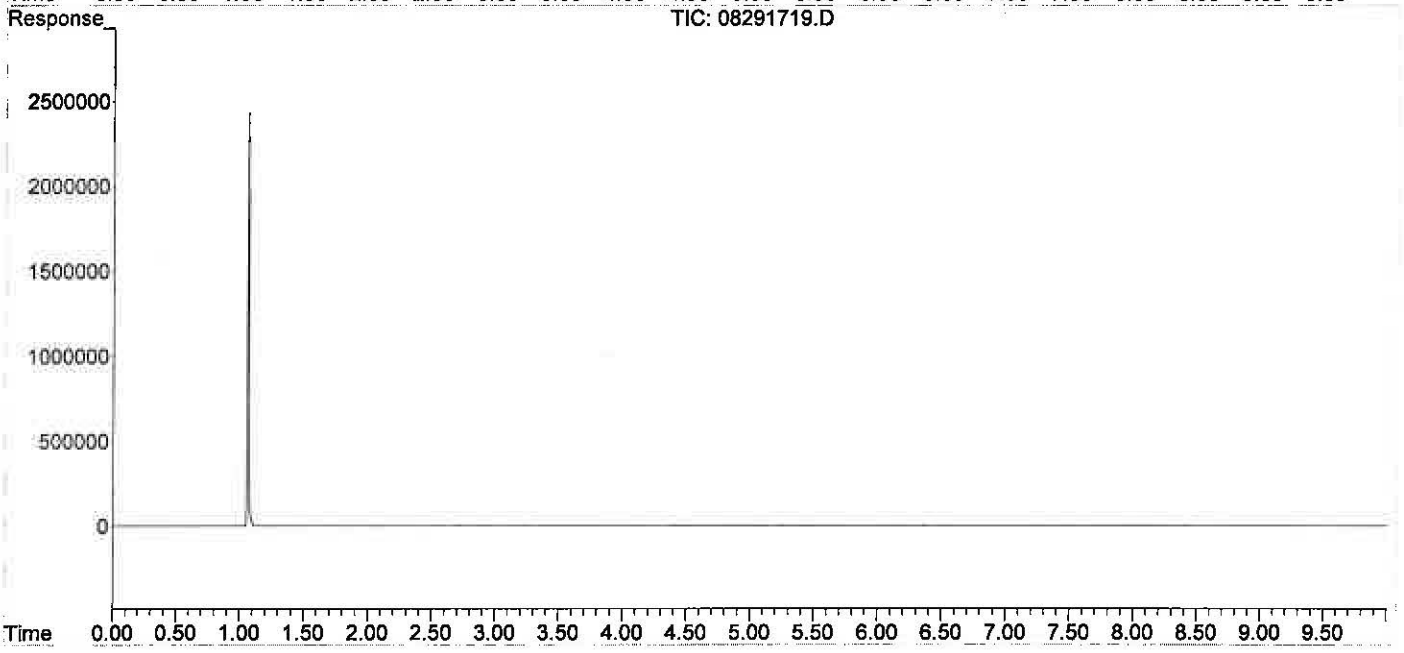
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

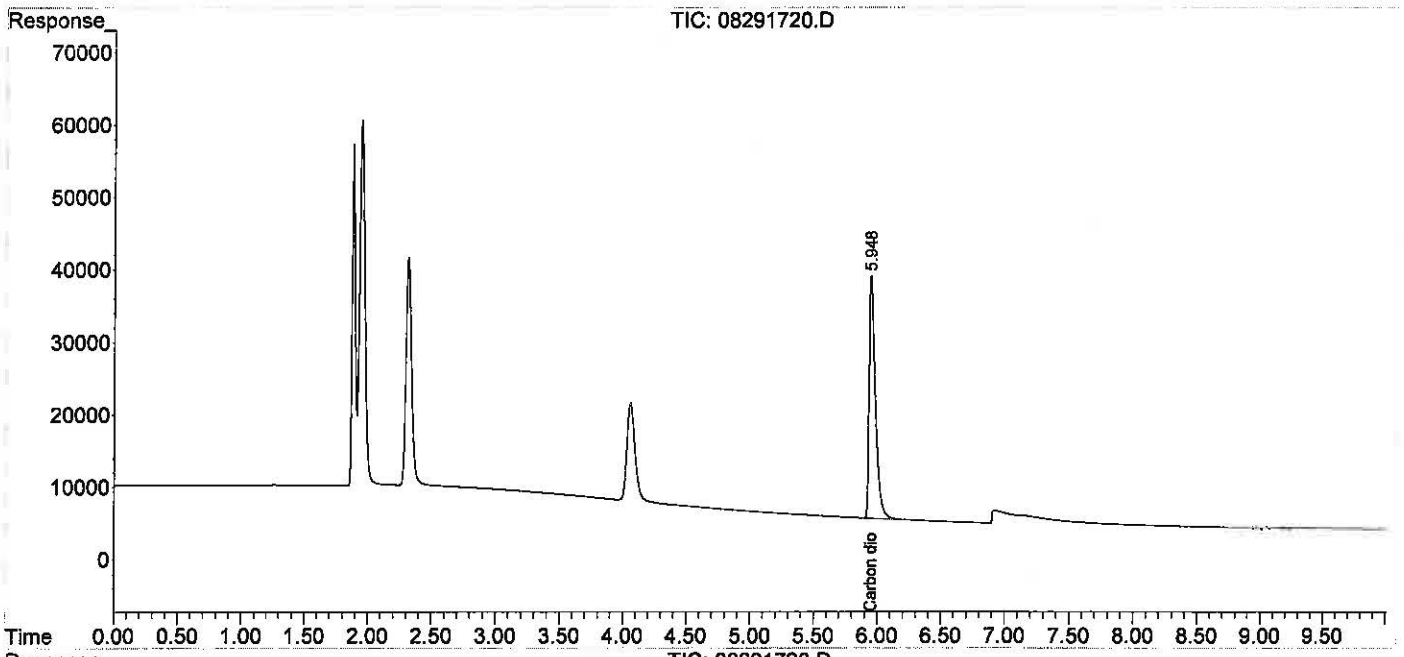
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

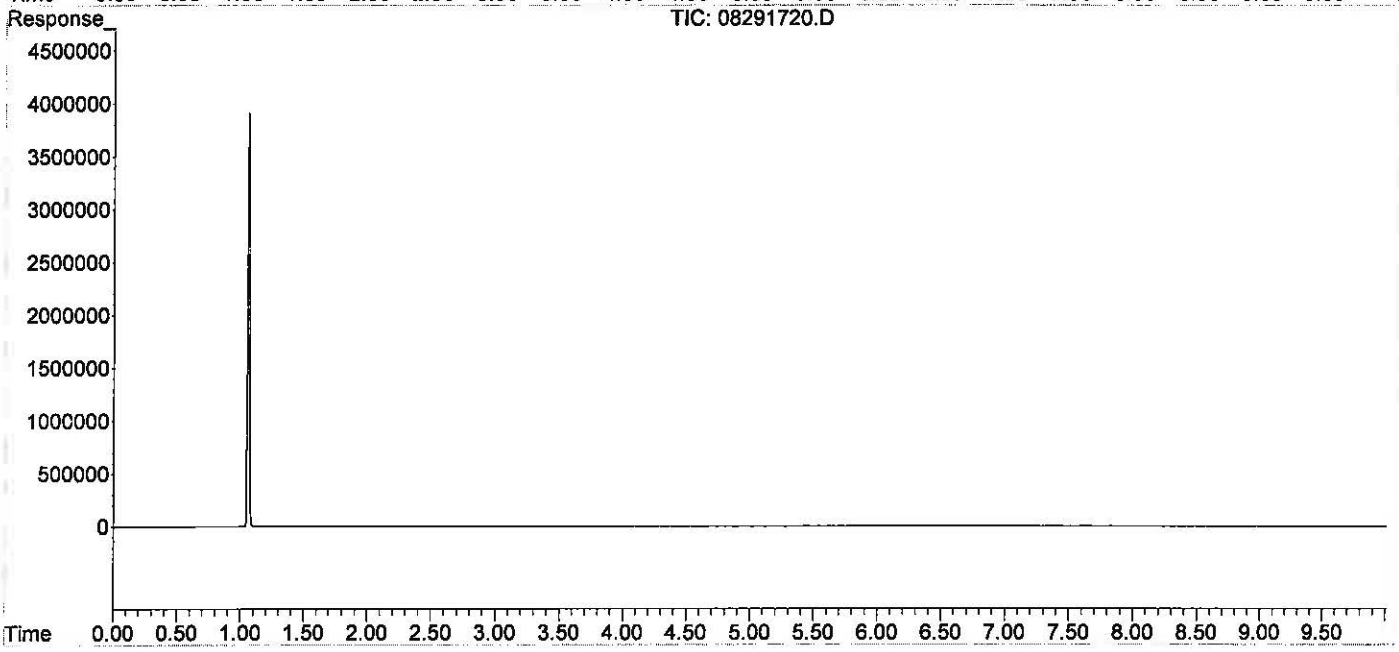
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

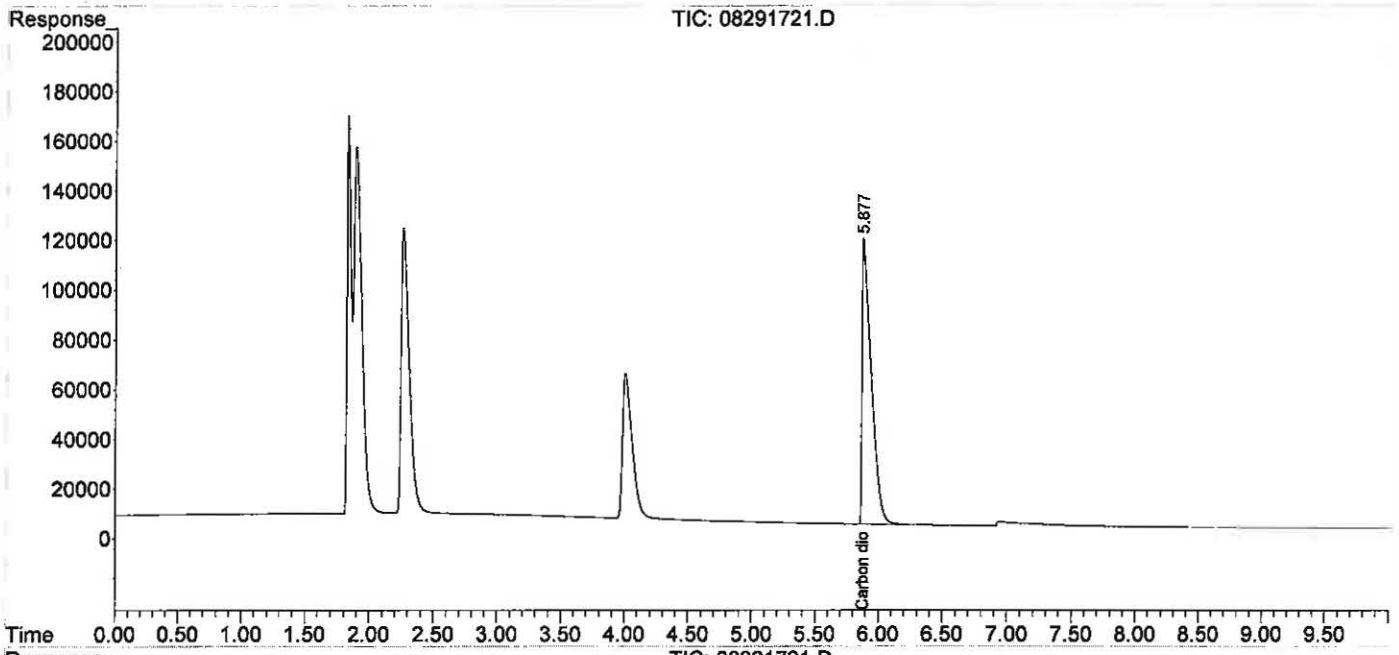
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

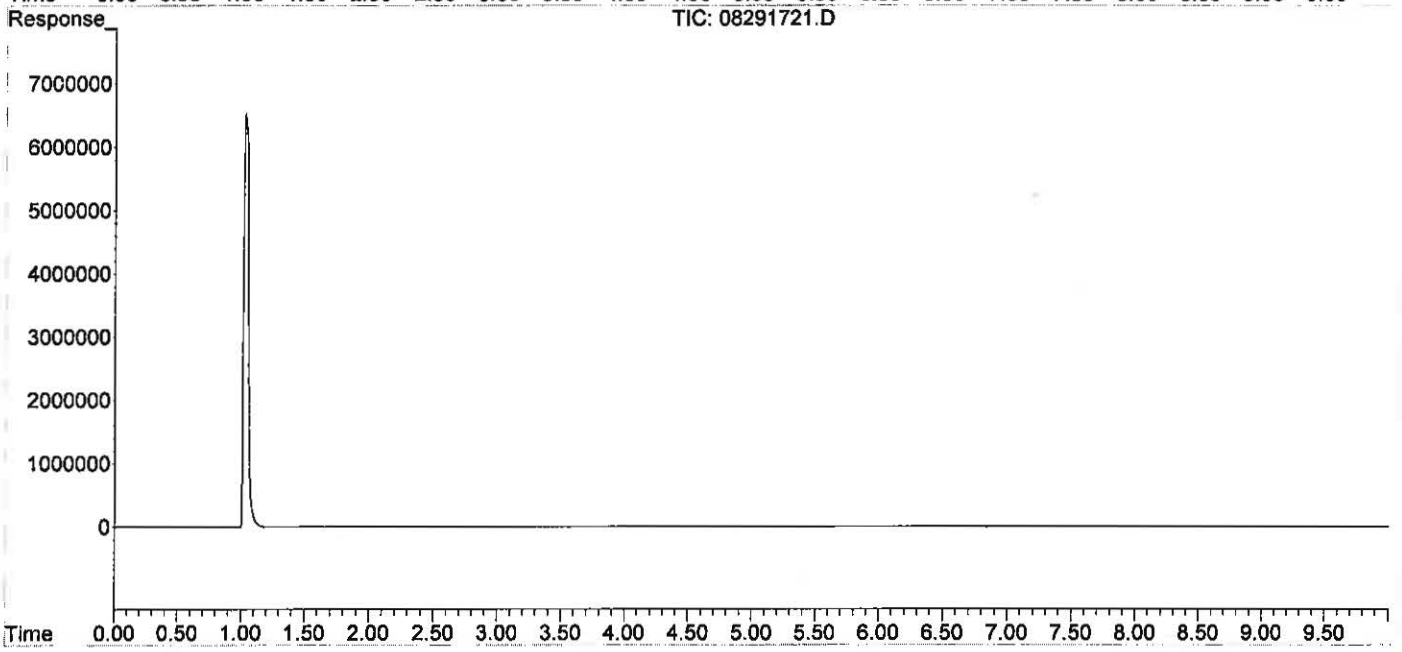
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

Actual %D
5000 99.16

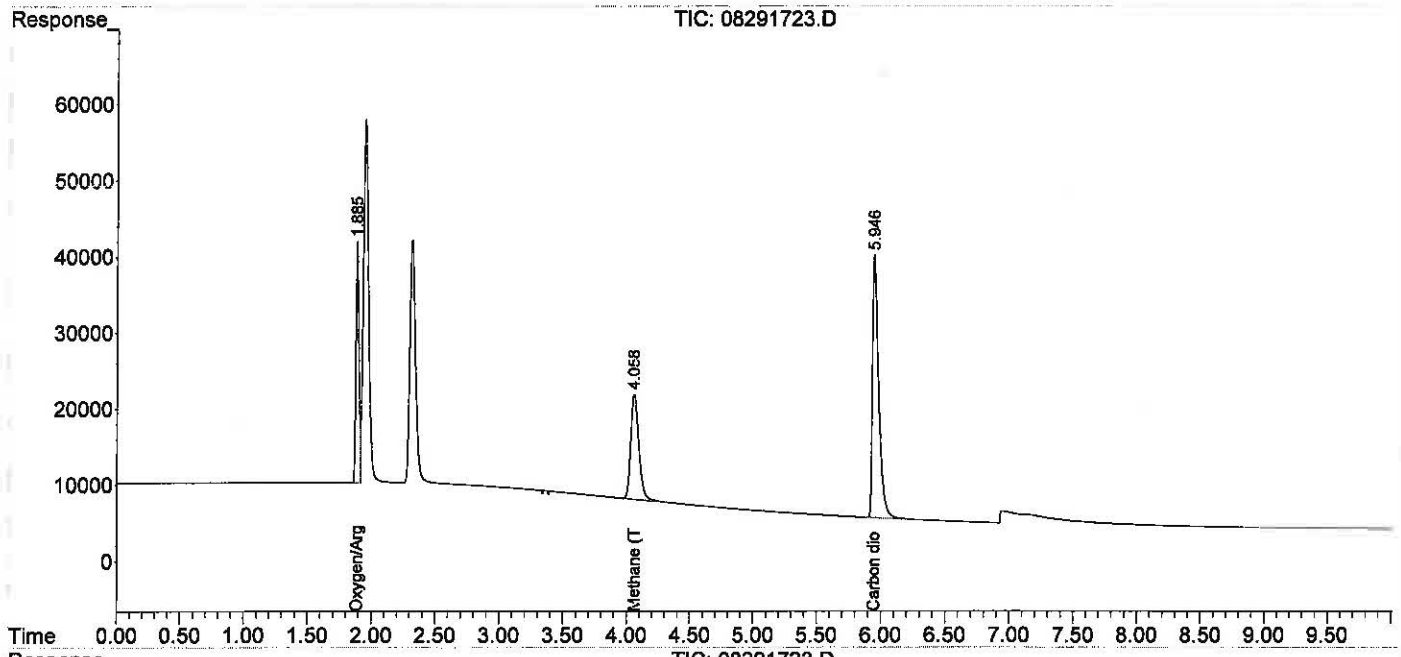
(f)=RT Delta > 1/2 Window (m)=manual int.

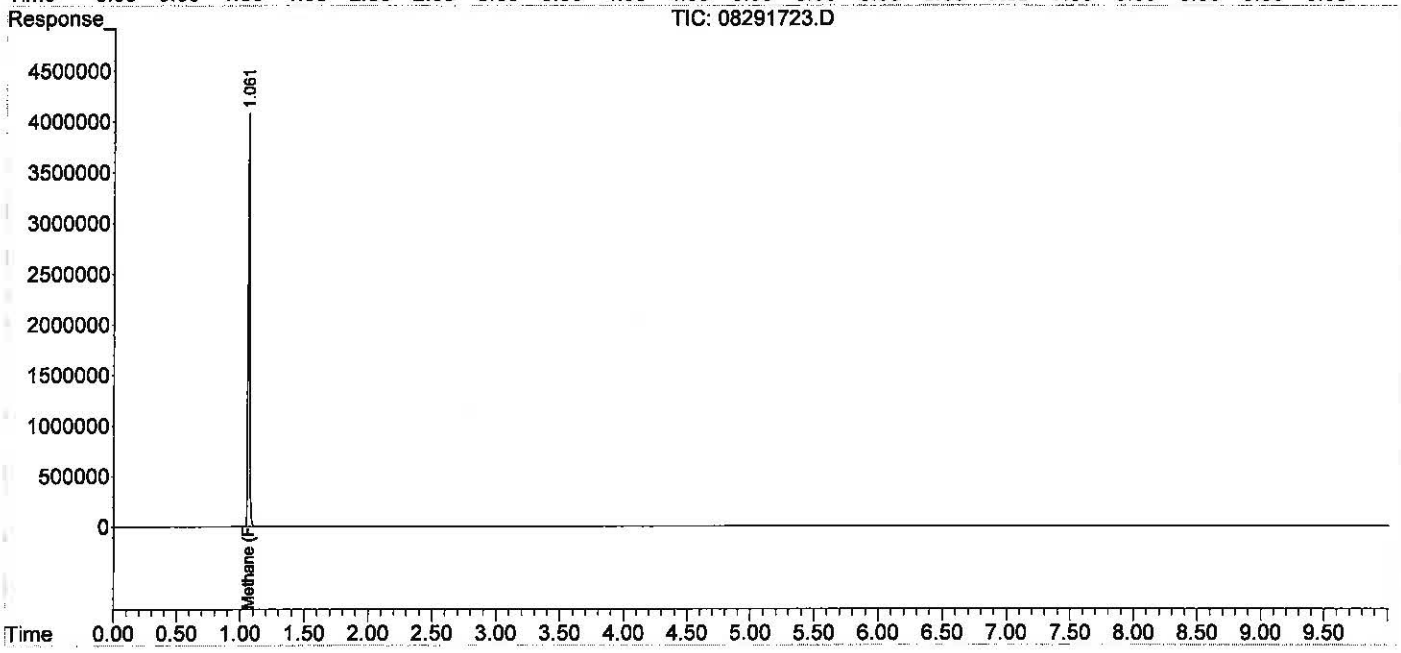
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1901501
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 03/28/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-01311901	0.100	4929.025
ACTUAL		5000.00
%Difference		1.4%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
lcs tcd S32-10081801	0.100	955.086
lcsd tcd S32-10081801	0.100	927.220
P1901501-001 50ul	0.050	21506.19
P1901501-002 50ul	0.050	15481.39
P1901501-003 50ul	0.050	18116.94
P1901501-004 50ul	0.050	10048.40
P1901501-005 50ul	0.050	16463.39
P1901501-006 50ul	0.050	15314.68
P1901501-007 50ul	0.050	20427.23
P1901501-007ms 50ul	0.050	21558.23
P1901501-007msd 50ul	0.050	21459.68
std s32-01311901		4873.635
ACTUAL		5000.00
%Difference		2.5%

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	0.000
lcs tcd S32-10081801	9550.860
lcsd tcd S32-10081801	9272.200
P1901501-001 50ul	430123.70
P1901501-002 50ul	309627.86
P1901501-003 50ul	362338.82
P1901501-004 50ul	200968.06
P1901501-005 50ul	329267.82
P1901501-006 50ul	306293.54
P1901501-007 50ul	408544.56
P1901501-007ms 50ui	431164.56
P1901501-007msd 50ul	429193.56

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:30:11
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 10:42:38 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.982f	539347	0.113	ppm	
2)	Carbon monoxide	1.982f	539347	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.073	1156986	4929.025	ppm	m
6)	Methane (FID)	1.116	35403276	3747.245	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

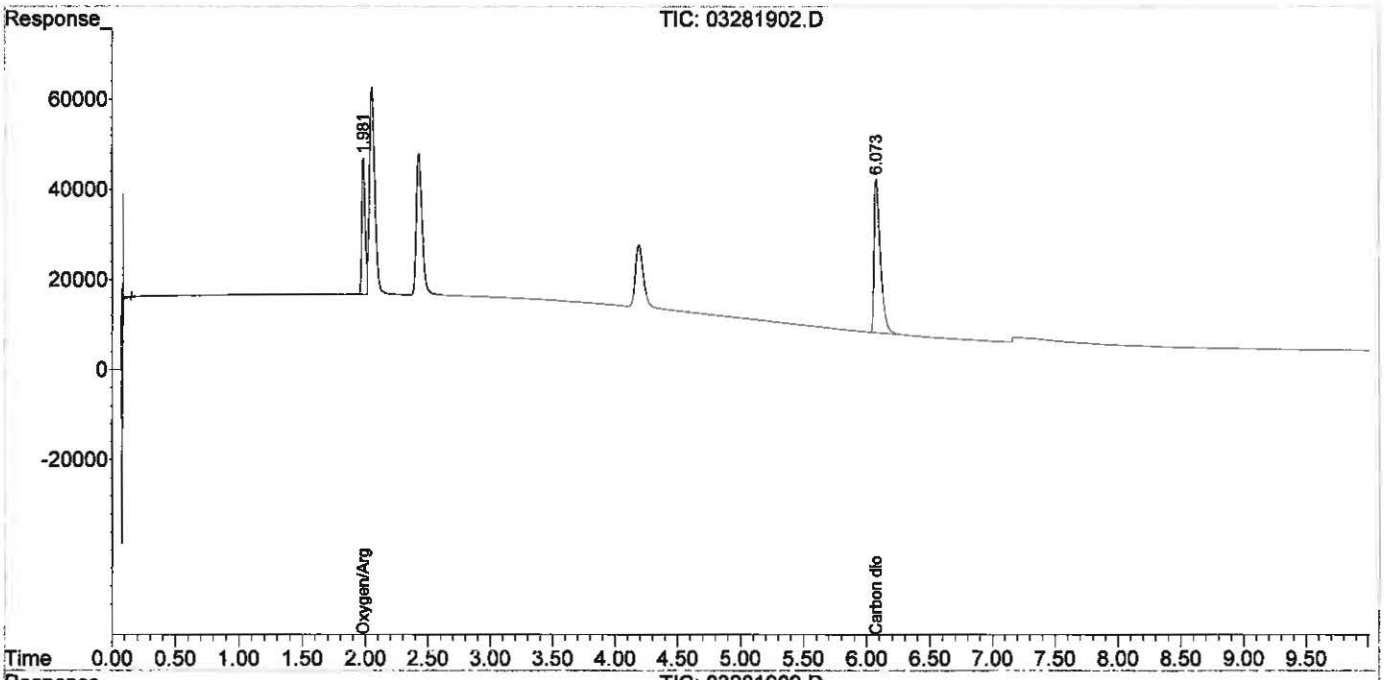
(f)=RT Delta > 1/2 Window (m)=manual int.

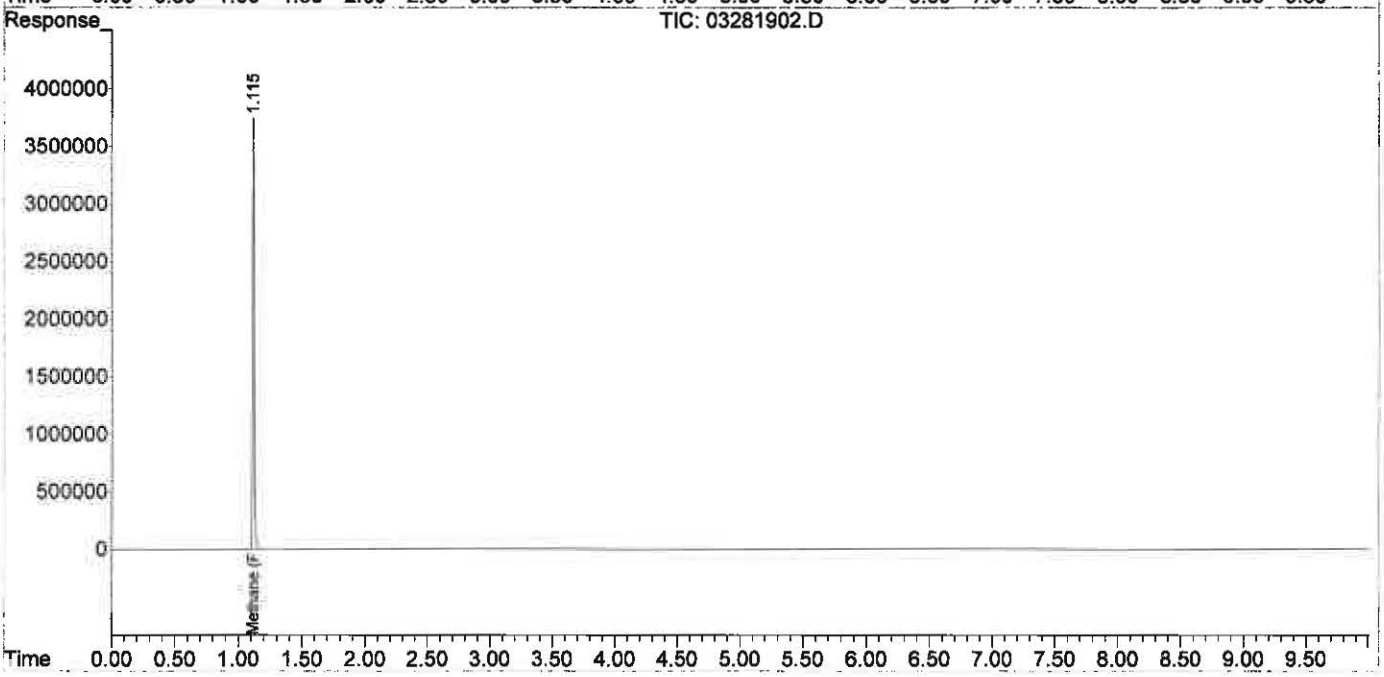
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:30:11
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 10:42:38 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



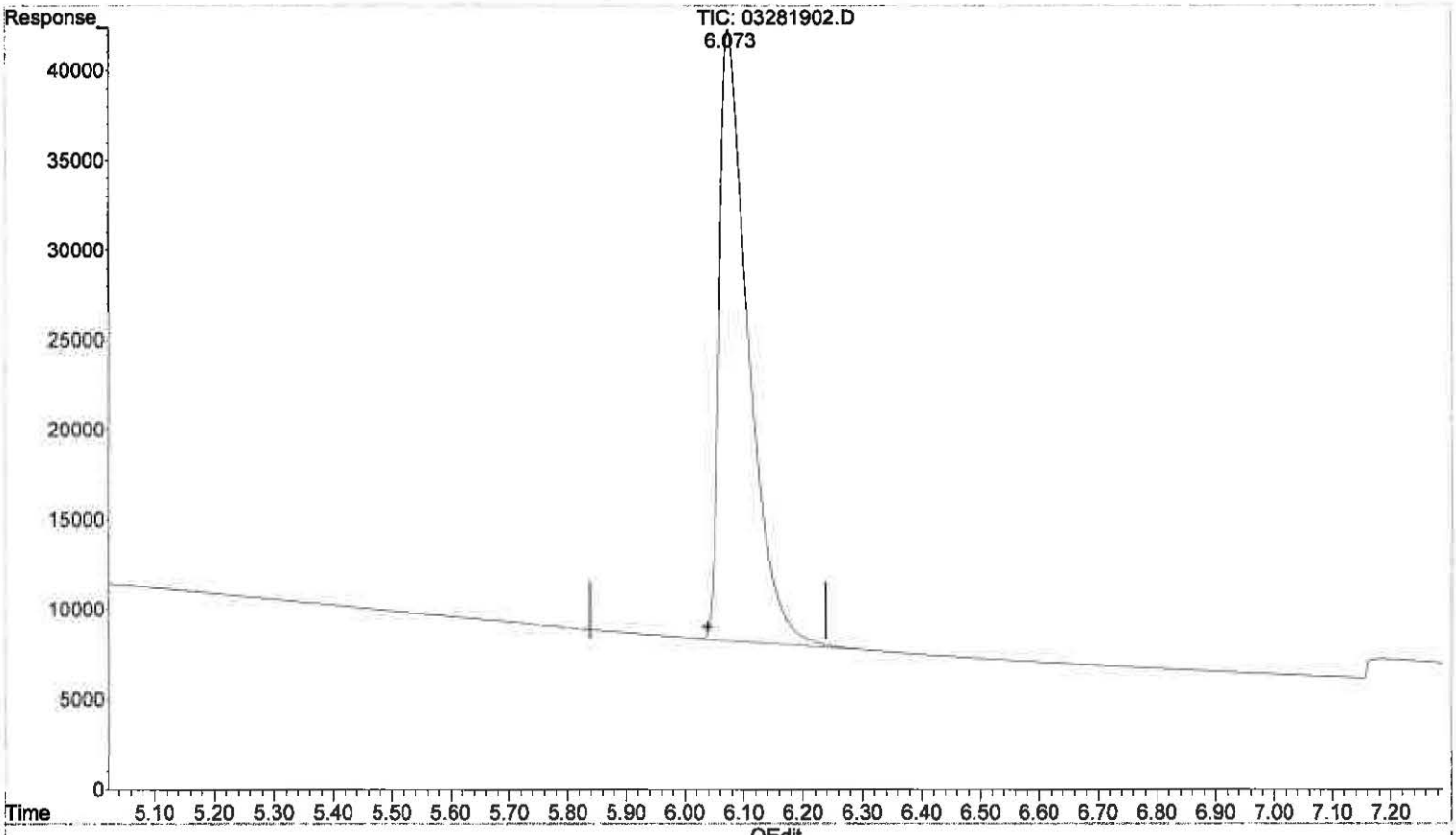


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:30:11
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 10:42:38 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.073min 4929.025 ppm m

response 1156986

MR 3/29/19

[illegible] 3/28/19
BLC
no previous

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:09:50
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 14:35:06 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.980f	534823	0.112	ppm
2)	Carbon monoxide	1.980f	534823	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.071	1142619	4867.818	ppm
6)	Methane (FID)	1.114	35776371	3786.735	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

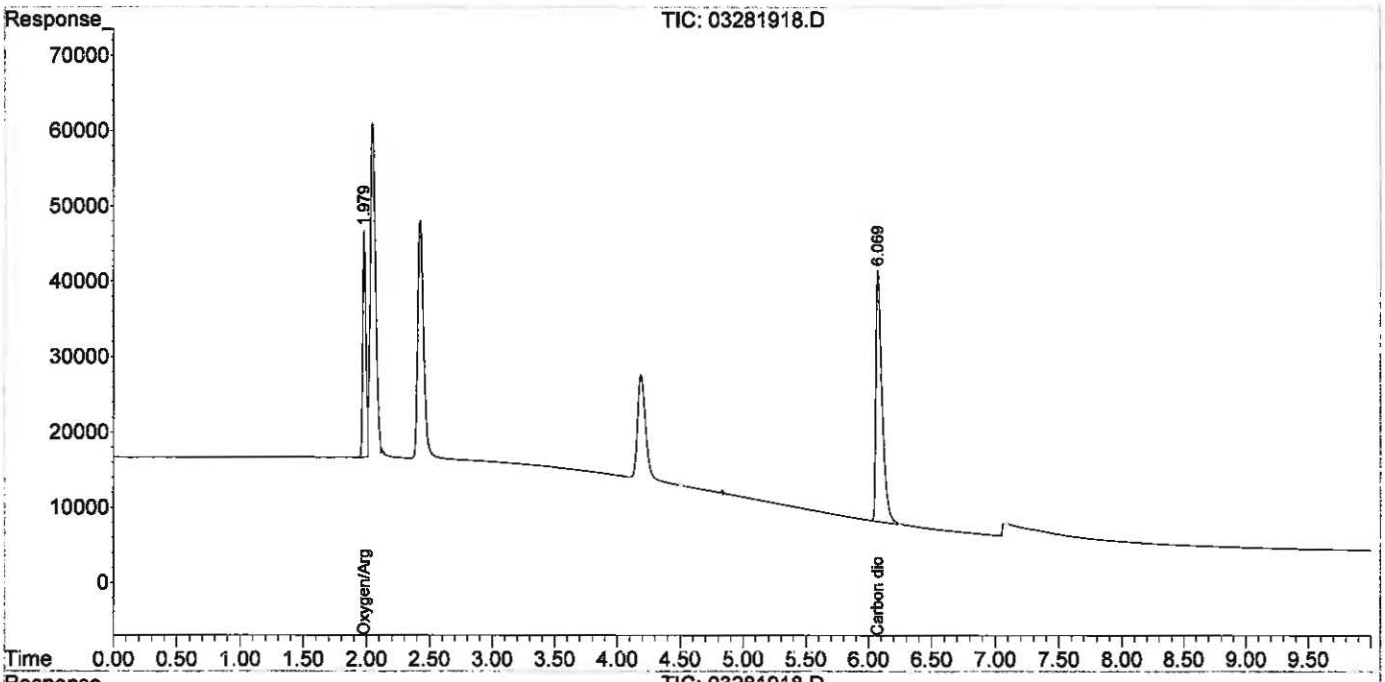
(f)=RT Delta > 1/2 Window (m)=manual int.

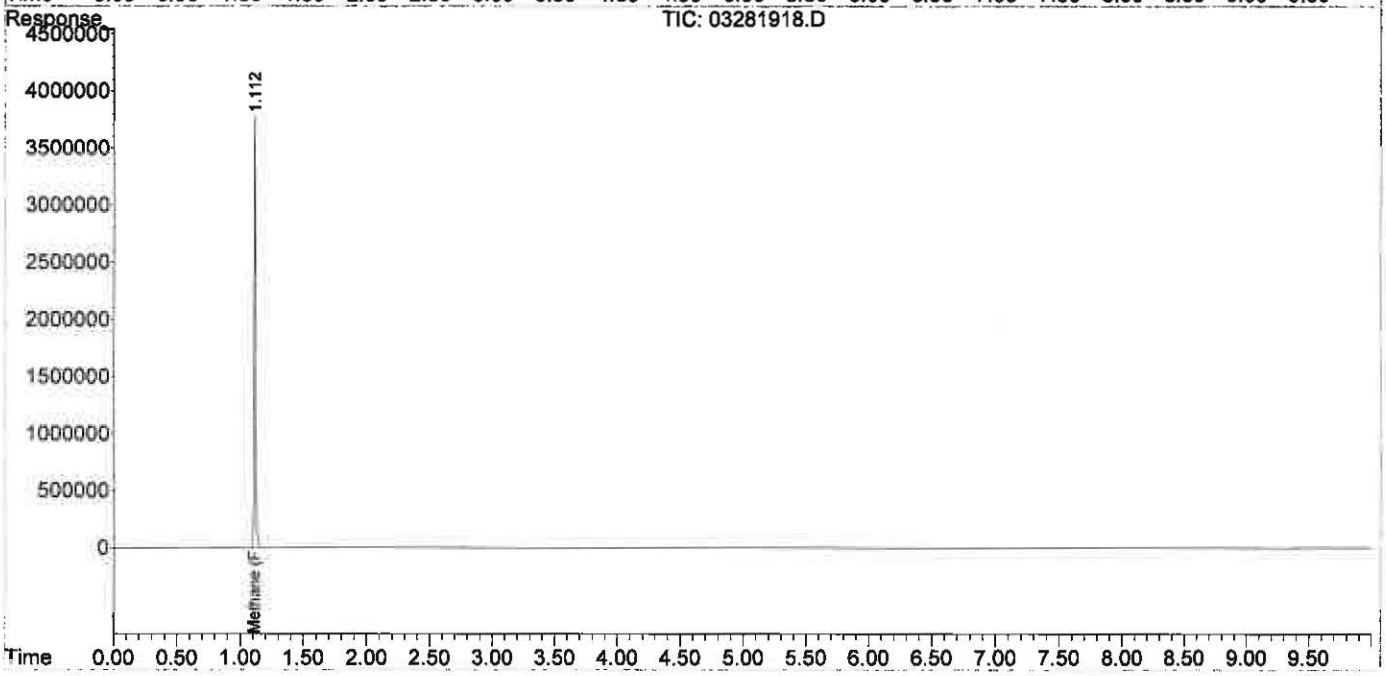
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 13:09:50
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 14:35:06 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281931.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:57:30
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 18:31:36 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.983f	546358	0.115	ppm	
2)	Carbon monoxide	1.983f	546358	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.073	1143984	4873.635	ppm	m
6)	Methane (FID)	1.116	36024638	3813.012	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

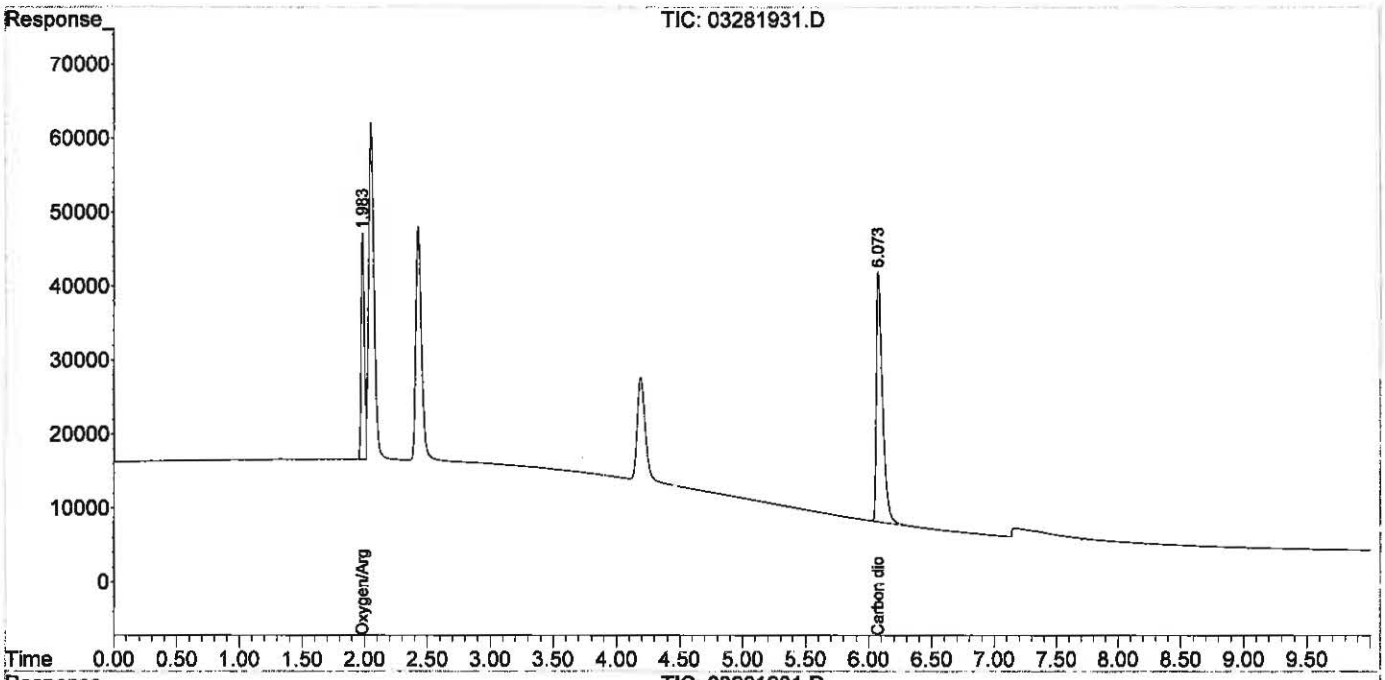
(f)=RT Delta > 1/2 Window (m)=manual int.

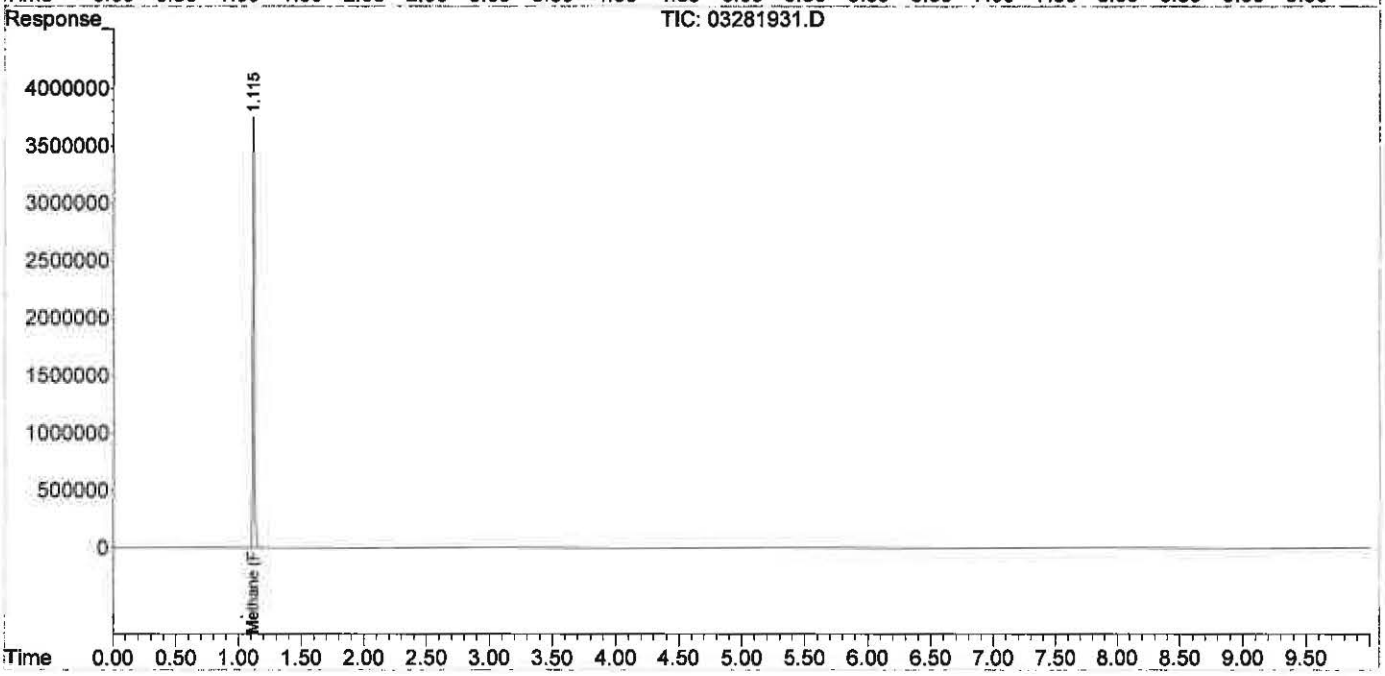
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281931.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:57:30
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 18:31:36 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



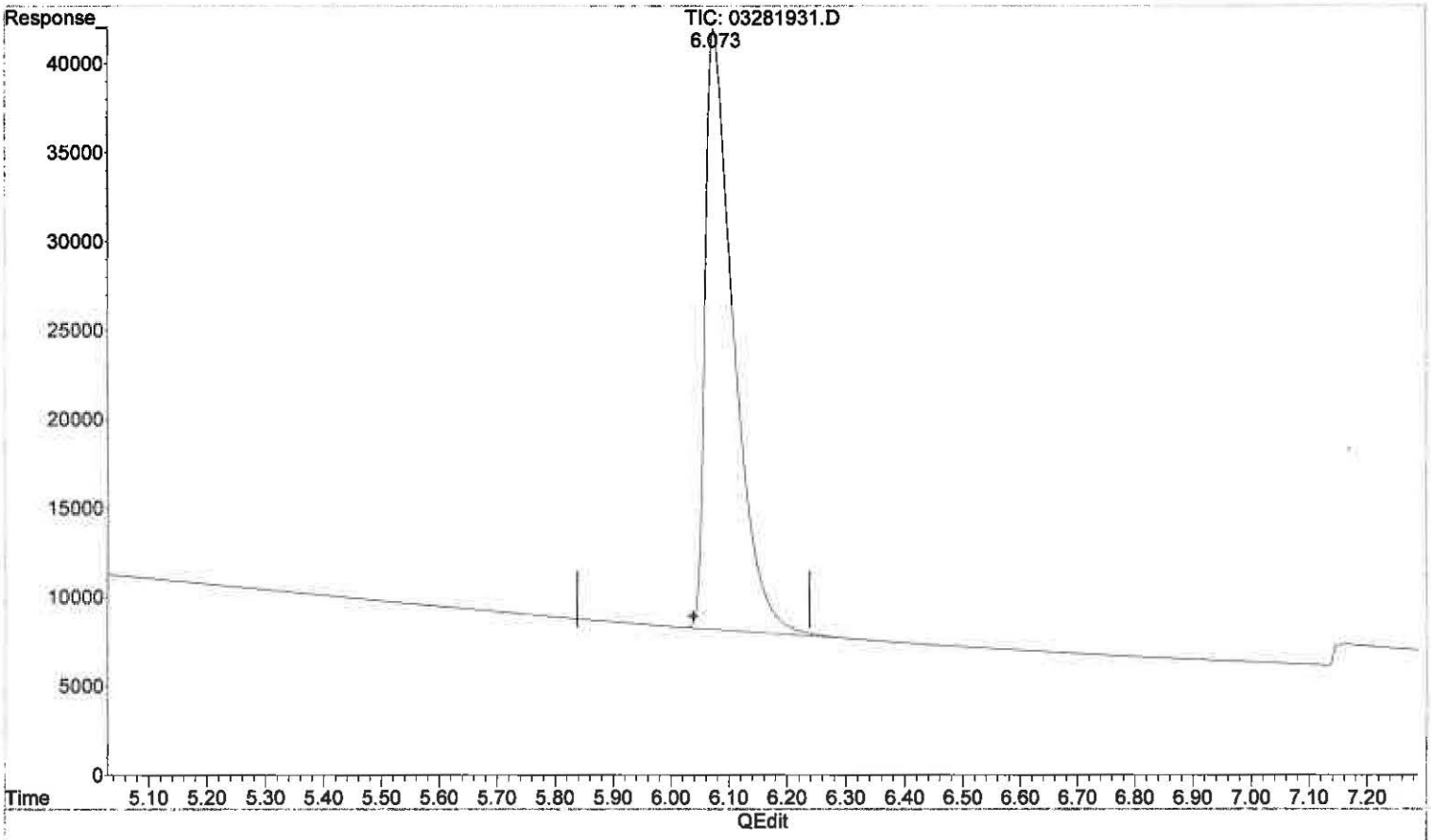


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281931.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 16:57:30
Operator : WH
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 18:31:36 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.073min 4873.635 ppm m

response 1143984

3/28/19
BVC
no problem

MK 3/29/19

(+) = Expected Retention Time

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_03\28\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	28-Mar-19, 09:14:34	03281901.D	std s32-07231801		WH	RSKBOTH.M	pass
2	28-Mar-19, 09:30:11	03281902.D	std s32-01311901		WH	RSKBOTH.M	pass
3	28-Mar-19, 09:44:40	03281903.D	rb 0.1ml		WH	RSKBOTH.M	pass
4	28-Mar-19, 09:56:00	03281904.D	mcs 0.1ml		WH	RSKBOTH.M	pass
5	28-Mar-19, 10:12:33	03281905.D	P1901501-001 0.1ml		WH	RSKBOTH.M	
6	28-Mar-19, 10:26:53	03281906.D	P1901501-002 0.1ml		WH	RSKBOTH.M	
7	28-Mar-19, 10:34:24	03281907.D	P1901501-003 0.1ml		WH	RSKBOTH.M	
8	28-Mar-19, 10:47:38	03281908.D	P1901501-004 0.1ml		WH	RSKBOTH.M	
9	28-Mar-19, 10:59:22	03281909.D	P1901501-005 0.1ml		WH	RSKBOTH.M	
10	28-Mar-19, 11:07:53	03281910.D	P1901501-006 0.1ml		WH	RSKBOTH.M	
11	28-Mar-19, 11:21:11	03281911.D	P1901501-007 0.1ml		WH	RSKBOTH.M	
12	28-Mar-19, 11:31:06	03281912.D	P1901501-007ms 0.1ml		WH	RSKBOTH.M	
13	28-Mar-19, 11:44:22	03281913.D	P1901501-007msd 0.1ml		WH	RSKBOTH.M	
14	28-Mar-19, 11:57:36	03281914.D	fid lcs s30-05241604		WH	RSKBOTH.M	
15	28-Mar-19, 12:18:46	03281915.D	fid lcs s30-05241604		WH	RSKBOTH.M	pass
16	28-Mar-19, 12:30:50	03281916.D	fid lcsd s30-05241604		WH	RSKBOTH.M	pass
17	28-Mar-19, 12:49:37	03281917.D	std s32-07231801		WH	RSKBOTH.M	pass
18	28-Mar-19, 13:09:50	03281918.D	std s32-01311901		WH	RSKBOTH.M	pass
19	28-Mar-19, 13:36:52	03281919.D	mcs 0.1ml		WH	RSKBOTH.M	pass
20	28-Mar-19, 13:46:41	03281920.D	lcs tcd S32-10081801		WH	RSKBOTH.M	pass
21	28-Mar-19, 14:17:53	03281921.D	lcsd tcd S32-10081801		WH	RSKBOTH.M	pass
22	28-Mar-19, 14:46:07	03281922.D	P1901501-001 50ul		WH	RSKBOTH.M	
23	28-Mar-19, 14:59:14	03281923.D	P1901501-002 50ul		WH	RSKBOTH.M	
24	28-Mar-19, 15:12:57	03281924.D	P1901501-003 50ul		WH	RSKBOTH.M	
25	28-Mar-19, 15:25:25	03281925.D	P1901501-004 50ul		WH	RSKBOTH.M	
26	28-Mar-19, 15:36:07	03281926.D	P1901501-005 50ul		WH	RSKBOTH.M	
27	28-Mar-19, 15:56:58	03281927.D	P1901501-006 50ul		WH	RSKBOTH.M	
28	28-Mar-19, 16:08:13	03281928.D	P1901501-007 50ul		WH	RSKBOTH.M	
29	28-Mar-19, 16:23:34	03281929.D	P1901501-007ms 50ul		WH	RSKBOTH.M	
30	28-Mar-19, 16:41:20	03281930.D	P1901501-007msd 50ul		WH	RSKBOTH.M	
31	28-Mar-19, 16:57:30	03281931.D	std s32-01311901		WH	RSKBOTH.M	pass
32	28-Mar-19, 17:49:38	03281932.D	loq		WH	RSKBOTH.M	
33	28-Mar-19, 18:01:49	03281933.D	loq		WH	RSKBOTH.M	
34	28-Mar-19, 18:21:24	03281934.D	lod		WH	RSKBOTH.M	

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:12:33
Operator : WH
Sample : P1901501-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 11:31:52 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.989f	169122	0.213	ppm
2)	Carbon monoxide	1.989f	169122	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.953	13189168	54107.452	ppm
6)	Methane (FID)	1.117	2151298	237.172	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

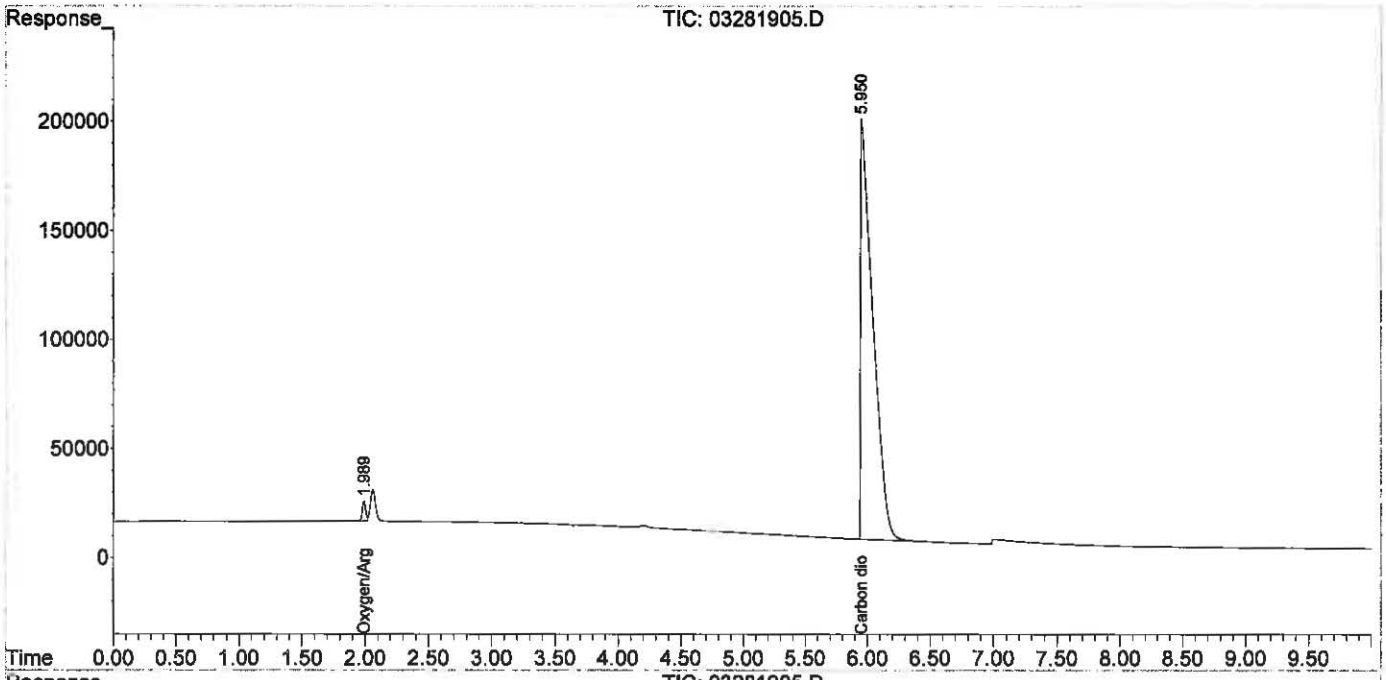
(f)=RT Delta > 1/2 Window (m)=manual int.

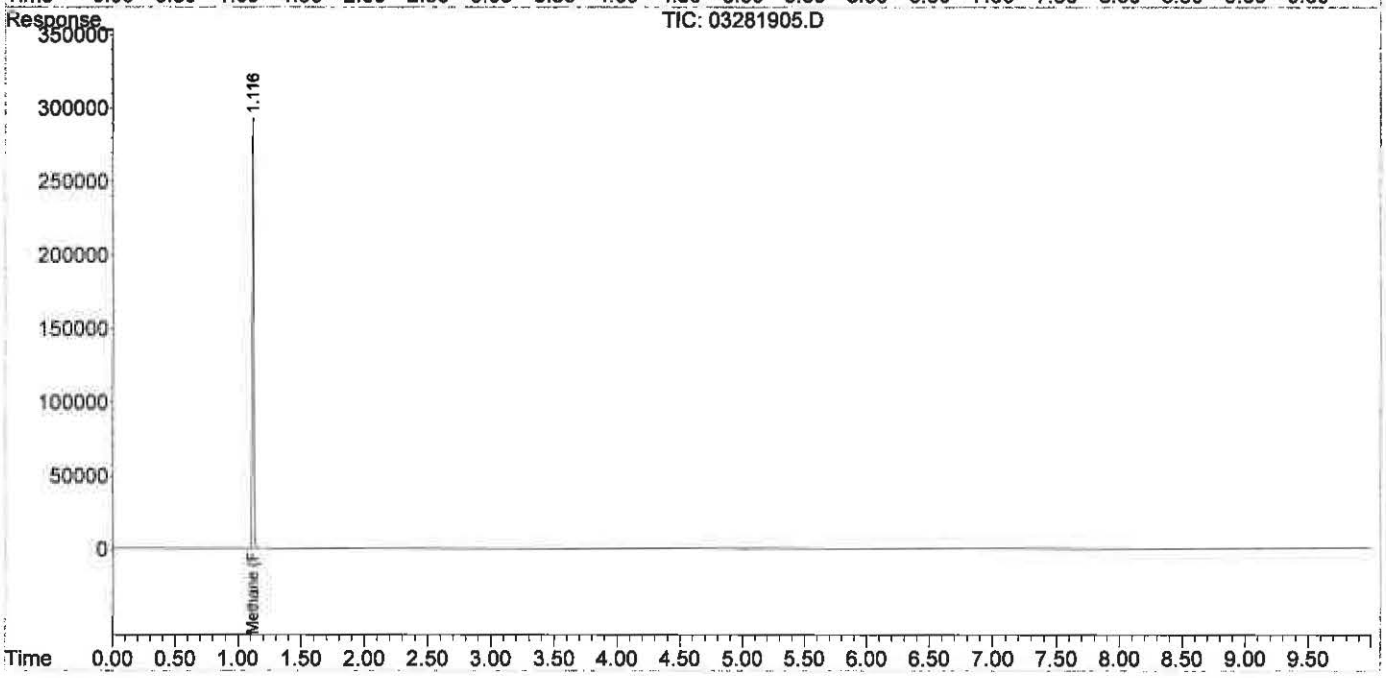
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:12:33
Operator : WH
Sample : P1901501-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 11:31:52 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:26:53
Operator : WH
Sample : P1901501-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:43:35 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

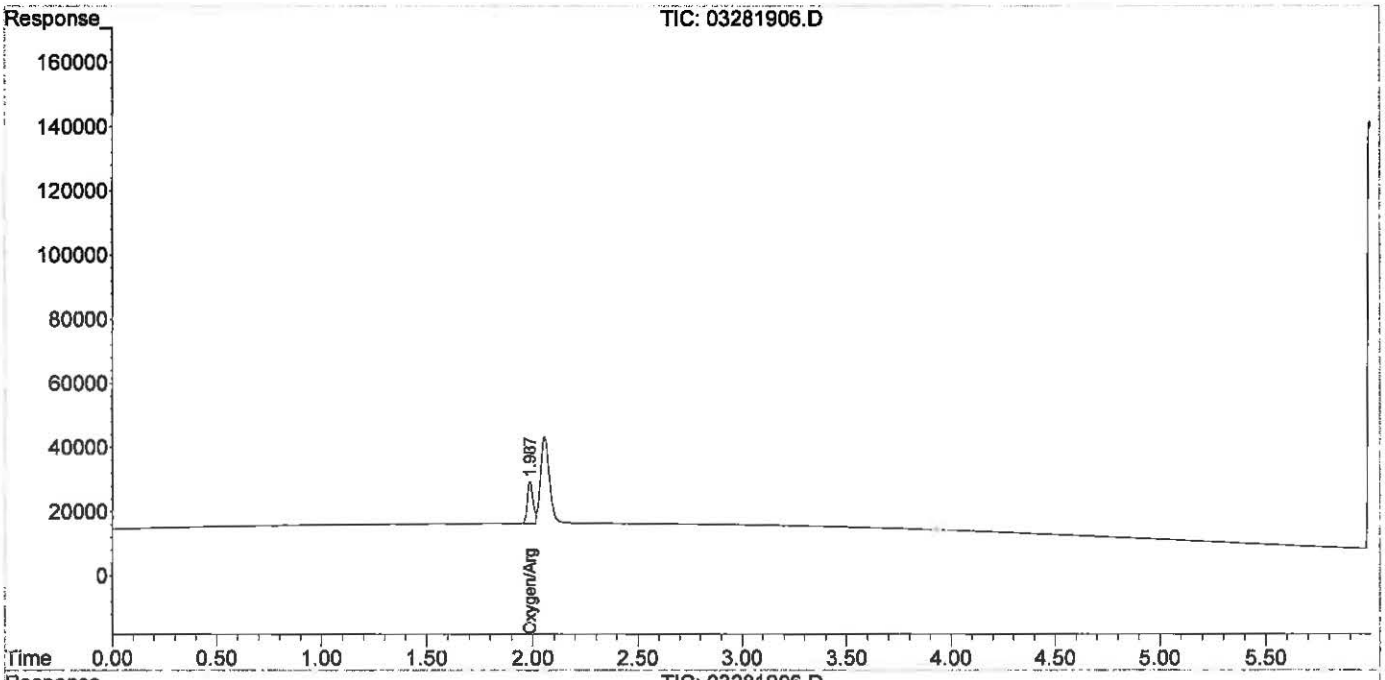
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.987f	233865	0.295	ppm
2)	Carbon monoxide	1.987f	233865	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.116	37059	4.086	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

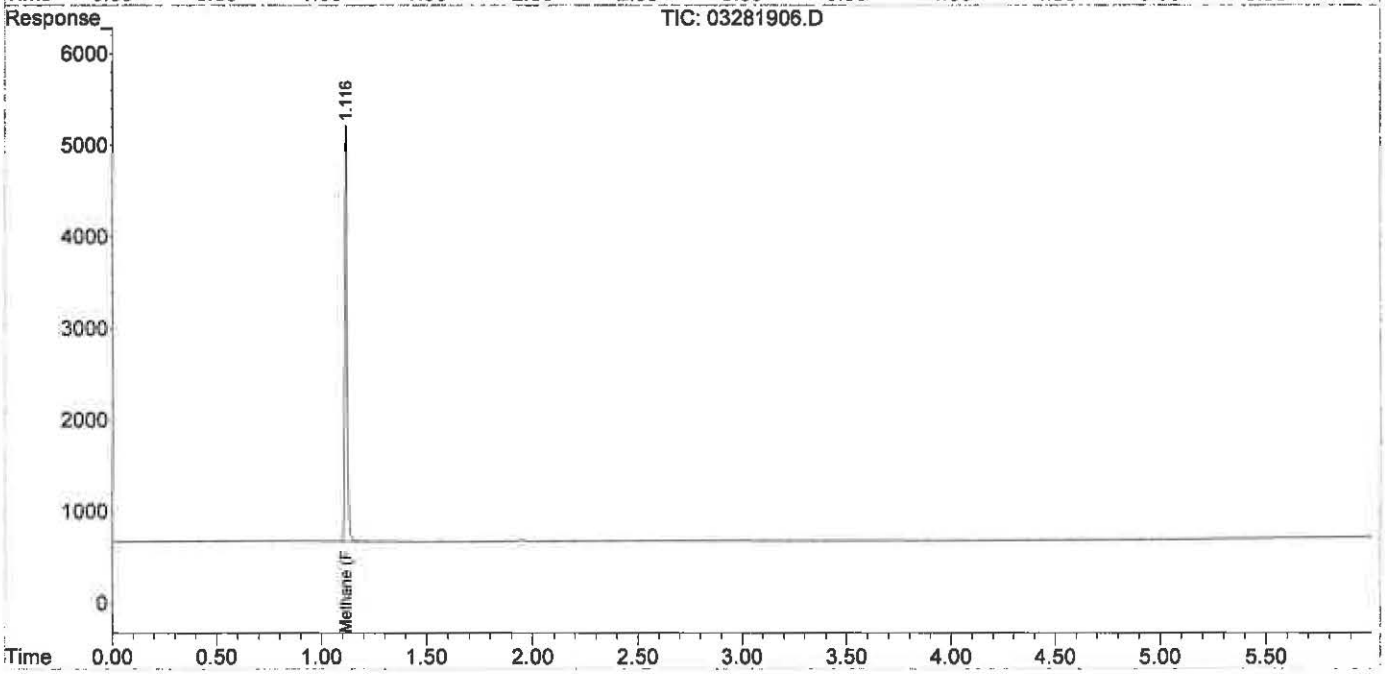
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:26:53
Operator : WH
Sample : P1901501-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:43:35 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:34:24
Operator : WH
Sample : P1901501-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:43:55 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

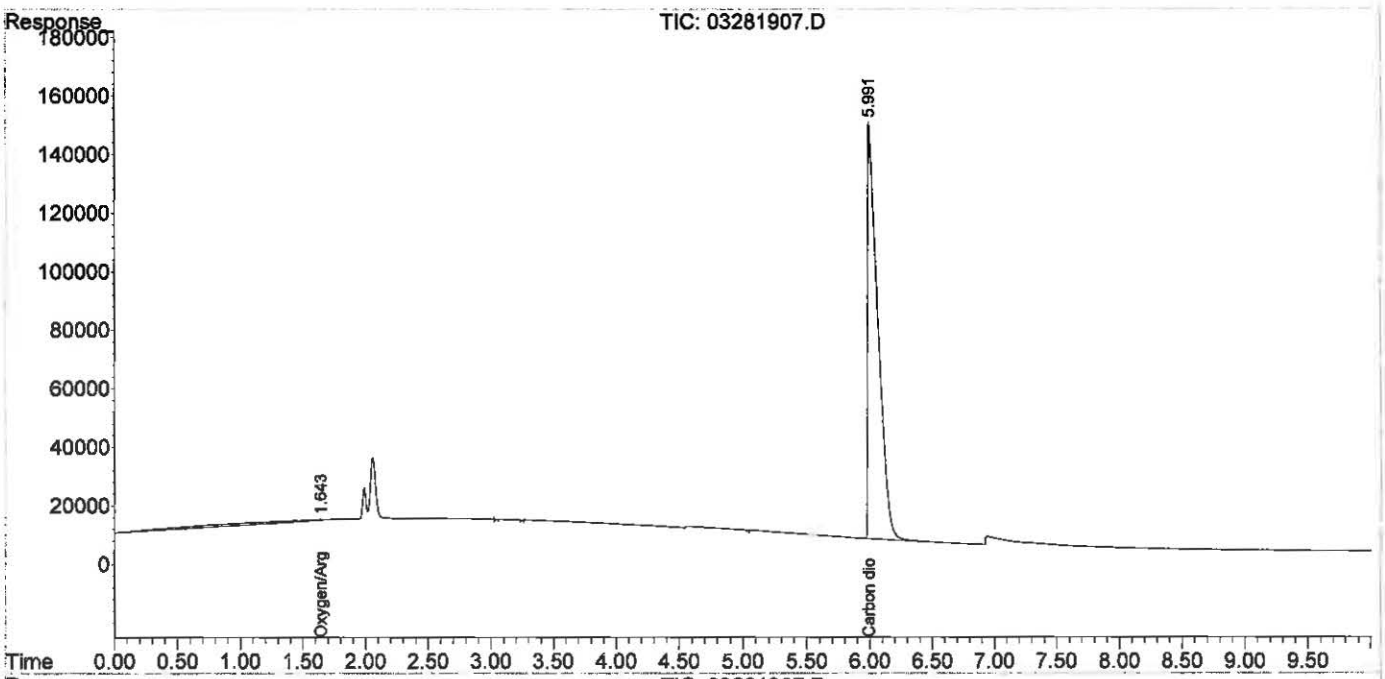
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.643f	463530	0.585	ppm
2)	Carbon monoxide	1.643f	463530	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.993	7900069	32409.370	ppm
6)	Methane (FID)	1.117	6129	0.676	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

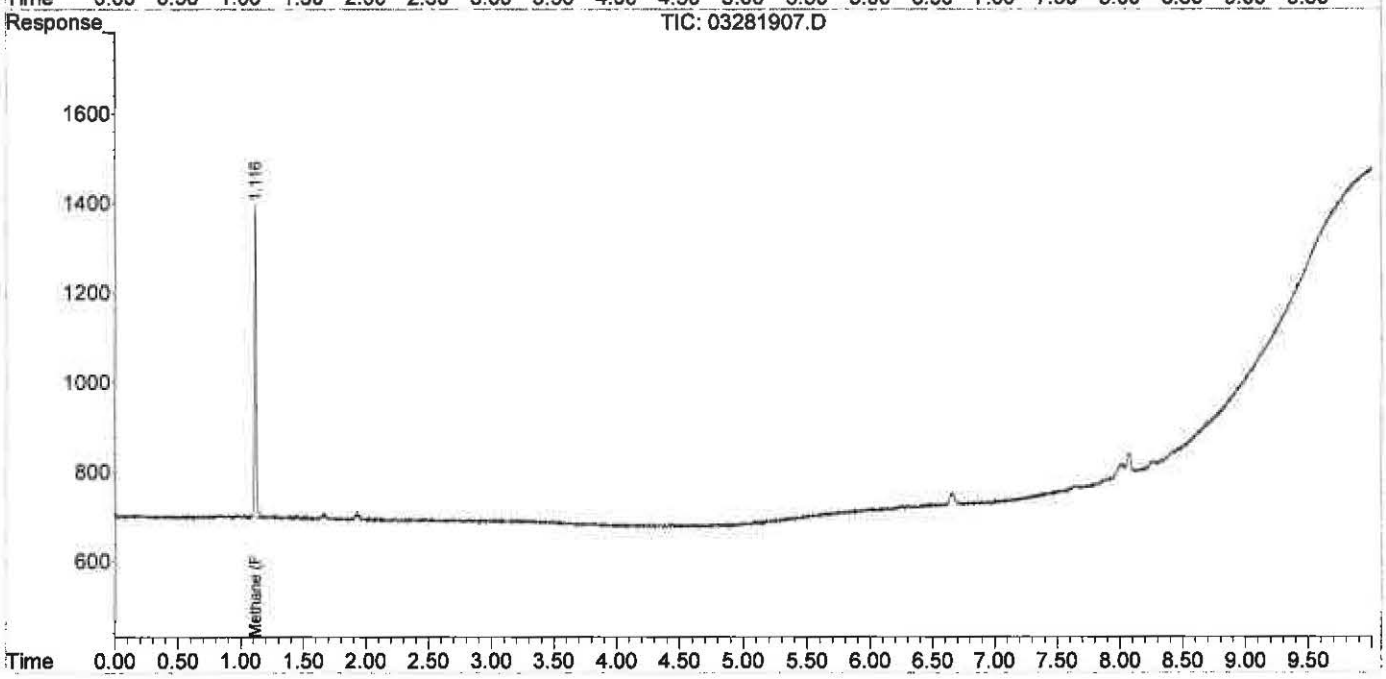
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:34:24
Operator : WH
Sample : P1901501-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:43:55 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:47:38
Operator : WH
Sample : P1901501-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:44:23 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.987f	1154896	1.457	ppm
2)	Carbon monoxide	1.987f	1154896	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.977	9437690	38717.330	ppm
6)	Methane (FID)	1.115	1265061	139.468	ppm
7)	Ethylene	1.674	94408	5.642	ppm
8)	Ethane	1.938	2315	0.137	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	6.222	9127	1400.023	ppm
12)	Isobutane	6.653	76575	2.877	ppm
13)	n-Butane	6.653	76575	2.877	ppm

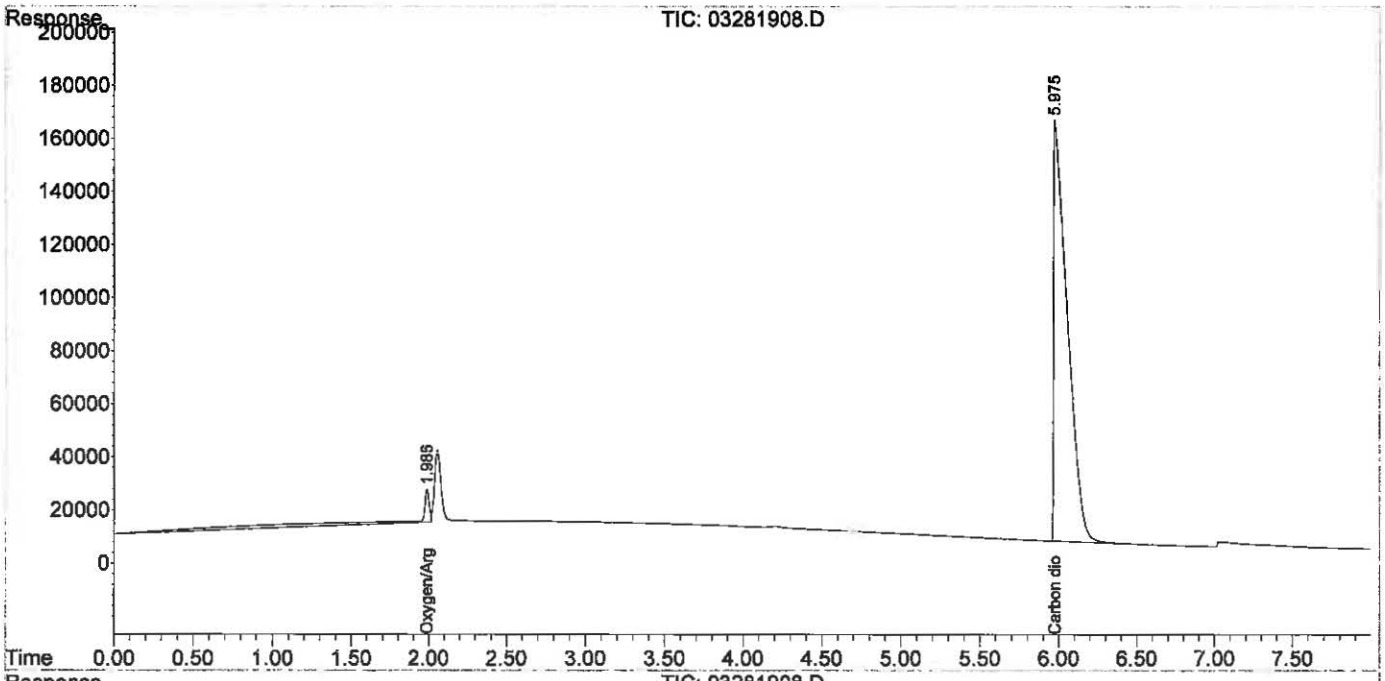
(f)=RT Delta > 1/2 Window (m)=manual int.

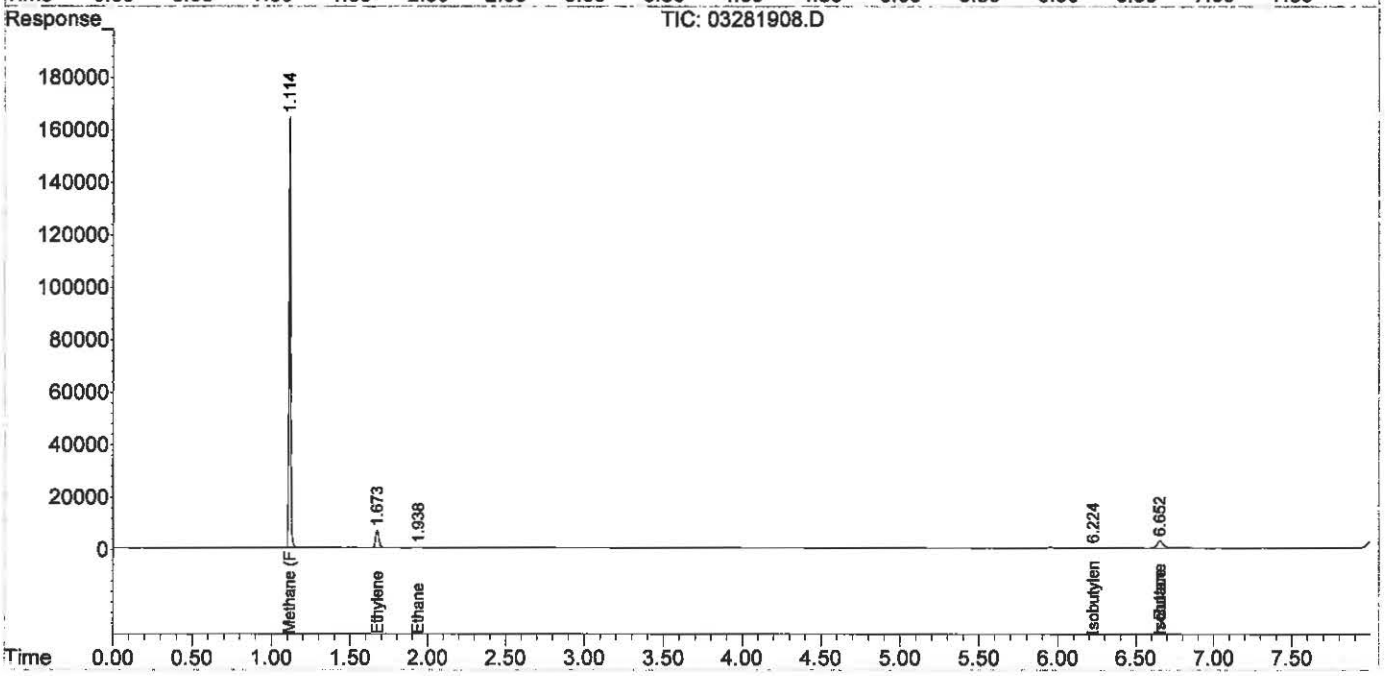
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:47:38
Operator : WH
Sample : P1901501-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:44:23 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:59:22
Operator : WH
Sample : P1901501-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:44:52 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.980f	170152	0.215	ppm
2)	Carbon monoxide	1.980f	170152	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.968	10202094	41853.233	ppm
6)	Methane (FID)	1.107	14990086	1652.594	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

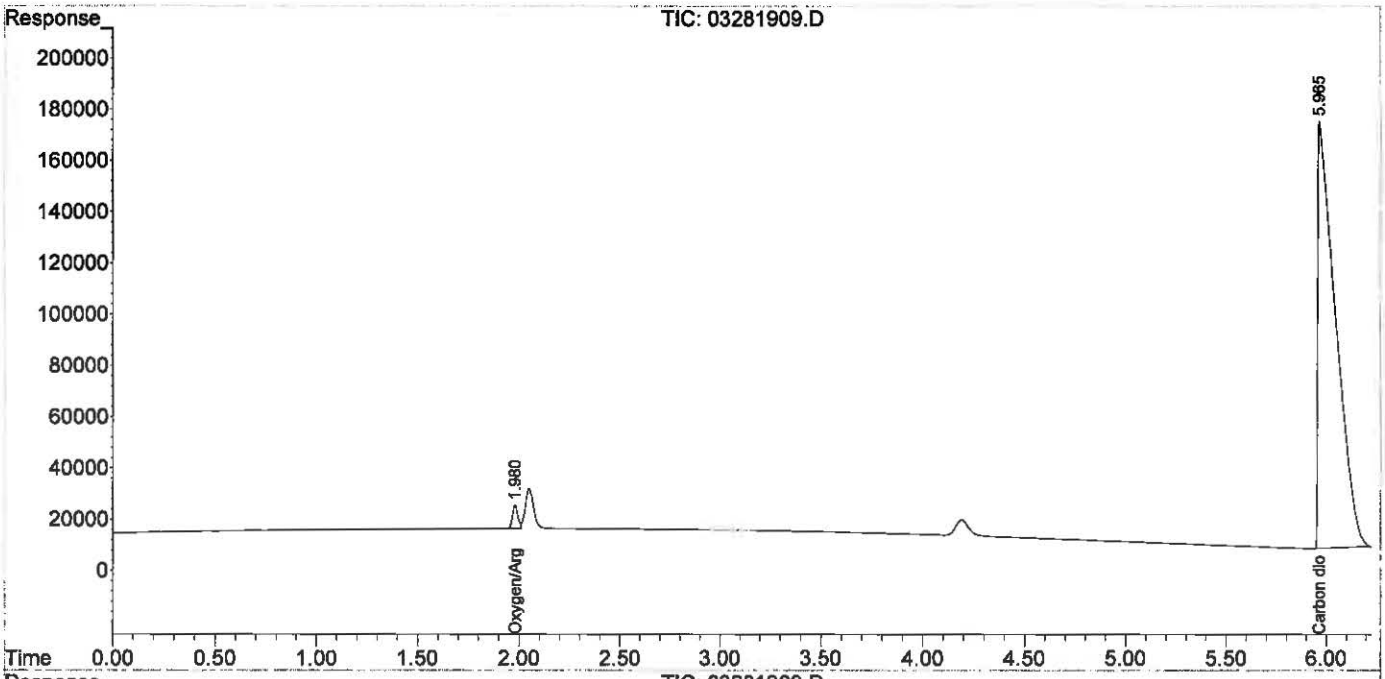
(f)=RT Delta > 1/2 Window (m)=manual int.

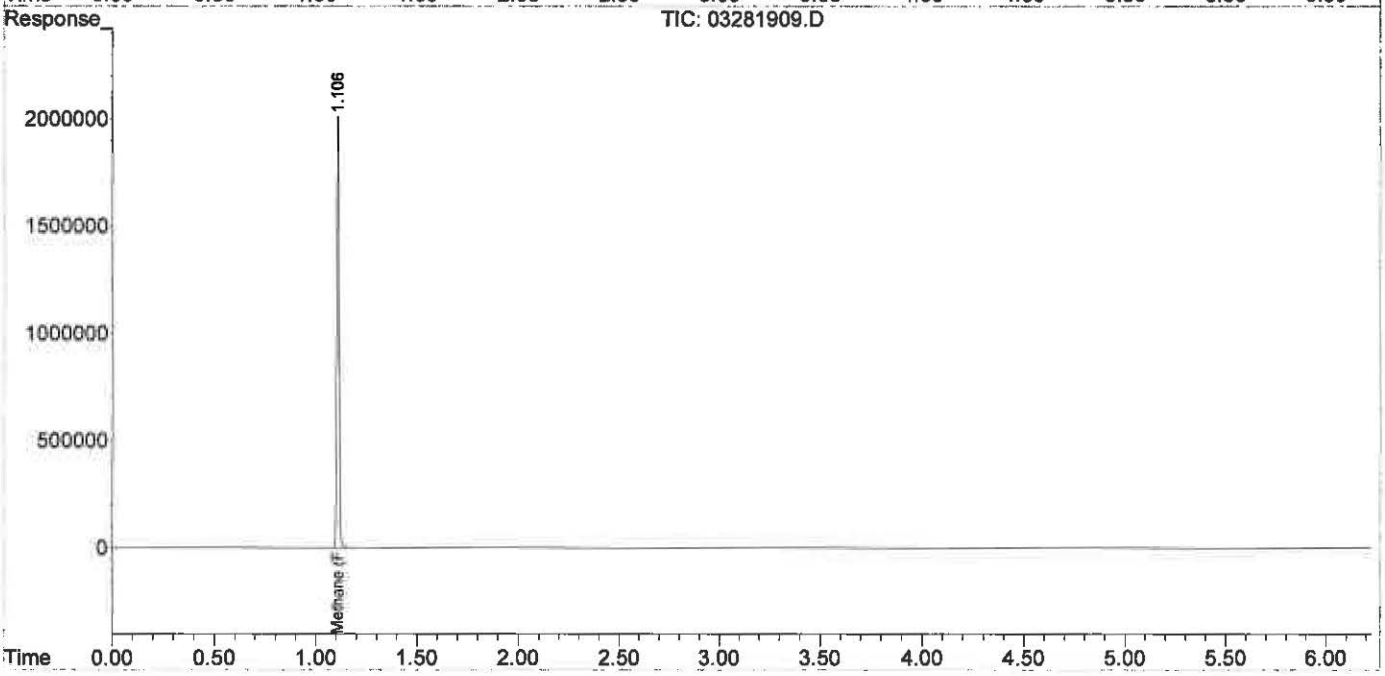
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 10:59:22
Operator : WH
Sample : P1901501-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:44:52 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:07:53
Operator : WH
Sample : P1901501-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:45:22 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.989f	154633	0.195	ppm
2)	Carbon monoxide	1.989f	154633	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.970	10388274	42617.018	ppm
6)	Methane (FID)	1.115	13881010	1530.323	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

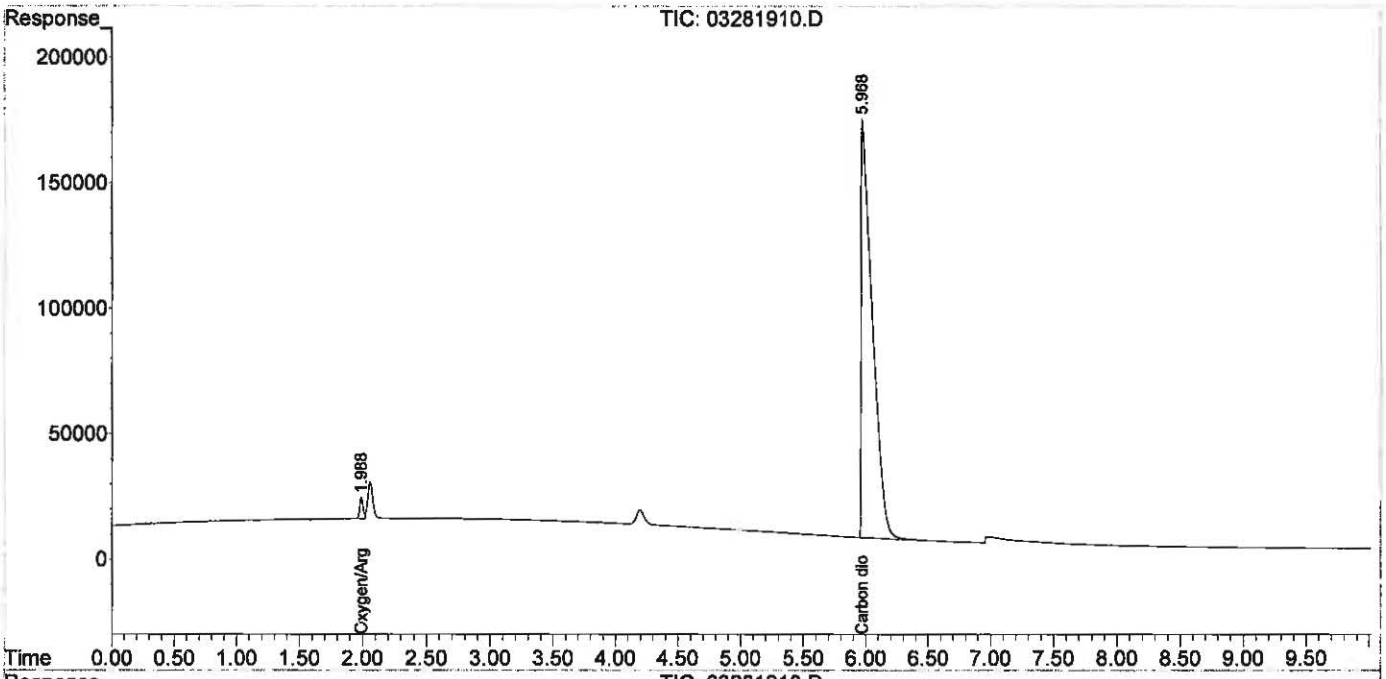
(f)=RT Delta > 1/2 Window (m)=manual int.

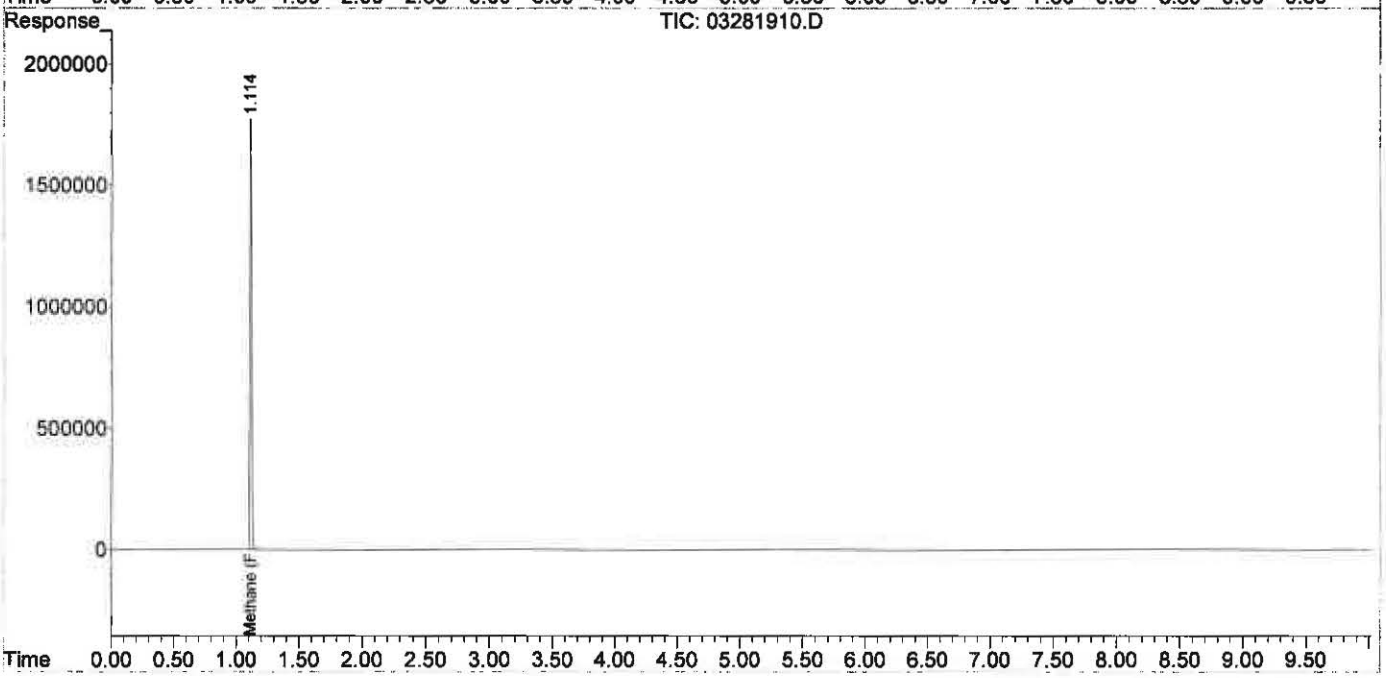
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:07:53
Operator : WH
Sample : P1901501-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 19:45:22 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:21:11
Operator : WH
Sample : P1901501-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

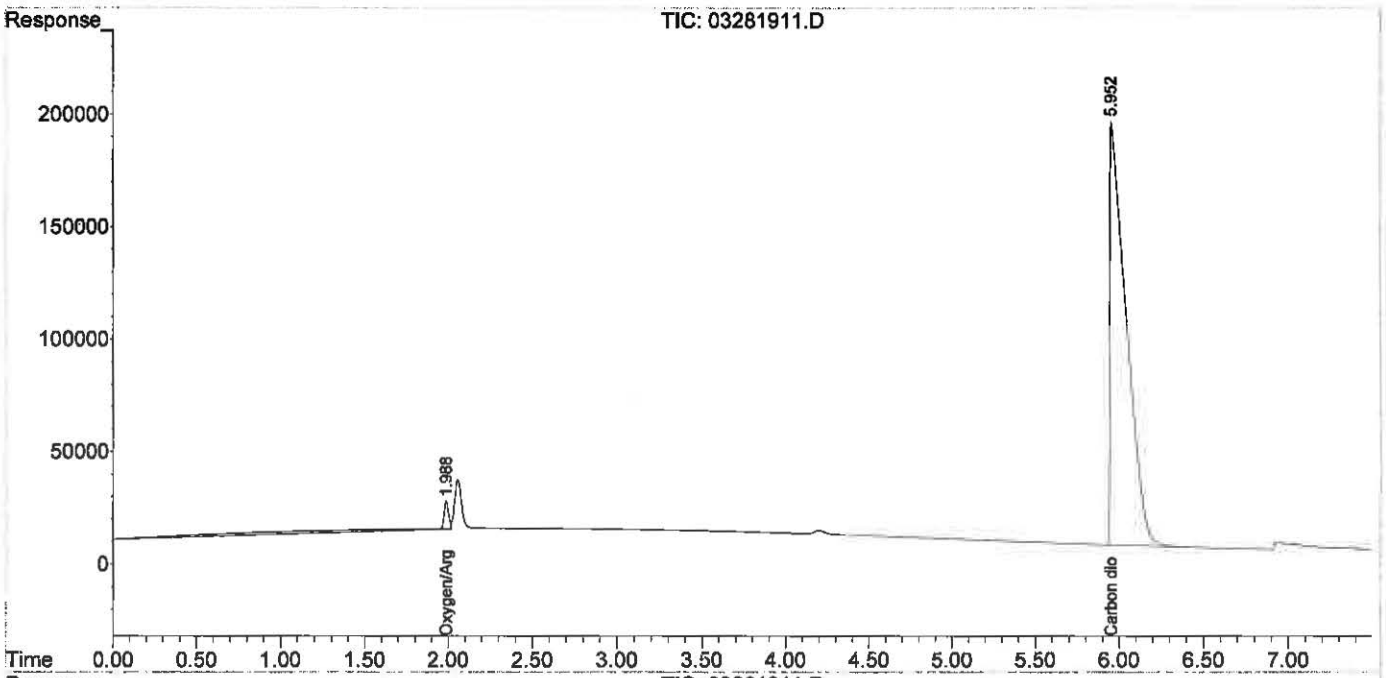
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.988f	1137423	1.435	ppm	
2)	Carbon monoxide	1.988f	1137423	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.955	12571752	51574.554	ppm	
6)	Methane (FID)	1.115	3979451	438.718	ppm	
7)	Ethylene	1.675	3550	0.212	ppm	
8)	Ethane	1.940	712	0.042	ppm	m
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.653	33229	1.248	ppm	
13)	n-Butane	6.653	33229	1.248	ppm	

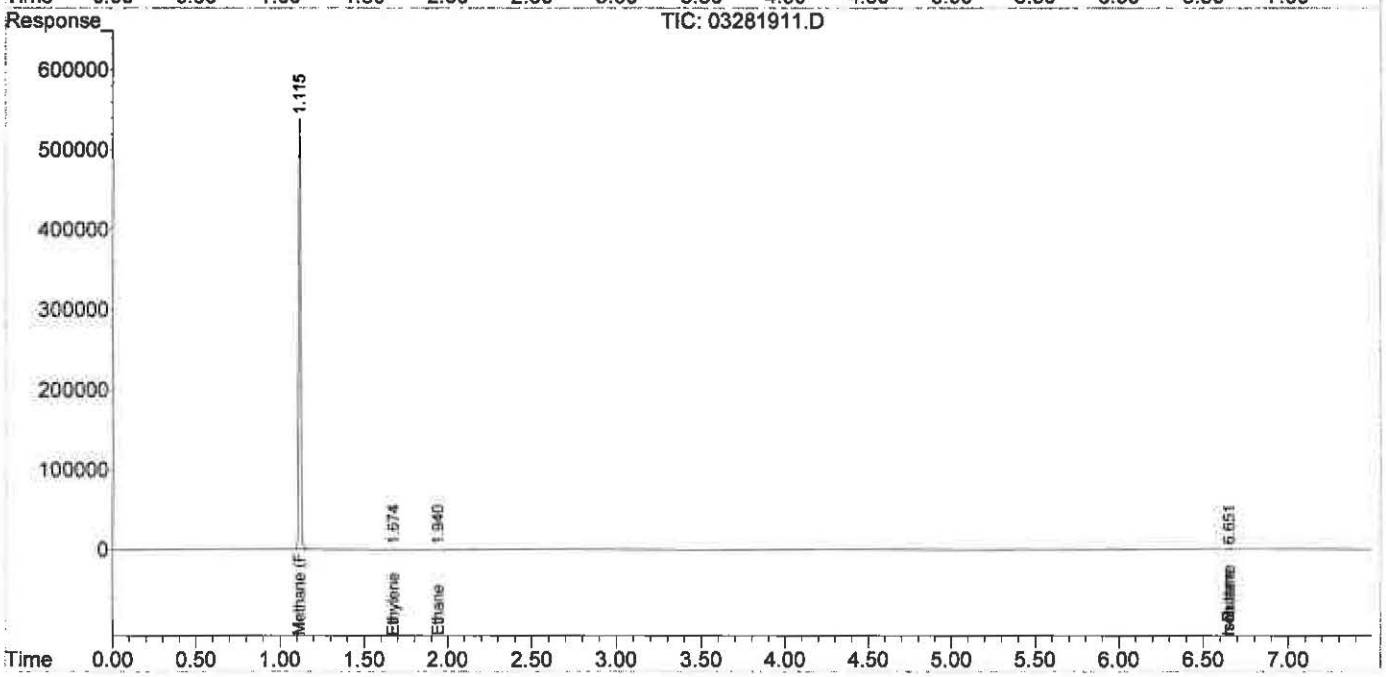
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:21:11
Operator : WH
Sample : P1901501-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



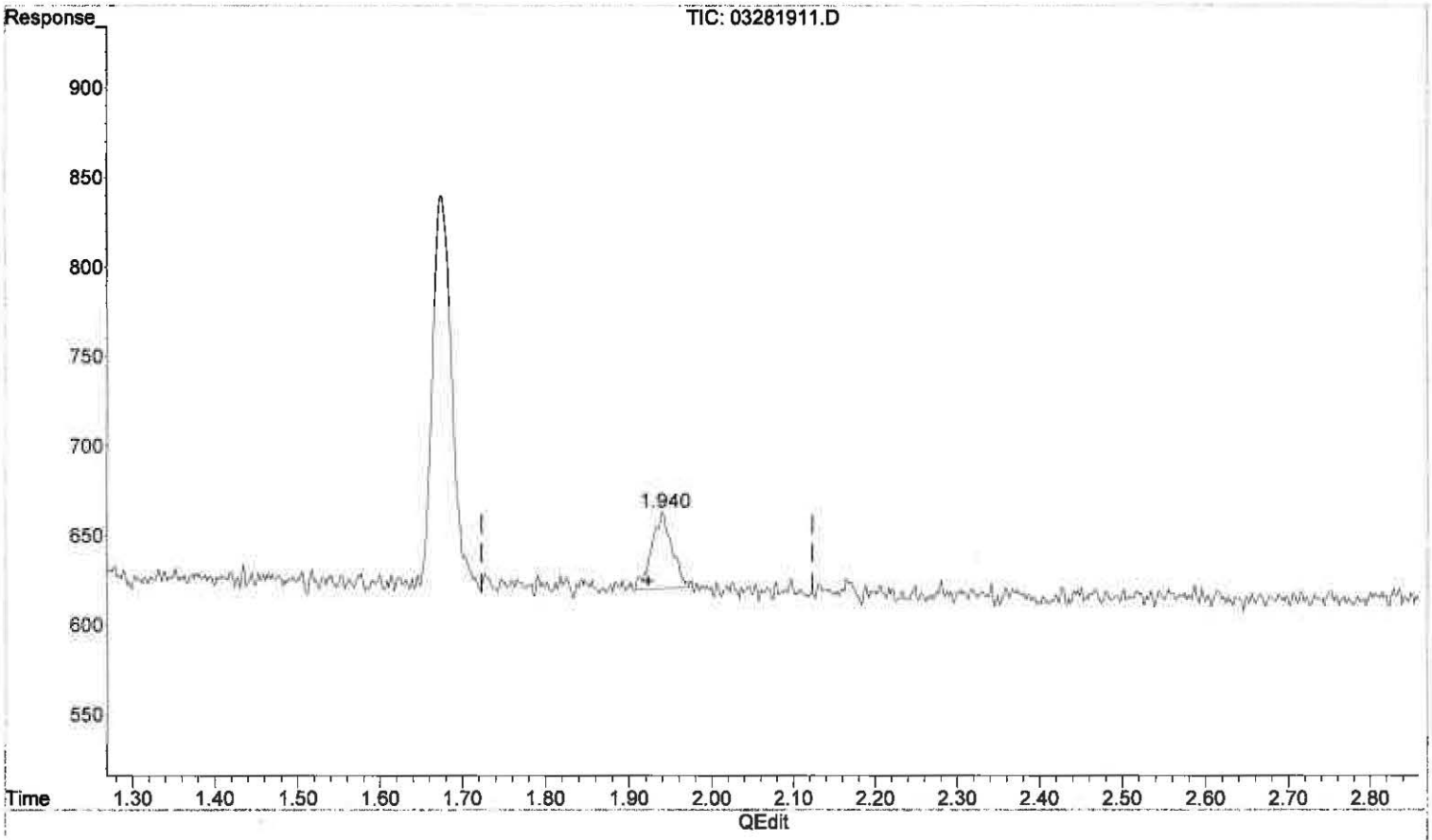


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:21:11
Operator : WH
Sample : P1901501-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.940min 0.042 ppm m

response 712

MRL 3/29/19

(+) = Expected Retention Time

RS091217_R.M Thu Mar 28 19:46:06 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:56:00
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 11:10:45 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.986f	656735	0.829	ppm	
2)	Carbon monoxide	1.986f	656735	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.097f	51172	209.928	ppm	
6)	Methane (FID)	1.109	1074	0.118	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

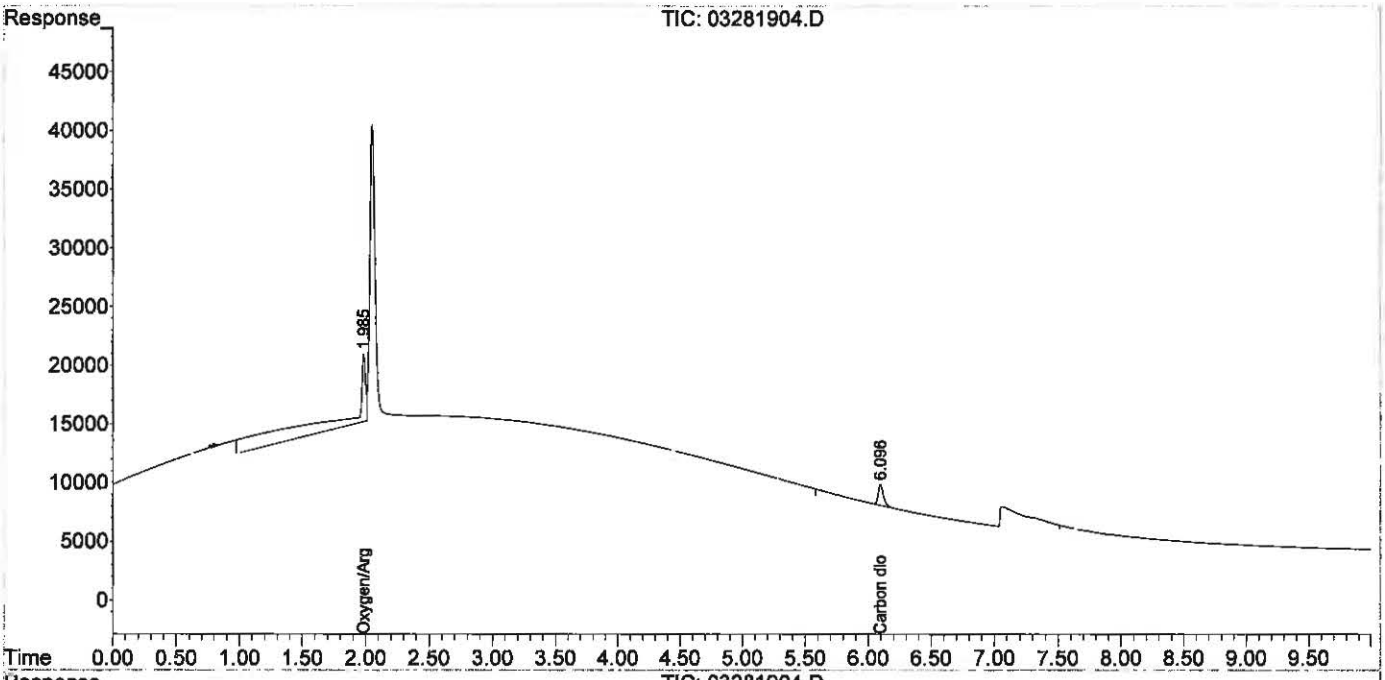
(f)=RT Delta > 1/2 Window (m)=manual int.

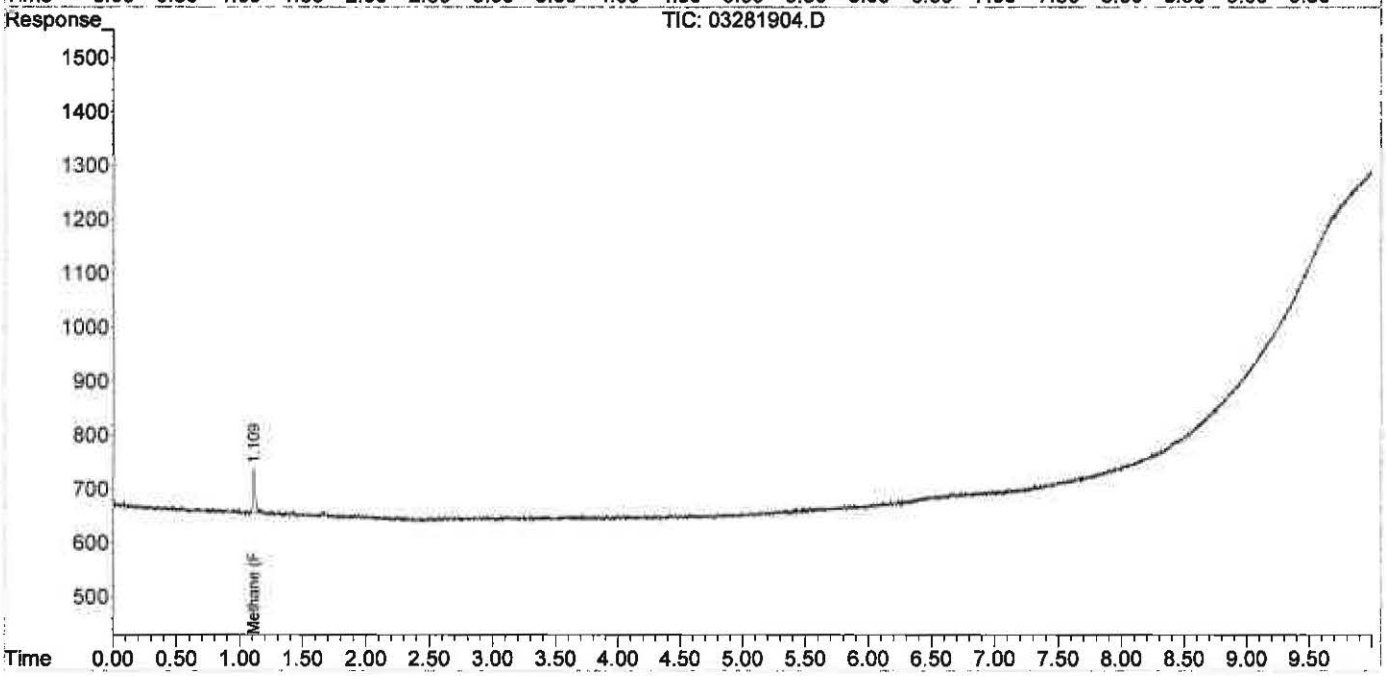
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:56:00
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 11:10:45 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



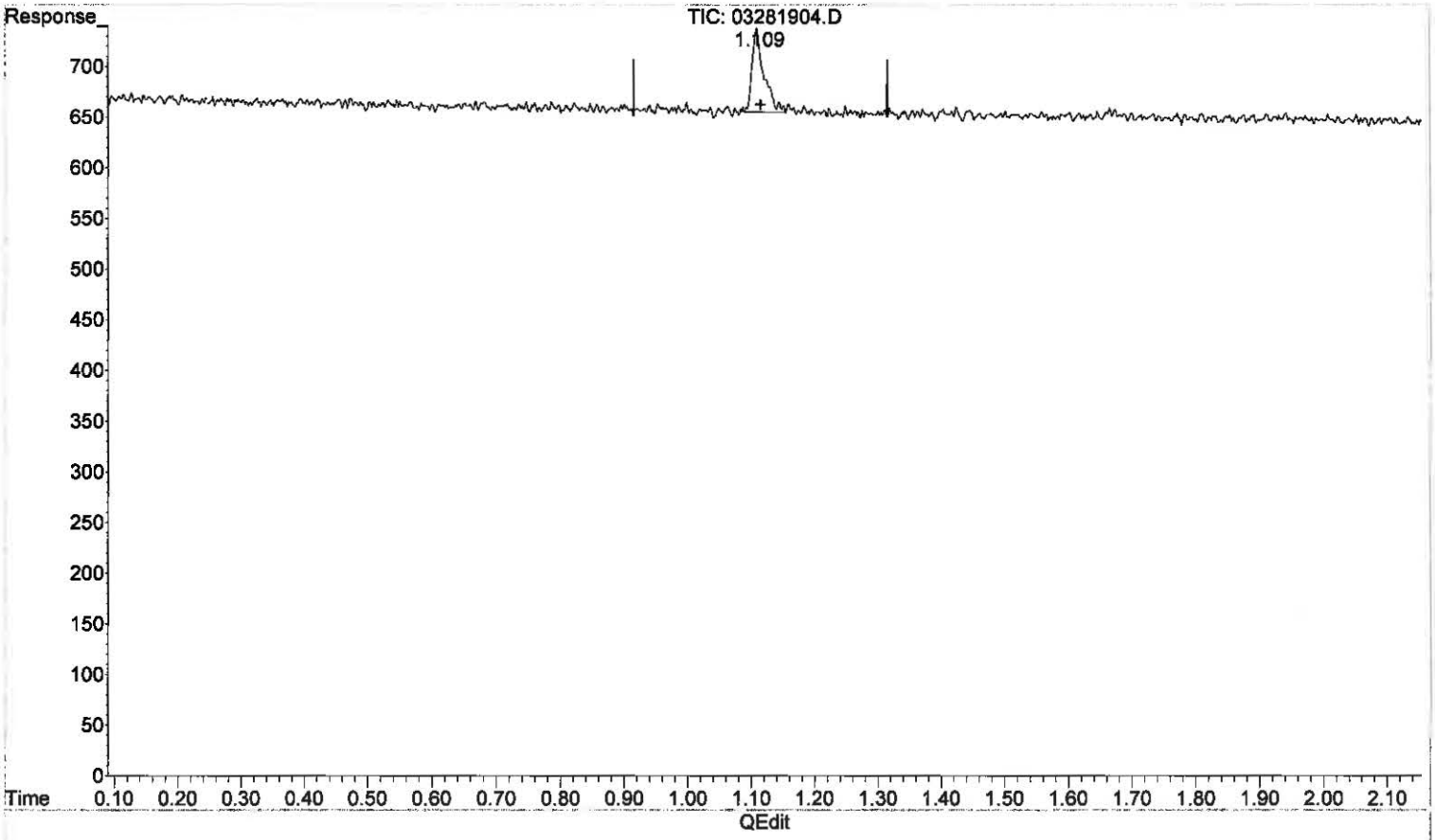


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:56:00
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 11:10:45 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.109min 0.118 ppm m

response 1074

ME 3/29/19

3/28/19 mp no previous

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:31:06
Operator : WH
Sample : P1901501-007ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:40 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.978f	10791402	13.615	ppm	
2)	Carbon monoxide	1.978f	10791402	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.954	12450269	51076.180	ppm	
6)	Methane (FID)	1.108	2535211	279.496	ppm	
7)	Ethylene	1.663	12097	0.723	ppm	m
8)	Ethane	1.925	11641	0.687	ppm	m
9)	Propylene	4.302	14200	0.606	ppm	
10)	Propane	4.426	17955	0.722	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.651	36149	1.358	ppm	
13)	n-Butane	6.651	36149	1.358	ppm	

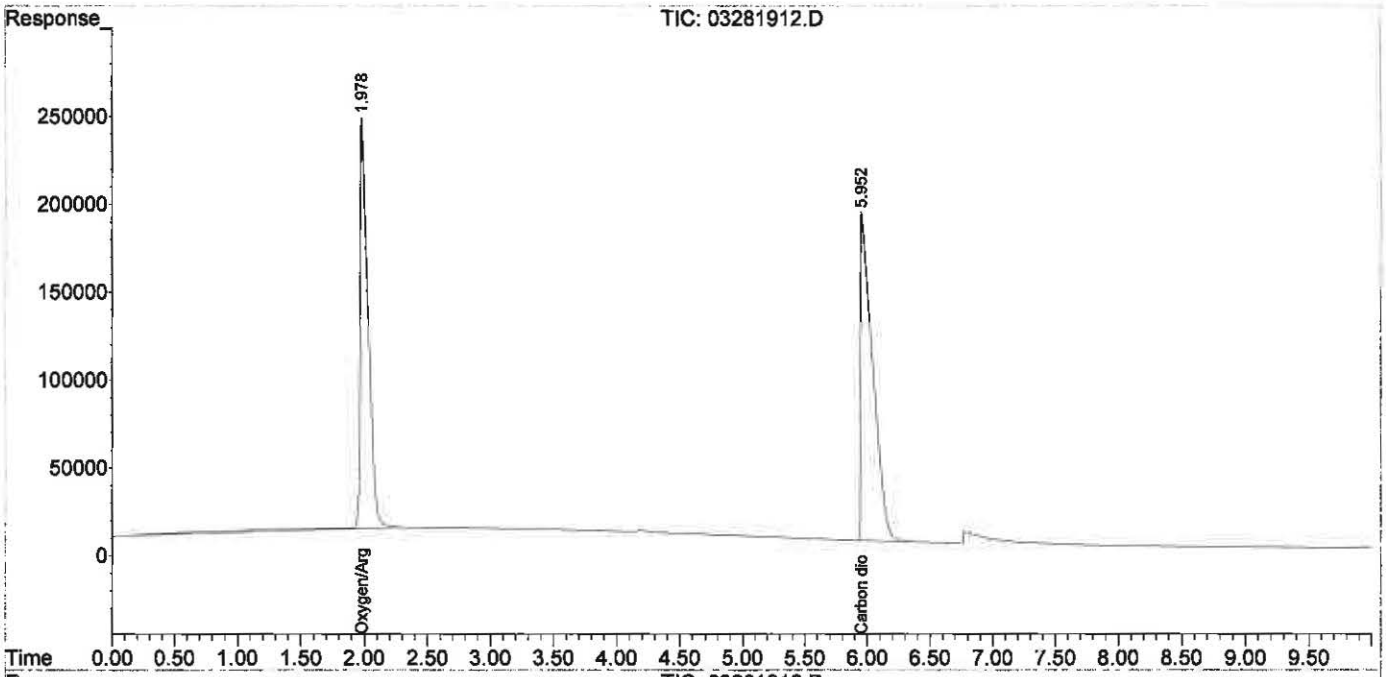
(f)=RT Delta > 1/2 Window (m)=manual int.

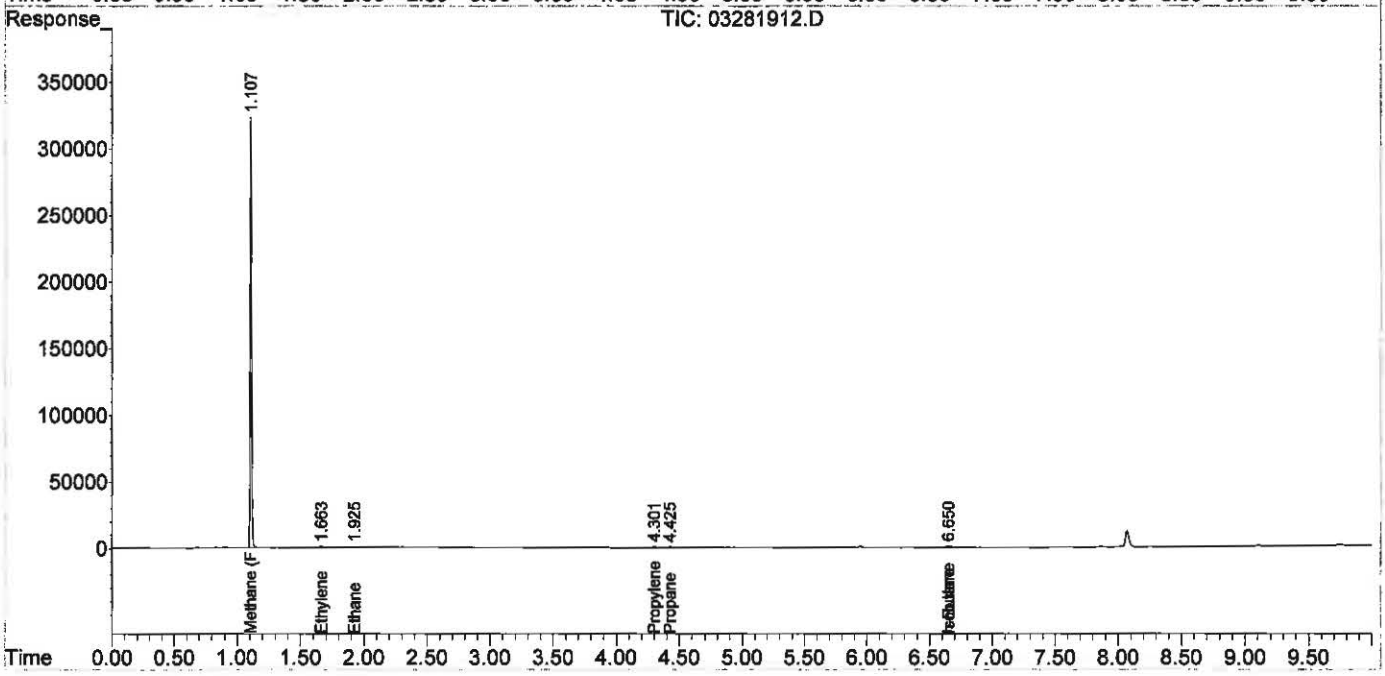
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:31:06
Operator : WH
Sample : P1901501-007ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:40 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



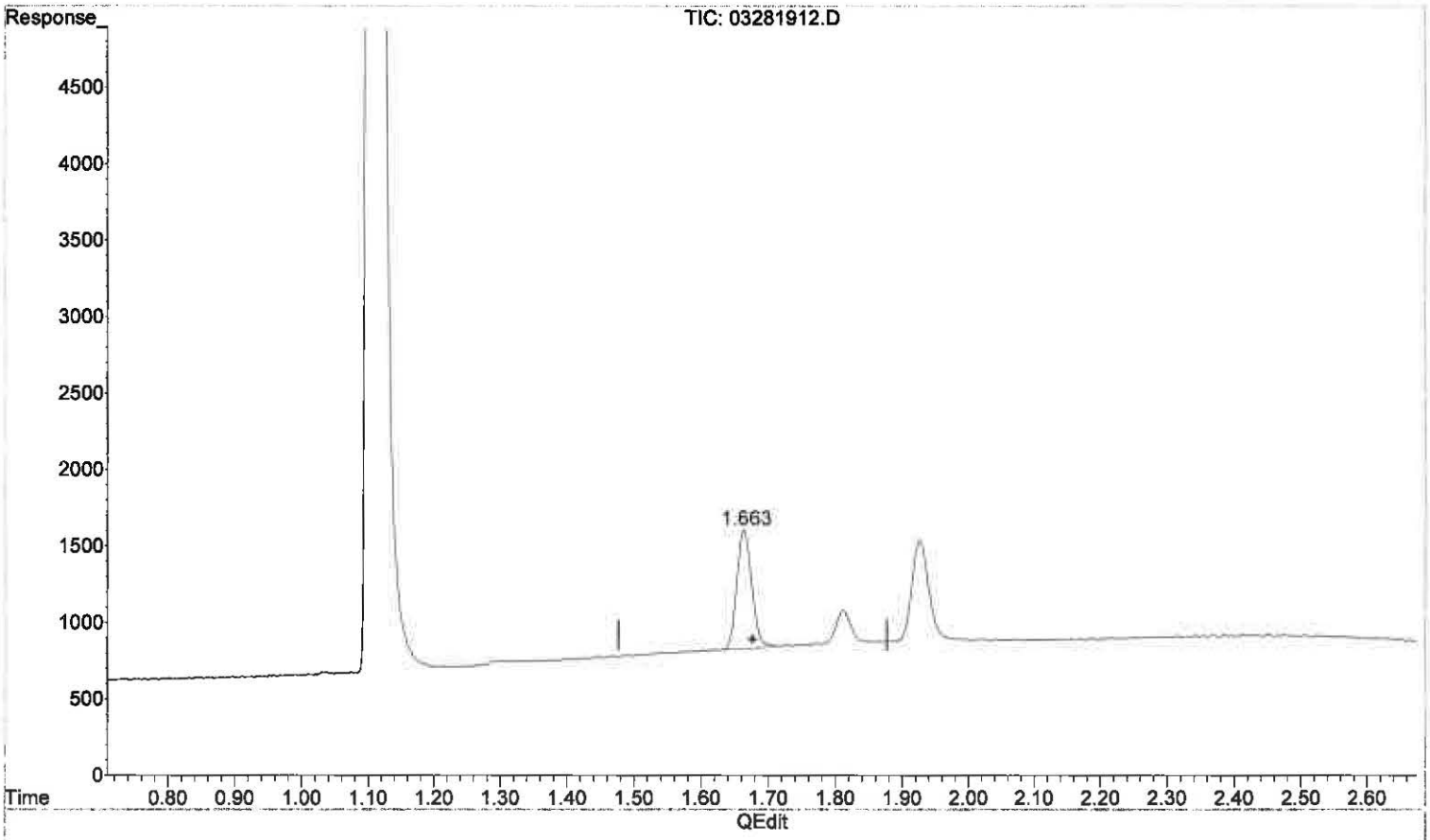


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:31:06
Operator : WH
Sample : P1901501-007ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:40 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(7) Ethylene

1.663min 0.723 ppm m

response 12097

MR 3/29/19

3/28/19
BLC
no previous

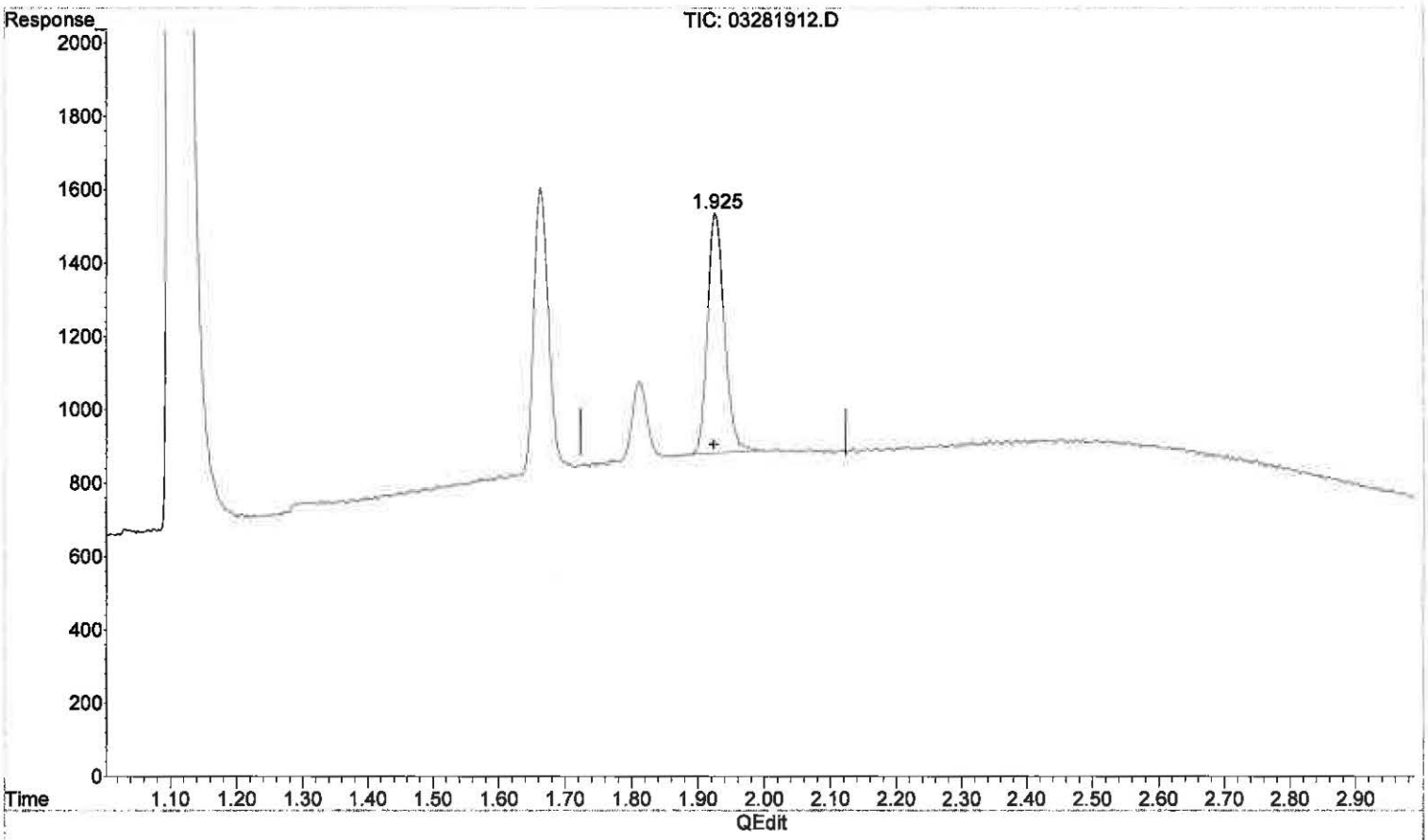
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:31:06
Operator : WH
Sample : P1901501-007ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:27:40 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.925min 0.687 ppm m

response 11641

MR 3/29/19

3/29/19 BLC no good QC

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:44:22
Operator : WH
Sample : P1901501-007msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:28:31 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.982f	9448858	11.921	ppm
2)	Carbon monoxide	1.982f	9448858	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.955	11767838	48276.566	ppm
6)	Methane (FID)	1.111	2968915	327.310	ppm
7)	Ethylene	1.670	12074	0.722	ppm
8)	Ethane	1.933	11324	0.668	ppm
9)	Propylene	4.313	13380	0.571	ppm
10)	Propane	4.436	16994	0.683	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.651	55016	2.067	ppm
13)	n-Butane	6.651	55016	2.067	ppm

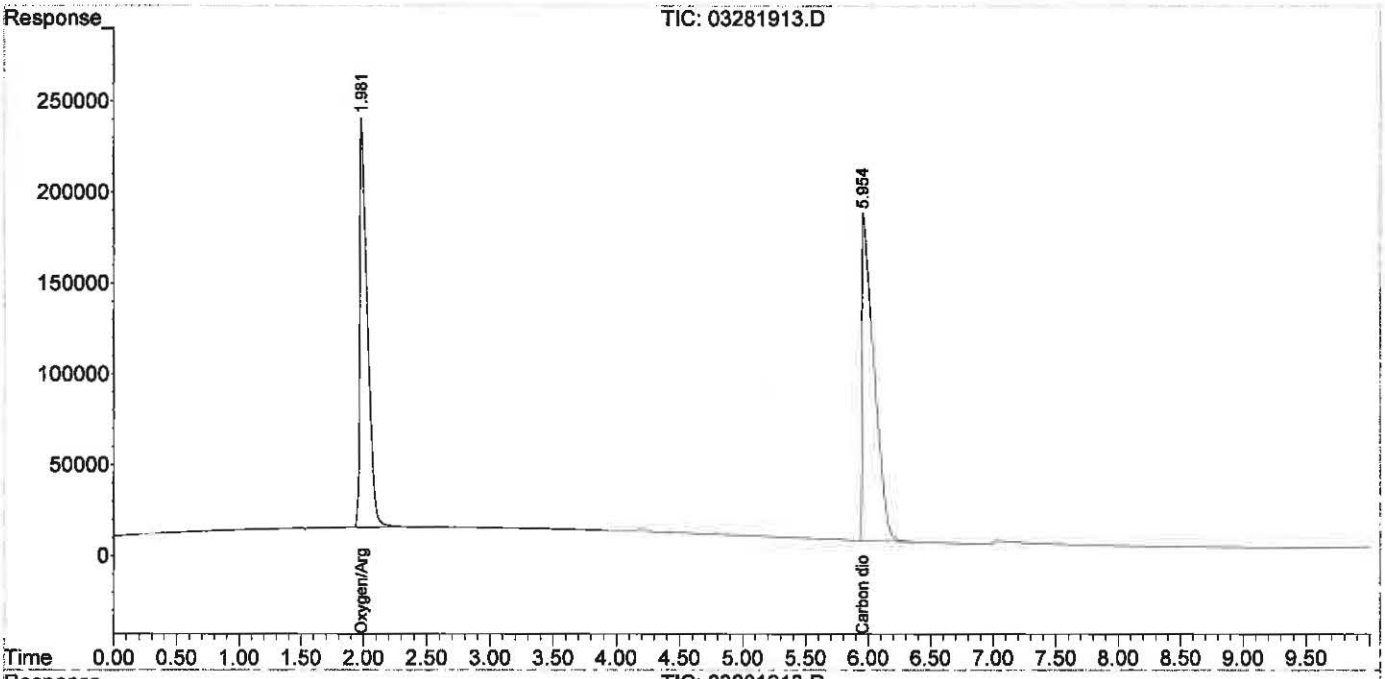
(f)=RT Delta > 1/2 Window (m)=manual int.

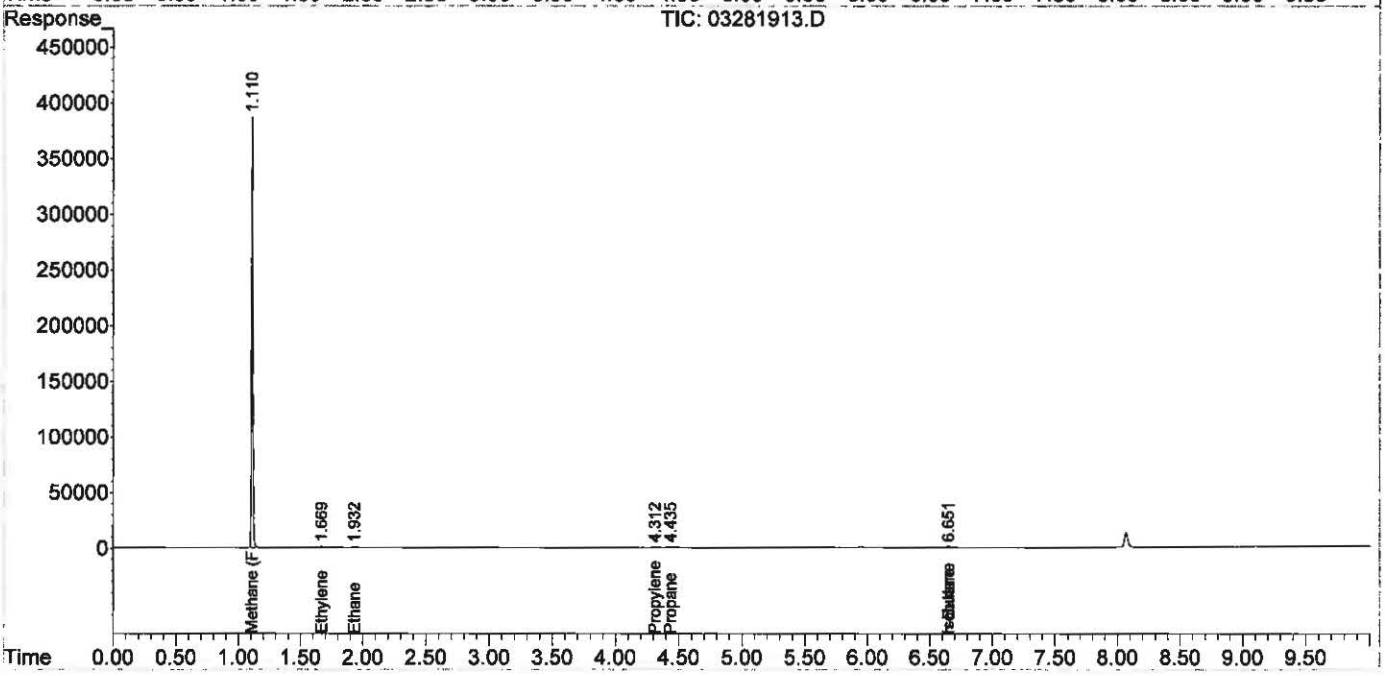
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 11:44:22
Operator : WH
Sample : P1901501-007msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:28:31 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 12:18:46
Operator : WH
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:29:28 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.941f	2875352	3.628	ppm
2)	Carbon monoxide	1.941f	2875352	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.093f	84004	344.621	ppm
6)	Methane (FID)	1.117	12420	1.369	ppm
7)	Ethylene	1.680	16497	0.986	ppm
8)	Ethane	1.943	20840	1.230	ppm
9)	Propylene	4.315	22617	0.965	ppm
10)	Propane	4.437	32278	1.297	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.650	51004	1.916	ppm
13)	n-Butane	6.650	51004	1.916	ppm

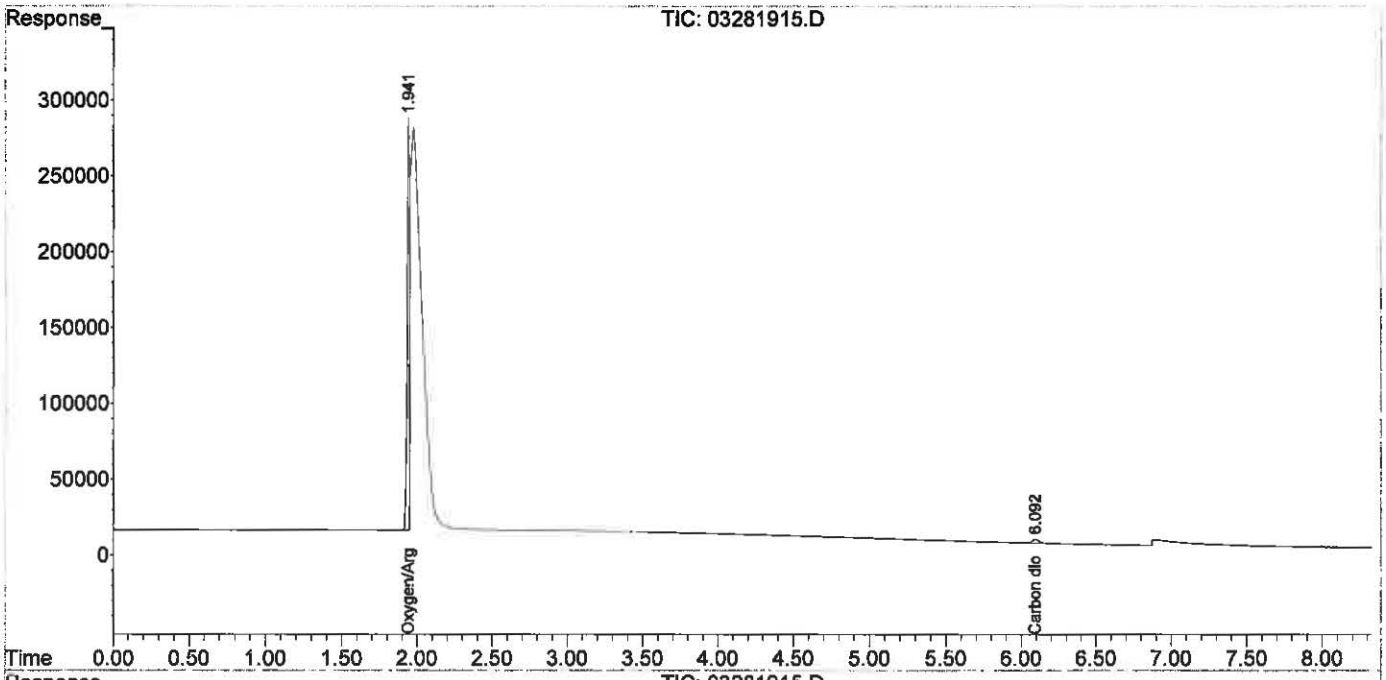
(f)=RT Delta > 1/2 Window (m)=manual int.

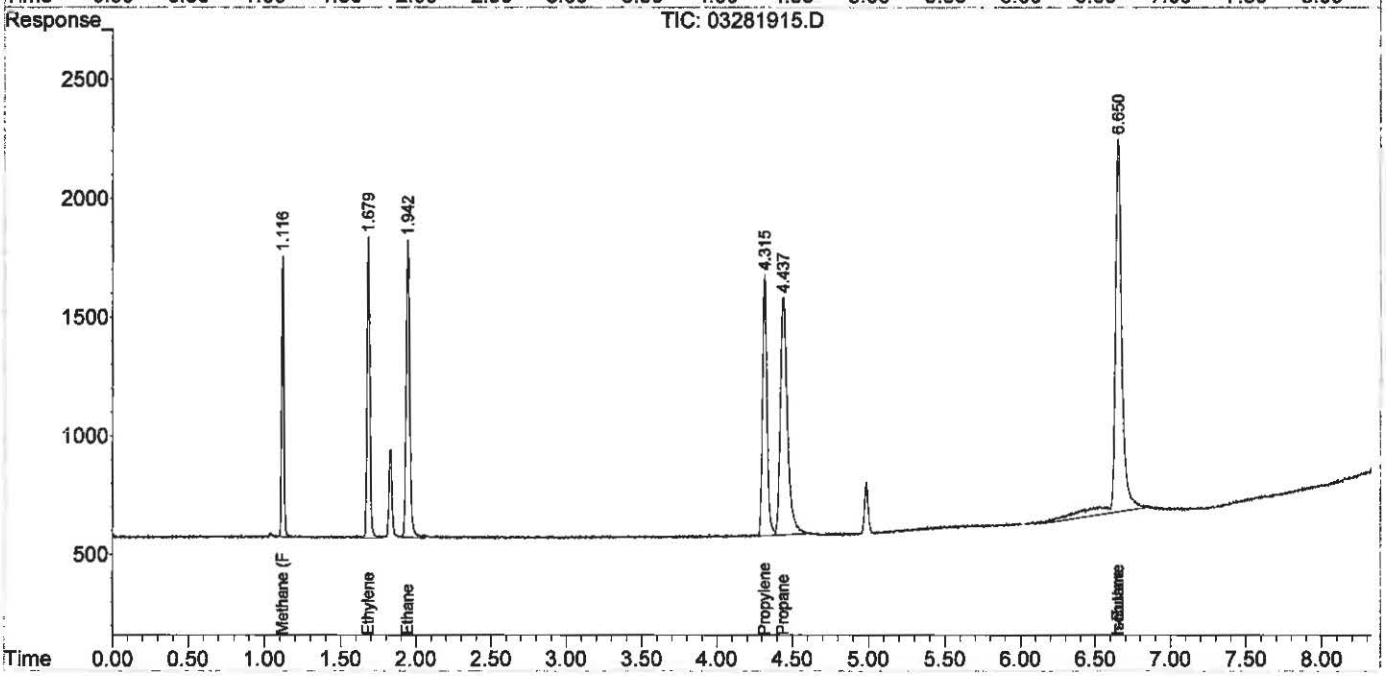
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 12:18:46
Operator : WH
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 13:29:28 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 12:30:50
Operator : WH
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 14:01:18 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

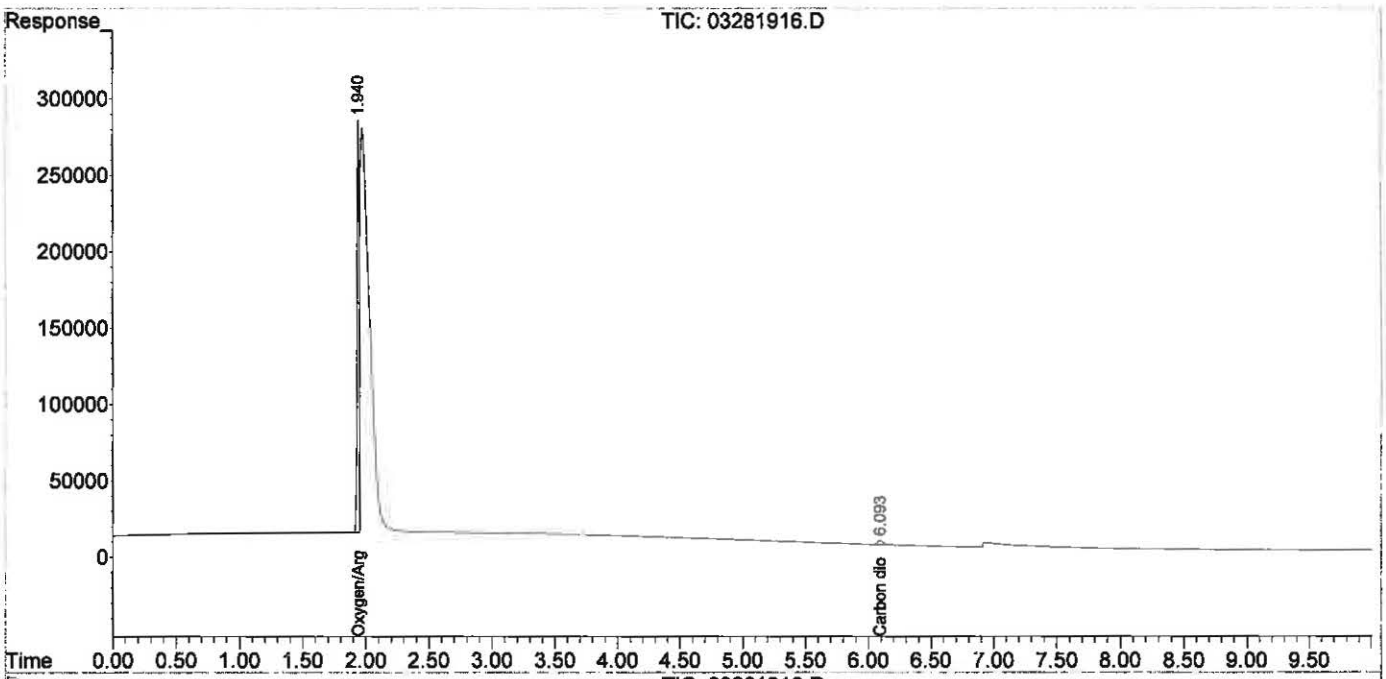
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.941f	2875150	3.627	ppm
2)	Carbon monoxide	1.941f	2875150	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.094f	82185	337.157	ppm
6)	Methane (FID)	1.115	12412	1.368	ppm
7)	Ethylene	1.678	16157	0.965	ppm
8)	Ethane	1.940	20590	1.215	ppm
9)	Propylene	4.315	22508	0.961	ppm
10)	Propane	4.437	32334	1.300	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.650	43045	1.617	ppm
13)	n-Butane	6.650	43045	1.617	ppm

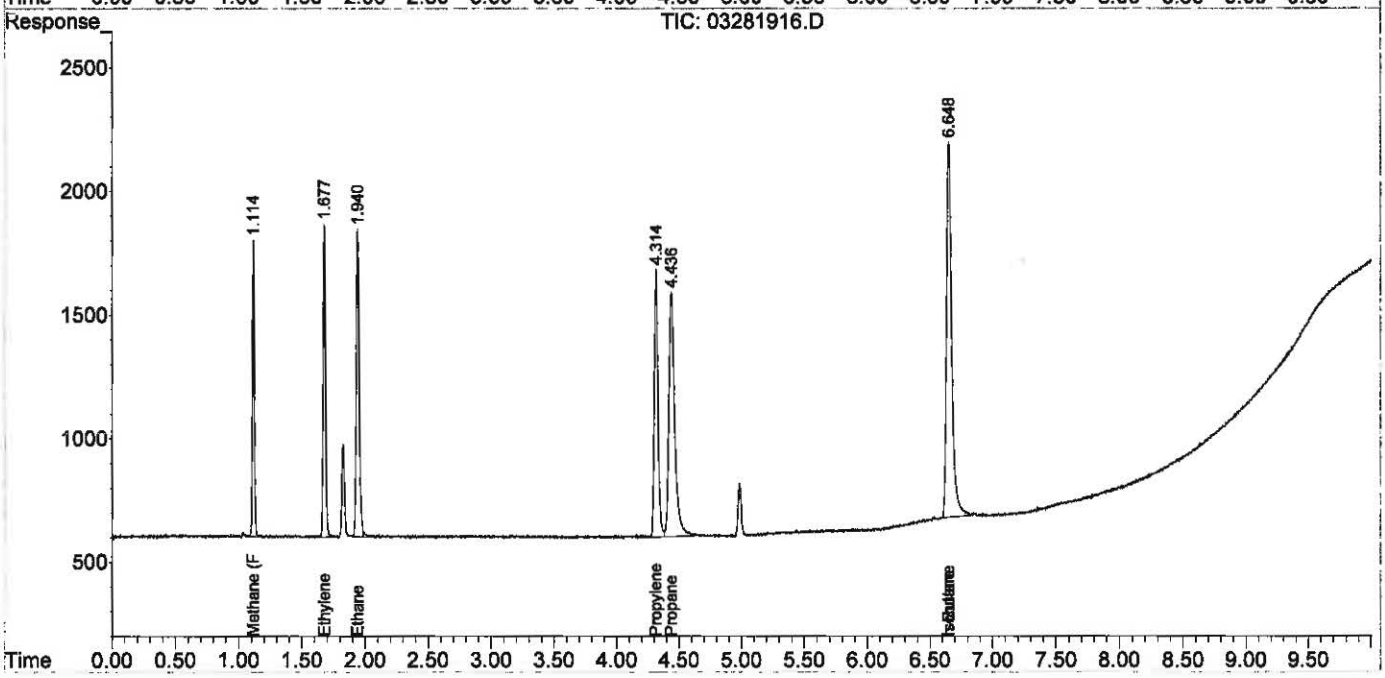
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 12:30:50
Operator : WH
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 14:01:18 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

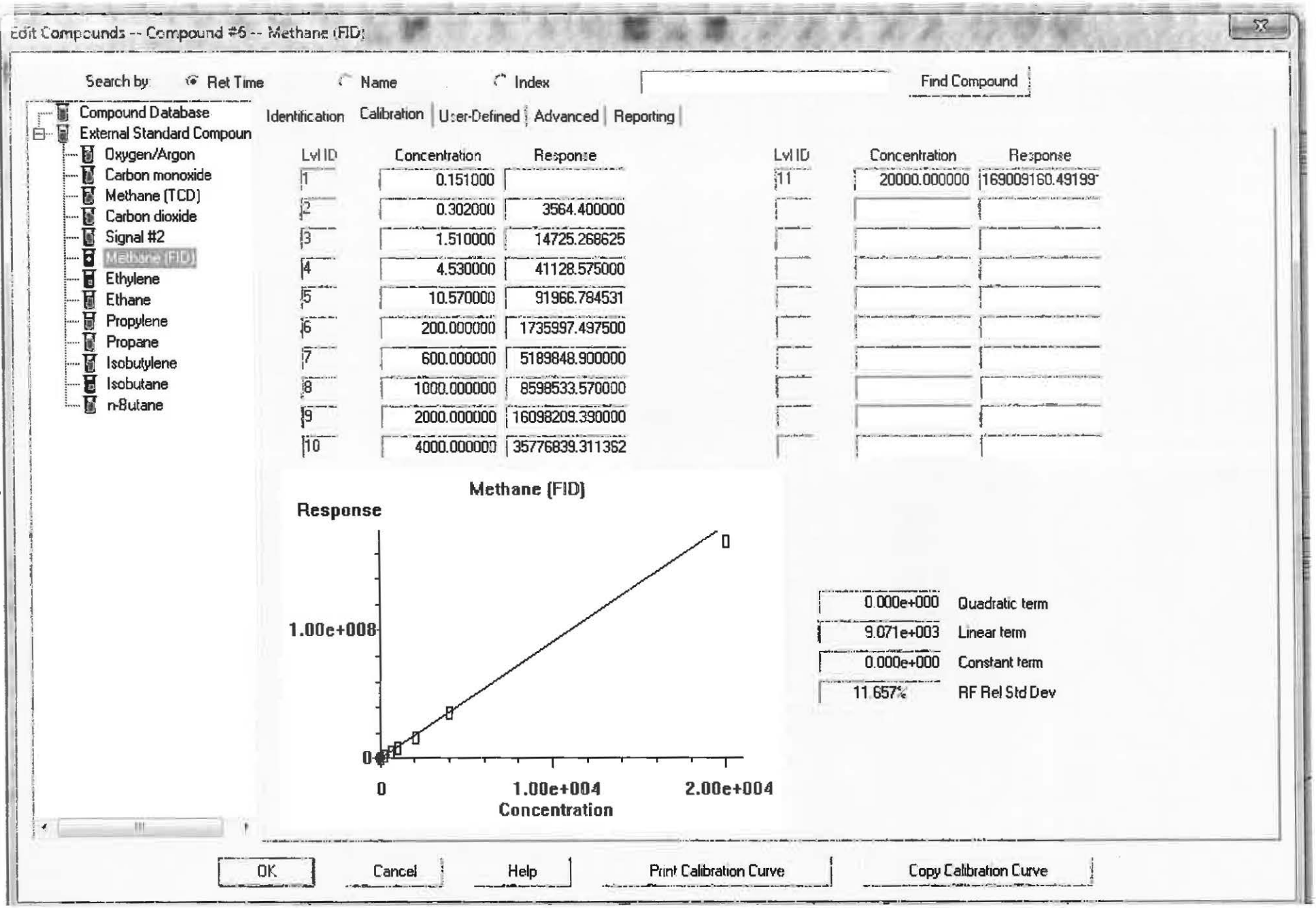
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017


Edit Compounds -- Compound #6 -- Methane (FID)
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compoun
Oxygen/Argon
Carbon monoxide
Methane (TCD)
Carbon dioxide
Signal #2
Methane (FID)
Ethylene
Ethane
Propylene
Propane
Isobutylene
Isobutane
n-Butane
Identification Calibration User-Defined Advanced Reporting
Lvl ID Concentration Response
1 0.151000
2 0.302000 3564.400000
3 1.510000 14725.268625
4 4.530000 41128.575000
5 10.570000 91966.784531
6 200.000000 1735997.497500
7 600.000000 5189848.900000
8 1000.000000 8598533.570000
9 2000.000000 16098209.390000
10 4000.000000 35776839.311362
Lvl ID Concentration Response
11 20000.000000 169009160.49199
Methane (FID)
Response
1.00e+008
0
0
1.00e+004
2.00e+004
Concentration
0.000e+000 Quadratic term
9.071e+003 Linear term
0.000e+000 Constant term
11.657% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

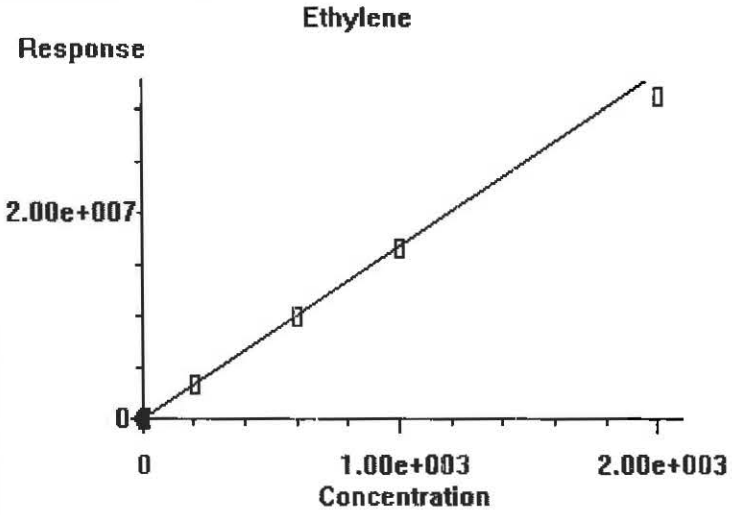
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

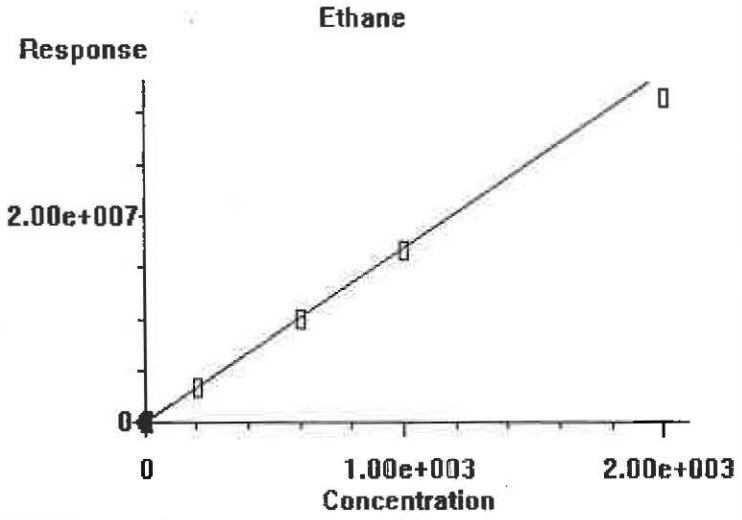
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

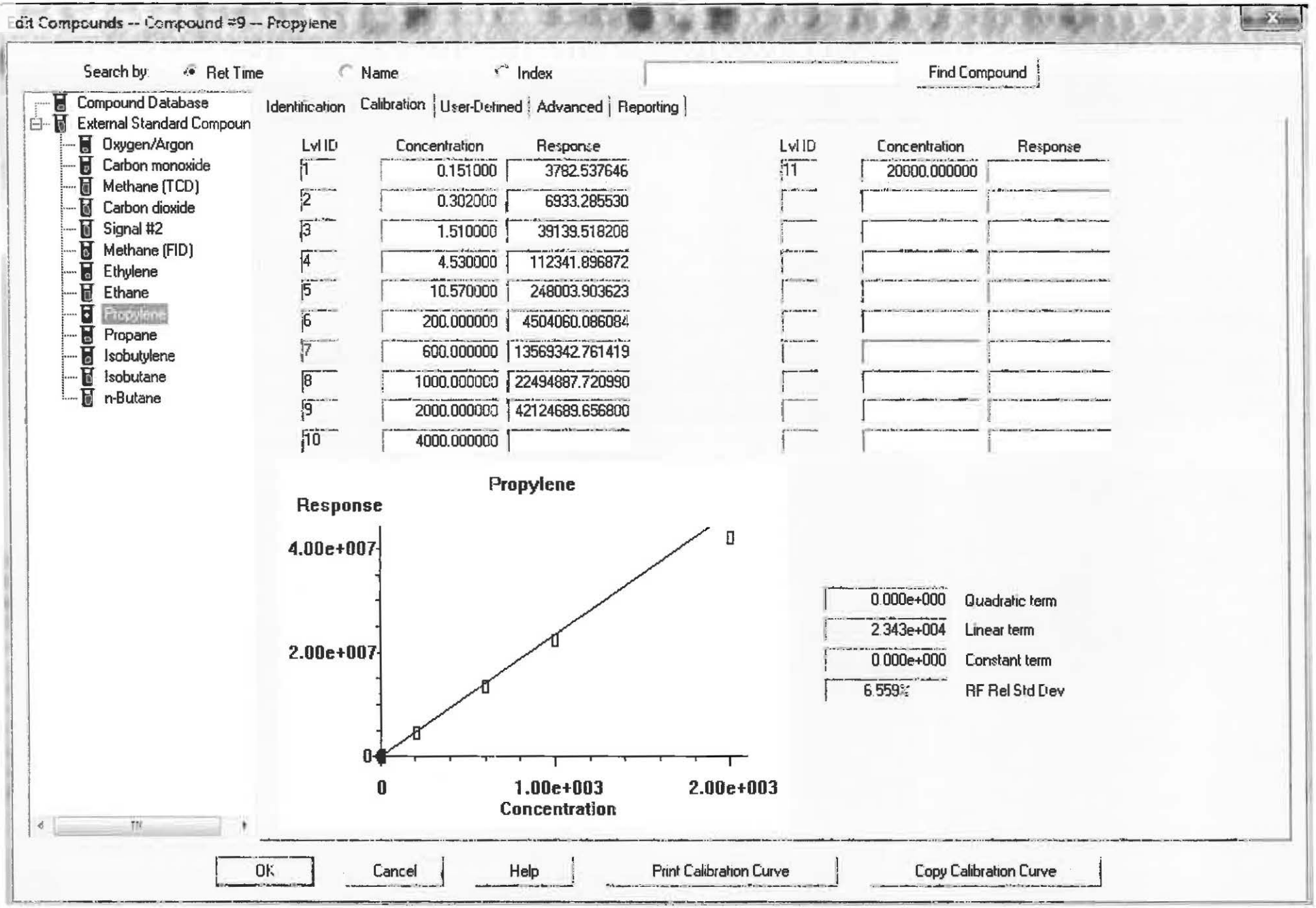
Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve


Edit Compounds -- Compound #9 -- Propylene
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compoun
Oxygen/Argon
Carbon monoxide
Methane (TCD)
Carbon dioxide
Signal #2
Methane (FID)
Ethylene
Ethane
Propylene
Propane
Isobutylene
Isobutane
n-Butane
Identification Calibration User-Defined Advanced Reporting
Lvl ID Concentration Response
1 0.151000 3782.537646
2 0.302000 6933.285530
3 1.510000 39139.518208
4 4.530000 112341.896872
5 10.570000 248003.903623
6 200.000000 4504060.086084
7 600.000000 13569342.761419
8 1000.000000 22494887.720990
9 2000.000000 42124689.656800
10 4000.000000
11 20000.000000
Propylene
Response
4.00e+007
2.00e+007
0
0
1.00e+003
2.00e+003
Concentration
0.000e+000 Quadratic term
2.343e+004 Linear term
0.000e+000 Constant term
6.559% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

00948476

Edit Compounds -- Compound #10 -- Propane

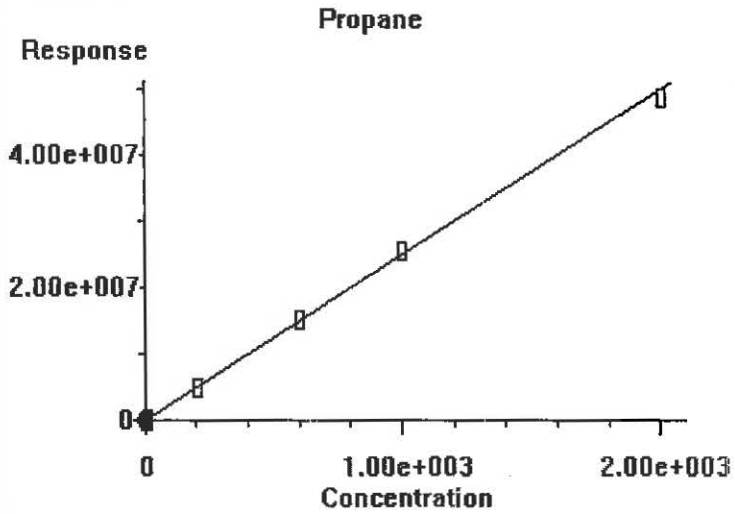
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00948477

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

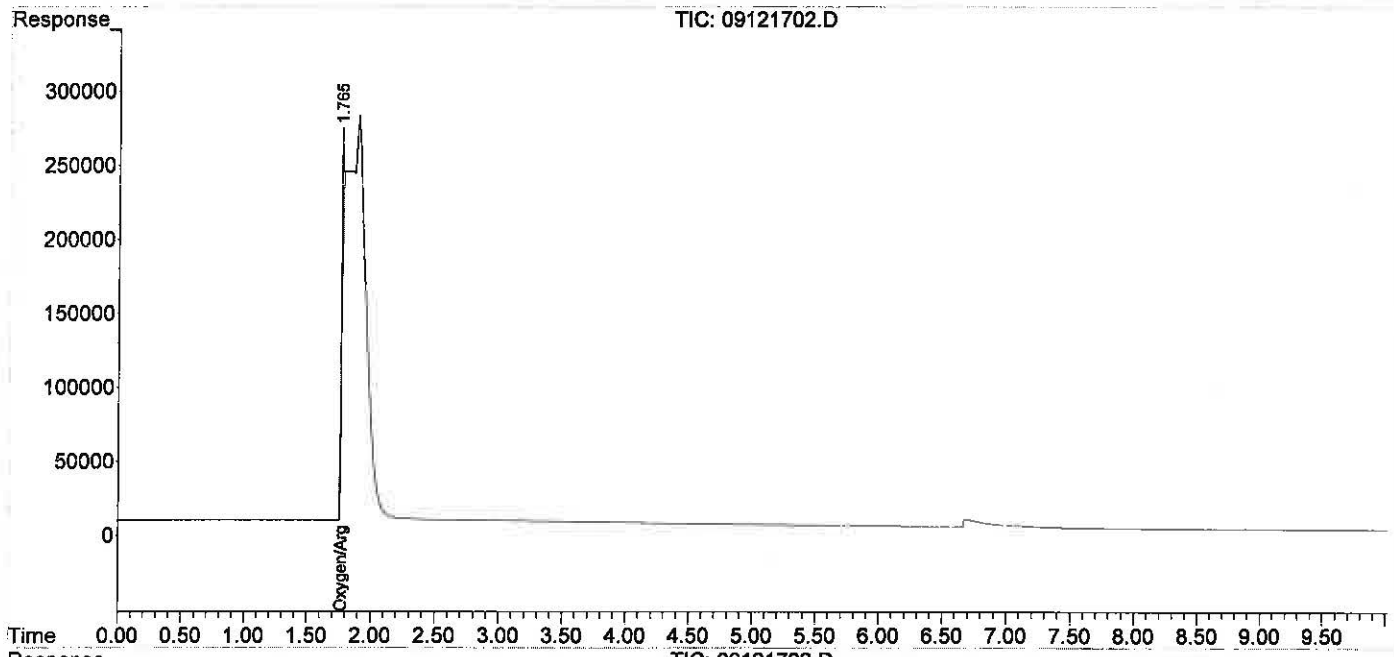
(f)=RT Delta > 1/2 Window (m)=manual int.

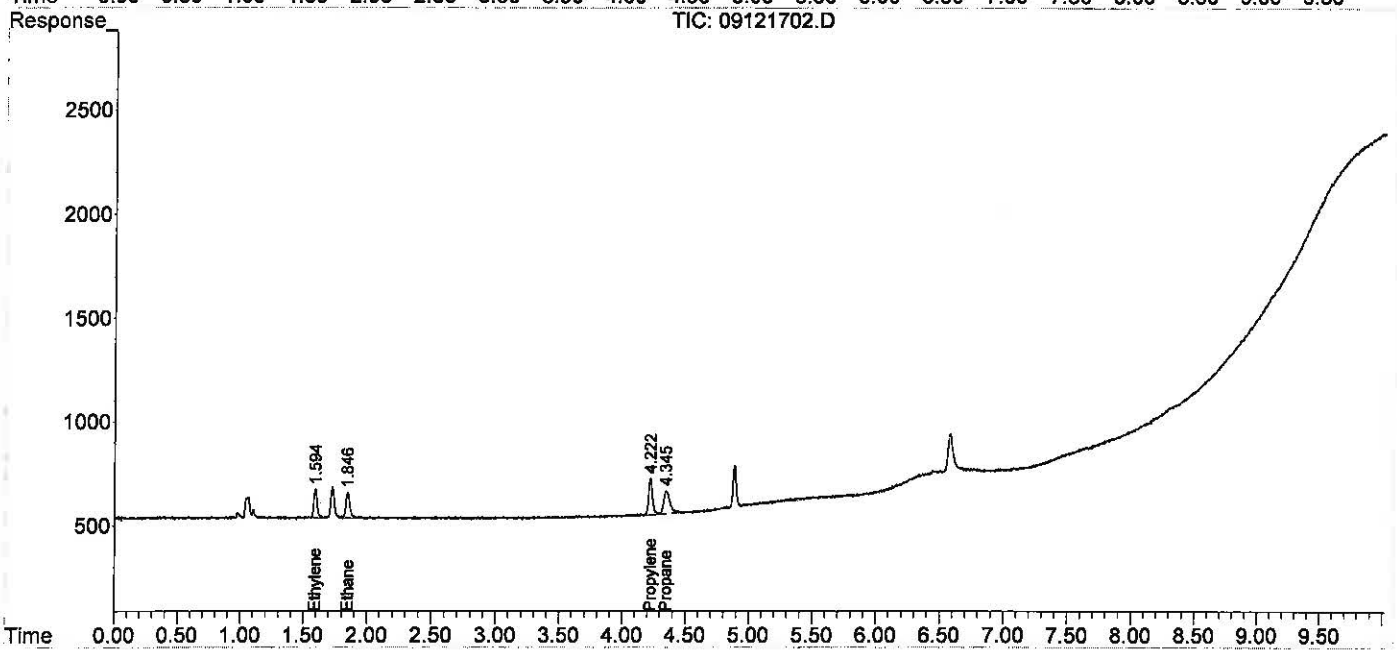
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

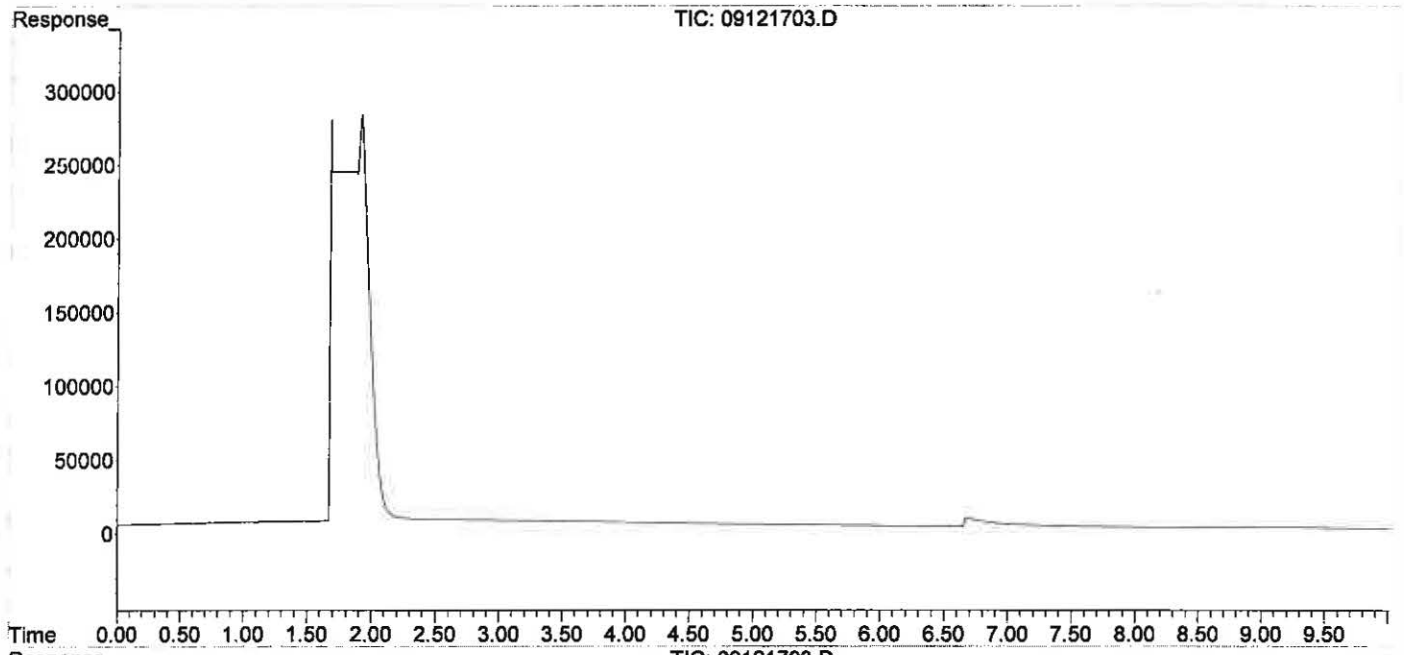
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

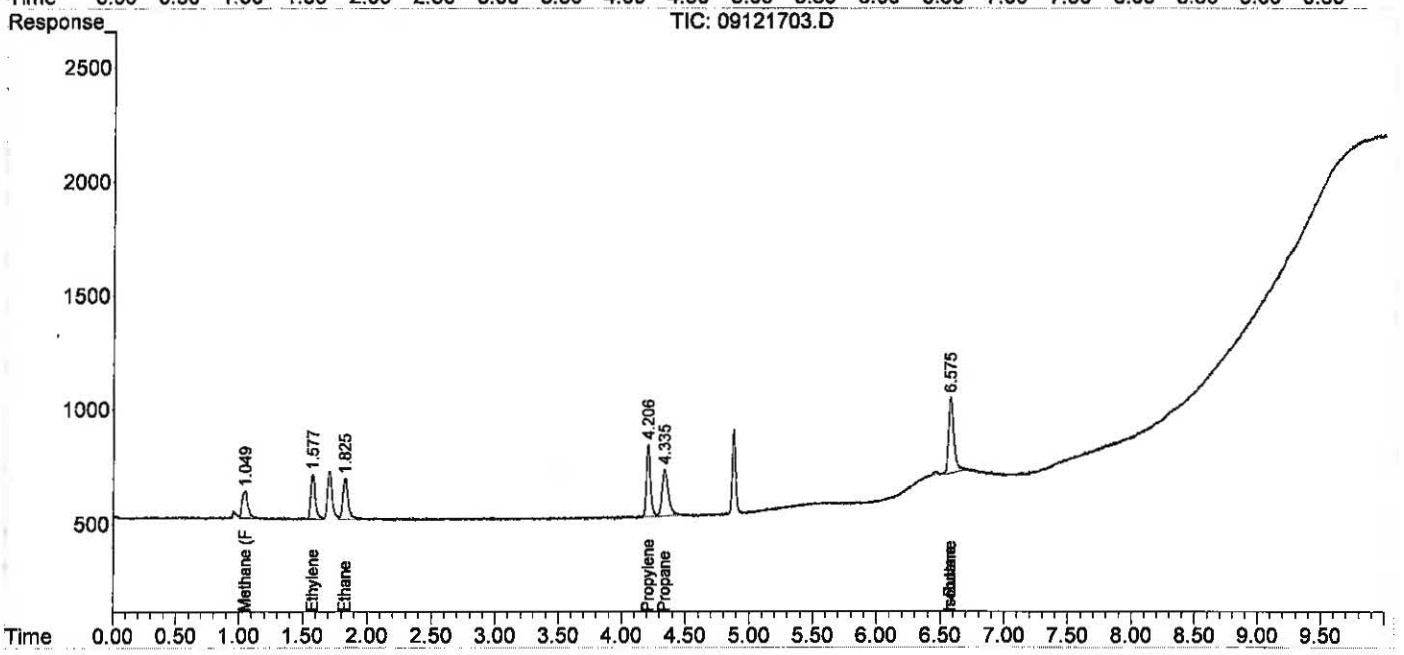
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

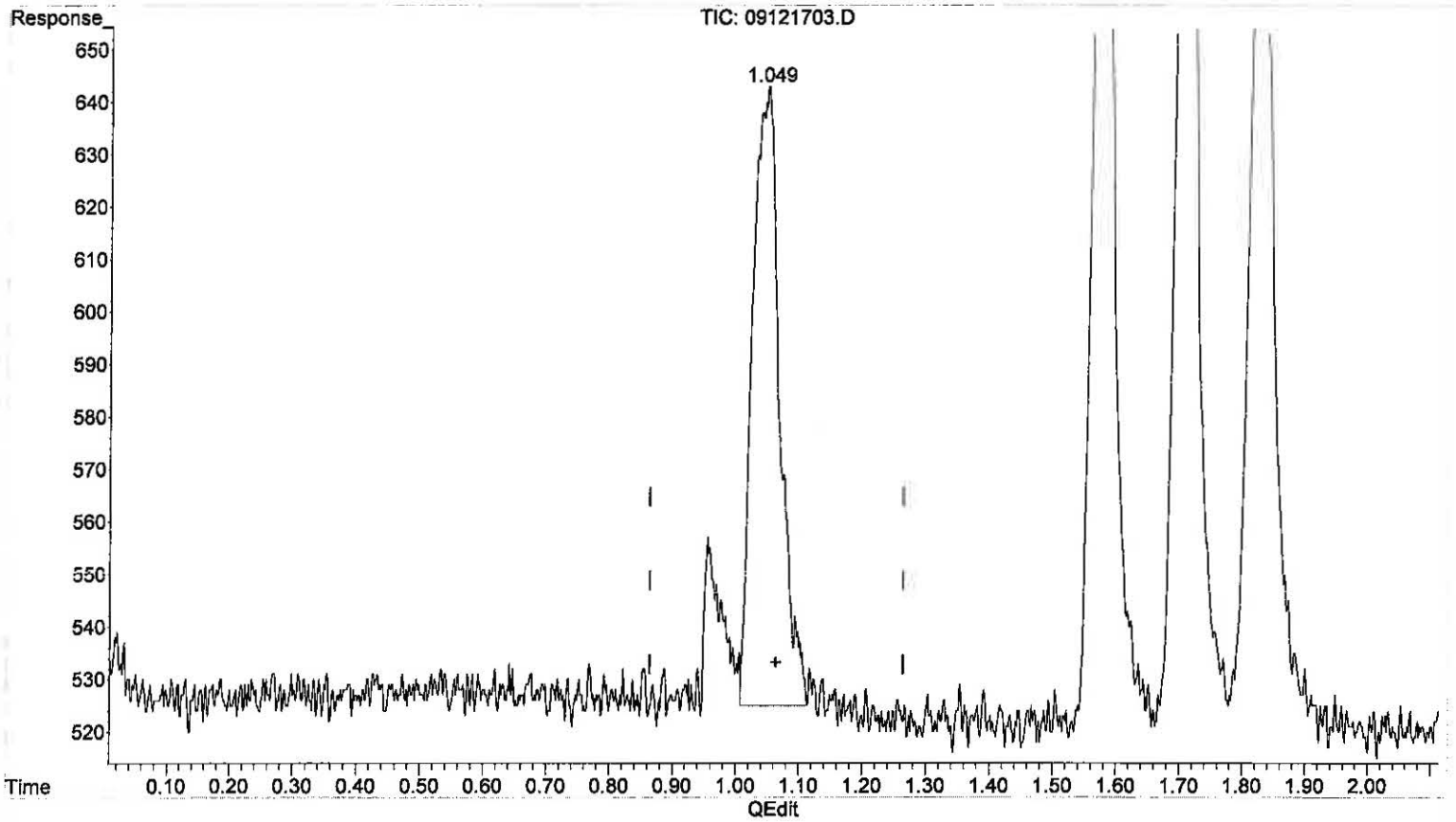




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

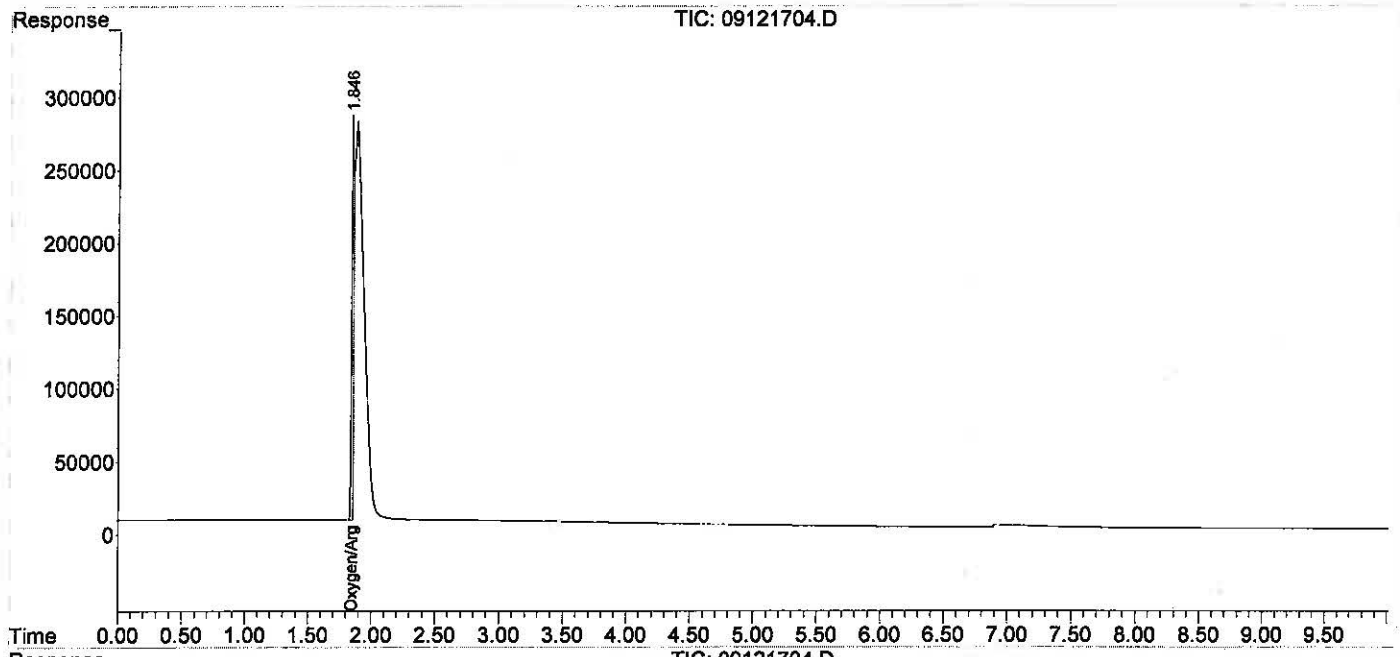
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.847	2536230	1.056 ppm
2)	Carbon monoxide	1.847	2536230	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	0.000	0	N.D. ppm
6)	Methane (FID)	1.064	14725	1.613 ppm
7)	Ethylene	1.598	26885	1.582 ppm
8)	Ethane	1.851	26944	1.555 ppm
9)	Propylene	4.220	39140	1.589 ppm
10)	Propane	4.349	39934	1.596 ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	6.578f	55348	1.020 ppm
13)	n-Butane	6.578f	55348	1.020 ppm

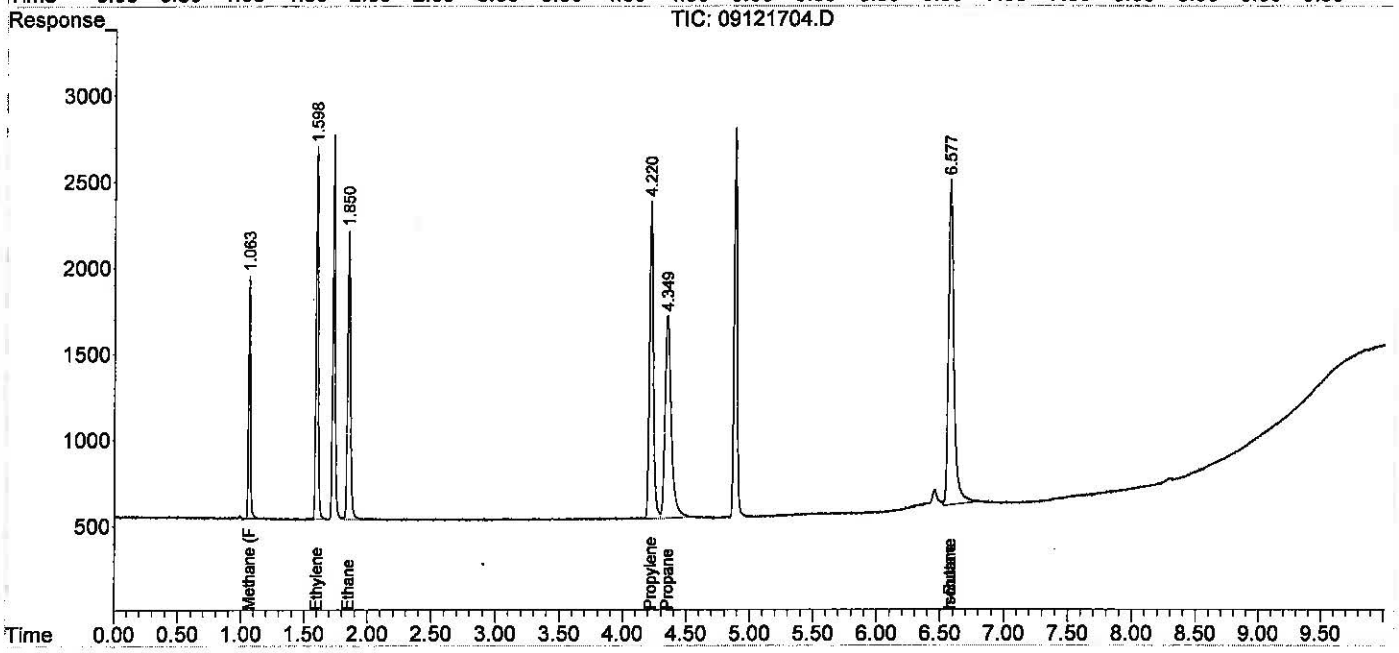
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

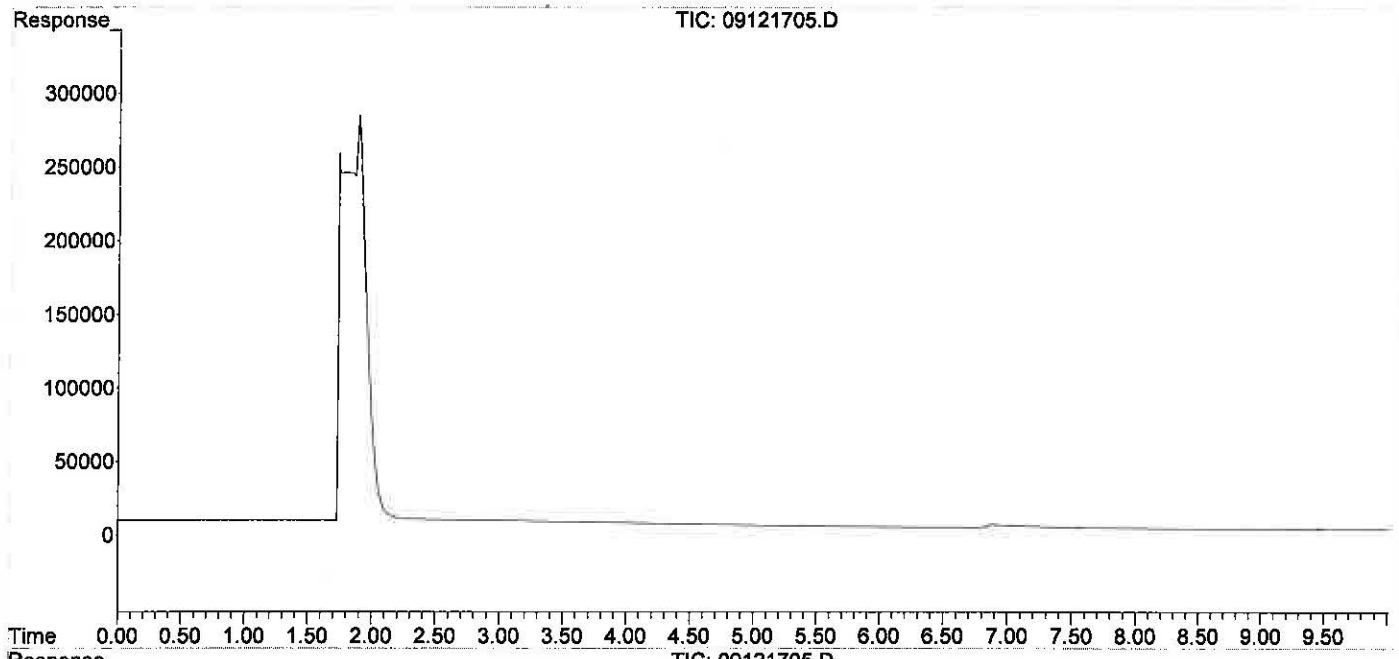
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

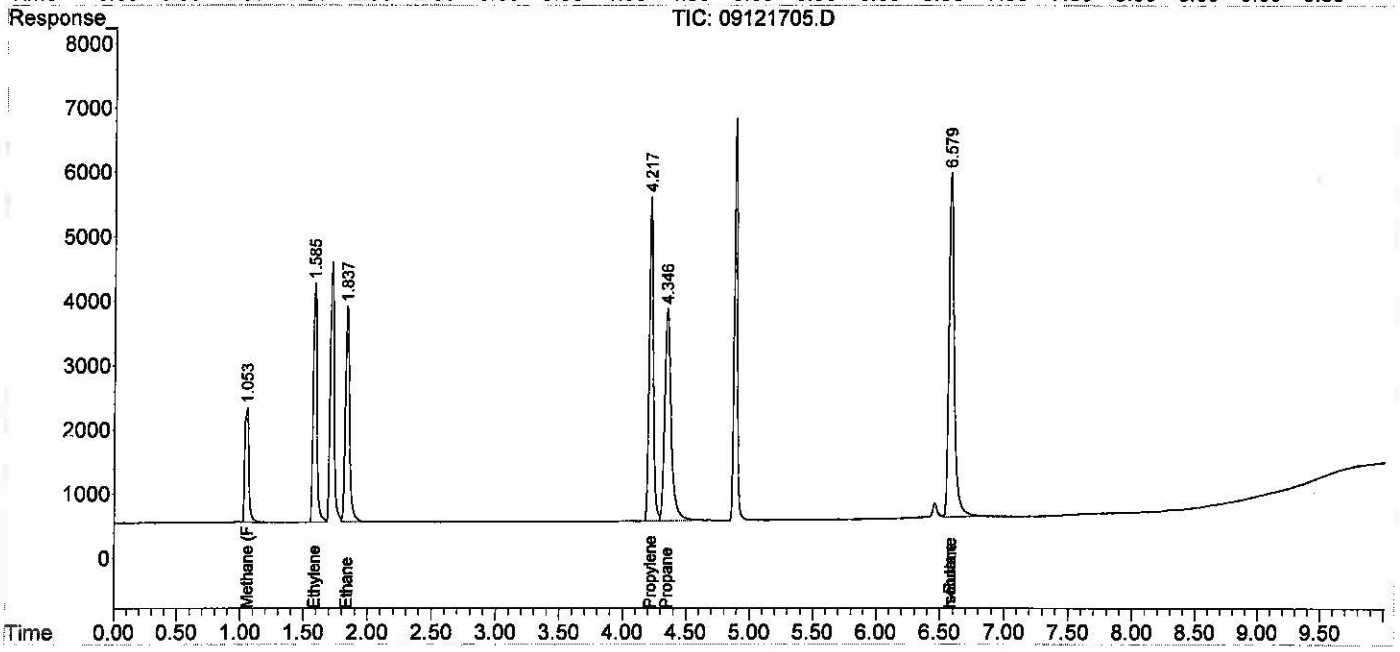
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

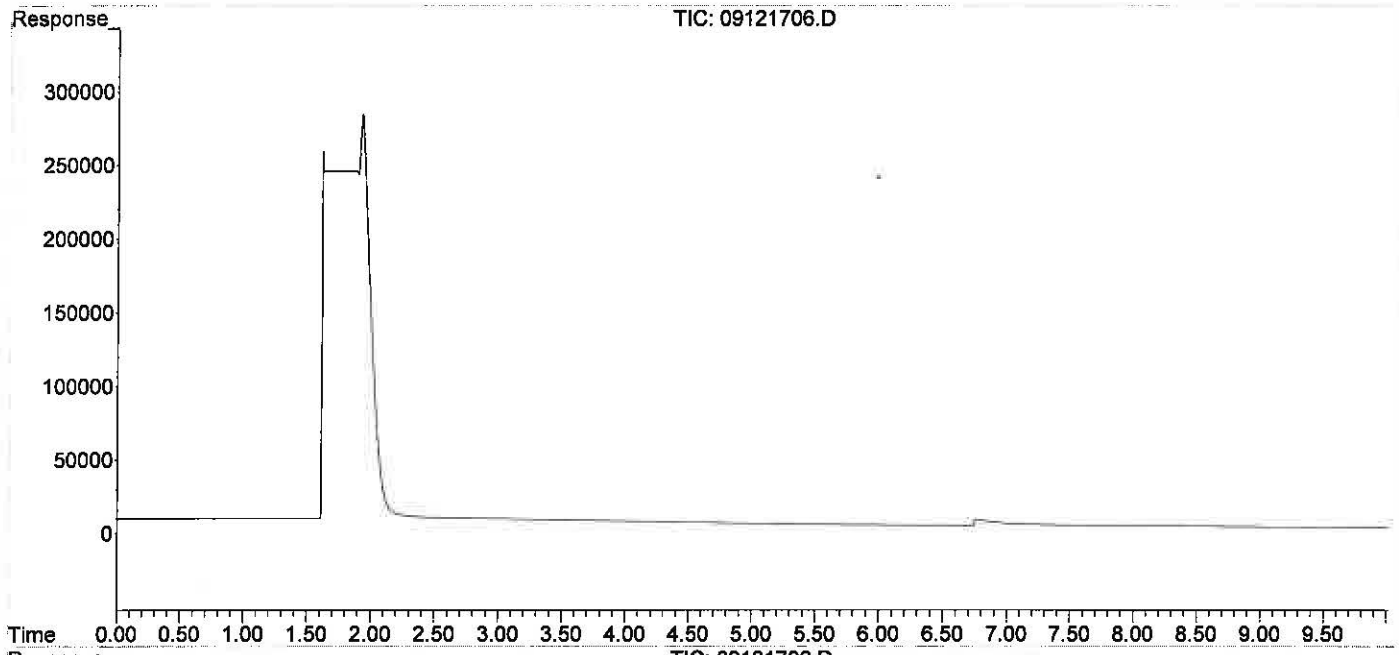
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

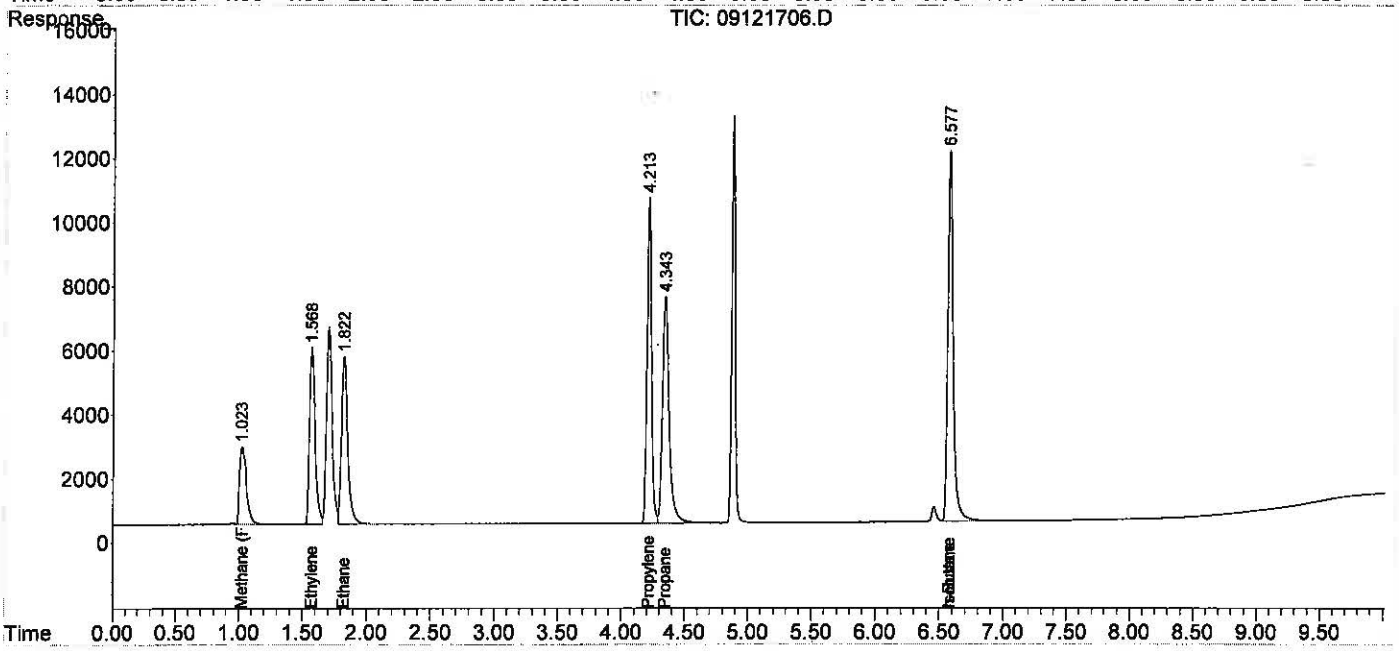
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

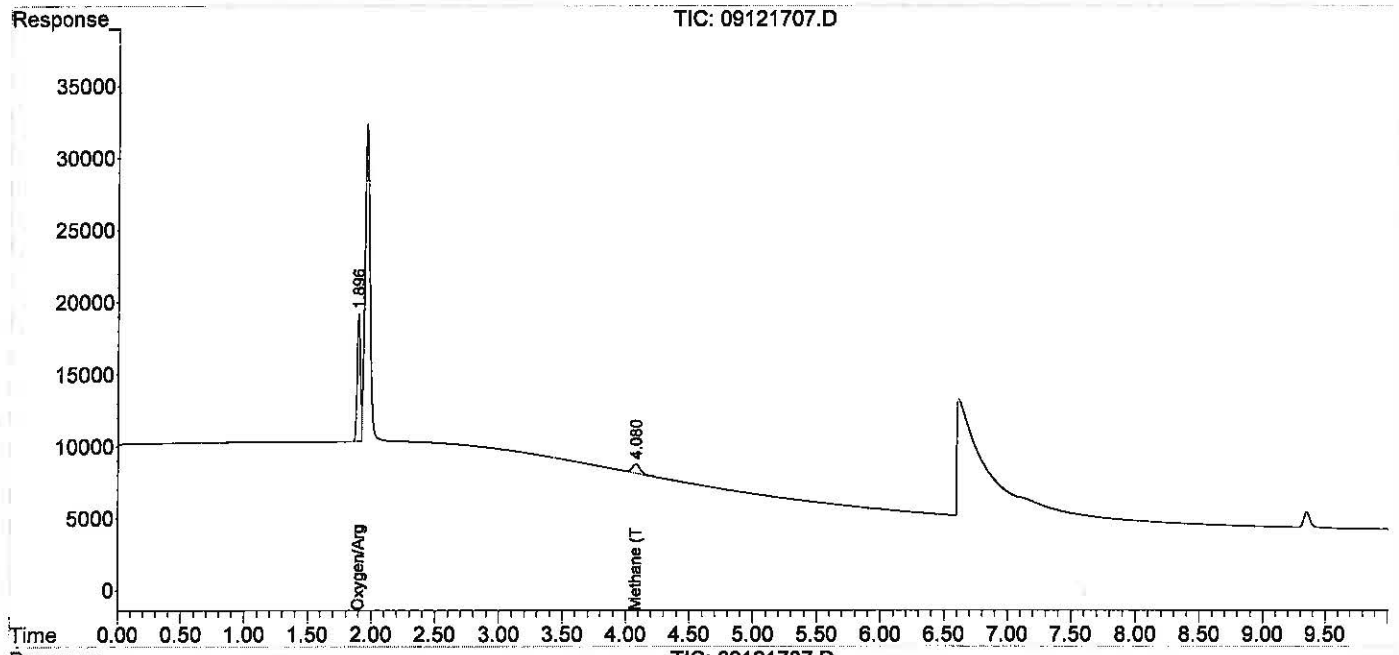
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

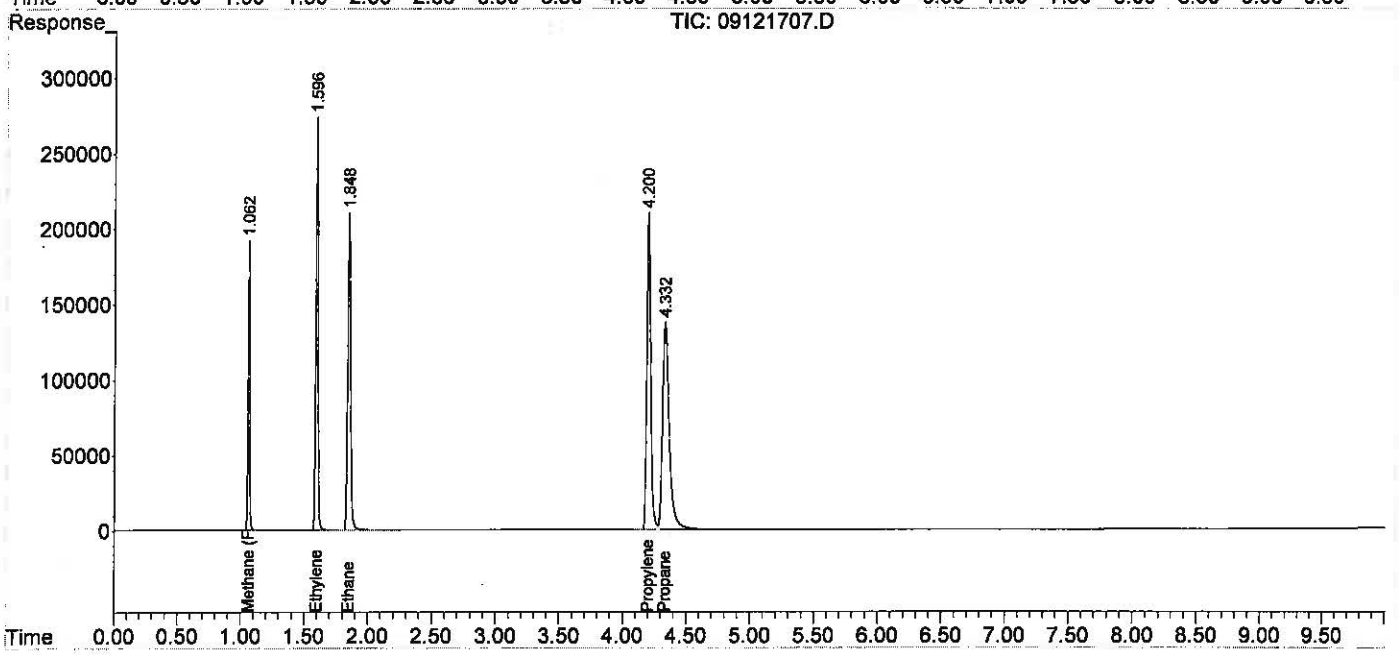
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

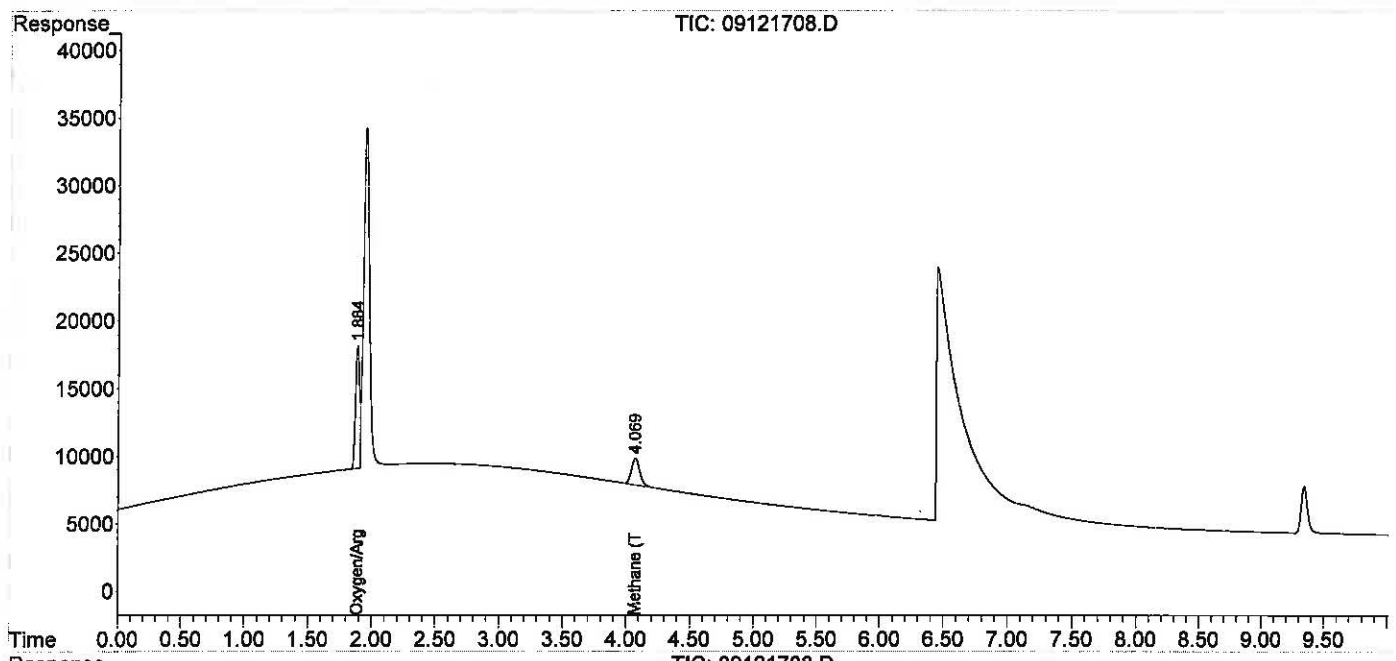
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

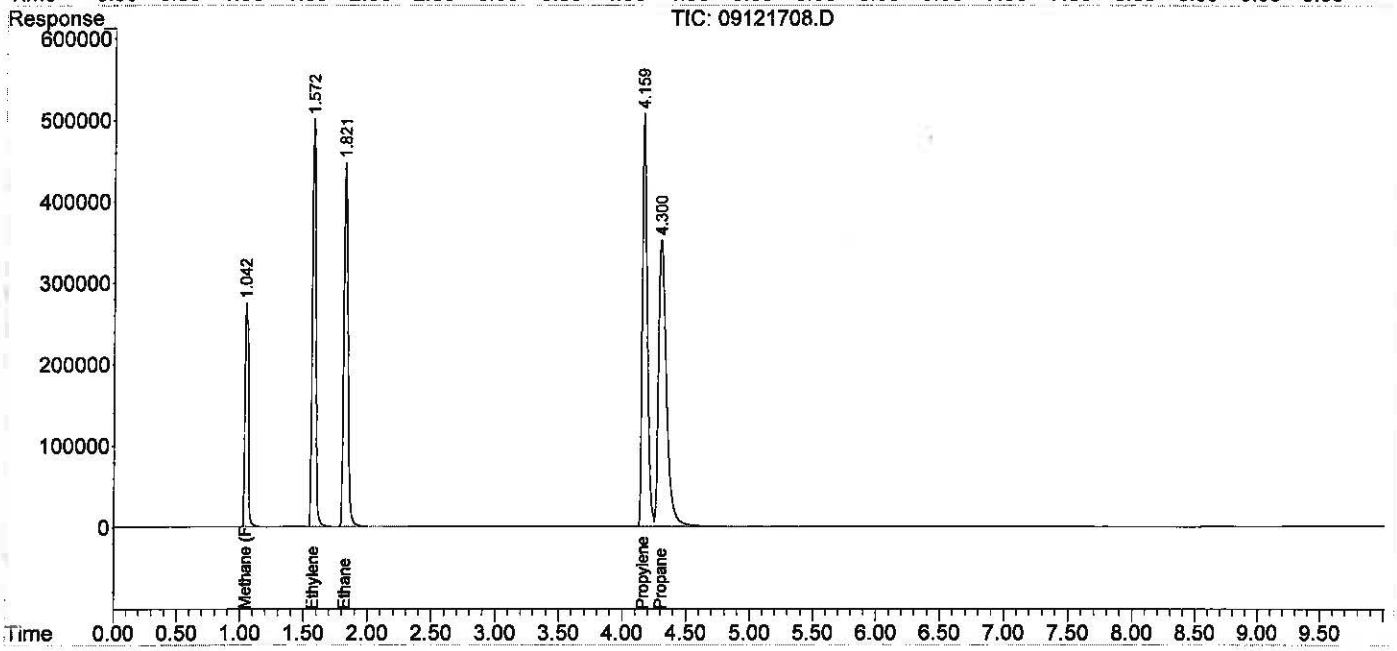
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

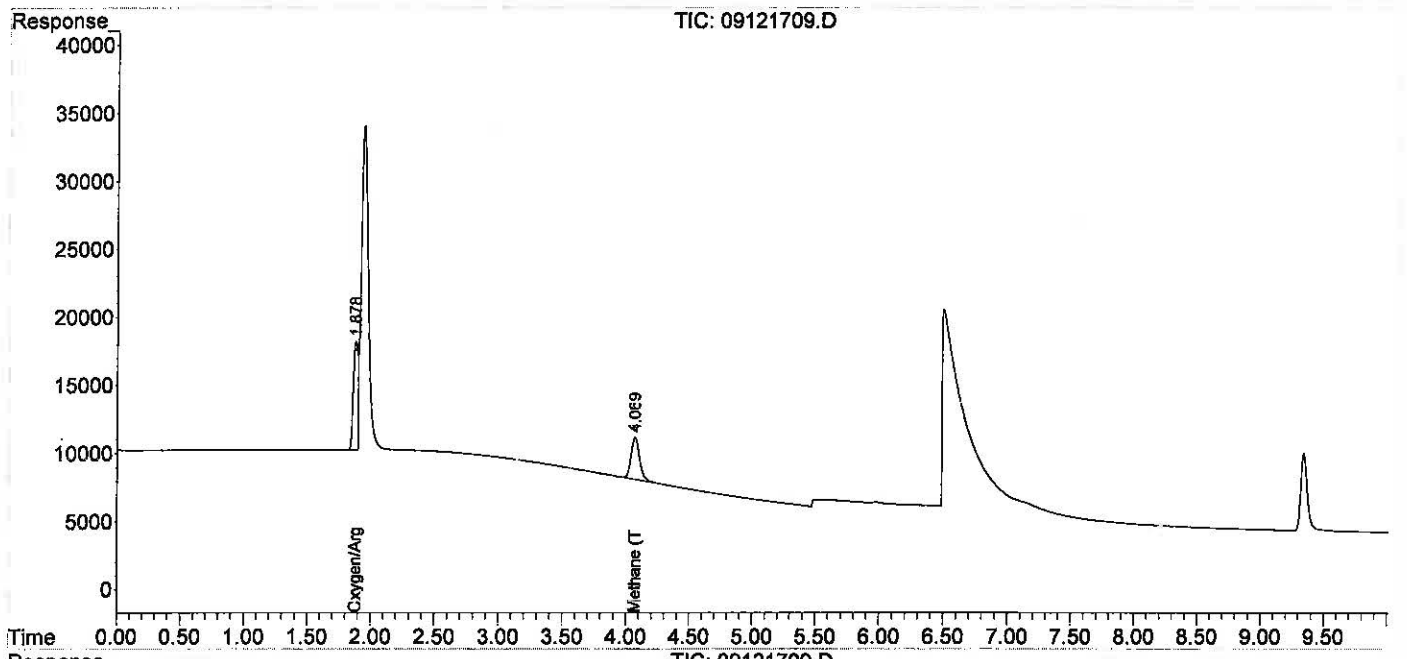
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

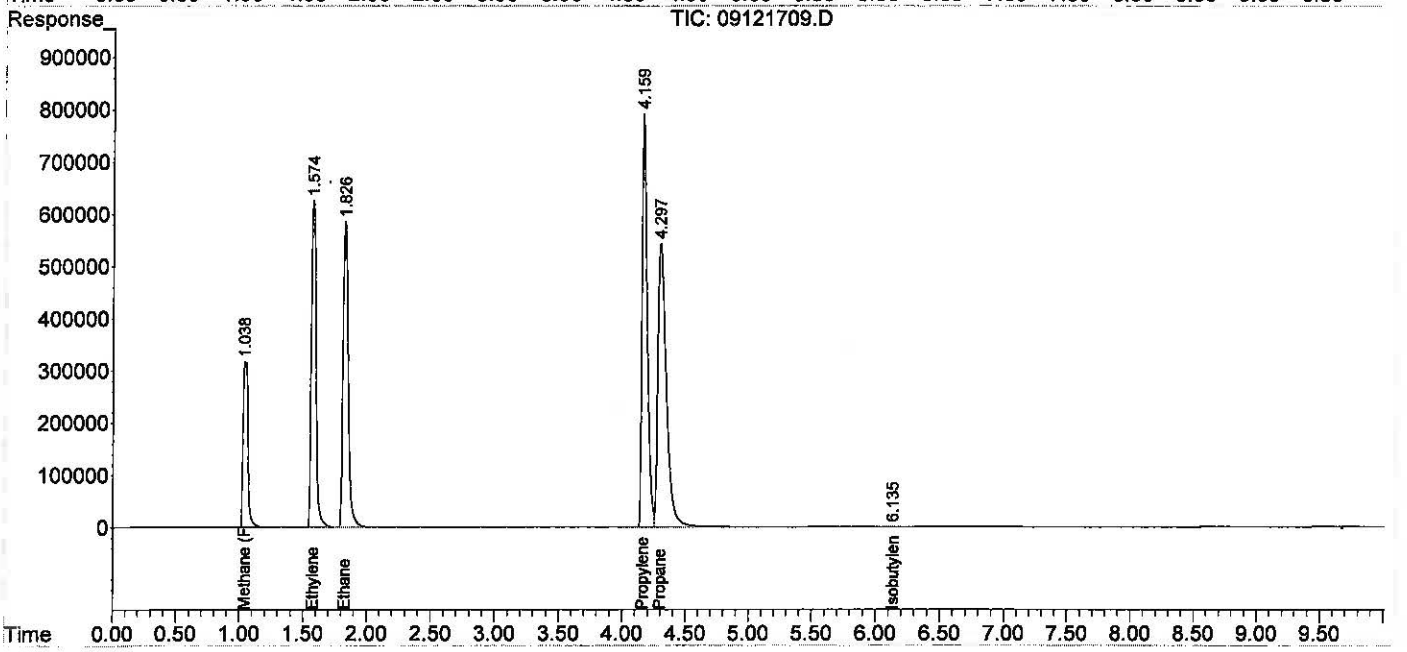
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

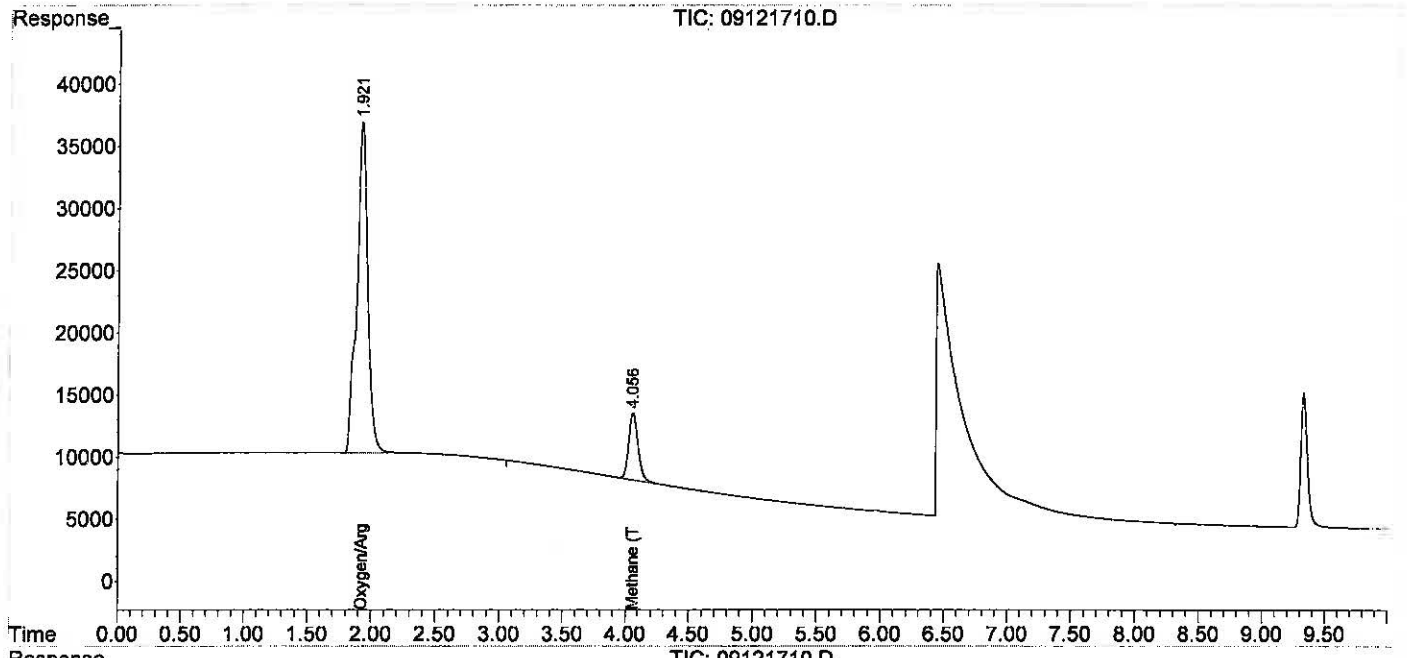
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

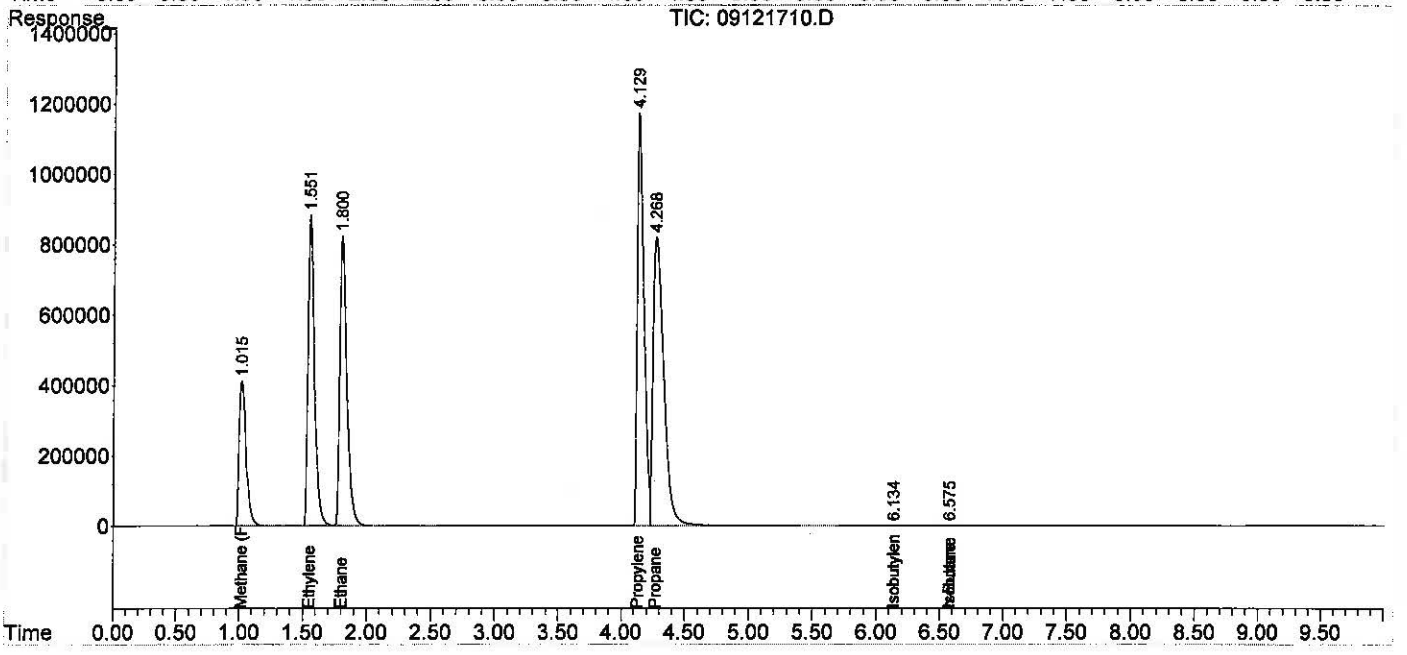
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



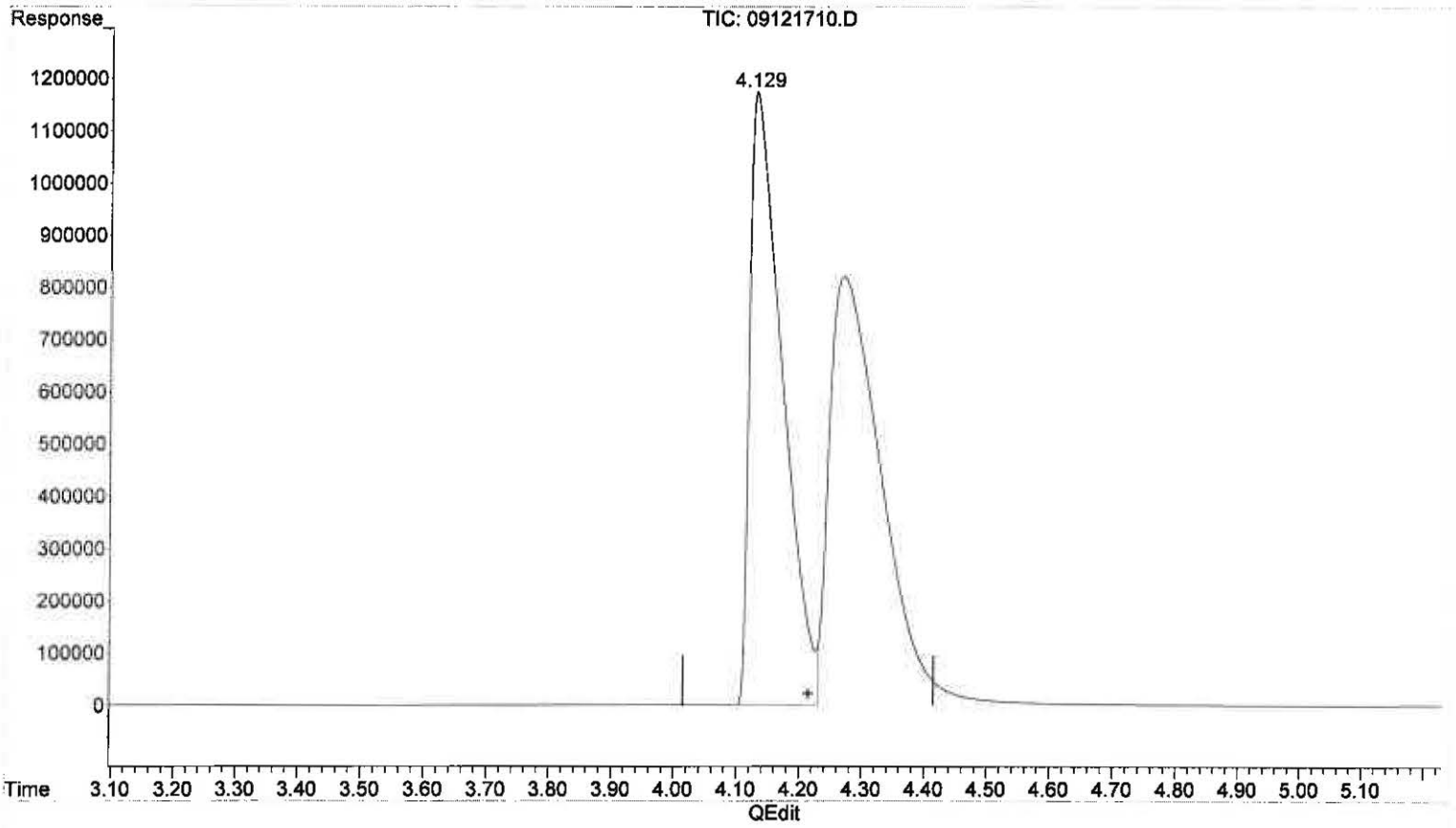


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

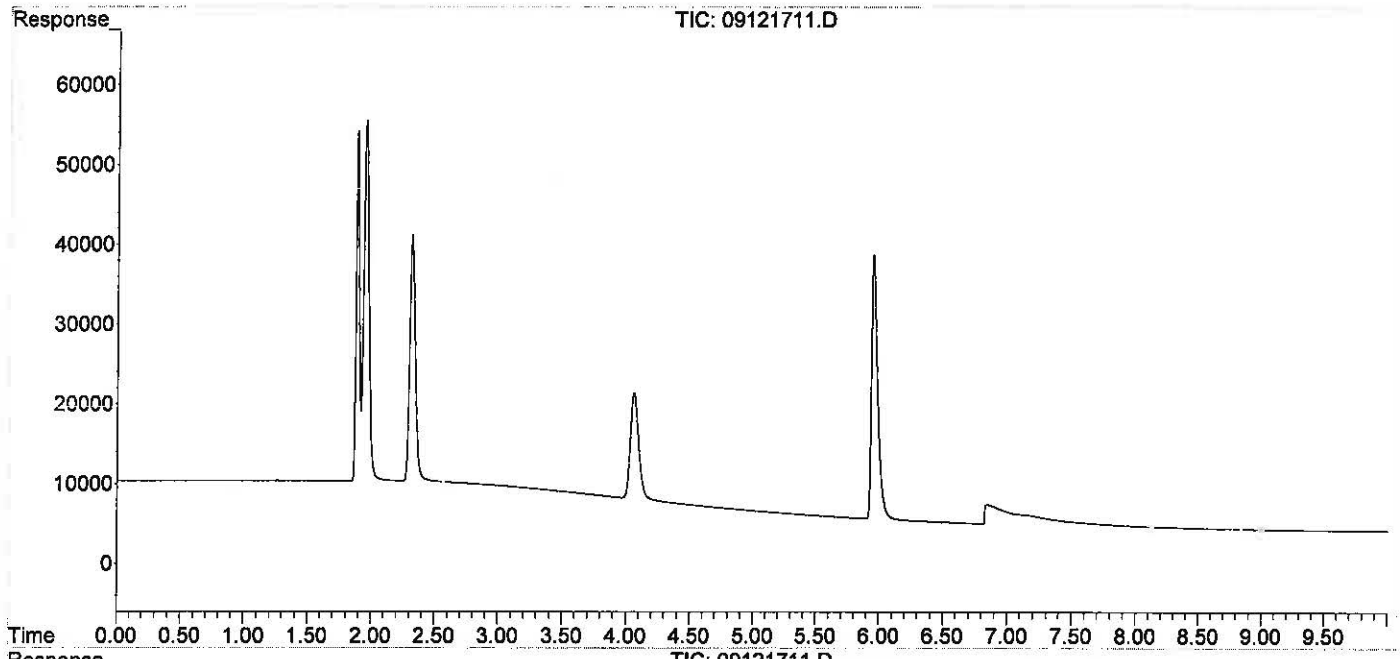
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

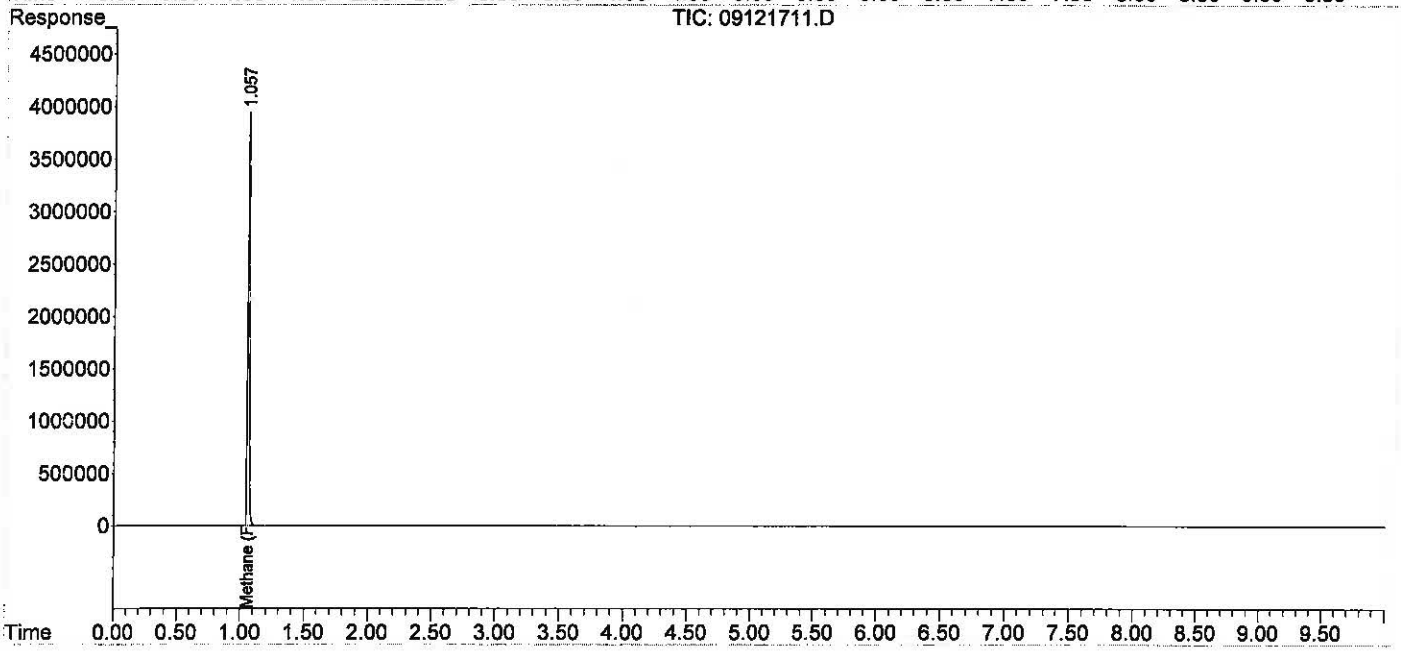
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

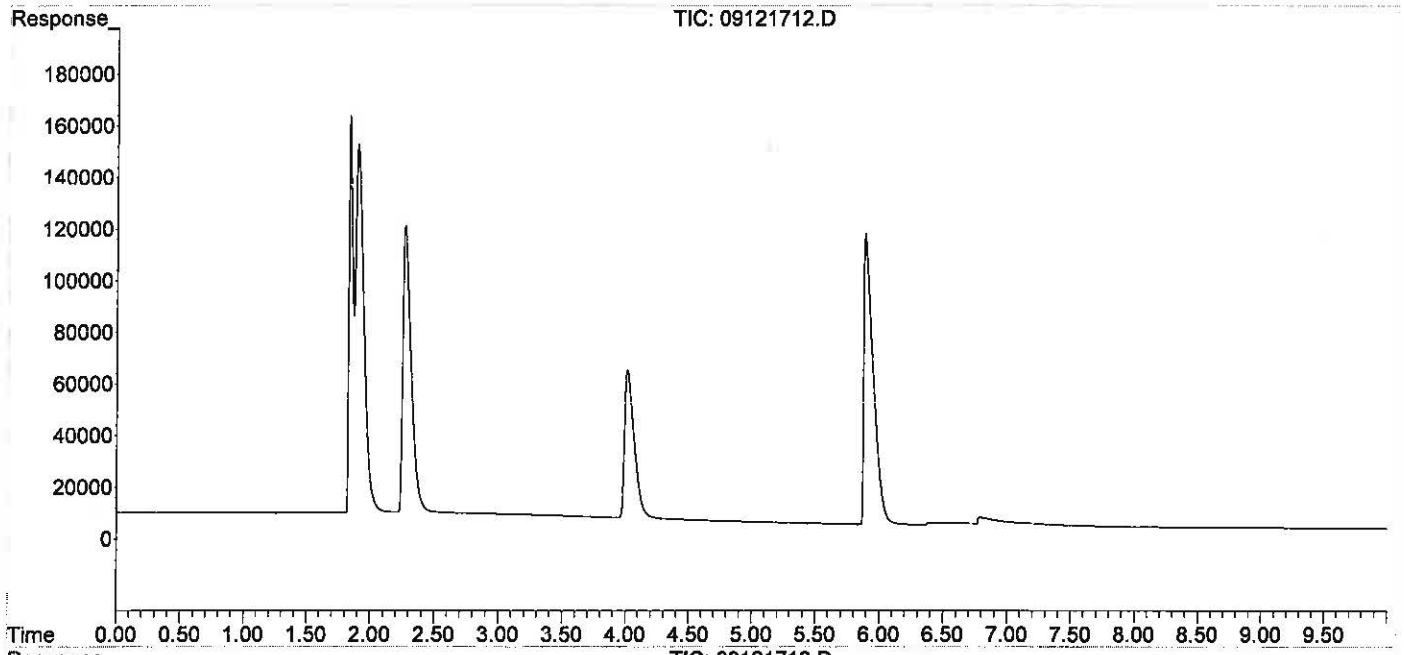
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

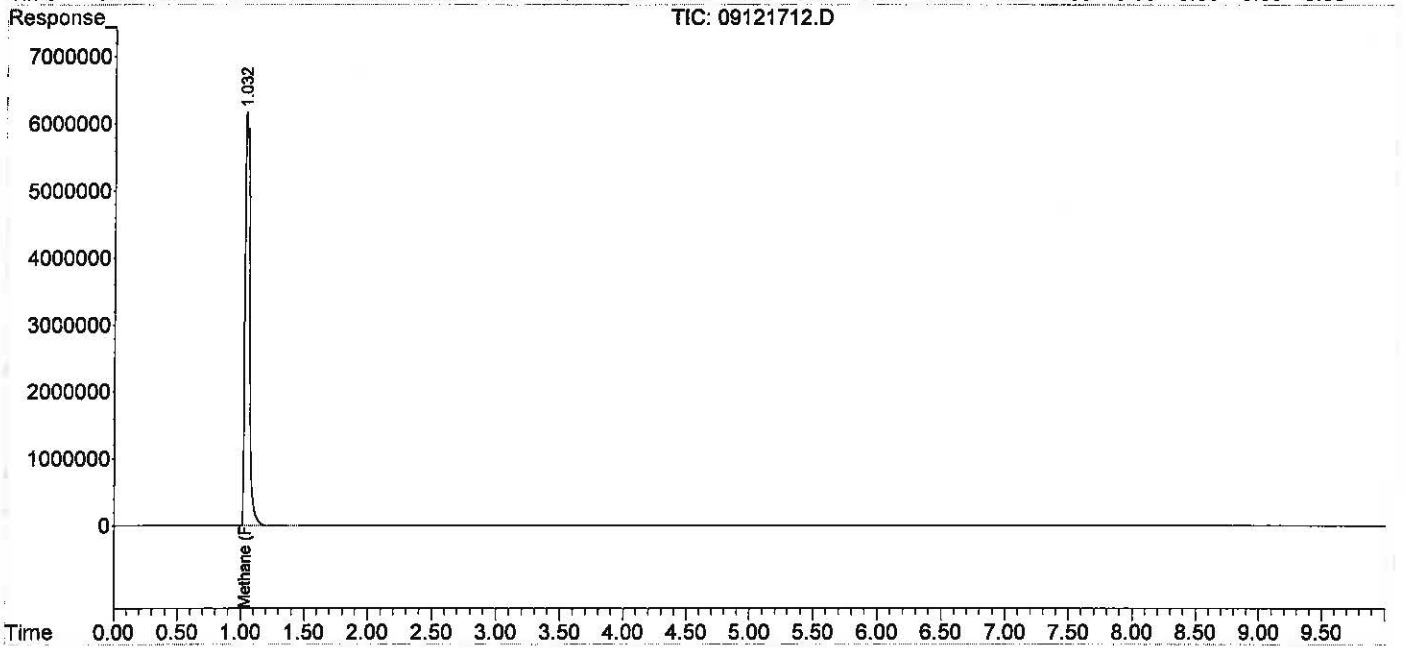
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%D	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1510~~	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1490~~	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1490~~	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	~~1511~~	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2		
13)	n-Butane	6.579f	48019	1.804	ppm			

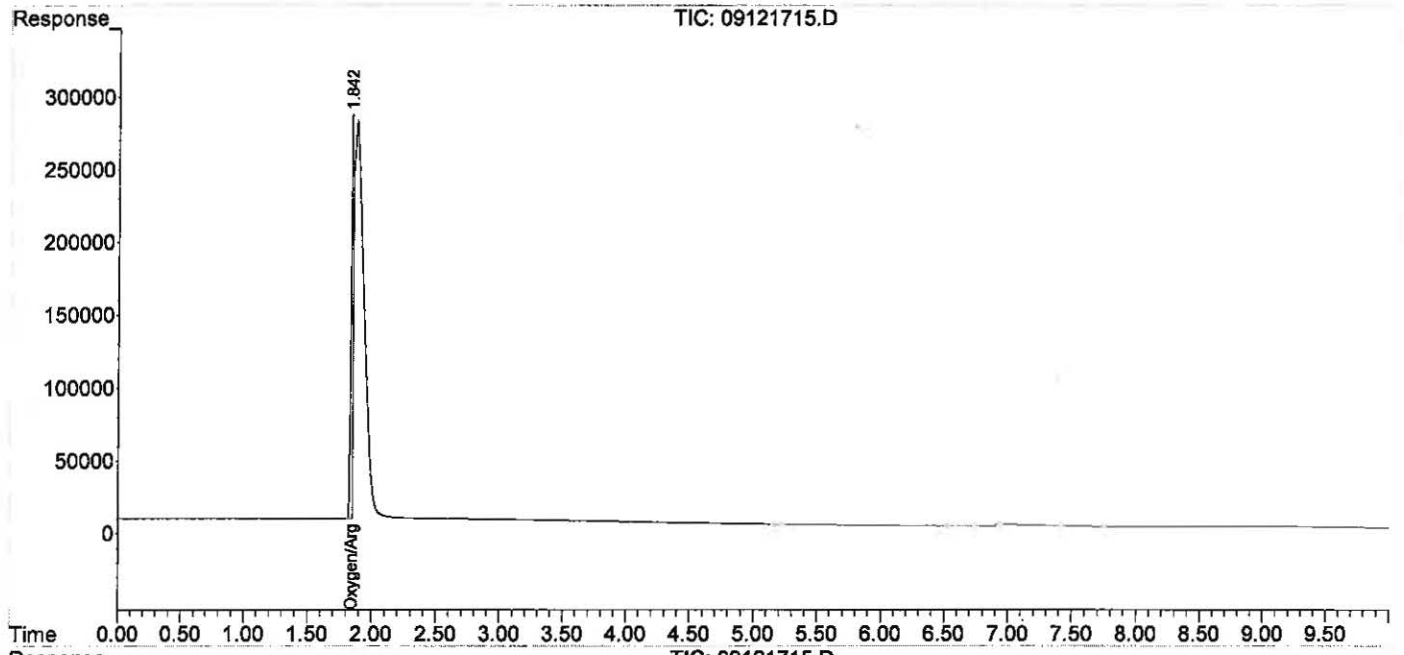
(f)=RT Delta > 1/2 Window (m)=manual int.

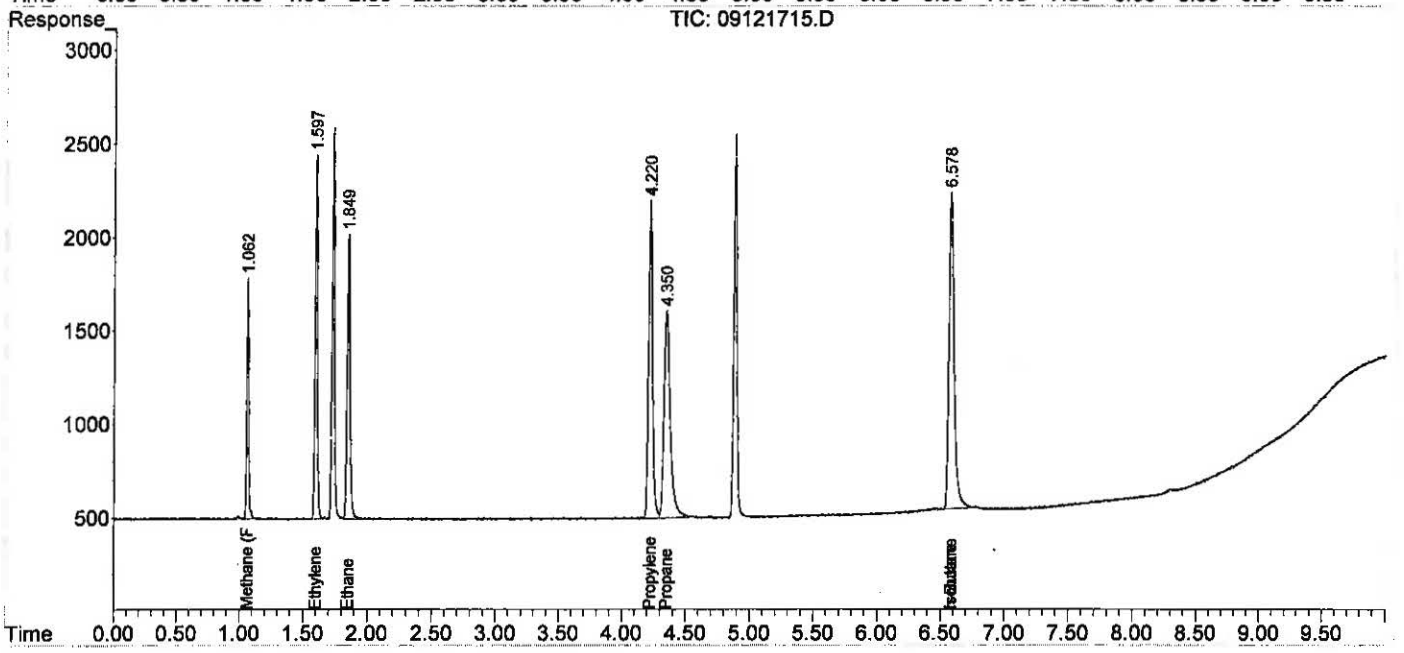
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1901501
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 03/28/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.549	1.567	1.509
ACTUAL		1.51	1.51	1.51
%Difference		2.6%	3.8%	0.1%
mcs 0.1ml	0.100	0.118	0.000	0.000
rb 0.1ml	0.100	0.000	0.000	0.000
fid lcs s30-05241604	0.100	1.369	0.986	1.230
fid lcsd s30-05241604	0.100	1.368	0.965	1.215
P1901501-001 0.1ml	0.100	237.172	0.000	0.000
P1901501-002 0.1ml	0.100	4.086	0.000	0.000
P1901501-003 0.1ml	0.100	0.676	0.000	0.000
P1901501-004 0.1ml	0.100	139.468	5.642	0.137
P1901501-005 0.1ml	0.100	1652.59	0.000	0.000
P1901501-006 0.1ml	0.100	1530.32	0.000	0.000
P1901501-007 0.1ml	0.100	438.718	0.212	0.042
P1901501-007ms 0.1ml	0.100	279.496	0.723	0.687
P1901501-007msd 0.1ml	0.100	327.310	0.722	0.668
std s32-07231801		1.700	1.699	1.654
ACTUAL		1.51	1.51	1.51
%Difference		12.6%	12.5%	9.5%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	1.180	0.000	0.000
fid lcs s30-05241604	13.690	9.860	12.300
fid lcsd s30-05241604	13.680	9.650	12.150
P1901501-001 0.1ml	2371.720	0.000	0.000
P1901501-002 0.1ml	40.860	0.000	0.000
P1901501-003 0.1ml	6.760	0.000	0.000
P1901501-004 0.1ml	1394.680	56.420	1.370
P1901501-005 0.1ml	16525.94	0.000	0.000
P1901501-006 0.1ml	15303.23	0.000	0.000
P1901501-007 0.1ml	4387.180	2.120	0.420
P1901501-007ms 0.1ml	2794.960	7.230	6.870
P1901501-007msd 0.1ml	3273.100	7.220	6.680

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:14:34
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 10:27:04 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.116	14049	1.549	ppm
7)	Ethylene	1.679	26230	1.567	ppm
8)	Ethane	1.943	25575	1.509	ppm
9)	Propylene	4.319	36673	1.565	ppm
10)	Propane	4.443	37576	1.510	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.652	49435	1.857	ppm
13)	n-Butane	6.652	49435	1.857	ppm

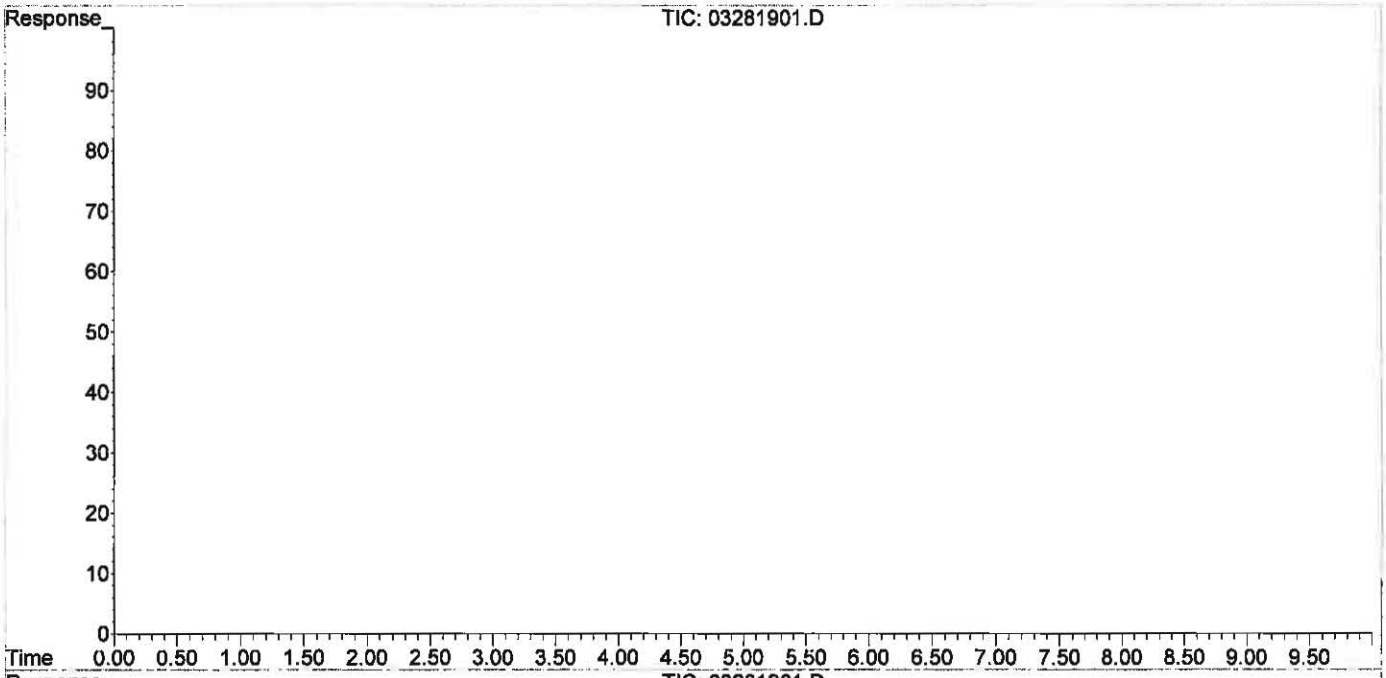
(f)=RT Delta > 1/2 Window (m)=manual int.

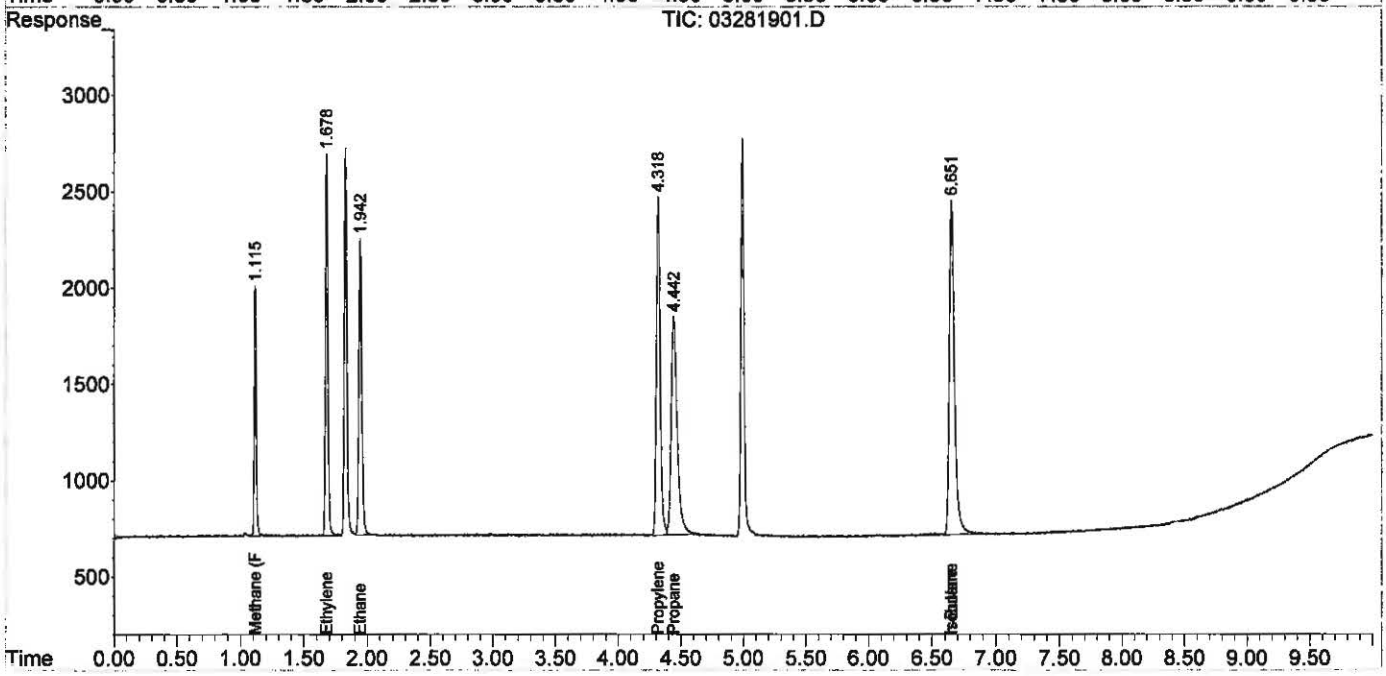
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 09:14:34
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 10:27:04 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 12:49:37
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 14:07:37 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.932f	3331050	4.203	ppm
2)	Carbon monoxide	1.932f	3331050	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.115	15419	1.700	ppm
7)	Ethylene	1.678	28436	1.699	ppm
8)	Ethane	1.941	28027	1.654	ppm
9)	Propylene	4.315	40696	1.737	ppm
10)	Propane	4.439	42069	1.691	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.649	56171	2.110	ppm
13)	n-Butane	6.649	56171	2.110	ppm

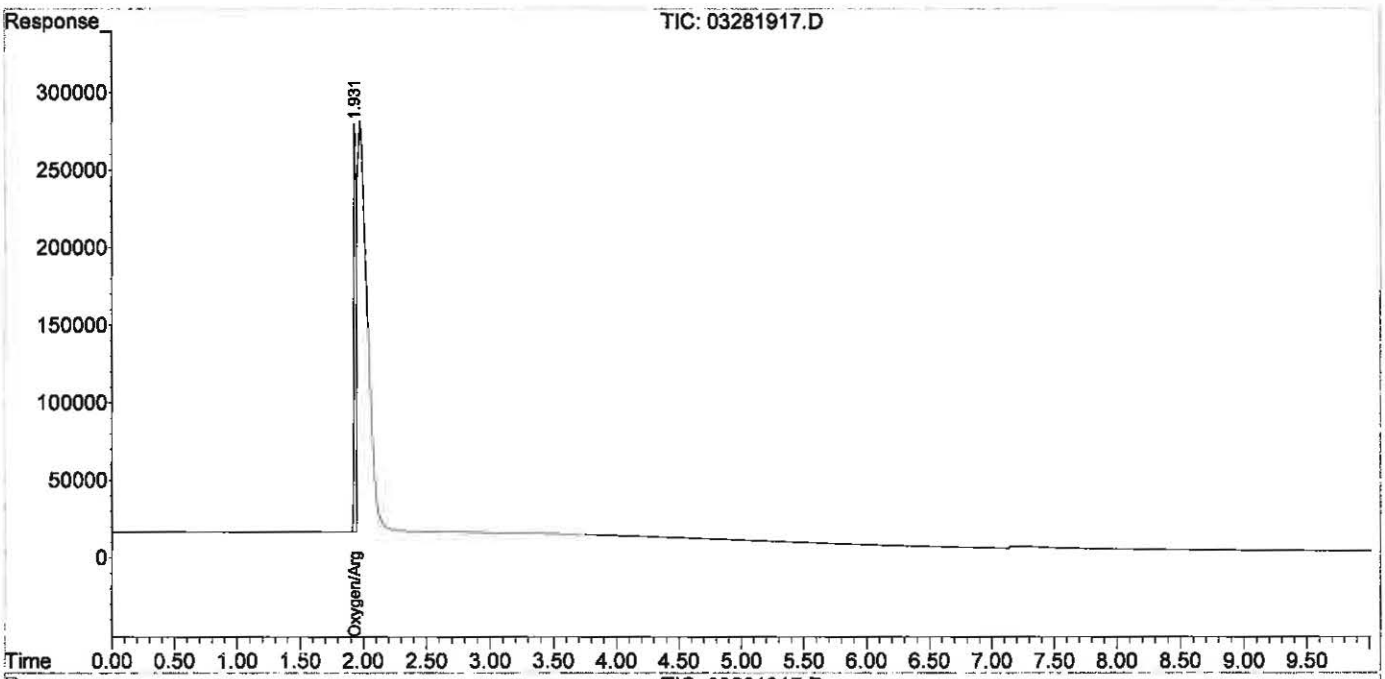
(f)=RT Delta > 1/2 Window (m)=manual int.

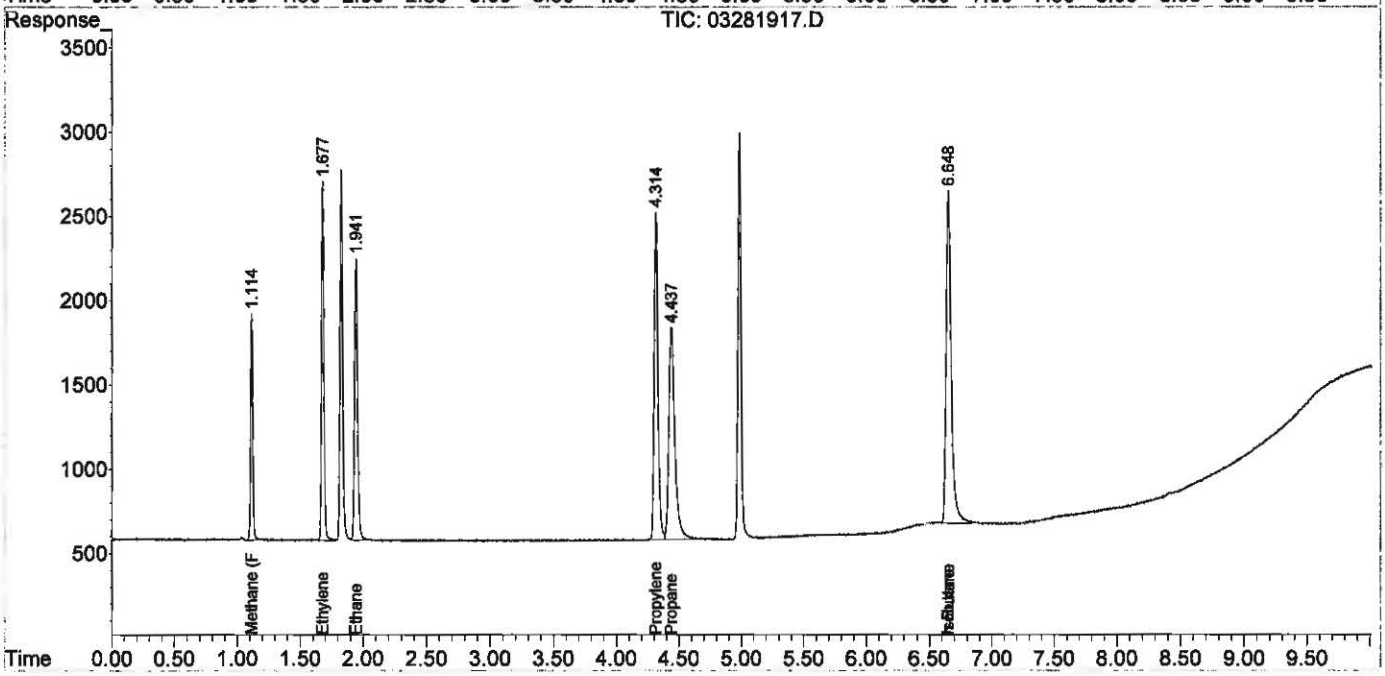
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_03\28\
Data File : 03281917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Mar-2019, 12:49:37
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 28 14:07:37 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_03\28\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	28-Mar-19, 09:14:34	03281901.D	std s32-07231801		WH	RSKBOTH.M	pass
2	28-Mar-19, 09:30:11	03281902.D	std s32-01311901		WH	RSKBOTH.M	pass
3	28-Mar-19, 09:44:40	03281903.D	rb 0.1ml		WH	RSKBOTH.M	pass
4	28-Mar-19, 09:56:00	03281904.D	mcs 0.1ml		WH	RSKBOTH.M	pass
5	28-Mar-19, 10:12:33	03281905.D	P1901501-001 0.1ml		WH	RSKBOTH.M	
6	28-Mar-19, 10:26:53	03281906.D	P1901501-002 0.1ml		WH	RSKBOTH.M	
7	28-Mar-19, 10:34:24	03281907.D	P1901501-003 0.1ml		WH	RSKBOTH.M	
8	28-Mar-19, 10:47:38	03281908.D	P1901501-004 0.1ml		WH	RSKBOTH.M	
9	28-Mar-19, 10:59:22	03281909.D	P1901501-005 0.1ml		WH	RSKBOTH.M	
10	28-Mar-19, 11:07:53	03281910.D	P1901501-006 0.1ml		WH	RSKBOTH.M	
11	28-Mar-19, 11:21:11	03281911.D	P1901501-007 0.1ml		WH	RSKBOTH.M	
12	28-Mar-19, 11:31:06	03281912.D	P1901501-007ms 0.1ml		WH	RSKBOTH.M	
13	28-Mar-19, 11:44:22	03281913.D	P1901501-007msd 0.1ml		WH	RSKBOTH.M	
14	28-Mar-19, 11:57:36	03281914.D	fid lcs s30-05241604		WH	RSKBOTH.M	
15	28-Mar-19, 12:18:46	03281915.D	fid lcs s30-05241604		WH	RSKBOTH.M	pass
16	28-Mar-19, 12:30:50	03281916.D	fid lcsd s30-05241604		WH	RSKBOTH.M	pass
17	28-Mar-19, 12:49:37	03281917.D	std s32-07231801		WH	RSKBOTH.M	pass
18	28-Mar-19, 13:09:50	03281918.D	std s32-01311901		WH	RSKBOTH.M	pass
19	28-Mar-19, 13:36:52	03281919.D	mcs 0.1ml		WH	RSKBOTH.M	pass
20	28-Mar-19, 13:46:41	03281920.D	lcs tcd S32-10081801		WH	RSKBOTH.M	pass
21	28-Mar-19, 14:17:53	03281921.D	lcsd tcd S32-10081801		WH	RSKBOTH.M	pass
22	28-Mar-19, 14:46:07	03281922.D	P1901501-001 50ul		WH	RSKBOTH.M	
23	28-Mar-19, 14:59:14	03281923.D	P1901501-002 50ul		WH	RSKBOTH.M	
24	28-Mar-19, 15:12:57	03281924.D	P1901501-003 50ul		WH	RSKBOTH.M	
25	28-Mar-19, 15:25:25	03281925.D	P1901501-004 50ul		WH	RSKBOTH.M	
26	28-Mar-19, 15:36:07	03281926.D	P1901501-005 50ul		WH	RSKBOTH.M	
27	28-Mar-19, 15:56:58	03281927.D	P1901501-006 50ul		WH	RSKBOTH.M	
28	28-Mar-19, 16:08:13	03281928.D	P1901501-007 50ul		WH	RSKBOTH.M	
29	28-Mar-19, 16:23:34	03281929.D	P1901501-007ms 50ul		WH	RSKBOTH.M	
30	28-Mar-19, 16:41:20	03281930.D	P1901501-007msd 50ul		WH	RSKBOTH.M	
31	28-Mar-19, 16:57:30	03281931.D	std s32-01311901		WH	RSKBOTH.M	pass
32	28-Mar-19, 17:49:38	03281932.D	loq		WH	RSKBOTH.M	
33	28-Mar-19, 18:01:49	03281933.D	loq		WH	RSKBOTH.M	
34	28-Mar-19, 18:21:24	03281934.D	lod		WH	RSKBOTH.M	

HS19031013 8260 Raw Data

ALS WO# HS19031013

MSVOA06 -Logbook

Batch: 34473
Date: 03-14-2019
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	E
1	BFB	TUNE	03-14-2019 11:09 am	1.00	50 mL	50 mL	X031401.D	Liquid	Y	N
	Auto find/ puregd									
2	VSTD000.25	ICAL1	03-14-2019 11:33 am	1.00	50 mL	50 mL	X031402.D	Liquid	Y	N
	0.1 uL cal std/100 mL DI									
3	VSTD000.5	ICAL2	03-14-2019 11:57 am	1.00	50 mL	50 mL	X031403.D	Liquid	Y	N
	0.10 uL cal std/50 mL DI									
4	VSTD001	ICAL3	03-14-2019 12:44 pm	1.00	50 mL	50 mL	X031404.D	Liquid	Y	N
	0.20 uL cal std/50 mL DI									
5	VSTD002	ICAL4	03-14-2019 01:08 pm	1.00	50 mL	50 mL	X031405.D	Liquid	Y	N
	0.40 uL cal std/50 mL DI									
6	VSTD005	ICAL5	03-14-2019 01:32 pm	1.00	50 mL	50 mL	X031406.D	Liquid	Y	N
	1.0 uL cal std/50 mL DI									
7	VSTD020	ICAL6	03-14-2019 01:56 pm	1.00	50 mL	50 mL	X031407.D	Liquid	Y	N
	4.0 uL cal std/50 mL DI									
8	VSTD050	ICAL7	03-14-2019 02:20 pm	1.00	50 mL	50 mL	X031408.D	Liquid	Y	N
	10 uL cal std/50 mL DI									
9	VSTD100	ICAL8	03-14-2019 02:44 pm	1.00	50 mL	50 mL	X031409.D	Liquid	Y	N
	20 uL cal std/50 mL DI									
10	VSTD150	ICAL9	03-14-2019 03:08 pm	1.00	50 mL	50 mL	X031410.D	Liquid	Y	N
	30 uL cal std/50 mL DI									
11	VSTD200	ICAL	03-14-2019 03:32 pm	1.00	50 mL	50 mL	X031411.D	Liquid	Y	N
	40 uL cal std/50 mL DI									
12	BLANK	SAMP	03-14-2019 03:56 pm	1.00	50 mL	50 mL	X031412.D	Liquid	Y	N
	clean up blank									
13	ICV	ICV	03-14-2019 04:20 pm	1.00	50 mL	50 mL	X031413.D	Liquid	Y	N
	10 uL ical std/50 mL DI									
14	BFB	TUNE	03-14-2019 05:08 pm	1.00	50 mL	50 mL	Y031401.D	Liquid	Y	N
	Auto find/ purged									
15	CCV	SAMP	03-14-2019 05:32 pm	1.00	50 mL	50 mL	Y031402a.D	Liquid	Y	N
	10 uL cal std/50 mL DI/ not used									
16	CCV	CCV	03-14-2019 05:56 pm	1.00	50 mL	50 mL	Y031403.D	Liquid	Y	N
	10 uL cal std/50 mL DI									
17	CCB	SAMP	03-14-2019 06:20 pm	1.00	50 mL	50 mL	Y031404.D	Liquid	Y	N
18	VLCSW-190314	LCS	03-14-2019 06:44 pm	1.00	50 mL	50 mL	Y031405.D	Liquid	Y	N
	4.0 uL cal std/50 mL DI									
19	BLANK	SAMP	03-14-2019 07:08 pm	1.00	50 mL	50 mL	Y031406.D	Liquid	Y	N
20	BLANK	SAMP	03-14-2019 07:32 pm	1.00	50 mL	50 mL	Y031407.D	Liquid	Y	N
21	VBLKW-190314	MBLK	03-14-2019 07:56 pm	1.00	50 mL	50 mL	Y031408.D	Liquid	Y	N
22	HS19030400-04	SAMP	03-14-2019 08:20 pm	1.00	50 mL	50 mL	Y031409.D	Liquid	Y	≥
23	HS19030400-18	SAMP	03-14-2019 08:44 pm	1.00	50 mL	50 mL	Y031410.D	Liquid	Y	≥
24	HS19030400-07	SAMP	03-14-2019 09:08 pm	1.00	50 mL	50 mL	Y031411.D	Liquid	Y	≥
25	HS19030400-01	SAMP	03-14-2019 09:32 pm	1.00	50 mL	50 mL	Y031412.D	Liquid	Y	≥
26	HS19030400-07MS	MS	03-14-2019 09:56 pm	1.00	50 mL	50 mL	Y031413.D	Liquid	Y	≥
	3.5 uL cal std/40 mL samp									
27	HS19030400-07MSD	MSD	03-14-2019 10:20 pm	1.00	50 mL	50 mL	Y031414.D	Liquid	Y	≥
	3.5 uL cal std/40 mL samp									
28	HS19030400-01	SAMP	03-14-2019 10:44 pm	5.00	10 mL	50 mL	Y031415.D	Liquid	Y	≥
29	HS19030665-07	SAMP	03-14-2019 11:08 pm	5.00	10 mL	50 mL	Y031416.D	Liquid	Y	≥
30	HS19030400-02	SAMP	03-14-2019 11:32 pm	1.00	50 mL	50 mL	Y031417.D	Liquid	Y	≥
31	HS19030400-03	SAMP	03-14-2019 11:57 pm	1.00	50 mL	50 mL	Y031418.D	Liquid	Y	≥

MSVOA06 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	E
32	HS19030400-05	SAMP	03-15-2019 12:21 am	1.00	50 mL	50 mL	Y031419.D	Liquid	Y	>
33	HS19030400-06	SAMP	03-15-2019 12:45 am	1.00	50 mL	50 mL	Y031420.D	Liquid	Y	>
34	HS19030400-08	SAMP	03-15-2019 01:09 am	1.00	50 mL	50 mL	Y031421.D	Liquid	Y	>
35	HS19030400-10	SAMP	03-15-2019 01:33 am	1.00	50 mL	50 mL	Y031422.D	Liquid	Y	>
36	HS19030400-11	SAMP	03-15-2019 01:57 am	1.00	50 mL	50 mL	Y031423.D	Liquid	Y	>
37	HS19030400-14	SAMP	03-15-2019 02:21 am	1.00	50 mL	50 mL	Y031424.D	Liquid	Y	>
38	HS19030400-09	SAMP	03-15-2019 02:45 am	1.00	50 mL	50 mL	Y031425.D	Liquid	Y	>
39	HS19030400-12DL	SAMP	03-15-2019 03:09 am	5.00	10 mL	50 mL	Y031426.D	Liquid	Y	>
40	HS19030400-12	SAMP	03-15-2019 03:33 am	25.00	2 mL	50 mL	Y031427.D	Liquid	Y	>
41	HS19030400-13	SAMP	03-15-2019 03:57 am	25.00	2 mL	50 mL	Y031428.D	Liquid	Y	>
42	HS19030400-13DL	SAMP	03-15-2019 04:21 am	5.00	10 mL	50 mL	Y031429.D	Liquid	Y	N
43	CCV-END	SAMP	03-15-2019 04:45 am	1.00	50 mL	50 mL	Y031430.D	Liquid	Y	N

10 uL cal std/50 mL DI

Chemical	Value
SURR SPK ID	30502-65-03
IS ID	30502-65-04
ICV STD ID	30603-58-01
LCS/MS ID	30502-68-01/02
CAL STD ID	30603-58-01
BFB ID	30502-65-03
pH Paper	634-40-13

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
cis-1,3-Dichloropropene	50.00	49.41	99	80-120
trans-1,3-Dichloroprope	50.00	50.99	102	80-120
1,3-Dichlorobenzene	50.00	46.39	93	80-120
2,2-Dichloropropane	50.00	47.72	95	80-120
1,1-Dichloropropene	50.00	43.76	88	80-120
Dibromomethane	50.00	47.53	95	80-120
1,2-Dibromoethane	50.00	48.81	98	80-120
trans-1,2-Dichloroethen	50.00	47.93	96	80-120
1,1,1,2-Tetrachloroetha	50.00	49.11	98	80-120
1,1,1-Trichloroethane	50.00	46.00	92	80-120
1,1,2,2-Tetrachloroetha	50.00	47.55	95	80-120
1,1,2-Trichloroethane	50.00	47.95	96	80-120
1,1-Dichloroethane	50.00	46.85	94	80-120
1,1-Dichloroethene	50.00	46.44	93	80-120
Trichloroethene	50.00	46.49	93	80-120
1,2,3-Trichlorobenzene	50.00	46.88	94	80-120
Trichlorofluoromethane	50.00	46.29	92	80-120
1,2,4-Trichlorobenzene	50.00	47.65	95	80-120
1,2,4-Trimethylbenzene	50.00	46.27	92	80-120
Tetrachloroethene	50.00	44.64	89	80-120
1,2-Dichlorobenzene	50.00	46.56	93	80-120
1,2-Dichloroethane	50.00	46.77	94	80-120
1,2-Dichloropropane	50.00	47.38	95	80-120
1,3,5-Trimethylbenzene	50.00	45.37	91	80-120
1,3-Dichloropropane	50.00	47.78	96	80-120
1,4-Dichlorobenzene	50.00	46.47	93	80-120
Toluene	50.00	47.30	95	80-120
2-Butanone	100.00	100.69	101	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
2-Chlorotoluene	50.00	45.31	91	80-120
2-Hexanone	100.00	97.71	98	80-120
4-Chlorotoluene	50.00	46.00	92	80-120
tert-Butylbenzene	50.00	43.02	86	80-120
4-Methyl-2-Pentanone	100.00	94.37	94	80-120
Acetone	100.00	100.98	101	80-120
Benzene	50.00	47.54	95	80-120
Bromobenzene	50.00	47.52	95	80-120
Bromochloromethane	50.00	46.72	93	80-120
Bromodichloromethane	50.00	48.52	97	80-120
Bromoform	50.00	48.53	97	80-120
Bromomethane	50.00	59.21	118	80-120
Carbon Disulfide	100.00	94.71	95	80-120
Carbon Tetrachloride	50.00	44.50	89	80-120
Chlorobenzene	50.00	47.50	95	80-120
Chloroethane	50.00	46.72	93	80-120
Chloroform	50.00	46.84	94	80-120
Chloromethane	50.00	46.87	94	80-120
cis-1,2-Dichloroethene	50.00	46.82	94	80-120
Dibromochloromethane	50.00	49.86	100	80-120
Dichlorodifluoromethane	50.00	45.80	92	80-120
Ethylbenzene	50.00	46.95	94	80-120
Hexachlorobutadiene	50.00	51.65	103	80-120
Isopropylbenzene	50.00	44.55	89	80-120
m,p-Xylenes	100.00	93.23	93	80-120
Methylene Chloride	50.00	48.42	97	80-120
n-Butylbenzene	50.00	45.45	91	80-120
n-Propylbenzene	50.00	44.83	90	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: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Naphthalene	50.00	49.30	99	80-120
o-Xylene	50.00	47.71	95	80-120
sec-Butylbenzene	50.00	43.04	86	80-120
Styrene	50.00	50.09	100	80-120
Vinyl Chloride	50.00	45.01	90	80-120
1,2,3-Trichloropropane	50.00	47.77	96	80-120
p-Isopropyltoluene	50.00	44.63	89	80-120
1,2-Dibromo-3-Chloropro	50.00	51.38	103	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: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Lab File ID: X031401 BFB Injection Date: 03/14/19

Instrument ID: VOA6 BFB Injection Time: 1109

GC Column: DB624 ID: 0.25 (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	53.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.5 (0.7)1
174	Greater than 50.0% of mass 95	69.5
175	5.0 - 9.0% of mass 174	5.3 (7.6)1
176	95.0 - 101.0% of mass 174	67.5 (97.2)1
177	5.0 - 9.0% of mass 176	4.7 (7.0)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	VSTD000.25	VSTD000.25	X031402	03/14/19	1133
02	VSTD000.5	VSTD000.5	X031403	03/14/19	1157
03	VSTD001	VSTD001	X031404	03/14/19	1244
04	VSTD002	VSTD002	X031405	03/14/19	1308
05	VSTD005	VSTD005	X031406	03/14/19	1332
06	VSTD020	VSTD020	X031407	03/14/19	1356
07	VSTD050	VSTD050	X031408	03/14/19	1420
08	VSTD100	VSTD100	X031409	03/14/19	1444
09	VSTD150	VSTD150	X031410	03/14/19	1508
10	VSTD200	VSTD200	X031411	03/14/19	1532
11	ICV	ICV	X031413	03/14/19	1620
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Instrument ID: VOA6 Calibration Date(s): 03/14/19 03/14/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1133 1532

LAB FILE ID: RF0.25: X031402 RF0.5: X031403 RF1: X031404
RF2: X031405 RF5: X031406 RF20: X031407

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
cis-1,3-Dichloropropene		0.603	0.564	0.537	0.526	0.549
trans-1,3-Dichloropropene		0.432	0.448	0.437	0.423	0.449
1,3-Dichlorobenzene		1.582	1.686	1.554	1.436	1.466
2,2-Dichloropropane		0.788	0.779	0.704	0.654	0.681
1,1-Dichloropropene		0.561	0.500	0.480	0.384	0.415
Dibromomethane		0.223	0.216	0.211	0.210	0.208
1,2-Dibromoethane		0.323	0.350	0.341	0.321	0.327
trans-1,2-Dichloroethene		0.462	0.489	0.489	0.442	0.470
1,1,1,2-Tetrachloroethane		0.330	0.360	0.341	0.319	0.331
1,1,1-Trichloroethane		0.817	0.776	0.750	0.647	0.697
1,1,2,2-Tetrachloroethane		0.869	0.880	0.837	0.792	0.793
1,1,2-Trichloroethane		0.305	0.277	0.294	0.271	0.271
1,1-Dichloroethane		1.025	0.985	0.918	0.865	0.910
1,1-Dichloroethene		0.499	0.436	0.448	0.367	0.407
Trichloroethene		0.397	0.379	0.359	0.321	0.337
1,2,3-Trichlorobenzene		0.418	0.348	0.342	0.337	0.340
Trichlorofluoromethane		3725	7958	15375	29483	133610
1,2,4-Trichlorobenzene		0.621	0.648	0.631	0.596	0.604
1,2,4-Trimethylbenzene		2.499	2.536	2.425	2.181	2.338
Tetrachloroethene		0.338	0.334	0.316	0.268	0.286
1,2-Dichlorobenzene		1.558	1.503	1.507	1.343	1.391
1,2-Dichloroethane		0.431	0.452	0.453	0.429	0.413
1,2-Dichloropropane		0.387	0.386	0.364	0.330	0.337
1,3,5-Trimethylbenzene		2.416	2.472	2.397	2.159	2.325
1,3-Dichloropropane		0.603	0.612	0.572	0.544	0.544
1,4-Dichlorobenzene		1.726	1.719	1.583	1.412	1.482
Toluene		1.572	1.584	1.525	1.398	1.425
2-Butanone		0.163	0.154	0.133	0.168	0.189
2-Chlorotoluene		2.502	2.311	2.194	1.962	2.024
2-Hexanone		0.215	0.186	0.184	0.190	0.197
4-Chlorotoluene		2.658	2.685	2.464	2.216	2.324
tert-Butylbenzene		2.347	2.260	2.145	1.802	1.955
4-Methyl-2-Pentanone		0.327	0.316	0.297	0.288	0.298
Acetone		5365	6603	8911	16151	52205
Benzene		1.423	1.354	1.270	1.200	1.244
Bromobenzene		0.891	0.920	0.878	0.808	0.843
Bromochloromethane		0.287	0.312	0.298	0.268	0.272
Bromodichloromethane		0.436	0.436	0.441	0.404	0.418
Bromoform		1344	3505	6589	15617	65679
Bromomethane		2332	4965	7815	17098	61792
Carbon Disulfide		1.599	1.531	1.495	1.292	1.409
Carbon Tetrachloride		3862	7557	12783	23333	101790
Chlorobenzene		1.110	1.065	1.013	0.910	0.936
Chloroethane		0.366	0.417	0.388	0.335	0.352

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date(s): 03/14/19 03/14/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1133 1532

LAB FILE ID: RF0.25: X031402 RF0.5: X031403 RF1: X031404
RF2: X031405 RF5: X031406 RF20: X031407

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Chloroform		0.957	0.945	0.919	0.862	0.874
Chloromethane		4606	9688	18061	38315	146979
cis-1,2-Dichloroethene		0.625	0.589	0.572	0.526	0.549
Dibromochloromethane		0.346	0.366	0.353	0.339	0.356
Dichlorodifluoromethane		2522	4945	9465	18712	86280
Ethylbenzene		0.526	0.503	0.500	0.452	0.471
Hexachlorobutadiene		2088	2972	5403	10475	48583
Isopropylbenzene		1.609	1.522	1.541	1.287	1.396
m,p-Xylenes		0.633	0.631	0.628	0.556	0.587
Methylene Chloride		4119	6642	11530	24802	97872
n-Butylbenzene		2.340	2.173	2.147	1.757	2.084
n-Propylbenzene		3.666	3.732	3.554	3.025	3.365
Naphthalene		0.849	0.916	0.910	0.930	0.951
o-Xylene		0.633	0.626	0.616	0.572	0.597
sec-Butylbenzene		3.182	3.145	3.060	2.432	2.773
Styrene		1.011	1.002	0.997	0.935	1.003
Vinyl Chloride		0.768	0.705	0.677	0.550	0.604
1,2,3-Trichloropropane		0.597	0.657	0.682	0.669	0.615
p-Isopropyltoluene		2.813	2.568	2.448	2.073	2.391
1,2-Dibromo-3-Chloropropane		0.092	0.090	0.102	0.093	0.097
1,2-Dichloroethane-d4		3467	5622	10993	27296	101012
Dibromofluoromethane		2889	4699	8973	23704	90165
Toluene-d8		11732	18273	35730	91809	338966
4-Bromofluorobenzene		5465	7465	14277	34111	126535

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date(s): 03/14/19 03/14/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1133 1532

LAB FILE ID: RF50: X031408 RF100: X031409 RF150: X031410
RF200: X031411

COMPOUND	RF50	RF100	RF150	RF200
cis-1,3-Dichloropropene	0.551	0.572	0.580	0.584
trans-1,3-Dichloropropene	0.450	0.472	0.482	0.488
1,3-Dichlorobenzene	1.390	1.491	1.494	1.509
2,2-Dichloropropane	0.633	0.710	0.702	0.710
1,1-Dichloropropene	0.384	0.441	0.437	0.442
Dibromomethane	0.203	0.207	0.206	0.209
1,2-Dibromoethane	0.319	0.326	0.327	0.330
trans-1,2-Dichloroethene	0.448	0.484	0.477	0.486
1,1,1,2-Tetrachloroethane	0.325	0.340	0.340	0.349
1,1,1-Trichloroethane	0.646	0.740	0.736	0.748
1,1,2,2-Tetrachloroethane	0.759	0.769	0.776	0.783
1,1,2-Trichloroethane	0.257	0.263	0.262	0.266
1,1-Dichloroethane	0.851	0.905	0.894	0.910
1,1-Dichloroethene	0.381	0.430	0.418	0.430
Trichloroethene	0.324	0.349	0.348	0.352
1,2,3-Trichlorobenzene	0.317	0.351	0.360	0.371
Trichlorofluoromethane	300492	681686	996321	1285010
1,2,4-Trichlorobenzene	0.577	0.641	0.643	0.670
1,2,4-Trimethylbenzene	2.201	2.448	2.430	2.468
Tetrachloroethene	0.260	0.302	0.294	0.305
1,2-Dichlorobenzene	1.325	1.394	1.401	1.409
1,2-Dichloroethane	0.398	0.406	0.407	0.410
1,2-Dichloropropane	0.331	0.343	0.341	0.343
1,3,5-Trimethylbenzene	2.148	2.461	2.441	2.477
1,3-Dichloropropane	0.528	0.537	0.537	0.545
1,4-Dichlorobenzene	1.403	1.507	1.503	1.529
Toluene	1.359	1.443	1.415	1.438
2-Butanone	0.176	0.186	0.185	0.188
2-Chlorotoluene	1.930	2.106	2.080	2.098
2-Hexanone	0.192	0.196	0.204	0.209
4-Chlorotoluene	2.222	2.439	2.433	2.462
tert-Butylbenzene	1.755	2.102	2.061	2.075
4-Methyl-2-Pentanone	0.290	0.294	0.307	0.314
Acetone	116587	213087	311676	399404
Benzene	1.215	1.270	1.258	1.274
Bromobenzene	0.805	0.848	0.850	0.858
Bromochloromethane	0.258	0.274	0.272	0.272
Bromodichloromethane	0.412	0.428	0.431	0.434
Bromoform	160732	319308	485383	628243
Bromomethane	143083	298815	443212	557773
Carbon Disulfide	1.322	1.495	1.474	1.510
Carbon Tetrachloride	230636	538968	797749	1041315
Chlorobenzene	0.901	0.945	0.935	0.952
Chloroethane	0.331	0.363	0.353	0.356

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date(s): 03/14/19 03/14/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1133 1532

LAB FILE ID: RF50: X031408 RF100: X031409 RF150: X031410
RF200: X031411

COMPOUND	RF50	RF100	RF150	RF200
Chloroform	0.822	0.875	0.858	0.870
Chloromethane	320320	617186	875713	1116067
cis-1,2-Dichloroethene	0.512	0.547	0.544	0.550
Dibromochloromethane	0.349	0.361	0.361	0.369
Dichlorodifluoromethane	201380	449989	671945	870002
Ethylbenzene	0.441	0.488	0.481	0.491
Hexachlorobutadiene	103418	258057	369069	489122
Isopropylbenzene	1.266	1.469	1.432	1.470
m,p-Xylenes	0.550	0.609	0.597	0.606
Methylene Chloride	232067	455199	665742	861209
n-Butylbenzene	1.862	2.297	2.237	2.296
n-Propylbenzene	3.065	3.637	3.609	3.656
Naphthalene	0.903	0.972	1.015	1.040
o-Xylene	0.562	0.600	0.593	0.600
sec-Butylbenzene	2.433	3.037	2.975	3.044
Styrene	0.955	1.016	1.006	1.024
Vinyl Chloride	0.555	0.651	0.643	0.654
1,2,3-Trichloropropane	0.594	0.597	0.603	0.594
p-Isopropyltoluene	2.158	2.610	2.568	2.626
1,2-Dibromo-3-Chloropropane	0.097	0.101	0.104	0.107
1,2-Dichloroethane-d4	251841	477612	698216	897261
Dibromofluoromethane	226962	423351	630249	804727
Toluene-d8	848357	1596573	2376667	3051020
4-Bromofluorobenzene	309611	588767	872319	1119684

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date(s): 03/14/19 03/14/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1133 1532

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	COEFFICENTS A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.56282929		4.314	15.000
trans-1,3-Dichloropropene	AVRG		0.45362299		4.988	15.000
1,3-Dichlorobenzene	AVRG		1.51210519		5.751	15.000
2,2-Dichloropropane	AVRG		0.70673896		7.201	15.000
1,1-Dichloropropene	AVRG		0.44949675		12.660	15.000
Dibromomethane	AVRG		0.21039556		2.906	15.000
1,2-Dibromoethane	AVRG		0.32935984		3.066	15.000
trans-1,2-Dichloroethene	AVRG		0.47189157		3.739	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.33743306		3.700	15.000
1,1,1-Trichloroethane	AVRG		0.72862174		7.760	15.000
1,1,2,2-Tetrachloroethane	AVRG		0.80641218		5.498	15.000
1,1,2-Trichloroethane	AVRG		0.27416946		5.804	15.000
1,1-Dichloroethane	AVRG		0.91820518		5.967	15.000
1,1-Dichloroethene	AVRG		0.42405711		9.084	15.000
Trichloroethene	AVRG		0.35184035		6.934	15.000
1,2,3-Trichlorobenzene	AVRG		0.35392193		8.026	15.000
Trichlorofluoromethane	2ORDR	1.494e-002	1.35004752	-2.52e-002	0.9987782	0.9900000
1,2,4-Trichlorobenzene	AVRG		0.62574577		4.656	15.000
1,2,4-Trimethylbenzene	AVRG		2.39178055		5.280	15.000
Tetrachloroethene	AVRG		0.30046018		8.889	15.000
1,2-Dichlorobenzene	AVRG		1.42577775		5.542	15.000
1,2-Dichloroethane	AVRG		0.42194837		4.804	15.000
1,2-Dichloropropane	AVRG		0.35132451		6.347	15.000
1,3,5-Trimethylbenzene	AVRG		2.36625905		5.465	15.000
1,3-Dichloropropane	AVRG		0.55805183		5.493	15.000
1,4-Dichlorobenzene	AVRG		1.54047371		7.595	15.000
Toluene	AVRG		1.46214912		5.410	15.000
2-Butanone	AVRG		0.17126433		11.066	15.000
2-Chlorotoluene	AVRG		2.13436910		8.427	15.000
2-Hexanone	AVRG		0.19711348		5.291	15.000
4-Chlorotoluene	AVRG		2.43384857		6.808	15.000
tert-Butylbenzene	AVRG		2.05591749		9.446	15.000
4-Methyl-2-Pentanone	AVRG		0.30344923		4.362	15.000
Acetone	LINR	-9.31e-002	8.35824195		0.9998905	0.9900000
Benzene	AVRG		1.27878400		5.429	15.000
Bromobenzene	AVRG		0.85571821		4.346	15.000
Bromochloromethane	AVRG		0.27940186		6.040	15.000
Bromodichloromethane	AVRG		0.42657199		2.922	15.000
Bromoform	LINR	1.875e-002	3.93358437		0.9996359	0.9900000
Bromomethane	LINR	4.342e-003	2.93716961		0.9993998	0.9900000
Carbon Disulfide	AVRG		1.45860390		6.816	15.000
Carbon Tetrachloride	LINR	3.568e-002	2.48626097		0.9983175	0.9900000
Chlorobenzene	AVRG		0.97428996		7.446	15.000
Chloroethane	AVRG		0.36223312		7.365	15.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date(s): 03/14/19 03/14/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1133 1532

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	COEFFICENTS A2	%RSD OR R^2	MAX %RSD OR R^2
Chloroform	AVRG		0.88685141		4.952	15.000
Chloromethane	LINR	-2.89e-002	1.47742584		0.9994373	0.9900000
cis-1,2-Dichloroethene	AVRG		0.55723113		6.090	15.000
Dibromochloromethane	AVRG		0.35547979		2.769	15.000
Dichlorodifluoromethane	LINR	3.706e-002	1.89206345		0.9985309	0.9900000
Ethylbenzene	AVRG		0.48369196		5.388	15.000
Hexachlorobutadiene	2ORDR	1.919e-002	2.78513326	-0.1765088	0.9979534	0.9900000
Isopropylbenzene	AVRG		1.44361611		7.860	15.000
m,p-Xylenes	AVRG		0.59959782		5.117	15.000
Methylene Chloride	LINR	-7.06e-004	1.92216601		0.9998008	0.9900000
n-Butylbenzene	AVRG		2.13259148		9.462	15.000
n-Propylbenzene	AVRG		3.47889088		7.662	15.000
Naphthalene	AVRG		0.94284173		6.268	15.000
o-Xylene	AVRG		0.59986465		3.898	15.000
sec-Butylbenzene	AVRG		2.89798430		9.941	15.000
Styrene	AVRG		0.99441651		2.982	15.000
Vinyl Chloride	AVRG		0.64536352		10.753	15.000
1,2,3-Trichloropropane	AVRG		0.62320541		5.737	15.000
p-Isopropyltoluene	AVRG		2.47290702		9.514	15.000
1,2-Dibromo-3-Chloropropane	AVRG		9.809e-002		5.914	15.000
1,2-Dichloroethane-d4	LINR	-4.54e-003	1.83985481		0.9999406	0.9900000
Dibromofluoromethane	LINR	-1.57e-003	2.04840666		0.9999951	0.9900000
Toluene-d8	LINR	-4.11e-003	0.80905091		0.9999340	0.9900000
4-Bromofluorobenzene	LINR	-7.16e-003	2.20563472		0.9999496	0.9900000

FORM VI VOA

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031401.D

Date : 14-MAR-2019 11:09

Client ID: BFB

Instrument: voa6.i

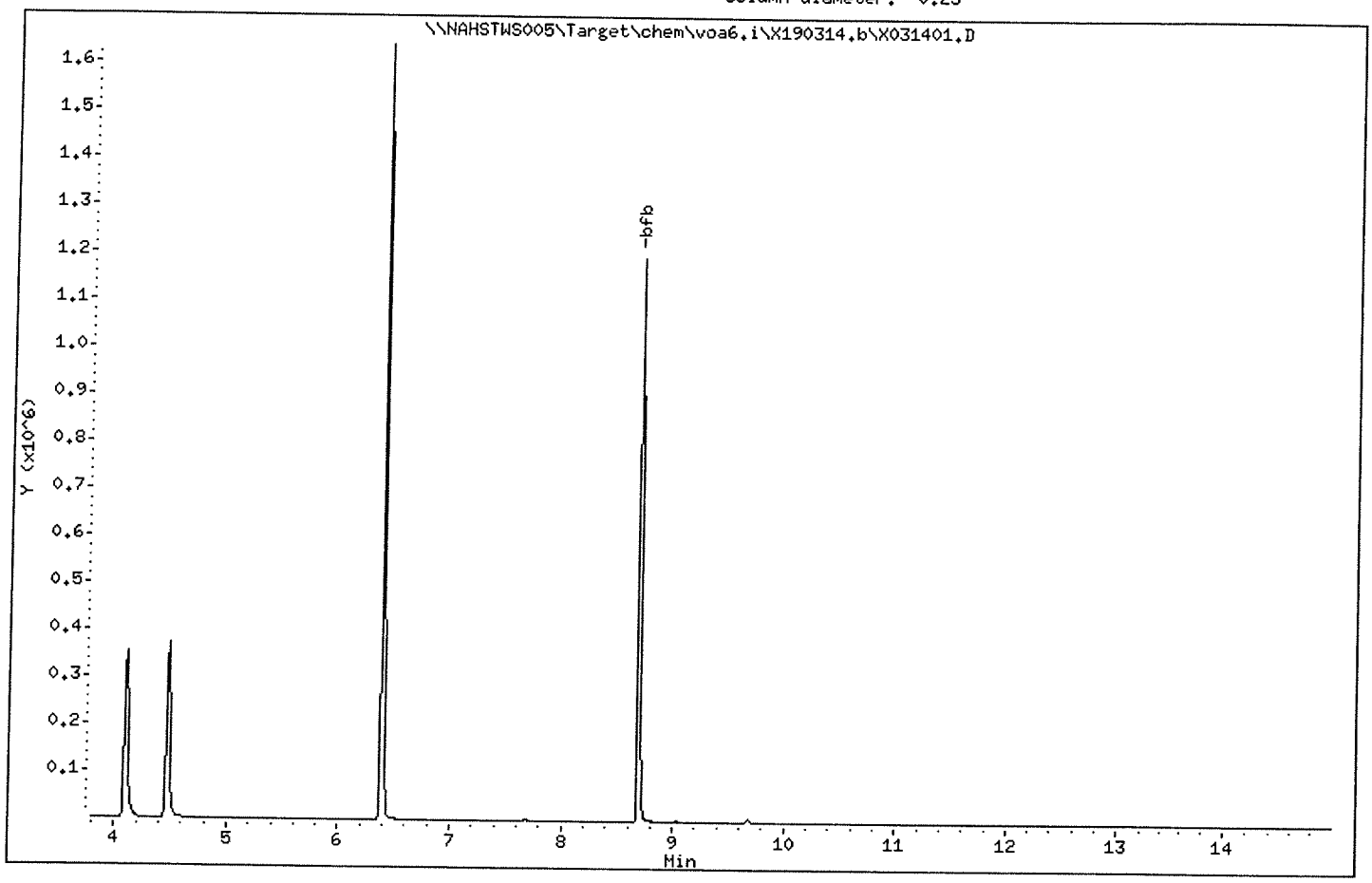
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031401.D

Date : 14-MAR-2019 11:09

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

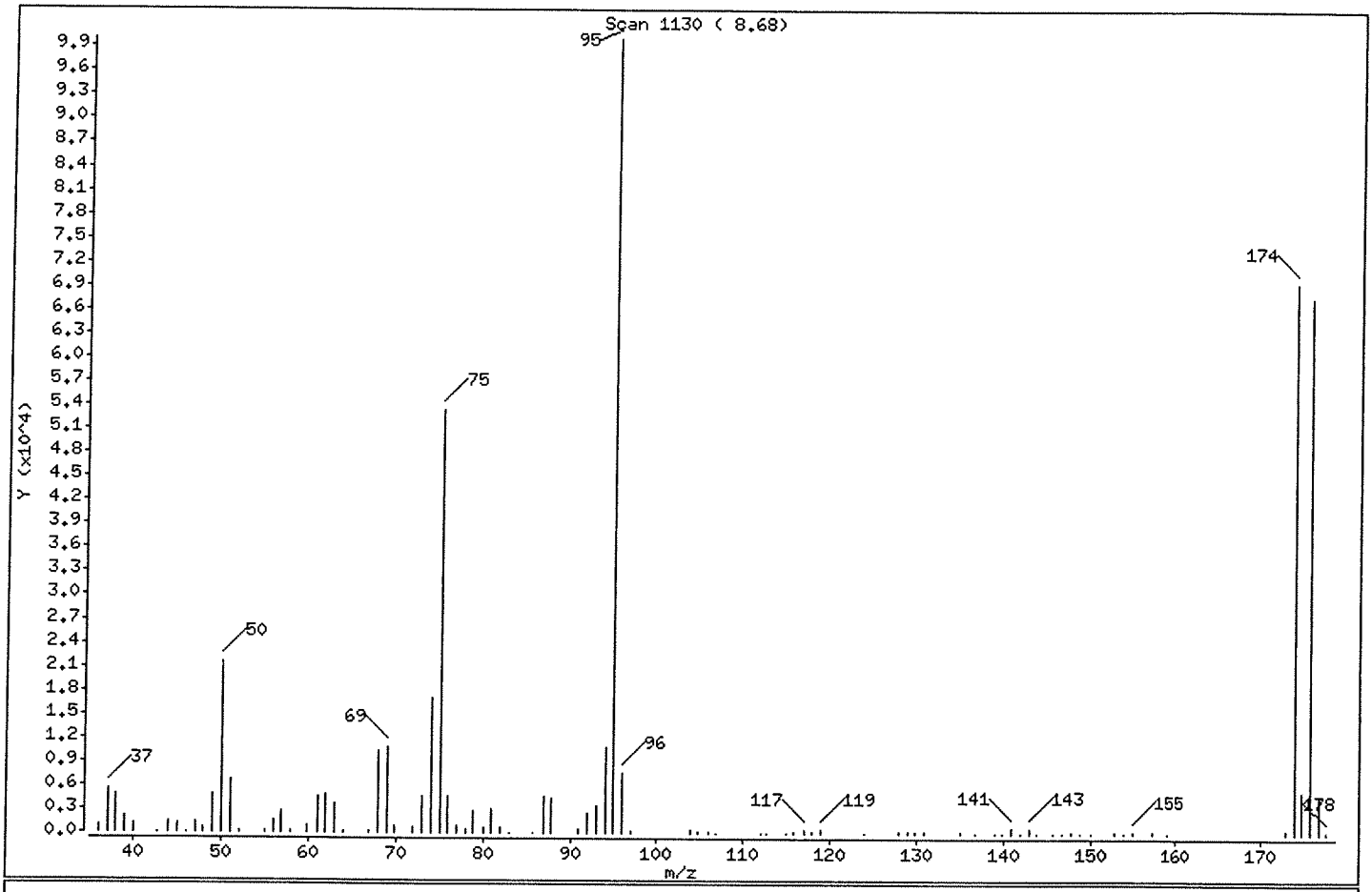
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

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	21.53
75	30.00 - 60.00% of mass 95	53.30
96	5.00 - 9.00% of mass 95	7.53
173	Less than 2.00% of mass 174	0.48 (0.69)
174	Greater than 50.00% of mass 95	69.48
175	5.00 - 9.00% of mass 174	5.26 (7.56)
176	95.00 - 101.00% of mass 174	67.52 (97.18)
177	5.00 - 9.00% of mass 176	4.71 (6.97)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031401.D

Date : 14-MAR-2019 11:09

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X031401.D
Spectrum: Scan 1130 (8.68)
Location of Maximum: 95.00
Number of points: 90

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	837	64.00	303	94.00	10765	139.70	74
37.00	5560	66.90	307	95.00	99984	140.90	581
38.00	4835	68.00	10362	96.00	7526	141.80	97
39.00	1979	69.00	10724	97.00	255	142.80	725
40.00	1097	69.90	827	103.90	435	143.80	110
42.80	61	72.00	584	104.70	154	145.70	91
44.00	1490	73.00	4661	105.90	299	146.70	72
45.10	1134	74.00	17008	106.80	59	147.80	179
46.10	101	75.00	53288	112.10	56	148.80	69
47.10	1267	76.00	4659	112.70	73	150.00	72
47.90	619	77.00	816	114.90	107	152.80	120
49.00	4749	77.90	465	115.80	273	153.80	87
50.00	21528	78.90	2714	117.00	518	154.80	181
51.00	6619	80.00	798	117.80	263	157.00	160
52.10	201	80.90	2981	118.90	451	158.90	73
55.00	266	81.90	606	124.00	61	172.90	478
56.00	1531	82.90	67	127.90	316	173.90	69472
57.00	2693	85.80	81	128.90	198	174.90	5255
58.00	172	86.90	4695	129.70	249	175.90	67512
59.90	927	87.90	4342	130.90	173	176.90	4708
61.00	4702	91.00	349	134.90	129	177.80	137
62.00	4740	91.90	2569	136.70	107		
63.00	3760	93.00	3416	138.90	60		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031402.D
Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031402.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 14-MAR-2019 11:33
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 15:32 Cal File: X031411.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	511689	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	771926	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	719423	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	361637	50.0000	
$ 30 Dibromofluoromethane	113	4.111	4.111	(0.981)	1626	0.25000	0.24(a)
$ 35 1,2-Dichloroethane-d4	65	4.490	4.490	(1.072)	2561	0.25000	0.23(Ta)
$ 48 Toluene-d8	98	6.396	6.396	(0.834)	9576	0.25000	0.33(a)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	5907	0.25000	0.54(aM)
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	1379	0.25000	0.28(a)
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	2020	0.25000	0.27(a)
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	1829	0.25000	0.31(aM)
53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	1141	0.25000	0.28(a)
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	2915	0.25000	0.31(Ta)
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	1217	0.25000	0.28(a)
32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	2446	0.25000	0.35(a)
93 1,2,3-Trichlorobenzene	180	11.761	11.761	(1.216)	618	0.25000	0.24(aM)
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	1285	0.25000	0.28(a)
90 1,2,4-Trichlorobenzene	180	11.352	11.352	(1.174)	1063	0.25000	0.23(aM)
79 1,2,4-Trimethylbenzene	105	9.390	9.390	(0.971)	5274	0.25000	0.30(a)
89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.103)	124	0.25000	0.17(aM)
57 1,2-Dibromoethane	107	7.270	7.270	(0.948)	1487	0.25000	0.31(a)
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	3015	0.25000	0.29(a)

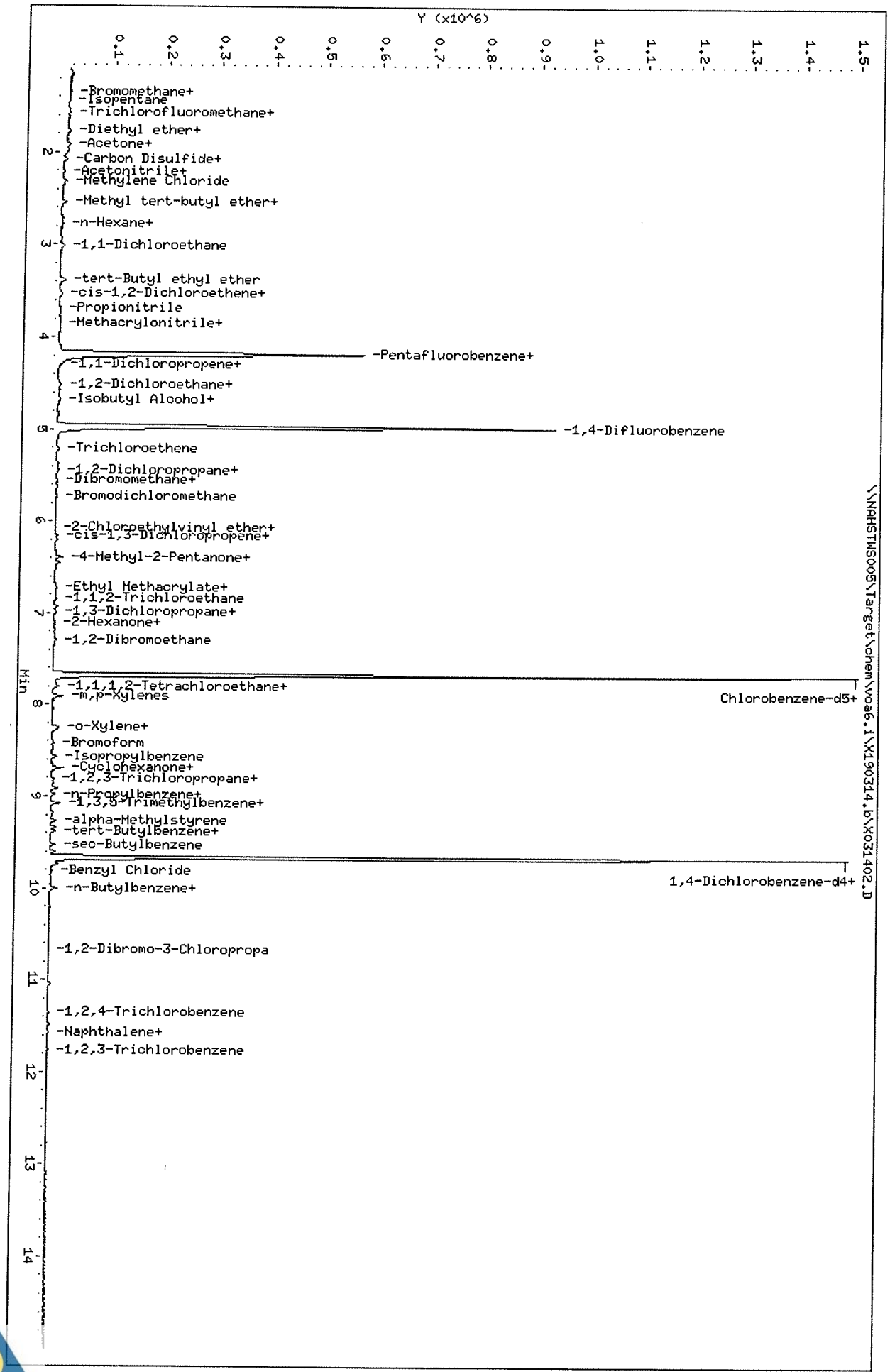
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031402.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.569	4.569	(0.919)	2082	0.25000	0.31(aM)
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	1882	0.25000	0.34(aM)
75 1,3,5-Trimethylbenzene	105	9.075	9.075	(0.939)	4936	0.25000	0.28(a)
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	3291	0.25000	0.30(a)
54 1,3-Dichloropropane	76	6.990	6.990	(0.911)	2435	0.25000	0.30(a)
84 1,4-Dichlorobenzene	146	9.691	9.691	(1.002)	3721	0.25000	0.33(a)
26 2,2-Dichloropropane	77	3.523	3.523	(0.841)	2486	0.25000	0.34(aM)
24 2-Butanone	43	3.609	3.609	(0.862)	858	0.50000	0.48(aM)
76 2-Chlorotoluene	91	8.982	8.982	(0.929)	4756	0.25000	0.30(a)
52 2-Hexanone	43	7.112	7.112	(0.927)	1642	0.50000	0.57(a)
77 4-Chlorotoluene	91	9.082	9.082	(0.939)	5358	0.25000	0.30(a)
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	4958	0.25000	0.27(a)
45 4-Methyl-2-Pentanone	43	6.338	6.338	(0.826)	2876	0.50000	0.65(a)
10 Acetone	43	1.976	1.976	(0.472)	4890	0.50000	(a)
37 Benzene	78	4.519	4.519	(0.909)	6242	0.25000	0.31(a)
74 Bromobenzene	156	8.810	8.810	(0.911)	1778	0.25000	0.28(a)
29 Bromochloromethane	128	3.803	3.803	(0.908)	879	0.25000	0.30(a)
39 Bromodichloromethane	83	5.729	5.729	(1.153)	1870	0.25000	0.28(aM)
66 Bromoform	173	8.416	8.416	(1.097)	900	0.25000	1.18(aM)
6 Bromomethane	94	1.346	1.346	(0.321)	1657	0.25000	0.69(aM)
19 Carbon Disulfide	76	2.069	2.069	(0.494)	9170	0.50000	0.61(a)
34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	2055	0.25000	2.11(aM)
59 Chlorobenzene	112	7.699	7.699	(1.004)	4461	0.25000	0.31(a)
7 Chloroethane	64	1.403	1.403	(0.335)	1251	0.25000	0.33(aM)
28 Chloroform	83	3.917	3.917	(0.935)	2816	0.25000	0.31(a)
3 Chloromethane	50	1.074	1.074	(0.256)	3463	0.25000	(aM)
27 cis-1,2-Dichloroethene	96	3.538	3.538	(0.844)	1636	0.25000	0.28(a)
46 cis-1,3-Dichloropropene	75	6.166	6.166	(1.241)	2425	0.25000	0.27(a)
55 Dibromochloromethane	129	7.176	7.176	(0.936)	1369	0.25000	0.26(a)
44 Dibromomethane	93	5.558	5.558	(1.118)	947	0.25000	0.29(a)
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	1336	0.25000	2.10(aM)
61 Ethylbenzene	106	7.807	7.807	(1.018)	2146	0.25000	0.30(a)
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	662	0.25000	1.21(aM)
67 Isopropylbenzene	105	8.566	8.566	(1.117)	6324	0.25000	0.30(a)
62 m,p-Xylenes	106	7.914	7.914	(1.032)	5314	0.50000	0.61(a)
17 Methylene Chloride	84	2.306	2.306	(0.550)	2375	0.25000	0.41(a)
87 n-Butylbenzene	91	9.999	9.999	(1.034)	4228	0.25000	0.27(a)
73 n-Propylbenzene	91	8.917	8.917	(0.922)	7052	0.25000	0.28(a)
92 Naphthalene	128	11.567	11.567	(1.196)	1660	0.25000	0.24(a)
63 o-Xylene	106	8.251	8.251	(1.076)	2632	0.25000	0.30(a)
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	5909	0.25000	0.28(a)
64 Styrene	104	8.272	8.272	(1.078)	4023	0.25000	0.28(a)
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	4318	0.25000	0.29(a)
56 Tetrachloroethene	164	6.933	6.933	(0.904)	1322	0.25000	0.30(a)
50 Toluene	91	6.453	6.453	(0.841)	6327	0.25000	0.30(a)
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	1422	0.25000	0.29(a)
51 trans-1,3-Dichloropropene	75	6.697	6.697	(1.347)	1939	0.25000	0.27(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	1642	0.25000	0.30(a)
8 Trichlorofluoromethane	101	1.568	1.568	(0.374)	2294	0.25000	1.04(a)
5 Vinyl Chloride	62	1.145	1.145	(0.273)	2099	0.25000	0.31(aM)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031402.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031403.D
Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031403.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 14-MAR-2019 11:57
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 11:33 Cal File: X031402.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	473435	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	737859	50.0000	
*	47 Chlorobenzene-d5	117	7.670	7.670	(1.000)	702812	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	356016	50.0000	
$	30 Dibromofluoromethane	113	4.110	4.110	(0.981)	2889	0.50000	0.54(a)
$	35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.070)	3467	0.50000	0.44(a)
$	48 Toluene-d8	98	6.395	6.395	(0.834)	11732	0.50000	0.46(a)
$	69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	5465	0.50000	0.49(a)
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	2321	0.50000	0.48(a)
	31 1,1,1-Trichloroethane	97	4.096	4.096	(0.978)	3868	0.50000	0.56(a)
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	3094	0.50000	0.53(aM)
	53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	2146	0.50000	0.55(a)
	22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	4851	0.50000	0.55(a)
	11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	2364	0.50000	0.58(a)
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	4139	0.50000	0.62(a)
	93 1,2,3-Trichlorobenzene	180	11.753	11.753	(1.216)	1489	0.50000	0.59(aM)
	71 1,2,3-Trichloropropane	75	8.874	8.874	(0.918)	2126	0.50000	0.47(a)
	90 1,2,4-Trichlorobenzene	180	11.352	11.352	(1.174)	2212	0.50000	0.49(aM)
	79 1,2,4-Trimethylbenzene	105	9.382	9.382	(0.970)	8896	0.50000	0.52(a)
	89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.103)	327	0.50000	0.46(aM)
	57 1,2-Dibromoethane	107	7.269	7.269	(0.948)	2268	0.50000	0.48(a)
	88 1,2-Dichlorobenzene	146	9.998	9.998	(1.034)	5545	0.50000	0.54(a)

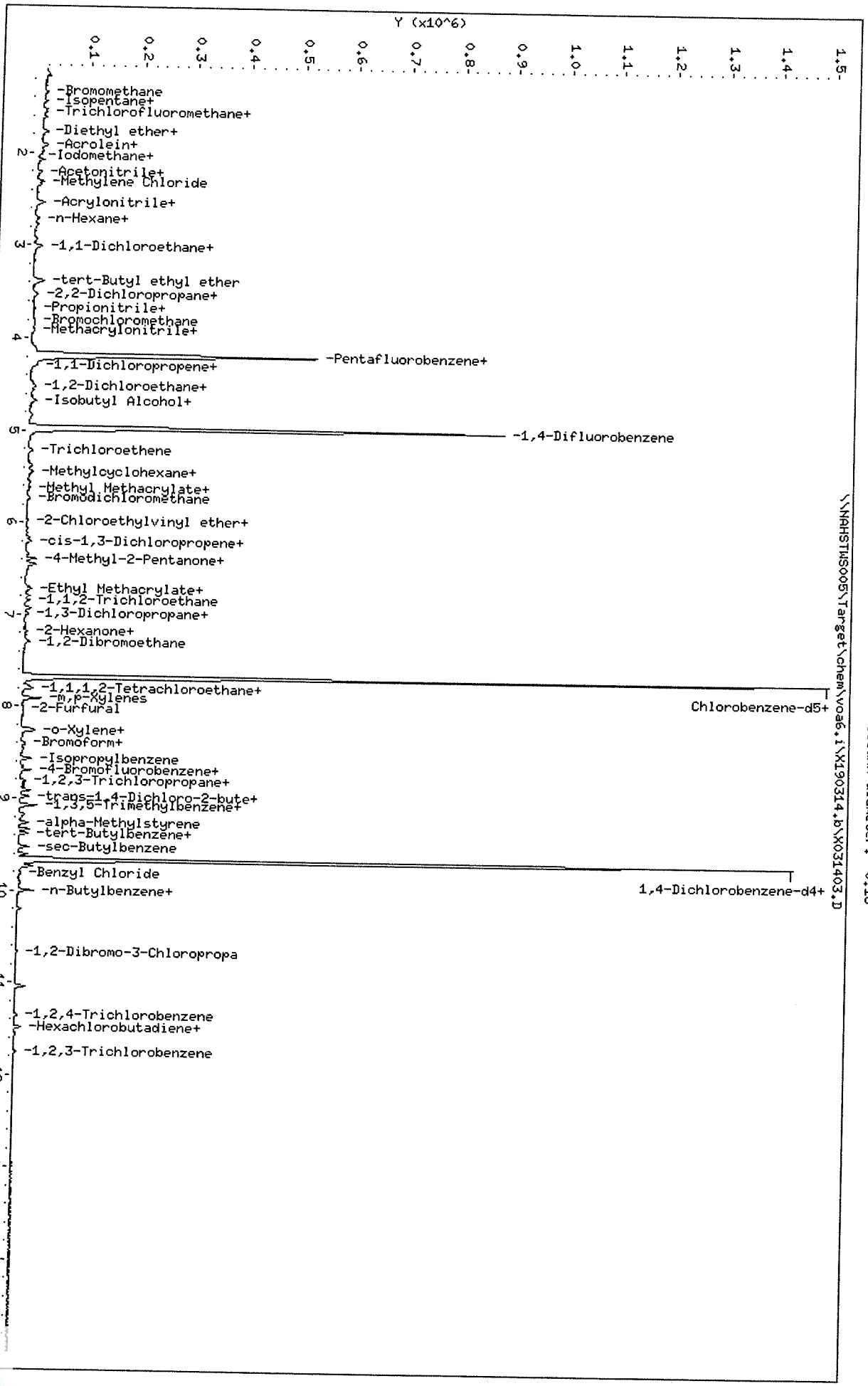
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031403.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	3181	0.50000	0.51(a)
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	2856	0.50000	0.55(aM)
75 1,3,5-Trimethylbenzene	105	9.074	9.074	(0.939)	8603	0.50000	0.51(a)
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	5631	0.50000	0.52(a)
54 1,3-Dichloropropane	76	6.990	6.990	(0.911)	4241	0.50000	0.54(a)
84 1,4-Dichlorobenzene	146	9.690	9.690	(1.002)	6145	0.50000	0.56(a)
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	3729	0.50000	0.55(a)
24 2-Butanone	43	3.609	3.609	(0.862)	1544	1.00000	0.95(aM)
76 2-Chlorotoluene	91	8.981	8.981	(0.929)	8909	0.50000	0.58(a)
52 2-Hexanone	43	7.105	7.105	(0.926)	3025	1.00000	1.09(a)
77 4-Chlorotoluene	91	9.074	9.074	(0.939)	9464	0.50000	0.54(a)
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	10014	0.50000	0.56(a)
45 4-Methyl-2-Pentanone	43	6.338	6.338	(0.826)	4602	1.00000	1.07(a)
10 Acetone	43	1.976	1.976	(0.472)	5365	1.00000	0.08(a)
37 Benzene	78	4.526	4.526	(0.911)	10502	0.50000	0.55(a)
74 Bromobenzene	156	8.809	8.809	(0.911)	3173	0.50000	0.52(a)
29 Bromochloromethane	128	3.802	3.802	(0.908)	1359	0.50000	0.51(a)
39 Bromodichloromethane	83	5.736	5.736	(1.154)	3215	0.50000	0.51(aM)
66 Bromoform	173	8.415	8.415	(1.097)	1344	0.50000	1.31(Ta)
6 Bromomethane	94	1.338	1.338	(0.320)	2332	0.50000	0.94(aM)
19 Carbon Disulfide	76	2.076	2.076	(0.496)	15137	1.00000	1.09(a)
34 Carbon Tetrachloride	117	4.275	4.275	(0.860)	3862	0.50000	2.43(aM)
59 Chlorobenzene	112	7.699	7.699	(1.004)	7805	0.50000	0.56(a)
7 Chloroethane	64	1.403	1.403	(0.335)	1731	0.50000	0.50(aM)
28 Chloroform	83	3.910	3.910	(0.933)	4529	0.50000	0.53(a)
3 Chloromethane	50	1.073	1.073	(0.256)	4606	0.50000	(aM)
27 cis-1,2-Dichloroethene	96	3.537	3.537	(0.844)	2960	0.50000	0.56(a)
46 cis-1,3-Dichloropropene	75	6.166	6.166	(1.241)	4447	0.50000	0.53(a)
55 Dibromochloromethane	129	7.183	7.183	(0.937)	2430	0.50000	0.48(a)
44 Dibromomethane	93	5.565	5.565	(1.120)	1648	0.50000	0.53(a)
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	2522	0.50000	2.35(a)
61 Ethylbenzene	106	7.807	7.807	(1.018)	3697	0.50000	0.54(a)
91 Hexachlorobutadiene	225	11.488	11.488	(1.188)	2088	0.50000	1.77(a)
67 Isopropylbenzene	105	8.566	8.566	(1.117)	11310	0.50000	0.55(a)
62 m,p-Xylenes	106	7.907	7.907	(1.031)	8894	1.00000	1.05(a)
17 Methylene Chloride	84	2.305	2.305	(0.550)	4119	0.50000	0.80(a)
87 n-Butylbenzene	91	9.998	9.998	(1.034)	8330	0.50000	0.54(a)
73 n-Propylbenzene	91	8.917	8.917	(0.922)	13053	0.50000	0.52(a)
92 Naphthalene	128	11.560	11.560	(1.196)	3023	0.50000	0.45(a)
63 o-Xylene	106	8.251	8.251	(1.076)	4452	0.50000	0.52(a)
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	11329	0.50000	0.54(a)
64 Styrene	104	8.265	8.265	(1.078)	7107	0.50000	0.50(a)
78 tert-Butylbenzene	119	9.339	9.339	(0.966)	8355	0.50000	0.57(a)
56 Tetrachloroethene	164	6.933	6.933	(0.904)	2375	0.50000	0.56(a)
50 Toluene	91	6.453	6.453	(0.841)	11045	0.50000	0.53(a)
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	2187	0.50000	0.48(a)
51 trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	3186	0.50000	0.47(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	2928	0.50000	0.56(a)
8 Trichlorofluoromethane	101	1.560	1.560	(0.373)	3725	0.50000	1.27(a)
5 Vinyl Chloride	62	1.145	1.145	(0.273)	3637	0.50000	0.59(a)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031403.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.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Sample Info: VSTD000.5;VSTD000.5;1;2;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
Min
\\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031403.D
-Bromomethane
-Isopentane+
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Acrylonitrile+
-n-Hexane+
-1,1-Dichloroethane+
-tert-Butyl ethyl ether
-2,2-Dichloropropane+
-Propionitrile+
-Bromochloromethane
-Methacrylonitrile+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether+
-cis-1,3-Dichloropropene+
-4-Methyl-2-Pentanone+
-Ethyl Methacrylate+
-1,1,2-Trichloroethane
-1,3-Dichloropropane+
-2-Hexanone+
-1,2-Dibromoethane
Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
-2-Furfural
-o-Xylene+
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,2,3-Trichloropropane+
-trans-1,4-Dichloro-2-bute+
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene

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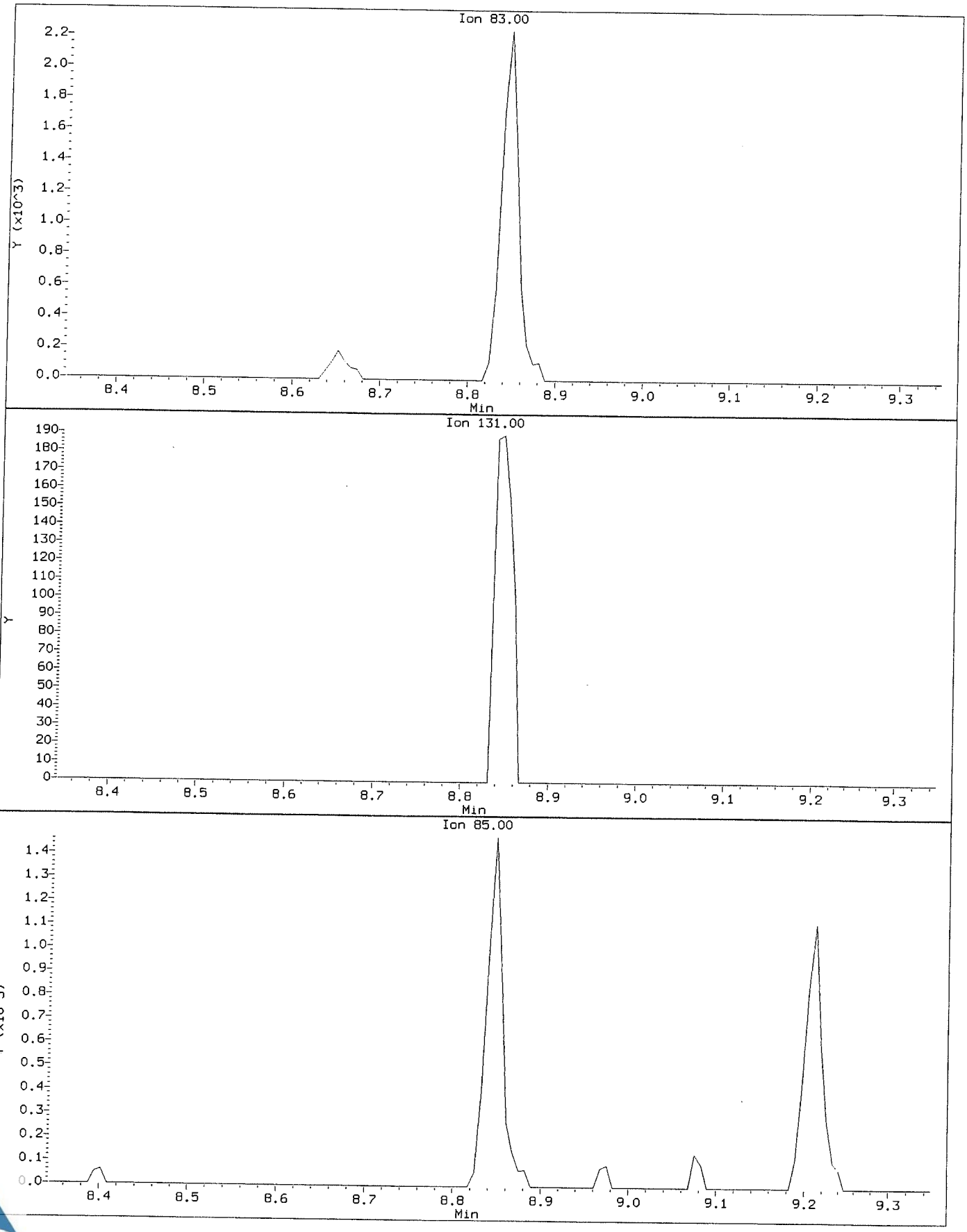
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
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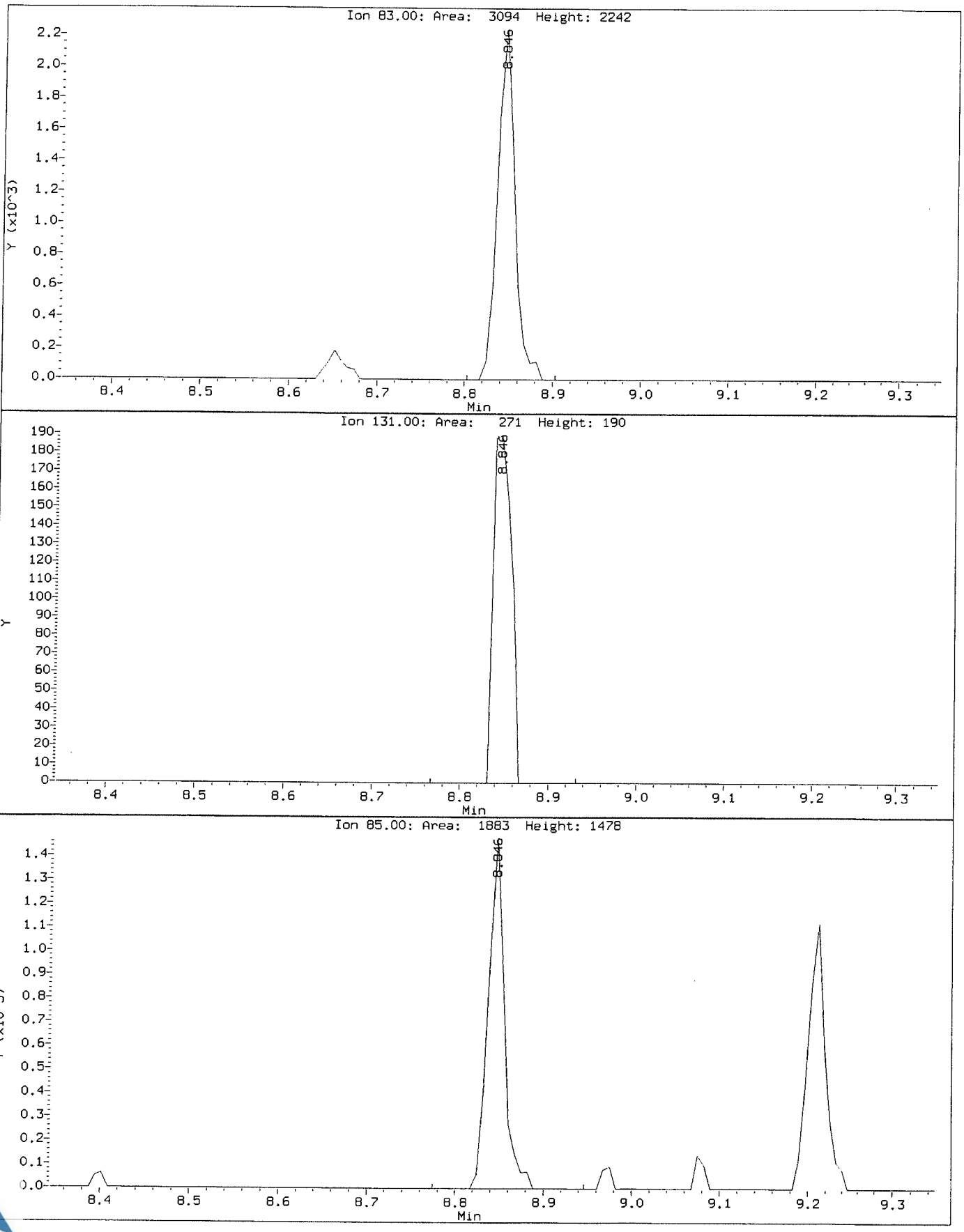

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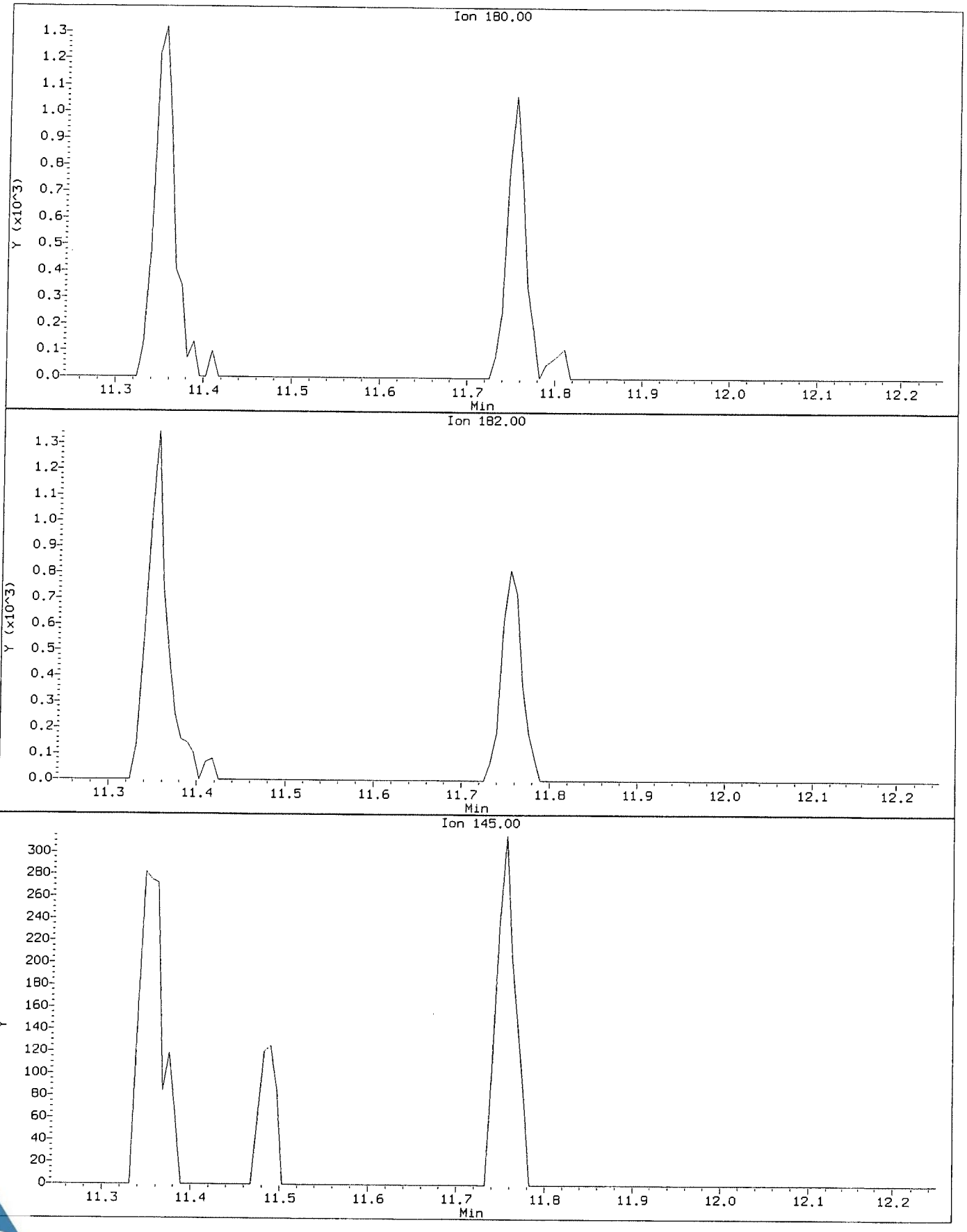
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



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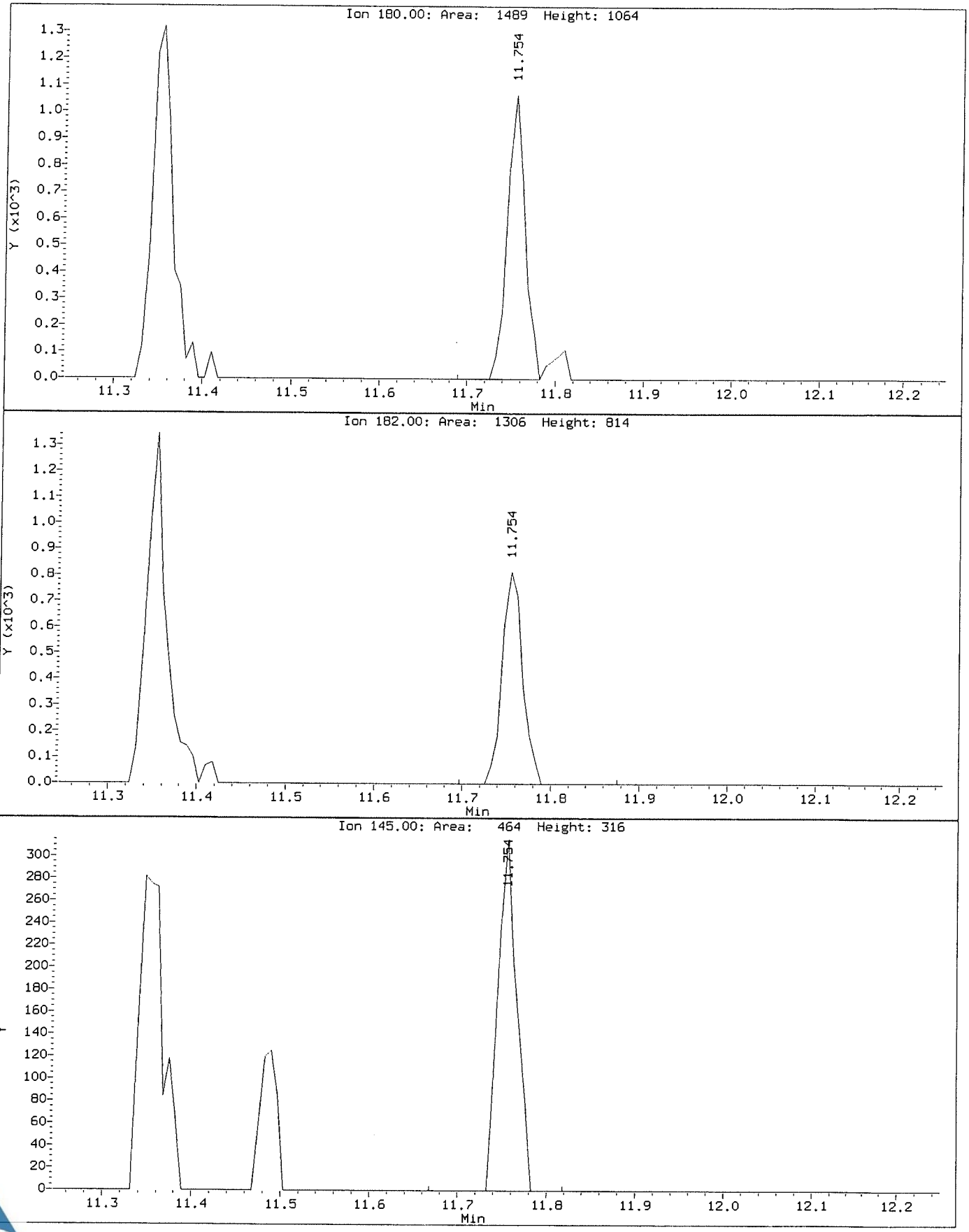
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



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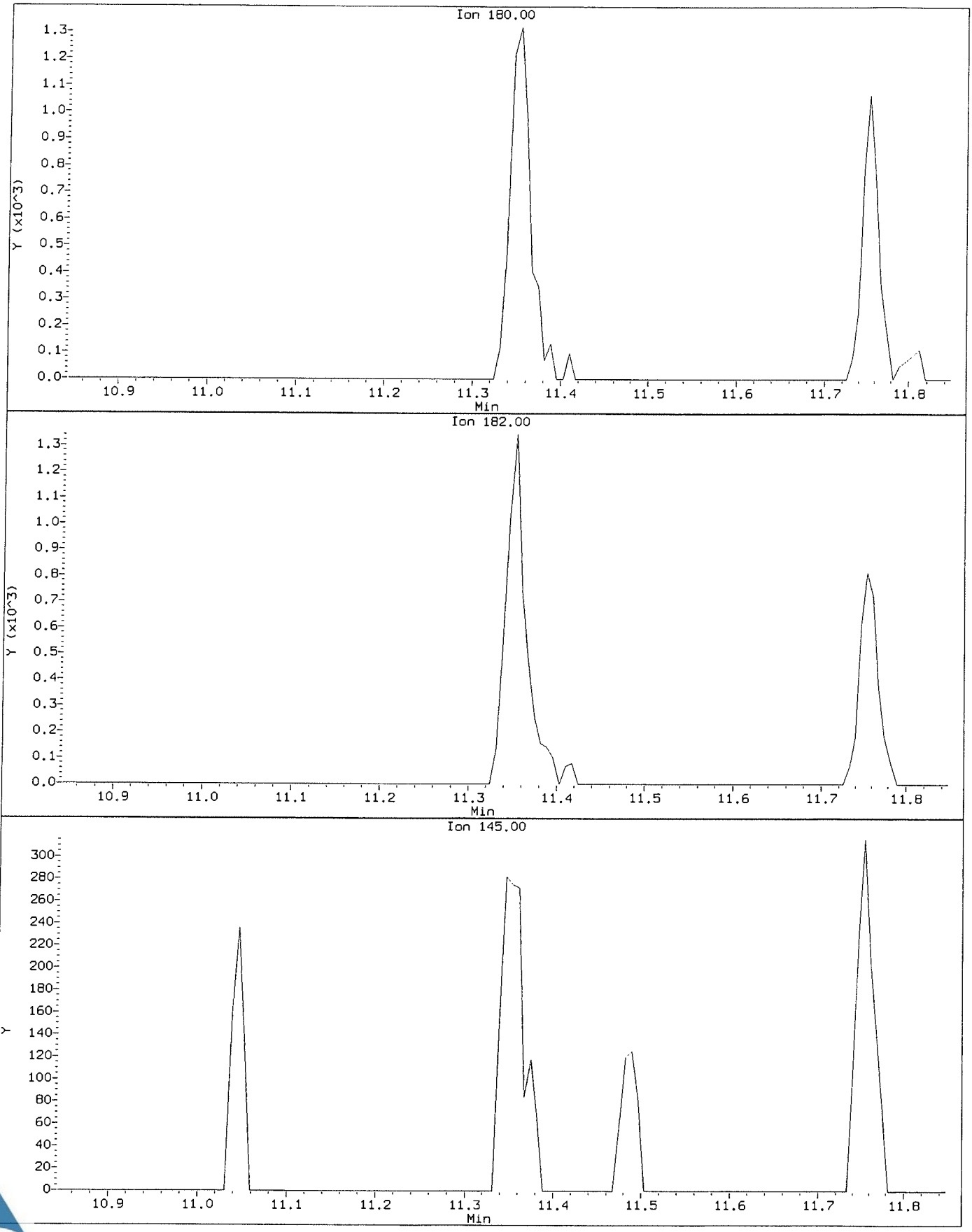
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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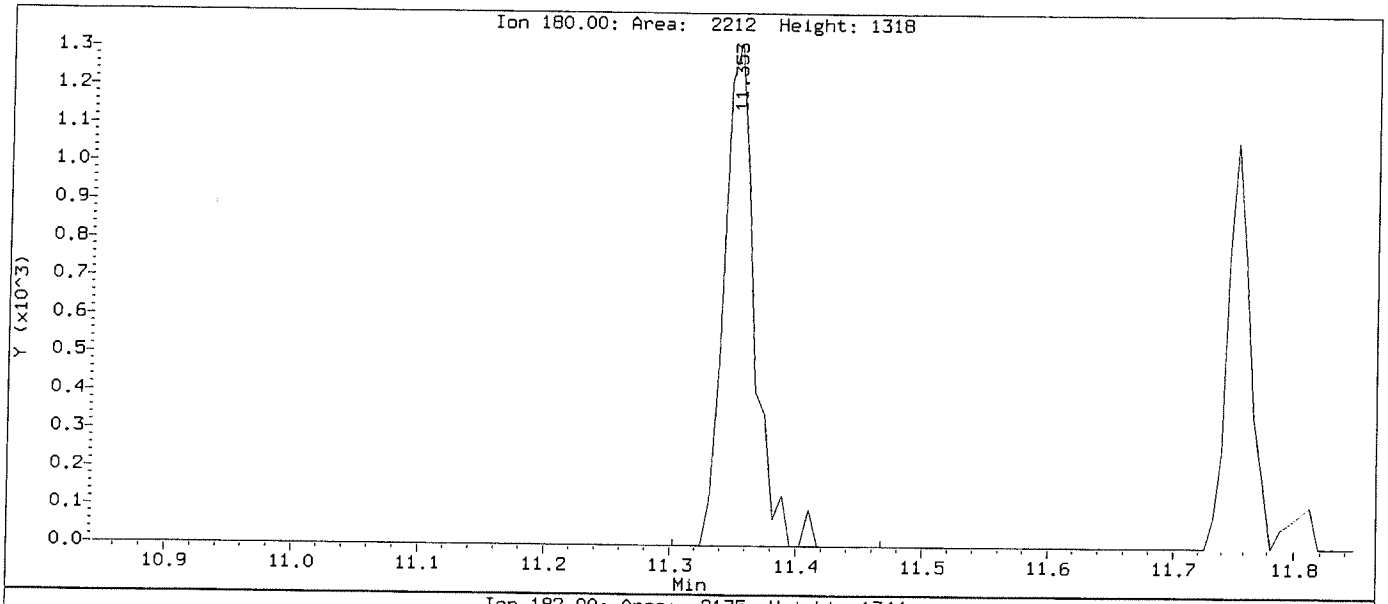
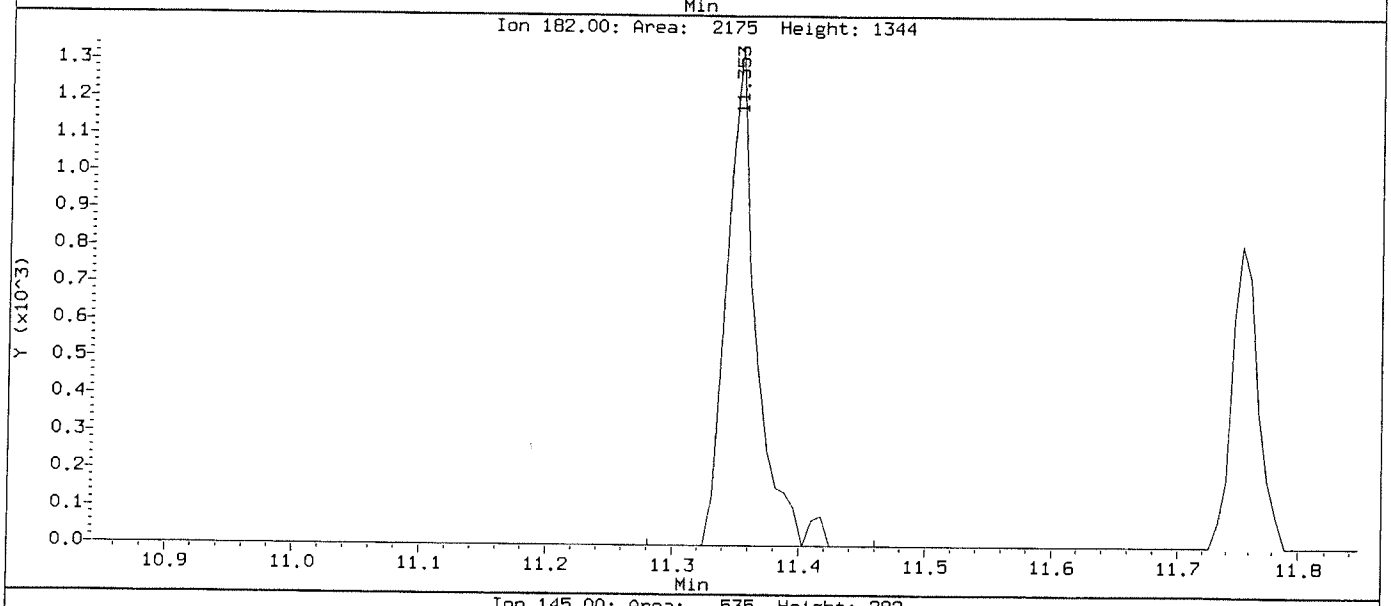
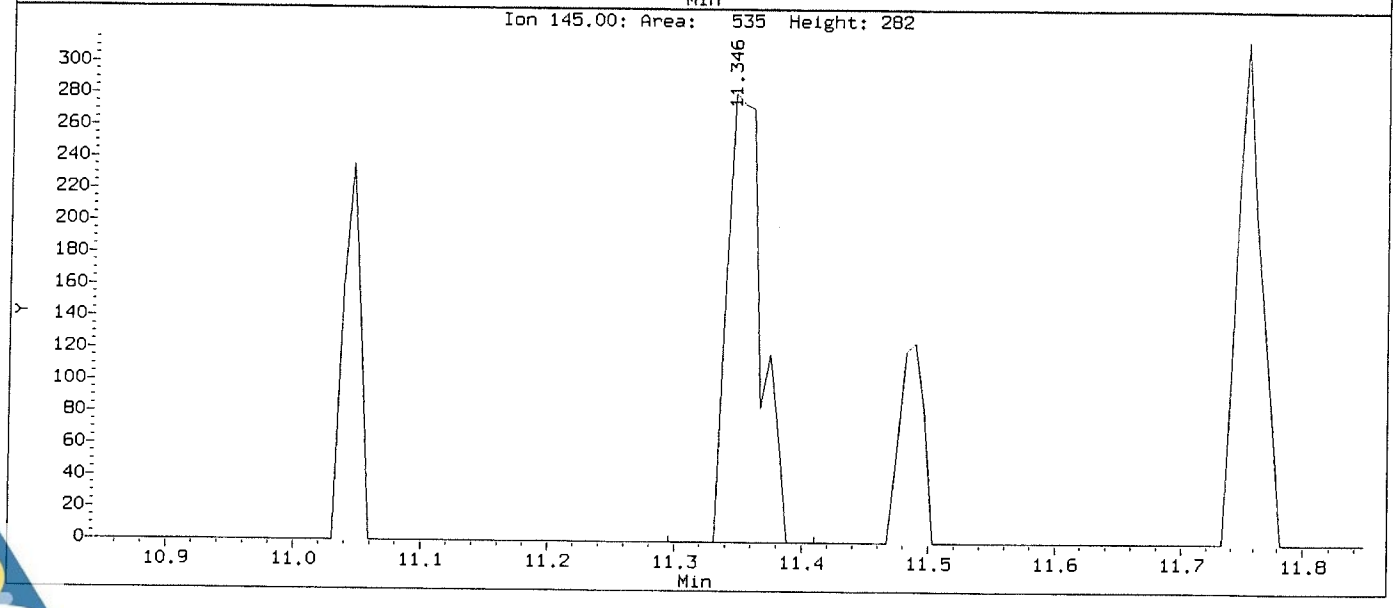
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1







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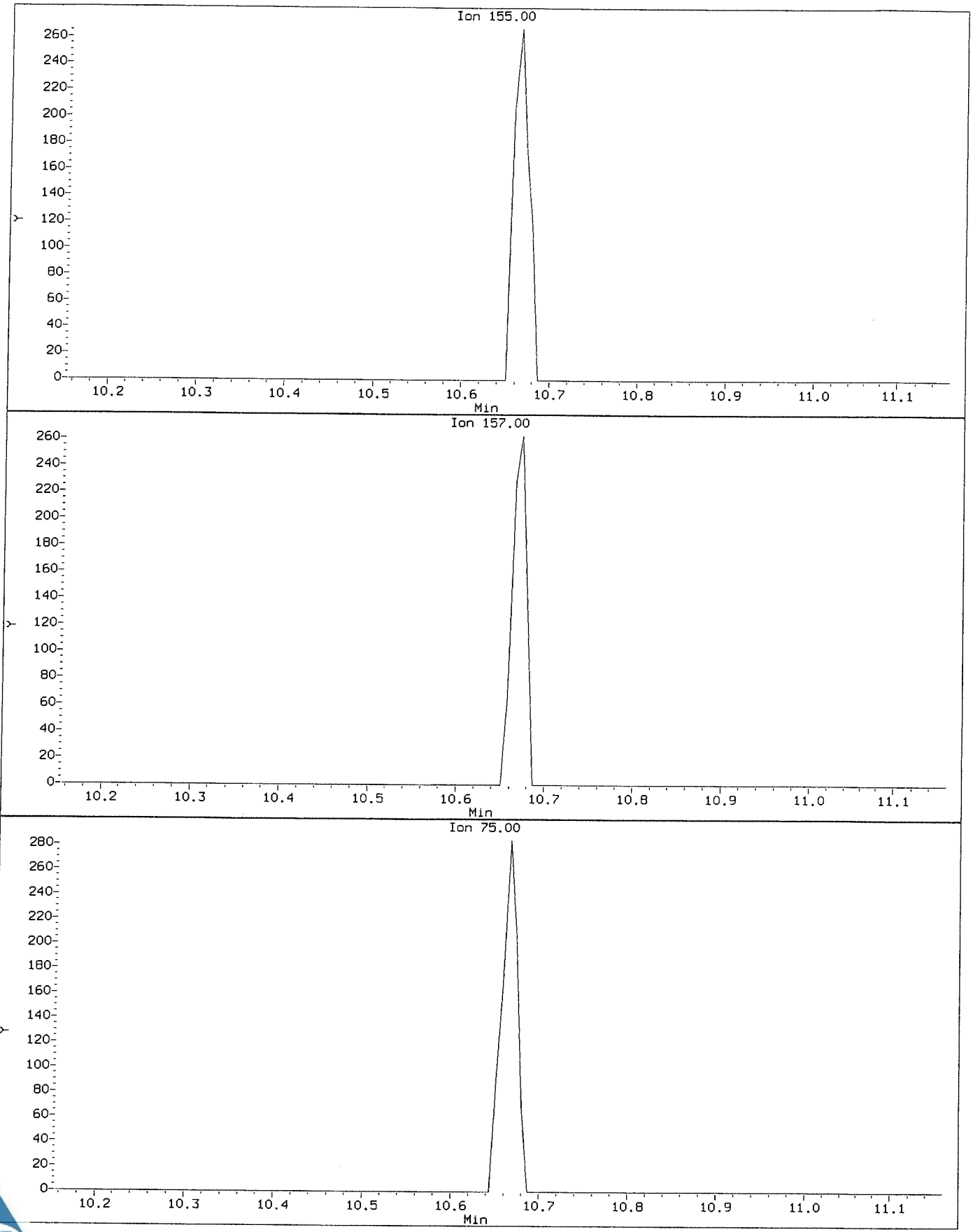
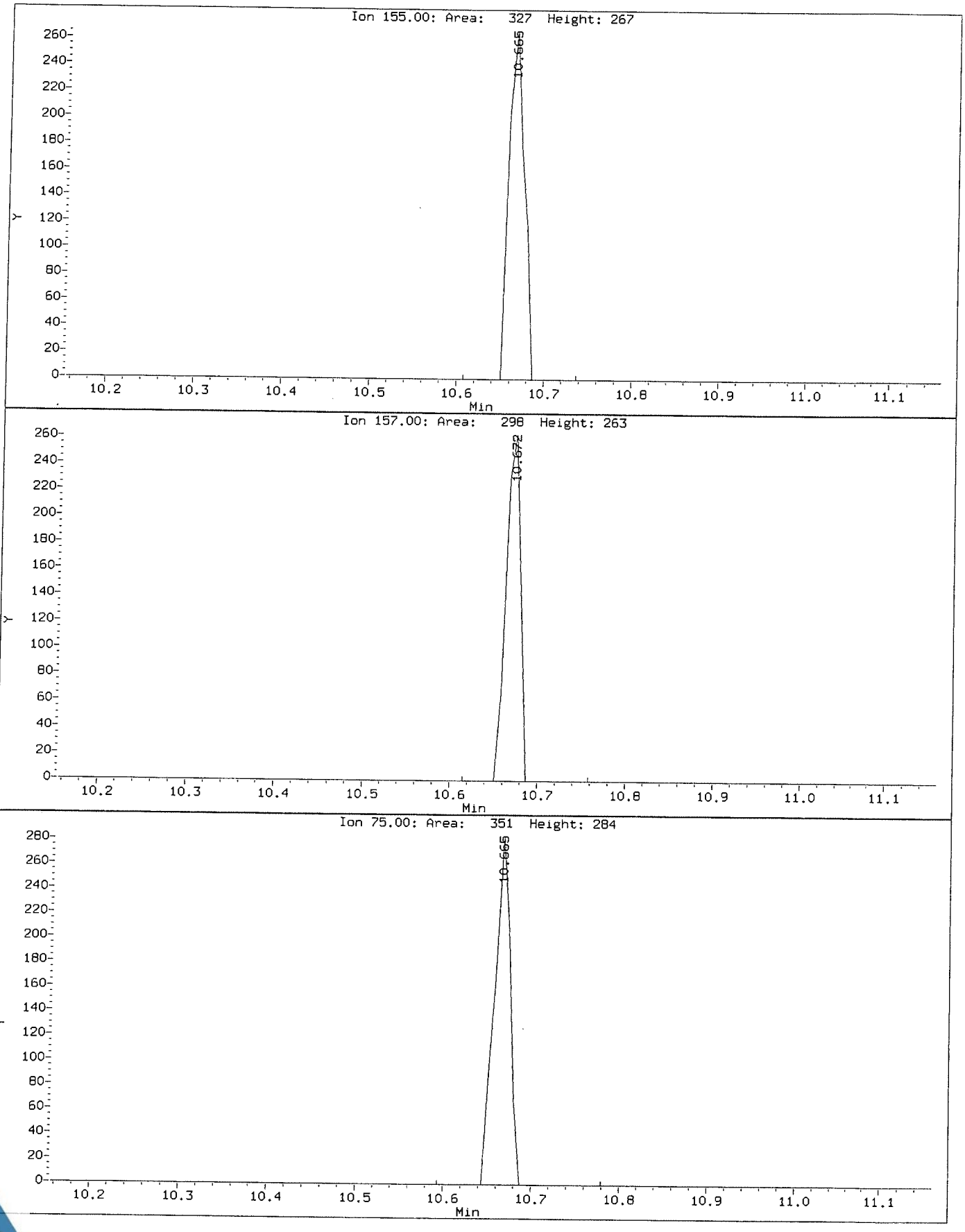
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031403.D
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



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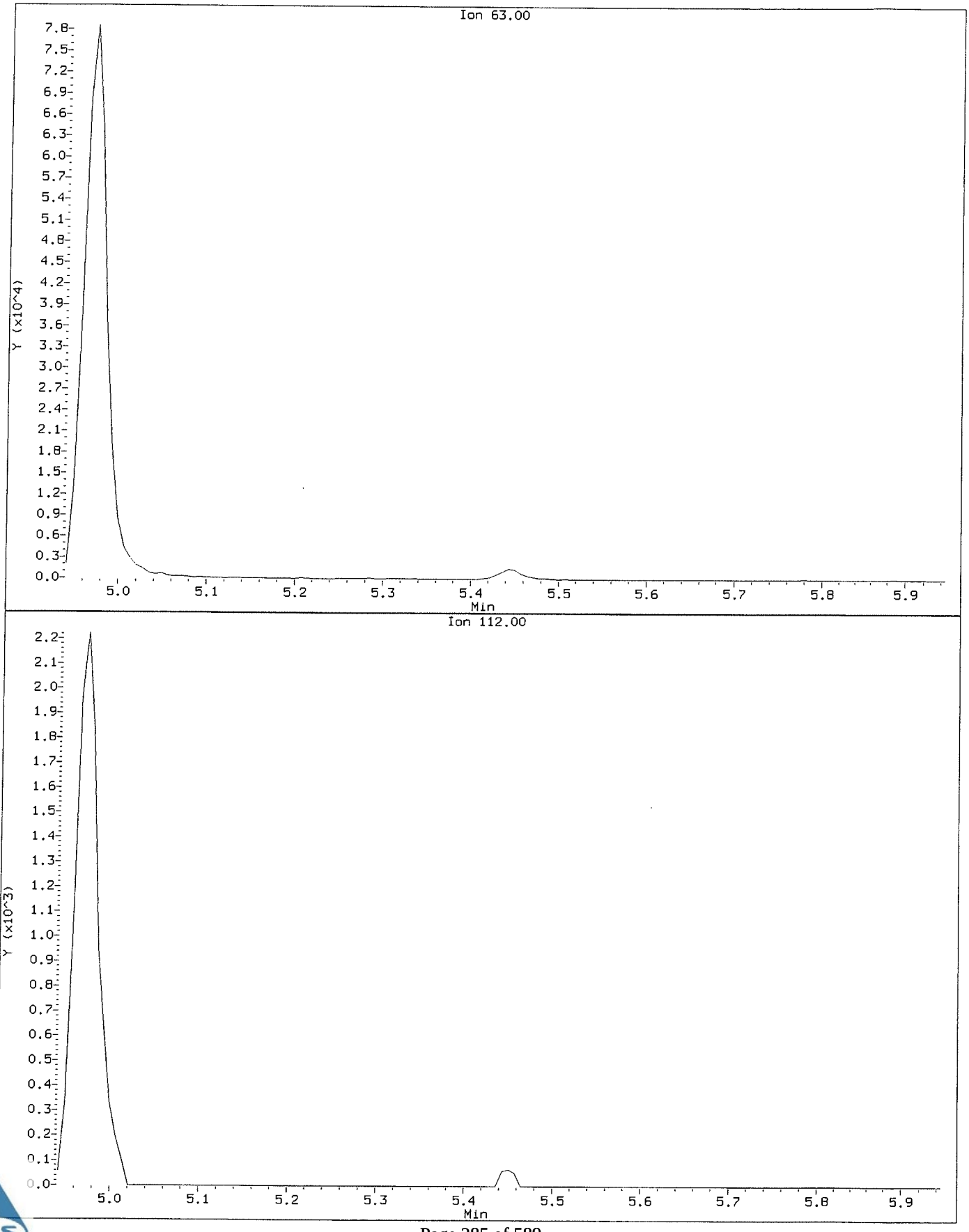
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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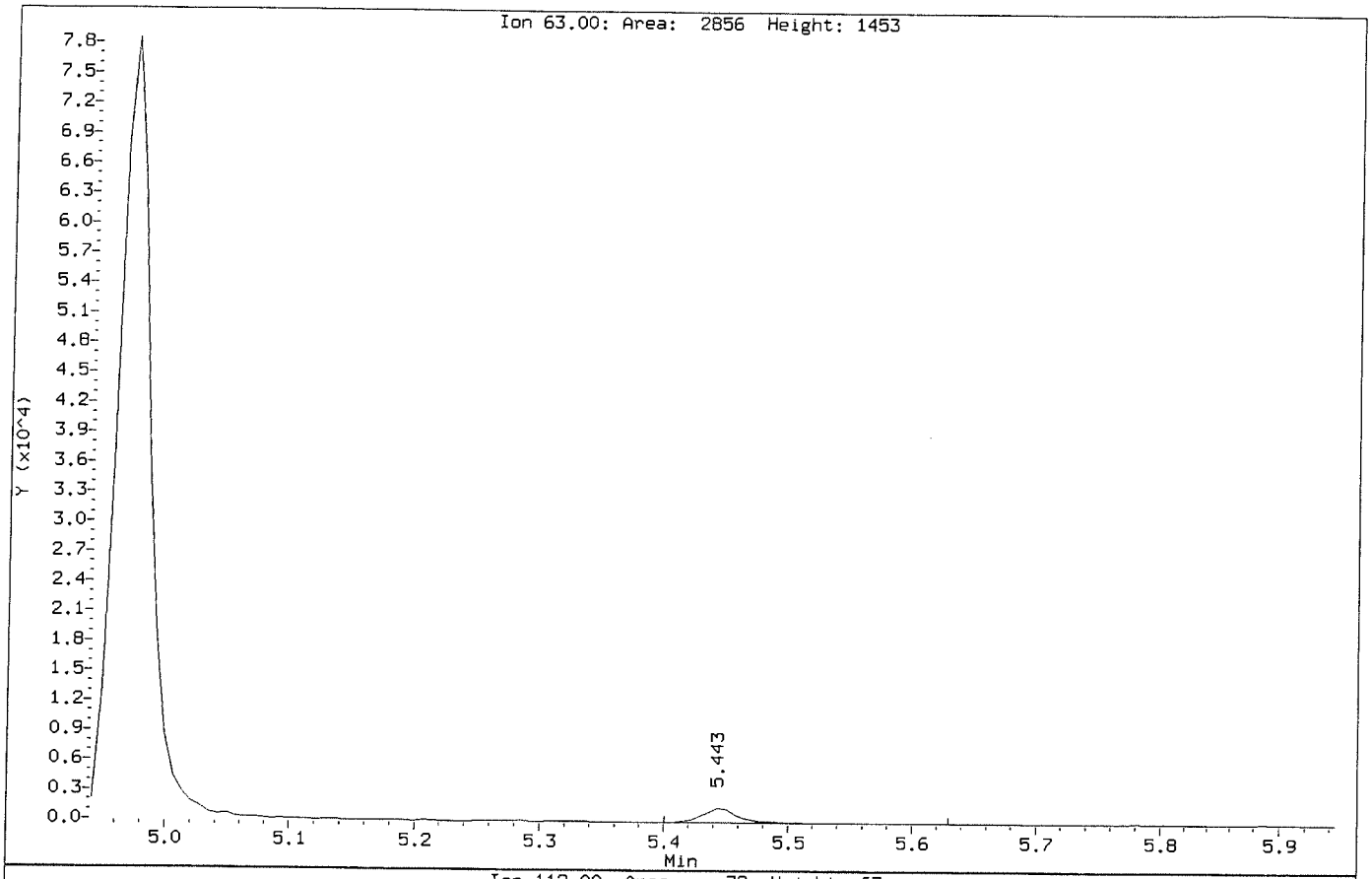
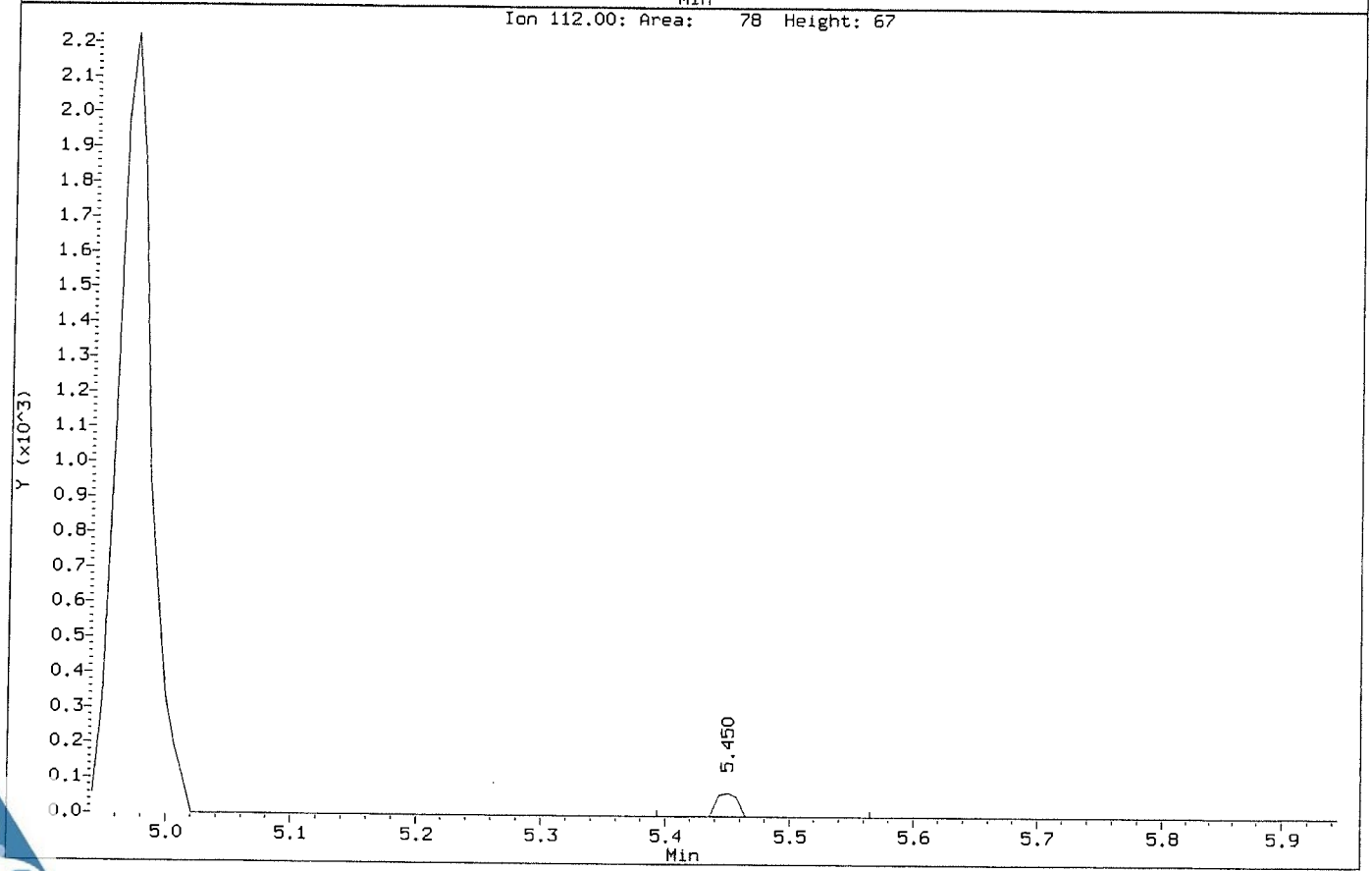
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5





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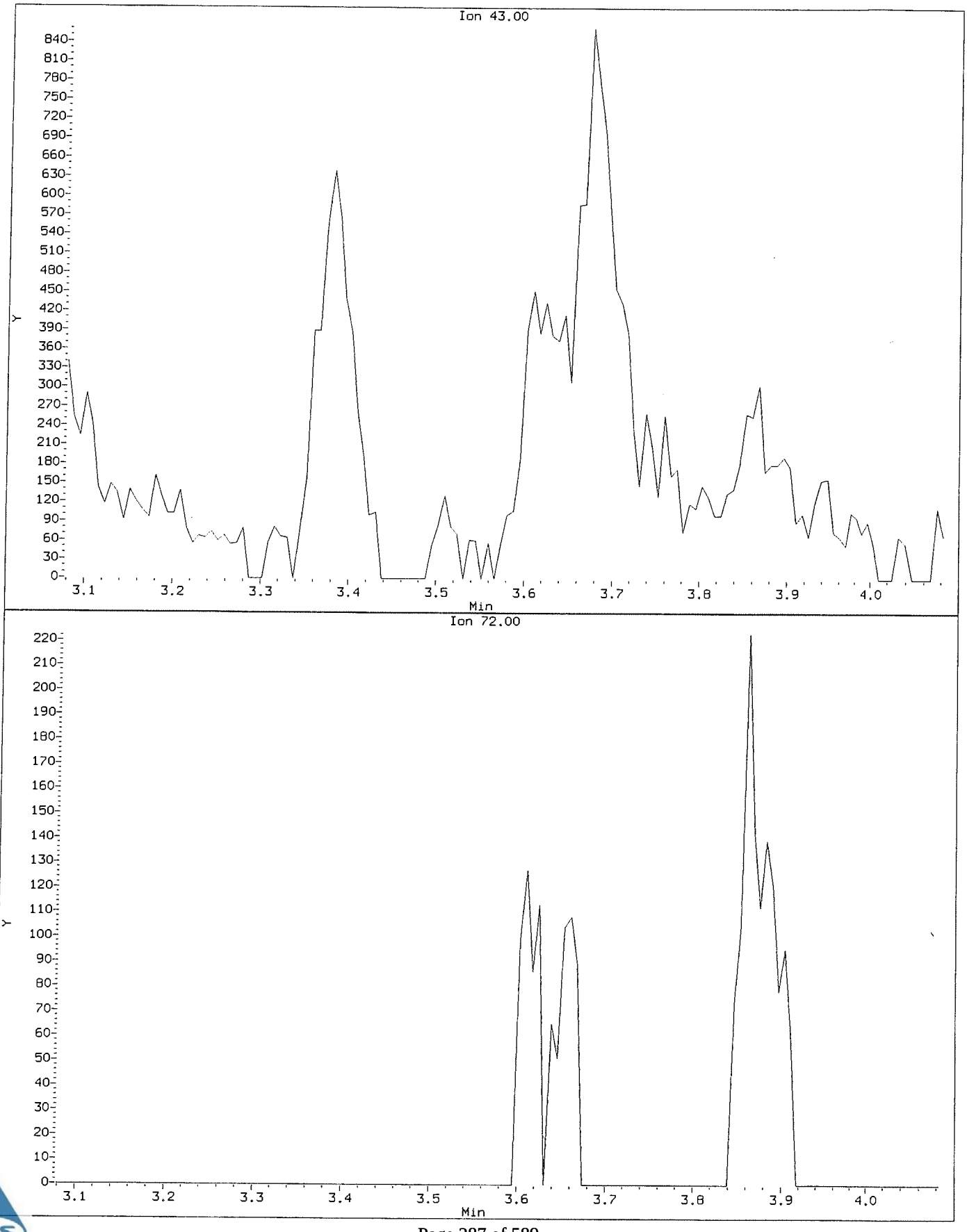
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Butanone
CAS Number: 78-93-3



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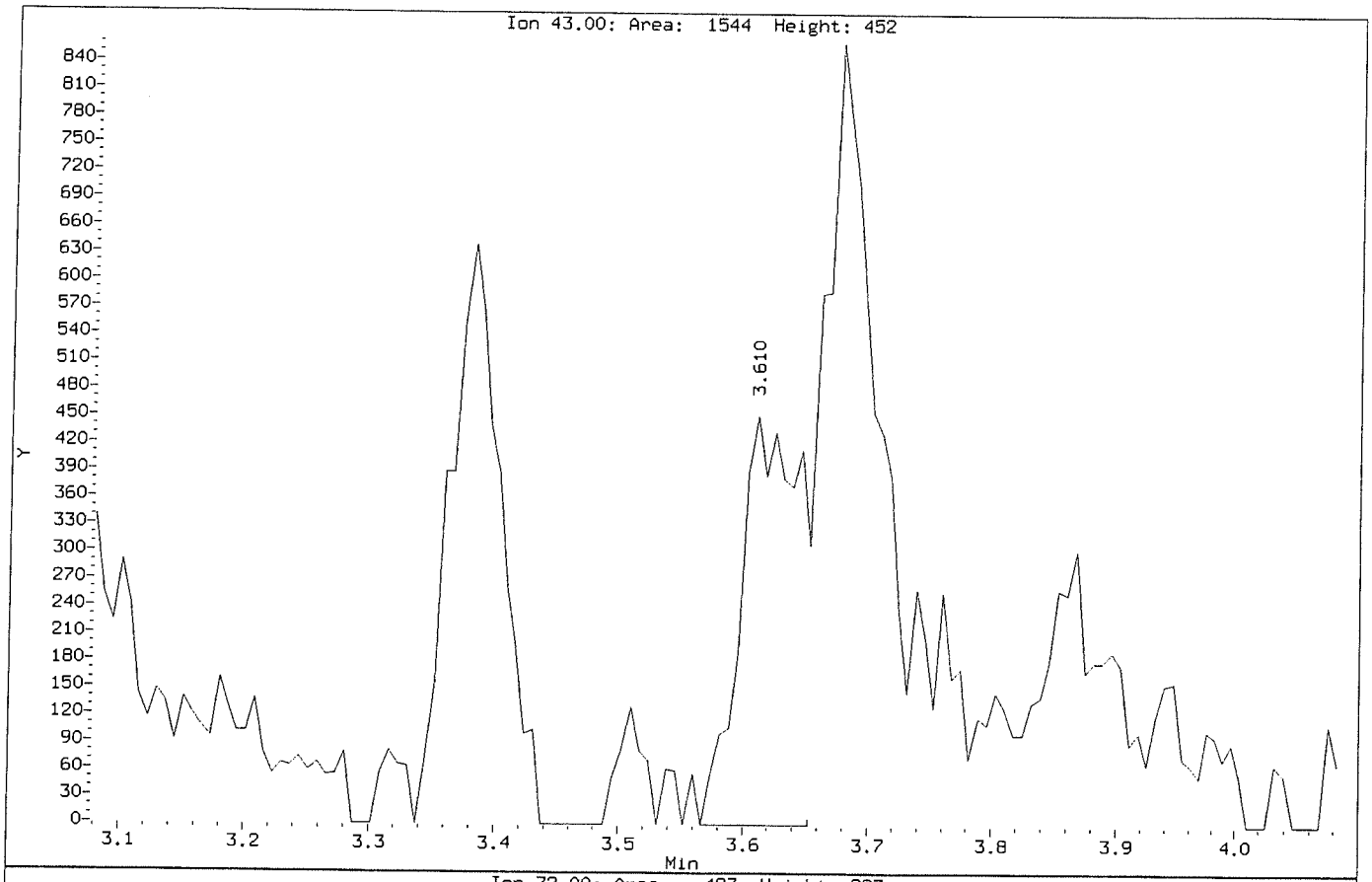
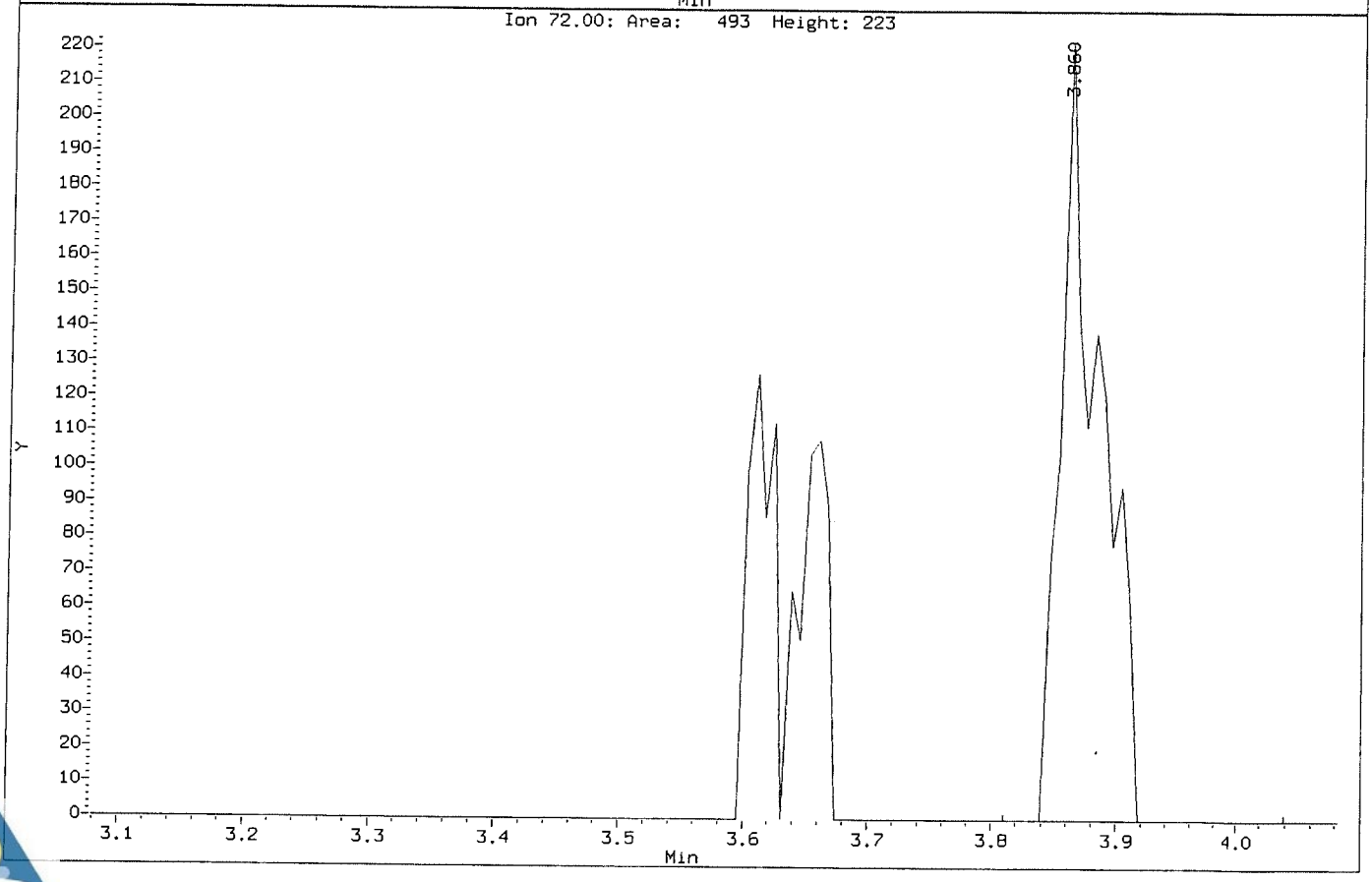
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Butanone
CAS Number: 78-93-3





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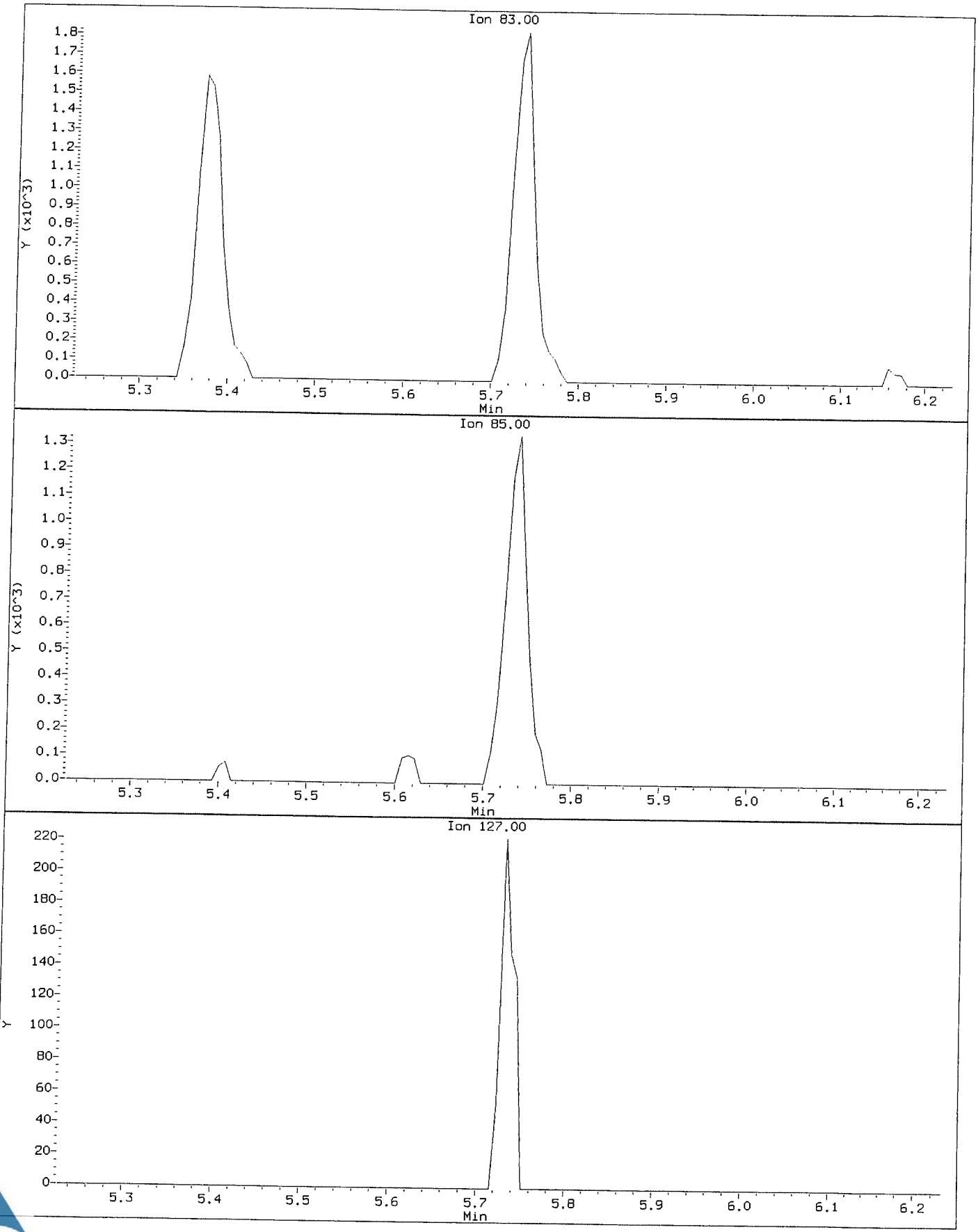
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



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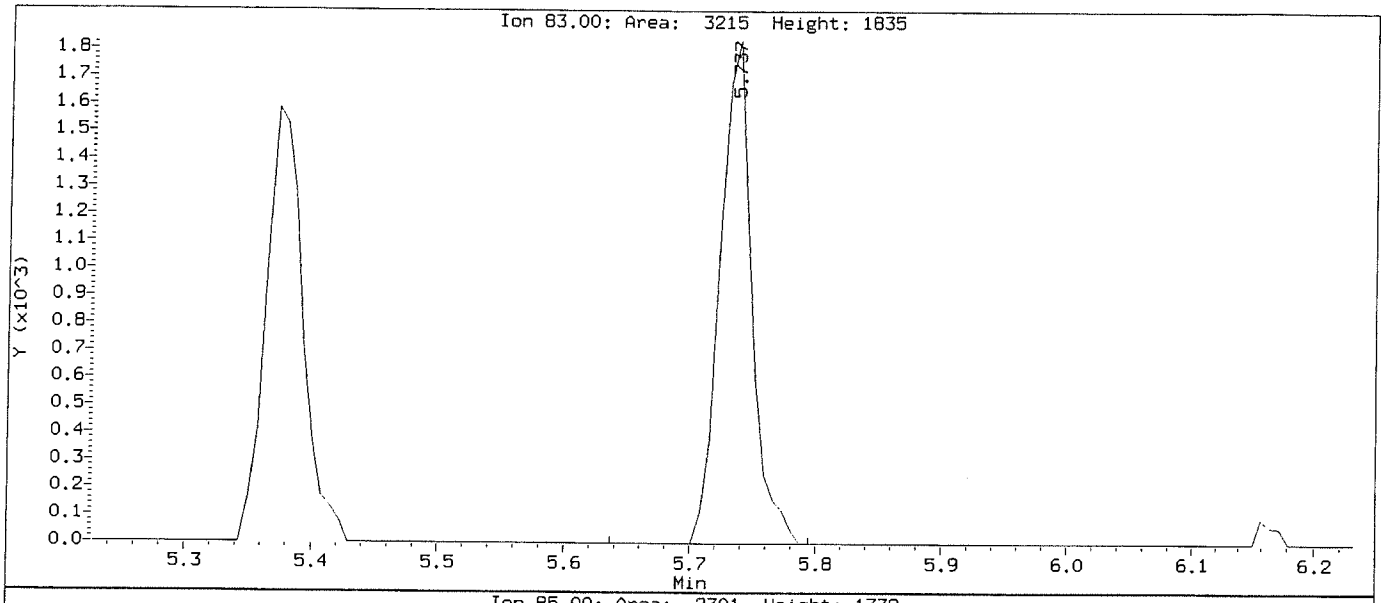
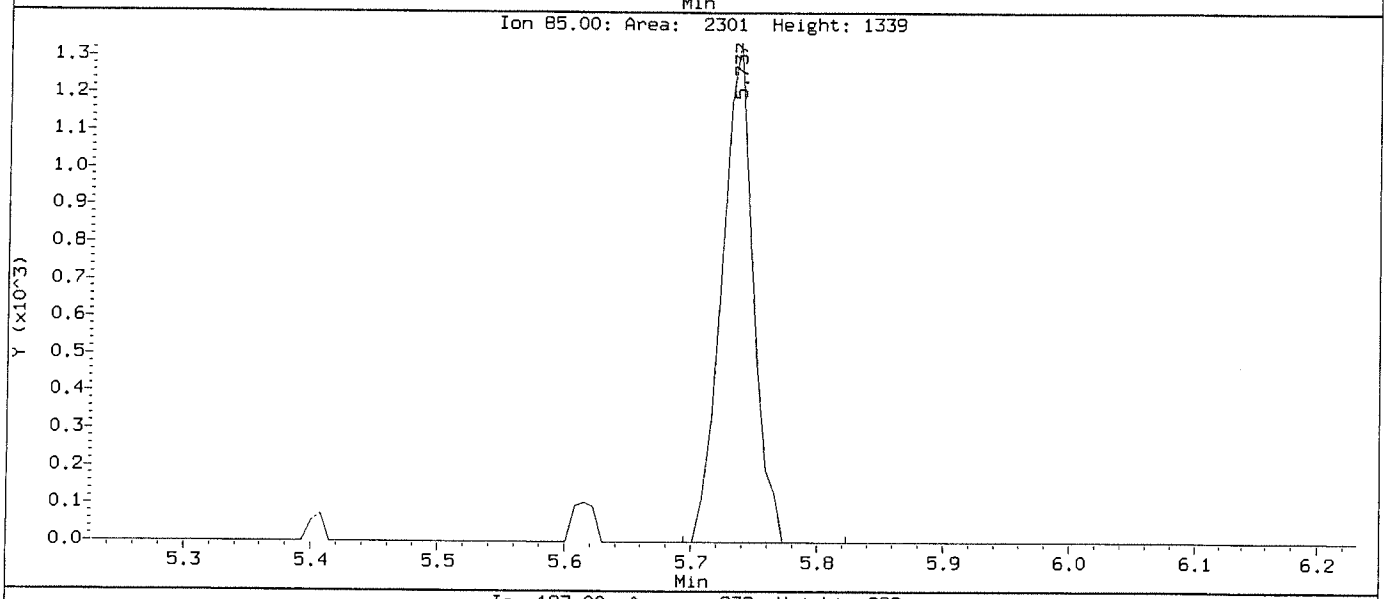
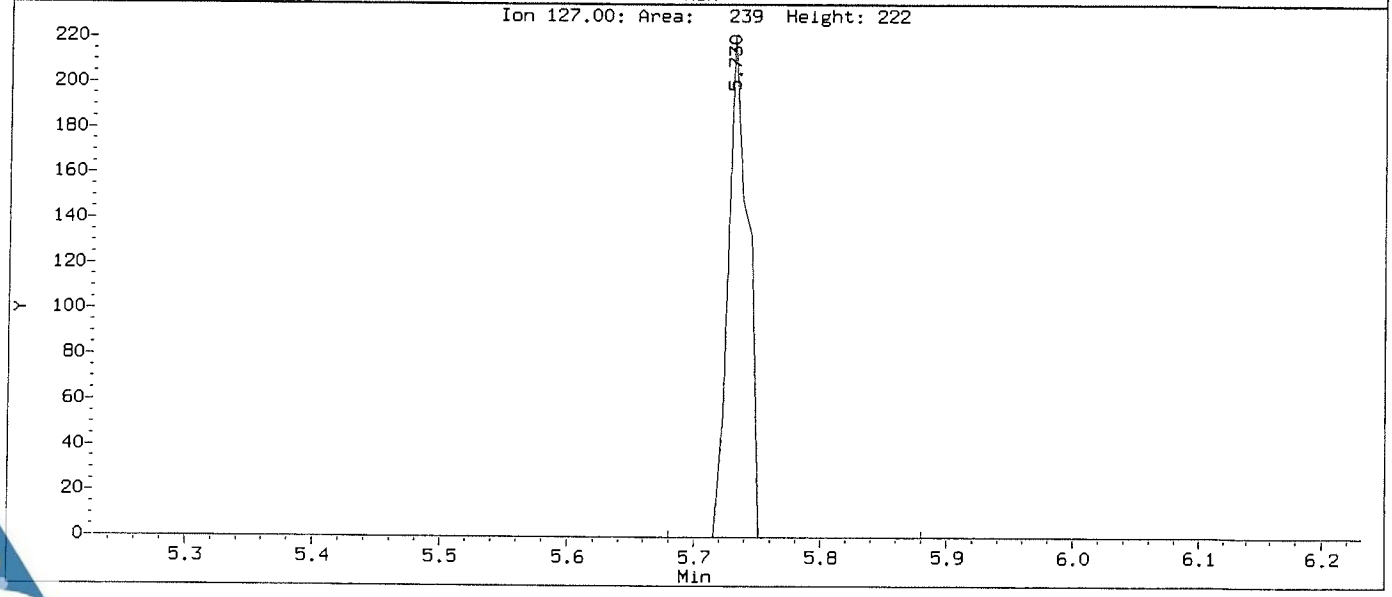
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4

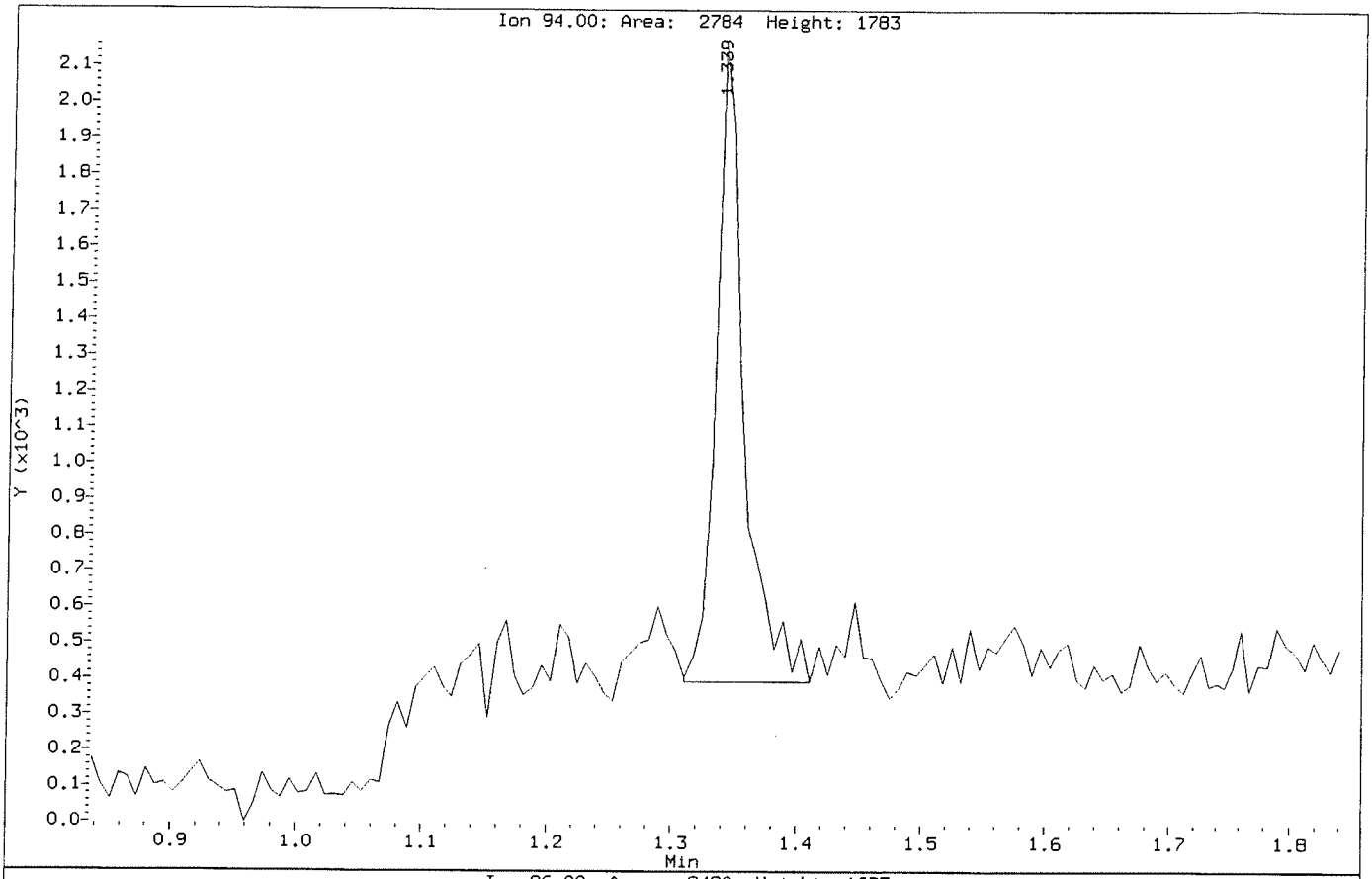


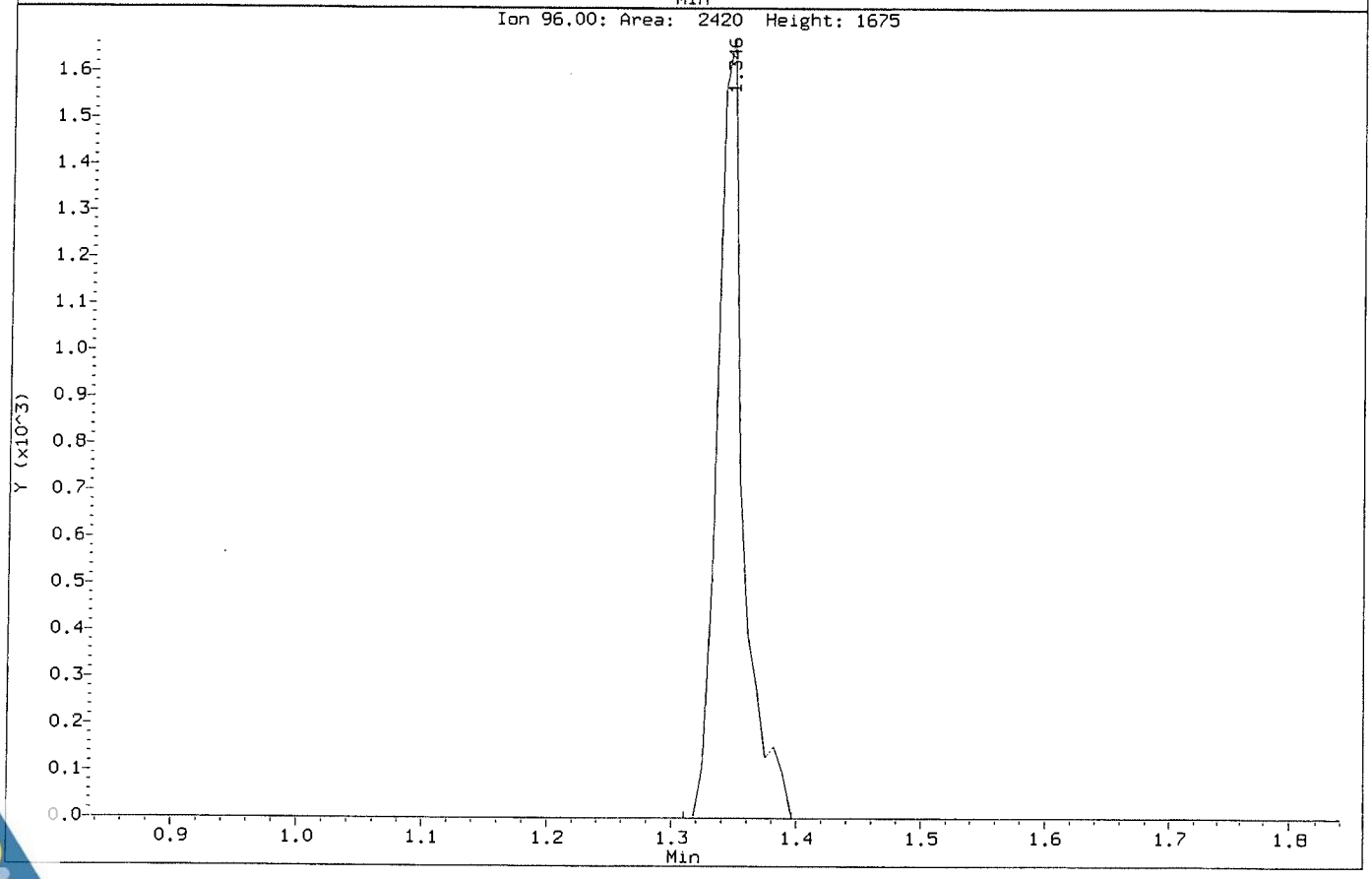




Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031403.D
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromomethane
CAS Number: 74-83-9





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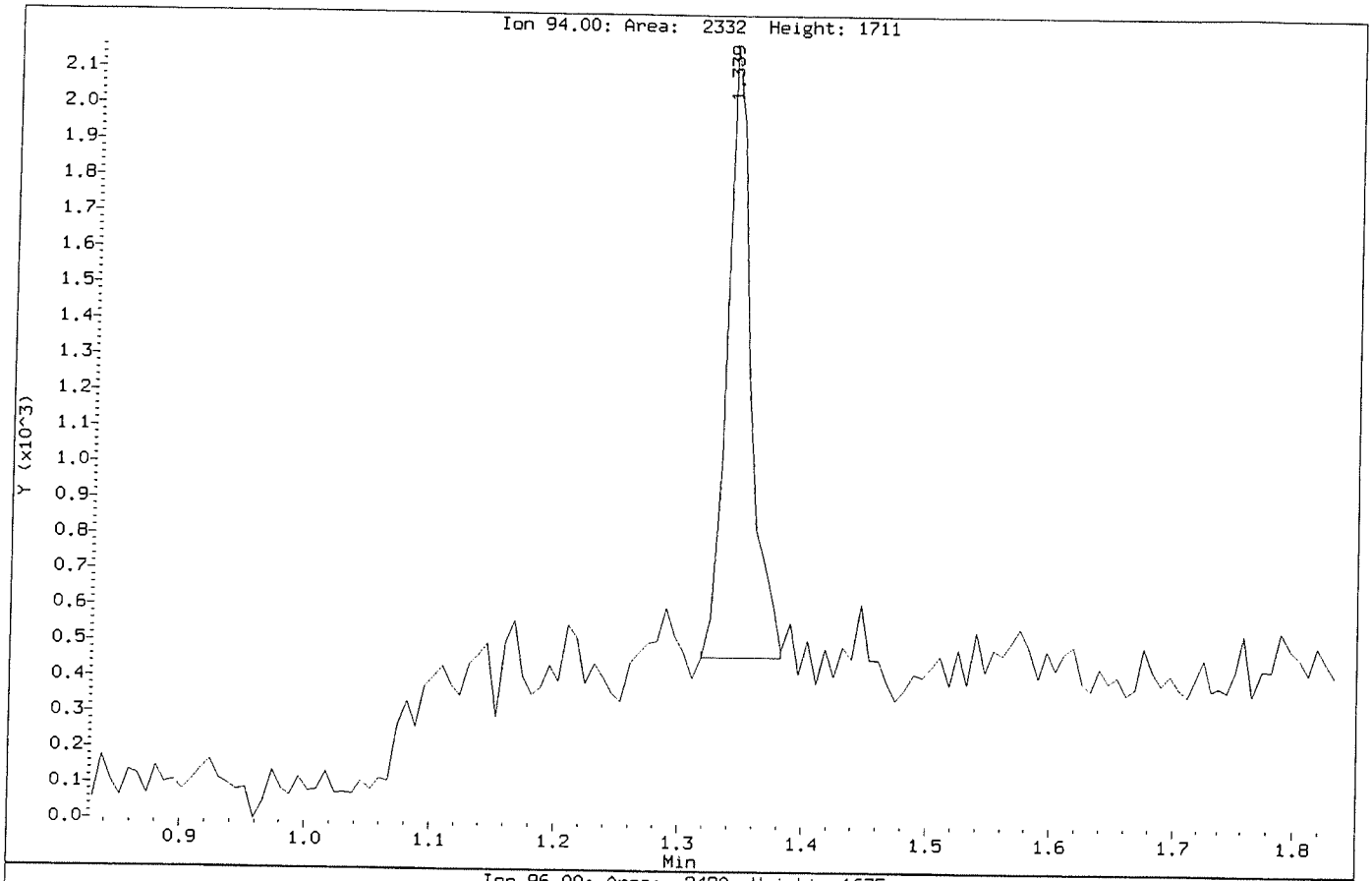
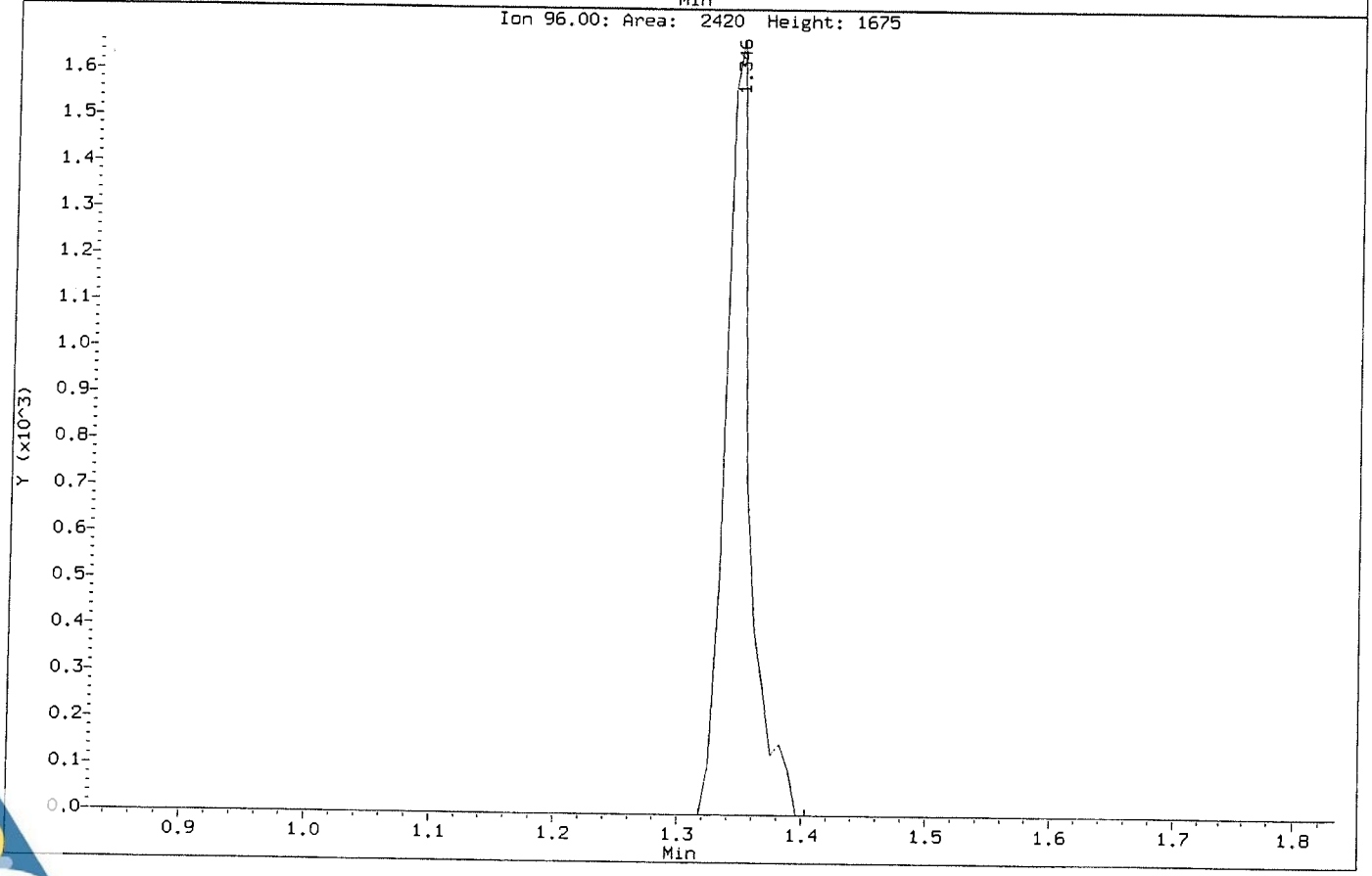
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromomethane
CAS Number: 74-83-9





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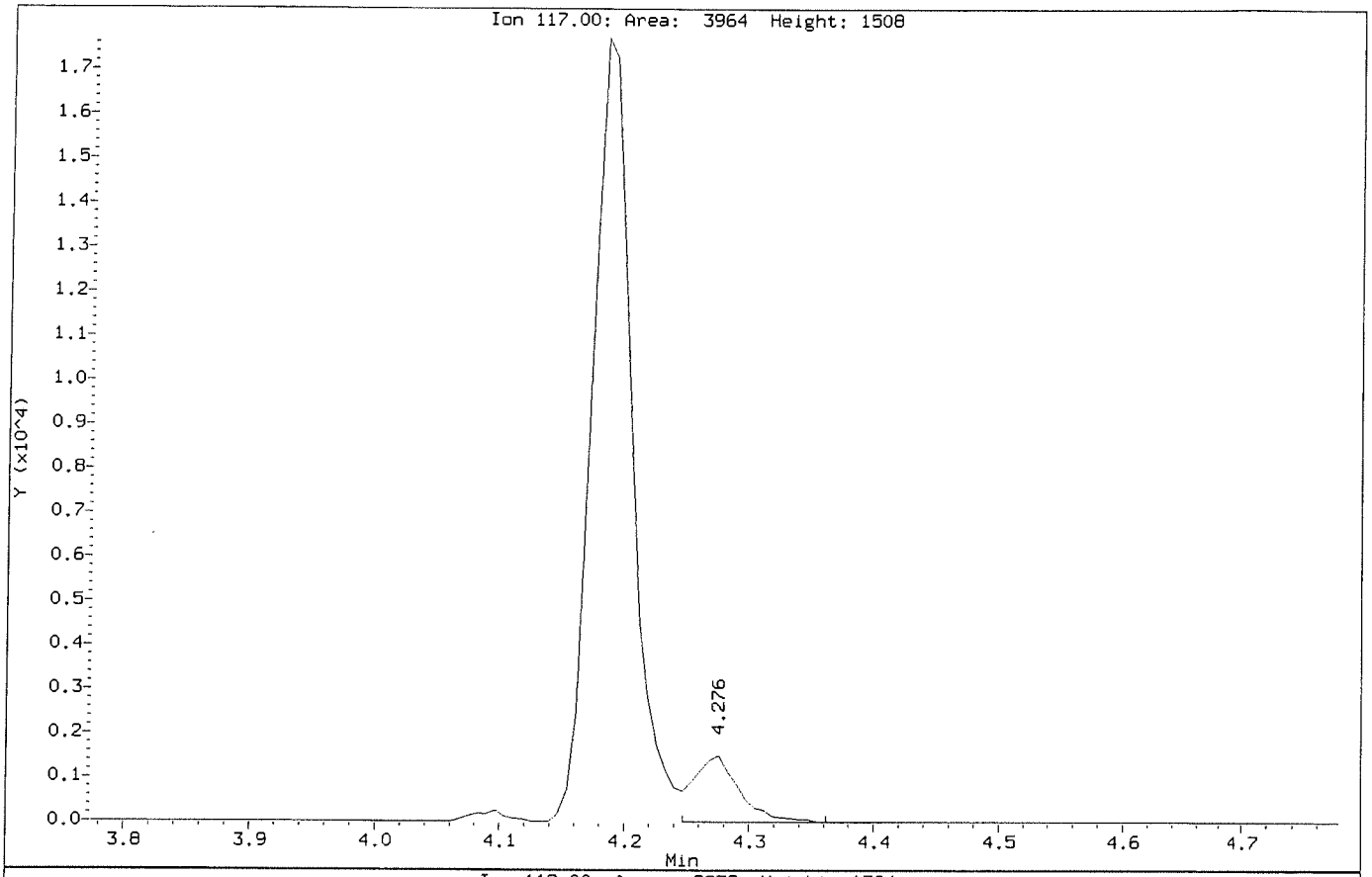
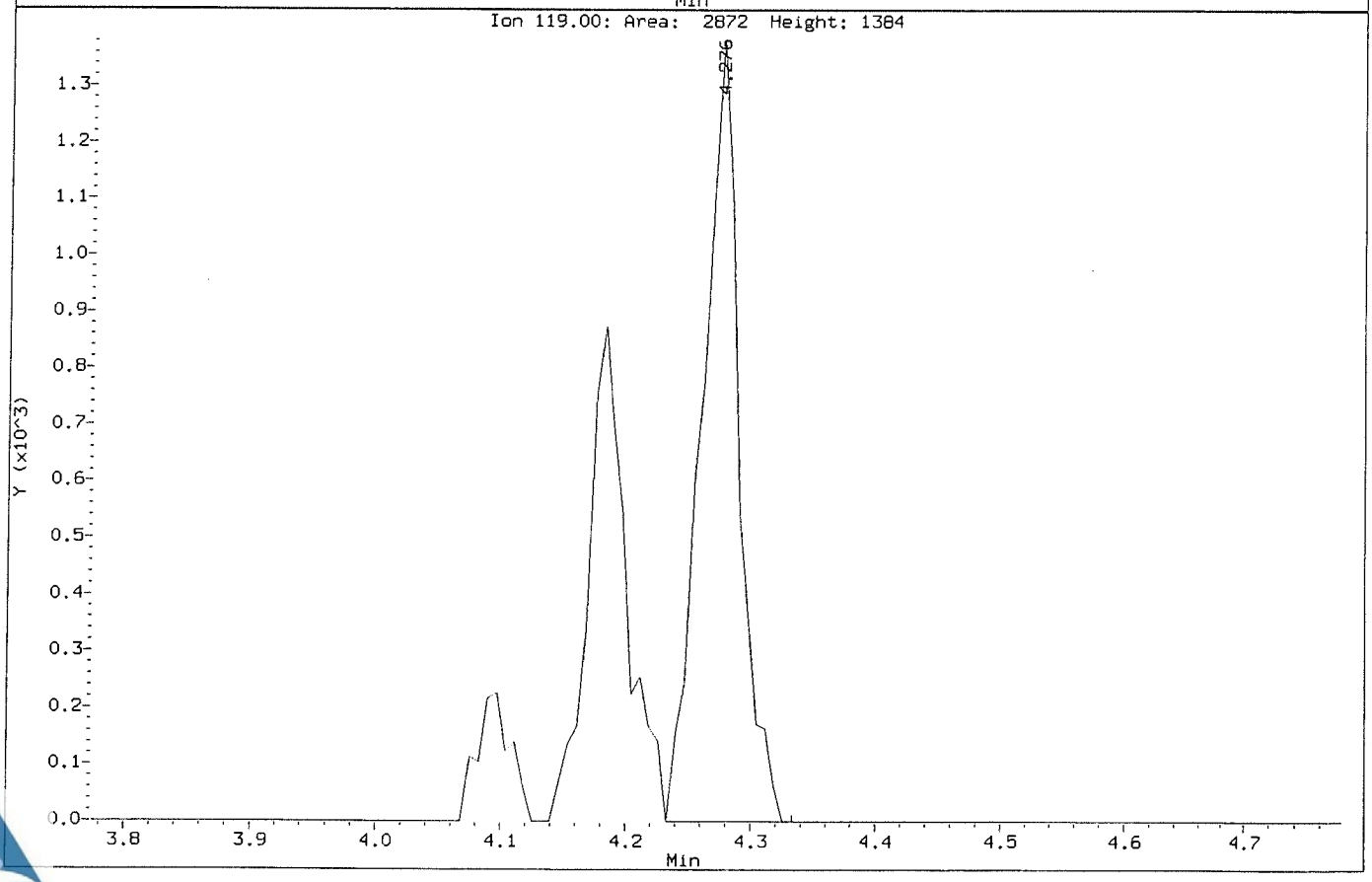
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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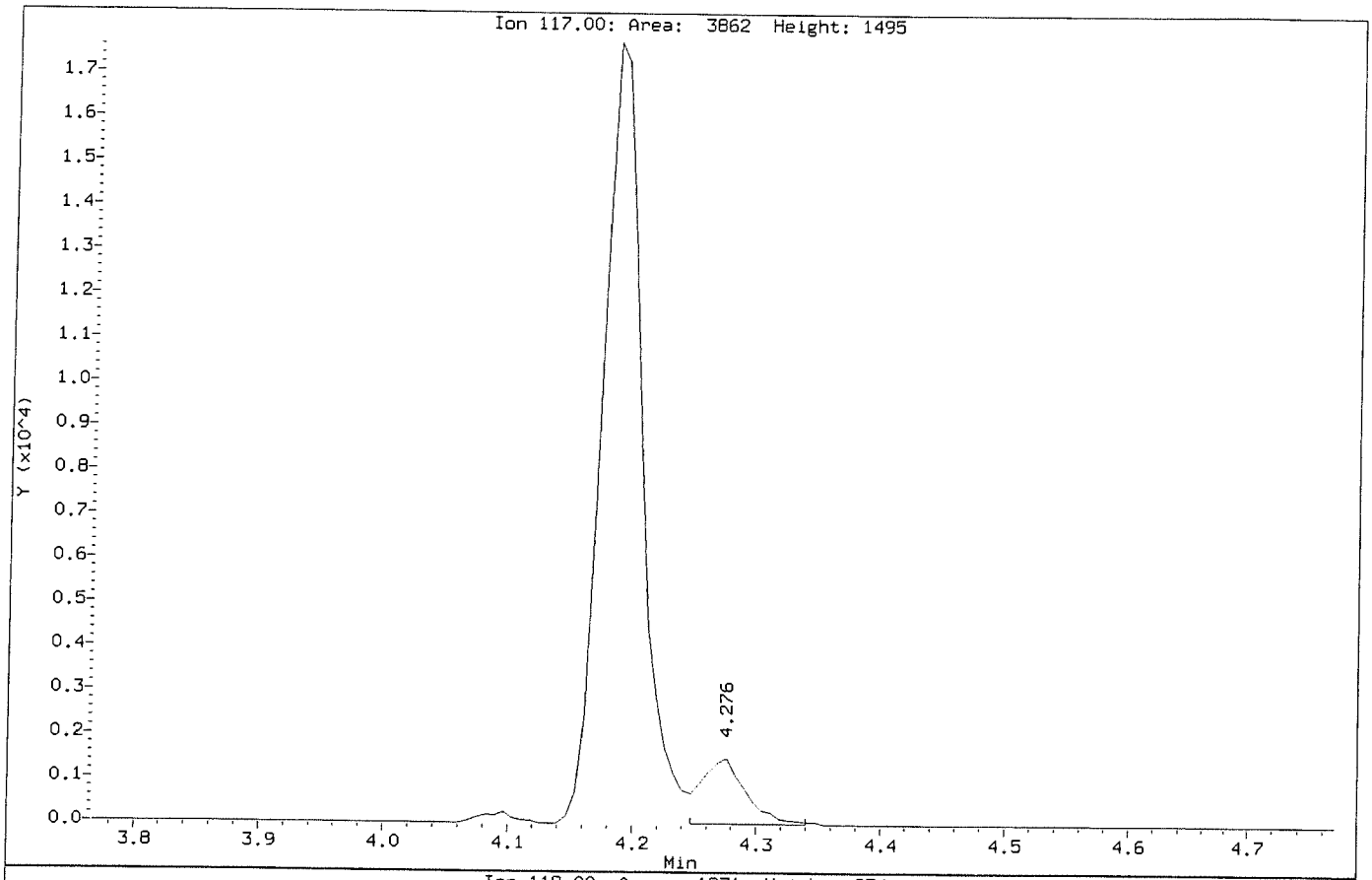
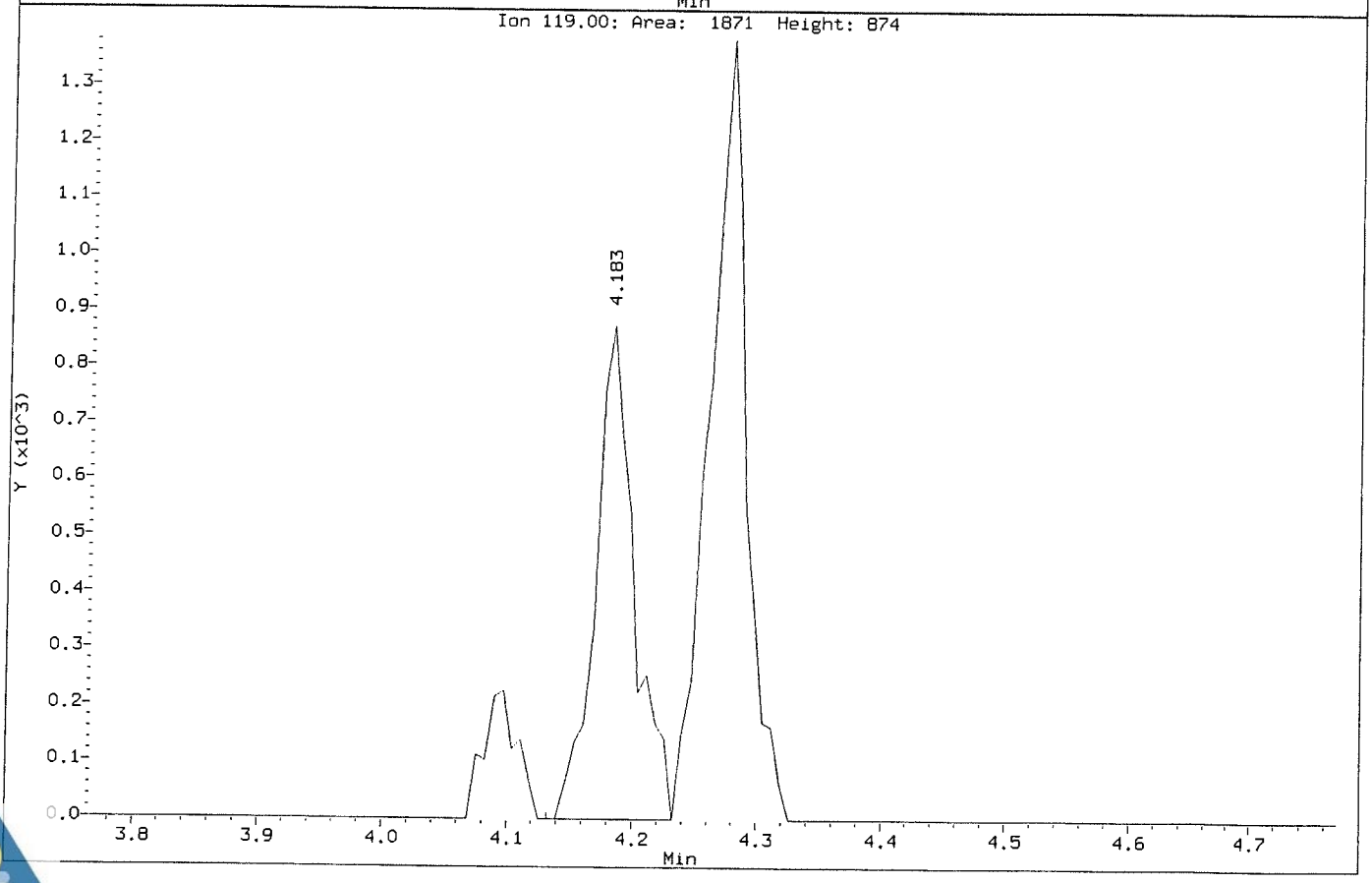
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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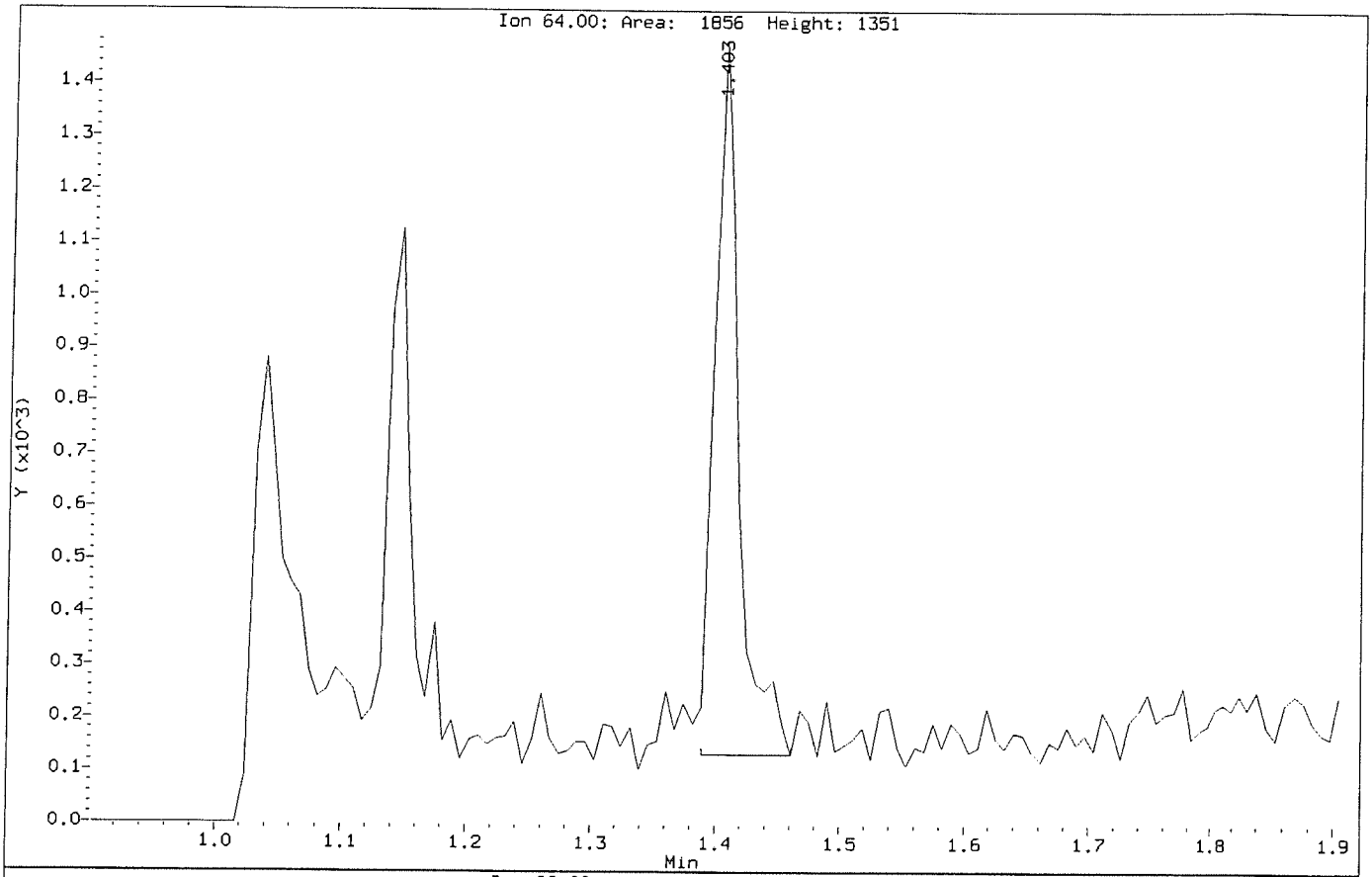
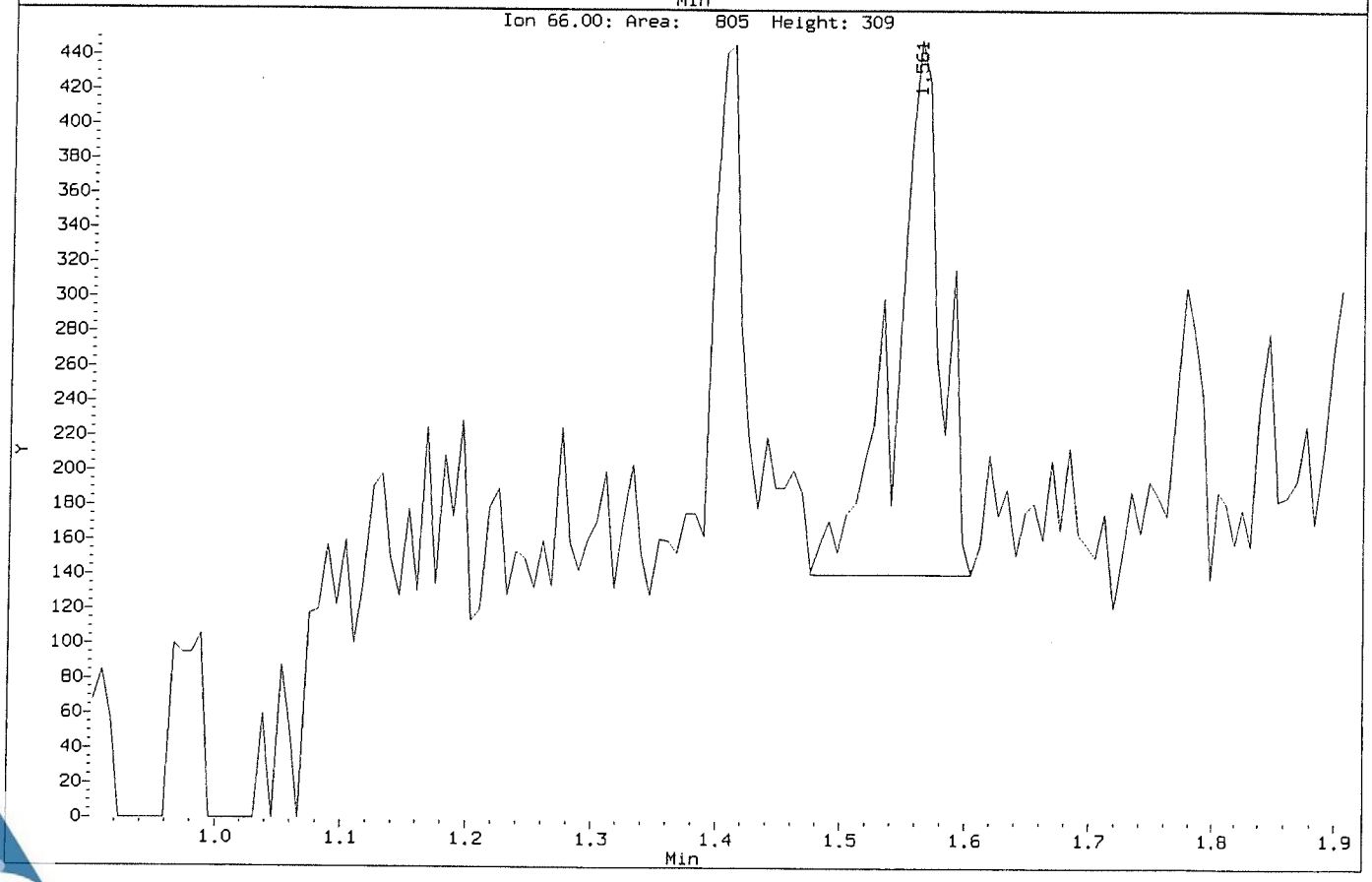
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Chloroethane
CAS Number: 75-00-3





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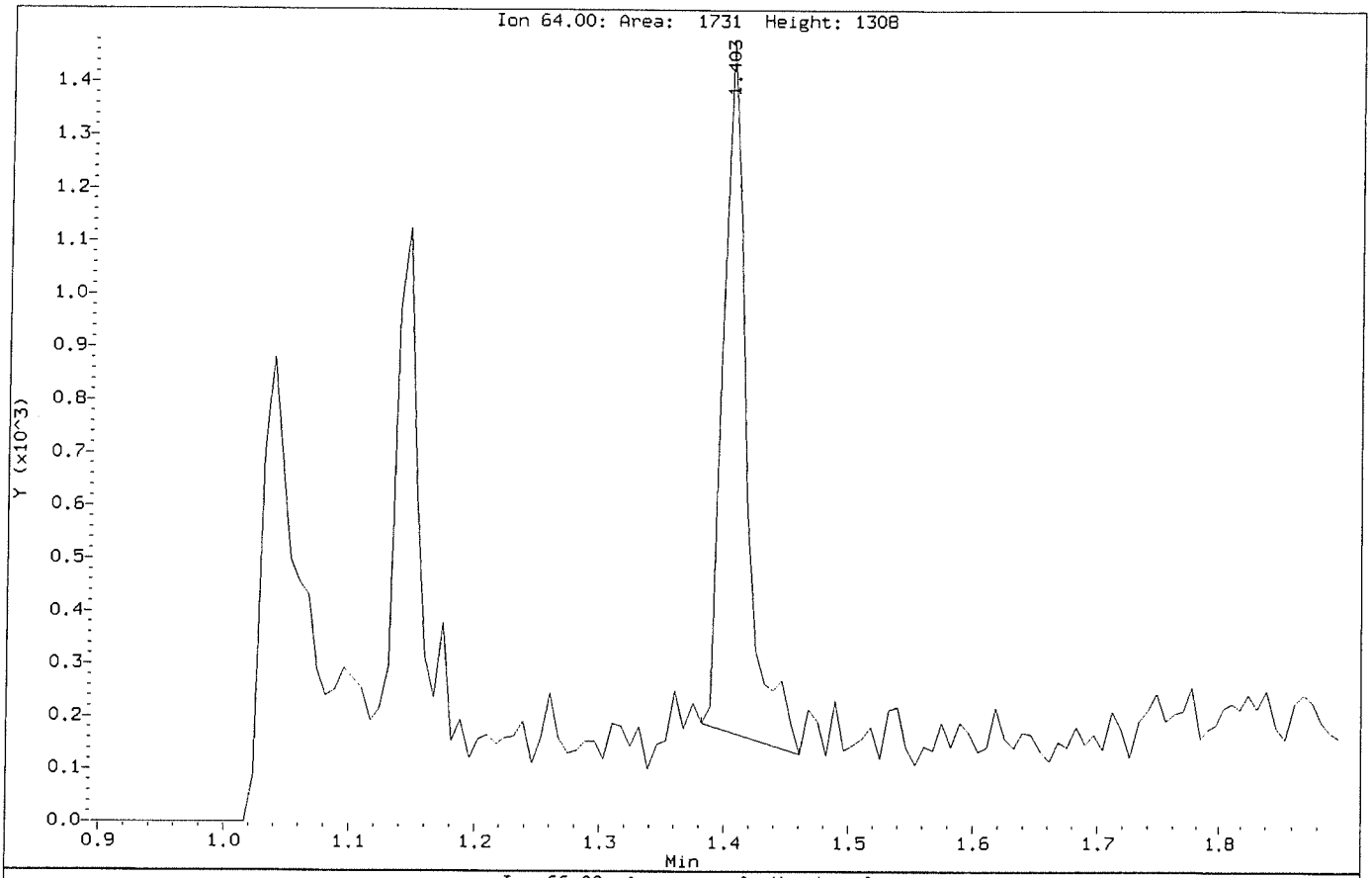
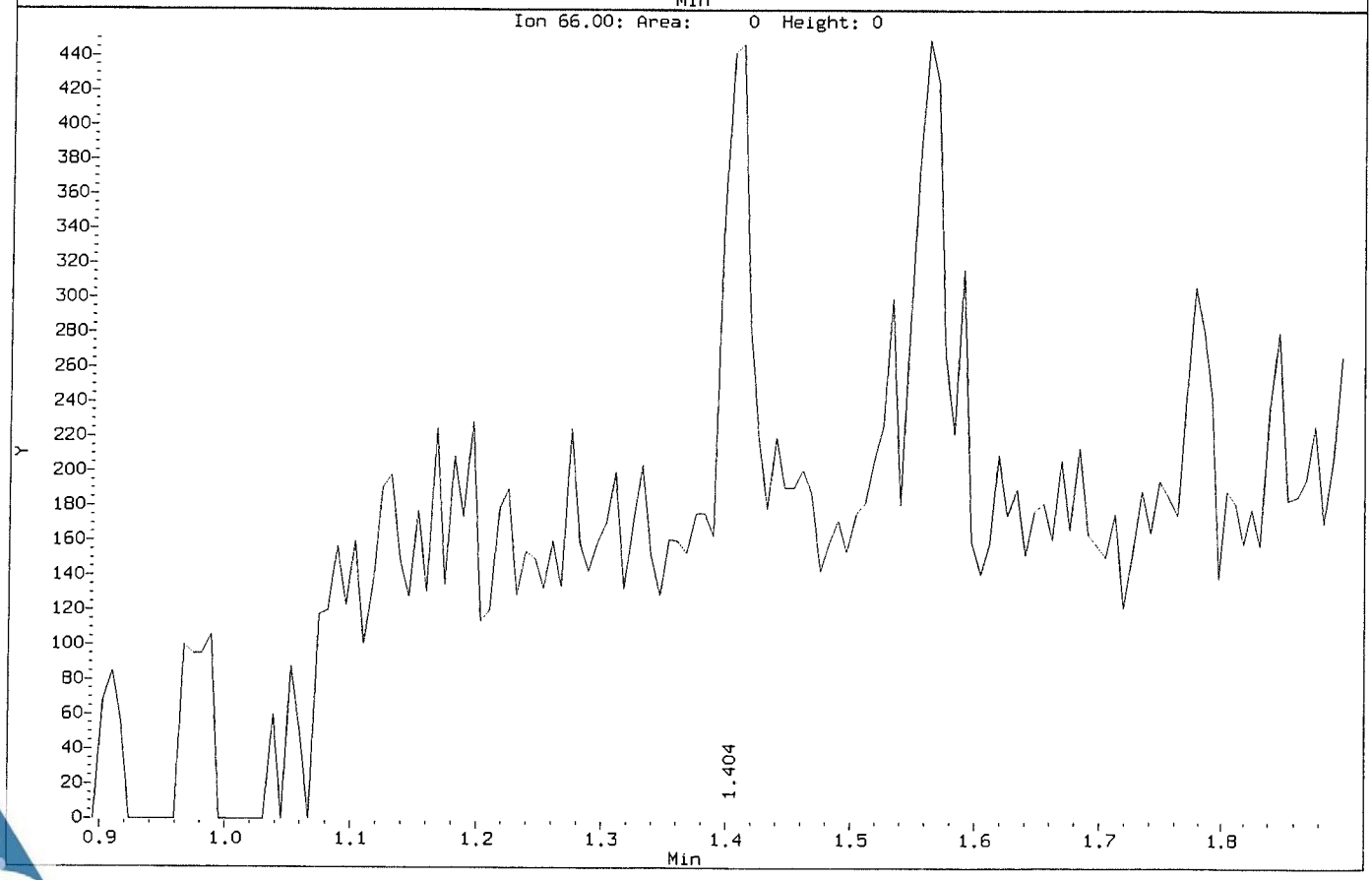
Instrument: voa6.i
Client Sample ID: VSTD000.5

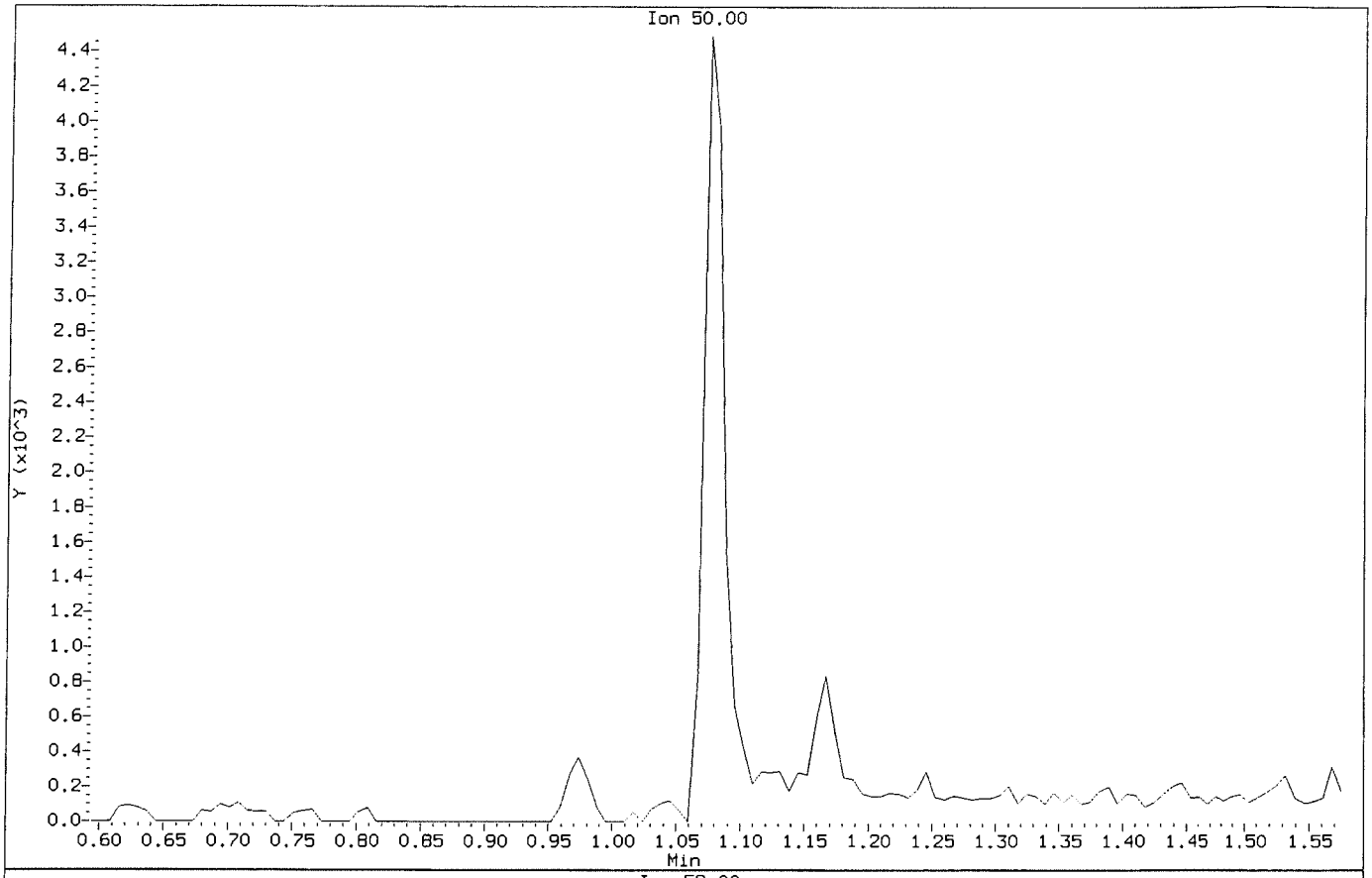
Compound: Chloroethane
CAS Number: 75-00-3

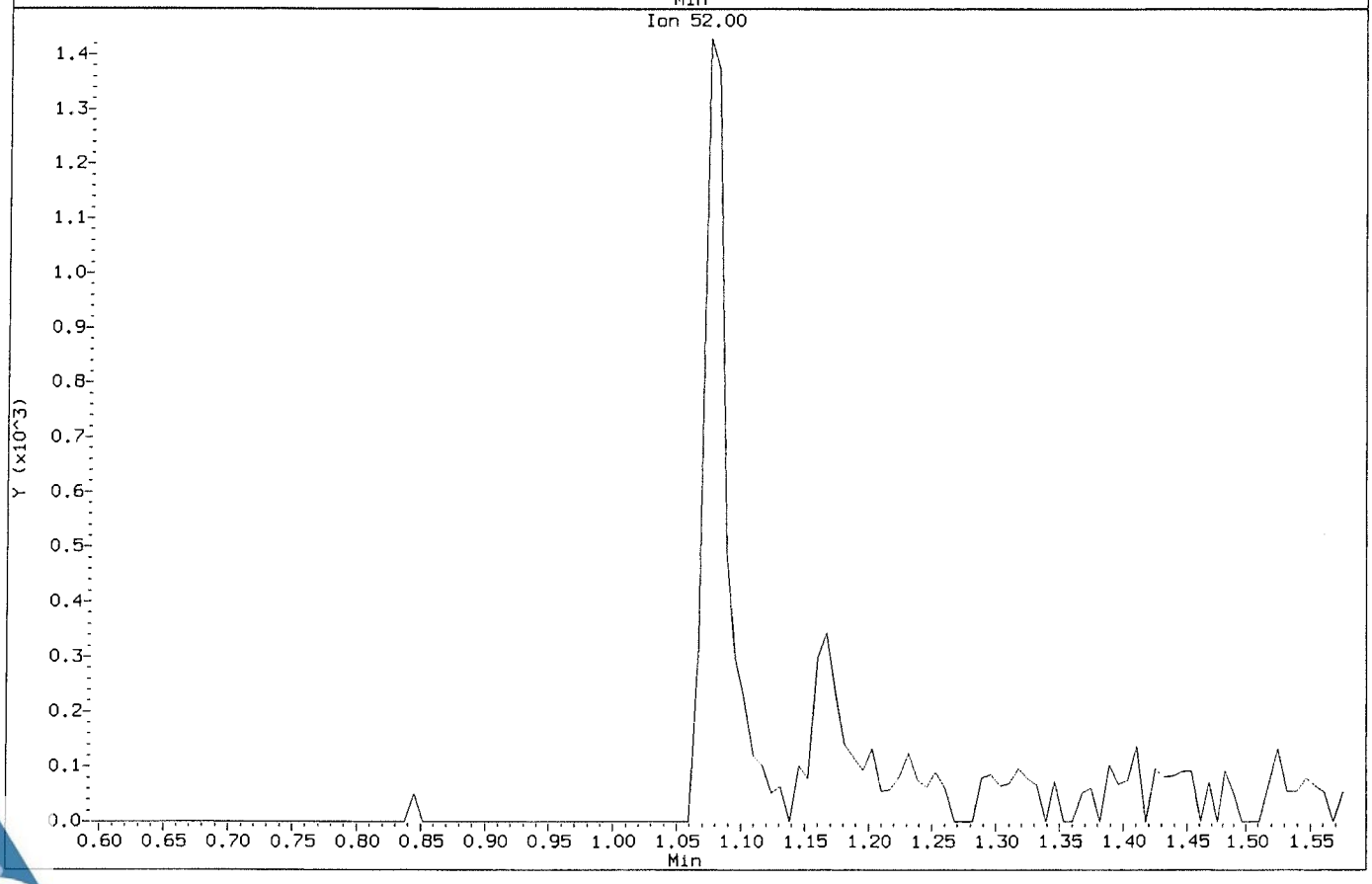




Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031403.D
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Chloromethane
CAS Number: 74-87-3





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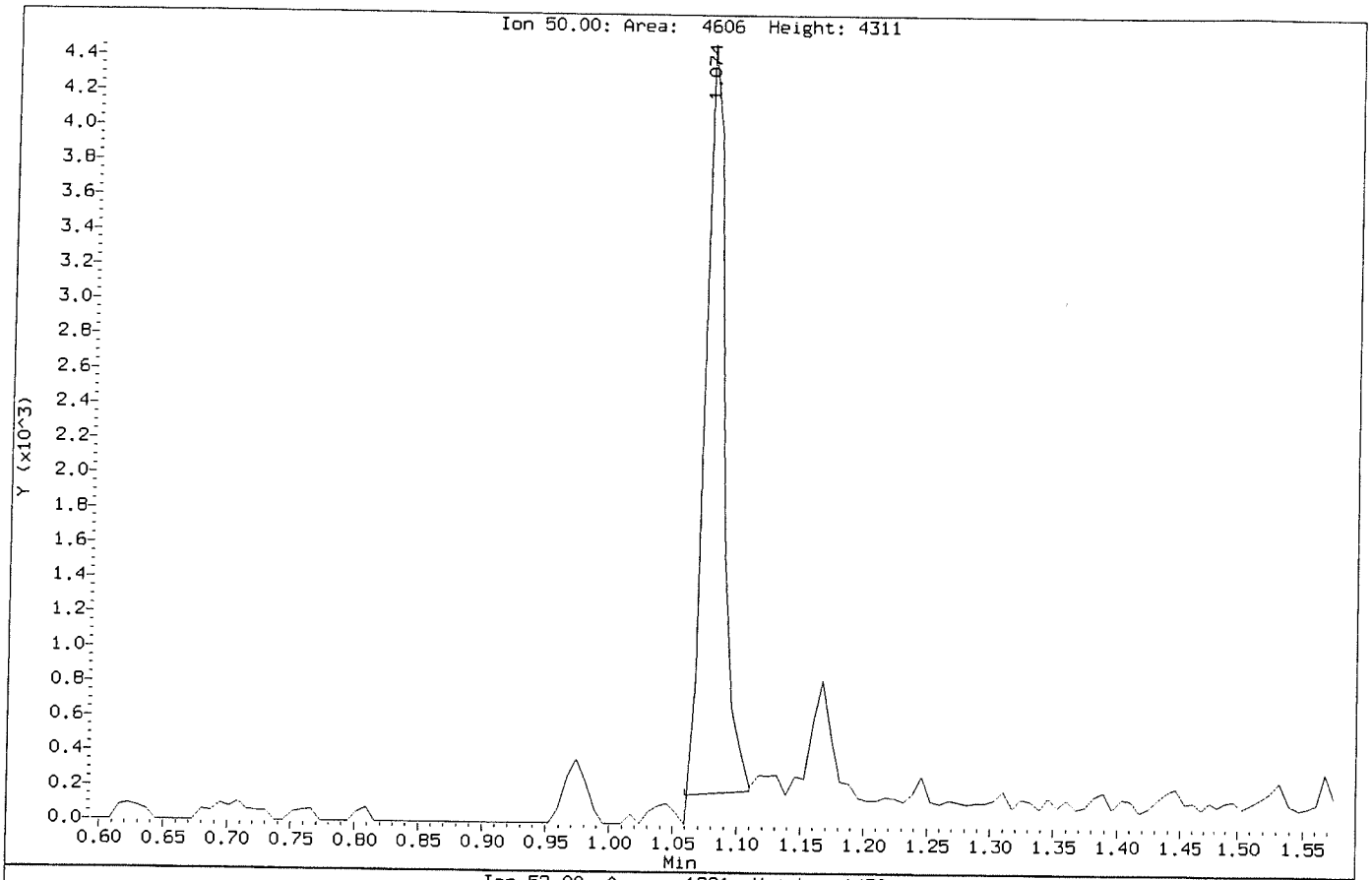
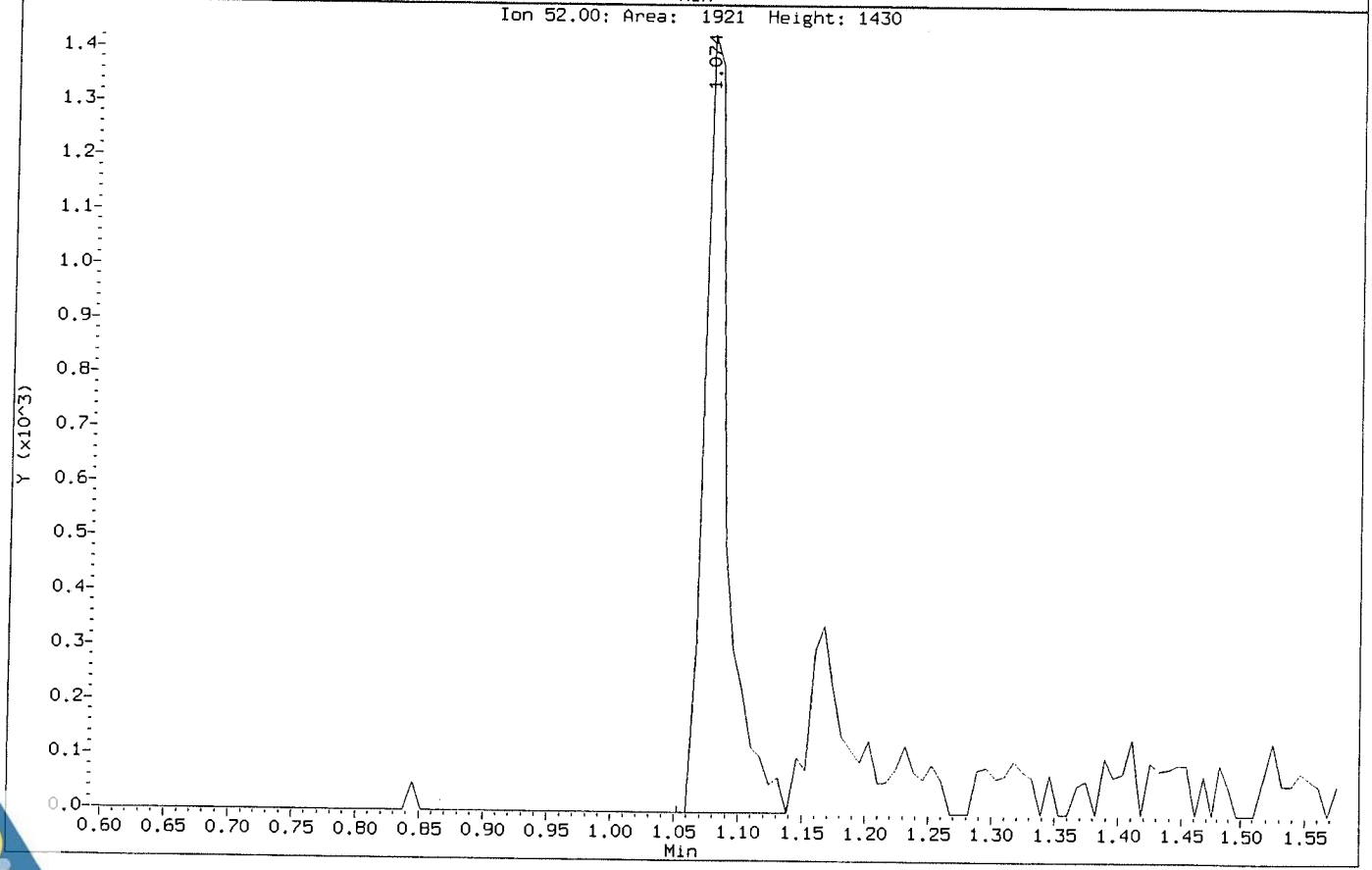
Injection Date: 14-MAR-2019 11:57
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Chloromethane
CAS Number: 74-87-3





Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031404.D
Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031404.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 14-MAR-2019 12:44
Operator : PC Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 11:57 Cal File: X031403.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	483793	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	749403	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	714726	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	357021	50.0000	
$	30 Dibromofluoromethane	113	4.111	4.111	(0.981)	4699	1.00000	0.91(a)
$	35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.070)	5622	1.00000	0.84(a)
$	48 Toluene-d8	98	6.396	6.396	(0.834)	18273	1.00000	0.82(a)
$	69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	7465	1.00000	0.79(a)
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	5147	1.00000	1.06(a)
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	7509	1.00000	1.06(a)
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	6281	1.00000	1.09(aM)
	53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	3963	1.00000	1.01(a)
	22 1,1-Dichloroethane	63	2.922	2.922	(0.697)	9532	1.00000	1.07(a)
	11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	4218	1.00000	1.02(a)
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	7501	1.00000	1.11(a)
	93 1,2,3-Trichlorobenzene	180	11.754	11.754	(1.216)	2488	1.00000	0.98(a)
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	4692	1.00000	1.05(aM)
	90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	4629	1.00000	1.03(a)
	79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	18112	1.00000	1.06(a)
	89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.103)	645	1.00000	0.92(a)
	57 1,2-Dibromoethane	107	7.269	7.269	(0.948)	5006	1.00000	1.06(a)
	88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	10733	1.00000	1.05(a)

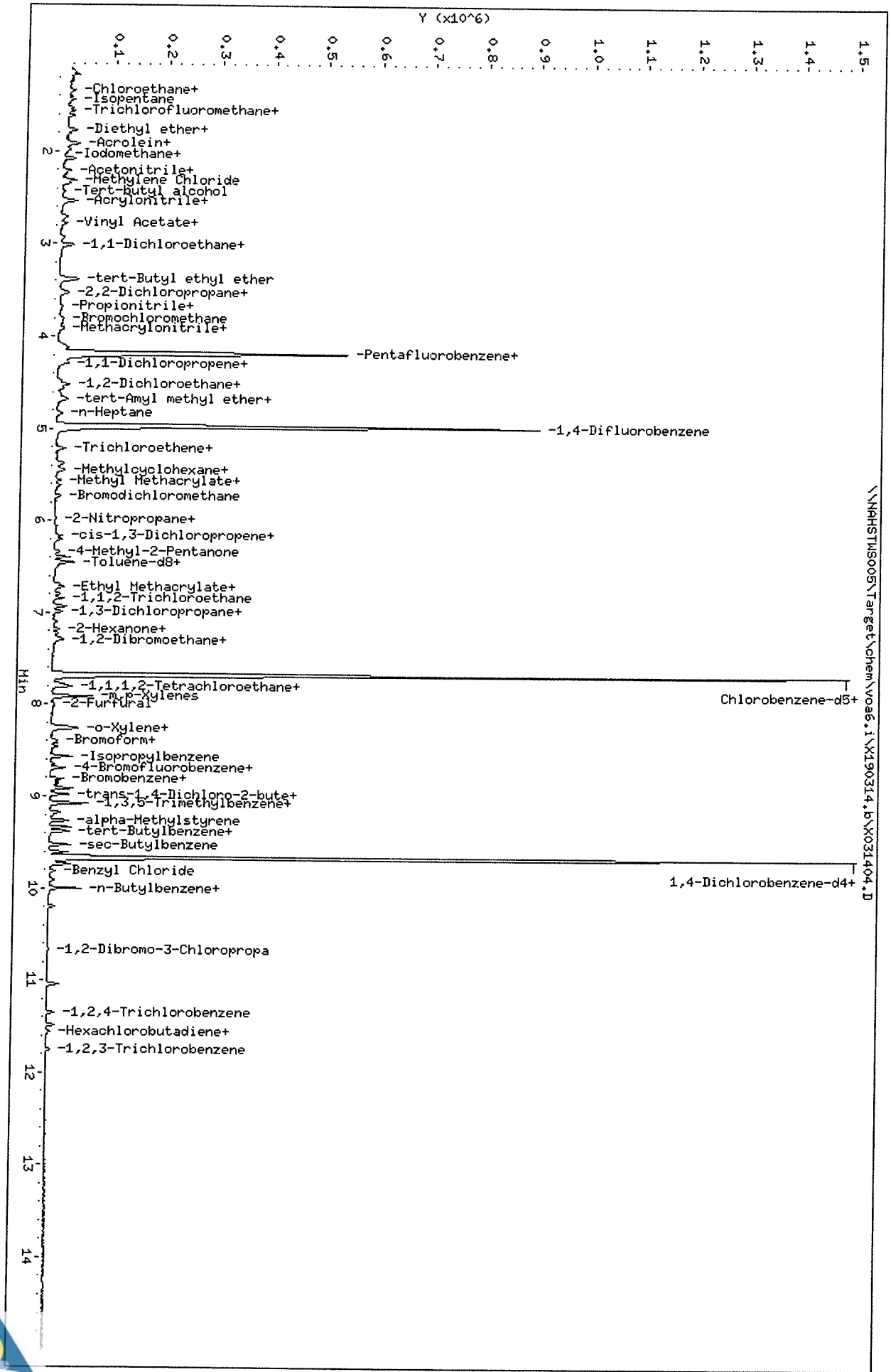
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031404.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.569	4.569	(0.919)	6769	1.00000	1.07(a)
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	5786	1.00000	1.09(aM)
75 1,3,5-Trimethylbenzene	105	9.075	9.075	(0.939)	17654	1.00000	1.04(a)
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	12042	1.00000	1.11(a)
54 1,3-Dichloropropane	76	6.990	6.990	(0.911)	8748	1.00000	1.09(a)
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	12275	1.00000	1.11(a)
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	7541	1.00000	1.10(a)
24 2-Butanone	43	3.616	3.616	(0.863)	2985	2.00000	1.80(a)
76 2-Chlorotoluene	91	8.981	8.981	(0.929)	16504	1.00000	1.08(a)
52 2-Hexanone	43	7.098	7.098	(0.925)	5315	2.00000	1.88(a)
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	19175	1.00000	1.10(a)
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	18334	1.00000	1.03(a)
45 4-Methyl-2-Pentanone	43	6.338	6.338	(0.826)	9026	2.00000	2.08(a)
10 Acetone	43	1.976	1.976	(0.472)	6603	2.00000	1.04(a)
37 Benzene	78	4.519	4.519	(0.909)	20297	1.00000	1.05(a)
74 Bromobenzene	156	8.810	8.810	(0.911)	6573	1.00000	1.07(a)
29 Bromochloromethane	128	3.803	3.803	(0.908)	3024	1.00000	1.11(a)
39 Bromodichloromethane	83	5.729	5.729	(1.153)	6534	1.00000	1.02(a)
66 Bromoform	173	8.416	8.416	(1.097)	3505	1.00000	1.90(Ta)
6 Bromomethane	94	1.338	1.338	(0.320)	4965	1.00000	1.72(aM)
19 Carbon Disulfide	76	2.069	2.069	(0.494)	29631	2.00000	2.09(a)
34 Carbon Tetrachloride	117	4.275	4.275	(0.860)	7557	1.00000	3.03(aM)
59 Chlorobenzene	112	7.699	7.699	(1.004)	15223	1.00000	1.09(a)
7 Chloroethane	64	1.403	1.403	(0.335)	4035	1.00000	1.15(a)
28 Chloroform	83	3.917	3.917	(0.935)	9140	1.00000	1.06(a)
3 Chloromethane	50	1.073	1.073	(0.256)	9688	1.00000	0.03(a)
27 cis-1,2-Dichloroethene	96	3.538	3.538	(0.844)	5696	1.00000	1.05(a)
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	8458	1.00000	1.00(a)
55 Dibromochloromethane	129	7.184	7.184	(0.937)	5231	1.00000	1.02(a)
44 Dibromomethane	93	5.558	5.558	(1.118)	3244	1.00000	1.02(a)
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	4945	1.00000	2.82(a)
61 Ethylbenzene	106	7.807	7.807	(1.018)	7185	1.00000	1.03(a)
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	2972	1.00000	2.11(a)
67 Isopropylbenzene	105	8.566	8.566	(1.117)	21754	1.00000	1.05(a)
62 m,p-Xylenes	106	7.907	7.907	(1.031)	18045	2.00000	2.10(a)
17 Methylene Chloride	84	2.305	2.305	(0.550)	6642	1.00000	1.28(a)
87 n-Butylbenzene	91	9.999	9.999	(1.034)	15517	1.00000	1.01(a)
73 n-Propylbenzene	91	8.917	8.917	(0.922)	26650	1.00000	1.07(a)
92 Naphthalene	128	11.553	11.553	(1.195)	6542	1.00000	0.97(a)
63 o-Xylene	106	8.244	8.244	(1.075)	8953	1.00000	1.04(a)
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	22460	1.00000	1.08(a)
64 Styrene	104	8.265	8.265	(1.078)	14331	1.00000	1.00(a)
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	16138	1.00000	1.09(a)
56 Tetrachloroethene	164	6.933	6.933	(0.904)	4772	1.00000	1.11(a)
50 Toluene	91	6.453	6.453	(0.841)	22643	1.00000	1.08(a)
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	4728	1.00000	1.03(a)
51 trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	6722	1.00000	0.98(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	5684	1.00000	1.07(a)
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	7958	1.00000	1.85(a)
5 Vinyl Chloride	62	1.145	1.145	(0.273)	6821	1.00000	1.09(a)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031404.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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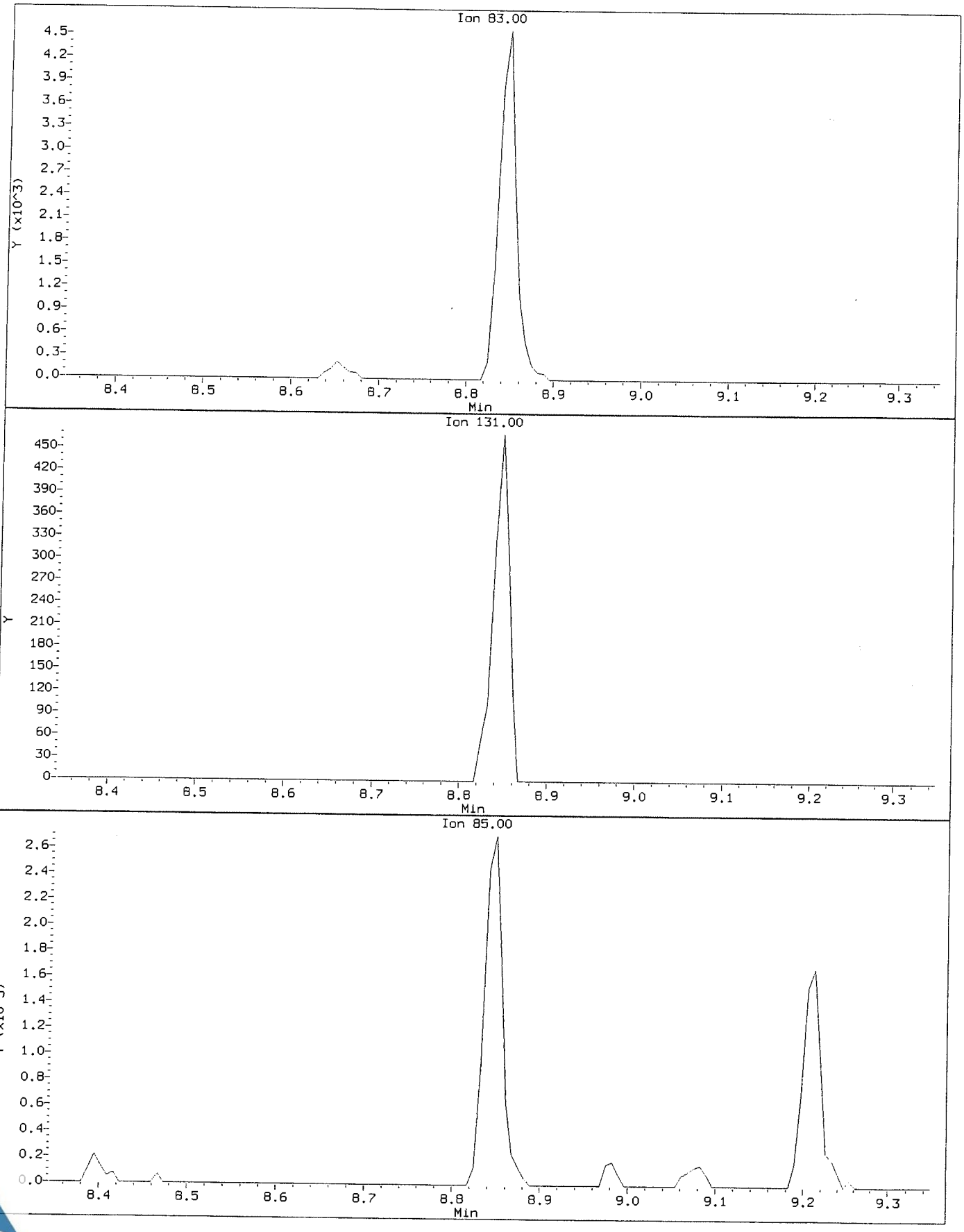
Date : 14-MAR-2019 12:44
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031404.D
Injection Date: 14-MAR-2019 12:44
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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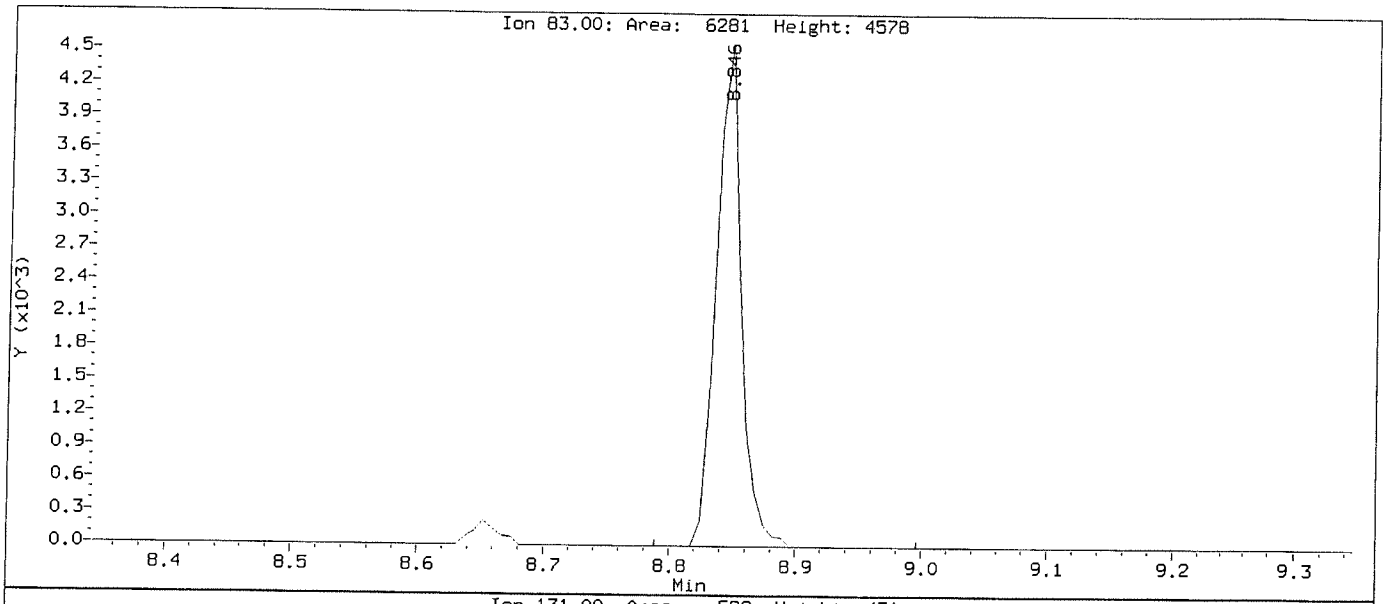
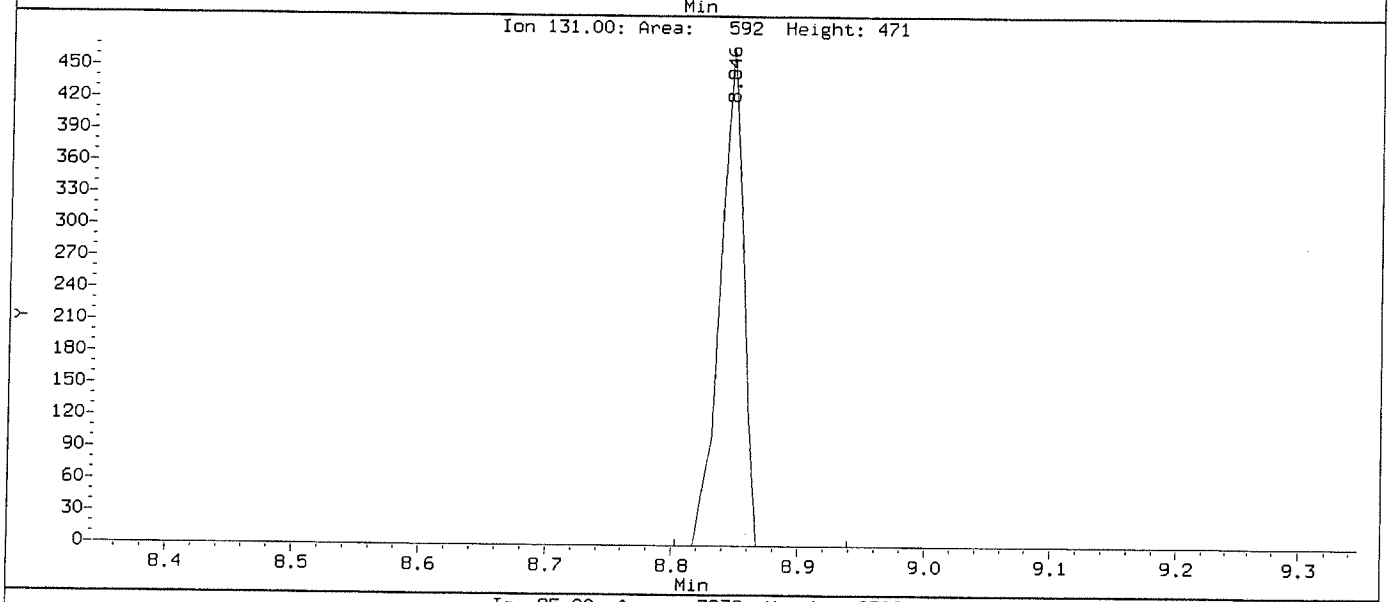
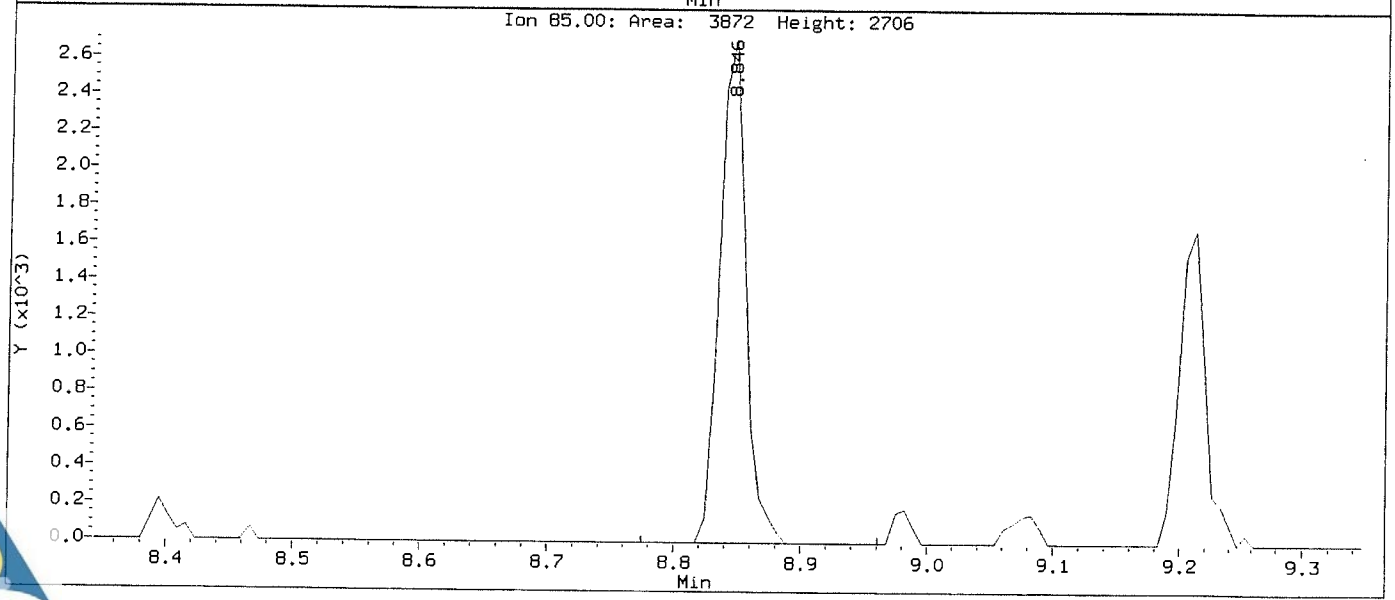
Client Sample ID: VSTD001

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5







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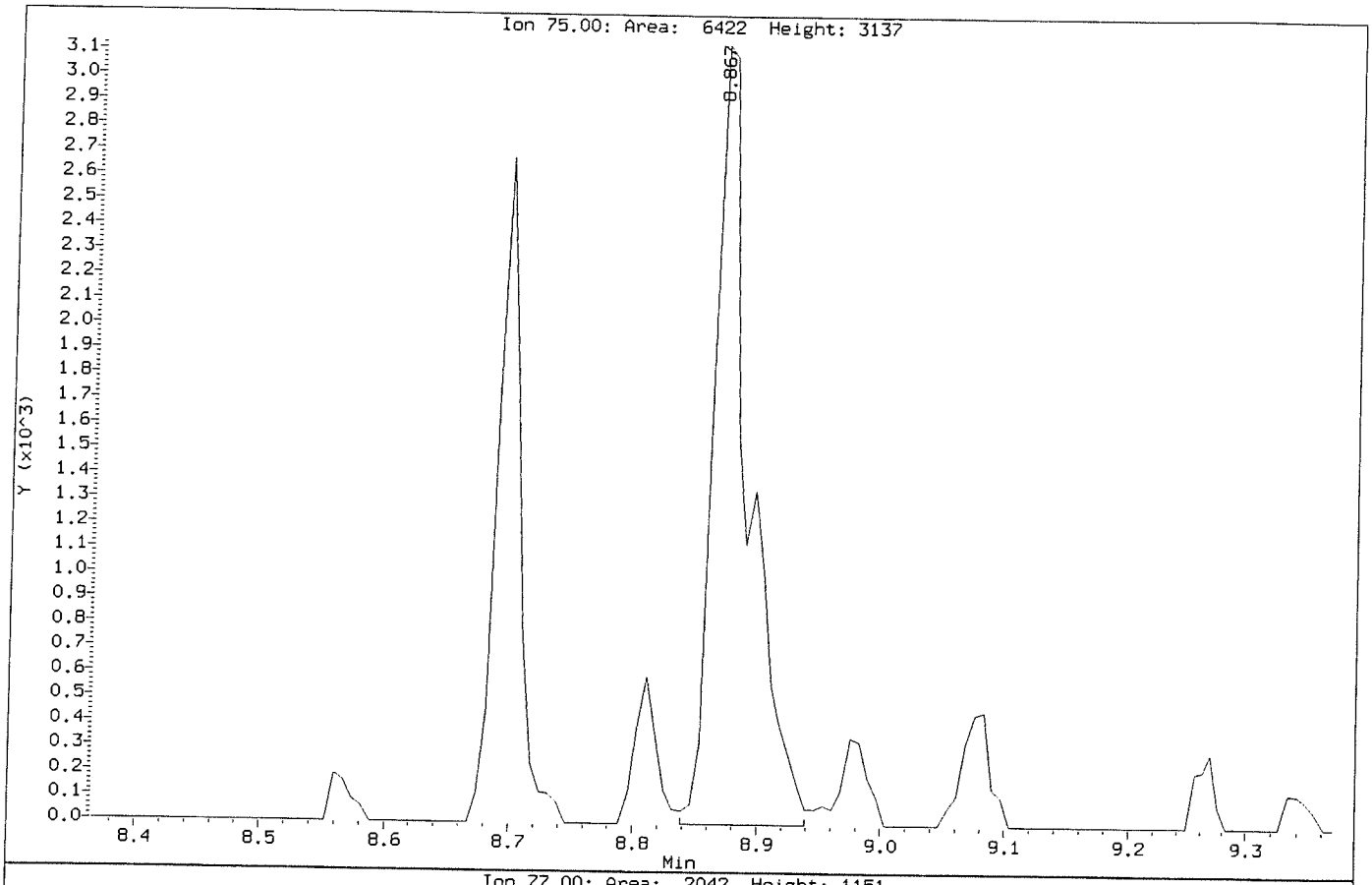
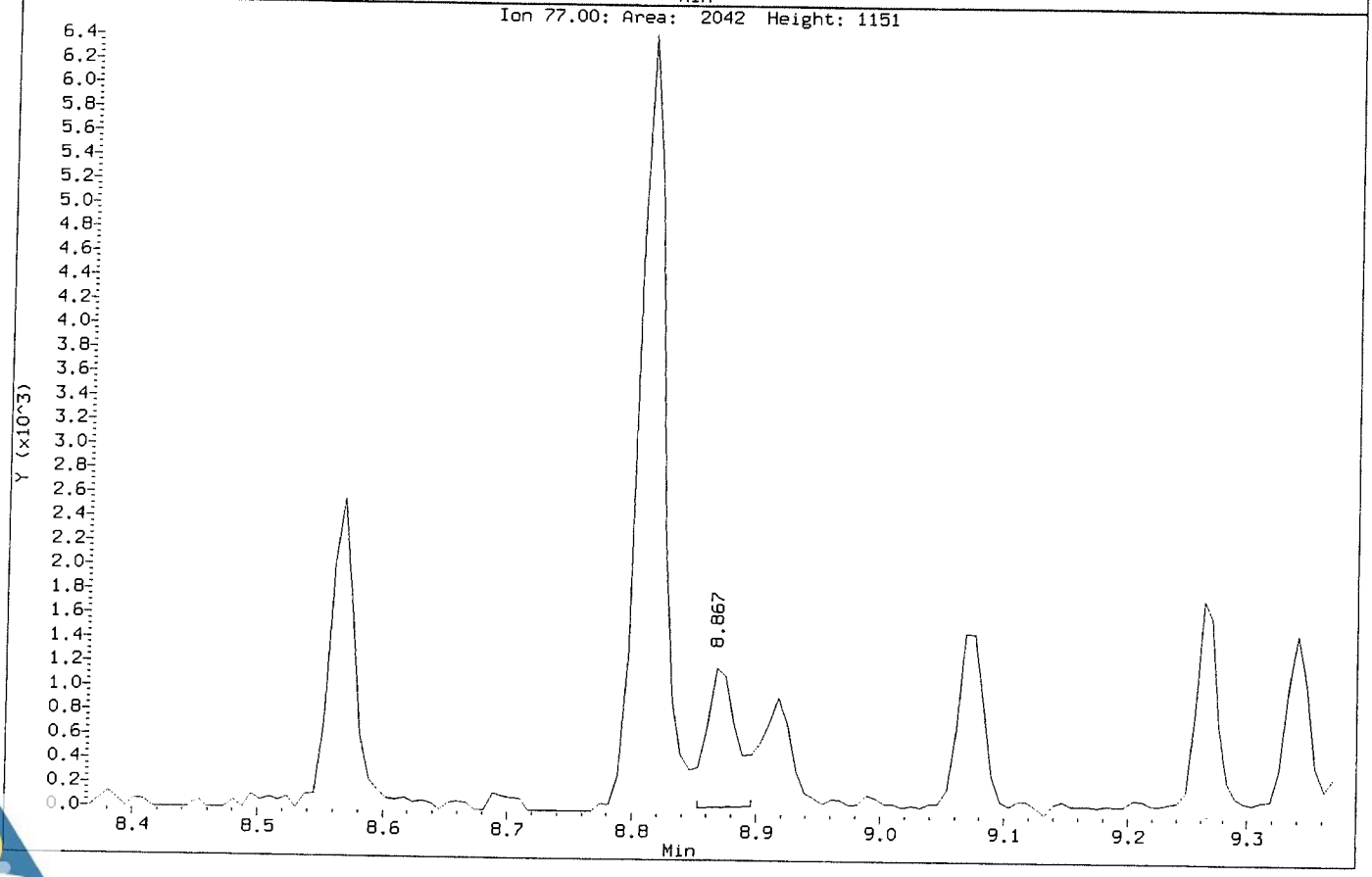
Injection Date: 14-MAR-2019 12:44
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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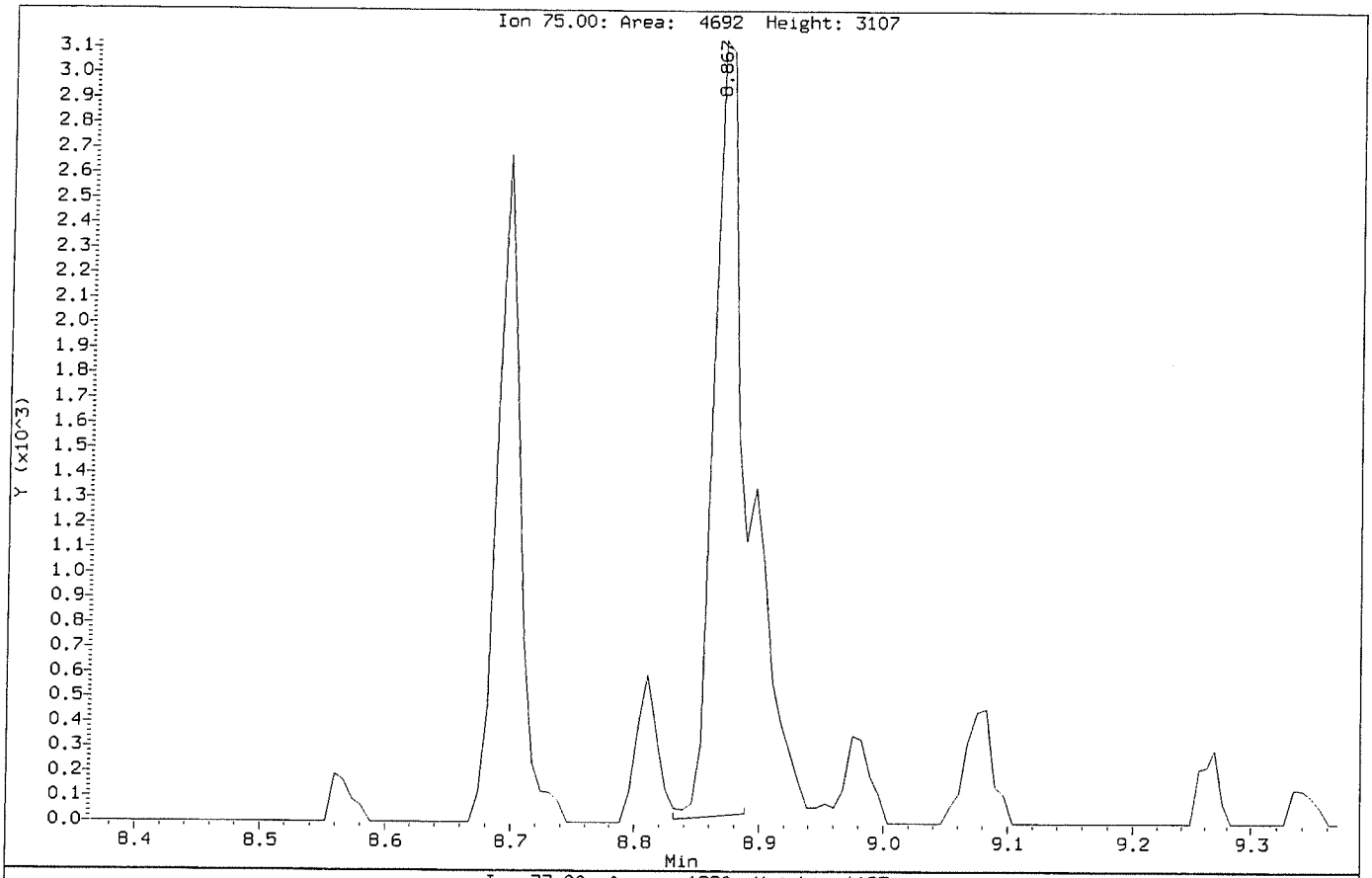
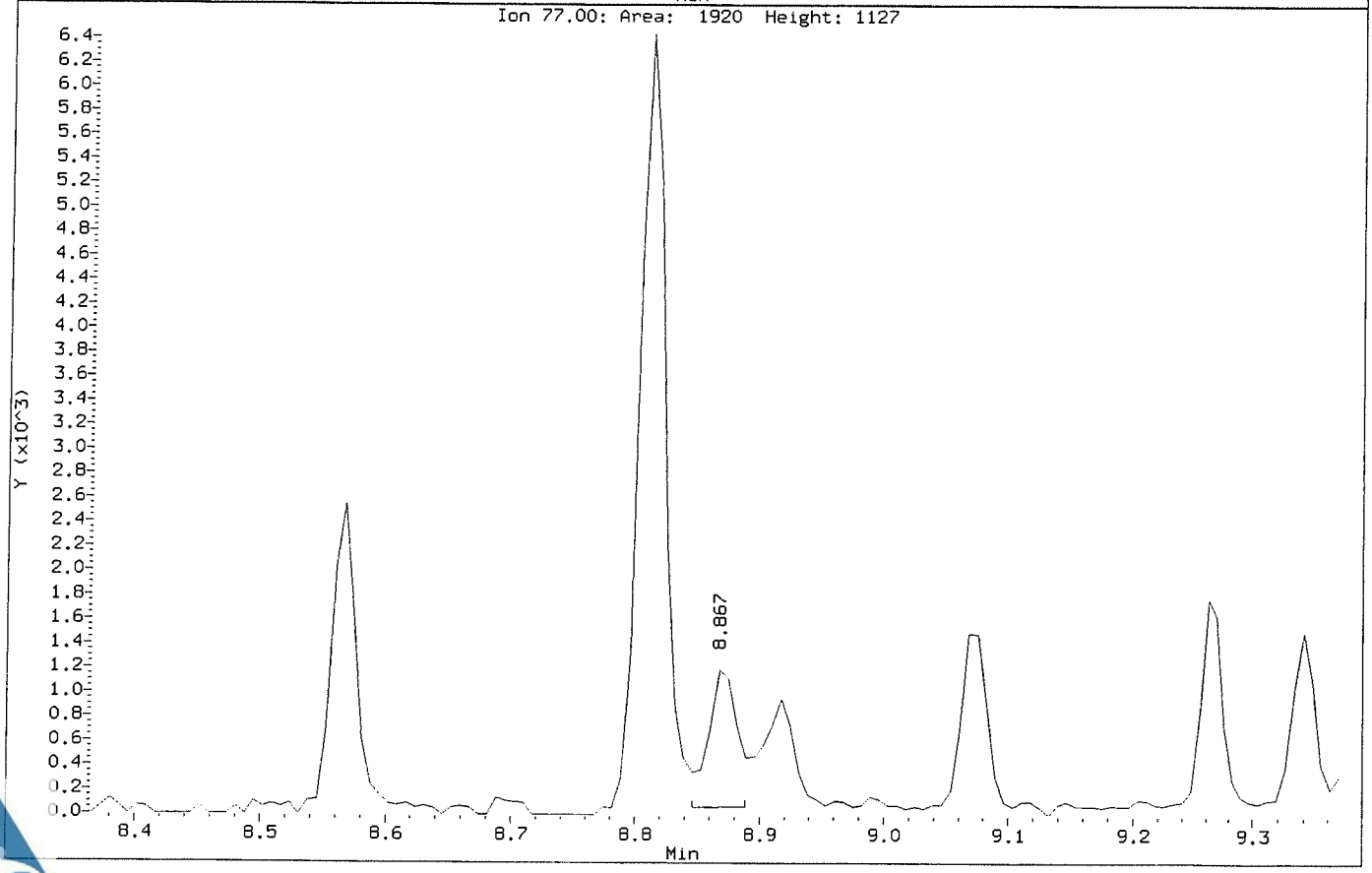
Injection Date: 14-MAR-2019 12:44
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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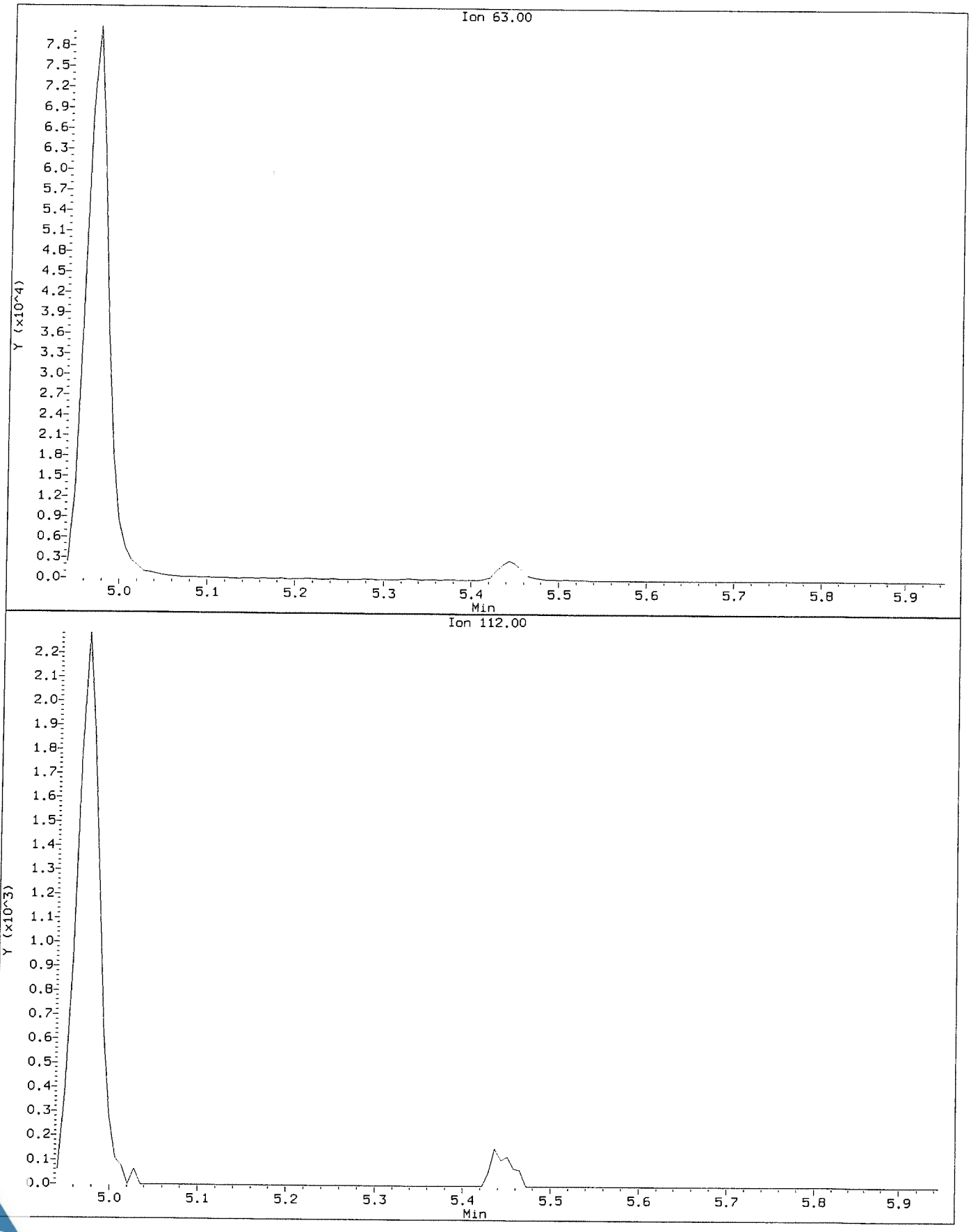
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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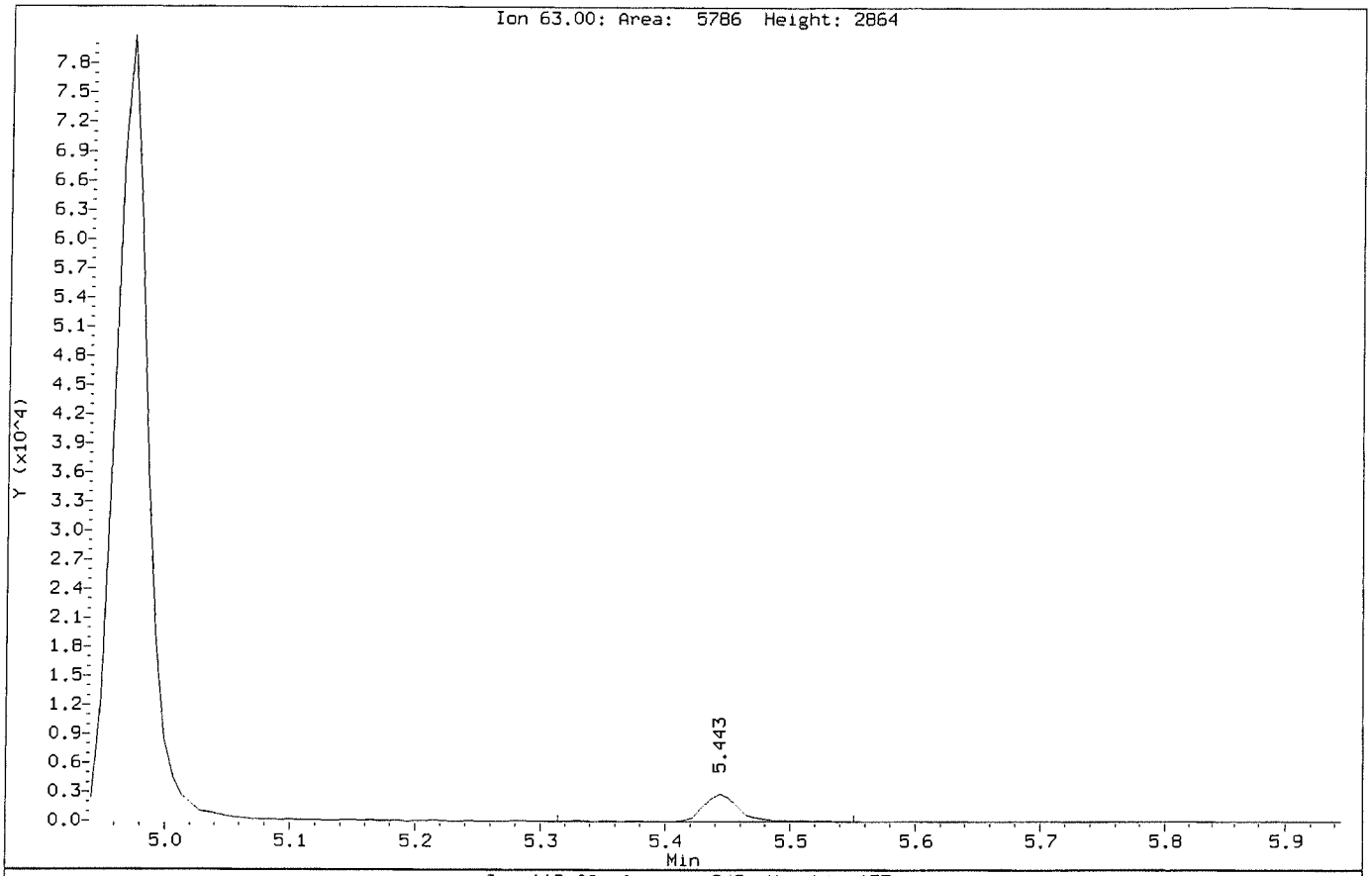
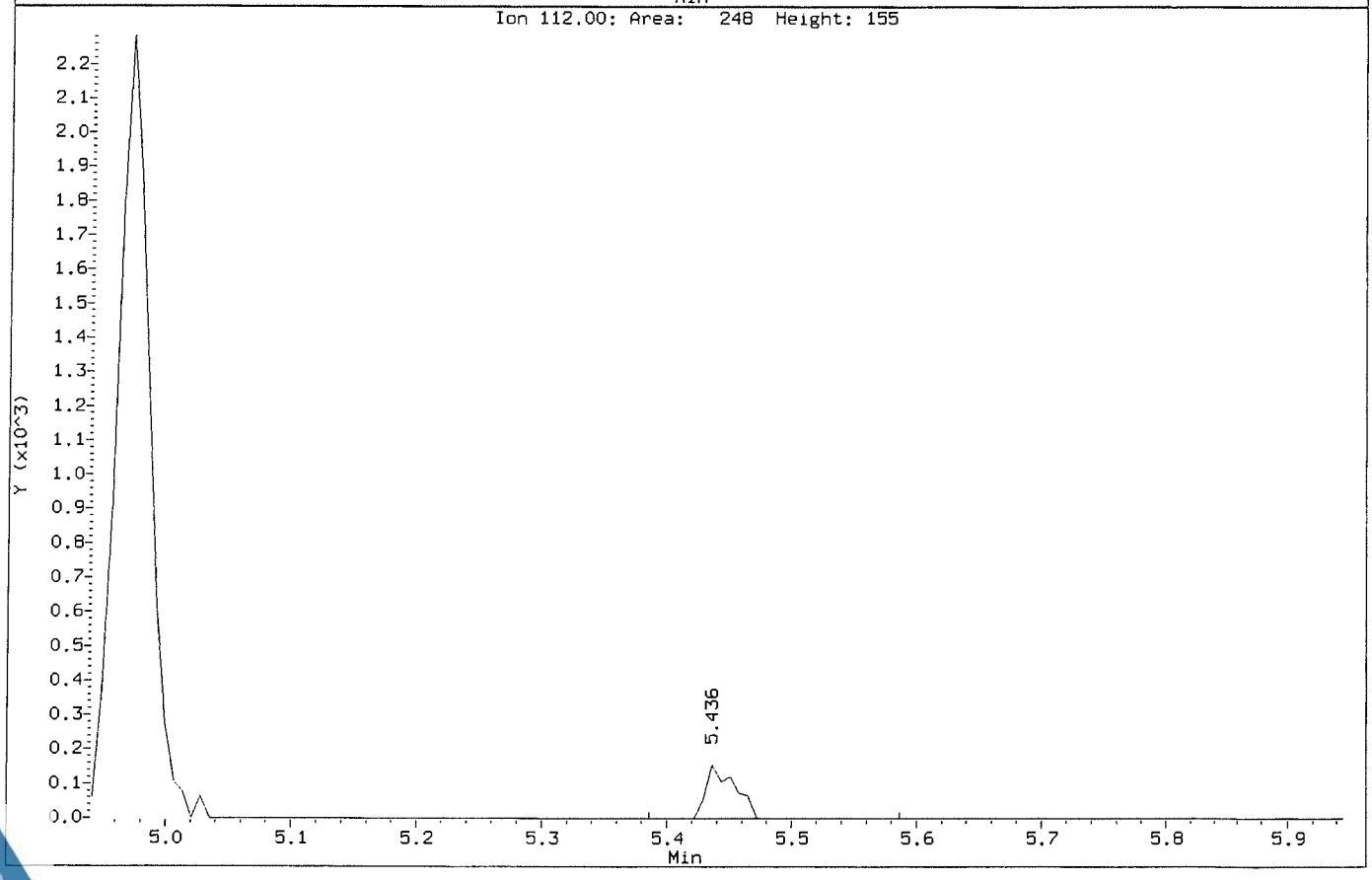
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5





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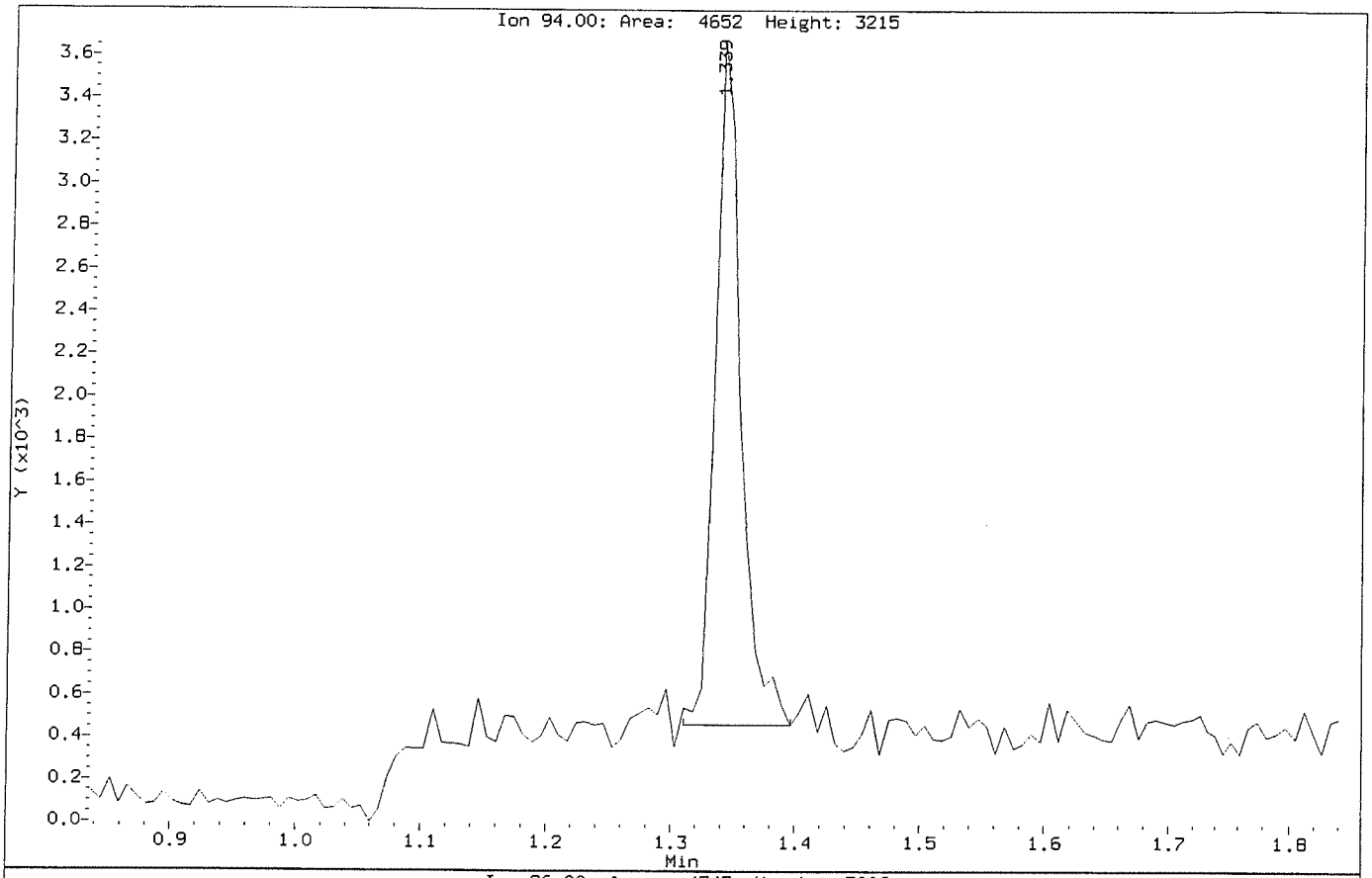
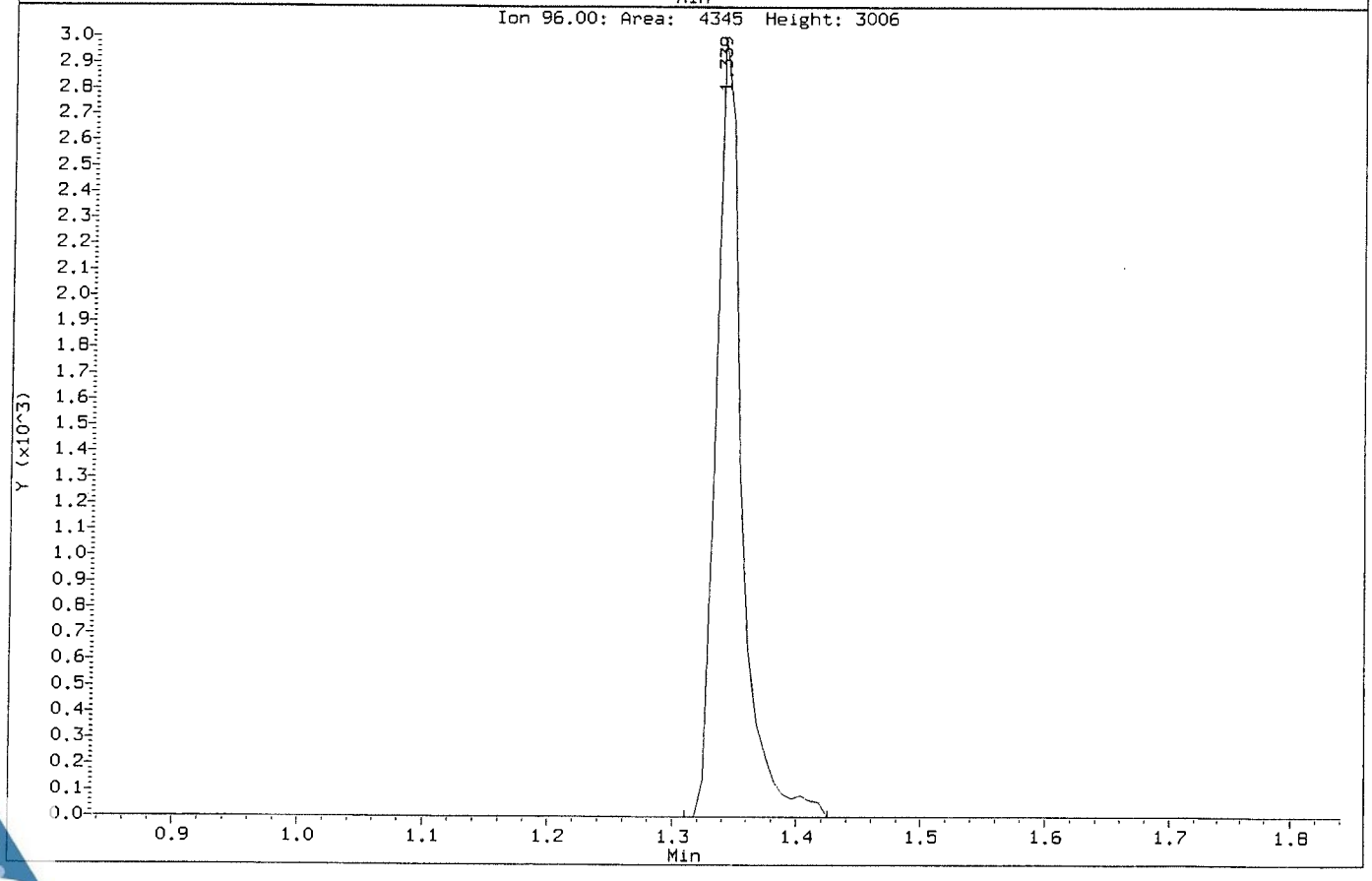
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Bromomethane
CAS Number: 74-83-9





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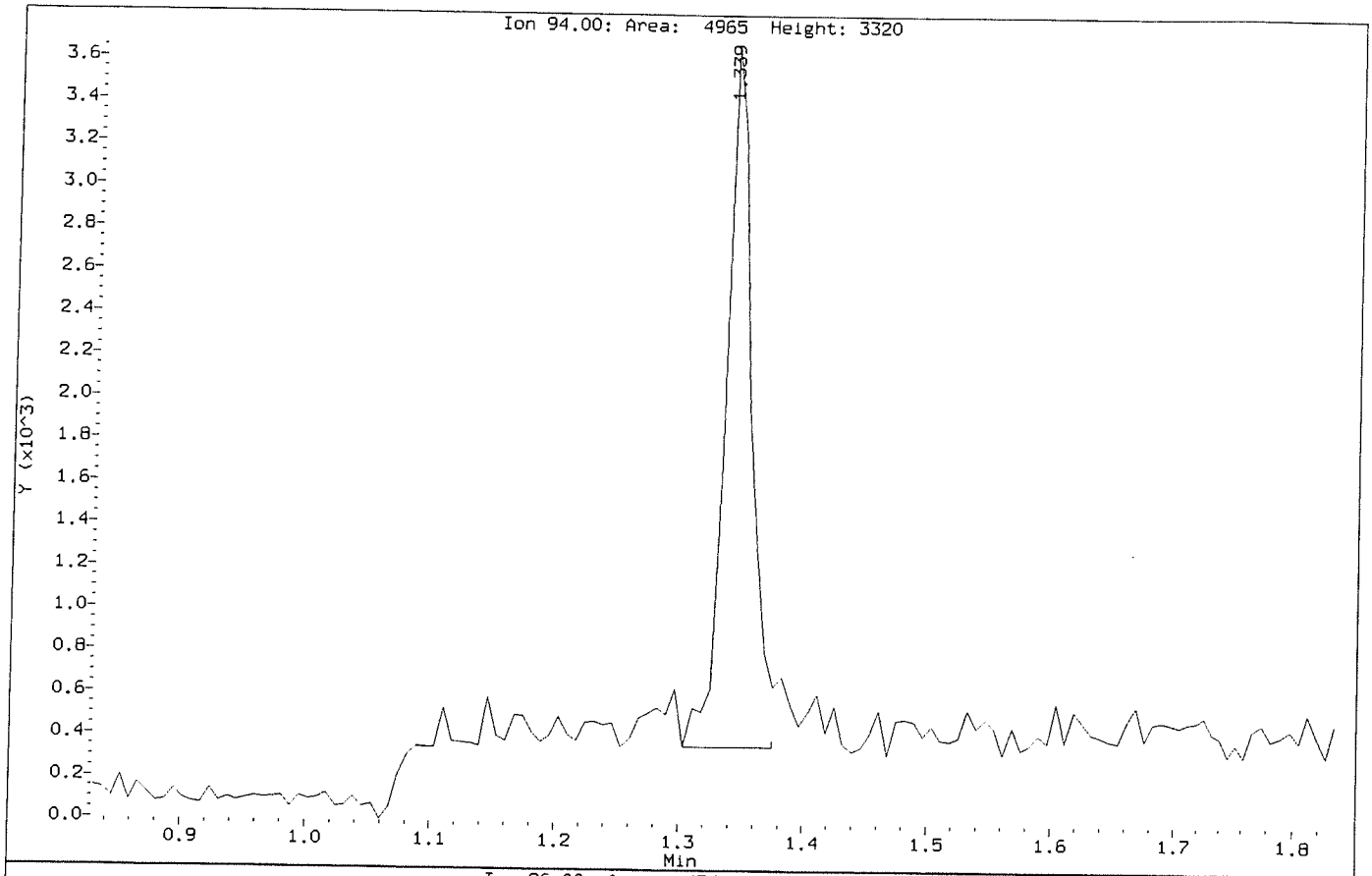
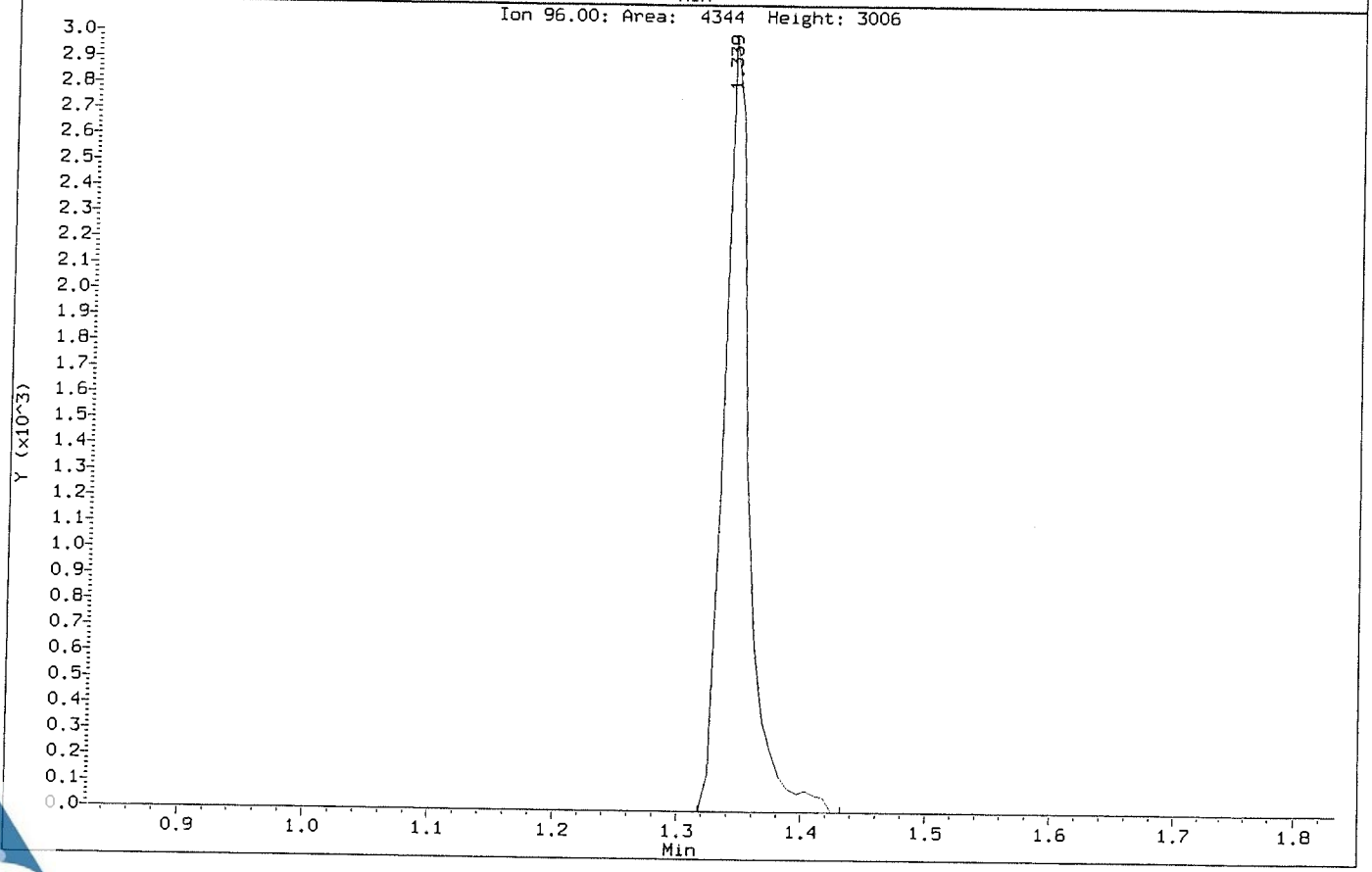
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Bromomethane
CAS Number: 74-83-9





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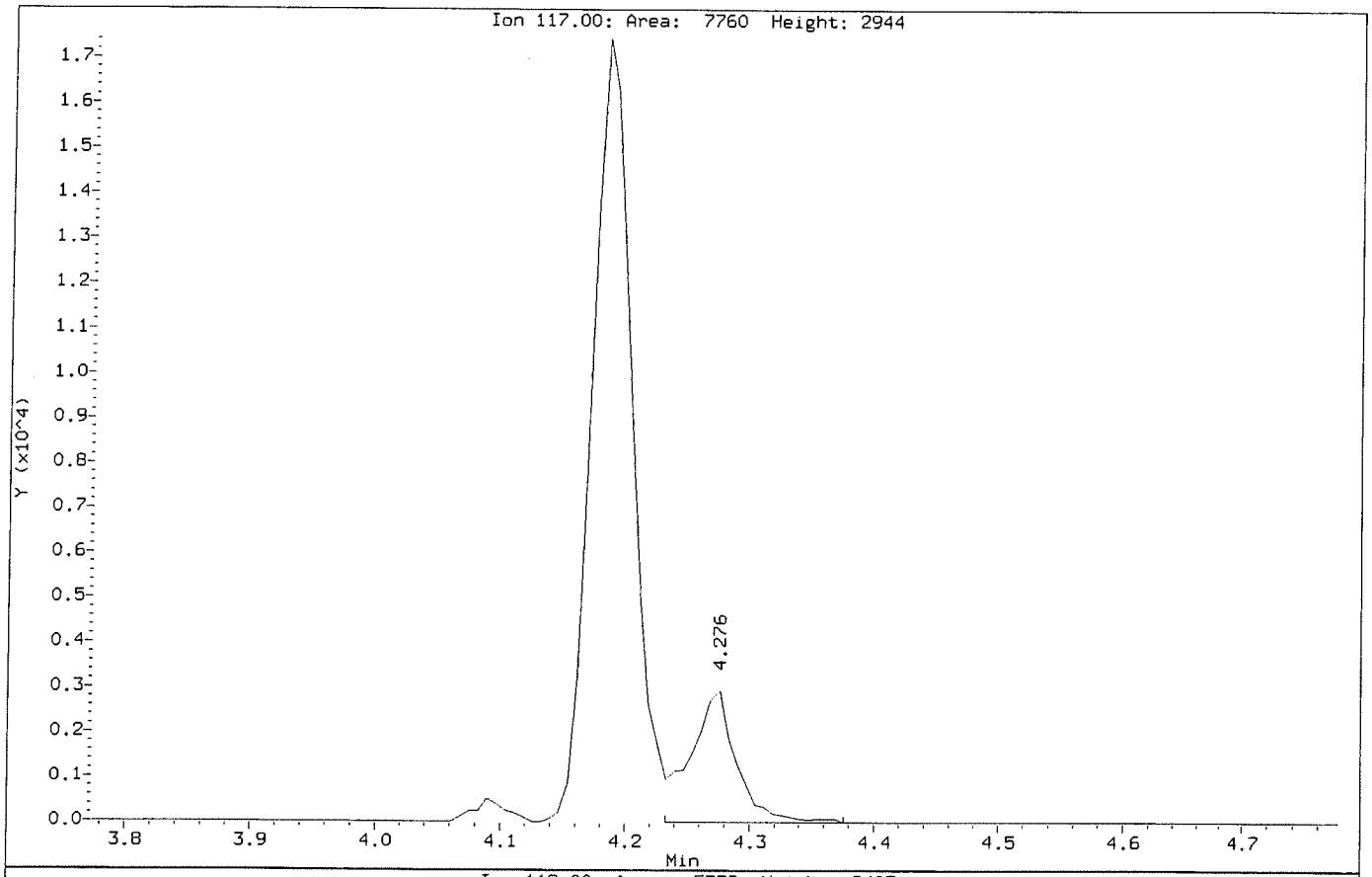
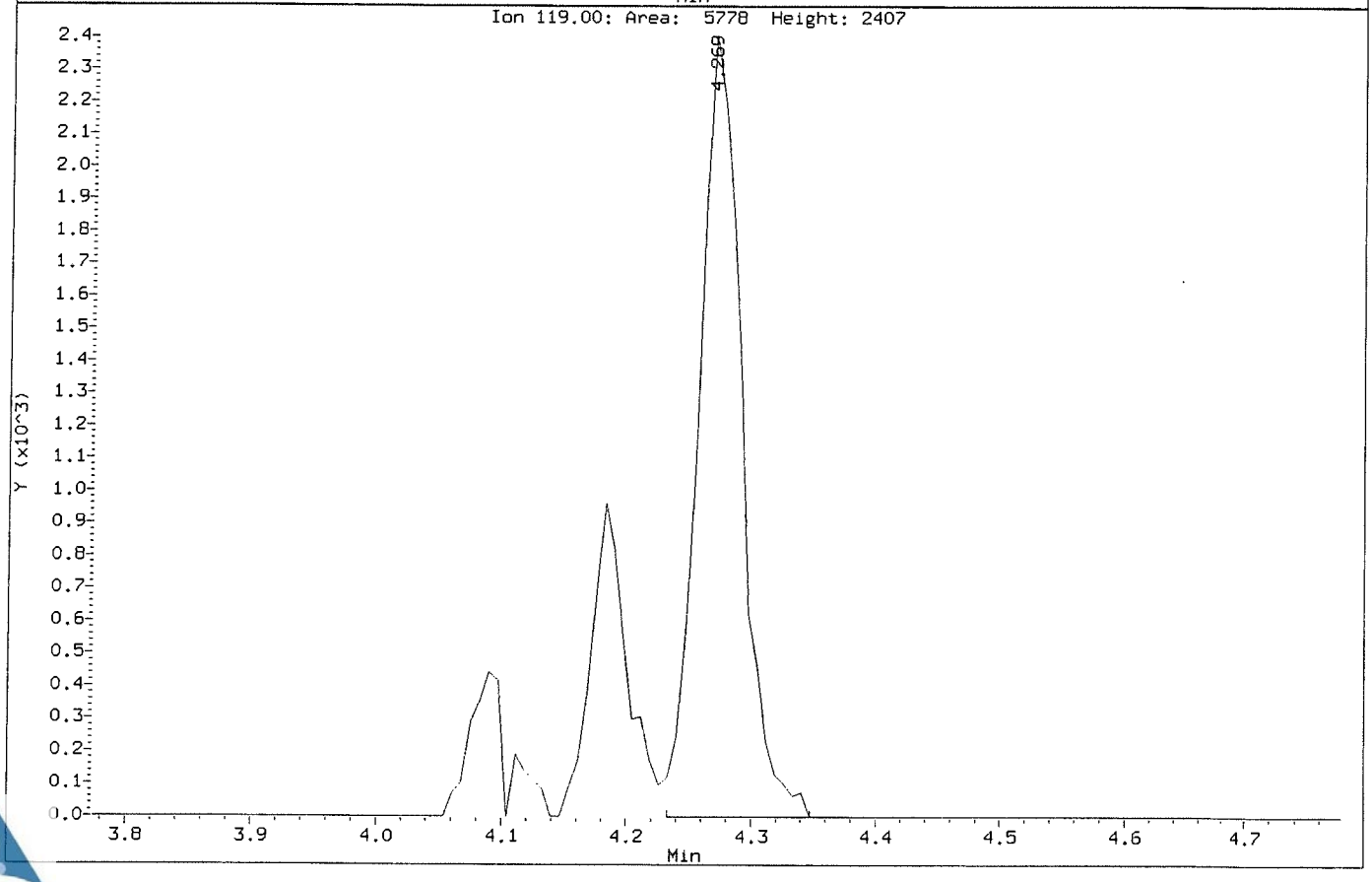
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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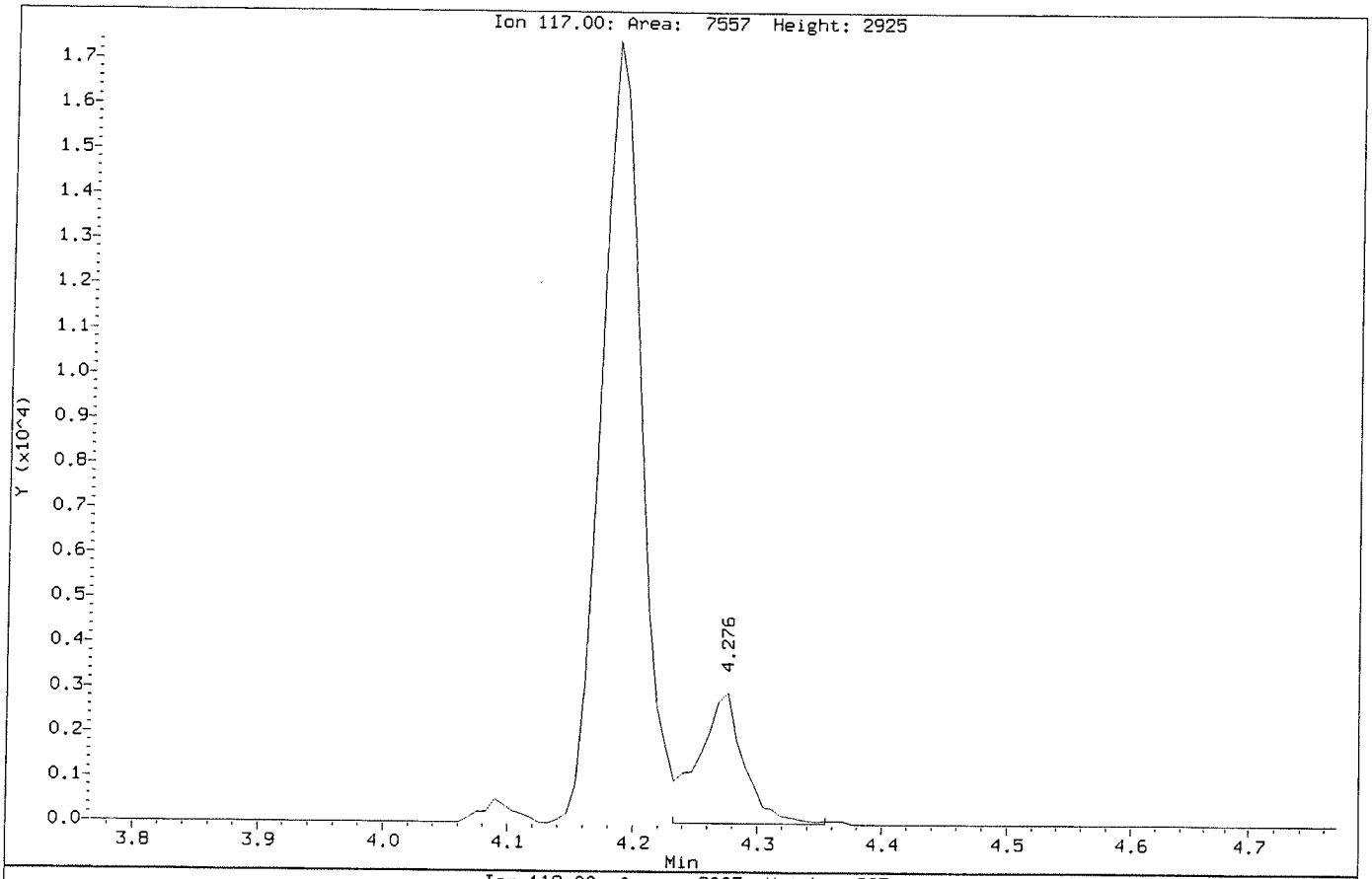
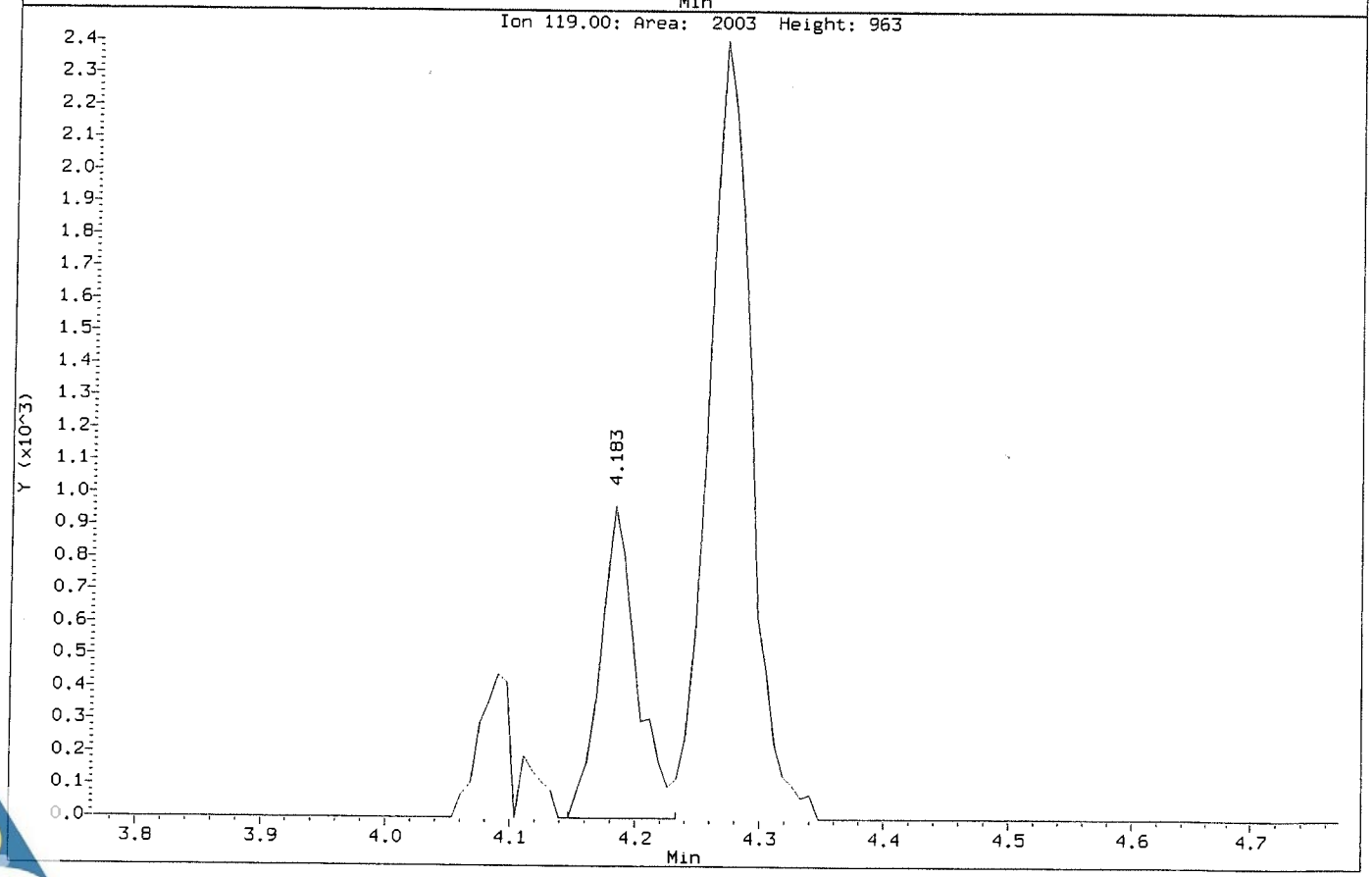
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031405.D
Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031405.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 14-MAR-2019 13:08
Operator : PC Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 12:44 Cal File: X031404.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	478926	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	740505	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	697885	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	352809	50.0000	
$ 30 Dibromofluoromethane	113	4.111	4.111	(0.981)	8973	2.00000	1.84(a)
$ 35 1,2-Dichloroethane-d4	65	4.483	4.483	(1.070)	10993	2.00000	1.88(a)
$ 48 Toluene-d8	98	6.396	6.396	(0.834)	35730	2.00000	1.86(a)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	14277	2.00000	1.89(a)
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	9528	2.00000	2.02(a)
31 1,1,1-Trichloroethane	97	4.096	4.096	(0.978)	14379	2.00000	2.06(a)
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	11807	2.00000	2.07(a)
53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	8215	2.00000	2.14(a)
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	17593	2.00000	2.00(a)
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	8586	2.00000	2.11(a)
32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	14206	2.00000	2.13(a)
93 1,2,3-Trichlorobenzene	180	11.754	11.754	(1.216)	4834	2.00000	1.93(a)
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	9629	2.00000	2.18(aM)
90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	8911	2.00000	2.01(a)
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	34225	2.00000	2.02(a)
89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.103)	1444	2.00000	2.08(a)
57 1,2-Dibromoethane	107	7.269	7.269	(0.948)	9520	2.00000	2.07(a)
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	21272	2.00000	2.11(a)

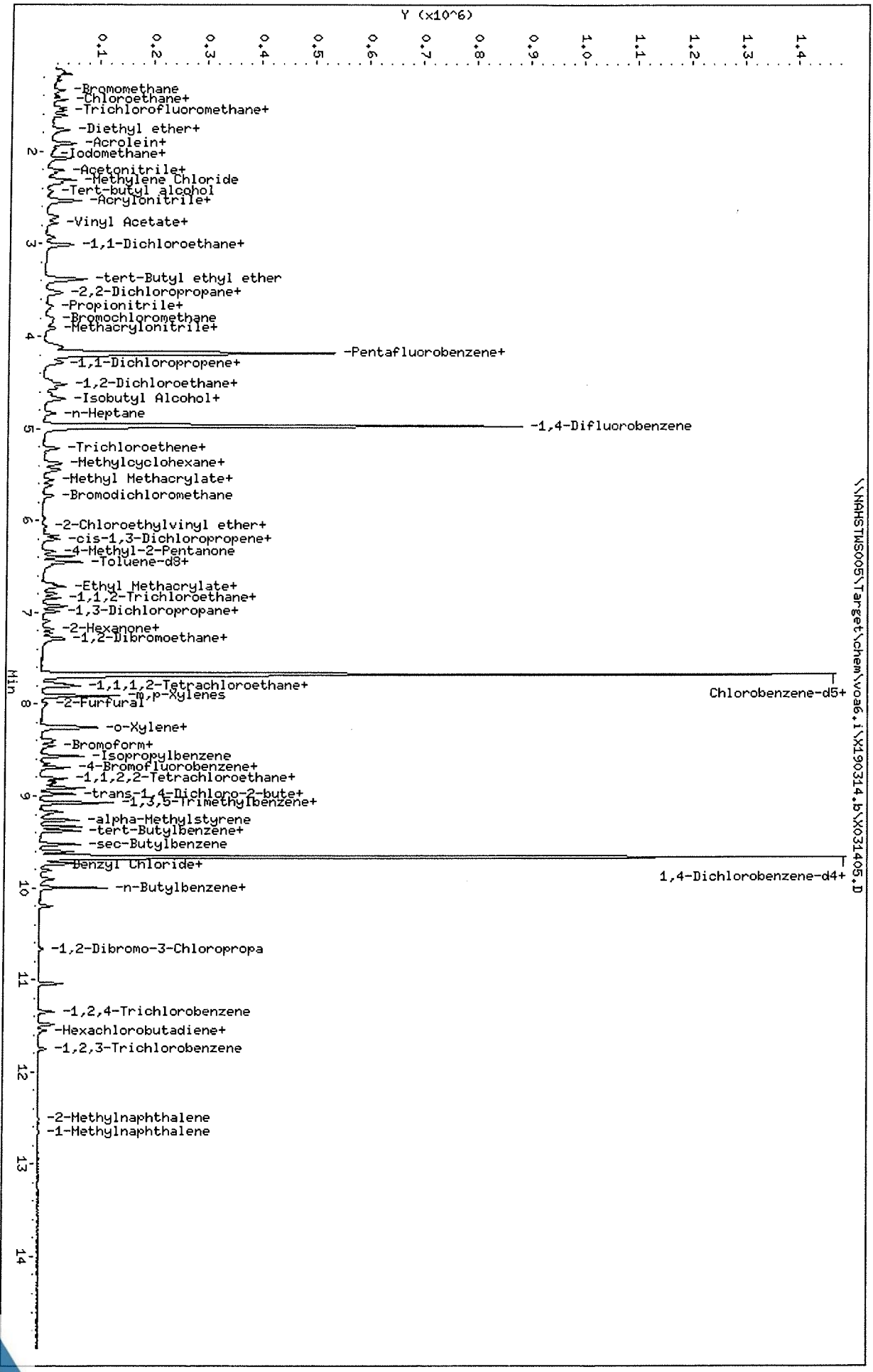
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031405.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	13420	2.00000	2.14(a)
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	10778	2.00000	2.07(aM)
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	33825	2.00000	2.02(a)
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	21933	2.00000	2.05(a)
54 1,3-Dichloropropane	76	6.990	6.990	(0.911)	15969	2.00000	2.05(a)
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	22337	2.00000	2.05(a)
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	13477	2.00000	1.99(a)
24 2-Butanone	43	3.602	3.602	(0.860)	5086	4.00000	3.10(a)
76 2-Chlorotoluene	91	8.981	8.981	(0.929)	30961	2.00000	2.05(a)
52 2-Hexanone	43	7.098	7.098	(0.925)	10301	4.00000	3.74(a)
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	34775	2.00000	2.02(a)
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	34553	2.00000	1.98(a)
45 4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	16579	4.00000	3.91(a)
10 Acetone	43	1.976	1.976	(0.472)	8911	4.00000	3.12(a)
37 Benzene	78	4.519	4.519	(0.909)	37609	2.00000	1.98(a)
74 Bromobenzene	156	8.810	8.810	(0.911)	12388	2.00000	2.05(a)
29 Bromochloromethane	128	3.803	3.803	(0.908)	5714	2.00000	2.13(a)
39 Bromodichloromethane	83	5.729	5.729	(1.153)	13053	2.00000	2.06(a)
66 Bromoform	173	8.416	8.416	(1.097)	6589	2.00000	2.79(Ta)
6 Bromomethane	94	1.338	1.338	(0.320)	7815	2.00000	2.61(a)
19 Carbon Disulfide	76	2.076	2.076	(0.496)	57285	4.00000	4.10(a)
34 Carbon Tetrachloride	117	4.275	4.275	(0.860)	12783	2.00000	3.93(aM)
59 Chlorobenzene	112	7.699	7.699	(1.004)	28290	2.00000	2.08(a)
7 Chloroethane	64	1.403	1.403	(0.335)	7444	2.00000	2.14(a)
28 Chloroform	83	3.917	3.917	(0.935)	17598	2.00000	2.07(a)
3 Chloromethane	50	1.073	1.073	(0.256)	18061	2.00000	1.33(a)
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	10962	2.00000	2.05(a)
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	15914	2.00000	1.90(a)
55 Dibromochloromethane	129	7.184	7.184	(0.937)	9850	2.00000	1.98(a)
44 Dibromomethane	93	5.558	5.558	(1.118)	6254	2.00000	2.00(a)
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	9465	2.00000	3.72(a)
61 Ethylbenzene	106	7.807	7.807	(1.018)	13954	2.00000	2.06(a)
91 Hexachlorobutadiene	225	11.488	11.488	(1.188)	5403	2.00000	3.08(a)
67 Isopropylbenzene	105	8.566	8.566	(1.117)	43031	2.00000	2.13(a)
62 m,p-Xylenes	106	7.907	7.907	(1.031)	35035	4.00000	4.18(a)
17 Methylene Chloride	84	2.305	2.305	(0.550)	11530	2.00000	2.27(a)
87 n-Butylbenzene	91	9.999	9.999	(1.034)	30300	2.00000	2.01(a)
73 n-Propylbenzene	91	8.917	8.917	(0.922)	50157	2.00000	2.04(a)
92 Naphthalene	128	11.553	11.553	(1.195)	12837	2.00000	1.92(a)
63 o-Xylene	106	8.244	8.244	(1.075)	17200	2.00000	2.05(a)
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	43188	2.00000	2.11(a)
64 Styrene	104	8.265	8.265	(1.078)	27843	2.00000	2.00(a)
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	30267	2.00000	2.08(a)
56 Tetrachloroethene	164	6.933	6.933	(0.904)	8827	2.00000	2.10(a)
50 Toluene	91	6.453	6.453	(0.841)	42576	2.00000	2.08(a)
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	9364	2.00000	2.07(a)
51 trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	12937	2.00000	1.92(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	10630	2.00000	2.04(a)
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	15375	2.00000	2.91(a)
5 Vinyl Chloride	62	1.145	1.145	(0.273)	12963	2.00000	2.09(a)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031405.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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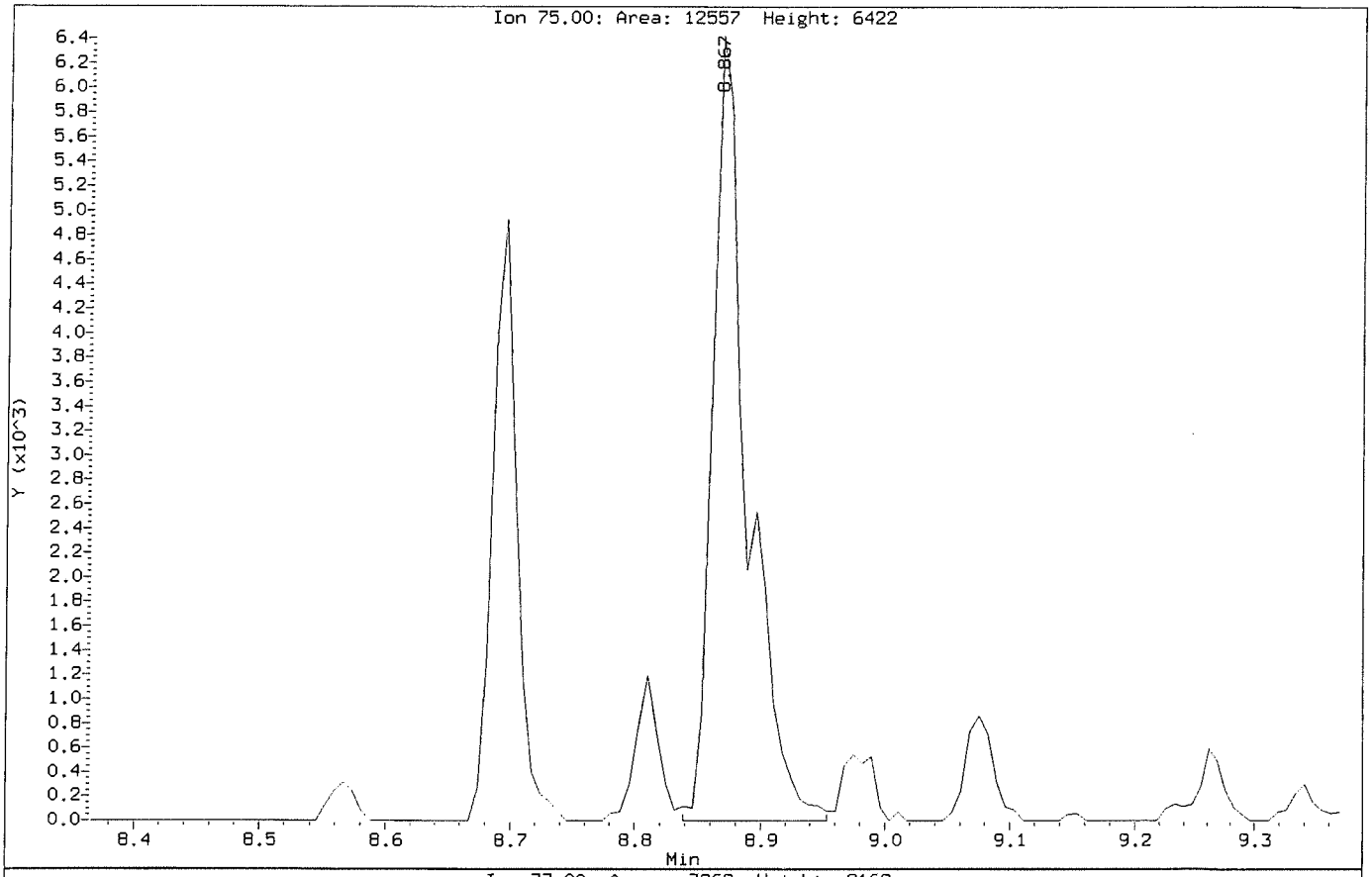
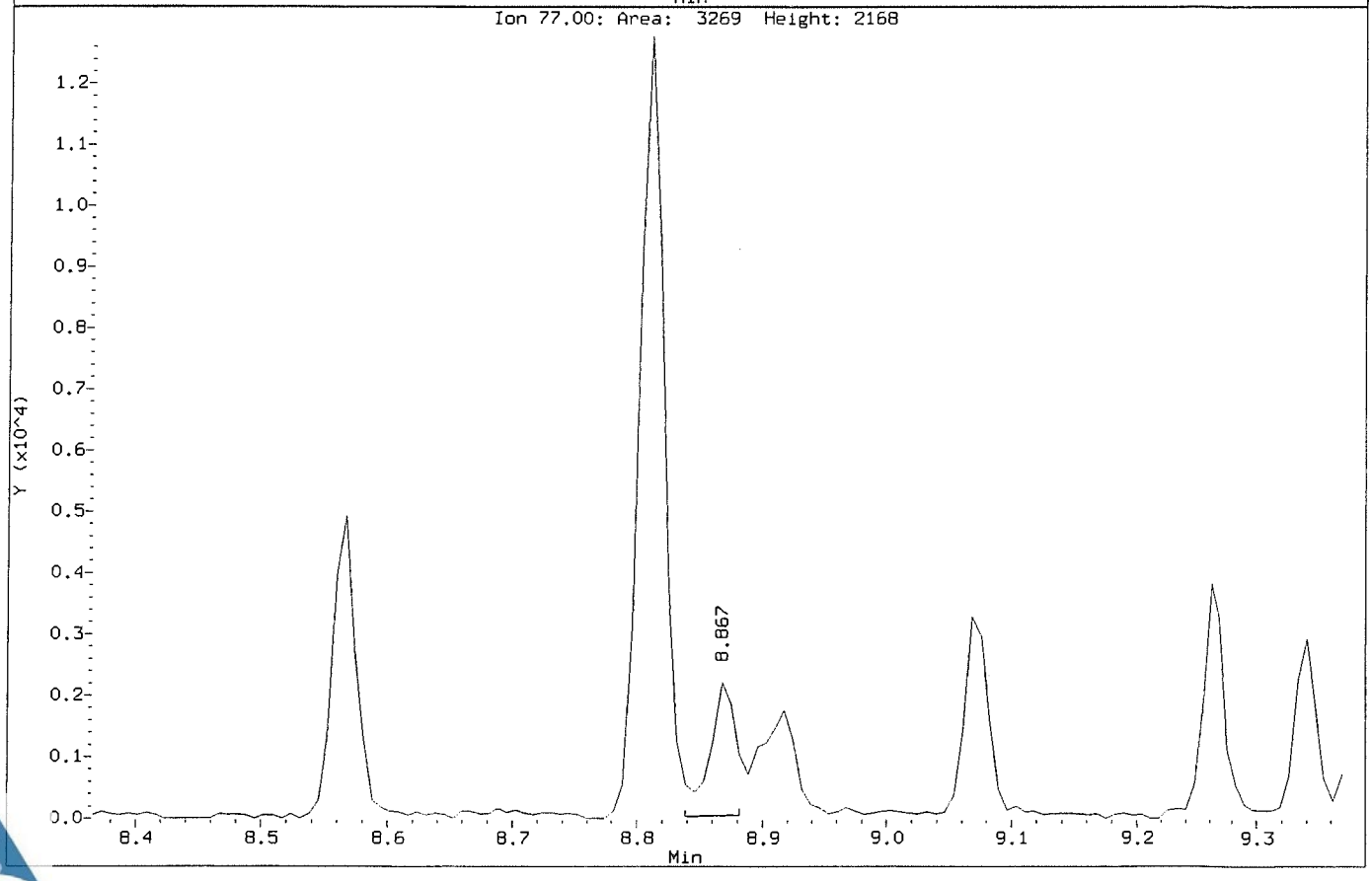
Date : 14-MAR-2019 13:08
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031405.D
Injection Date: 14-MAR-2019 13:08
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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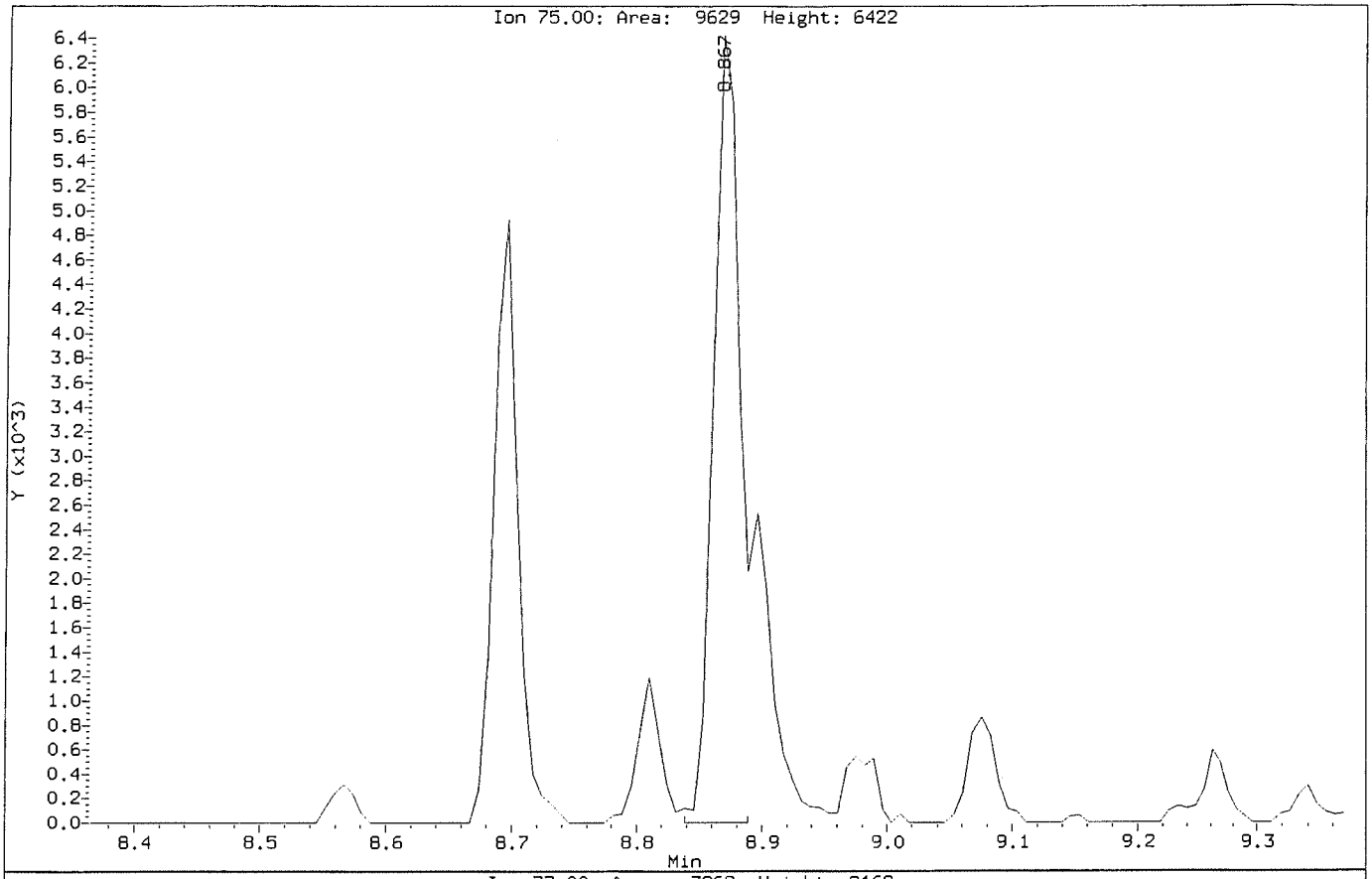
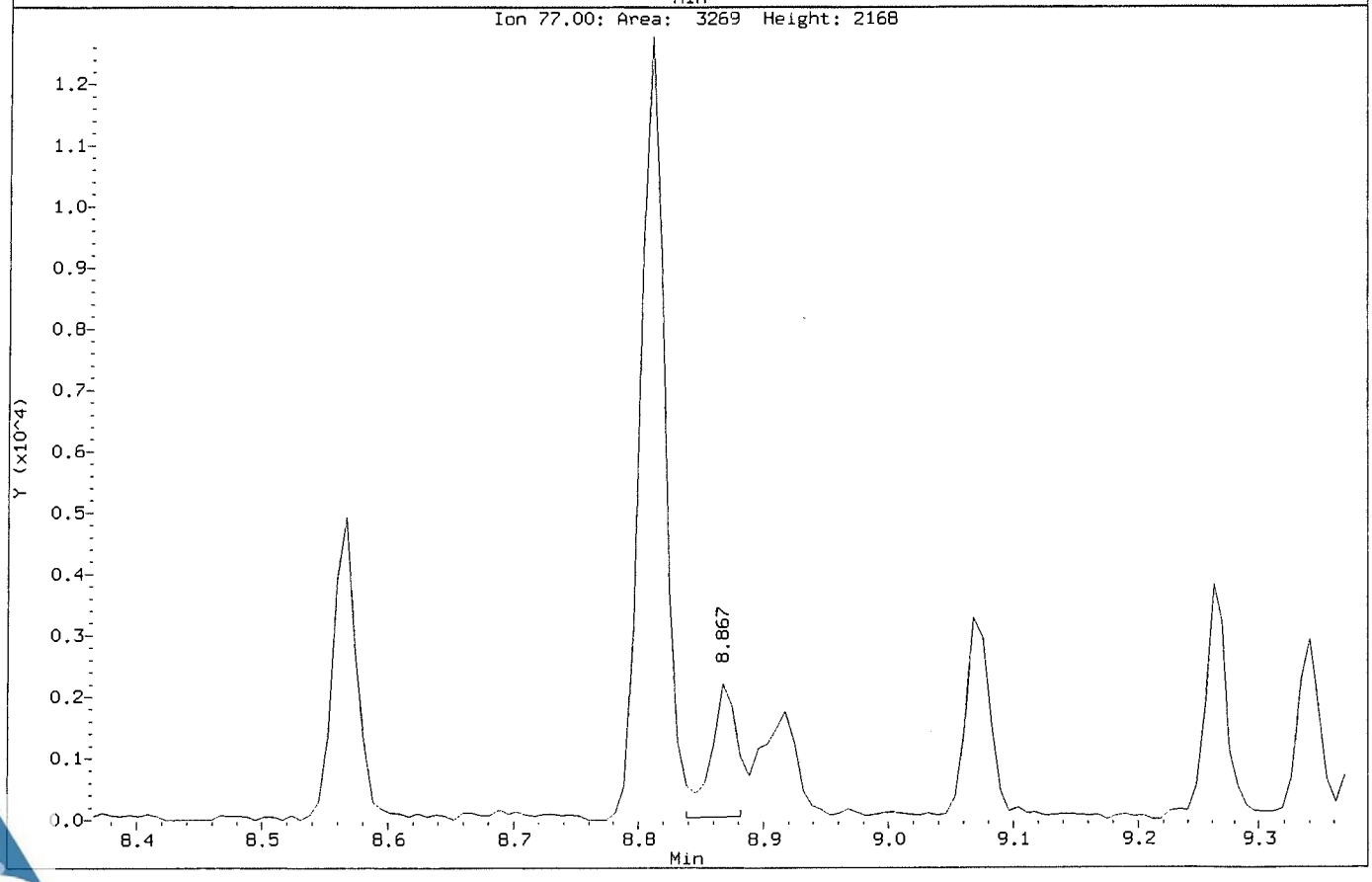
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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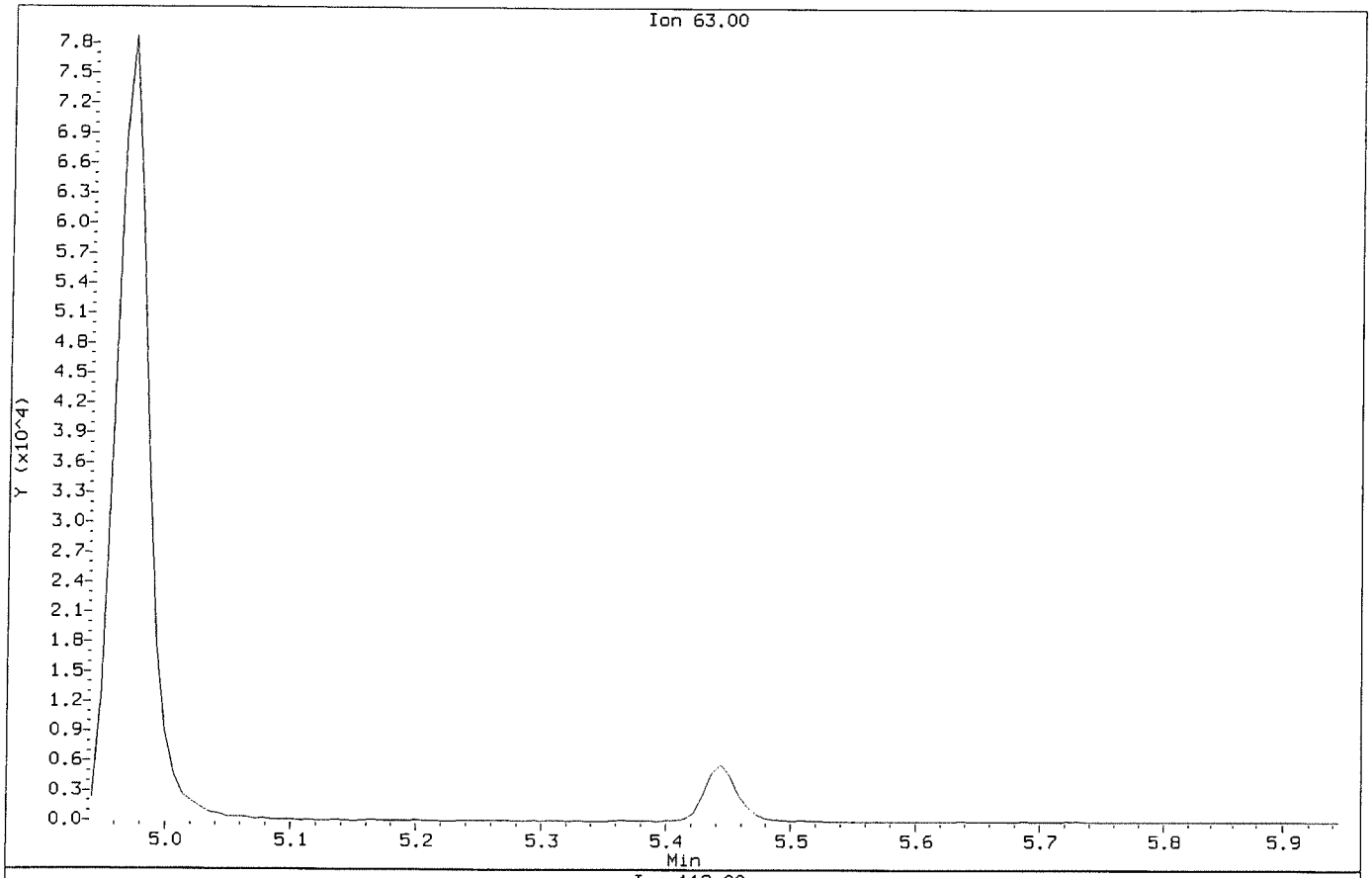
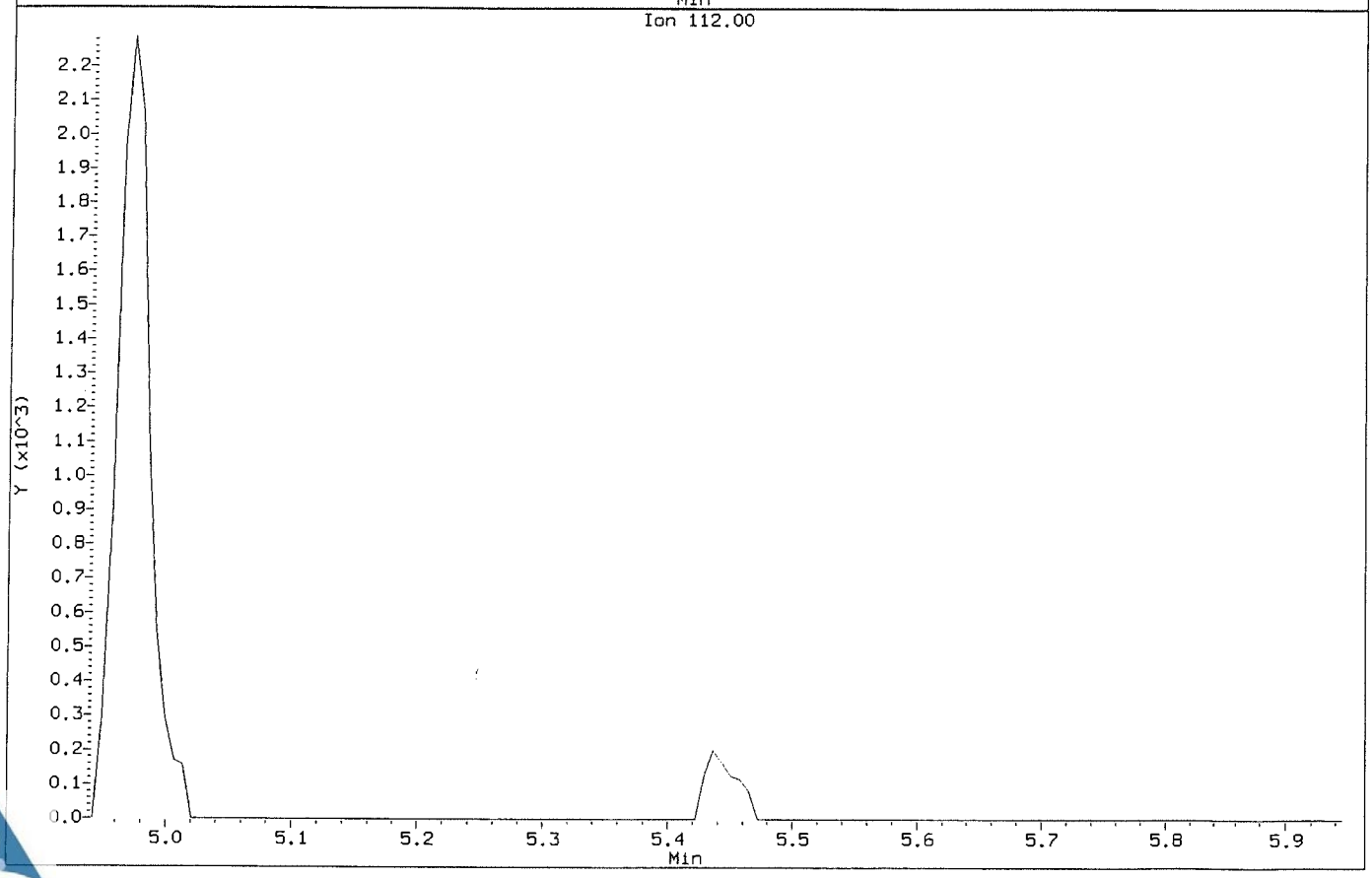
Injection Date: 14-MAR-2019 13:08
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5





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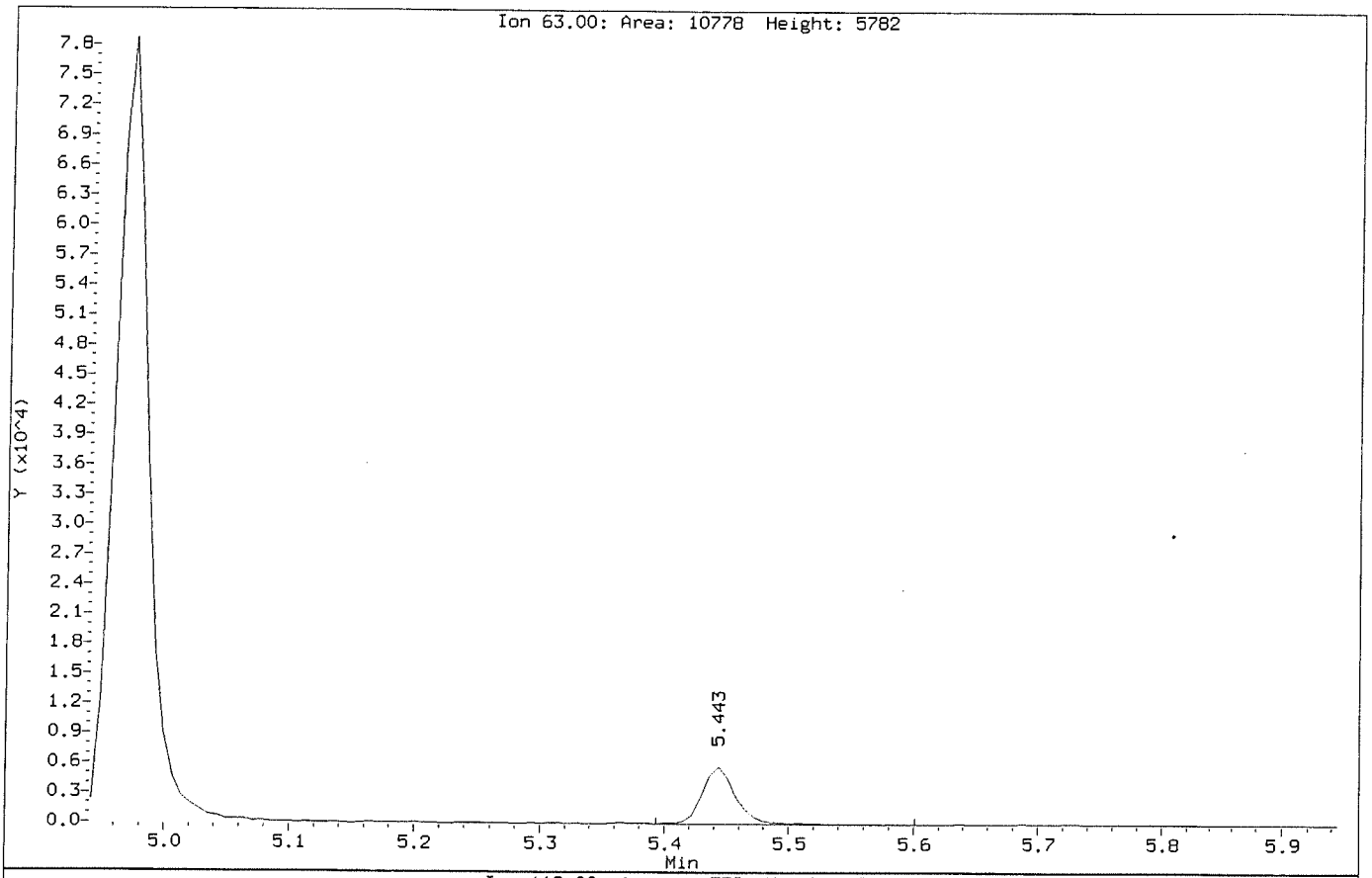
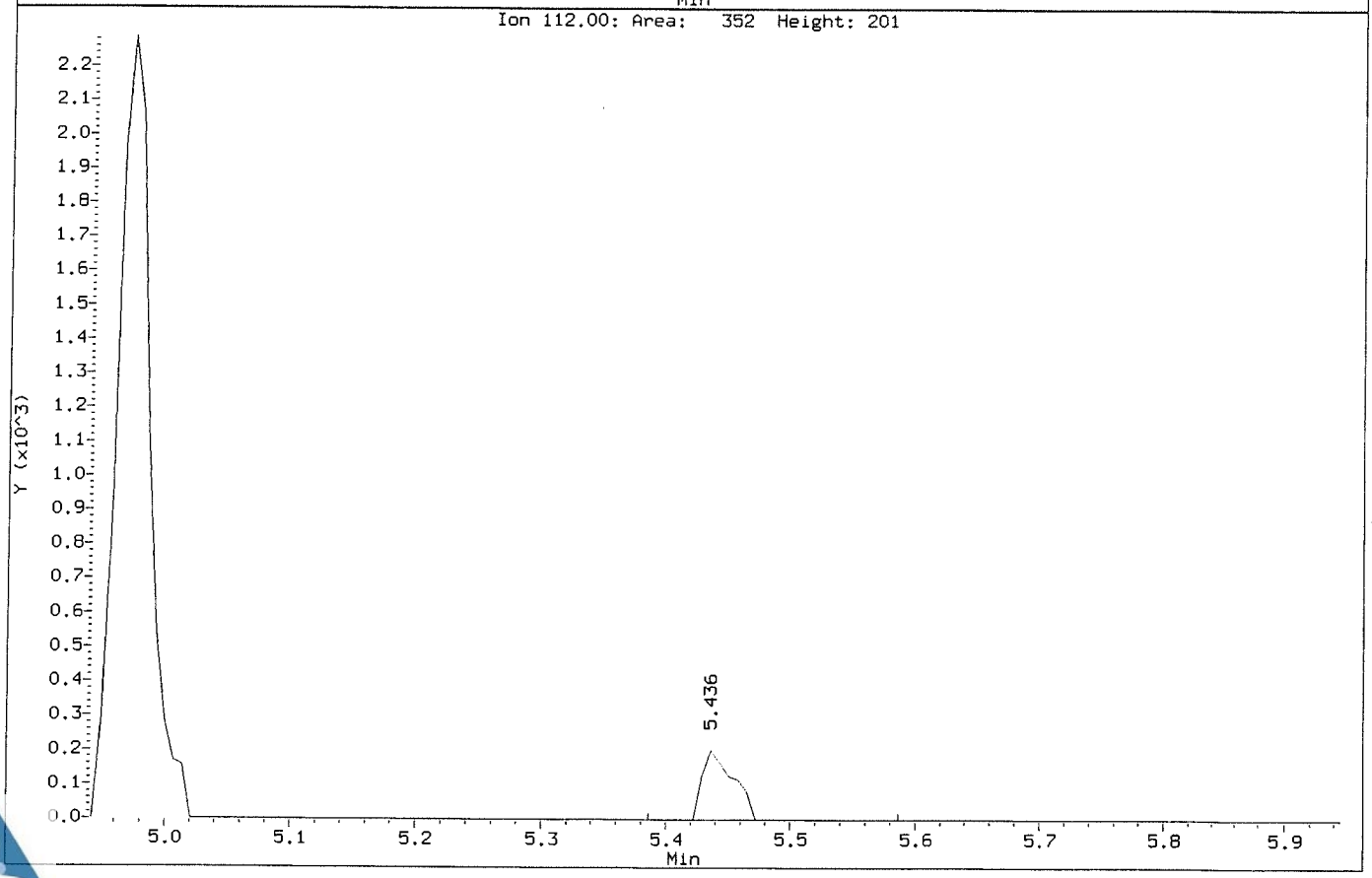
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5





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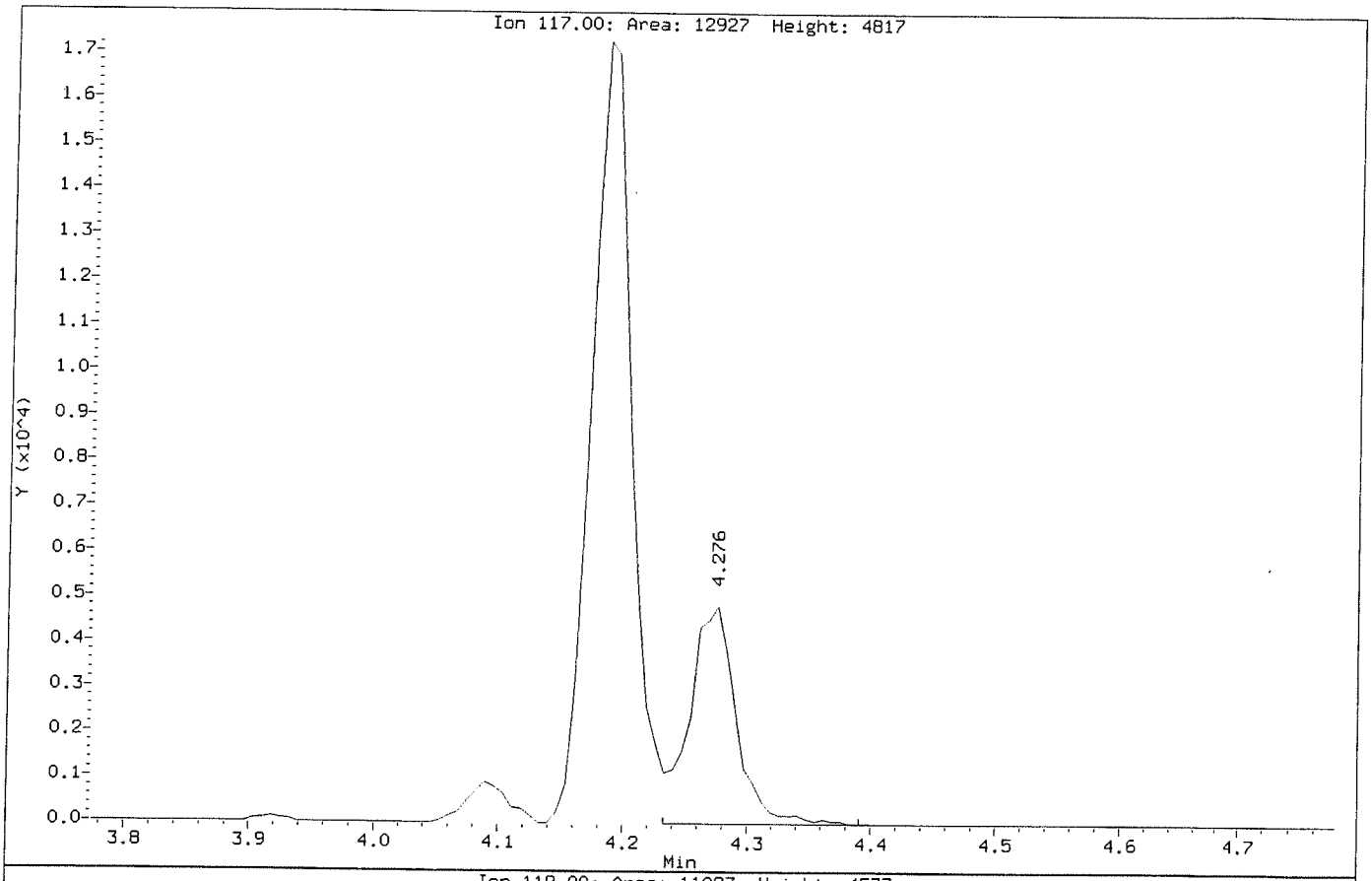
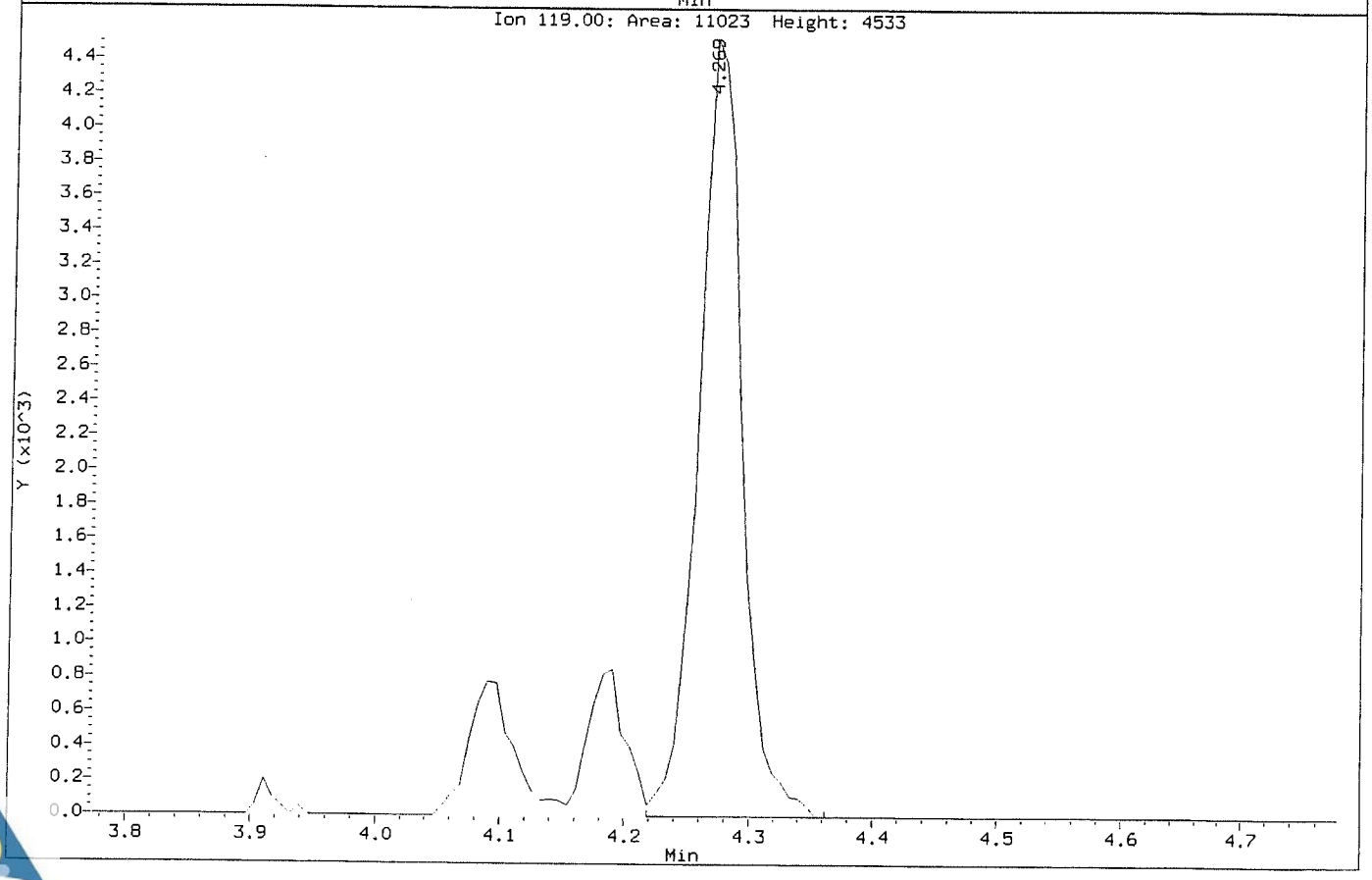
Injection Date: 14-MAR-2019 13:08
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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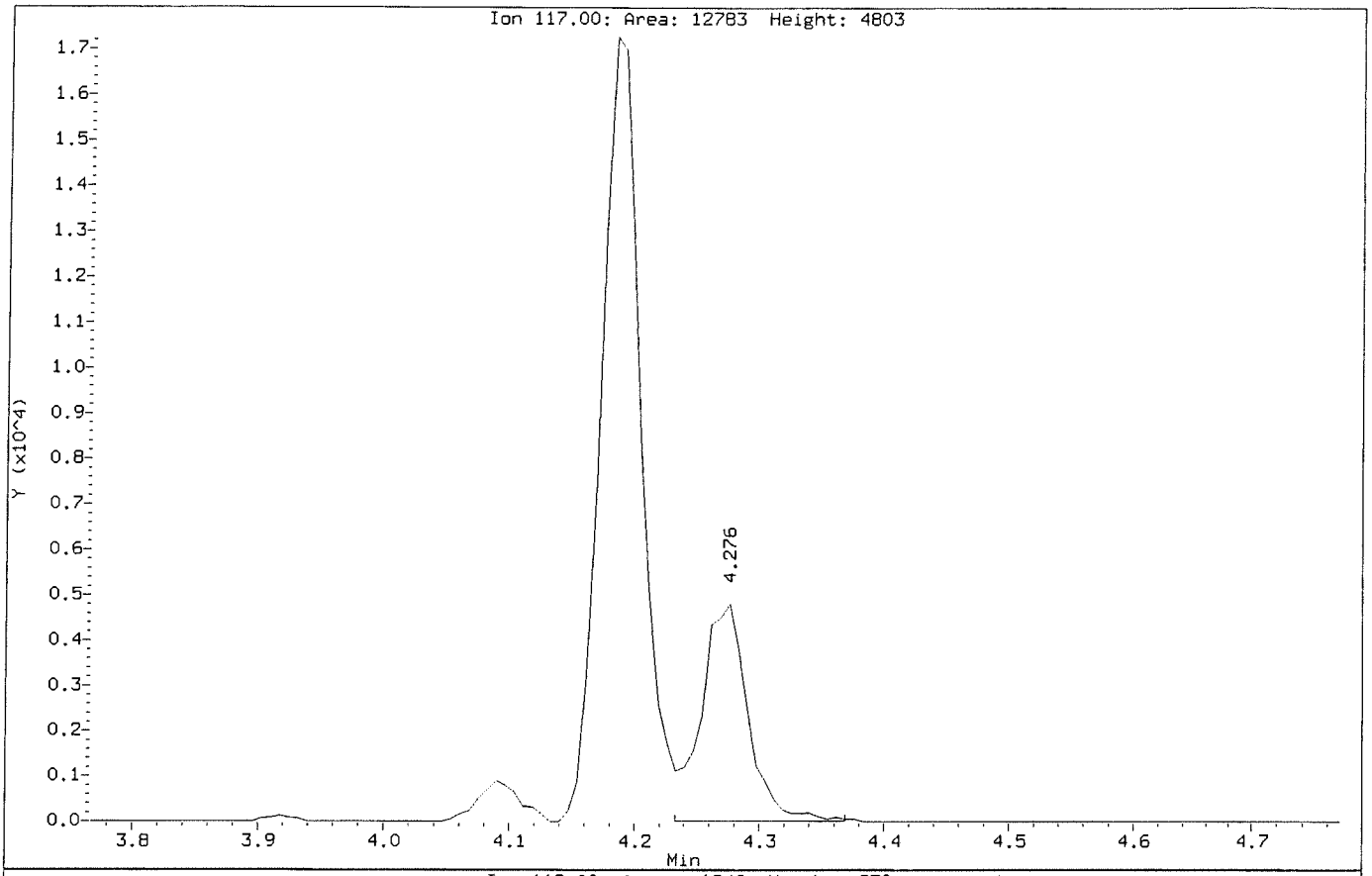
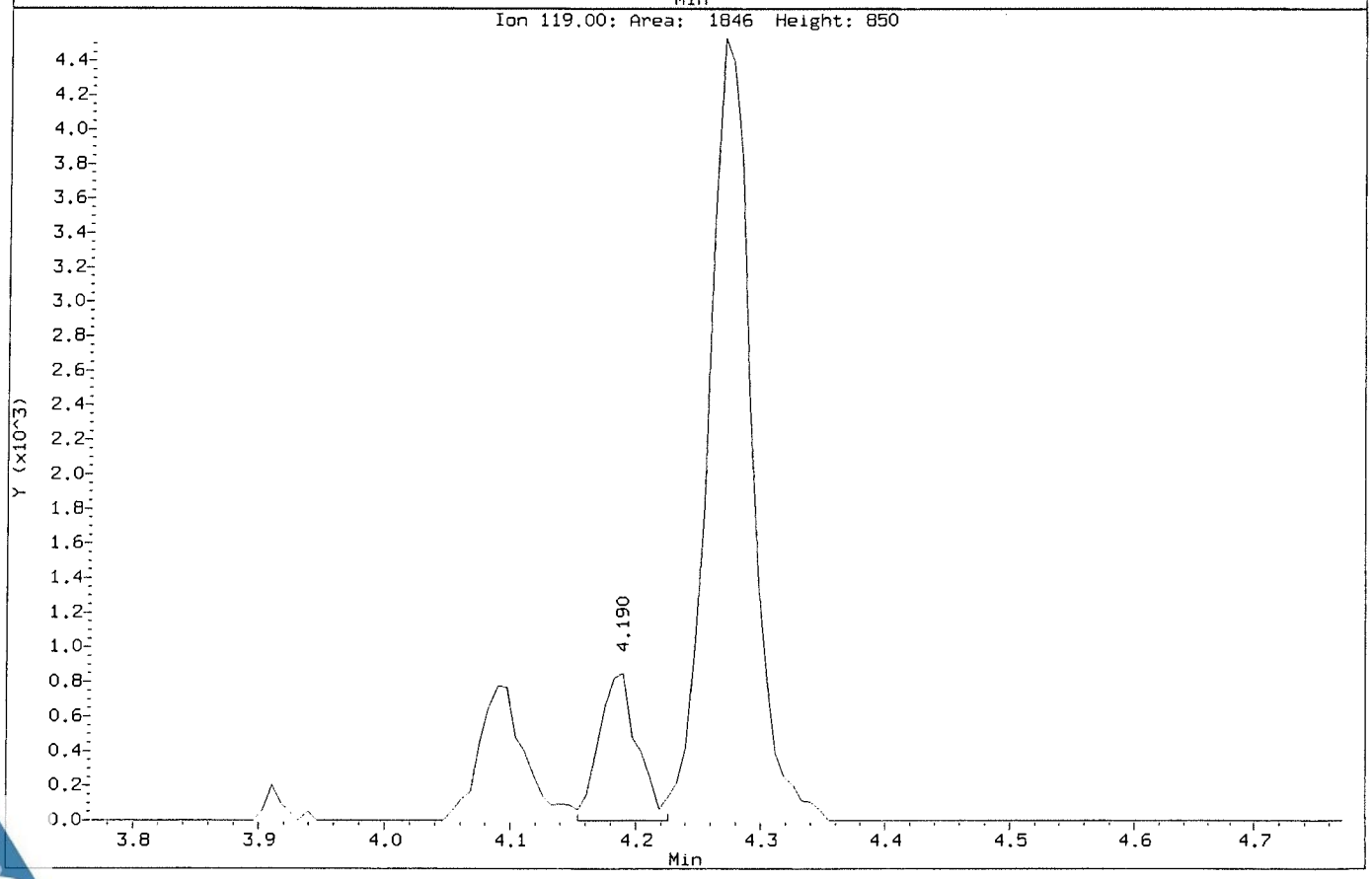
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031406.D
Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031406.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 14-MAR-2019 13:32
Operator : PC Inst ID: voa6.i
Smp Info : VSTD005;VSTD005;1;5;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 13:08 Cal File: X031405.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	461718	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	725660	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	690700	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	352934	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.979)	23704	5.00000	5.17
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	27296	5.00000	5.21
$	48 Toluene-d8	98	6.389	6.389	(0.833)	91809	5.00000	5.17
$	69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	34111	5.00000	5.08
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	22060	5.00000	4.73(a)
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	29869	5.00000	4.43(a)
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	27961	5.00000	4.91(a)
	53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	18703	5.00000	4.93(a)
	22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	39940	5.00000	4.71(a)
	11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	16949	5.00000	4.32(a)
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	27884	5.00000	4.27(a)
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	11895	5.00000	4.76(a)
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	23598	5.00000	5.36(M)
	90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	21032	5.00000	4.76(a)
	79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	76988	5.00000	4.56(a)
	89 1,2-Dibromo-3-Chloropropane	155	10.665	10.665	(1.103)	3270	5.00000	4.72(a)
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	22168	5.00000	4.87(a)
	88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	47414	5.00000	4.71(a)

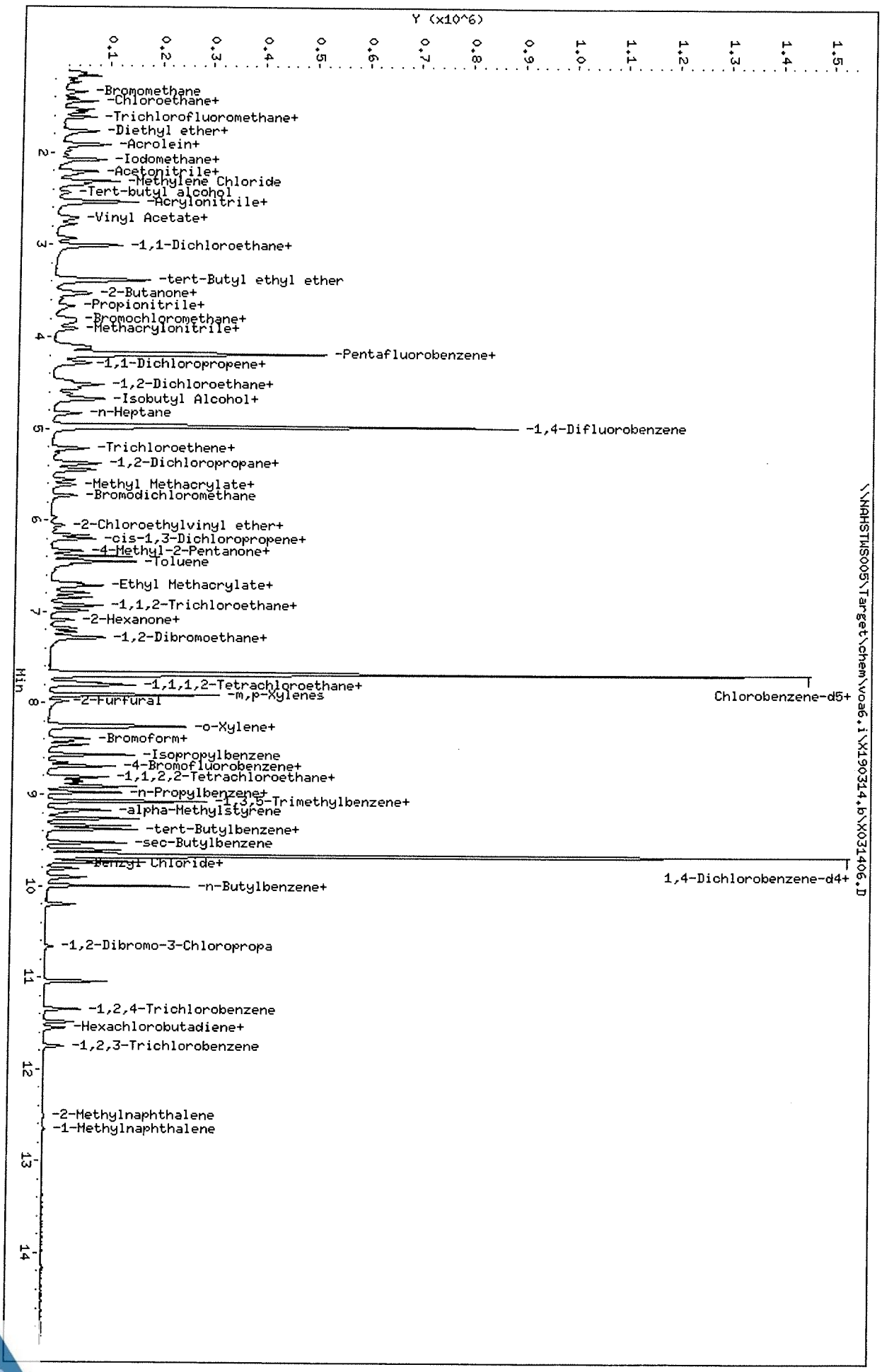
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031406.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	31106	5.00000	5.07
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	23911	5.00000	4.68(a)
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	76207	5.00000	4.56(a)
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	50699	5.00000	4.75(a)
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	37561	5.00000	4.87(a)
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	49839	5.00000	4.58(a)
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	30218	5.00000	4.63(a)
24 2-Butanone	43	3.588	3.588	(0.856)	15482	10.0000	9.78
76 2-Chlorotoluene	91	8.982	8.982	(0.929)	69257	5.00000	4.59(a)
52 2-Hexanone	43	7.090	7.090	(0.924)	26285	10.0000	9.65
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	78227	5.00000	4.55(a)
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	73154	5.00000	4.19(a)
45 4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	39820	10.0000	9.49
10 Acetone	43	1.976	1.976	(0.472)	16151	10.0000	9.96
37 Benzene	78	4.519	4.519	(0.909)	87102	5.00000	4.69(a)
74 Bromobenzene	156	8.810	8.810	(0.911)	28505	5.00000	4.71(a)
29 Bromochloromethane	128	3.803	3.803	(0.908)	12375	5.00000	4.79(a)
39 Bromodichloromethane	83	5.730	5.730	(1.153)	29297	5.00000	4.73(a)
66 Bromoform	173	8.416	8.416	(1.097)	15617	5.00000	5.38
6 Bromomethane	94	1.339	1.339	(0.320)	17098	5.00000	5.65
19 Carbon Disulfide	76	2.076	2.076	(0.496)	119343	10.0000	8.86
34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	23333	5.00000	5.78(M)
59 Chlorobenzene	112	7.699	7.699	(1.004)	62856	5.00000	4.67(a)
7 Chloroethane	64	1.403	1.403	(0.335)	15451	5.00000	4.61(a)
28 Chloroform	83	3.917	3.917	(0.935)	39823	5.00000	4.86(a)
3 Chloromethane	50	1.074	1.074	(0.256)	38315	5.00000	4.68(a)
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	24307	5.00000	4.72(a)
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	38177	5.00000	4.67(a)
55 Dibromochloromethane	129	7.184	7.184	(0.937)	23410	5.00000	4.76(a)
44 Dibromomethane	93	5.558	5.558	(1.118)	15254	5.00000	4.99(a)
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	18712	5.00000	5.68
61 Ethylbenzene	106	7.800	7.800	(1.017)	31216	5.00000	4.67(a)
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	10475	5.00000	5.08
67 Isopropylbenzene	105	8.566	8.566	(1.117)	88891	5.00000	4.45(a)
62 m,p-Xylenes	106	7.907	7.907	(1.031)	76850	10.0000	9.27
17 Methylene Chloride	84	2.306	2.306	(0.550)	24802	5.00000	5.12
87 n-Butylbenzene	91	9.999	9.999	(1.034)	62016	5.00000	4.11(a)
73 n-Propylbenzene	91	8.917	8.917	(0.922)	106774	5.00000	4.34(a)
92 Naphthalene	128	11.546	11.546	(1.194)	32812	5.00000	4.93(a)
63 o-Xylene	106	8.244	8.244	(1.075)	39477	5.00000	4.76(a)
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	85826	5.00000	4.19(a)
64 Styrene	104	8.265	8.265	(1.077)	64566	5.00000	4.70(a)
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	63619	5.00000	4.38(a)
56 Tetrachloroethene	164	6.933	6.933	(0.904)	18484	5.00000	4.45(a)
50 Toluene	91	6.453	6.453	(0.841)	96534	5.00000	4.77(a)
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	20418	5.00000	4.68(a)
51 trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	30731	5.00000	4.66(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	23294	5.00000	4.56(a)
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	29483	5.00000	5.05
5 Vinyl Chloride	62	1.145	1.145	(0.273)	25416	5.00000	4.26(a)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031406.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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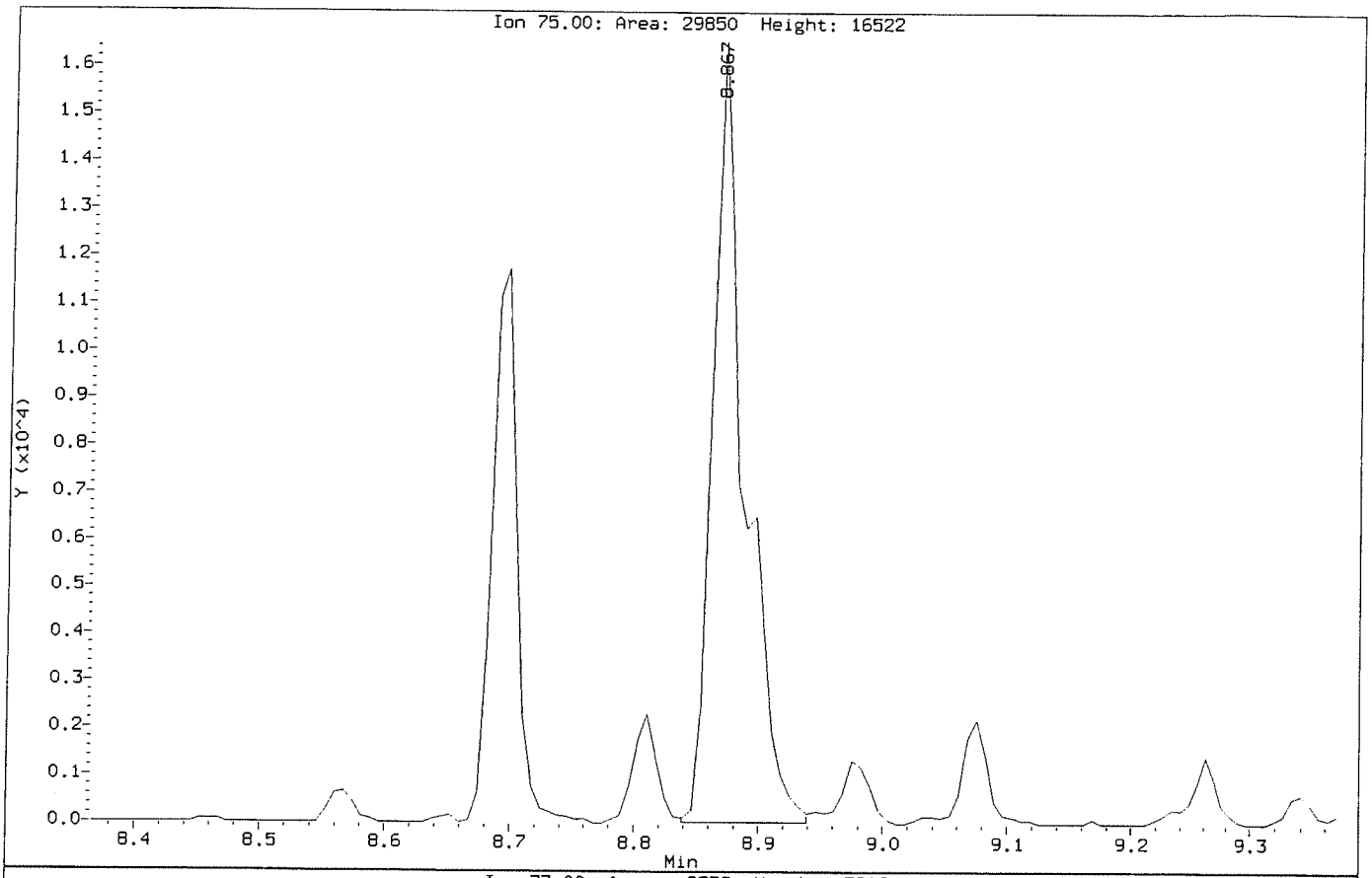
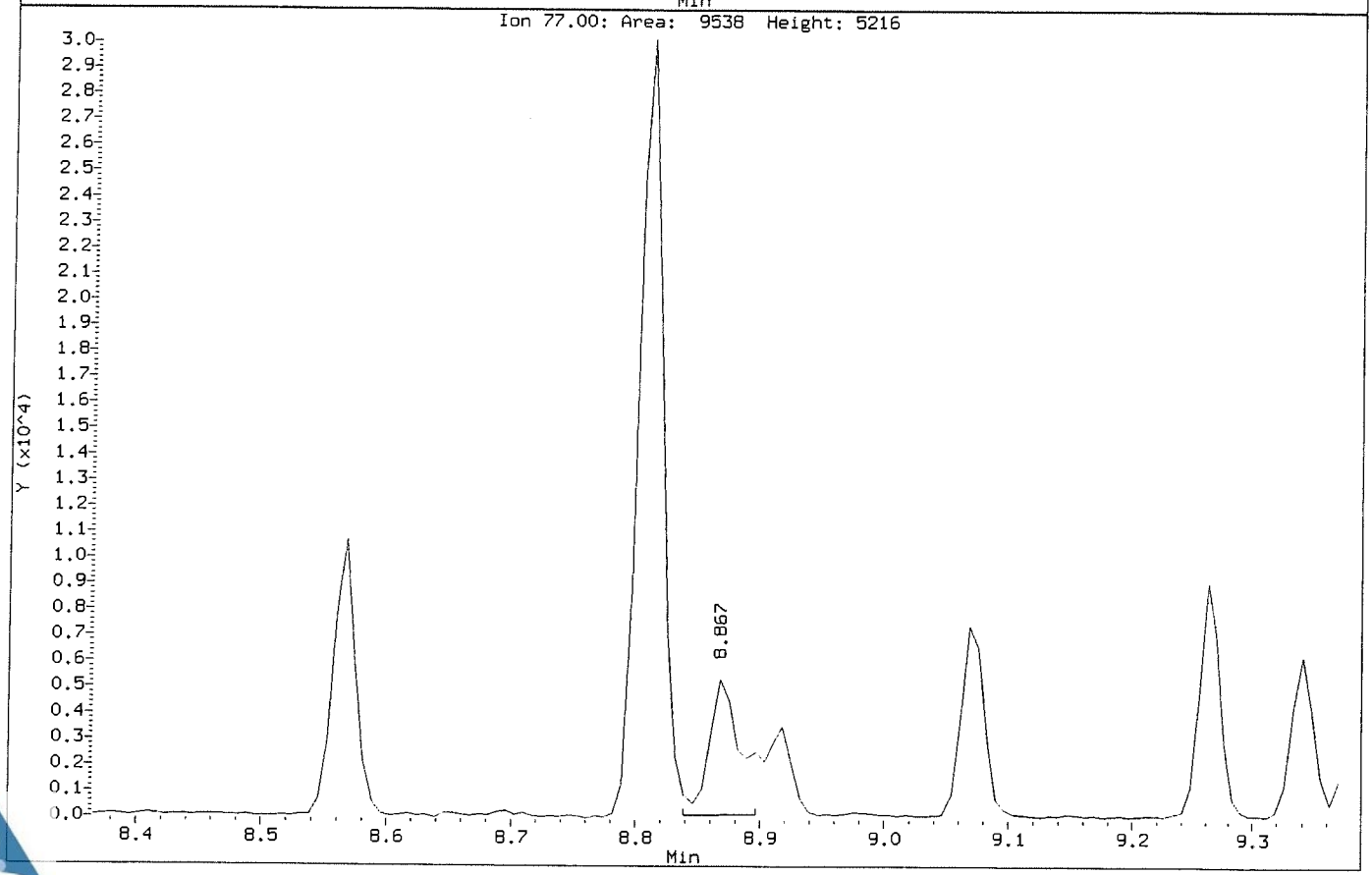
Date : 14-MAR-2019 13:32
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031406.D
Injection Date: 14-MAR-2019 13:32
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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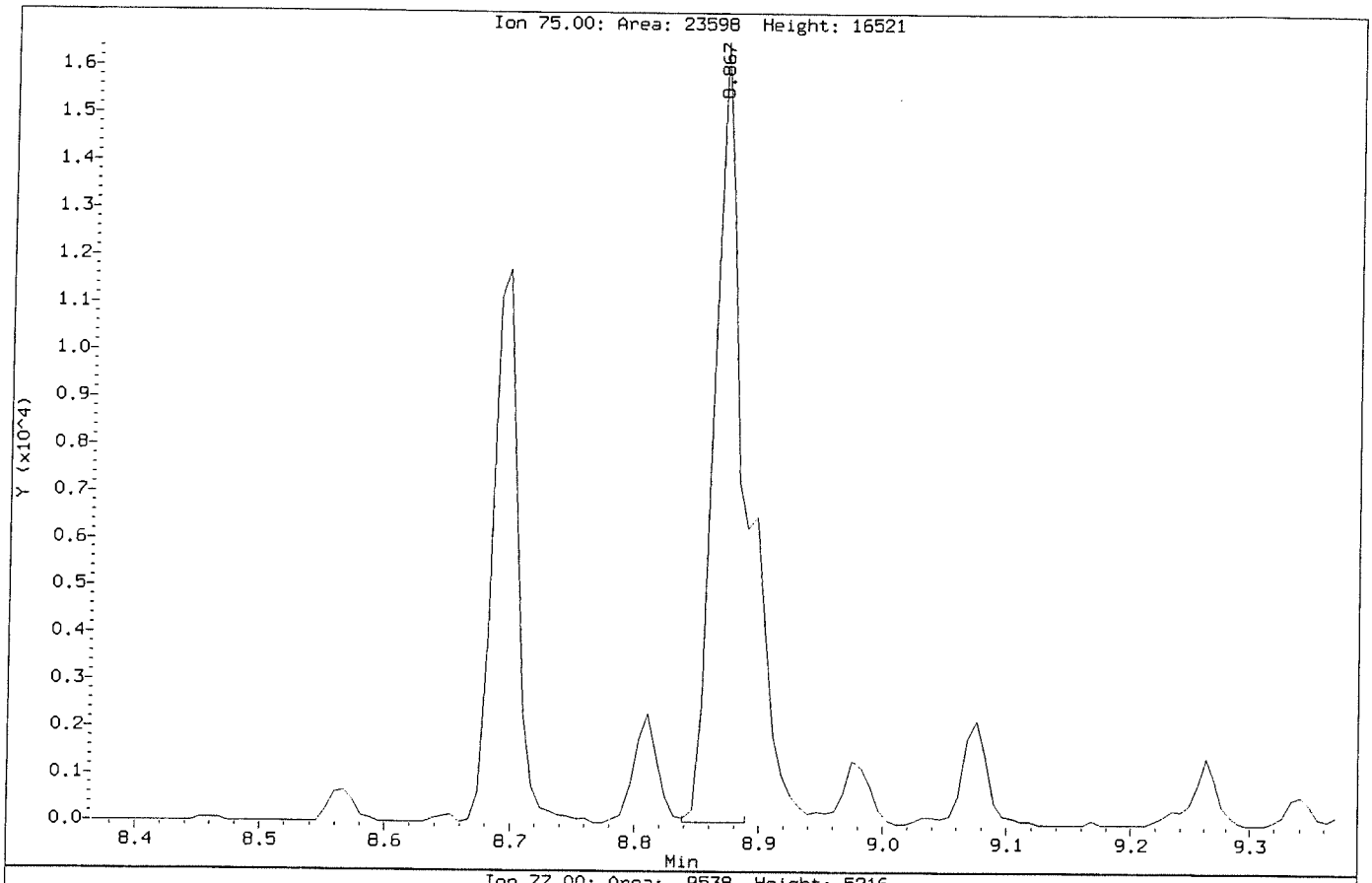
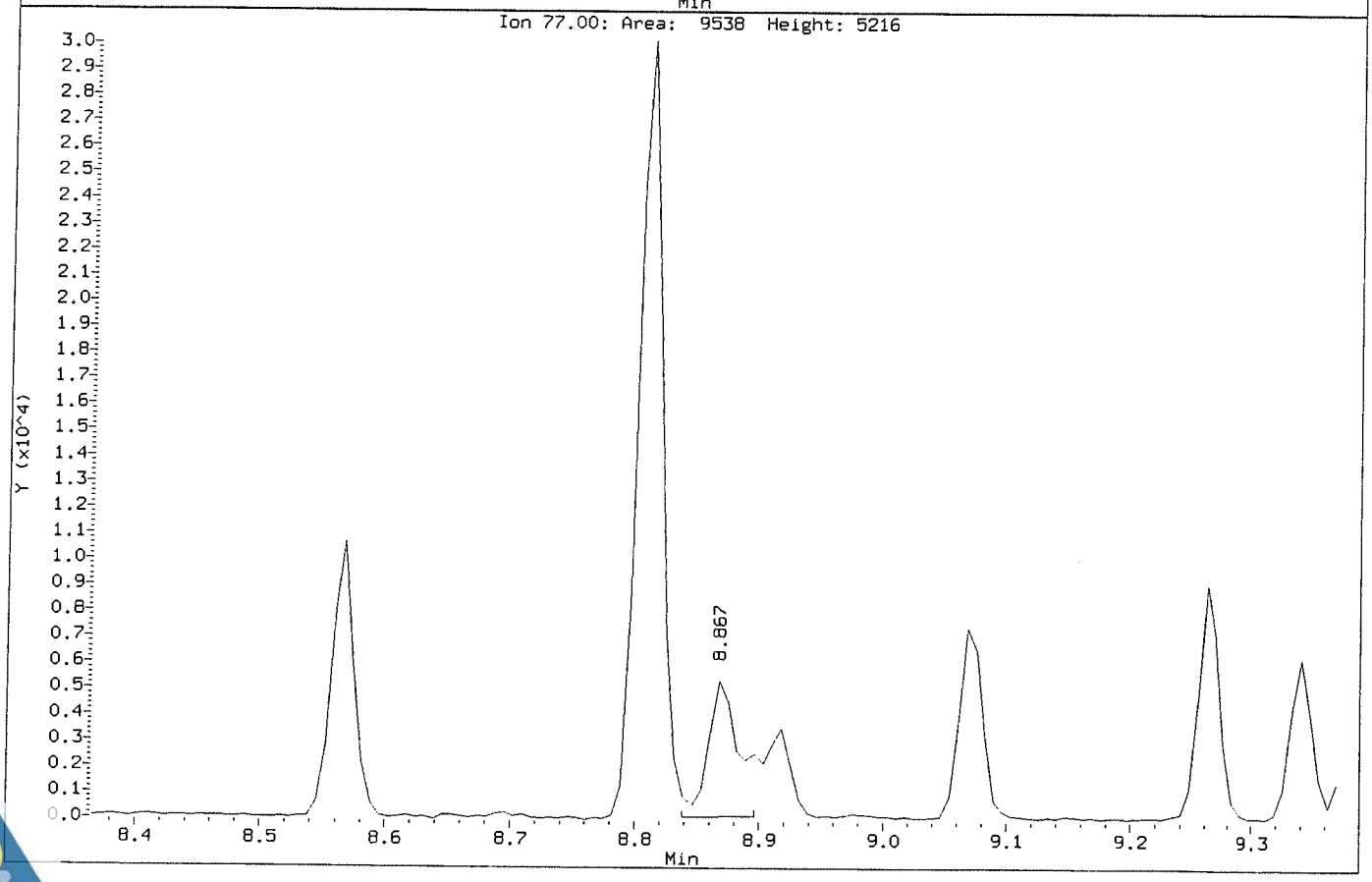
Injection Date: 14-MAR-2019 13:32
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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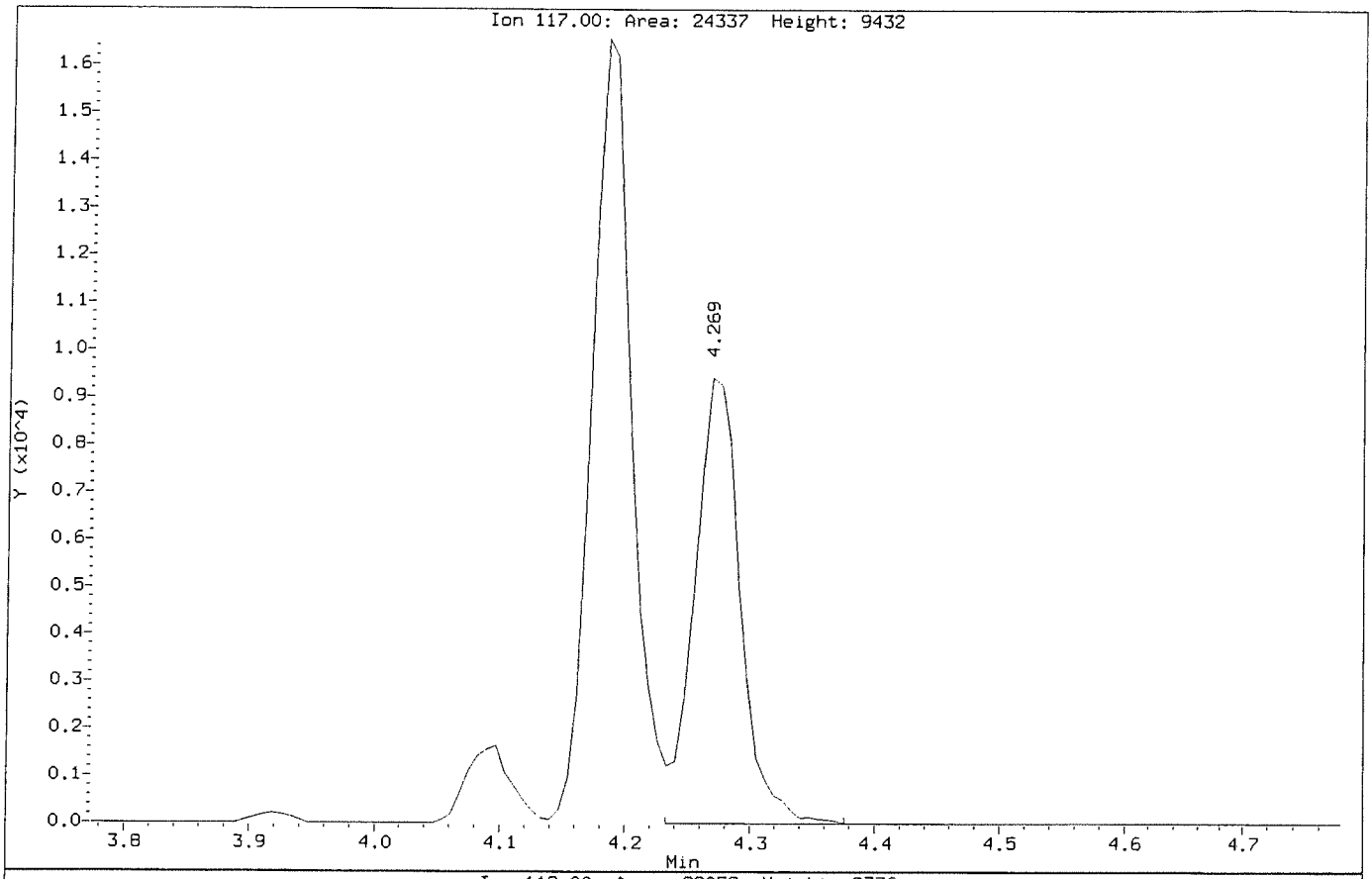
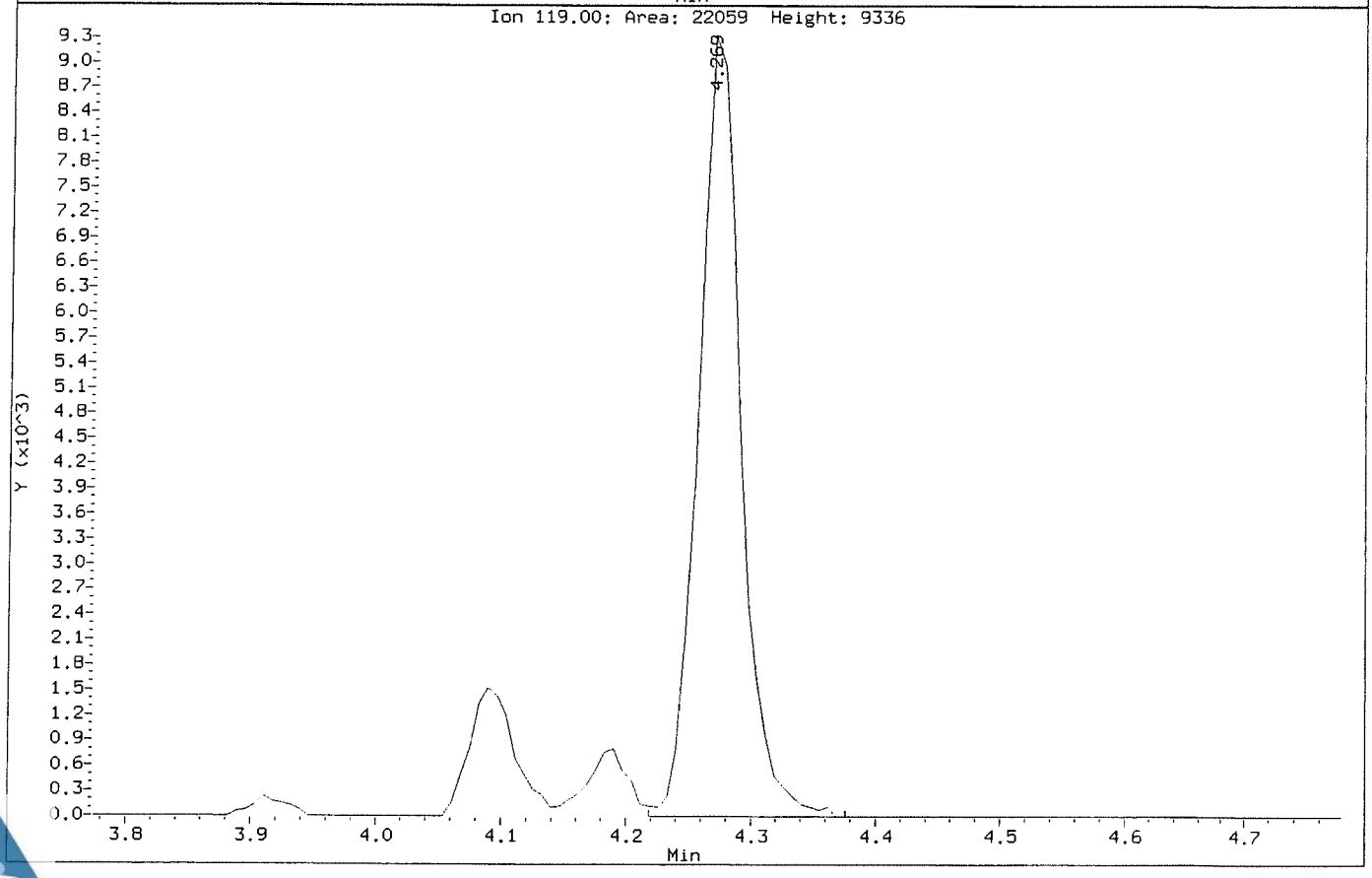
Injection Date: 14-MAR-2019 13:32
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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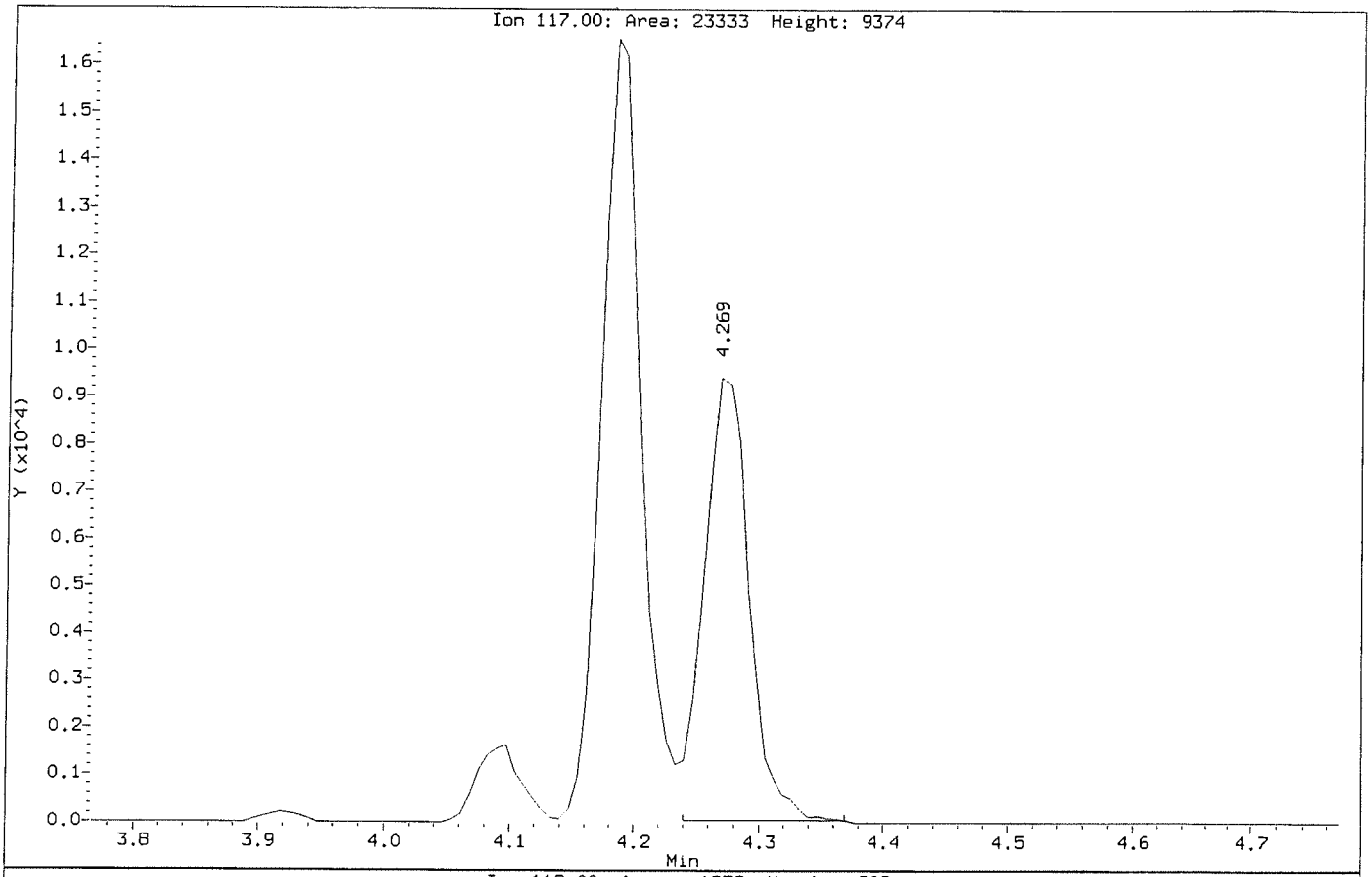
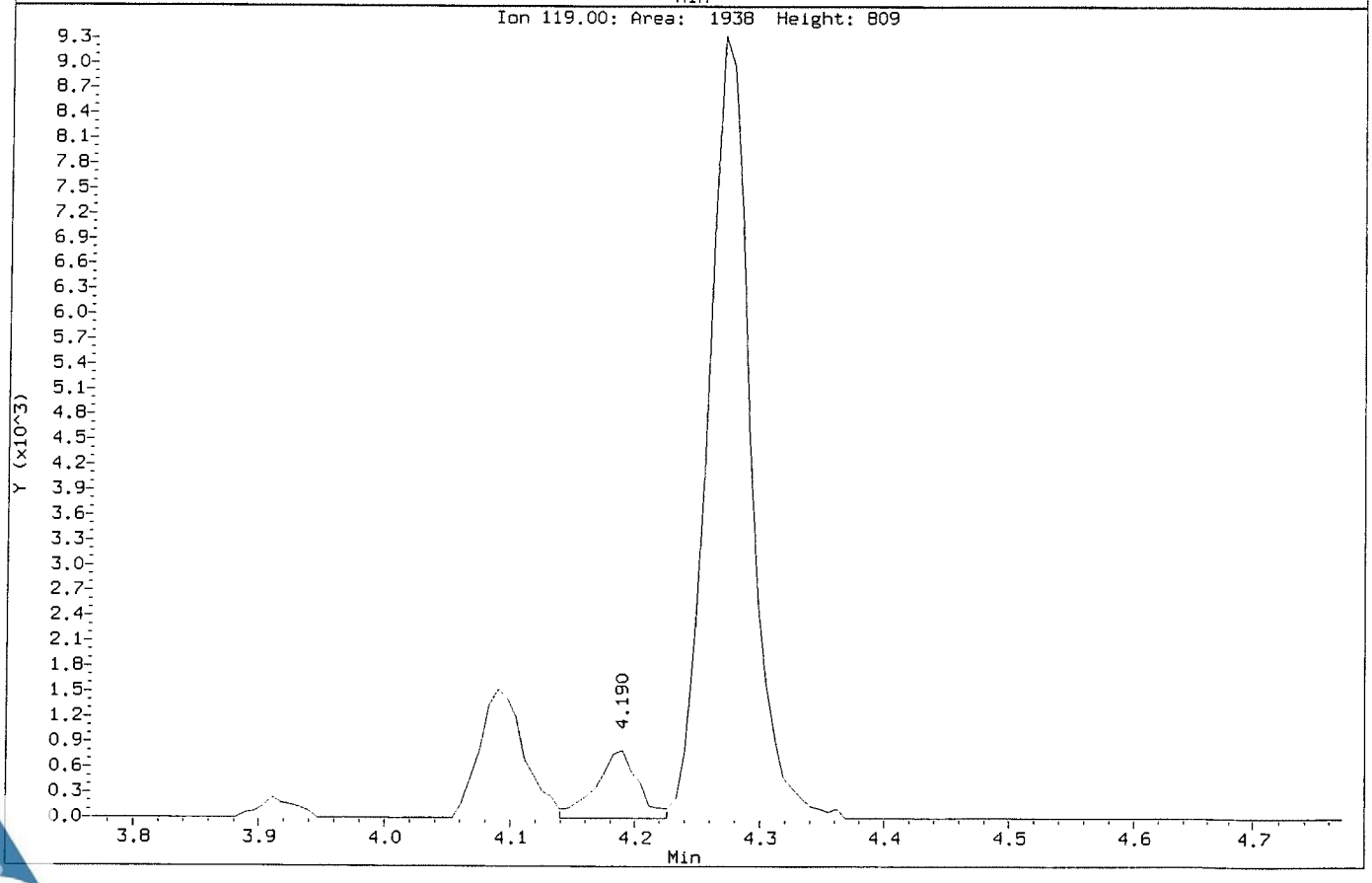
Injection Date: 14-MAR-2019 13:32
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031407.D
Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031407.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 14-MAR-2019 13:56
Operator : PC Inst ID: voa6.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS18090001;WATER;0;1;
Comment :
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Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 13:32 Cal File: X031406.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	455159	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	719487	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	678548	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	346952	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	90165	20.0000	20.21
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	101012	20.0000	20.18
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	338966	20.0000	20.00
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	126535	20.0000	20.20
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	89825	20.0000	19.61
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	126940	20.0000	19.13
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	110092	20.0000	19.67
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	73605	20.0000	19.78
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	165620	20.0000	19.81
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	74190	20.0000	19.21
32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	119514	20.0000	18.47
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	47179	20.0000	19.21
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	85418	20.0000	19.75(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	83769	20.0000	19.29
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	324407	20.0000	19.54
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	13452	20.0000	19.76
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	88769	20.0000	19.86
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	193023	20.0000	19.51

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Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	118865	20.0000	19.57
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	97047	20.0000	19.19
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	322667	20.0000	19.65
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	203479	20.0000	19.39
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	147799	20.0000	19.51
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	205693	20.0000	19.24
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	124026	20.0000	19.27
24 2-Butanone	43	3.581	3.581	(0.855)	68954	40.0000	44.22
76 2-Chlorotoluene	91	8.974	8.974	(0.928)	280964	20.0000	18.97
52 2-Hexanone	43	7.090	7.090	(0.924)	106908	40.0000	39.96
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	322595	20.0000	19.10
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	331876	20.0000	19.34
45 4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	161874	40.0000	39.30
10 Acetone	43	1.976	1.976	(0.472)	52205	40.0000	43.27
37 Benzene	78	4.519	4.519	(0.909)	358052	20.0000	19.45
74 Bromobenzene	156	8.810	8.810	(0.911)	116987	20.0000	19.70
29 Bromochloromethane	128	3.803	3.803	(0.908)	49630	20.0000	19.51
39 Bromodichloromethane	83	5.729	5.729	(1.153)	120167	20.0000	19.57
66 Bromoform	173	8.416	8.416	(1.097)	65679	20.0000	19.97
6 Bromomethane	94	1.339	1.339	(0.320)	61792	20.0000	20.15
19 Carbon Disulfide	76	2.076	2.076	(0.496)	513065	40.0000	38.64
34 Carbon Tetrachloride	117	4.275	4.275	(0.860)	101790	20.0000	19.37(M)
59 Chlorobenzene	112	7.699	7.699	(1.004)	254066	20.0000	19.21
7 Chloroethane	64	1.403	1.403	(0.335)	64014	20.0000	19.41
28 Chloroform	83	3.917	3.917	(0.935)	159049	20.0000	19.70
3 Chloromethane	50	1.073	1.073	(0.256)	146979	20.0000	22.40
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	99946	20.0000	19.70
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	158080	20.0000	19.51
55 Dibromochloromethane	129	7.176	7.176	(0.936)	96548	20.0000	20.01
44 Dibromomethane	93	5.558	5.558	(1.118)	59802	20.0000	19.75
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	86280	20.0000	19.78
61 Ethylbenzene	106	7.800	7.800	(1.017)	127939	20.0000	19.49
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	48583	20.0000	20.28
67 Isopropylbenzene	105	8.566	8.566	(1.117)	378968	20.0000	19.34
62 m,p-Xylenes	106	7.907	7.907	(1.031)	318482	40.0000	39.13
17 Methylene Chloride	84	2.306	2.306	(0.550)	97872	20.0000	20.63
87 n-Butylbenzene	91	9.999	9.999	(1.034)	289287	20.0000	19.54
73 n-Propylbenzene	91	8.917	8.917	(0.922)	466942	20.0000	19.34
92 Naphthalene	128	11.546	11.546	(1.194)	132022	20.0000	20.17
63 o-Xylene	106	8.244	8.244	(1.075)	161982	20.0000	19.89
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	384788	20.0000	19.13
64 Styrene	104	8.258	8.258	(1.077)	272253	20.0000	20.17
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	271293	20.0000	19.01
56 Tetrachloroethene	164	6.933	6.933	(0.904)	77718	20.0000	19.06
50 Toluene	91	6.453	6.453	(0.841)	386854	20.0000	19.49
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	85639	20.0000	19.93
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	129304	20.0000	19.80
38 Trichloroethene	130	5.214	5.214	(1.049)	97034	20.0000	19.16
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	133610	20.0000	20.45
5 Vinyl Chloride	62	1.145	1.145	(0.273)	110016	20.0000	18.72

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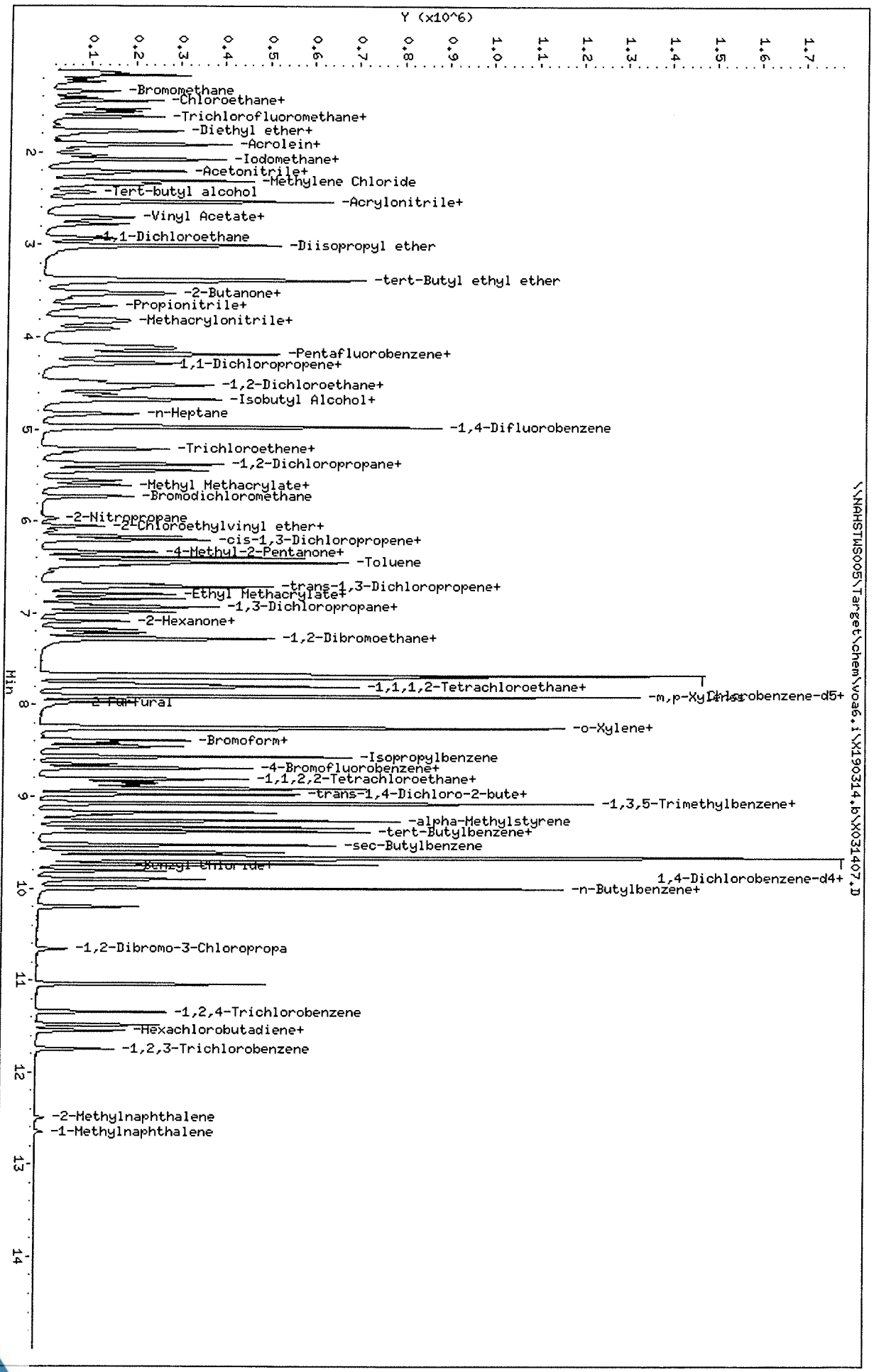
QC Flag Legend

M - Compound response manually integrated.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2 3 4 5 6 7 8 9 10 11 12 13 14
-Bromomethane
-Chloroethane+
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-1,2-Dichloropropane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether+
-cis-1,3-Dichloropropene+
-4-Methyl-2-Pentanone+
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate+
-1,3-Dichloropropane+
-2-Hexanone+
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2-Furfural
-o-Xylene+
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-Benzyl Chloride+
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
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-1,2,3-Trichlorobenzene
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Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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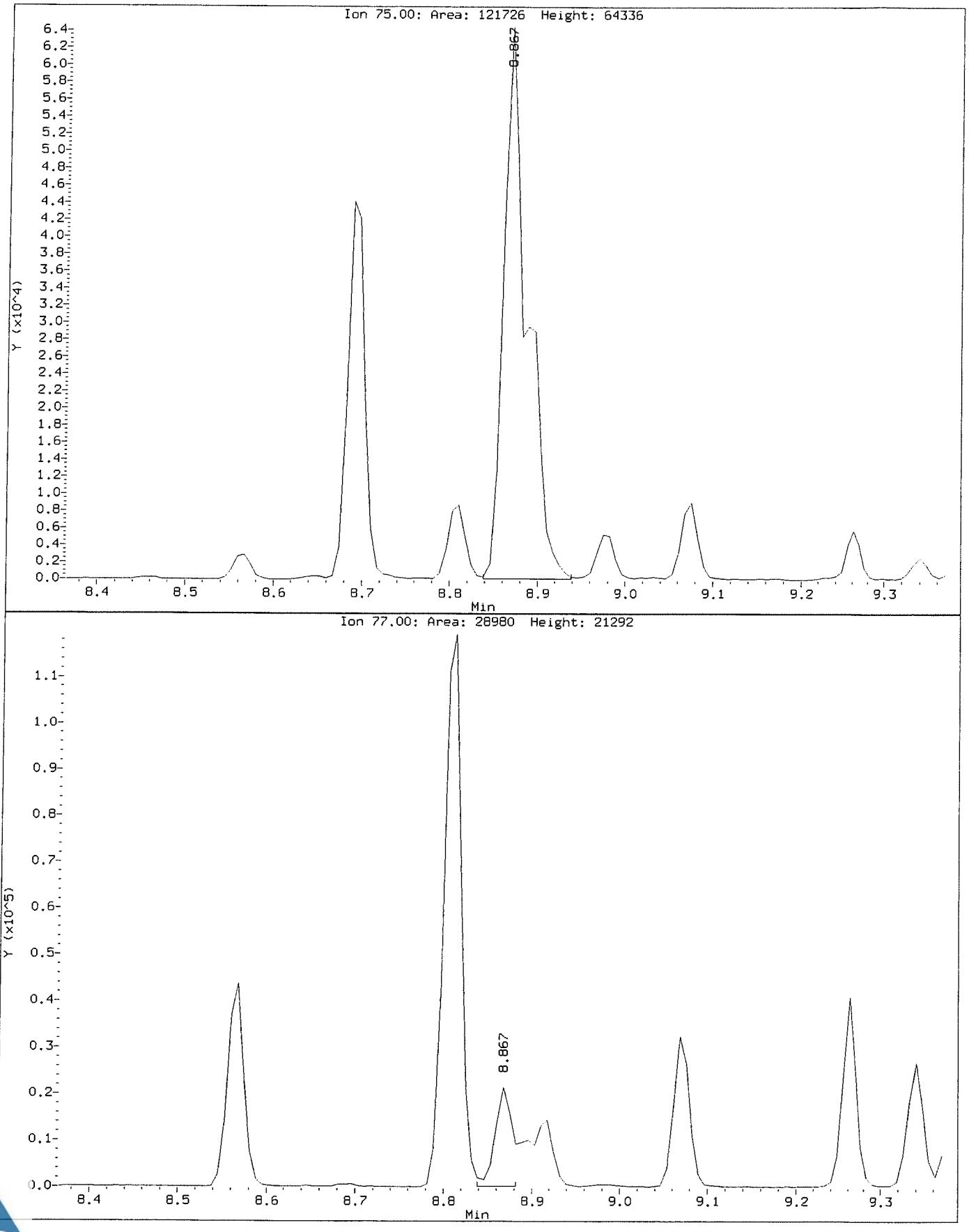
Instrument: voa6.i
Client Sample ID: VSTD020

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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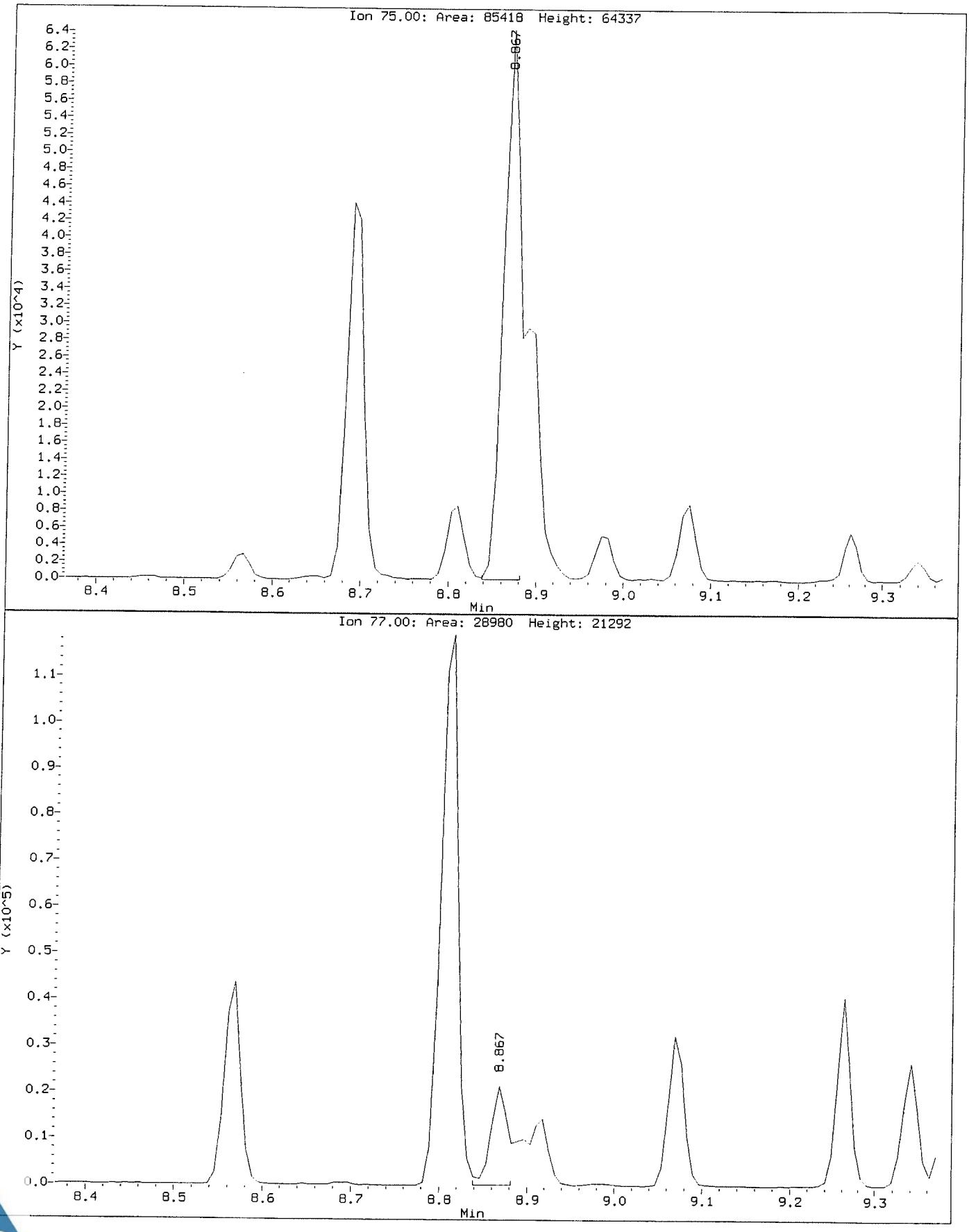
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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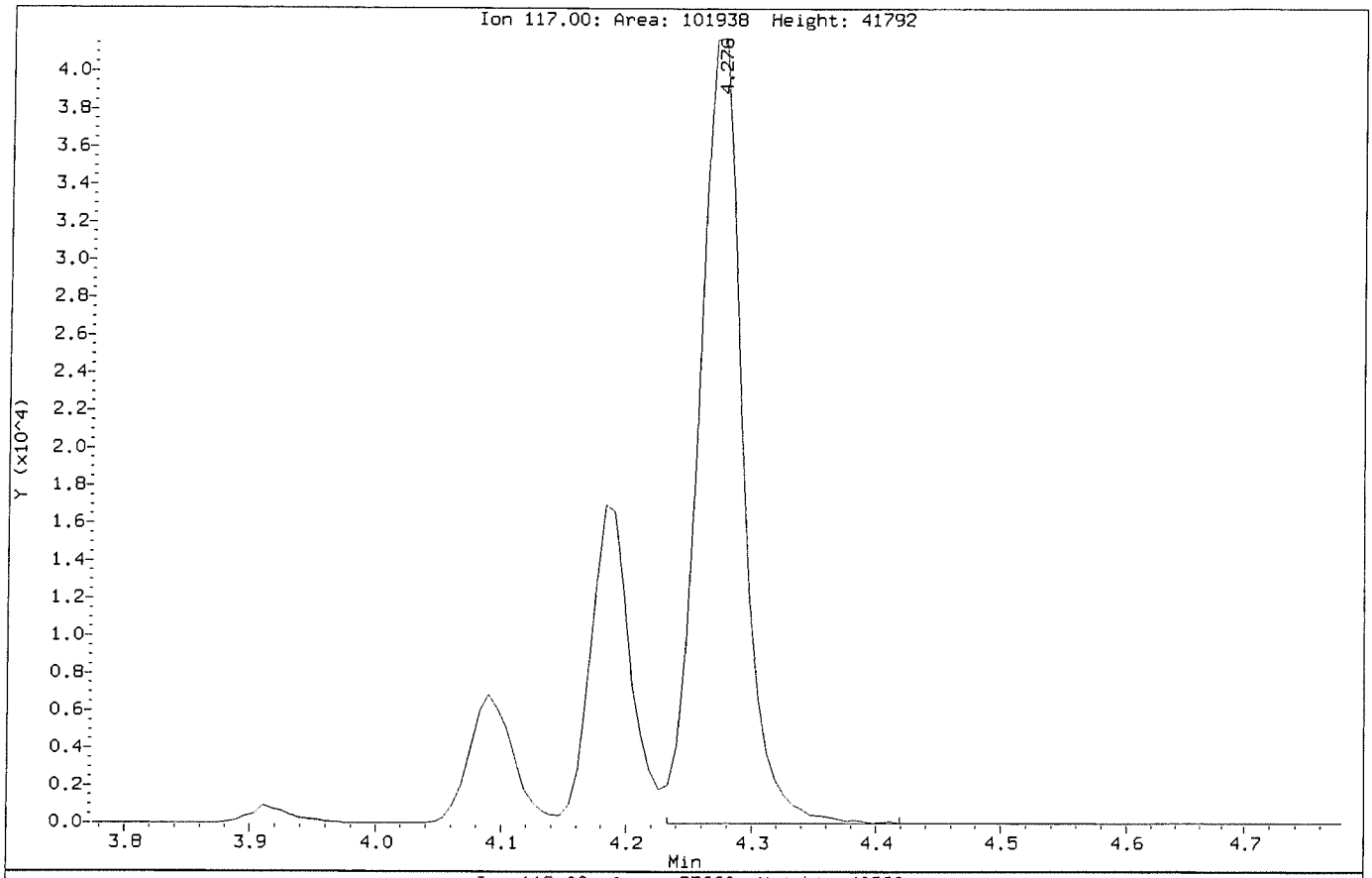
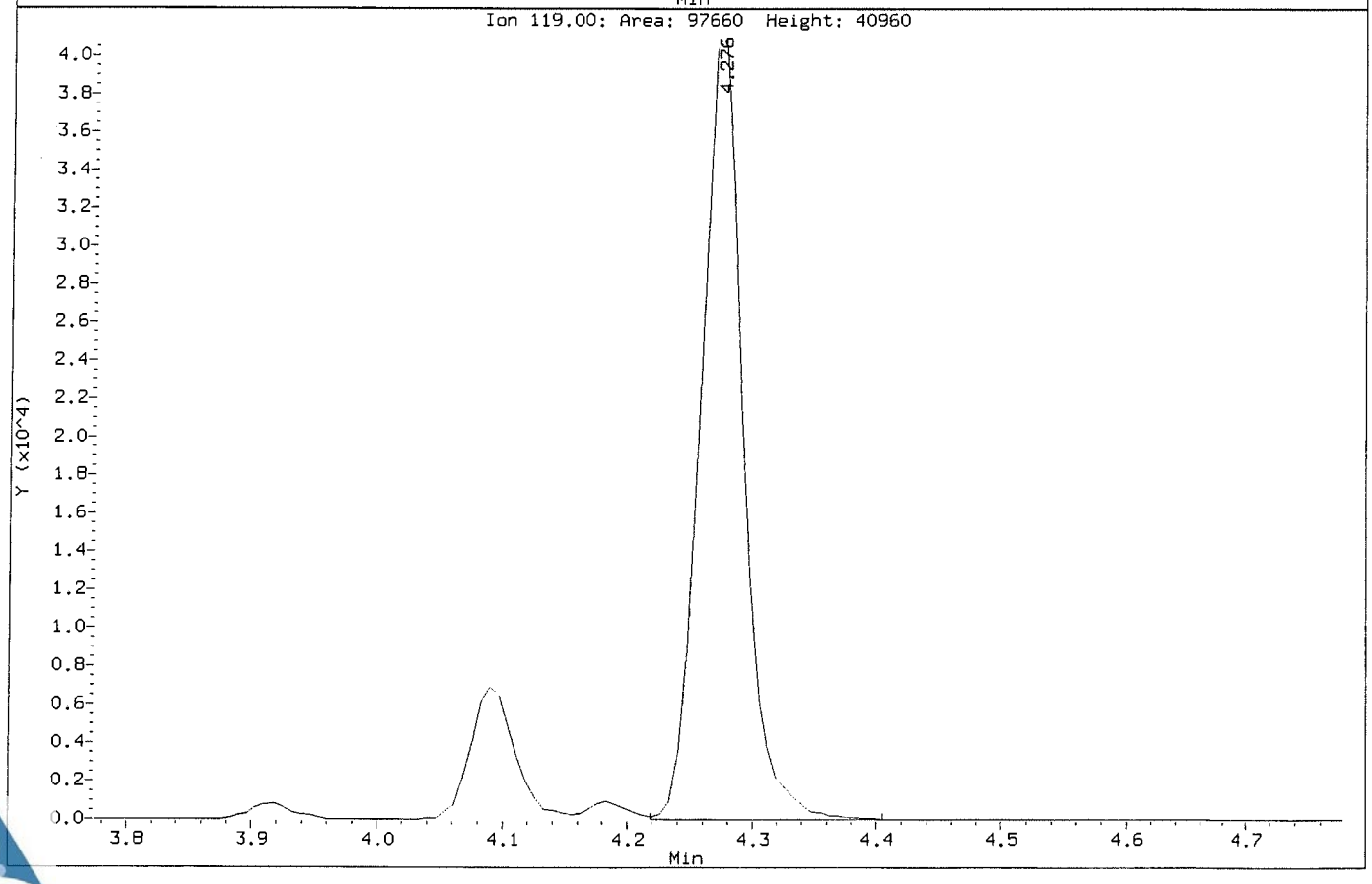
Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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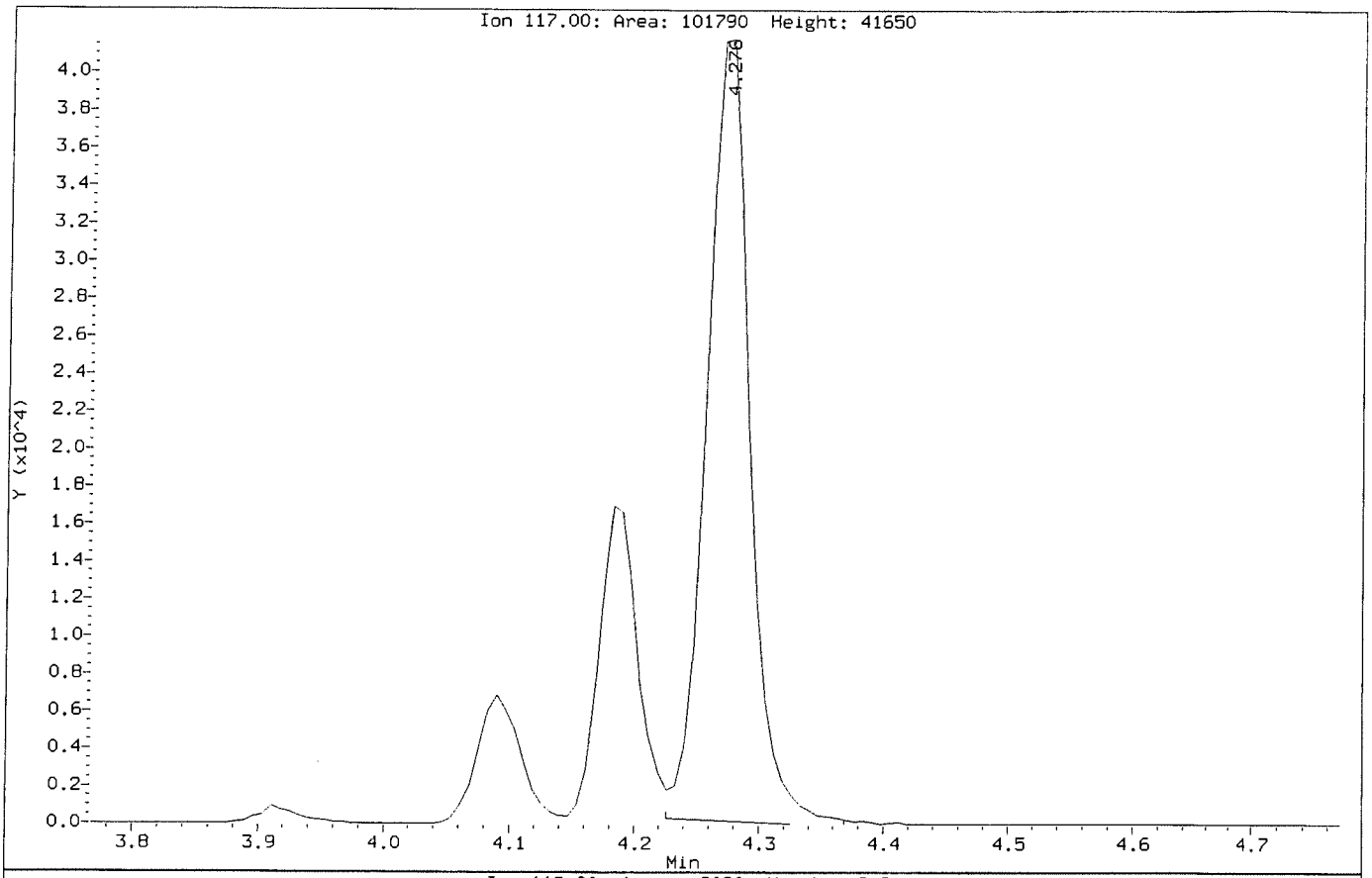
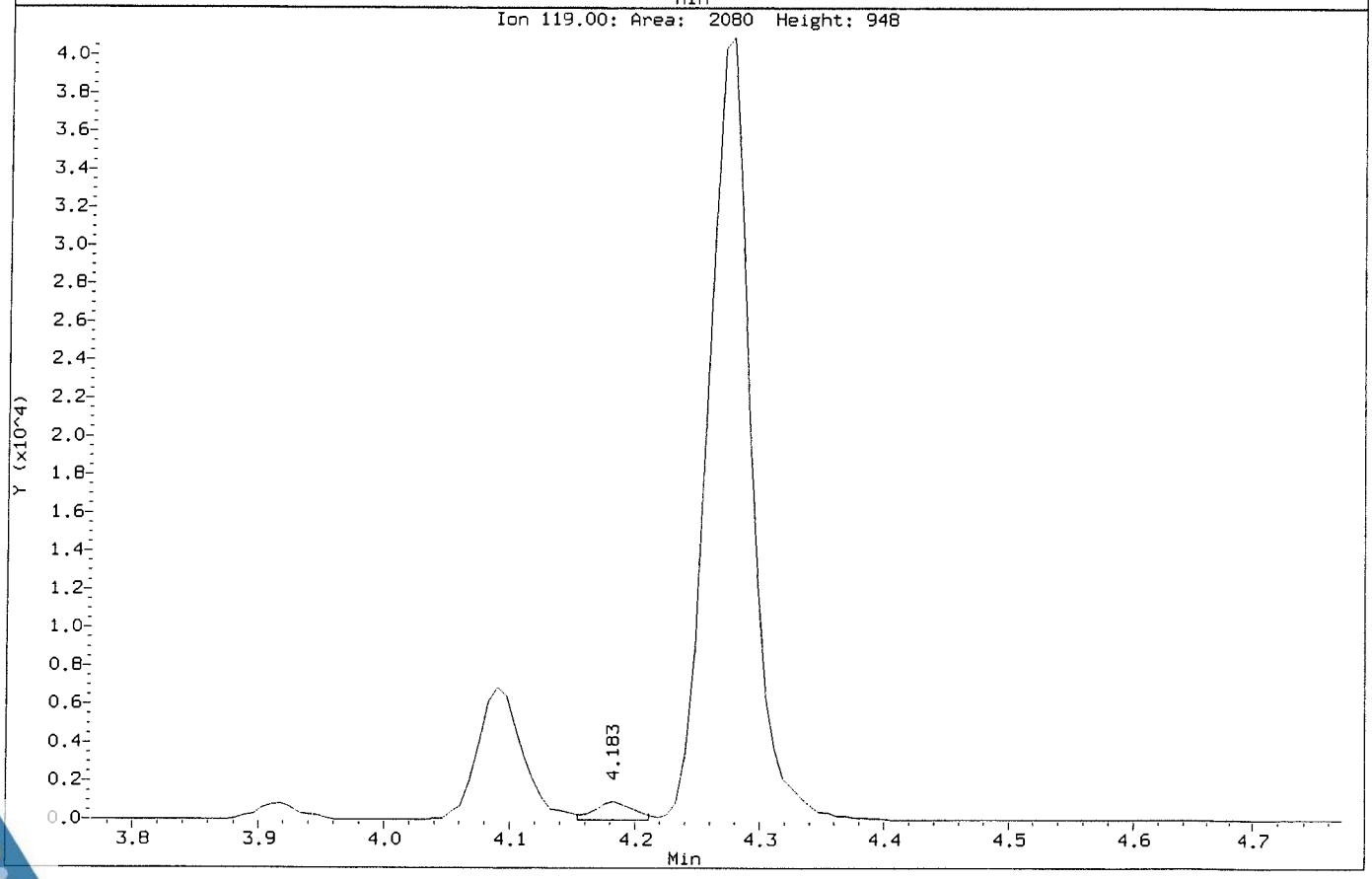
Client Sample ID: VSTD020

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031408.D
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Inj Date : 14-MAR-2019 14:20
Operator : PC Inst ID: voa6.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS18090001;WATER;0;1;
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Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 13:56 Cal File: X031407.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	464771	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	707275	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	671467	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	341377	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	226962	50.0000	49.93
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	251841	50.0000	49.62
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	848357	50.0000	50.90
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	309611	50.0000	50.49
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	218554	50.0000	48.22
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	300292	50.0000	44.33
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	258976	50.0000	47.03
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	172799	50.0000	46.93
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	395598	50.0000	46.34
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	176984	50.0000	44.89
32 1,1-Dichloropropene	75	4.283	4.283	(0.862)	271634	50.0000	42.72
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	108337	50.0000	44.83
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	202921	50.0000	47.69(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	196986	50.0000	46.10
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	751323	50.0000	46.00
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	33100	50.0000	49.42
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	214168	50.0000	48.42
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	452464	50.0000	46.48

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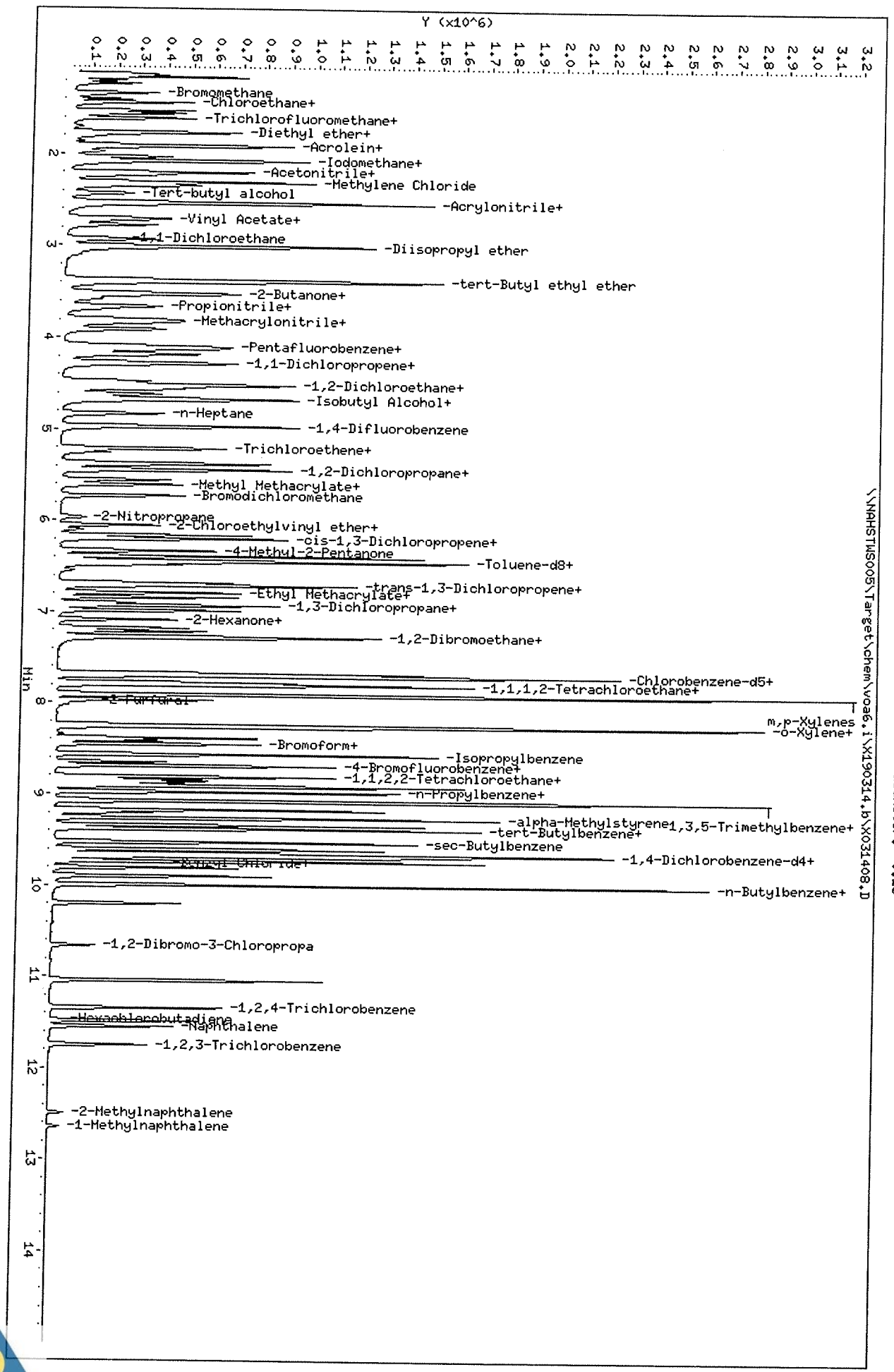
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	281266	50.0000	47.12
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	233880	50.0000	47.06
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	733186	50.0000	45.38
83 1,3-Dichlorobenzene	146	9.605	9.605	(0.993)	474576	50.0000	45.96
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	354670	50.0000	47.32
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	479009	50.0000	45.54
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	294128	50.0000	44.77
24 2-Butanone	43	3.581	3.581	(0.855)	163366	100.000	102.61
76 2-Chlorotoluene	91	8.974	8.974	(0.928)	658806	50.0000	45.20
52 2-Hexanone	43	7.090	7.090	(0.924)	258616	100.000	97.69
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	758392	50.0000	45.63
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	736608	50.0000	43.62
45 4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	389924	100.000	95.68
10 Acetone	43	1.976	1.976	(0.472)	116587	100.000	100.17
37 Benzene	78	4.519	4.519	(0.909)	859672	50.0000	47.52
74 Bromobenzene	156	8.810	8.810	(0.911)	274915	50.0000	47.05
29 Bromochloromethane	128	3.803	3.803	(0.908)	119984	50.0000	46.19
39 Bromodichloromethane	83	5.729	5.729	(1.153)	291800	50.0000	48.35
66 Bromoform	173	8.416	8.416	(1.097)	160732	50.0000	48.01
6 Bromomethane	94	1.339	1.339	(0.320)	143083	50.0000	45.42
19 Carbon Disulfide	76	2.069	2.069	(0.494)	1229145	100.000	90.65
34 Carbon Tetrachloride	117	4.275	4.275	(0.860)	230636	50.0000	42.32(M)
59 Chlorobenzene	112	7.699	7.699	(1.004)	605220	50.0000	46.25
7 Chloroethane	64	1.403	1.403	(0.335)	153754	50.0000	45.66
28 Chloroform	83	3.910	3.910	(0.933)	382054	50.0000	46.34
3 Chloromethane	50	1.074	1.074	(0.256)	320320	50.0000	49.46
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	237996	50.0000	45.94
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	389602	50.0000	48.93
55 Dibromochloromethane	129	7.176	7.176	(0.936)	234189	50.0000	49.05
44 Dibromomethane	93	5.558	5.558	(1.118)	143675	50.0000	48.27
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	201380	50.0000	42.84
61 Ethylbenzene	106	7.800	7.800	(1.017)	296445	50.0000	45.63
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	103418	50.0000	42.33
67 Isopropylbenzene	105	8.566	8.566	(1.117)	849988	50.0000	43.84
62 m,p-Xylenes	106	7.907	7.907	(1.031)	738281	100.000	91.68
17 Methylene Chloride	84	2.306	2.306	(0.550)	232067	50.0000	47.95
87 n-Butylbenzene	91	9.999	9.999	(1.034)	635679	50.0000	43.65
73 n-Propylbenzene	91	8.917	8.917	(0.922)	1046353	50.0000	44.05
92 Naphthalene	128	11.546	11.546	(1.194)	308220	50.0000	47.88
63 o-Xylene	106	8.244	8.244	(1.075)	377510	50.0000	46.86
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	830691	50.0000	41.98
64 Styrene	104	8.258	8.258	(1.077)	641050	50.0000	48.00
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	599120	50.0000	42.68
56 Tetrachloroethene	164	6.933	6.933	(0.904)	174876	50.0000	43.33
50 Toluene	91	6.446	6.446	(0.840)	912673	50.0000	46.48
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	208234	50.0000	47.47
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	318214	50.0000	49.59
38 Trichloroethene	130	5.214	5.214	(1.049)	229444	50.0000	46.10
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	300492	50.0000	43.86
5 Vinyl Chloride	62	1.145	1.145	(0.273)	258146	50.0000	43.03

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031408.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

M - Compound response manually integrated.



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Date : 14-MAR-2019 14:20
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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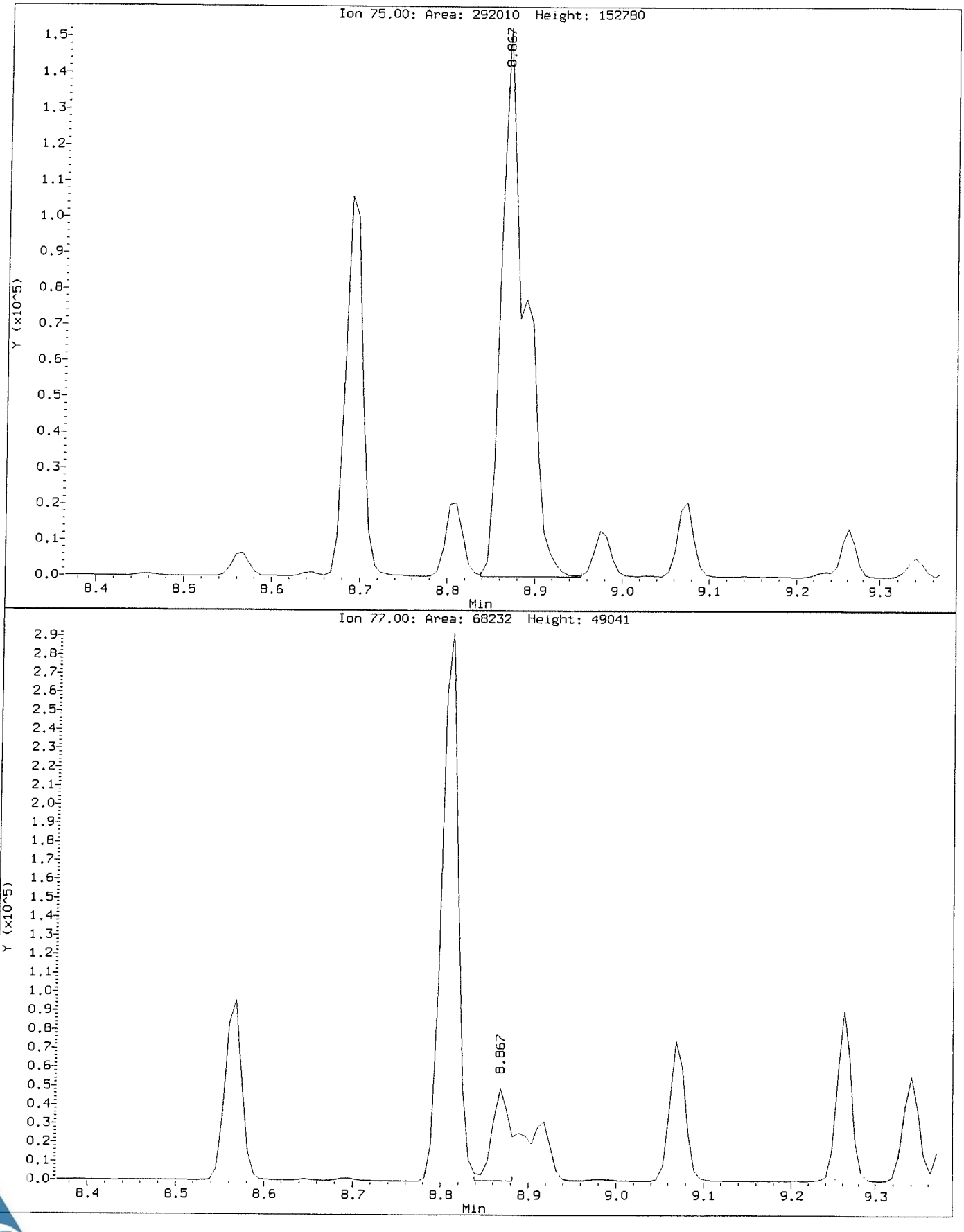
Injection Date: 14-MAR-2019 14:20
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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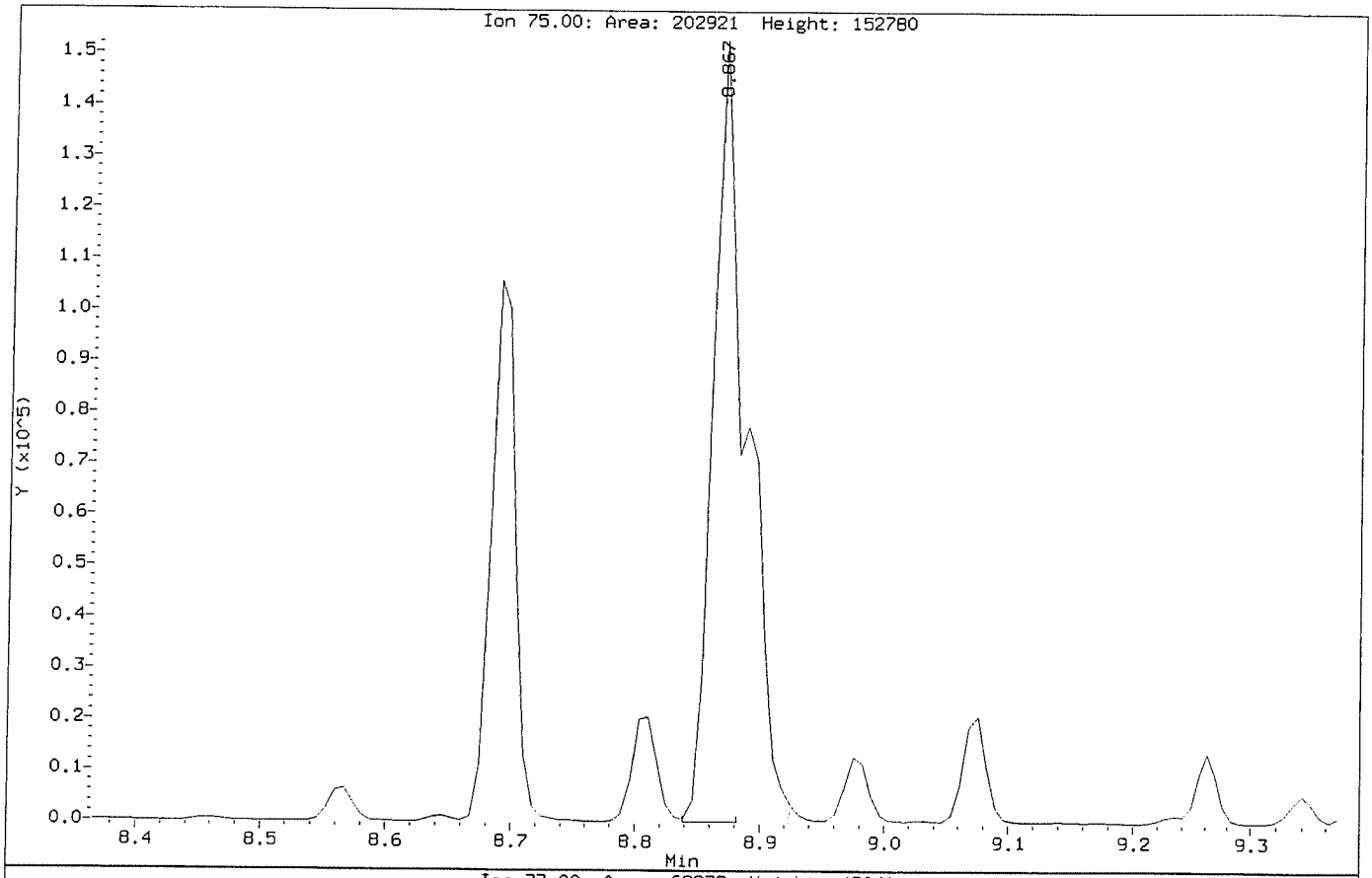
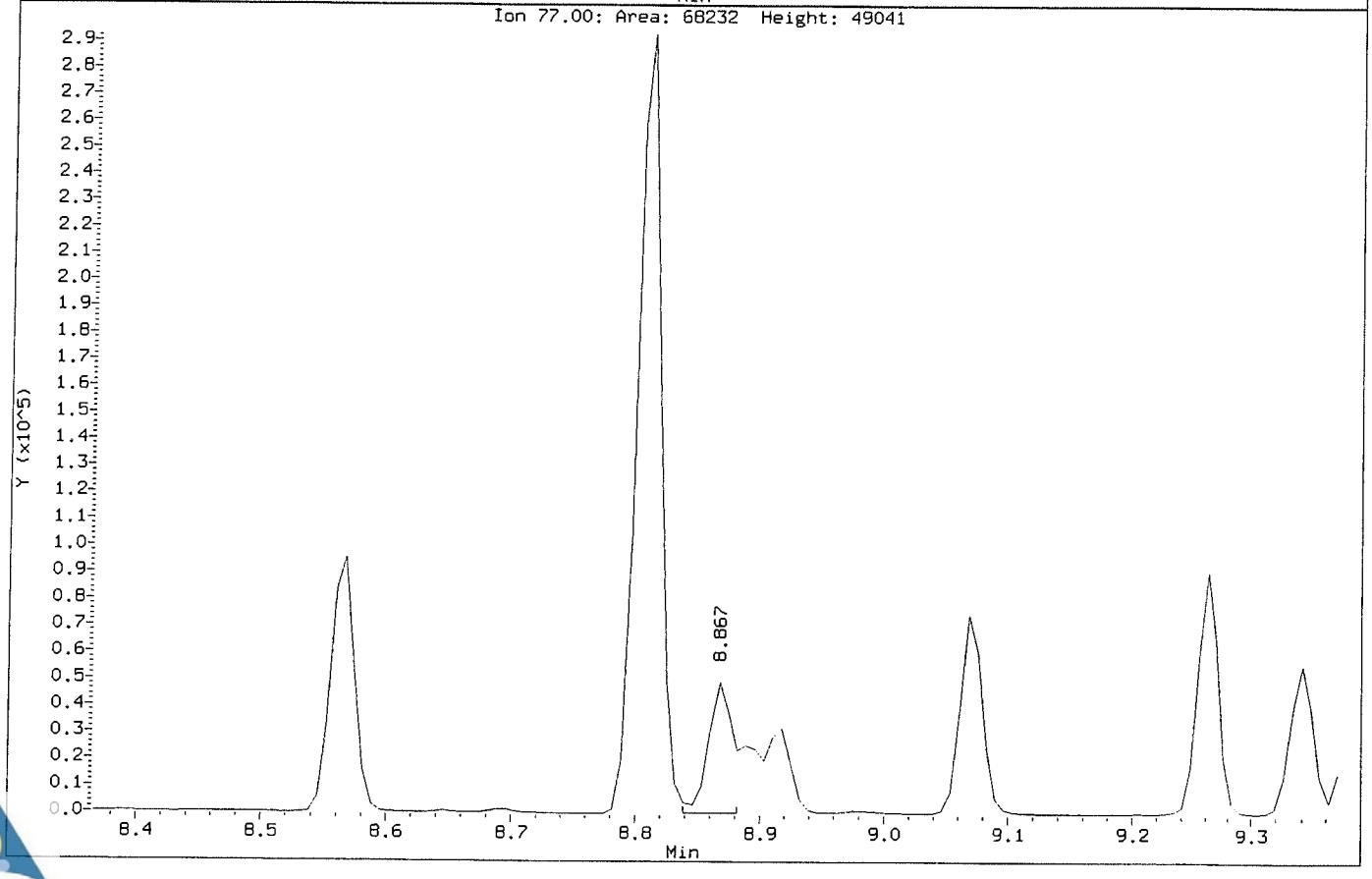
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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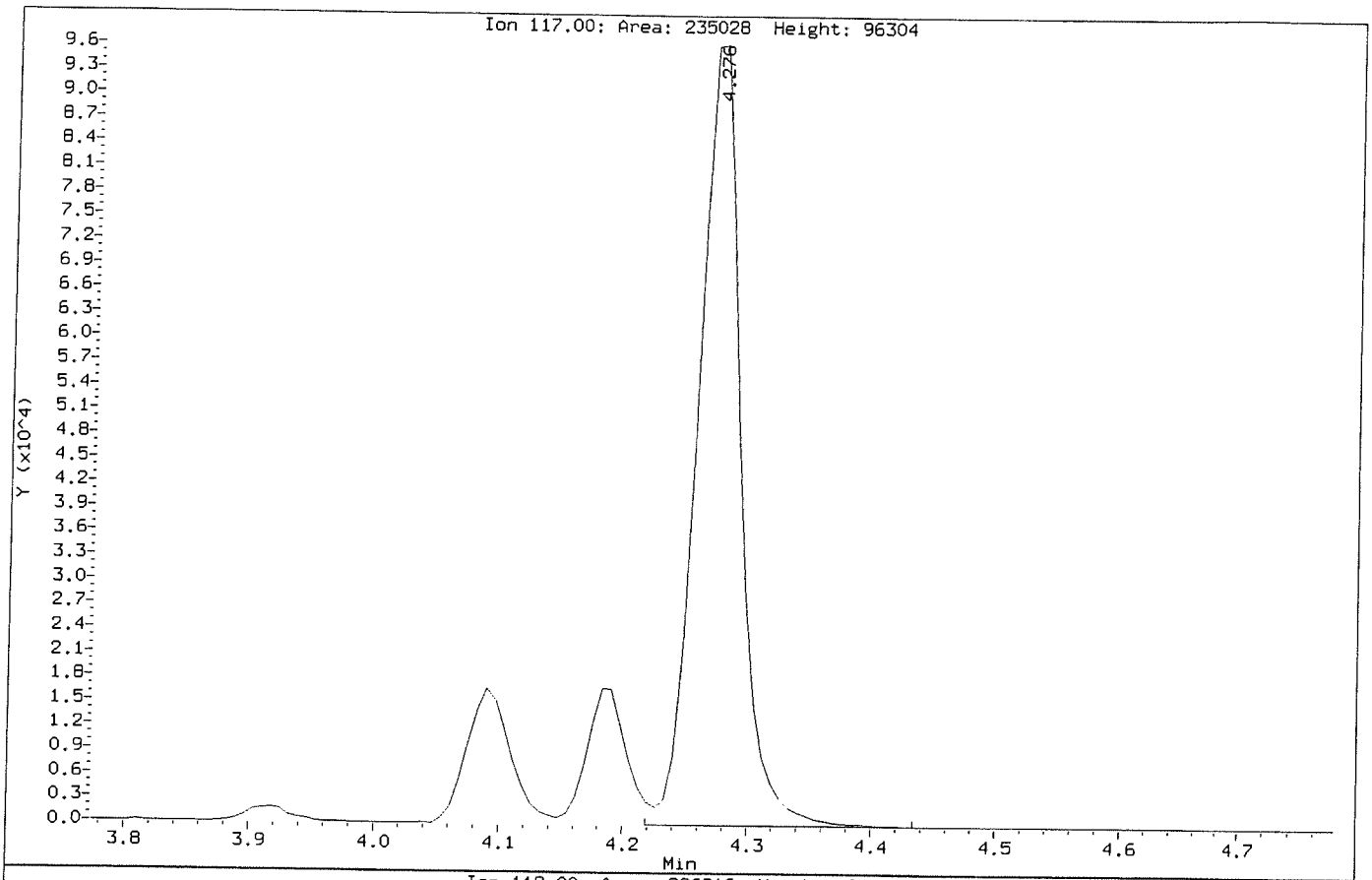
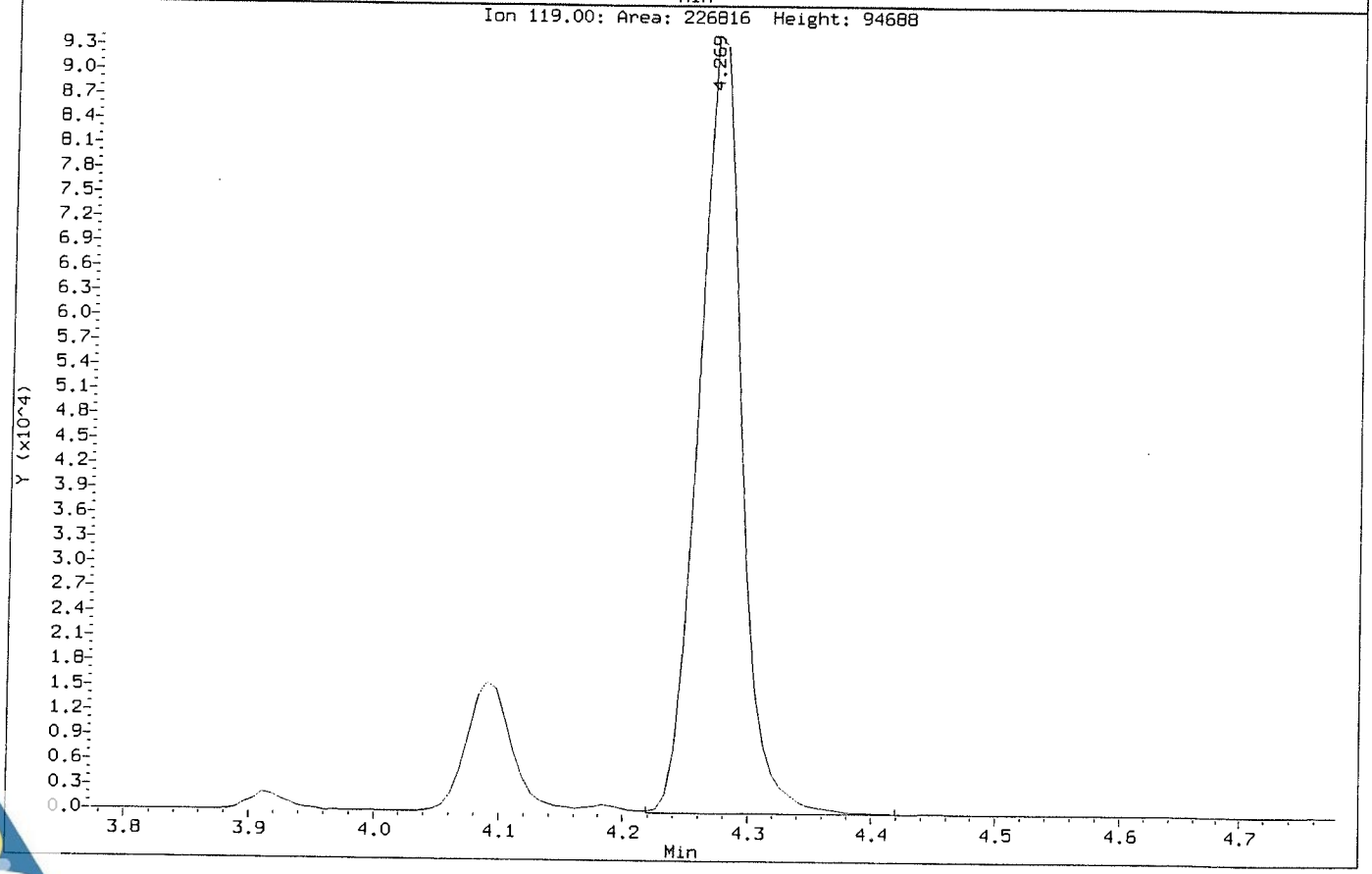
Injection Date: 14-MAR-2019 14:20
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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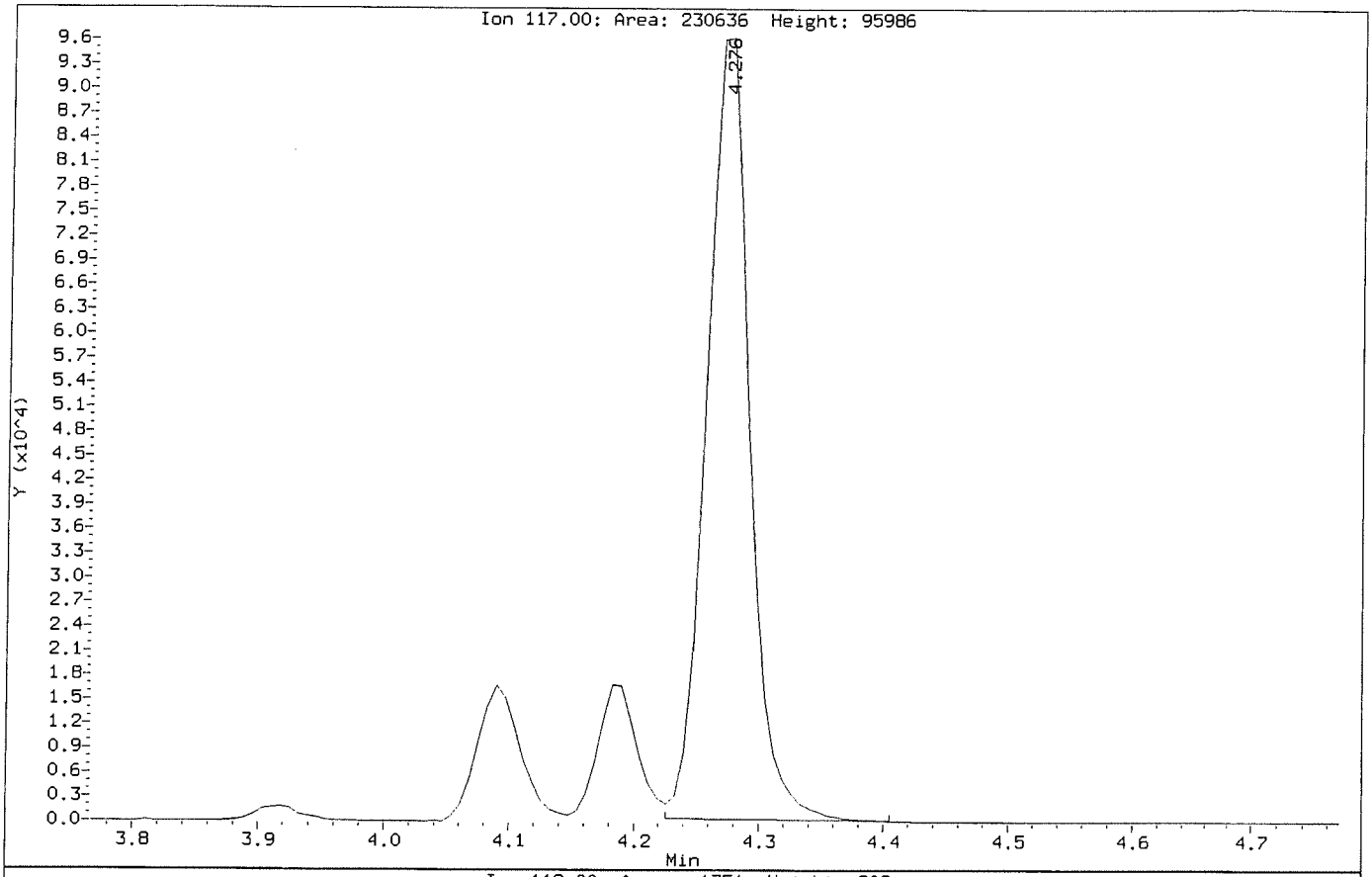
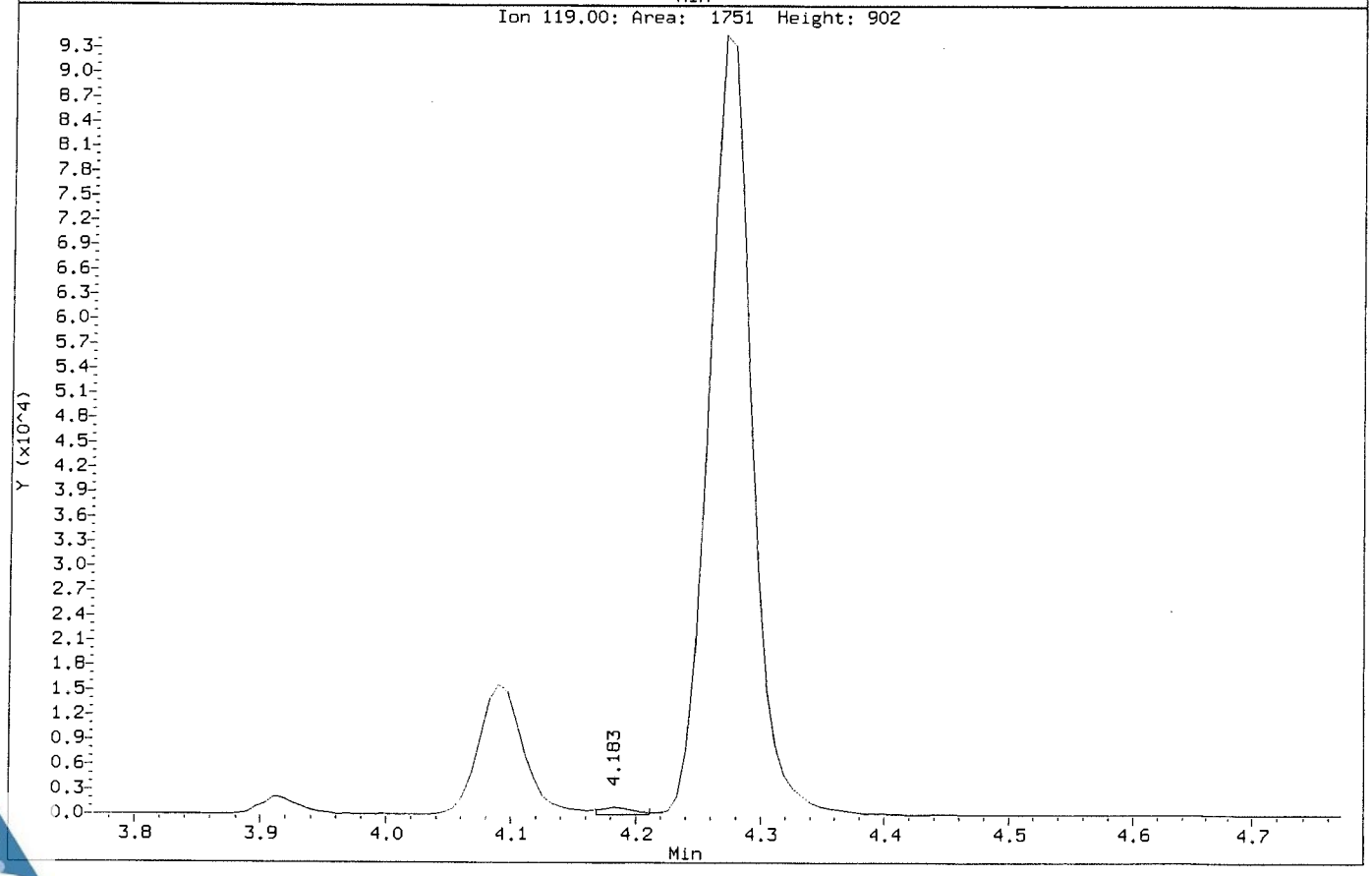
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031409.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 14-MAR-2019 14:44
Operator : PC Inst ID: voa6.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	433895	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	679870	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	647442	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	327544	50.0000	
$ 30 Dibromofluoromethane	113	4.104	4.104	(0.979)	423351	100.000	99.85
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	477612	100.000	101.03
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	1596573	100.000	99.54
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	588767	100.000	99.92
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	440219	100.000	100.75
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	641787	100.000	101.50
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	503593	100.000	95.32
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	340638	100.000	95.94
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	785593	100.000	98.59
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	372820	100.000	101.31
32 1,1-Dichloropropene	75	4.283	4.283	(0.862)	600062	100.000	98.17
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	229884	100.000	99.15
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	390888	100.000	95.74(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	419893	100.000	102.43
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	1603501	100.000	102.34
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	65949	100.000	102.63
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	422260	100.000	99.00
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	913451	100.000	97.79

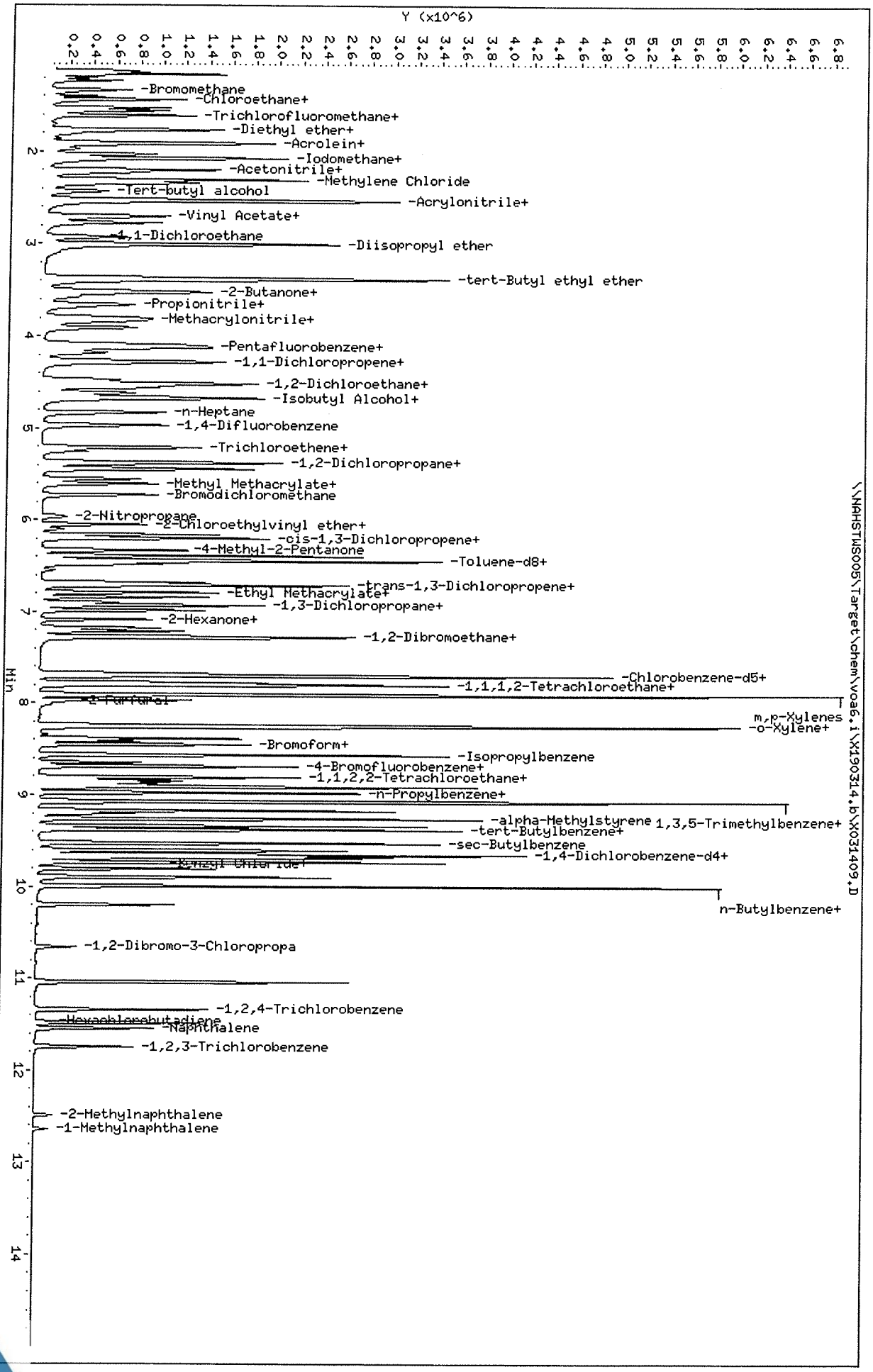
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031409.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	551449	100.000	96.11
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	466673	100.000	97.68
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	1612171	100.000	104.00
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	976521	100.000	98.58
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	695258	100.000	96.21
84 1,4-Dichlorobenzene	146	9.684	9.684	(1.001)	987089	100.000	97.81
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	616259	100.000	100.48
24 2-Butanone	43	3.581	3.581	(0.855)	322208	200.000	216.79(A)
76 2-Chlorotoluene	91	8.982	8.982	(0.929)	1379585	100.000	98.66
52 2-Hexanone	43	7.090	7.090	(0.924)	506963	200.000	198.62
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	1597877	100.000	100.21
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	1710141	100.000	105.56
45 4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	761096	200.000	193.69
10 Acetone	43	1.976	1.976	(0.472)	213087	200.000	200.58(A)
37 Benzene	78	4.519	4.519	(0.909)	1726940	100.000	99.31
74 Bromobenzene	156	8.810	8.810	(0.911)	555304	100.000	99.06
29 Bromochloromethane	128	3.803	3.803	(0.908)	237711	100.000	98.04
39 Bromodichloromethane	83	5.730	5.730	(1.153)	582503	100.000	100.42
66 Bromoform	173	8.416	8.416	(1.097)	319308	100.000	97.93
6 Bromomethane	94	1.339	1.339	(0.320)	298815	100.000	101.35
19 Carbon Disulfide	76	2.069	2.069	(0.494)	2594996	200.000	205.01(A)
34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	538968	100.000	100.33(H)
59 Chlorobenzene	112	7.699	7.699	(1.004)	1224218	100.000	97.03
7 Chloroethane	64	1.403	1.403	(0.335)	314853	100.000	100.16
28 Chloroform	83	3.910	3.910	(0.933)	759710	100.000	98.71
3 Chloromethane	50	1.074	1.074	(0.256)	617186	100.000	103.63
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	474623	100.000	98.15
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	777246	100.000	101.56
55 Dibromochloromethane	129	7.176	7.176	(0.936)	467876	100.000	101.64
44 Dibromomethane	93	5.558	5.558	(1.118)	280976	100.000	98.21
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	449989	100.000	99.96
61 Ethylbenzene	106	7.800	7.800	(1.017)	632333	100.000	100.95
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	258057	100.000	105.19
67 Isopropylbenzene	105	8.566	8.566	(1.117)	1901806	100.000	101.73
62 m,p-Xylenes	106	7.907	7.907	(1.031)	1576561	200.000	203.05(A)
17 Methylene Chloride	84	2.306	2.306	(0.550)	455199	100.000	100.79
87 n-Butylbenzene	91	9.999	9.999	(1.034)	1504611	100.000	107.70
73 n-Propylbenzene	91	8.917	8.917	(0.922)	2382361	100.000	104.53
92 Naphthalene	128	11.546	11.546	(1.194)	636562	100.000	103.06
63 o-Xylene	106	8.244	8.244	(1.075)	776441	100.000	99.95
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	1989321	100.000	104.78
64 Styrene	104	8.258	8.258	(1.077)	1315615	100.000	102.17
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	1377385	100.000	102.27
56 Tetrachloroethene	164	6.933	6.933	(0.904)	391389	100.000	100.59
50 Toluene	91	6.453	6.453	(0.841)	1868708	100.000	98.70
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	420227	100.000	102.61
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	642538	100.000	104.17
38 Trichloroethene	130	5.214	5.214	(1.049)	474965	100.000	99.27
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	681686	100.000	103.68
5 Vinyl Chloride	62	1.145	1.145	(0.273)	564808	100.000	100.85

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031409.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^6)
Min
-Bromomethane
-Chloroethane+
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-1,2-Dichloropropane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether+
-cis-1,3-Dichloropropene+
-4-Methyl-2-Pentanone
-Toluene-d8+
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate+
-1,3-Dichloropropane+
-2-Hexanone+
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-2-Pentanal
m,p-Xylenes
-o-Xylene+
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-alpha-Methylstyrene
1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
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Date : 14-MAR-2019 14:44
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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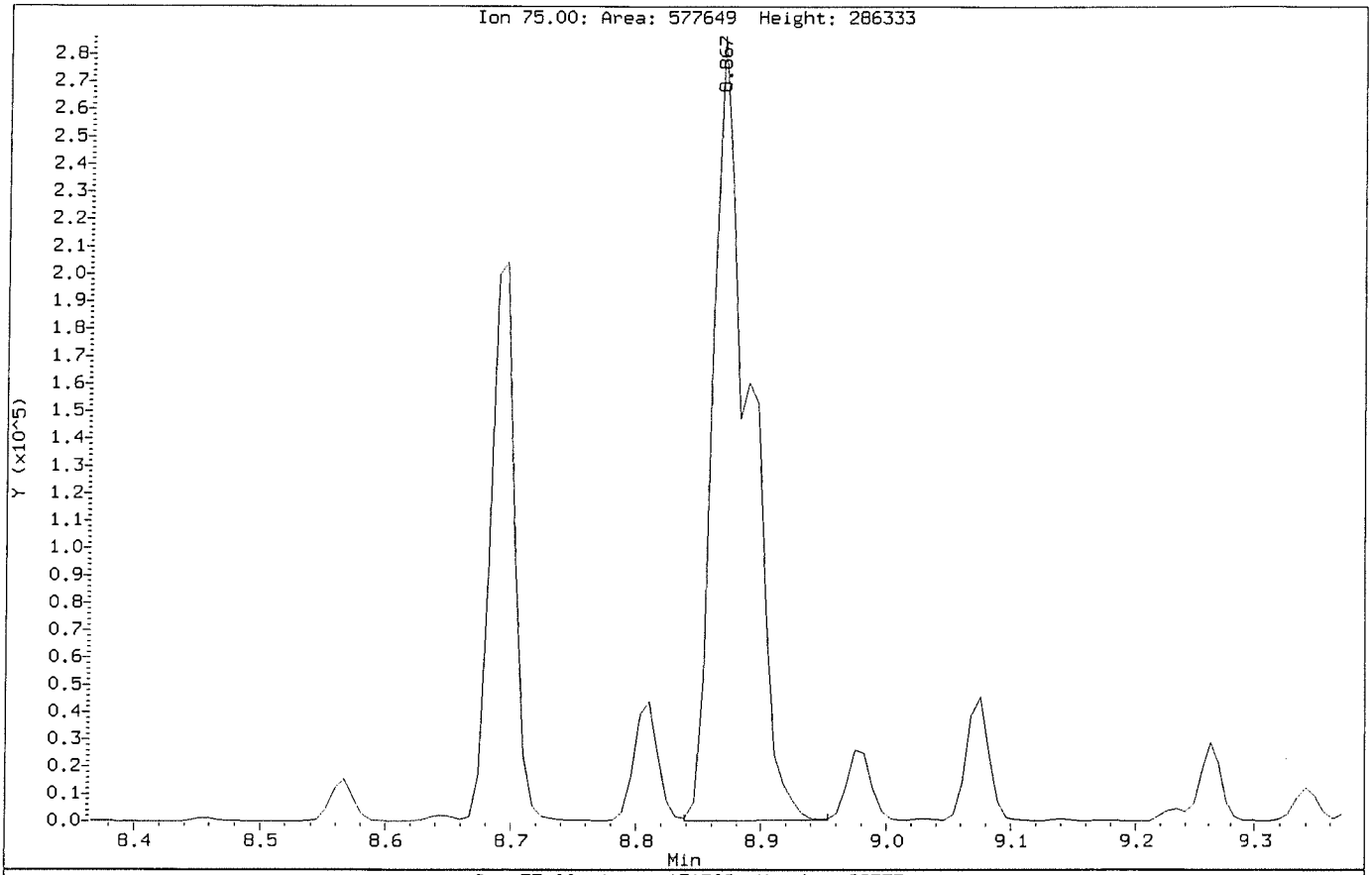
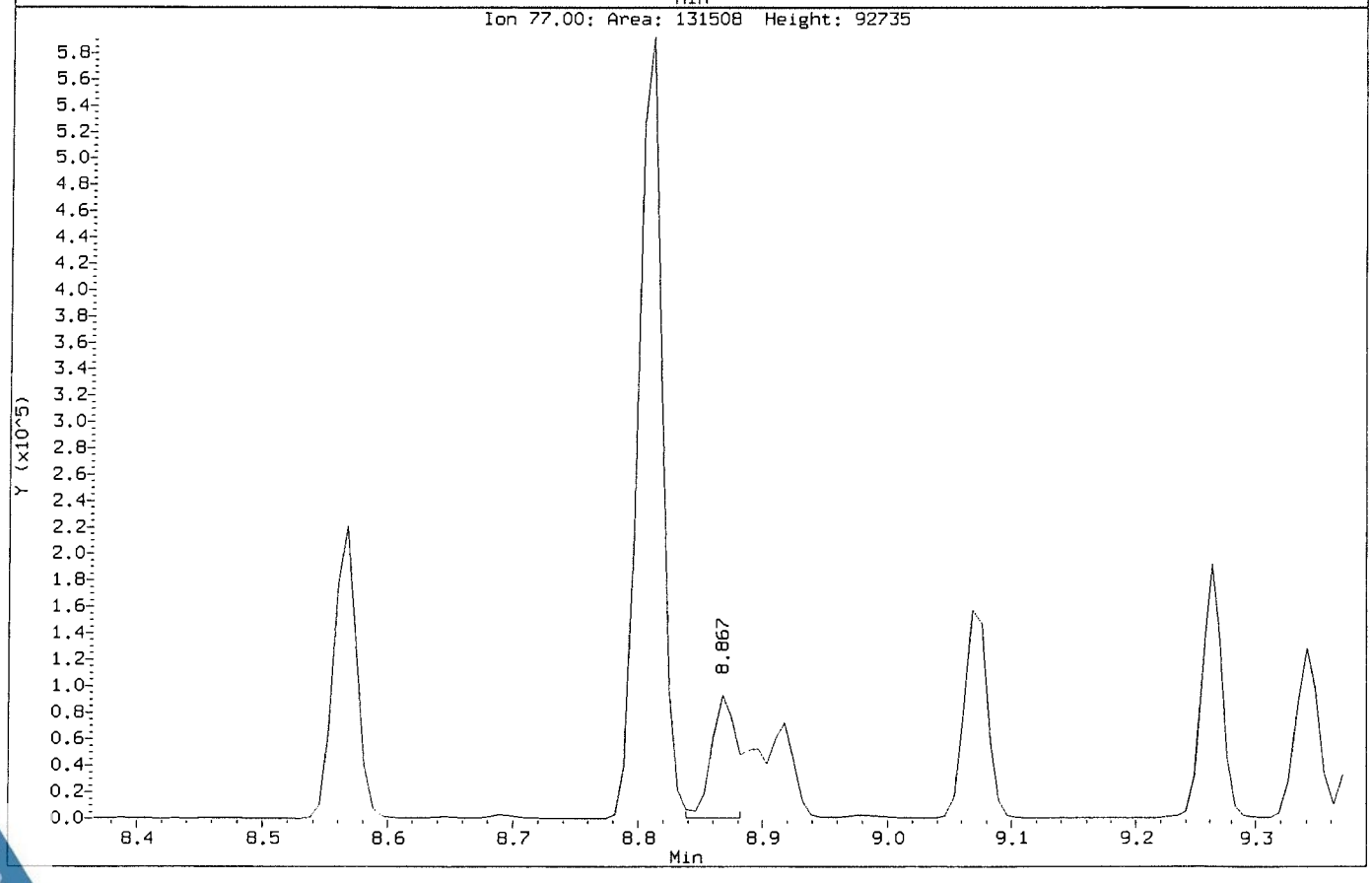
Injection Date: 14-MAR-2019 14:44
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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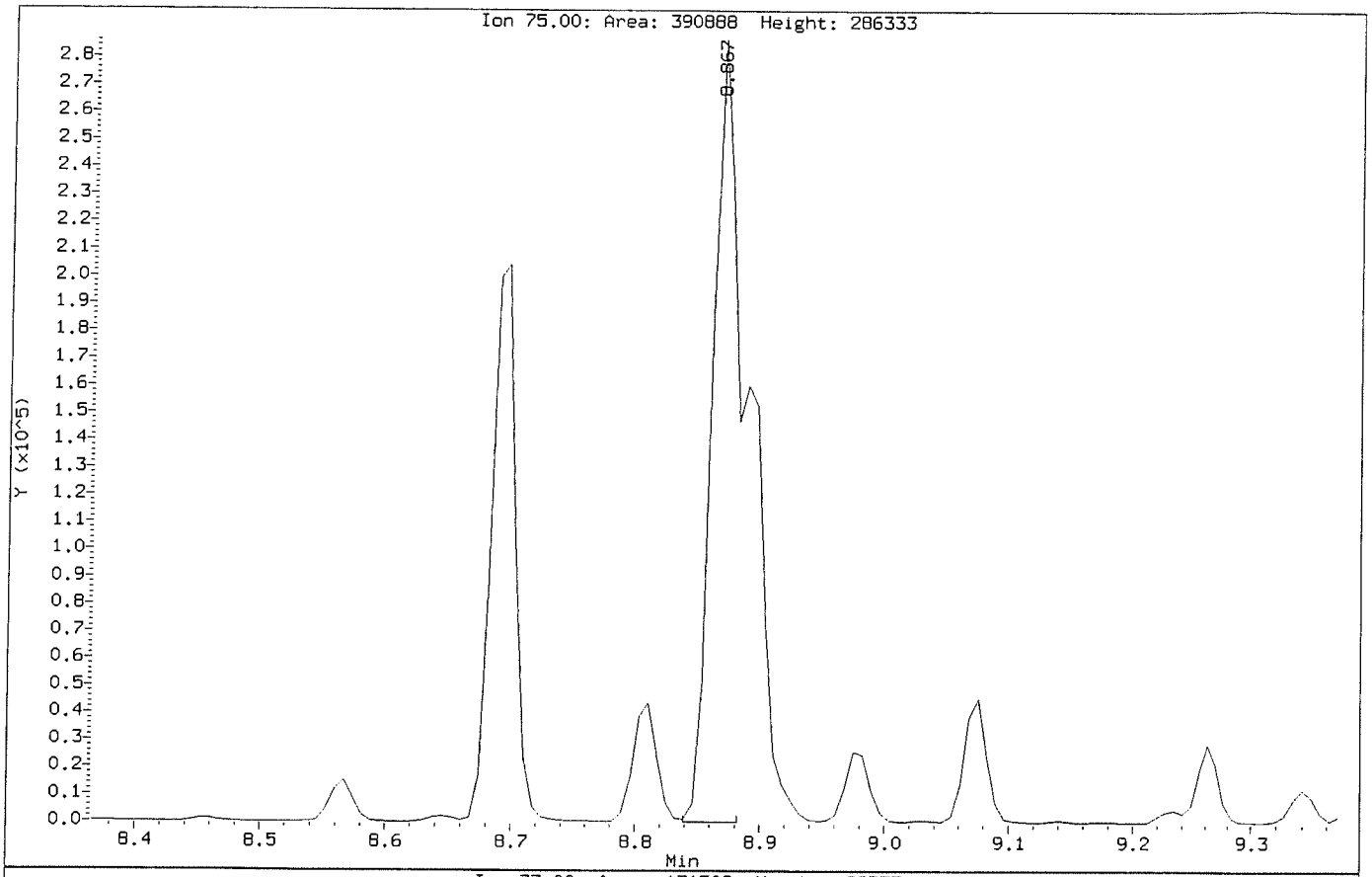
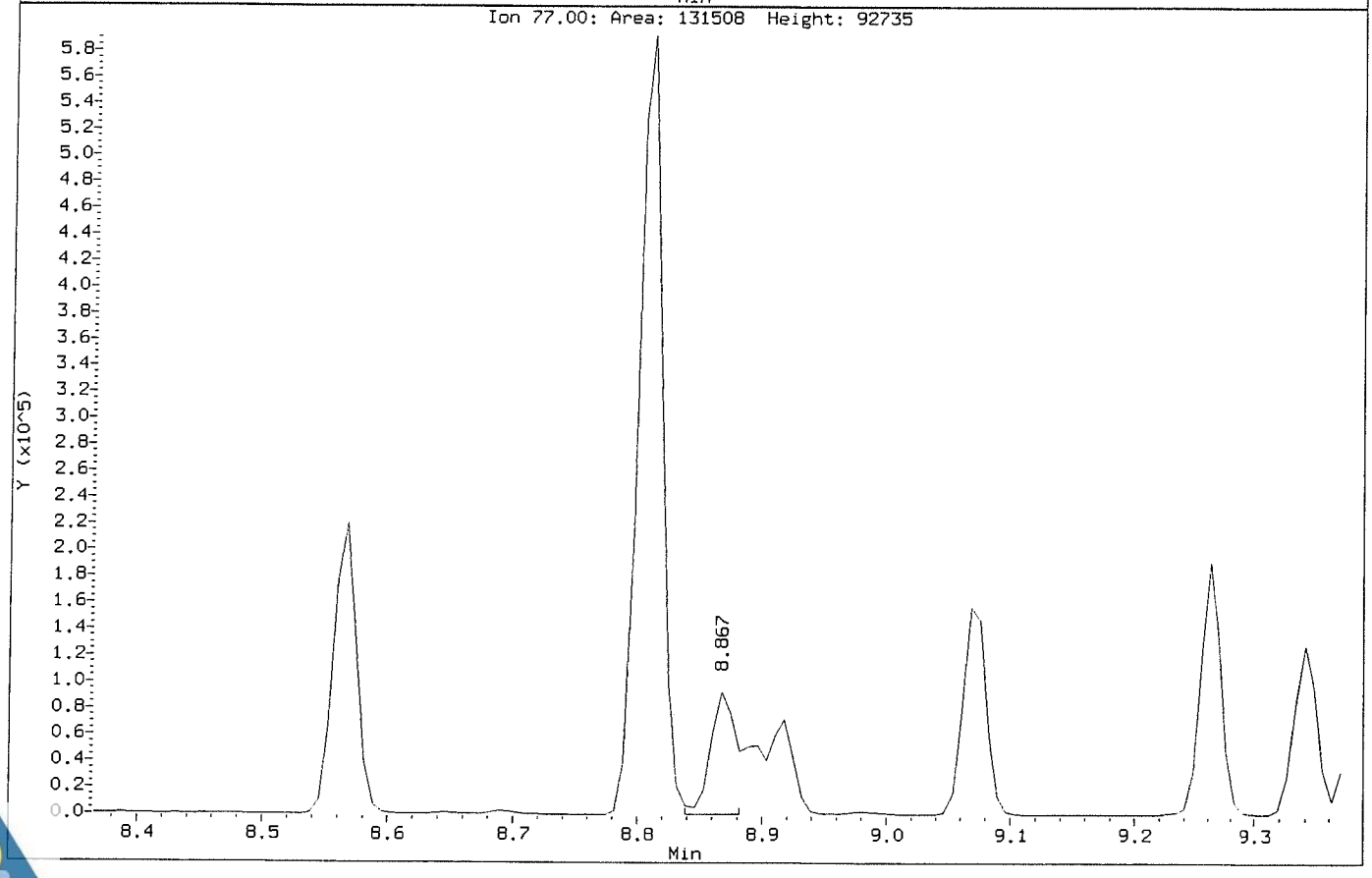
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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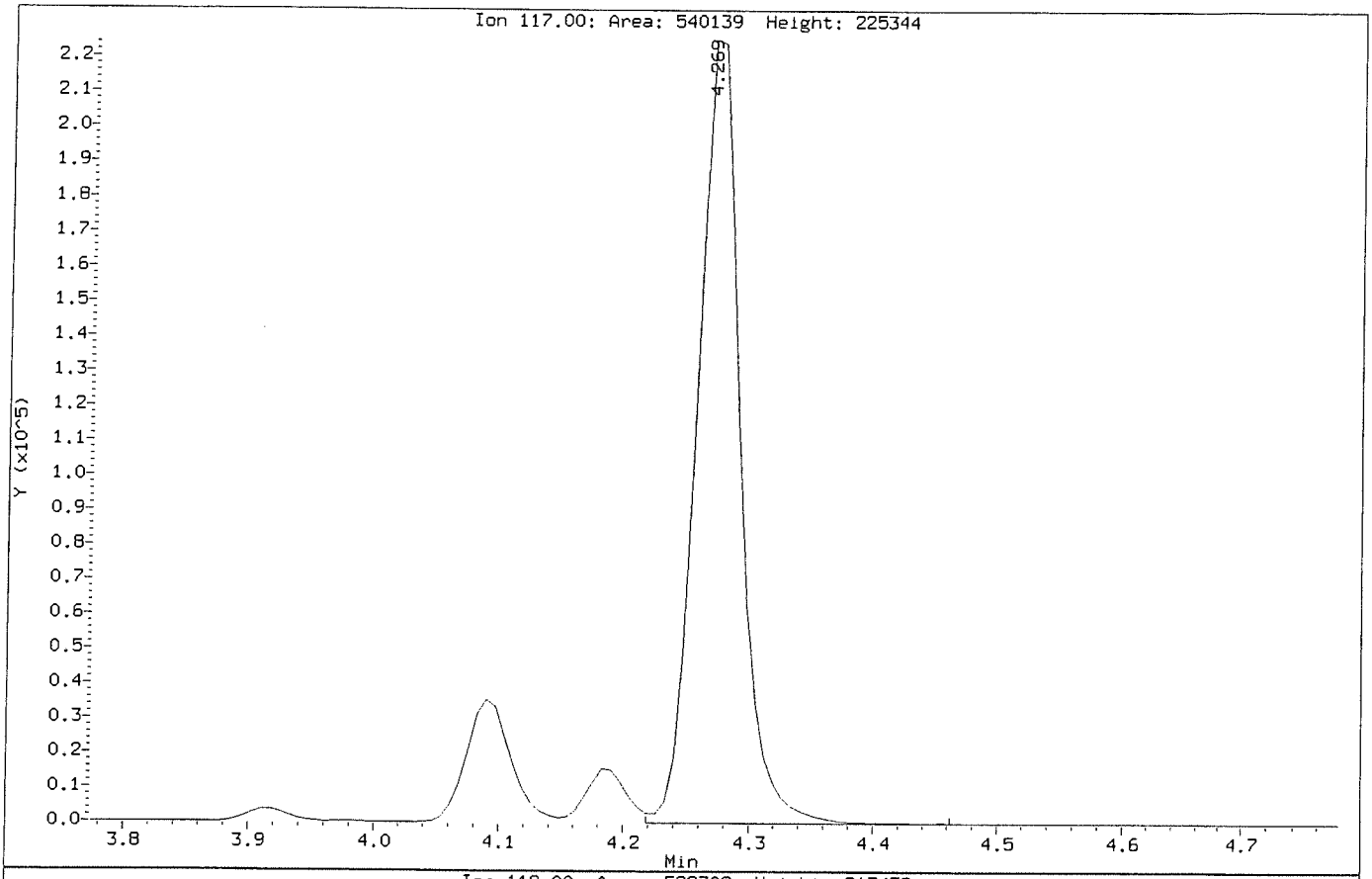
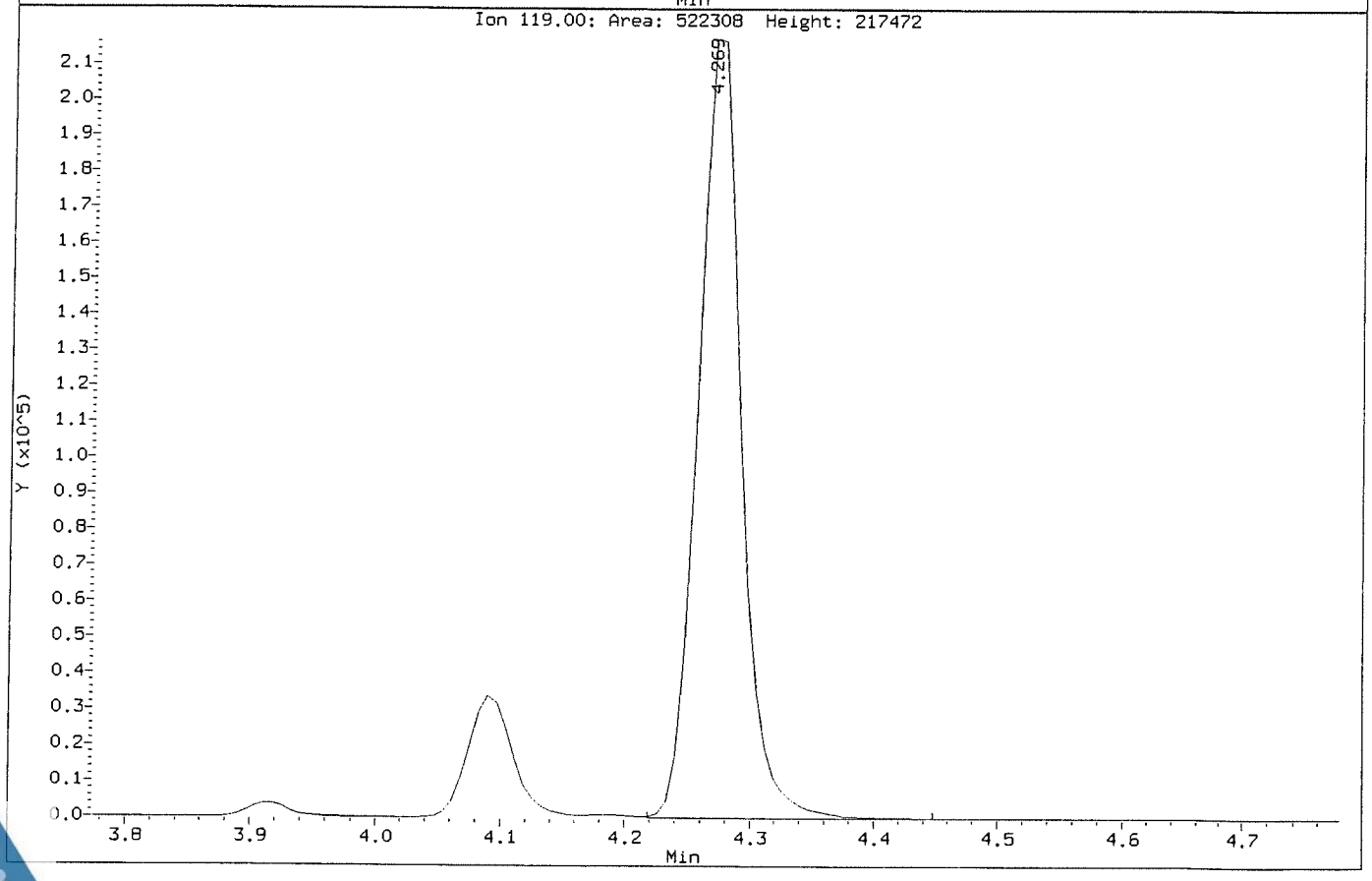
Injection Date: 14-MAR-2019 14:44
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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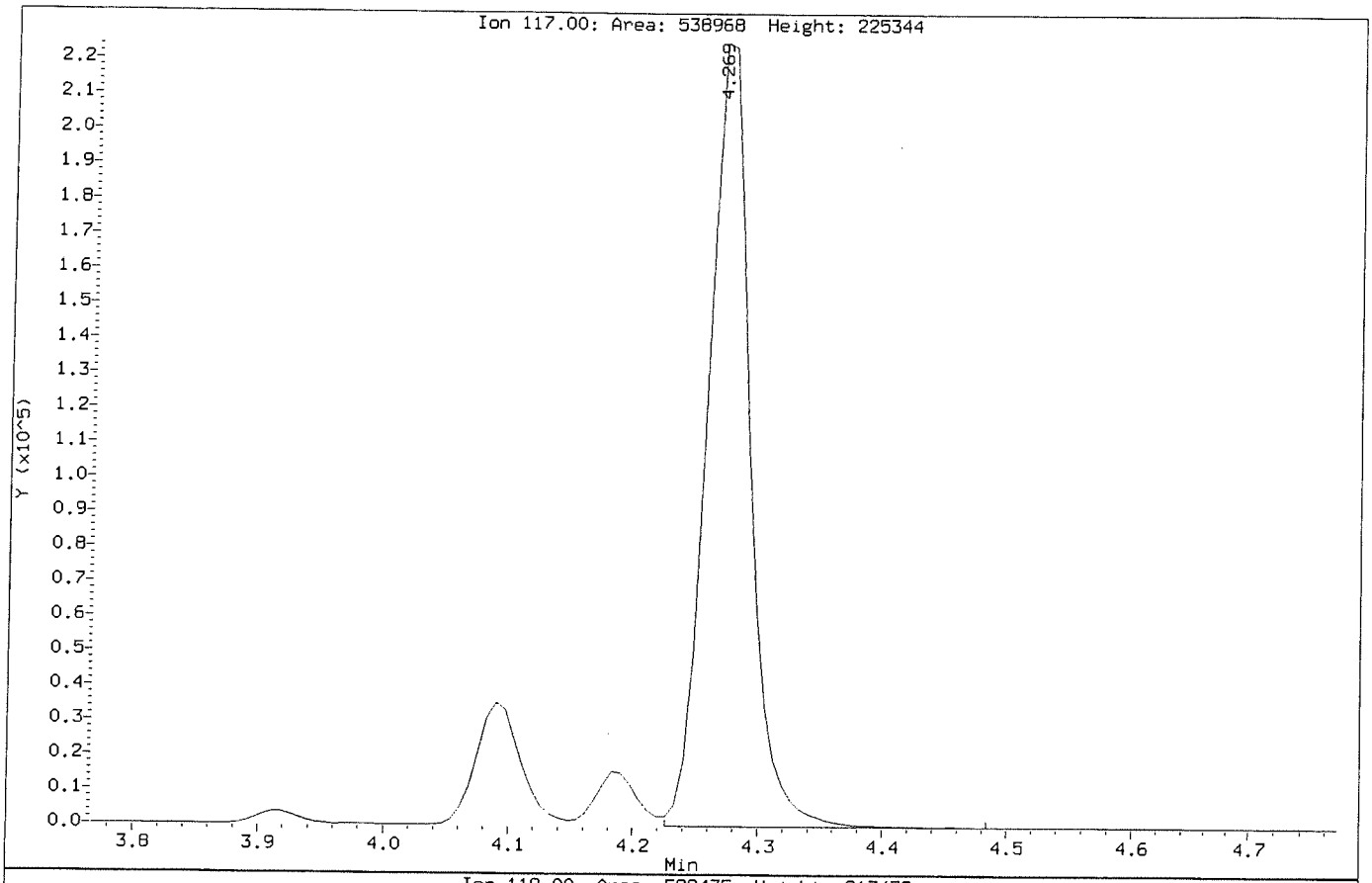
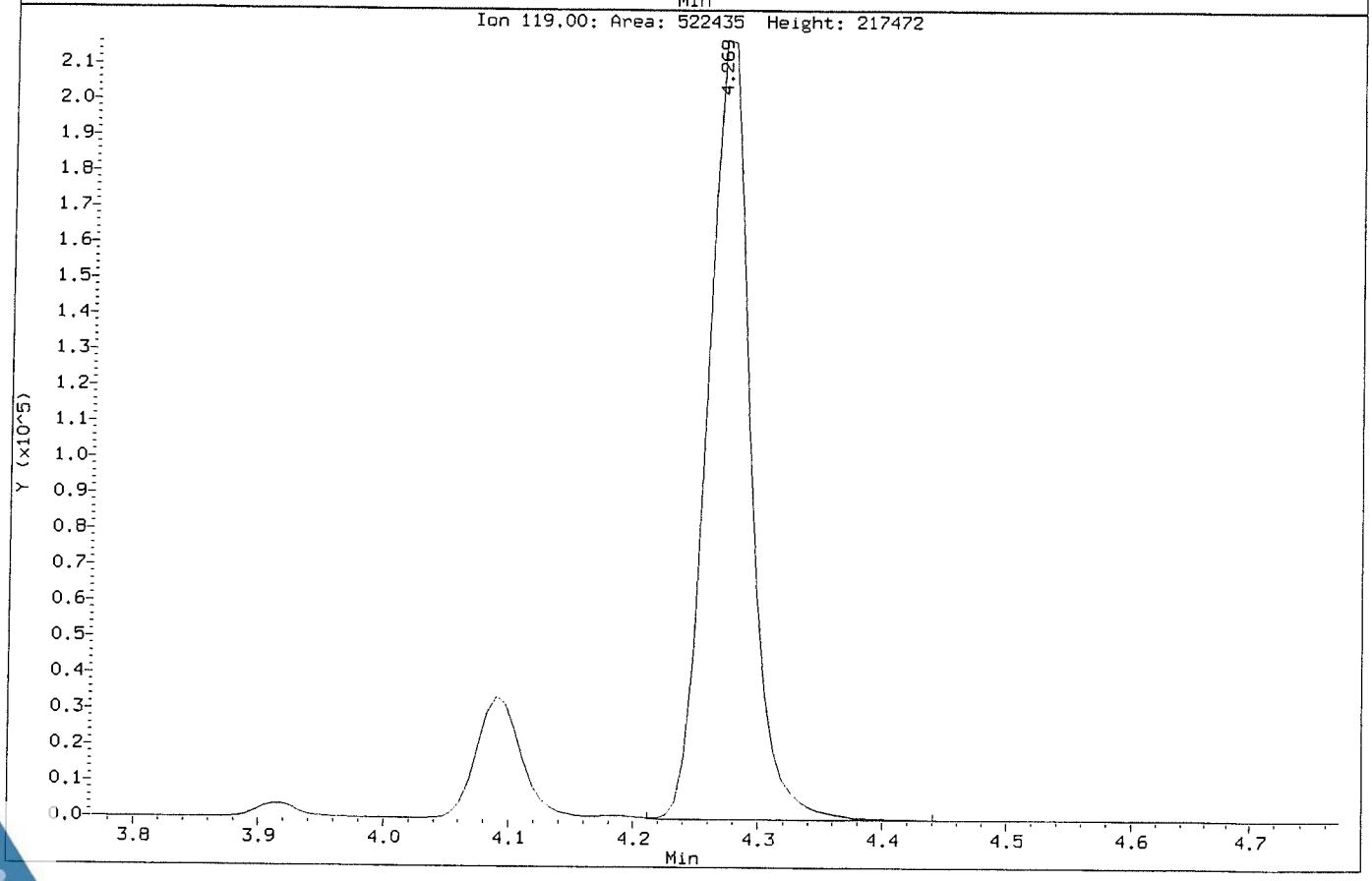
Injection Date: 14-MAR-2019 14:44
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031410.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 14-MAR-2019 15:08
Operator : PC Inst ID: voa6.i
Smp Info : VSTD150;VSTD150;1;9;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:44 Cal File: X031409.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	430667	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	670891	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	644755	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	321470	50.0000	
$ 30 Dibromofluoromethane	113	4.104	4.104	(0.979)	630249	150.000	149.80
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	698216	150.000	148.91
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	2376667	150.000	148.90
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	872319	150.000	148.84
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	657715	150.000	151.15
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	950656	150.000	151.47
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	748527	150.000	144.37
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	506251	150.000	143.19
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	1155028	150.000	146.04
11 1,1-Dichloroethene	96	1.912	1.912	(0.456)	540725	150.000	148.04
32 1,1-Dichloropropene	75	4.283	4.283	(0.862)	879655	150.000	145.84
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	346778	150.000	152.39
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	581256	150.000	145.06(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	620516	150.000	154.23
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	2343579	150.000	152.40
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	100688	150.000	159.66
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	632643	150.000	148.95
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	1351436	150.000	147.42

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Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	818929	150.000	144.64
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	686588	150.000	145.64
75 1,3,5-Trimethylbenzene	105	9.075	9.075	(0.939)	2354049	150.000	154.73
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	1440522	150.000	148.17
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	1038285	150.000	144.28
84 1,4-Dichlorobenzene	146	9.691	9.691	(1.002)	1449628	150.000	146.36
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	906538	150.000	148.92
24 2-Butanone	43	3.581	3.581	(0.855)	478178	300.000	324.15(A)
76 2-Chlorotoluene	91	8.982	8.982	(0.929)	2006428	150.000	146.21
52 2-Hexanone	43	7.090	7.090	(0.924)	787705	300.000	309.90(A)
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	2346498	150.000	149.95
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	2477104	150.000	155.79
45 4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	1186232	300.000	303.15(A)
10 Acetone	43	1.976	1.976	(0.472)	311676	300.000	297.78(A)
37 Benzene	78	4.519	4.519	(0.909)	2531611	150.000	147.54
74 Bromobenzene	156	8.810	8.810	(0.911)	819955	150.000	149.03
29 Bromochloromethane	128	3.803	3.803	(0.908)	350800	150.000	145.76
39 Bromodichloromethane	83	5.730	5.730	(1.153)	867208	150.000	151.51
66 Bromoform	173	8.416	8.416	(1.097)	485383	150.000	149.00
6 Bromomethane	94	1.331	1.331	(0.318)	443212	150.000	151.35
19 Carbon Disulfide	76	2.069	2.069	(0.494)	3807843	300.000	303.08(A)
34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	797749	150.000	149.60(H)
59 Chlorobenzene	112	7.699	7.699	(1.004)	1808471	150.000	143.94
7 Chloroethane	64	1.403	1.403	(0.335)	455694	150.000	146.05
28 Chloroform	83	3.910	3.910	(0.933)	1108384	150.000	145.10
3 Chloromethane	50	1.074	1.074	(0.256)	875713	150.000	148.76
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	703301	150.000	146.53
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	1166394	150.000	154.44
55 Dibromochloromethane	129	7.176	7.176	(0.936)	698638	150.000	152.40
44 Dibromomethane	93	5.558	5.558	(1.118)	415060	150.000	147.02
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	671945	150.000	149.45
61 Ethylbenzene	106	7.800	7.800	(1.017)	930055	150.000	149.11
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	369069	150.000	149.20
67 Isopropylbenzene	105	8.566	8.566	(1.117)	2769171	150.000	148.75
62 m,p-Xylenes	106	7.907	7.907	(1.031)	2311119	300.000	298.90(A)
17 Methylene Chloride	84	2.306	2.306	(0.550)	665742	150.000	148.53
87 n-Butylbenzene	91	9.999	9.999	(1.034)	2157109	150.000	157.32
73 n-Propylbenzene	91	8.917	8.917	(0.922)	3481014	150.000	155.63
92 Naphthalene	128	11.546	11.546	(1.194)	978698	150.000	161.45
63 o-Xylene	106	8.244	8.244	(1.075)	1146315	150.000	148.19
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	2869017	150.000	153.98
64 Styrene	104	8.265	8.265	(1.078)	1946303	150.000	151.78
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	1988126	150.000	150.40
56 Tetrachloroethene	164	6.933	6.933	(0.904)	569558	150.000	147.00
50 Toluene	91	6.446	6.446	(0.840)	2737298	150.000	145.17
20 trans-1,2-Dichloroethene	96	2.528	2.528	(0.603)	616134	150.000	151.58
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	969906	150.000	159.35
38 Trichloroethene	130	5.214	5.214	(1.049)	700871	150.000	148.46
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	996321	150.000	150.16
5 Vinyl Chloride	62	1.138	1.138	(0.272)	830650	150.000	149.43

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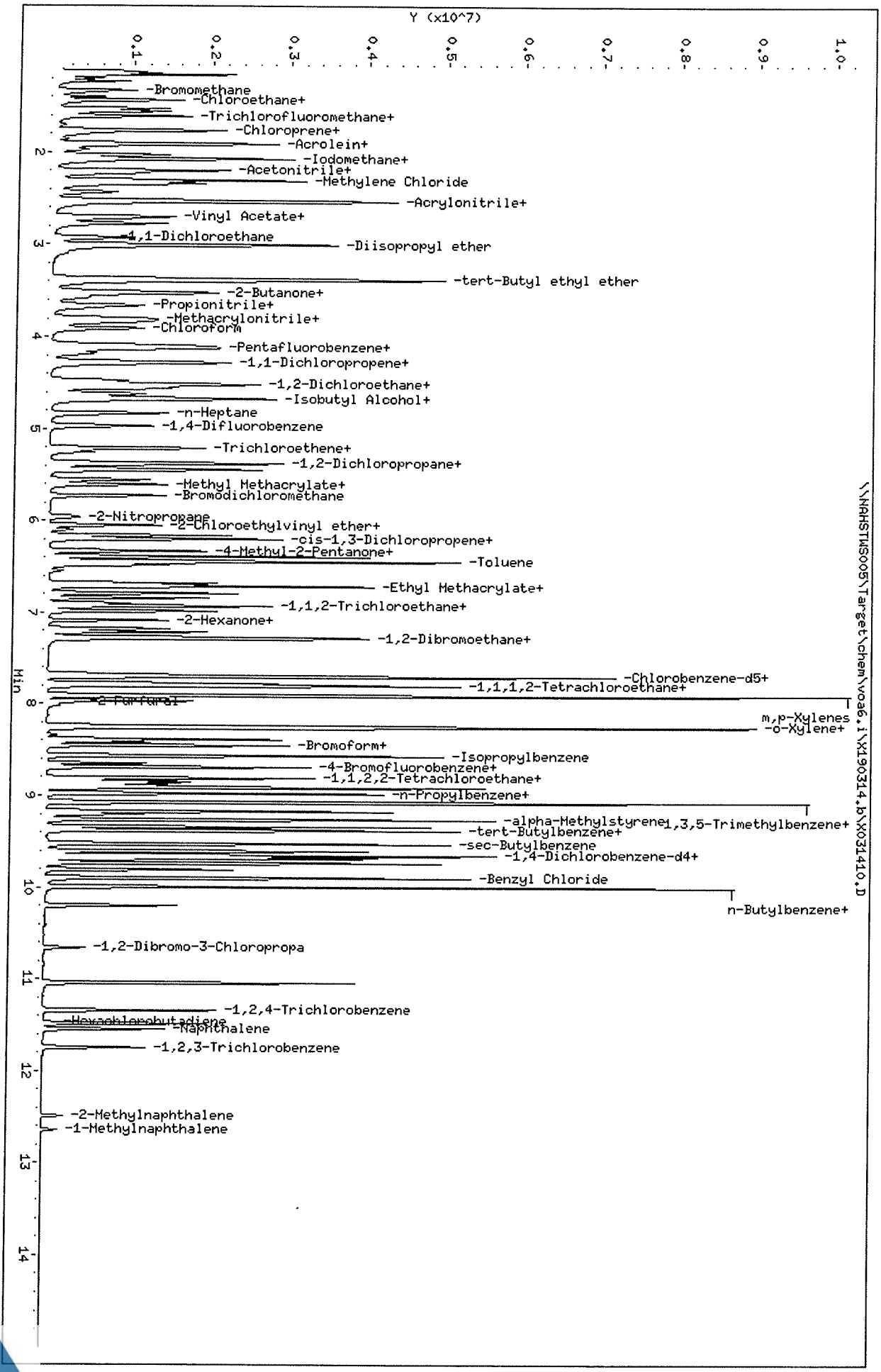
Report Date: 29-Mar-2019 19:45

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^7)
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Min
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-Chloroethane+
-Trichlorofluoromethane+
-Chloroprene+
-Acrolein+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-1,2-Dichloropropane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether+
-cis-1,3-Dichloropropene+
-4-Methyl-2-Pentanone+
-Toluene
-Ethyl Methacrylate+
-1,1,2-Trichloroethane+
-2-Hexanone+
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-2-Pentanone
m,p-Xylenes
-o-Xylene+
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-alpha-Methylstyrene
1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
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Sample Info: VSTD150;VSTD150;1;9;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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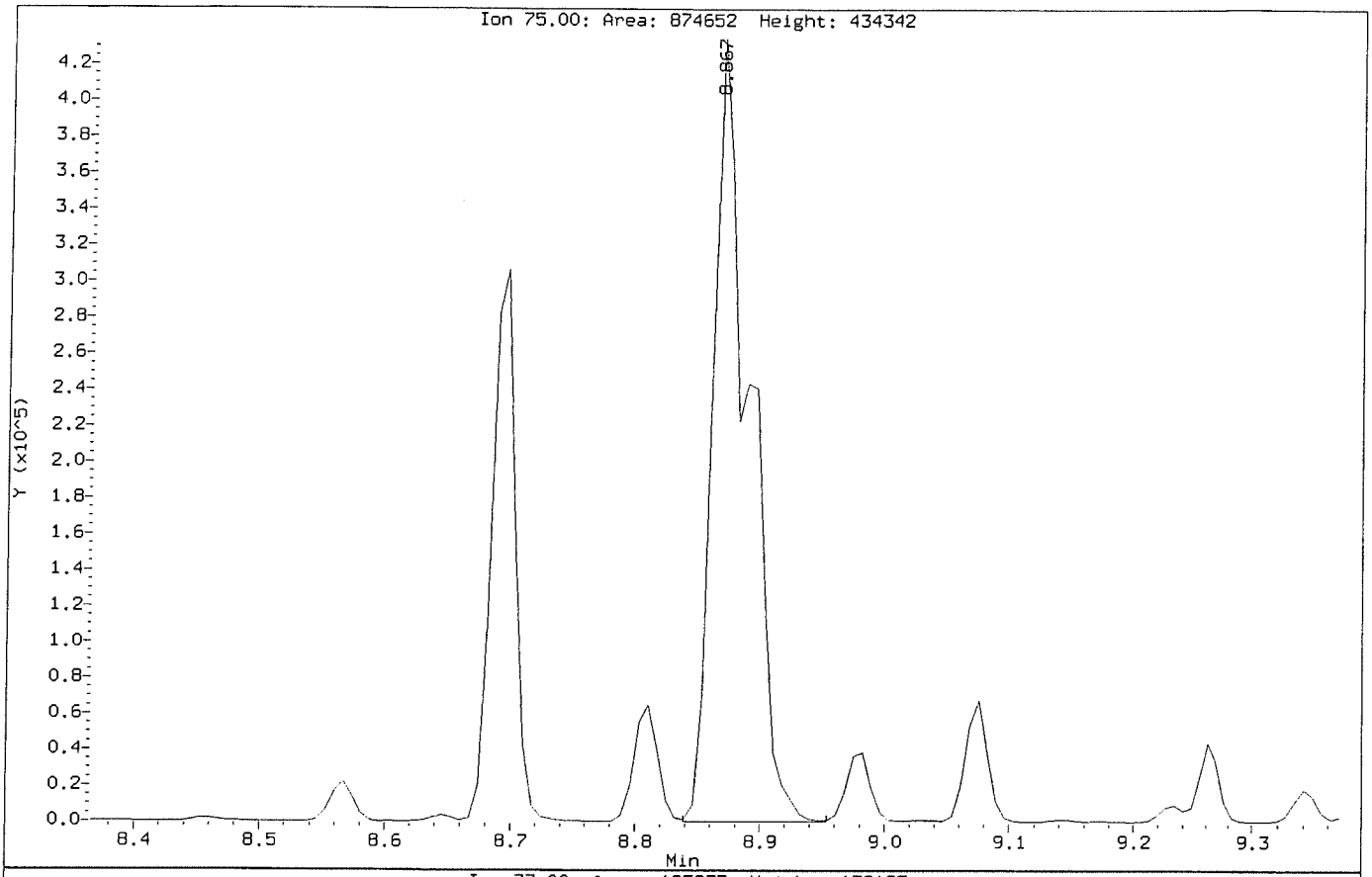
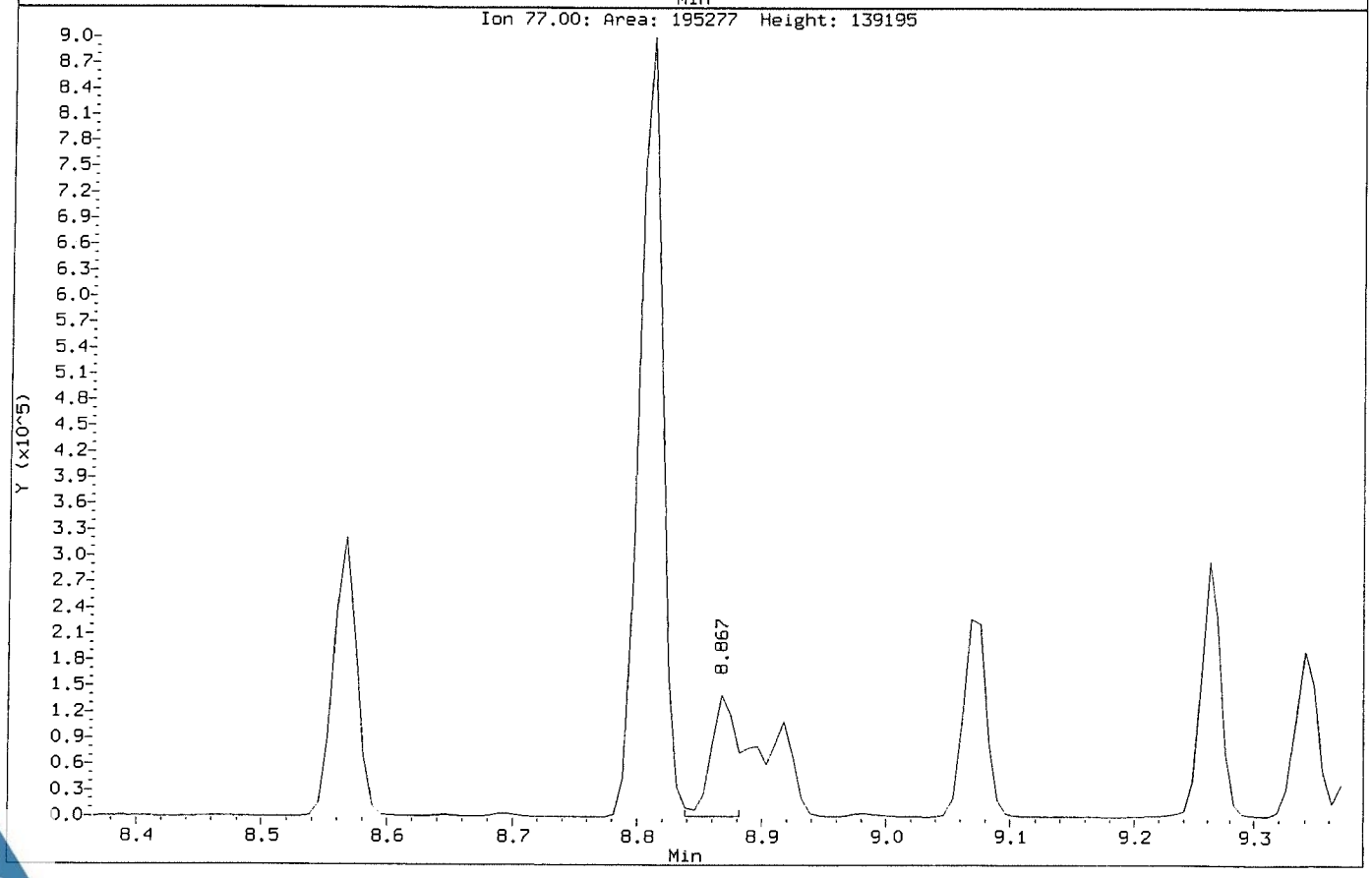
Injection Date: 14-MAR-2019 15:08
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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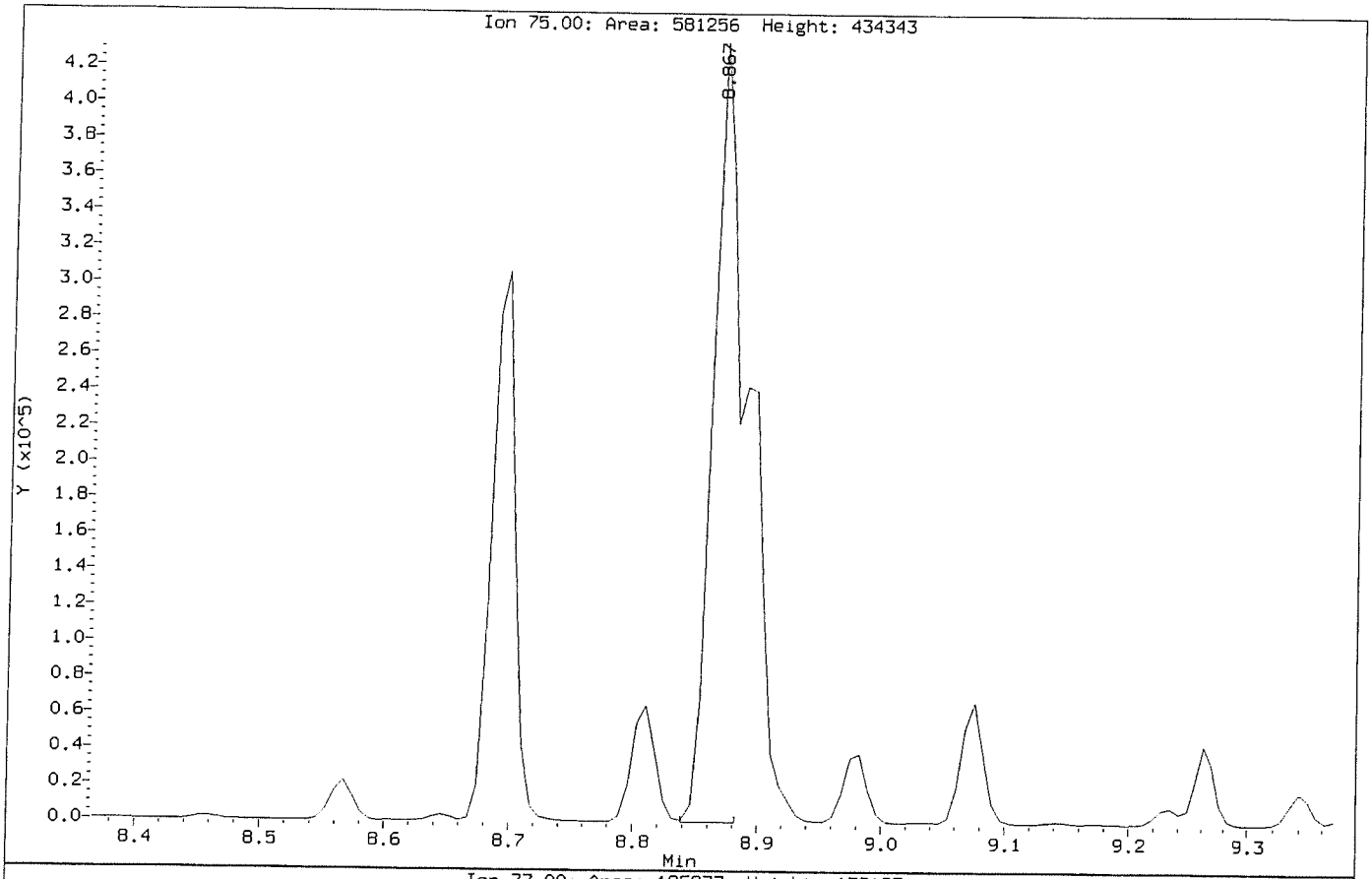
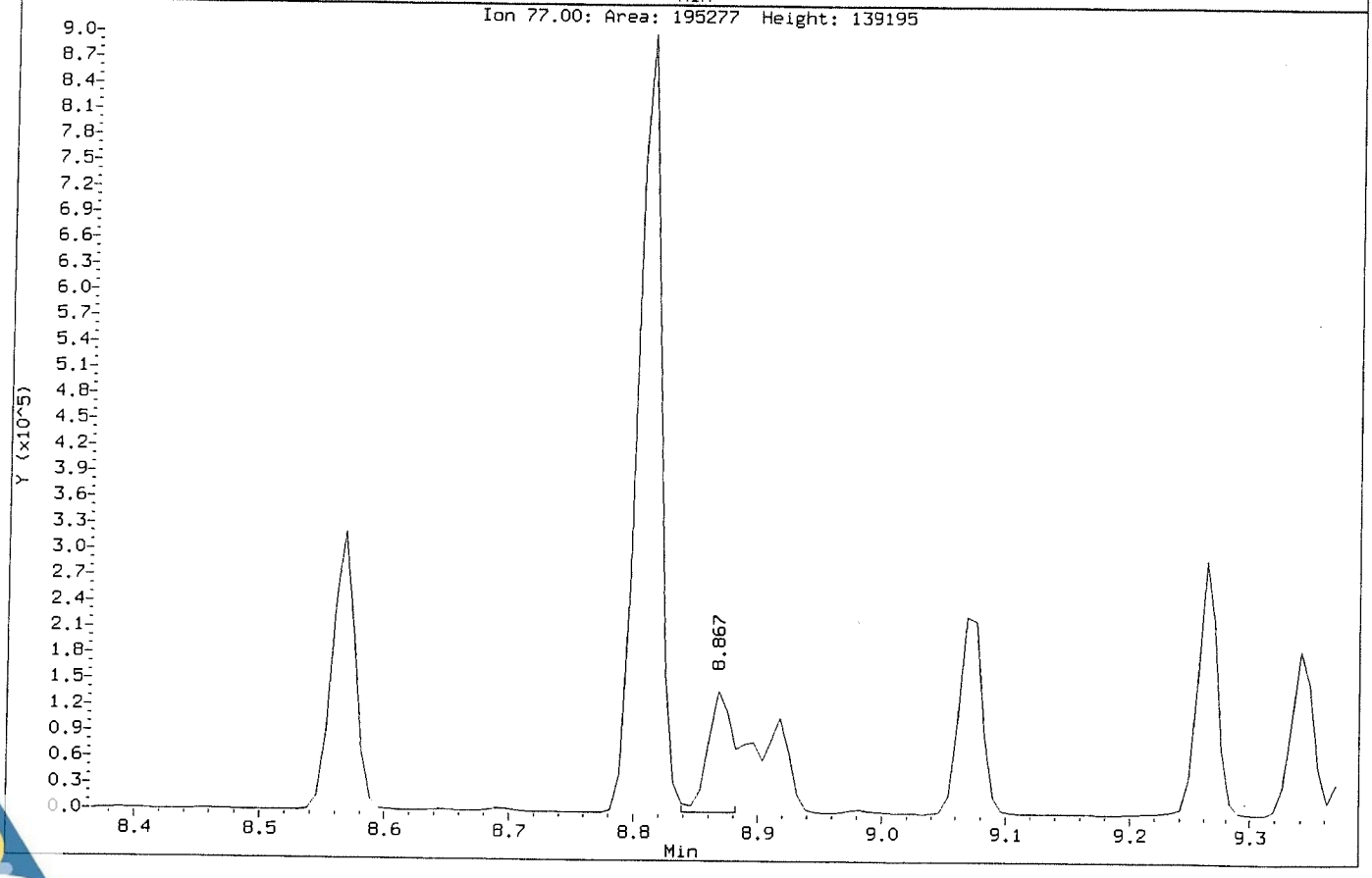
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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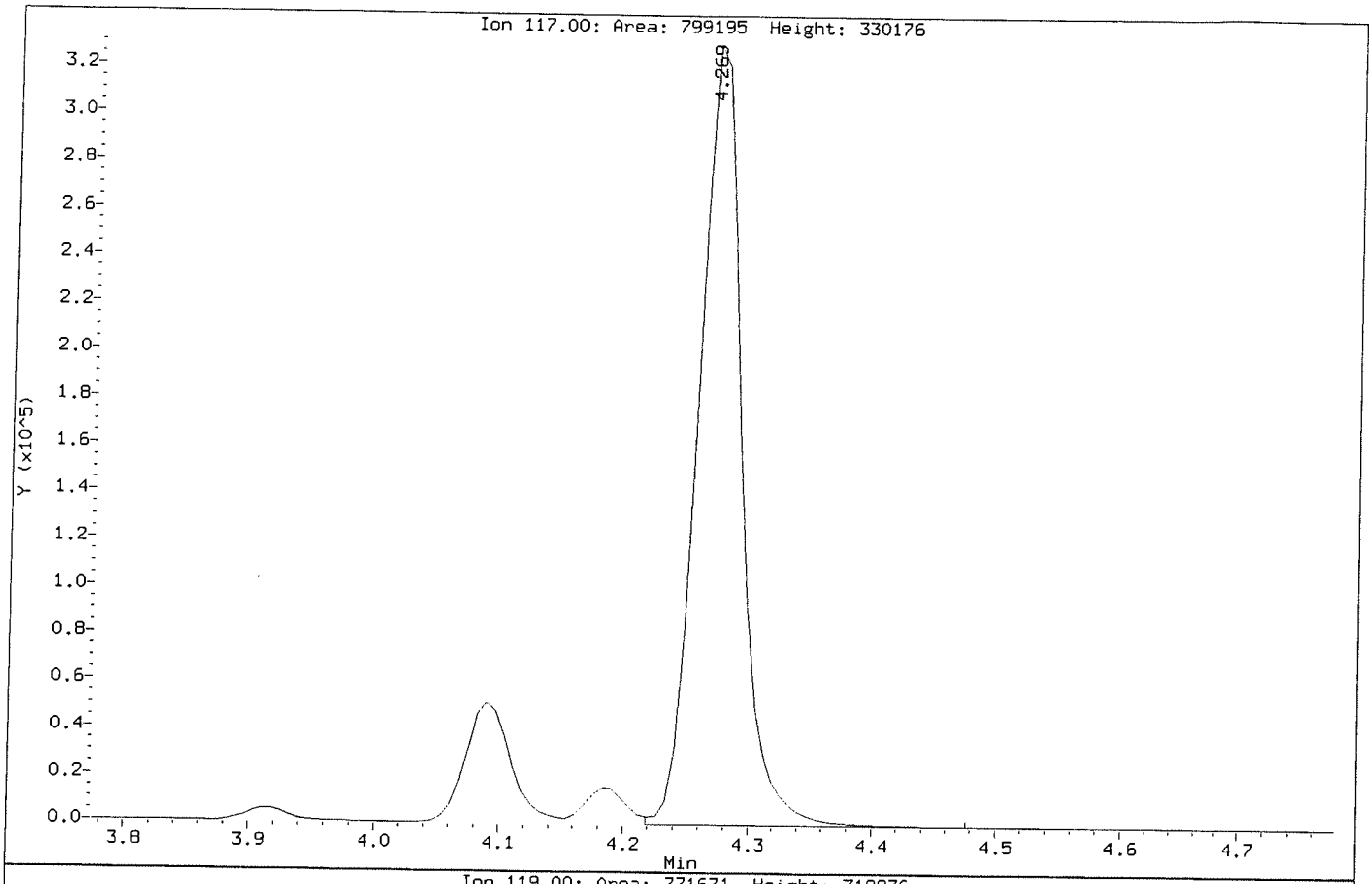
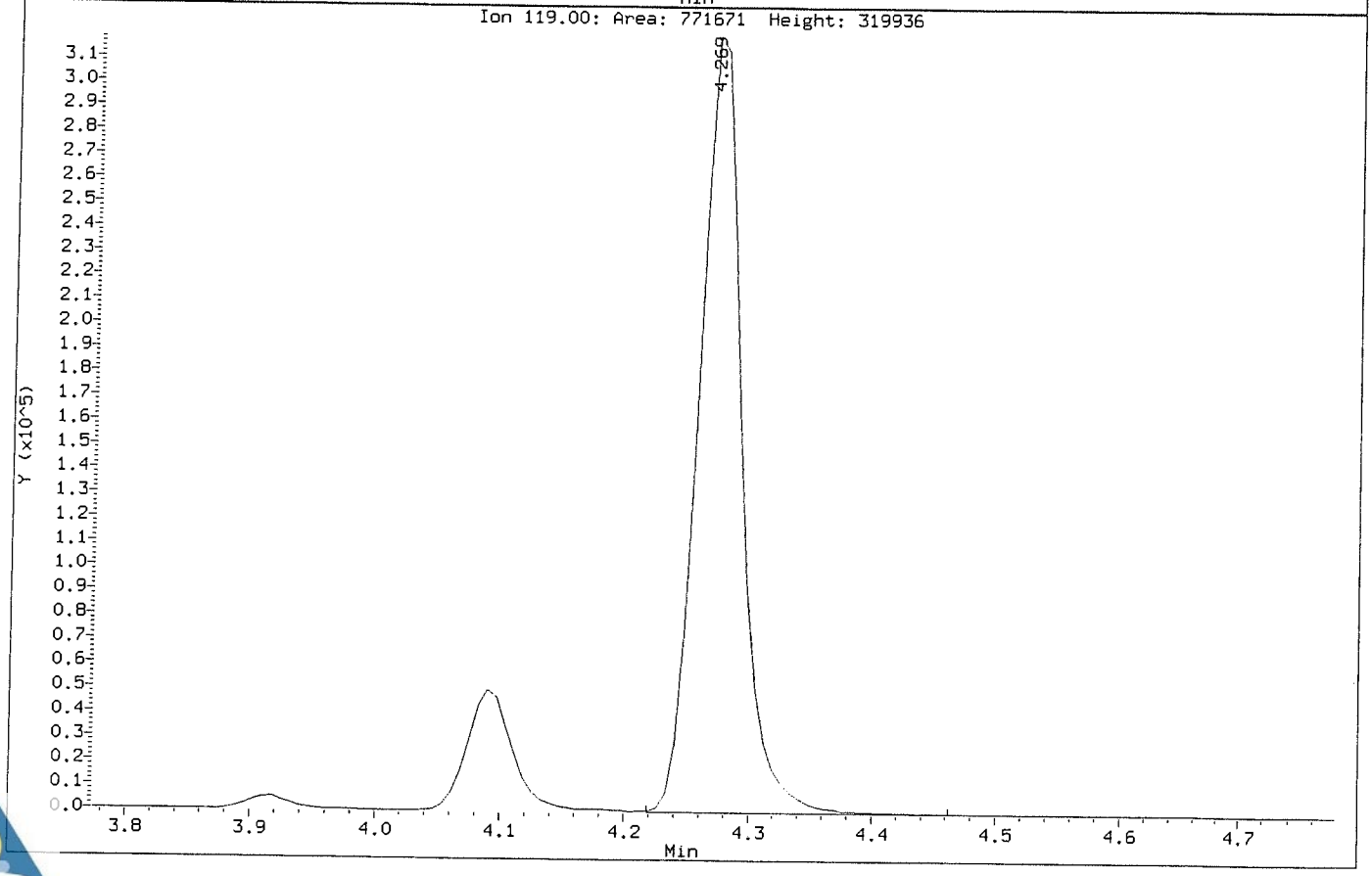
Injection Date: 14-MAR-2019 15:08
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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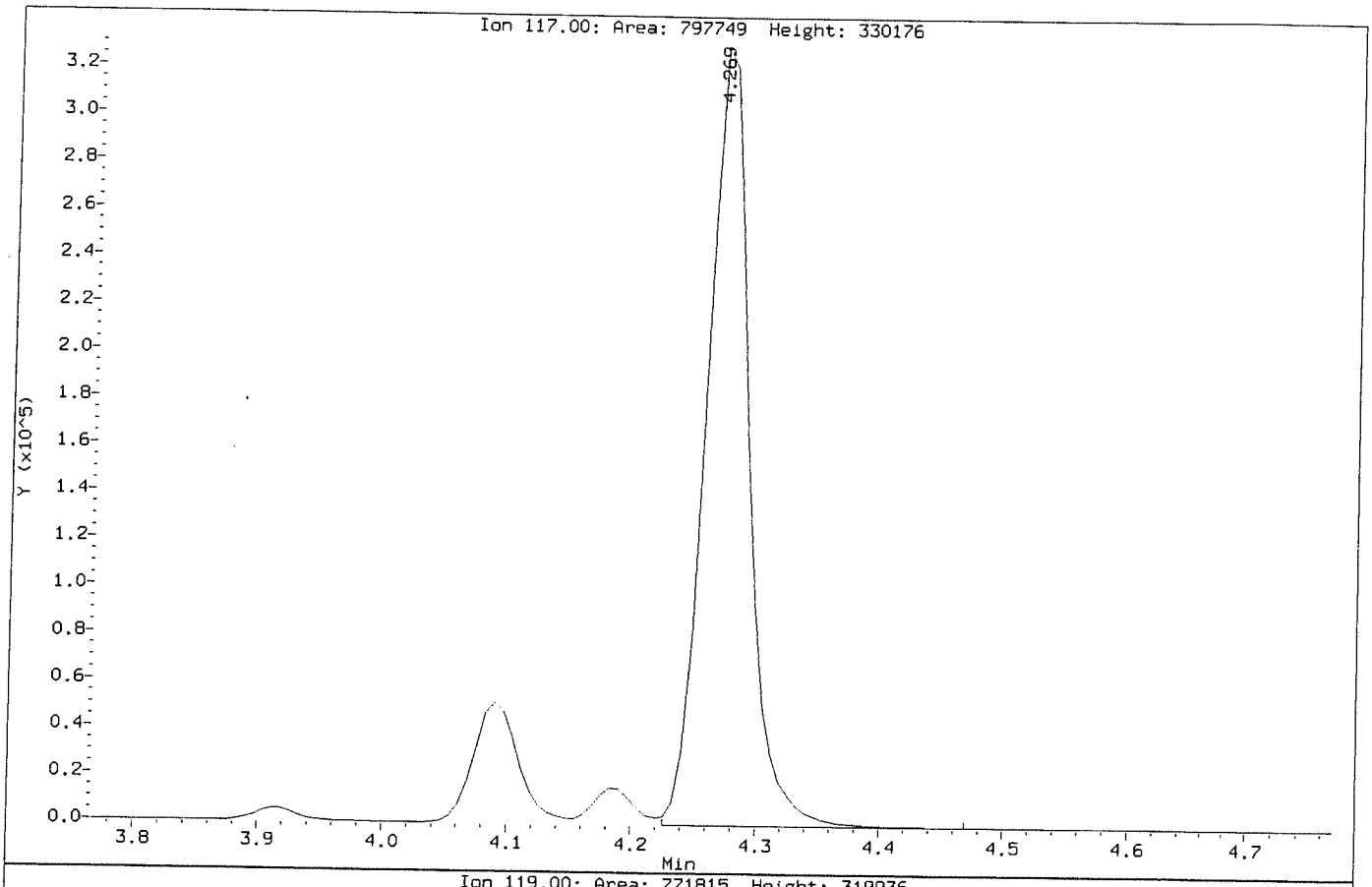
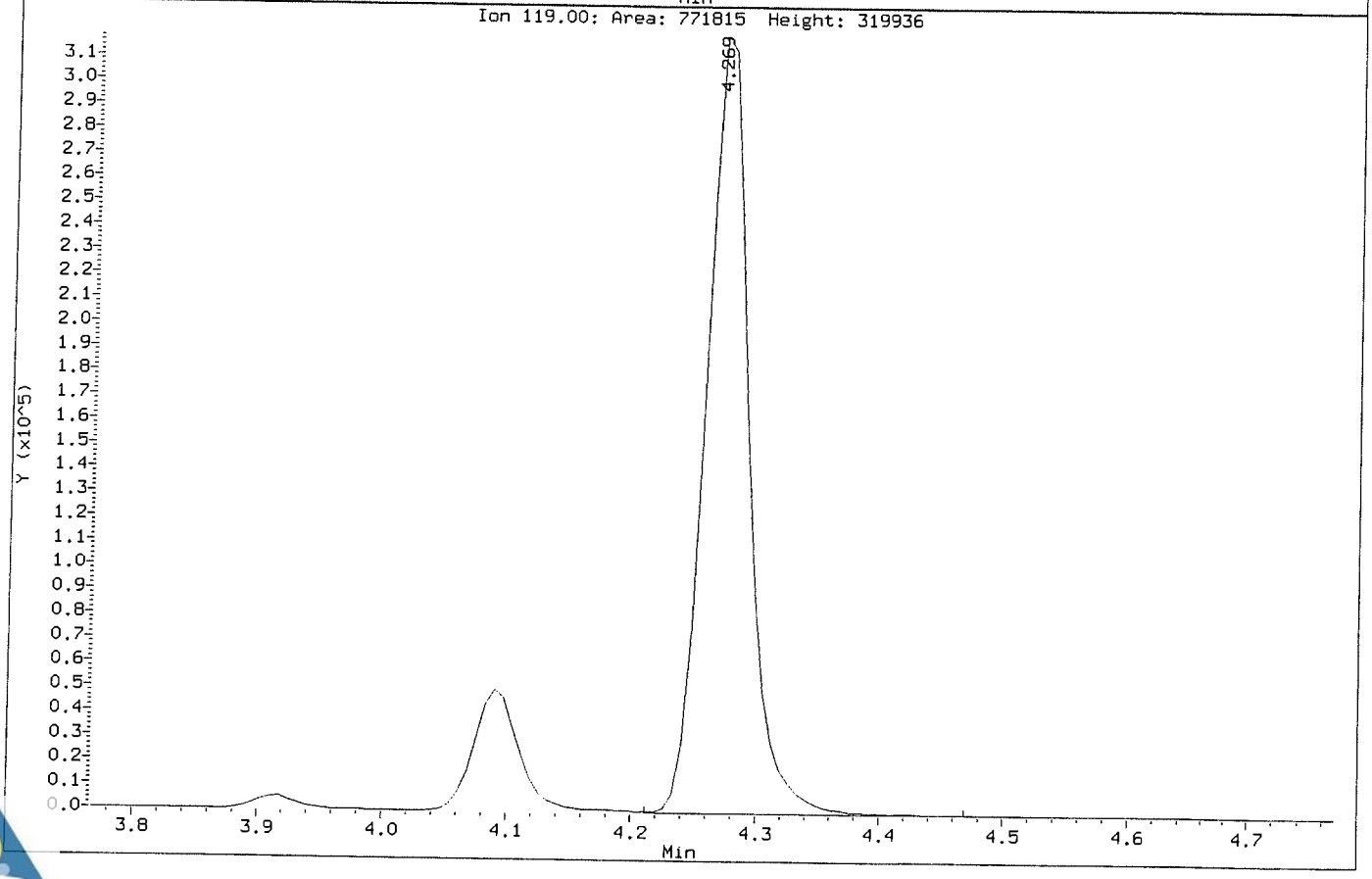
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031411.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 14-MAR-2019 15:32
Operator : PC Inst ID: voa6.i
Smp Info : VSTD200;VSTD200;1;10;
Misc Info : HS18090001;WATER;0;1;
Comment :
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Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 15:08 Cal File: X031410.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	411509	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	647564	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	614017	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	308766	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	804727	200.000	200.20(A)
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	897261	200.000	200.35(A)
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	3051020	200.000	200.80(A)
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	1119684	200.000	200.74(A)
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	858266	200.000	207.12(A)
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	1231786	200.000	205.41(A)
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	967460	200.000	194.27
53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	654671	200.000	194.44
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	1498839	200.000	198.33
11 1,1-Dichloroethene	96	1.911	1.911	(0.456)	707051	200.000	202.58(A)
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	1146187	200.000	196.88
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	458515	200.000	209.79(A)
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	734045	200.000	190.73(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	827162	200.000	214.05(A)
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	3048047	200.000	206.36(A)
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	131731	200.000	217.47(A)
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	810920	200.000	200.49(A)
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	1739758	200.000	197.59

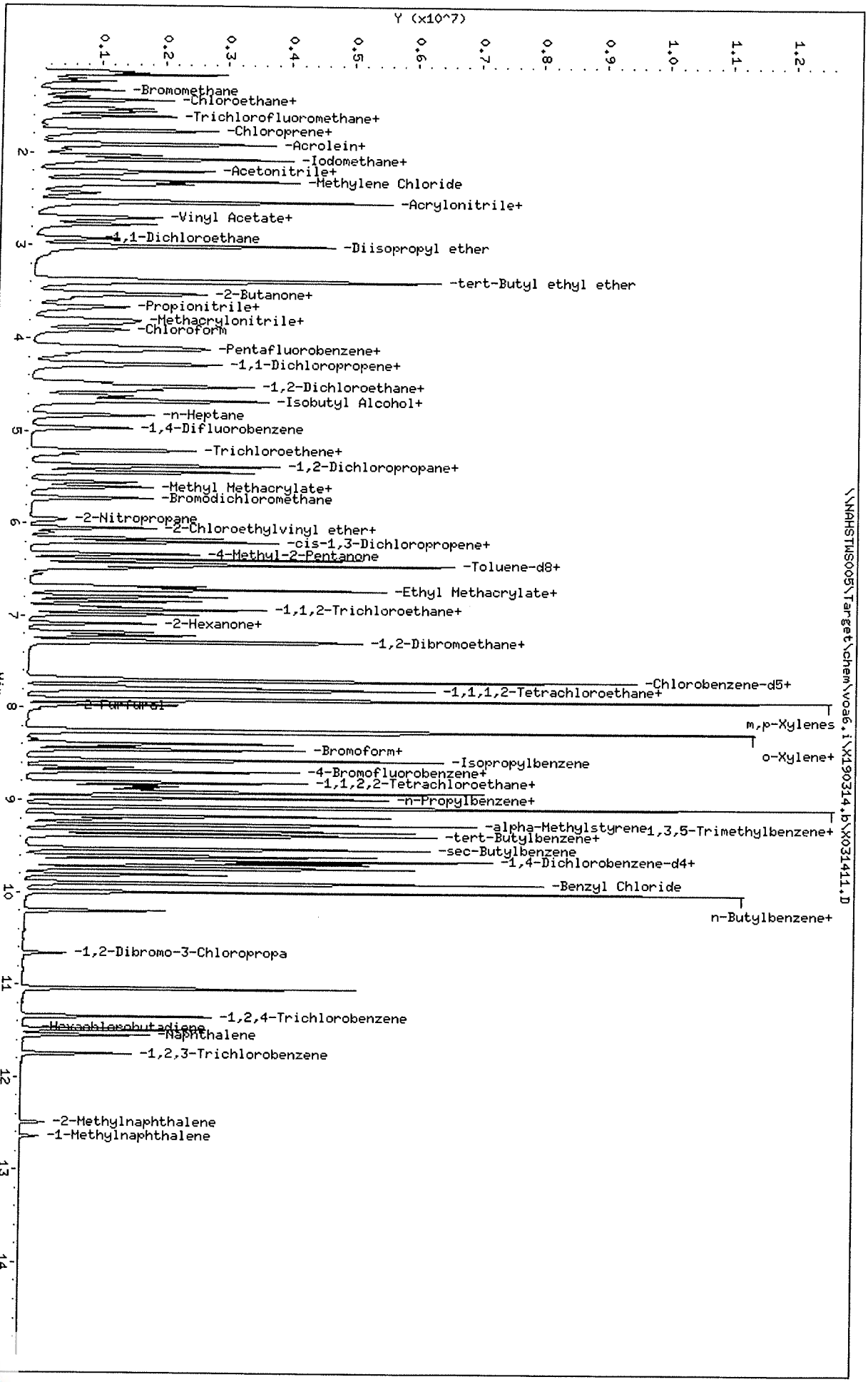
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031411.D
Report Date: 29-Mar-2019 19:45

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	1061832	200.000	194.30
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	888995	200.000	195.37
75	1,3,5-Trimethylbenzene	105	9.074	9.074	(0.939)	3058911	200.000	209.33(A)
83	1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	1864237	200.000	199.64
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	1337906	200.000	195.22
84	1,4-Dichlorobenzene	146	9.691	9.691	(1.002)	1888366	200.000	198.50
26	2,2-Dichloropropane	77	3.516	3.516	(0.839)	1168357	200.000	200.86(A)
24	2-Butanone	43	3.580	3.580	(0.855)	618401	400.000	438.72(A)
76	2-Chlorotoluene	91	8.981	8.981	(0.929)	2591847	200.000	196.64
52	2-Hexanone	43	7.090	7.090	(0.924)	1027763	400.000	424.58(A)
77	4-Chlorotoluene	91	9.074	9.074	(0.939)	3040670	200.000	202.30(A)
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	3243747	200.000	212.41(A)
45	4-Methyl-2-Pentanone	43	6.331	6.331	(0.825)	1540671	400.000	413.44(A)
10	Acetone	43	1.976	1.976	(0.472)	399404	400.000	400.96(A)
37	Benzene	78	4.519	4.519	(0.909)	3300078	200.000	199.25
74	Bromobenzene	156	8.809	8.809	(0.911)	1059735	200.000	200.54(A)
29	Bromochloromethane	128	3.802	3.802	(0.908)	448619	200.000	195.09
39	Bromodichloromethane	83	5.729	5.729	(1.153)	1123375	200.000	203.33(A)
66	Bromoform	173	8.415	8.415	(1.097)	628243	200.000	202.17(A)
6	Bromomethane	94	1.331	1.331	(0.318)	557773	200.000	199.27
19	Carbon Disulfide	76	2.069	2.069	(0.494)	4970894	400.000	414.08(A)
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	1041315	200.000	201.68(AH)
59	Chlorobenzene	112	7.699	7.699	(1.004)	2337852	200.000	195.39
7	Chloroethane	64	1.396	1.396	(0.333)	586468	200.000	196.71
28	Chloroform	83	3.910	3.910	(0.933)	1432631	200.000	196.27
3	Chloromethane	50	1.073	1.073	(0.256)	1116067	200.000	198.90
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	905648	200.000	197.47
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	1512246	200.000	207.45(A)
55	Dibromochloromethane	129	7.183	7.183	(0.937)	905876	200.000	207.51(A)
44	Dibromomethane	93	5.557	5.557	(1.118)	540401	200.000	198.32
2	Dichlorodifluoromethane	85	0.973	0.973	(0.232)	870002	200.000	201.86(A)
61	Ethylbenzene	106	7.807	7.807	(1.018)	1205244	200.000	202.90(A)
91	Hexachlorobutadiene	225	11.488	11.488	(1.188)	489122	200.000	199.41
67	Isopropylbenzene	105	8.566	8.566	(1.117)	3611756	200.000	203.73(A)
62	m,p-Xylenes	106	7.907	7.907	(1.031)	2976653	400.000	404.25(A)
17	Methylene Chloride	84	2.305	2.305	(0.550)	861209	200.000	201.10(A)
87	n-Butylbenzene	91	9.999	9.999	(1.034)	2835827	200.000	215.33(A)
73	n-Propylbenzene	91	8.917	8.917	(0.922)	4515416	200.000	210.18(A)
92	Naphthalene	128	11.546	11.546	(1.194)	1284759	200.000	220.65(A)
63	o-Xylene	106	8.244	8.244	(1.075)	1473723	200.000	200.05(A)
81	sec-Butylbenzene	105	9.526	9.526	(0.985)	3760203	200.000	210.11(A)
64	Styrene	104	8.265	8.265	(1.078)	2514448	200.000	205.90(A)
78	tert-Butylbenzene	119	9.340	9.340	(0.966)	2562931	200.000	201.86(A)
56	Tetrachloroethene	164	6.933	6.933	(0.904)	749268	200.000	203.06(A)
50	Toluene	91	6.453	6.453	(0.841)	3532138	200.000	196.71
20	trans-1,2-Dichloroethene	96	2.527	2.527	(0.603)	799766	200.000	205.92(A)
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	1265137	200.000	215.34(A)
38	Trichloroethene	130	5.214	5.214	(1.049)	910524	200.000	199.81
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	1285010	200.000	199.23
5	Vinyl Chloride	62	1.138	1.138	(0.272)	1077324	200.000	202.83(A)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031411.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

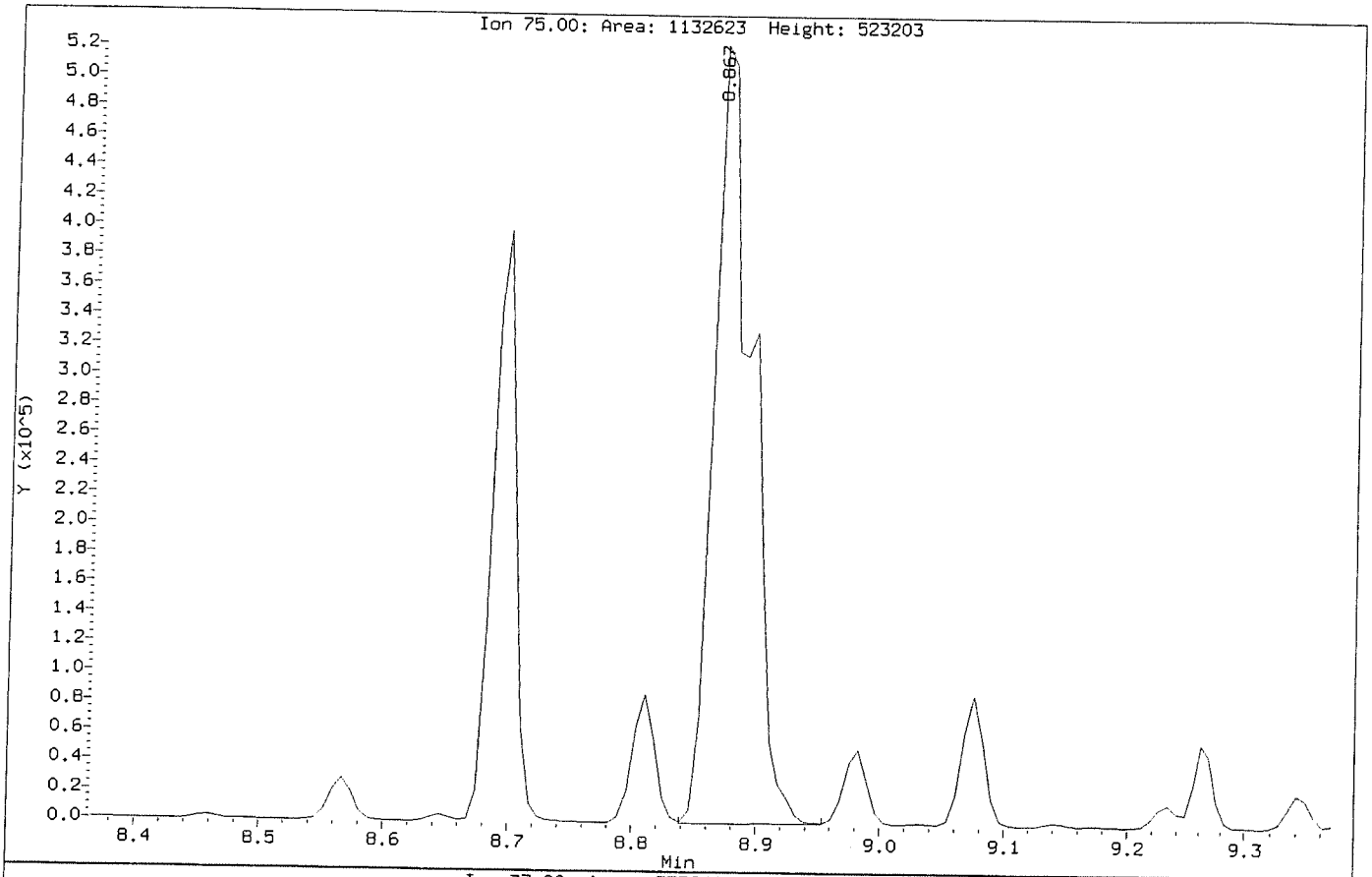


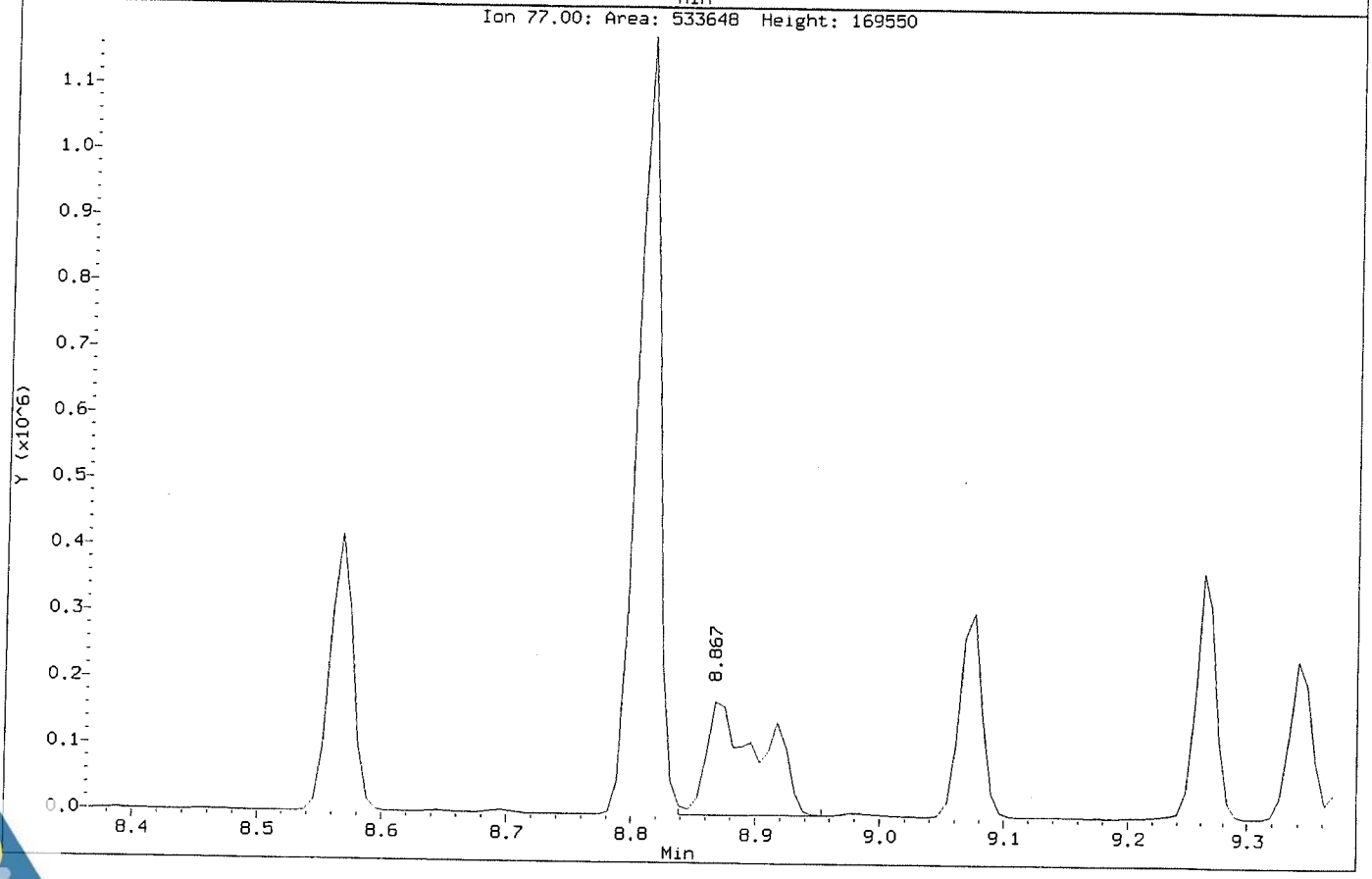
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031411.D
Date : 14-MAR-2019 15:32
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031411.D
Injection Date: 14-MAR-2019 15:32
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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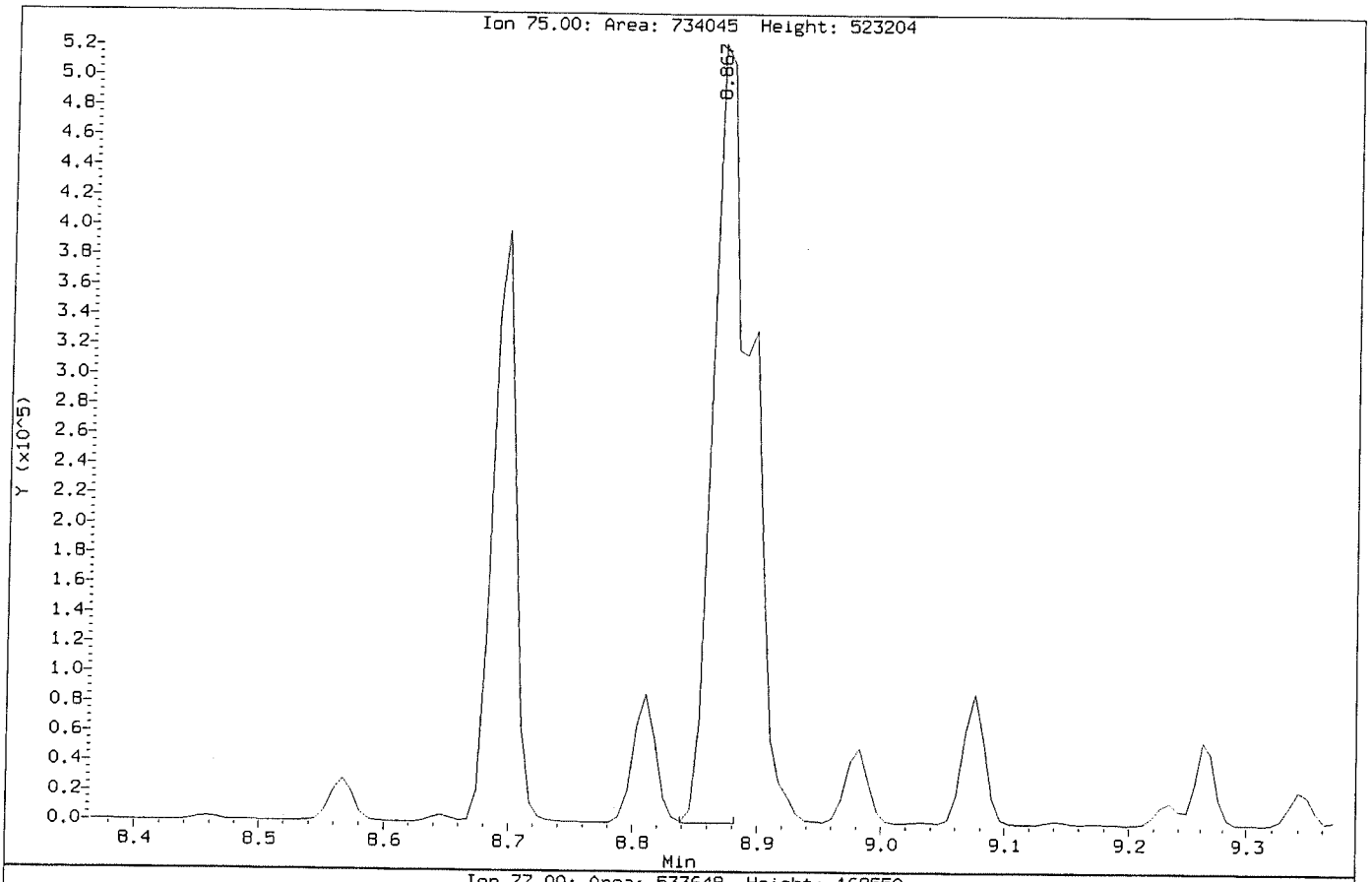
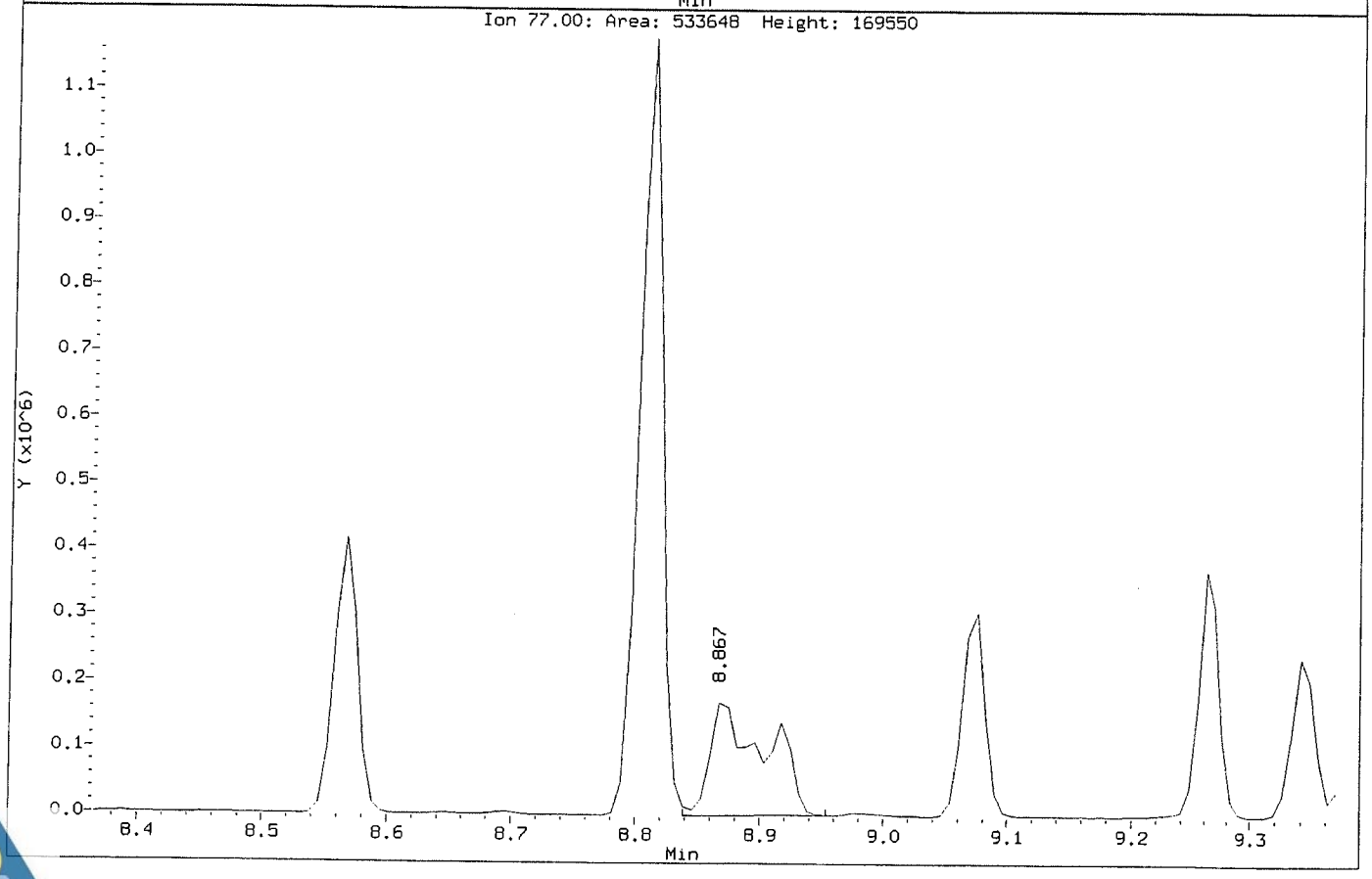
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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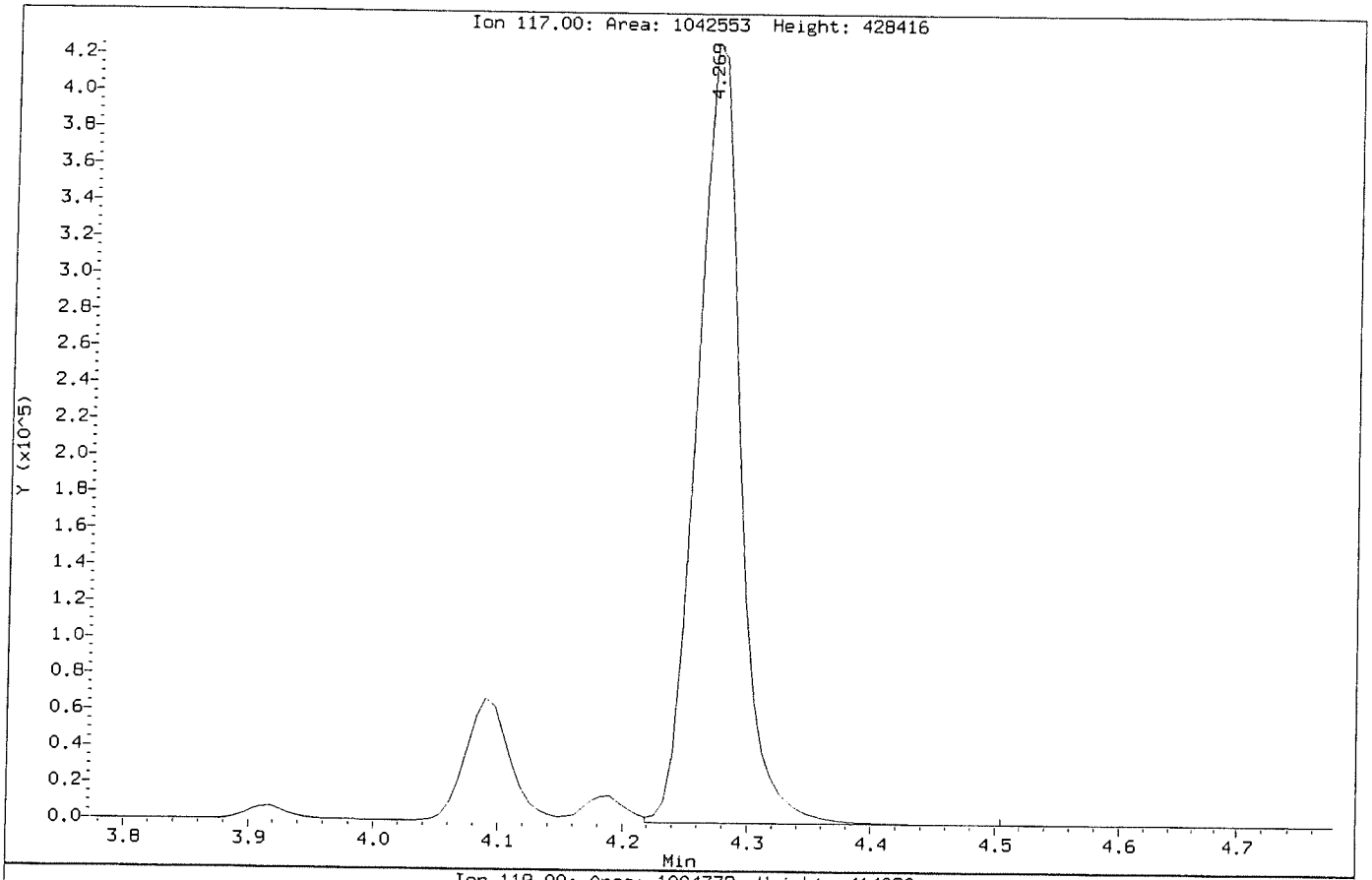
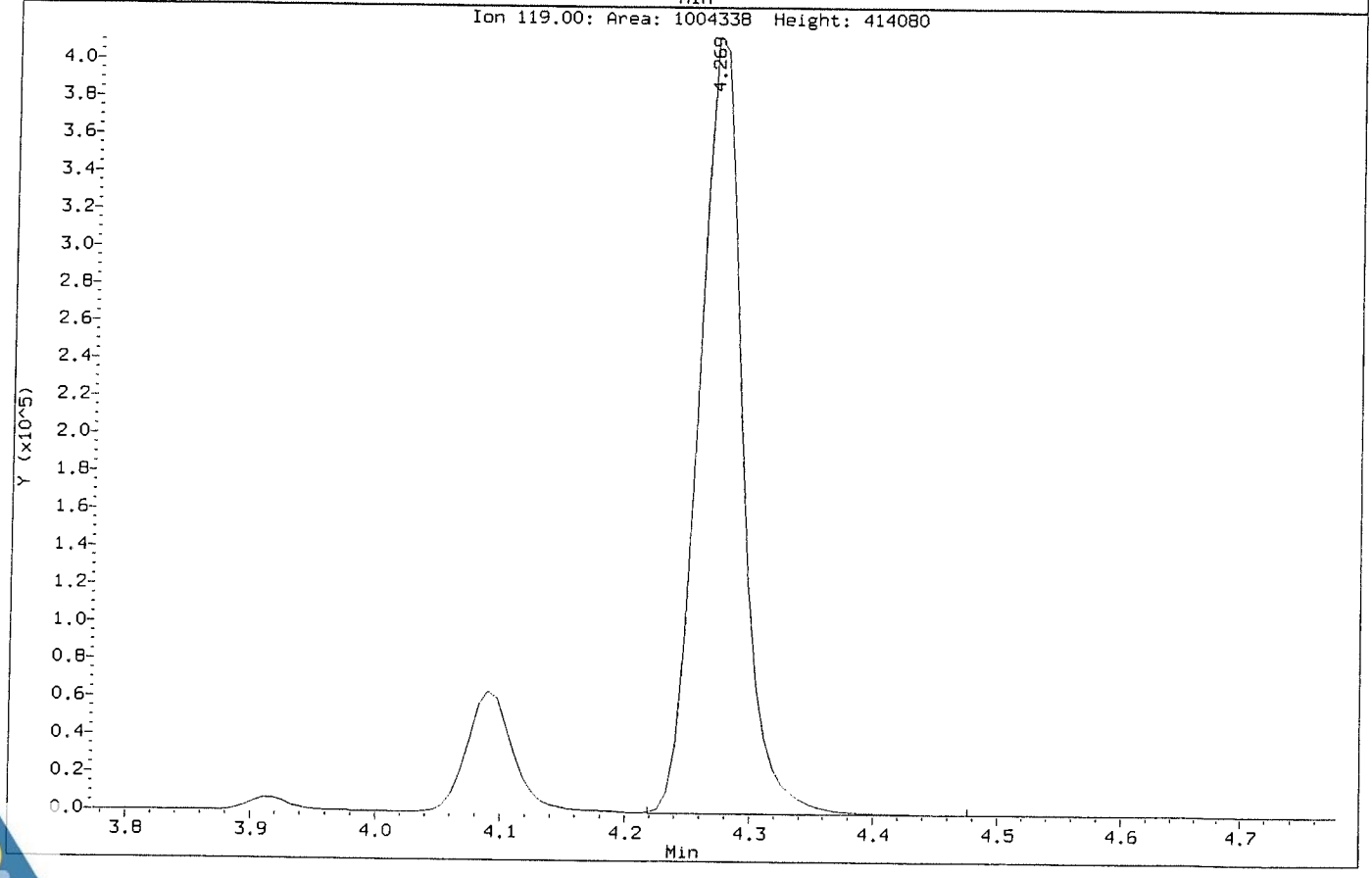
Injection Date: 14-MAR-2019 15:32
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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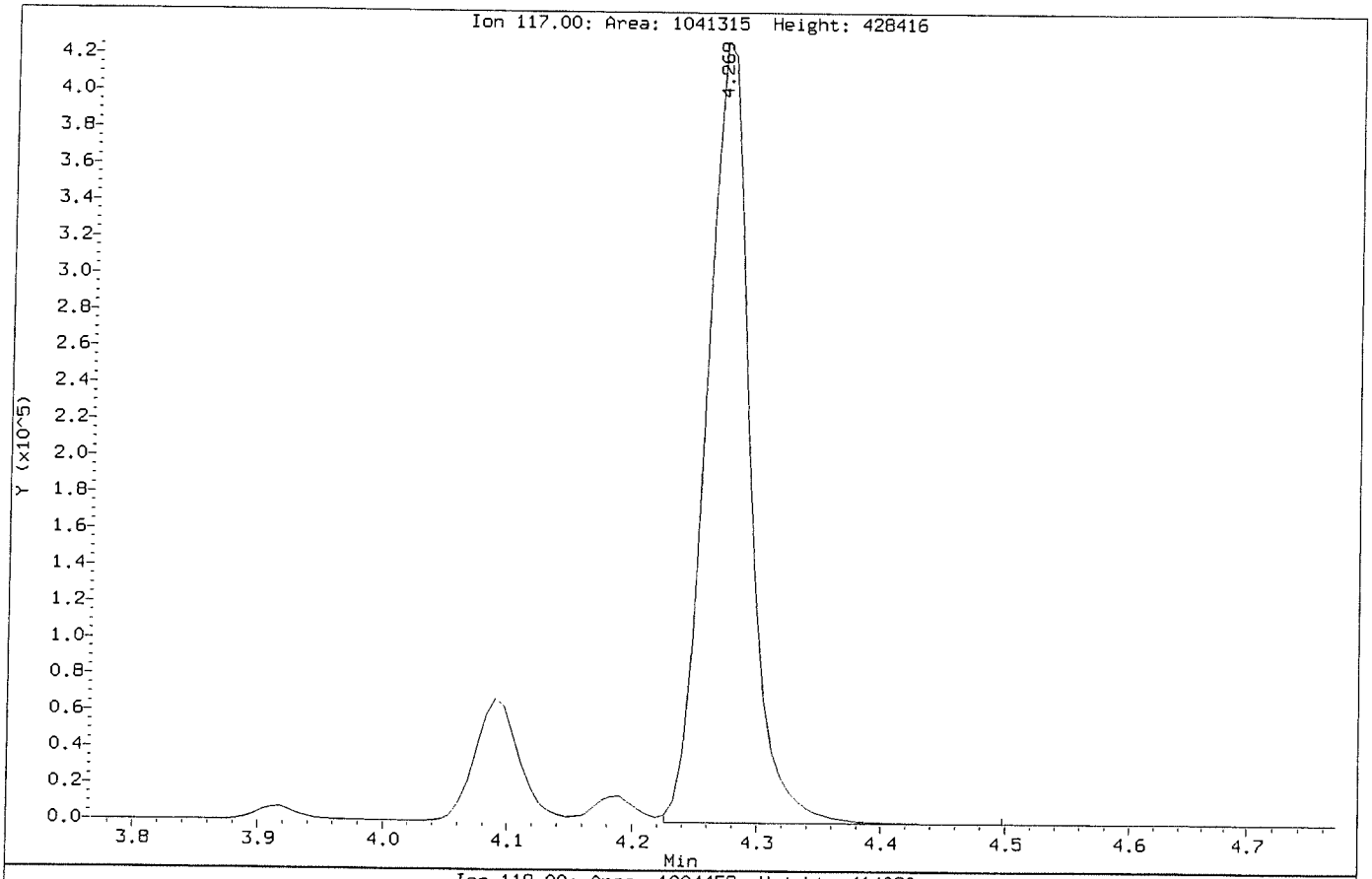
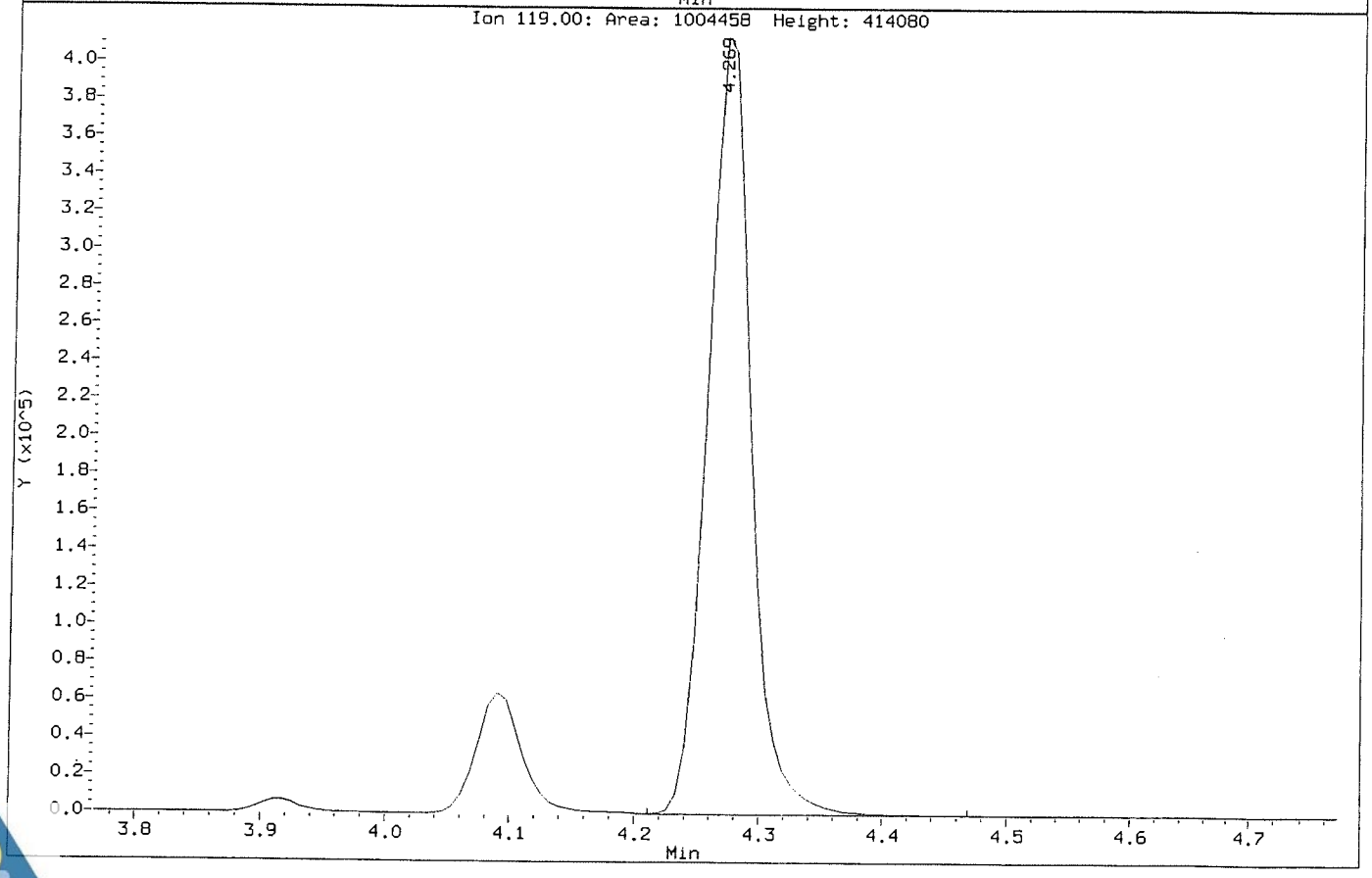
Injection Date: 14-MAR-2019 15:32
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: Carbon Tetrachloride
CAS Number: 56-23-5





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Report Date: 29-Mar-2019 19:45

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031413.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 14-MAR-2019 16:20
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;ICV
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190314.b\8260W.m
Meth Date : 29-Mar-2019 19:45 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 15:32 Cal File: X031411.D
Als bottle: 14 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	435137	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	673646	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	632221	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	322814	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	211721	49.7555	49.75
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	238554	50.2060	50.20
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	799081	50.9234	50.92
$ 69 4-Bromofluorobenzene	95	8.695	8.695	(1.134)	298270	51.6707	51.67
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	209546	49.1126	49.11
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	291735	46.0077	46.00
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	247607	47.5580	47.55
53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	166245	47.9546	47.95
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	374430	46.8570	46.85
11 1,1-Dichloroethene	96	1.919	1.911	(0.458)	171406	46.4457	46.44
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	265021	43.7615	43.76
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	107137	46.8867	46.88
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	192228	47.7753	47.77(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.173)	192506	47.6501	47.65
79 1,2,4-Trimethylbenzene	105	9.382	9.383	(0.970)	714541	46.2726	46.27
89 1,2-Dibromo-3-Chloropropane	155	10.657	10.658	(1.102)	32538	51.3806	51.38
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	203312	48.8195	48.81
88 1,2-Dichlorobenzene	146	9.998	9.999	(1.034)	428639	46.5648	46.56

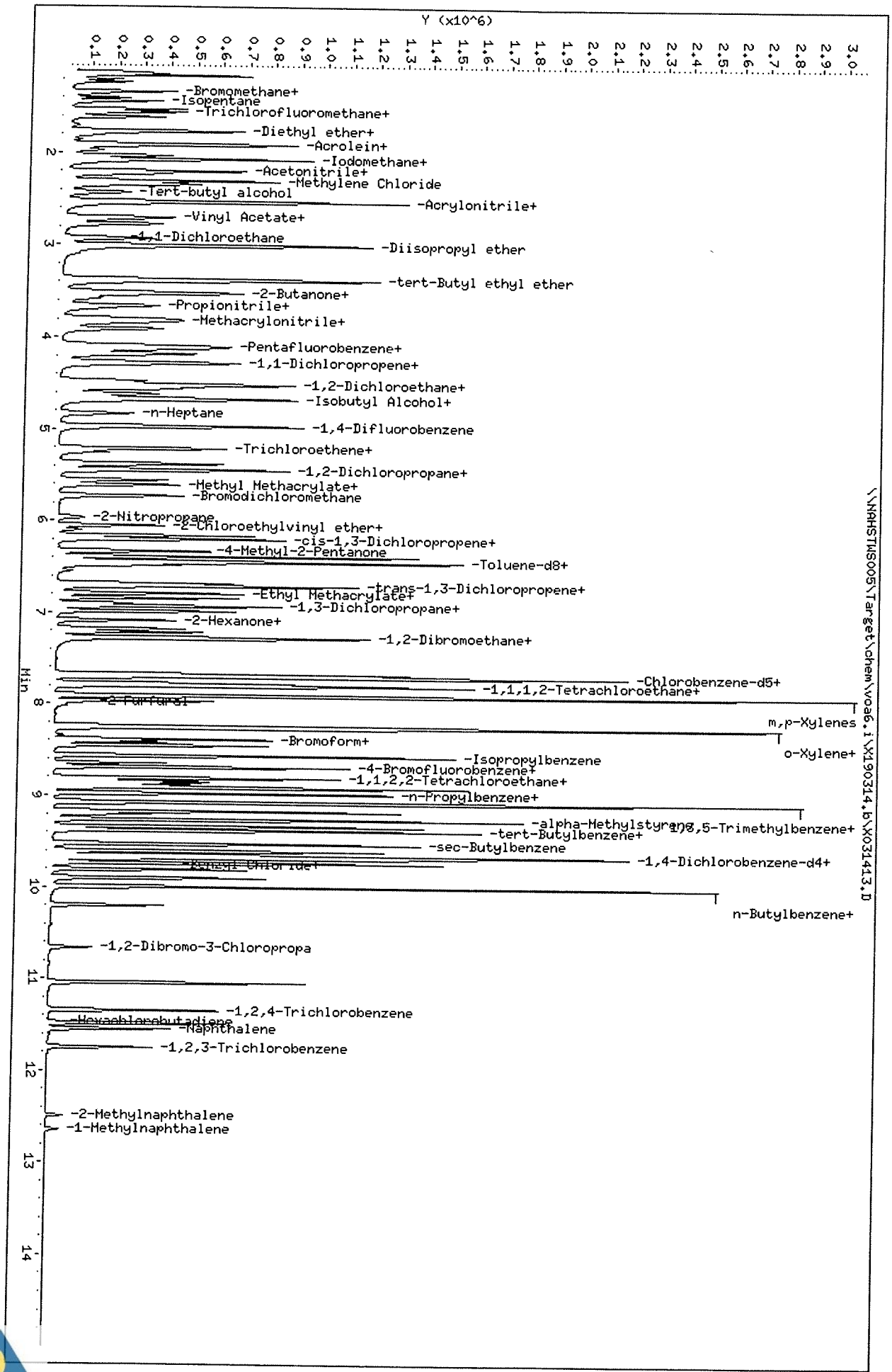
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031413.D
Report Date: 29-Mar-2019 19:45

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	265911	46.7752	46.77
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	224283	47.3834	47.38
75 1,3,5-Trimethylbenzene	105	9.067	9.074	(0.938)	693156	45.3718	45.37
83 1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	452977	46.3993	46.39
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	337205	47.7882	47.78
84 1,4-Dichlorobenzene	146	9.683	9.691	(1.001)	462227	46.4749	46.47
26 2,2-Dichloropropane	77	3.516	3.516	(0.839)	293566	47.7299	47.72
24 2-Butanone	43	3.580	3.580	(0.855)	150082	100.694	100.69
76 2-Chlorotoluene	91	8.981	8.981	(0.929)	624428	45.3138	45.31
52 2-Hexanone	43	7.090	7.090	(0.924)	243550	97.7176	97.71
77 4-Chlorotoluene	91	9.074	9.074	(0.939)	722914	46.0056	46.00
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	712627	44.6346	44.63
45 4-Methyl-2-Pentanone	43	6.324	6.331	(0.824)	362104	94.3731	94.37
10 Acetone	43	1.976	1.976	(0.472)	109995	100.985	100.98
37 Benzene	78	4.519	4.519	(0.909)	819120	47.5432	47.54
74 Bromobenzene	156	8.809	8.809	(0.911)	262589	47.5295	47.52
29 Bromochloromethane	128	3.802	3.802	(0.908)	113623	46.7284	46.72
39 Bromodichloromethane	83	5.729	5.729	(1.153)	278906	48.5293	48.52
66 Bromoform	173	8.415	8.415	(1.097)	153006	48.5368	48.53
6 Bromomethane	94	1.338	1.331	(0.320)	174814	59.2167	59.21
19 Carbon Disulfide	76	2.069	2.069	(0.494)	1202286	94.7141	94.71
34 Carbon Tetrachloride	117	4.275	4.268	(0.860)	231488	44.5025	44.50
59 Chlorobenzene	112	7.699	7.699	(1.004)	585209	47.5033	47.50
7 Chloroethane	64	1.403	1.396	(0.335)	147285	46.7212	46.72
28 Chloroform	83	3.910	3.910	(0.933)	361556	46.8456	46.84
3 Chloromethane	50	1.073	1.073	(0.256)	284635	46.8751	46.87
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	227080	46.8260	46.82
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	374699	49.4133	49.41
55 Dibromochloromethane	129	7.176	7.183	(0.936)	224145	49.8672	49.86
44 Dibromomethane	93	5.557	5.557	(1.118)	134731	47.5302	47.53
2 Dichlorodifluoromethane	85	0.973	0.973	(0.232)	202140	45.8004	45.80
61 Ethylbenzene	106	7.799	7.807	(1.017)	287185	46.9563	46.95
91 Hexachlorobutadiene	225	11.488	11.488	(1.188)	120356	51.6521	51.65
67 Isopropylbenzene	105	8.566	8.566	(1.117)	813384	44.5600	44.55
62 m,p-Xylenes	106	7.907	7.907	(1.031)	706849	93.2326	93.23
17 Methylene Chloride	84	2.305	2.305	(0.550)	219395	48.4223	48.42
87 n-Butylbenzene	91	9.998	9.999	(1.034)	625806	45.4517	45.45
73 n-Propylbenzene	91	8.917	8.917	(0.922)	1007066	44.8368	44.83
92 Naphthalene	128	11.546	11.546	(1.194)	300143	49.3068	49.30
63 o-Xylene	106	8.244	8.244	(1.075)	361943	47.7186	47.71
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	805357	43.0437	43.04
64 Styrene	104	8.265	8.265	(1.078)	629872	50.0939	50.09
78 tert-Butylbenzene	119	9.339	9.340	(0.966)	571107	43.0258	43.02
56 Tetrachloroethene	164	6.933	6.933	(0.904)	169609	44.6440	44.64
50 Toluene	91	6.453	6.453	(0.841)	874629	47.3079	47.30
20 trans-1,2-Dichloroethene	96	2.535	2.527	(0.605)	196837	47.9301	47.93
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	311632	50.9900	50.99
38 Trichloroethene	130	5.214	5.214	(1.049)	220380	46.4906	46.49
8 Trichlorofluoromethane	101	1.560	1.560	(0.373)	297435	46.2985	46.29
5 Vinyl Chloride	62	1.145	1.138	(0.273)	252814	45.0133	45.01

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\X031413.D
Report Date: 29-Mar-2019 19:45

QC Flag Legend

M - Compound response manually integrated.



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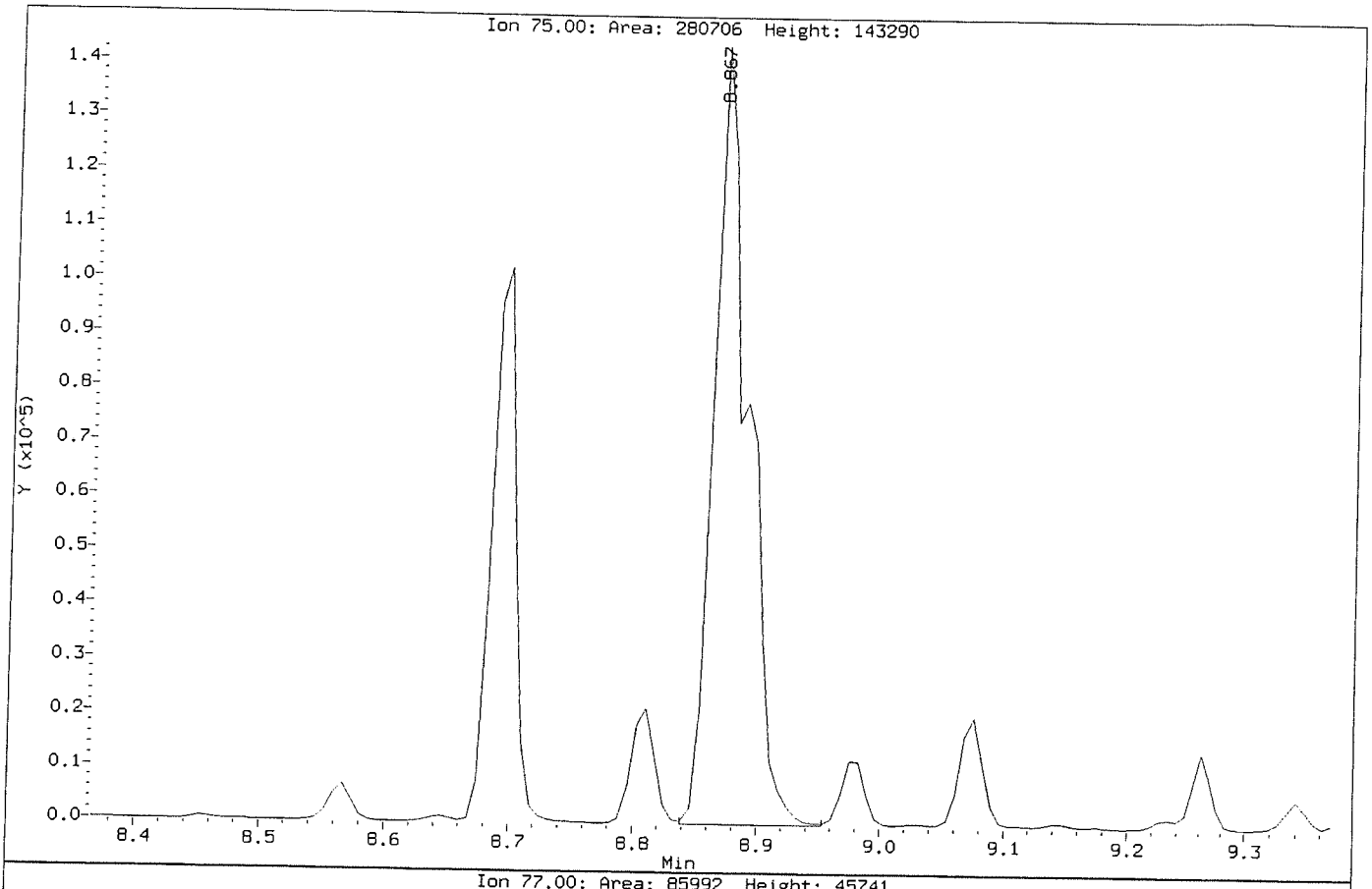
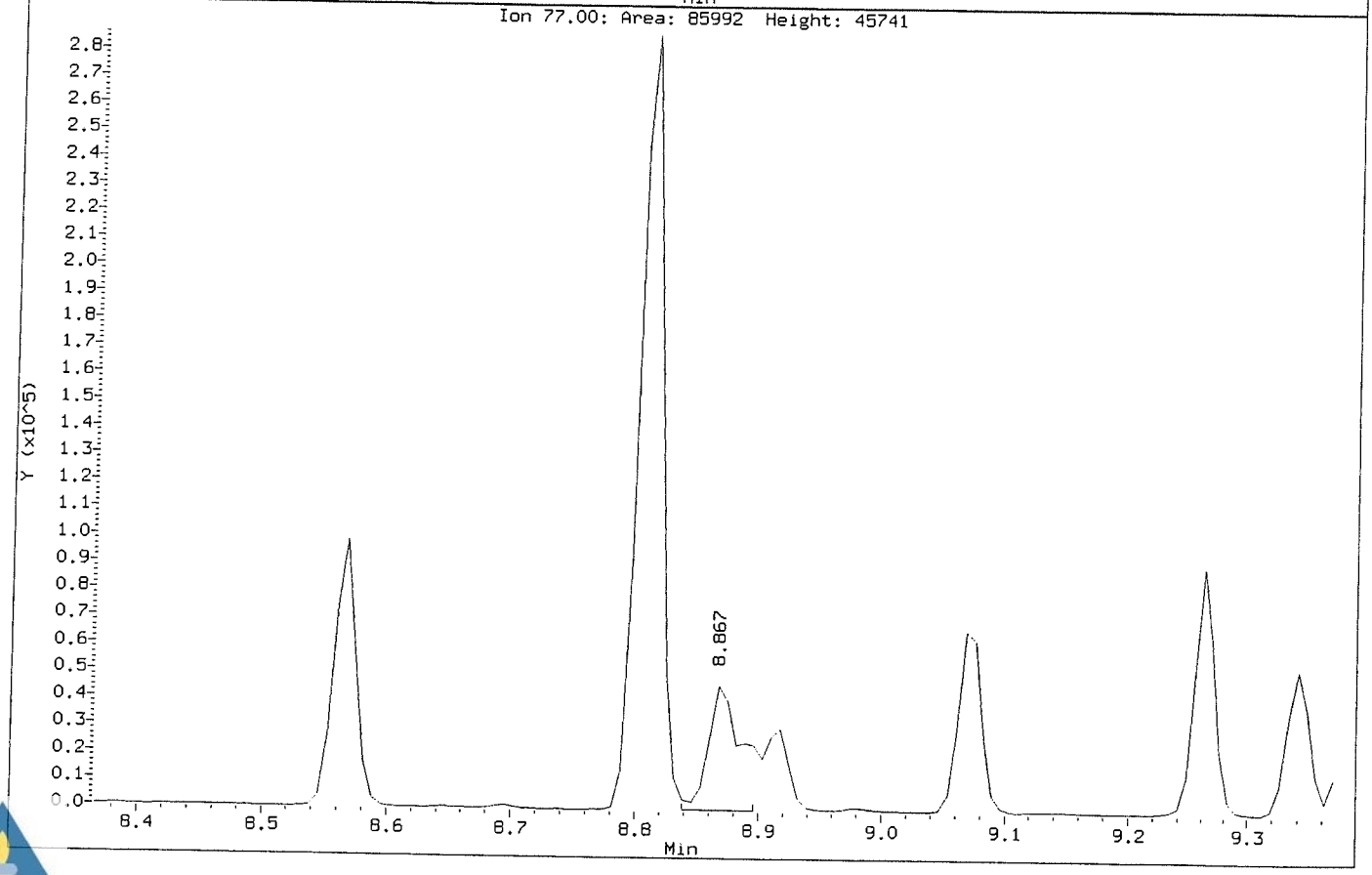
Date : 14-MAR-2019 16:20
Client ID: ICV
Sample Info: CCV;CCV;2;;ICV
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190314.b\Before\X031413.D
Injection Date: 14-MAR-2019 16:20
Instrument: voa6.i
Client Sample ID: CCV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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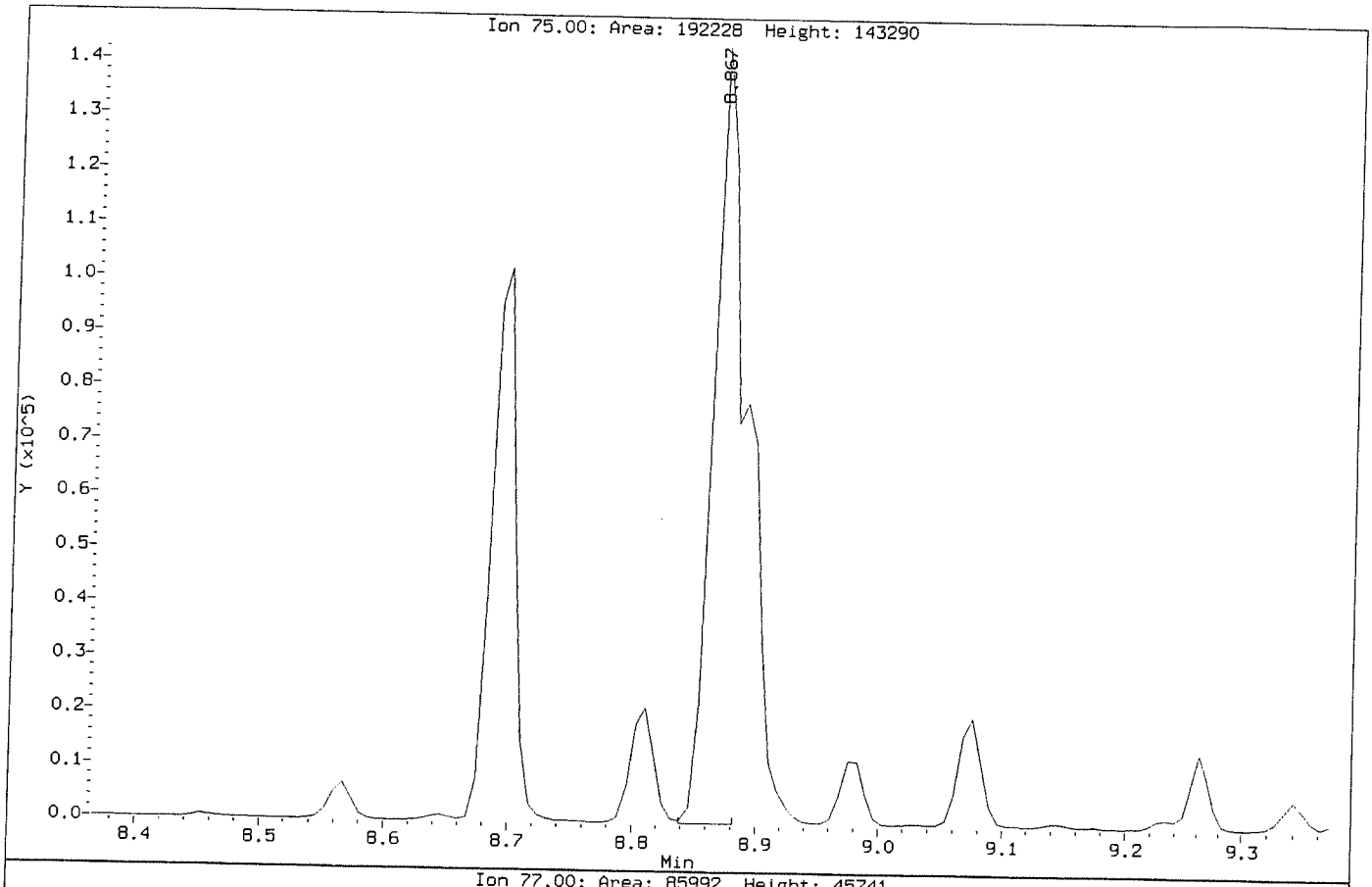
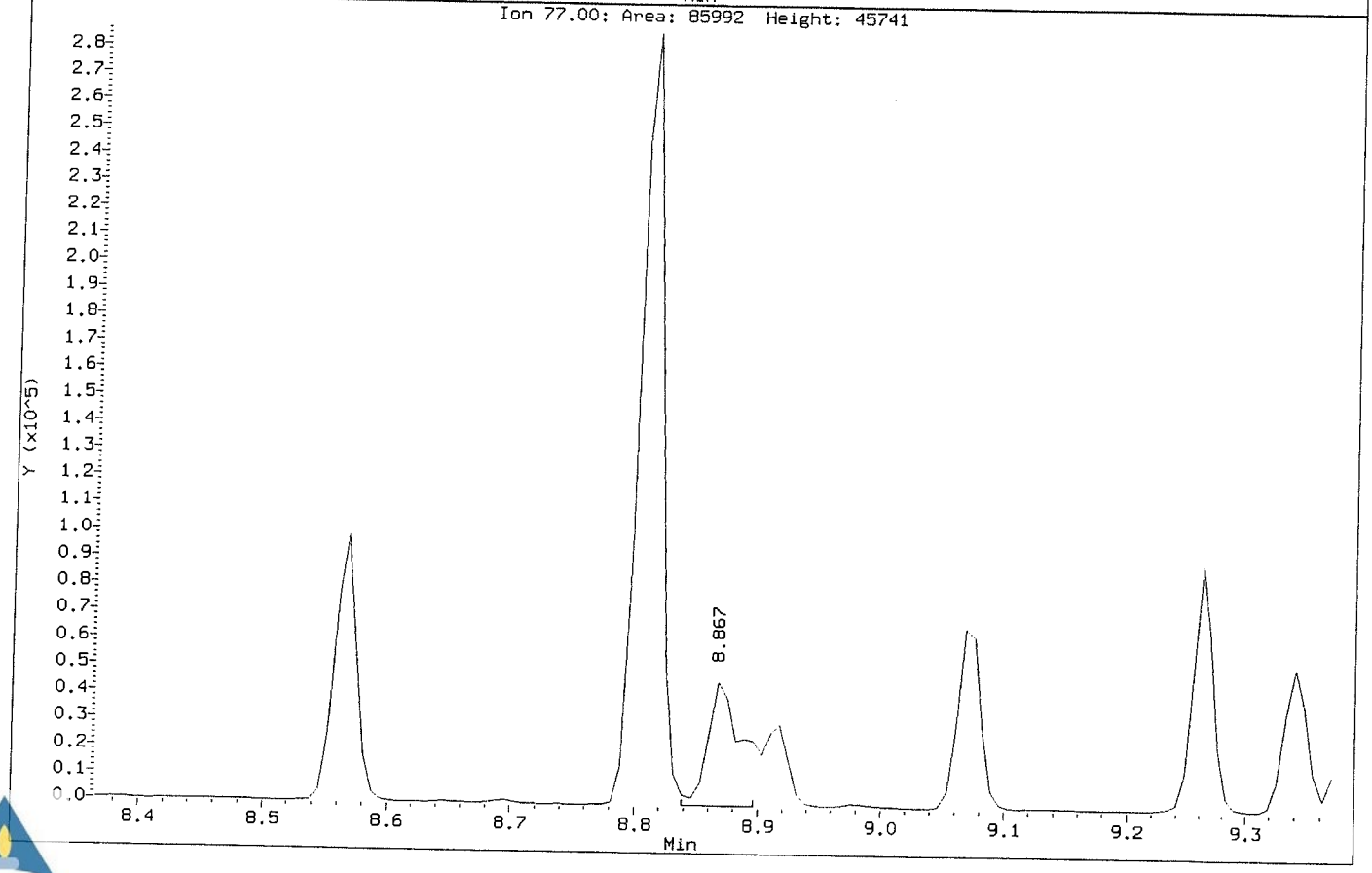
Client Sample ID: ICV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





MSVOA06 -Logbook

Batch: 34484
Date: 03-26-2019
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	p
1	BFB	TUNE	03-26-2019 12:38 pm	1.00	50 mL	50 mL	X032601.D	Liquid	Y	r
	Auto find/ purged									
2	CCV	CCV	03-26-2019 01:02 pm	1.00	50 mL	50 mL	X032602.D	Liquid	Y	r
	10 uL ical std/50 mL DI									
3	VLCSW-190326	LCS	03-26-2019 01:26 pm	1.00	50 mL	50 mL	X032603.D	Liquid	Y	r
	10 uL ical std/50 mL DI									
4	CCB	SAMP	03-26-2019 01:51 pm	1.00	50 mL	50 mL	X032604.D	Liquid	Y	r
5	BLANK	SAMP	03-26-2019 02:15 pm	1.00	50 mL	50 mL	X032605.D	Liquid	Y	r
6	BLANK	SAMP	03-26-2019 02:39 pm	1.00	50 mL	50 mL	X032606.D	Liquid	Y	r
7	VBLKW-190325	MBLK	03-26-2019 03:03 pm	1.00	50 mL	50 mL	X032607.D	Liquid	Y	r
8	HS19031013-08	SAMP	03-26-2019 03:27 pm	1.00	50 mL	50 mL	X032608.D	Liquid	Y	>
9	HS19031189-02	SAMP	03-26-2019 03:51 pm	1.00	50 mL	50 mL	X032609.D	Liquid	Y	>
10	HS19031013-01	SAMP	03-26-2019 04:15 pm	1.00	50 mL	50 mL	X032610.D	Liquid	Y	>
11	HS19031013-07	SAMP	03-26-2019 04:39 pm	1.00	50 mL	50 mL	X032611.D	Liquid	Y	>
12	HS19031013-07MS	MS	03-26-2019 05:03 pm	1.00	50 mL	50 mL	X032612.D	Liquid	Y	>
	3.5 uL ical std/40 mL samp									
13	HS19031013-07MSD	MSD	03-26-2019 05:27 pm	1.00	50 mL	50 mL	X032613.D	Liquid	Y	>
	3.5 uL ical std/40 mL samp									
14	HS19031013-07	SAMP	03-26-2019 05:54 pm	25.00	2 mL	50 mL	X032614.D	Liquid	Y	>
15	BLK	SAMP	03-26-2019 06:18 pm	1.00	50 mL	50 mL	X032615.D	Liquid	Y	r
	clean up blank									
16	HS19031013-02	SAMP	03-26-2019 06:42 pm	1.00	50 mL	50 mL	X032616.D	Liquid	Y	>
17	HS19031013-03	SAMP	03-26-2019 07:06 pm	1.00	50 mL	50 mL	X032617.D	Liquid	Y	>
18	HS19031013-04	SAMP	03-26-2019 07:30 pm	1.00	50 mL	50 mL	X032618.D	Liquid	Y	>
19	HS19031013-05	SAMP	03-26-2019 07:54 pm	1.00	50 mL	50 mL	X032619.D	Liquid	Y	>
20	HS19031013-06	SAMP	03-26-2019 08:18 pm	1.00	50 mL	50 mL	X032620.D	Liquid	Y	>
21	HS19031189-01	SAMP	03-26-2019 08:42 pm	1.00	50 mL	50 mL	X032621.D	Liquid	Y	>
22	HS19031242-20	SAMP	03-26-2019 09:09 pm	100.0(	500 µL	50 mL	X032622.D	Liquid	Y	>
23	HS19031242-21	SAMP	03-26-2019 09:35 pm	100.0(	500 µL	50 mL	X032623.D	Liquid	Y	>
24	HS19031242-22	SAMP	03-26-2019 10:02 pm	100.0(	500 µL	50 mL	X032624.D	Liquid	Y	>
25	HS19031242-23	SAMP	03-26-2019 10:28 pm	100.0(	500 µL	50 mL	X032625.D	Liquid	Y	>
26	HS19031242-24	SAMP	03-26-2019 10:55 pm	100.0(	500 µL	50 mL	X032626.D	Liquid	Y	>
27	HS19031242-25	SAMP	03-26-2019 11:21 pm	100.0(	500 µL	50 mL	X032627.D	Liquid	Y	>
28	HS19031289-01	SAMP	03-26-2019 11:48 pm	100.0(	500 µL	50 mL	X032628.D	Liquid	Y	>
29	CCV_END	CCV	03-27-2019 12:12 am	1.00	50 mL	50 mL	X032629.D	Liquid	Y	r
	10 uL ical std/50 mL DI									

MSVOA06 -Logbook

Chemical	Value
SURR SPK ID	30502-69-03
IS ID	30502-69-04
LCS/MS ID	30603-59-01
CAL STD ID	30502-69-01/02
BFB ID	30202-69-03
pH Paper	634-40-13

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

	CLIENT SAMPLE NO.	SMC1 (DCE) #	SMC2 #	SMC3 (TOL) #	OTHER #	TOT OUT
01	VLCSW-190326	90	92	106	99	0
02	VBLKW-190325	90	91	106	98	0
03	HS19031013-0	90	91	106	99	0
04	HS19031013-0	94	91	108	97	0
05	HS19031013-0	96	92	101	102	0
06	HS19031013-0	94	92	109	95	0
07	HS19031013-0	94	93	102	101	0
08	HS19031013-0	91	91	104	100	0
09	HS19031013-0	90	91	106	97	0
10	HS19031013-0	92	92	107	98	0
11	HS19031013-0	93	92	104	101	0
12	HS19031013-0	94	92	107	98	0
13	HS19031013-0	93	91	101	100	0
14						
15						
16						
17						
18						
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25						
26						
27						
28						

		QC LIMITS
SMC1 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
SMC2	= Dibromofluoromethane	(0-130)
SMC3 (TOL)	= Toluene-d8	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-190325

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Lab File ID: X032607 Lab Sample ID: VBLKW-190325

Date Analyzed: 03/26/19 Time Analyzed: 1503

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-190326	VLCSW-190326	X032603	1326
02	HS19031013-0	HS19031013-08	X032608	1527
03	HS19031013-0	HS19031013-01	X032610	1615
04	HS19031013-0	HS19031013-07	X032611	1639
05	HS19031013-0	HS19031013-07M	X032612	1703
06	HS19031013-0	HS19031013-07M	X032613	1727
07	HS19031013-0	HS19031013-07D	X032614	1754
08	HS19031013-0	HS19031013-02	X032616	1842
09	HS19031013-0	HS19031013-03	X032617	1906
10	HS19031013-0	HS19031013-04	X032618	1930
11	HS19031013-0	HS19031013-05	X032619	1954
12	HS19031013-0	HS19031013-06	X032620	2018
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Lab File ID: X032601 BFB Injection Date: 03/26/19

Instrument ID: VOA6 BFB Injection Time: 1238

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.1
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	86.2
175	5.0 - 9.0% of mass 174	6.3 (7.4)1
176	95.0 - 101.0% of mass 174	82.9 (96.2)1
177	5.0 - 9.0% of mass 176	5.7 (6.8)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	X032602	03/26/19	1302
02	VLCSW-190326	VLCSW-190326	X032603	03/26/19	1326
03	VBLKW-190325	VBLKW-190325	X032607	03/26/19	1503
04	HS19031013-0	HS19031013-08	X032608	03/26/19	1527
05	HS19031013-0	HS19031013-01	X032610	03/26/19	1615
06	HS19031013-0	HS19031013-07	X032611	03/26/19	1639
07	HS19031013-0	HS19031013-07M	X032612	03/26/19	1703
08	HS19031013-0	HS19031013-07M	X032613	03/26/19	1727
09	HS19031013-0	HS19031013-07D	X032614	03/26/19	1754
10	HS19031013-0	HS19031013-02	X032616	03/26/19	1842
11	HS19031013-0	HS19031013-03	X032617	03/26/19	1906
12	HS19031013-0	HS19031013-04	X032618	03/26/19	1930
13	HS19031013-0	HS19031013-05	X032619	03/26/19	1954
14	HS19031013-0	HS19031013-06	X032620	03/26/19	2018
15	CCV_END	CCV_END	X032629	03/27/19	0012
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Instrument ID: VOA6 Calibration Date: 03/26/19 Time: 1302

Lab File ID: X032602 Init. Calib. Date(s): 03/14/19 03/14/19

Init. Calib. Times: 1133 1532

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
cis-1,3-Dichloropropene	0.5630000	0.6041412	0.6041412	0.2	-7.31	20.00	AVRG
trans-1,3-Dichloropropene	0.4530000	0.5288441	0.5288441	0.1	-16.74	20.00	AVRG
1,3-Dichlorobenzene	1.5120000	1.6505748	1.6505748	0.6	-9.16	20.00	AVRG
2,2-Dichloropropane	0.7070000	0.6960929	0.6960929	0.1	1.54	20.00	AVRG
1,1-Dichloropropene	0.4490000	0.4198729	0.4198729	0.1	6.49	20.00	AVRG
Dibromomethane	0.2100000	0.2321560	0.2321560	0.1	-10.55	20.00	AVRG
1,2-Dibromoethane	0.3290000	0.3813137	0.3813137	0.1	-15.90	20.00	AVRG
trans-1,2-Dichloroethene	0.4720000	0.4543996	0.4543996	0.1	3.73	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3370000	0.3894072	0.3894072	0.1	-15.55	20.00	AVRG
1,1,1-Trichloroethane	0.7280000	0.6955094	0.6955094	0.1	4.46	20.00	AVRG
1,1,2,2-Tetrachloroethane	0.8060000	0.8662057	0.8662057	0.3	-7.47	20.00	AVRG
1,1,2-Trichloroethane	0.2740000	0.3047168	0.3047168	0.1	-11.21	20.00	AVRG
1,1-Dichloroethane	0.9180000	0.8859342	0.8859342	0.2	3.49	20.00	AVRG
1,1-Dichloroethene	0.4240000	0.3925128	0.3925128	0.1	7.43	20.00	AVRG
Trichloroethene	0.3520000	0.3532310	0.3532310	0.2	-0.35	20.00	AVRG
1,2,3-Trichlorobenzene	0.3540000	0.3977511	0.3977511	0.1	-12.36	20.00	AVRG
Trichlorofluoromethane	47.020633	50.000000	0.6945235	0.1	5.96	20.00	2RDR
1,2,4-Trichlorobenzene	0.6260000	0.7115944	0.7115944	0.2	-13.67	20.00	AVRG
1,2,4-Trimethylbenzene	2.3920000	2.7875516	2.7875516	0.1	-16.54	20.00	AVRG
Tetrachloroethene	0.3000000	0.3244633	0.3244633	0.2	-8.15	20.00	AVRG
1,2-Dichlorobenzene	1.4260000	1.5489750	1.5489750	0.4	-8.62	20.00	AVRG
1,2-Dichloroethane	0.4220000	0.4400786	0.4400786	0.1	-4.28	20.00	AVRG
1,2-Dichloropropane	0.3510000	0.3624363	0.3624363	0.1	-3.26	20.00	AVRG
1,3,5-Trimethylbenzene	2.3660000	2.6574826	2.6574826	0.1	-12.32	20.00	AVRG
1,3-Dichloropropane	0.5580000	0.6241237	0.6241237	0.1	-11.85	20.00	AVRG
1,4-Dichlorobenzene	1.5400000	1.6699066	1.6699066	0.4	-8.44	20.00	AVRG
Toluene	1.4620000	1.6137098	1.6137098	0.4	-10.38	20.00	AVRG
2-Butanone	0.1710000	0.1819476	0.1819476	0.1	-6.40	20.00	AVRG
2-Chlorotoluene	2.1340000	2.2545570	2.2545570	0.1	-5.65	20.00	AVRG
2-Hexanone	0.1970000	0.2246881	0.2246881	0.1	-14.05	20.00	AVRG
4-Chlorotoluene	2.4340000	2.6356444	2.6356444	0.1	-8.28	20.00	AVRG
tert-Butylbenzene	2.0560000	2.1842526	2.1842526	0.1	-6.24	20.00	AVRG
4-Methyl-2-Pentanone	0.3030000	0.3357699	0.3357699	0.1	-10.82	20.00	AVRG
Acetone	99.512108	100.00000	0.1246288	0.1	0.49	20.00	LINR
Benzene	1.2790000	1.3558231	1.3558231	0.5	-6.01	20.00	AVRG
Bromobenzene	0.8560000	0.9777735	0.9777735	0.1	-14.22	20.00	AVRG
Bromochloromethane	0.2790000	0.2813575	0.2813575	0.1	-0.84	20.00	AVRG
Bromodichloromethane	0.4270000	0.4800225	0.4800225	0.2	-12.42	20.00	AVRG
Bromoform	59.369781	50.000000	0.2970932	0.1	-18.74	20.00	LINR
Bromomethane	50.487590	50.000000	0.3423055	0.1	-0.98	20.00	LINR
Carbon Disulfide	1.4580000	1.3170572	1.3170572	0.1	9.67	20.00	AVRG
Carbon Tetrachloride	51.639874	50.000000	0.4010494	0.1	-3.28	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date: 03/26/19 Time: 1302

Lab File ID: X032602 Init. Calib. Date(s): 03/14/19 03/14/19

Init. Calib. Times: 1133 1532

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
Chlorobenzene	0.9740000	1.0430237	1.0430237	0.5	-7.09	20.00	AVRG
Chloroethane	0.3620000	0.3330588	0.3330588	0.1	7.99	20.00	AVRG
Chloroform	0.8870000	0.8839273	0.8839273	0.2	0.35	20.00	AVRG
Chloromethane	51.040100	50.000000	0.7105087	0.1	-2.08	20.00	LINR
cis-1,2-Dichloroethene	0.5570000	0.5464851	0.5464851	0.1	1.89	20.00	AVRG
Dibromochloromethane	0.3560000	0.4124775	0.4124775	0.1	-15.86	20.00	AVRG
Dichlorodifluoromethane	54.047172	50.000000	0.5517155	0.1	-8.09	20.00	LINR
Ethylbenzene	0.4840000	0.5406670	0.5406670	0.1	-11.71	20.00	AVRG
Hexachlorobutadiene	56.828100	50.000000	0.4119479	0.1	-13.66	20.00	2RDR
Isopropylbenzene	1.4440000	1.5800005	1.5800005	0.1	-9.42	20.00	AVRG
m,p-Xylenes	0.6000000	0.6600727	0.6600727	0.1	-10.01	20.00	AVRG
Methylene Chloride	50.678571	50.000000	0.5276741	0.1	-1.36	20.00	LINR
n-Butylbenzene	2.1320000	2.4328116	2.4328116	0.5	-14.11	20.00	AVRG
n-Propylbenzene	3.4790000	3.7532426	3.7532426	0.1	-7.88	20.00	AVRG
Naphthalene	0.9430000	1.0912327	1.0912327	0.2	-15.72	20.00	AVRG
o-Xylene	0.6000000	0.6519184	0.6519184	0.3	-8.65	20.00	AVRG
sec-Butylbenzene	2.8980000	3.0830340	3.0830340	0.1	-6.38	20.00	AVRG
Styrene	0.9940000	1.1630163	1.1630163	0.3	-17.00	20.00	AVRG
Vinyl Chloride	0.6450000	0.5980523	0.5980523	0.1	7.28	20.00	AVRG
1,2,3-Trichloropropane	0.6230000	0.7171106	0.7171106	0.1	-15.11	20.00	AVRG
p-Isopropyltoluene	2.4730000	2.7502113	2.7502113	0.1	-11.21	20.00	AVRG
1,2-Dibromo-3-Chloropropane	9.8e-002	0.1141964	0.1141964	0.05	-16.53	20.00	AVRG
1,2-Dichloroethane-d4	44.573396	50.000000	0.4869982	0.1	10.85	20.00	LINR
Dibromofluoromethane	46.243094	50.000000	0.4522679	0.1	7.51	20.00	LINR
Toluene-d8	52.666476	50.000000	1.3070154	0.1	-5.33	20.00	LINR
4-Bromofluorobenzene	49.706454	50.000000	0.4539700	0.1	0.59	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Instrument ID: VOA6 Calibration Date: 03/27/19 Time: 0012

Lab File ID: X032629 Init. Calib. Date(s): 03/14/19 03/14/19

Init. Calib. Times: 1133 1532

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	
cis-1,3-Dichloropropene	0.5630000	0.5920002	0.5920002	0.2	-5.15	50.00	AVRG	
trans-1,3-Dichloropropene	0.4530000	0.5209555	0.5209555	0.1	-15.00	50.00	AVRG	
1,3-Dichlorobenzene	1.5120000	1.7003546	1.7003546	0.6	-12.46	50.00	AVRG	
2,2-Dichloropropane	0.7070000	0.6430504	0.6430504	0.1	9.04	50.00	AVRG	
1,1-Dichloropropene	0.4490000	0.4405170	0.4405170	0.1	1.89	50.00	AVRG	
Dibromomethane	0.2100000	0.2363941	0.2363941	0.1	-12.57	50.00	AVRG	
1,2-Dibromoethane	0.3290000	0.3835050	0.3835050	0.1	-16.57	50.00	AVRG	
trans-1,2-Dichloroethene	0.4720000	0.4633437	0.4633437	0.1	1.83	50.00	AVRG	
1,1,1,2-Tetrachloroethane	0.3370000	0.3998511	0.3998511	0.1	-18.65	50.00	AVRG	
1,1,1-Trichloroethane	0.7280000	0.7182957	0.7182957	0.1	1.33	50.00	AVRG	
1,1,2,2-Tetrachloroethane	0.8060000	0.8756105	0.8756105	0.3	-8.64	50.00	AVRG	
1,1,2-Trichloroethane	0.2740000	0.3098466	0.3098466	0.1	-13.08	50.00	AVRG	
1,1-Dichloroethane	0.9180000	0.9069761	0.9069761	0.2	1.20	50.00	AVRG	
1,1-Dichloroethene	0.4240000	0.4081982	0.4081982	0.1	3.73	50.00	AVRG	
Trichloroethene	0.3520000	0.3621335	0.3621335	0.2	-2.88	50.00	AVRG	
1,2,3-Trichlorobenzene	0.3540000	0.3275282	0.3275282	0.1	7.48	50.00	AVRG	
Trichlorofluoromethane	47.636559	50.000000	0.7038928	0.1	4.73	50.00	2RDR	
1,2,4-Trichlorobenzene	0.6260000	0.6268201	0.6268201	0.2	-0.13	50.00	AVRG	
1,2,4-Trimethylbenzene	2.3920000	3.2158601	3.2158601	0.1	-34.44	50.00	AVRG	
Tetrachloroethene	0.3000000	0.3304621	0.3304621	0.2	-10.15	50.00	AVRG	
1,2-Dichlorobenzene	1.4260000	1.5851213	1.5851213	0.4	-11.16	50.00	AVRG	
1,2-Dichloroethane	0.4220000	0.4721514	0.4721514	0.1	-11.88	50.00	AVRG	
1,2-Dichloropropane	0.3510000	0.3727243	0.3727243	0.1	-6.19	50.00	AVRG	
1,3,5-Trimethylbenzene	2.3660000	2.8326954	2.8326954	0.1	-19.72	50.00	AVRG	
1,3-Dichloropropane	0.5580000	0.6343810	0.6343810	0.1	-13.69	50.00	AVRG	
1,4-Dichlorobenzene	1.5400000	1.6916925	1.6916925	0.4	-9.85	50.00	AVRG	
Toluene	1.4620000	2.5523958	2.5523958	0.4	-74.58	50.00	AVRG	<-
2-Butanone	0.1710000	0.1744802	0.1744802	0.1	-2.04	50.00	AVRG	
2-Chlorotoluene	2.1340000	2.3817583	2.3817583	0.1	-11.61	50.00	AVRG	
2-Hexanone	0.1970000	0.2264798	0.2264798	0.1	-14.96	50.00	AVRG	
4-Chlorotoluene	2.4340000	2.7273671	2.7273671	0.1	-12.05	50.00	AVRG	
tert-Butylbenzene	2.0560000	2.2491363	2.2491363	0.1	-9.39	50.00	AVRG	
4-Methyl-2-Pentanone	0.3030000	0.3490647	0.3490647	0.1	-15.20	50.00	AVRG	
Acetone	97.879399	100.00000	0.1226754	0.1	2.12	50.00	LINR	
Benzene	1.2790000	5.0864887	5.0864887	0.5	-297.69	50.00	AVRG	<-
Bromobenzene	0.8560000	1.0254161	1.0254161	0.1	-19.79	50.00	AVRG	
Bromochloromethane	0.2790000	0.2932647	0.2932647	0.1	-5.11	50.00	AVRG	
Bromodichloromethane	0.4270000	0.4819026	0.4819026	0.2	-12.86	50.00	AVRG	
Bromoform	58.047443	50.000000	0.2903698	0.1	-16.09	50.00	LINR	
Bromomethane	71.089113	50.000000	0.4825870	0.1	-42.18	50.00	LINR	
Carbon Disulfide	1.4580000	1.3489785	1.3489785	0.1	7.48	50.00	AVRG	
Carbon Tetrachloride	53.309550	50.000000	0.4144806	0.1	-6.62	50.00	LINR	

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS1903101

Instrument ID: VOA6 Calibration Date: 03/27/19 Time: 0012

Lab File ID: X032629 Init. Calib. Date(s): 03/14/19 03/14/19

Init. Calib. Times: 1133 1532

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
Chlorobenzene	0.9740000	1.0769055	1.0769055	0.5	-10.56	50.00	AVRG
Chloroethane	0.3620000	0.2212552	0.2212552	0.1	38.88	50.00	AVRG
Chloroform	0.8870000	0.9092491	0.9092491	0.2	-2.51	50.00	AVRG
Chloromethane	50.339793	50.000000	0.7010286	0.1	-0.68	50.00	LINR
cis-1,2-Dichloroethene	0.5570000	0.5633411	0.5633411	0.1	-1.14	50.00	AVRG
Dibromochloromethane	0.3560000	0.4184406	0.4184406	0.1	-17.54	50.00	AVRG
Dichlorodifluoromethane	53.779411	50.000000	0.5488851	0.1	-7.56	50.00	LINR
Ethylbenzene	0.4840000	0.6032947	0.6032947	0.1	-24.65	50.00	AVRG
Hexachlorobutadiene	50.377013	50.000000	0.3632293	0.1	-0.75	50.00	2RDR
Isopropylbenzene	1.4440000	1.6325015	1.6325015	0.1	-13.05	50.00	AVRG
m,p-Xylenes	0.6000000	0.8032671	0.8032671	0.1	-33.88	50.00	AVRG
Methylene Chloride	52.382021	50.000000	0.5453984	0.1	-4.76	50.00	LINR
n-Butylbenzene	2.1320000	2.3928985	2.3928985	0.5	-12.24	50.00	AVRG
n-Propylbenzene	3.4790000	3.9243104	3.9243104	0.1	-12.80	50.00	AVRG
Naphthalene	0.9430000	1.0848077	1.0848077	0.2	-15.04	50.00	AVRG
o-Xylene	0.6000000	0.7774397	0.7774397	0.3	-29.57	50.00	AVRG
sec-Butylbenzene	2.8980000	3.1324586	3.1324586	0.1	-8.09	50.00	AVRG
Styrene	0.9940000	1.3233883	1.3233883	0.3	-33.14	50.00	AVRG
Vinyl Chloride	0.6450000	0.6070226	0.6070226	0.1	5.89	50.00	AVRG
1,2,3-Trichloropropane	0.6230000	0.7266449	0.7266449	0.1	-16.64	50.00	AVRG
p-Isopropyltoluene	2.4730000	2.7586858	2.7586858	0.1	-11.55	50.00	AVRG
1,2-Dibromo-3-Chloropropane	9.8e-002	0.1075975	0.1075975	0.05	-9.79	50.00	AVRG
1,2-Dichloroethane-d4	44.850385	50.000000	0.4900092	0.1	10.30	50.00	LINR
Dibromofluoromethane	46.853063	50.000000	0.4582234	0.1	6.29	50.00	LINR
Toluene-d8	52.746250	50.000000	1.3089875	0.1	-5.49	50.00	LINR
4-Bromofluorobenzene	48.960565	50.000000	0.4472065	0.1	2.08	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Lab File ID (Standard): X032602 Date Analyzed: 03/26/19

Instrument ID: VOA6 Time Analyzed: 1302

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(CBZ) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(DCB) AREA #	RT #
	12 HOUR STD	551184	7.67	619971	4.97	278091	9.67
	UPPER LIMIT	1102368	8.17	1239942	5.47	556182	10.17
	LOWER LIMIT	275592	7.17	309986	4.47	139046	9.17
	CLIENT SAMPLE NO.						
01	VLCSW-190326	539815	7.67	610344	4.97	267257	9.67
02	VBLKW-190325	578209	7.67	652798	4.97	292434	9.67
03	HS19031013-0	578987	7.67	659945	4.97	293417	9.67
04	HS19031013-0	564464	7.67	652966	4.97	277977	9.67
05	HS19031013-0	616395	7.67	660508	4.97	328254	9.67
06	HS19031013-0	538651	7.67	631108	4.97	253964	9.67
07	HS19031013-0	603457	7.67	647862	4.97	312908	9.67
08	HS19031013-0	575738	7.67	644234	4.97	292307	9.67
09	HS19031013-0	583602	7.67	660833	4.97	298071	9.67
10	HS19031013-0	582207	7.67	662497	4.97	298939	9.67
11	HS19031013-0	601827	7.67	661119	4.97	313253	9.66
12	HS19031013-0	560050	7.67	641824	4.97	281586	9.67
13	HS19031013-0	626015	7.67	673306	4.97	322660	9.67
14							
15							
16							
17							
18							
19							
20							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (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

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ALS LABORATORY GROUP Contract:

Lab Code: ALS-HS Case No.: SAS No.: SDG No.: HS19031013

Lab File ID (Standard): X032602 Date Analyzed: 03/26/19

Instrument ID: VOA6 Time Analyzed: 1302

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	425018	4.19				
	UPPER LIMIT	850036	4.69				
	LOWER LIMIT	212509	3.69				
	CLIENT SAMPLE NO.						
01	VLCSW-190326	419667	4.19				
02	VBLKW-190325	452532	4.18				
03	HS19031013-0	453999	4.19				
04	HS19031013-0	453595	4.19				
05	HS19031013-0	444081	4.19				
06	HS19031013-0	433309	4.19				
07	HS19031013-0	438907	4.18				
08	HS19031013-0	439715	4.19				
09	HS19031013-0	461743	4.19				
10	HS19031013-0	456136	4.19				
11	HS19031013-0	452653	4.19				
12	HS19031013-0	443609	4.19				
13	HS19031013-0	464782	4.19				
14							
15							
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032601.D

Date : 26-MAR-2019 12:38

Client ID: BFB

Instrument: voa6.i

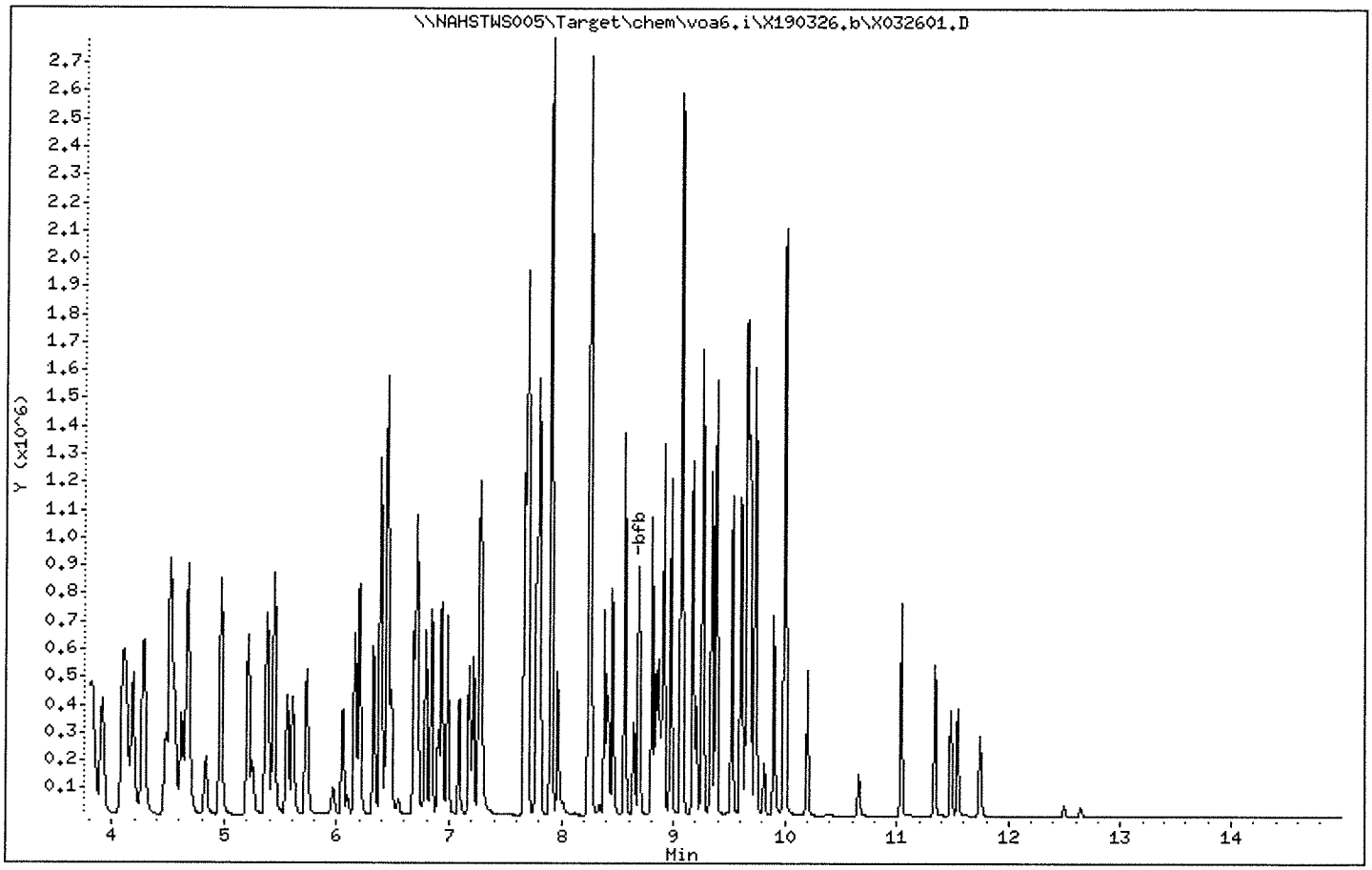
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032601.D

Date : 26-MAR-2019 12:38

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

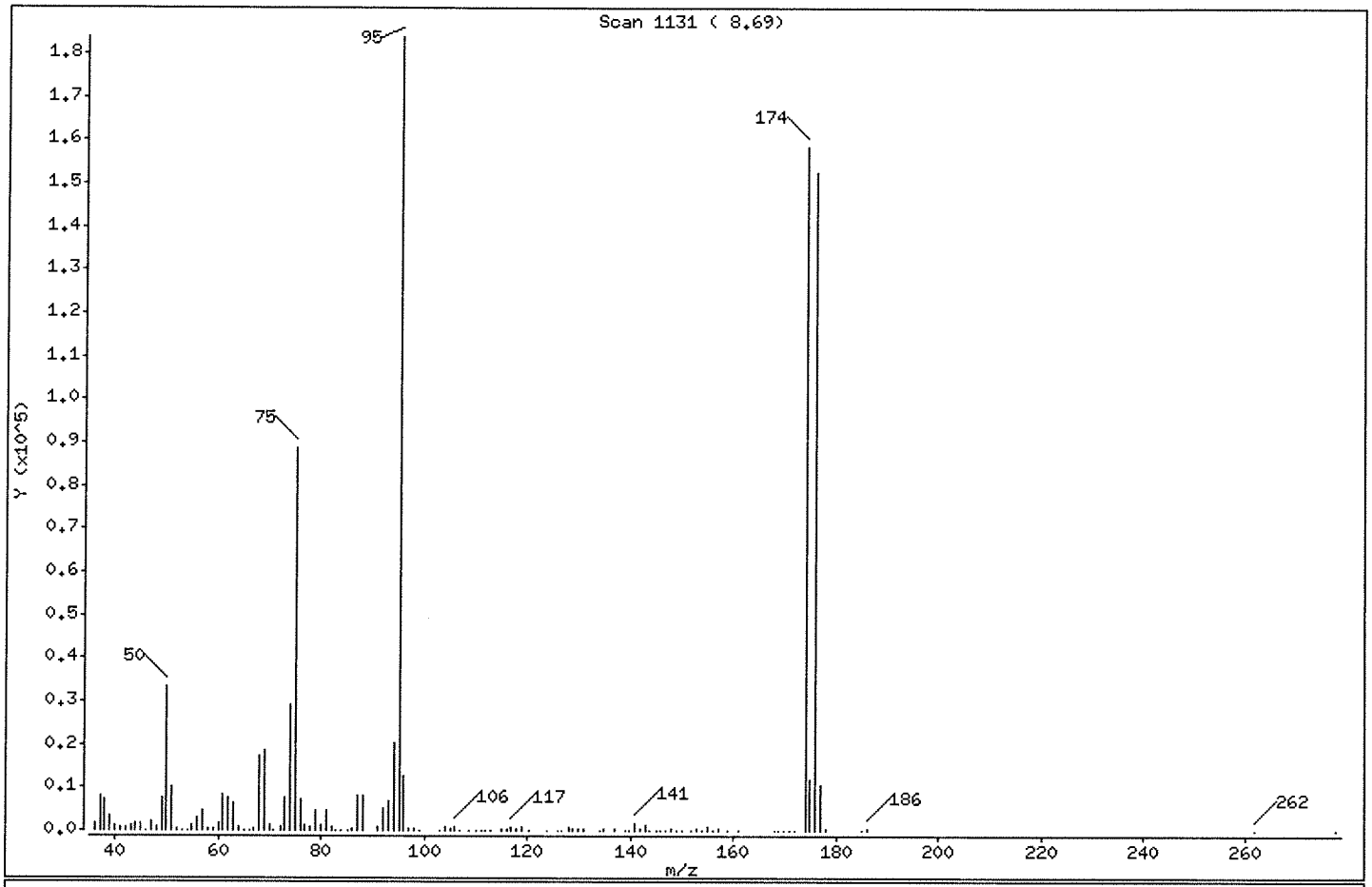
Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

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	18.08
75	30.00 - 60.00% of mass 95	48.35
96	5.00 - 9.00% of mass 95	6.90
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	86.17
175	5.00 - 9.00% of mass 174	6.34 (7.36)
176	95.00 - 101.00% of mass 174	82.93 (96.24)
177	5.00 - 9.00% of mass 176	5.67 (6.83)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032601.D

Date : 26-MAR-2019 12:38

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X032601.D
Spectrum: Scan 1131 (8.69)
Location of Maximum: 95.00
Number of points: 123

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1696	66.90	496	103.00	115	142.90	1475
37.00	8186	68.00	17384	103.90	734	143.80	158
38.00	7198	69.00	18688	105.00	302	144.90	193
39.00	3173	70.00	1468	105.90	763	145.90	204
40.00	1069	70.90	188	106.90	187	146.80	126
41.10	761	72.00	946	108.70	79	147.80	405
42.00	680	73.00	7575	110.10	99	148.90	135
43.00	1081	74.00	29192	110.90	122	149.90	94
44.00	1556	75.00	88840	111.80	64	151.90	121
45.00	1820	76.00	7005	112.70	99	152.90	225
46.10	162	76.90	1273	113.00	108	153.80	204
47.00	2140	77.90	833	114.90	253	154.90	644
48.00	916	78.90	4542	115.90	595	155.90	50
49.00	7505	80.00	1366	116.80	937	157.00	332
50.00	33224	80.90	4796	117.90	566	158.90	175
51.00	10153	82.00	1005	118.90	870	160.90	141
52.00	389	82.90	172	120.10	86	167.90	56
53.20	165	84.00	166	123.70	114	168.80	71
54.00	59	85.10	110	126.00	57	169.90	138
54.90	1349	86.00	237	126.80	196	170.80	98
56.00	2805	86.90	8034	127.90	680	172.00	86
57.00	4799	87.90	7971	128.90	475	173.90	158336
58.10	281	90.90	645	129.90	610	174.90	11651
59.00	528	92.00	4935	131.00	304	175.90	152384
60.00	1541	93.00	6784	134.00	54	176.90	10412
61.00	8326	94.00	20336	134.70	237	177.90	403
62.00	7772	95.00	183744	136.80	221	185.00	83
63.00	6210	96.00	12670	139.00	93	186.00	443
64.00	661	97.00	334	139.80	120	261.90	55
65.00	167	98.00	428	140.90	1643	277.80	52
66.10	116	99.00	79	141.80	335		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032602.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032602.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 26-MAR-2019 13:02
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	425018	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	619971	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	551184	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	278091	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.979)	192222	50.0000	46.24
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	206983	50.0000	44.57
$	48 Toluene-d8	98	6.388	6.388	(0.833)	720406	50.0000	52.66
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	250221	50.0000	49.70
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	214635	50.0000	57.70
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	295604	50.0000	47.72
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	240884	50.0000	53.70
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	167955	50.0000	55.57
	22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	376538	50.0000	48.24
	11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	166825	50.0000	46.28
	32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	260309	50.0000	46.70
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	110611	50.0000	56.19
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	199422	50.0000	57.53(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	197888	50.0000	56.85
	79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	775193	50.0000	58.27
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	31757	50.0000	58.21
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	210174	50.0000	57.88
	88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	430756	50.0000	54.32

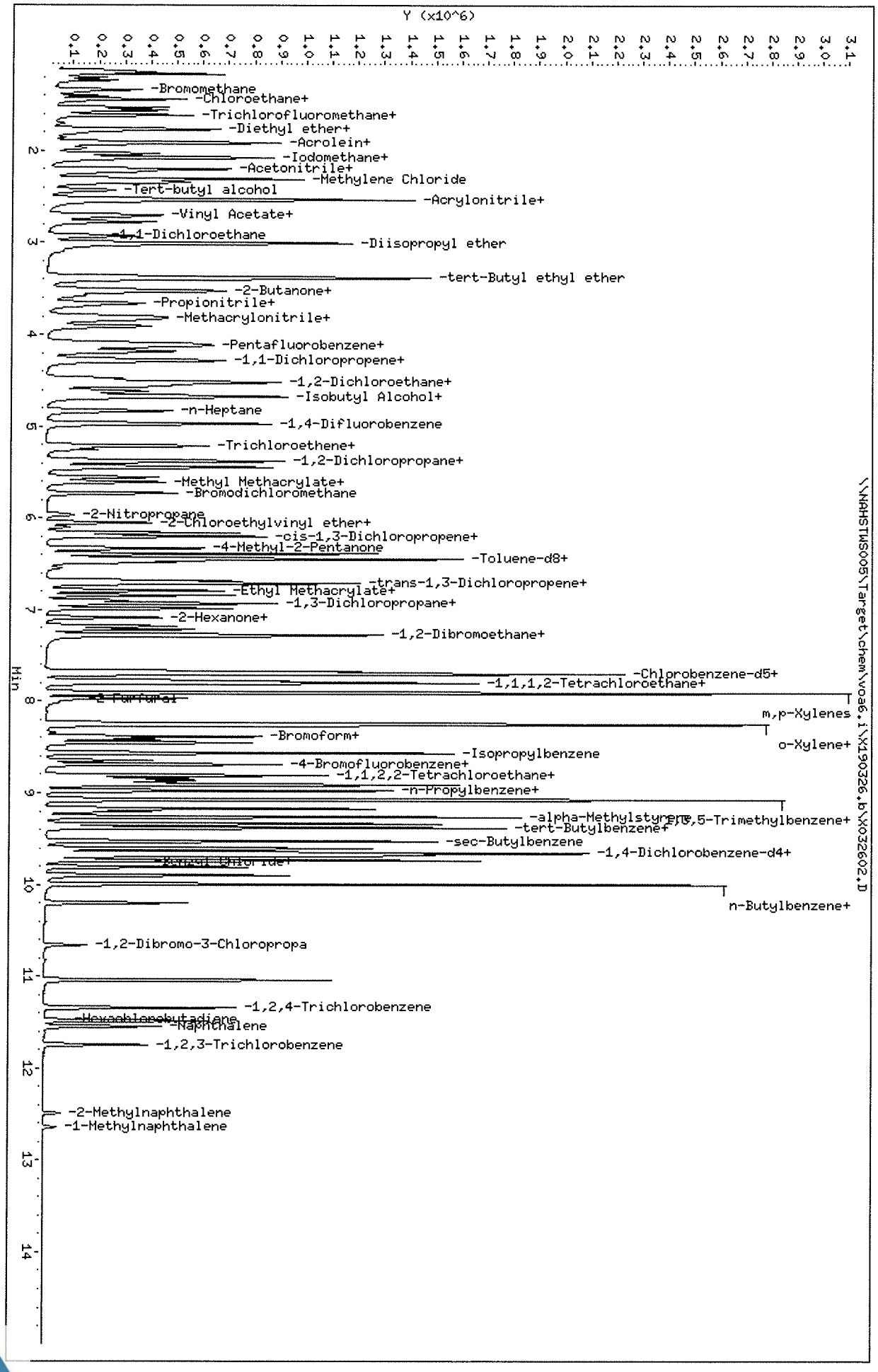
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032602.D
Report Date: 29-Mar-2019 20:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	272836	50.0000	52.14
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	224700	50.0000	51.58
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	739022	50.0000	56.15
83	1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	459010	50.0000	54.57
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	344007	50.0000	55.91
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	464386	50.0000	54.20
26	2,2-Dichloropropane	77	3.516	3.516	(0.839)	295852	50.0000	49.24
24	2-Butanone	43	3.580	3.580	(0.855)	154662	100.000	106.23
76	2-Chlorotoluene	91	8.974	8.974	(0.928)	626972	50.0000	52.81
52	2-Hexanone	43	7.090	7.090	(0.924)	247689	100.000	113.98
77	4-Chlorotoluene	91	9.075	9.075	(0.939)	732949	50.0000	54.14
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	764809	50.0000	55.60
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	370142	100.000	110.65
10	Acetone	43	1.976	1.976	(0.472)	105939	100.000	99.51
37	Benzene	78	4.519	4.519	(0.909)	840571	50.0000	53.01
74	Bromobenzene	156	8.809	8.809	(0.911)	271910	50.0000	57.13
29	Bromochloromethane	128	3.803	3.803	(0.908)	119582	50.0000	50.34
39	Bromodichloromethane	83	5.729	5.729	(1.153)	297600	50.0000	56.26
66	Bromoform	173	8.416	8.416	(1.097)	163753	50.0000	59.36
6	Bromomethane	94	1.338	1.338	(0.320)	145486	50.0000	50.48
19	Carbon Disulfide	76	2.069	2.069	(0.494)	1119546	100.000	90.29
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	248639	50.0000	51.63
59	Chlorobenzene	112	7.699	7.699	(1.004)	574898	50.0000	53.52
7	Chloroethane	64	1.403	1.403	(0.335)	141556	50.0000	45.97
28	Chloroform	83	3.910	3.910	(0.933)	375685	50.0000	49.83
3	Chloromethane	50	1.081	1.081	(0.258)	301979	50.0000	51.04
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	232266	50.0000	49.03
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	374550	50.0000	53.67
55	Dibromochloromethane	129	7.176	7.176	(0.936)	227351	50.0000	58.01
44	Dibromomethane	93	5.557	5.557	(1.118)	143930	50.0000	55.17
2	Dichlorodifluoromethane	85	0.973	0.973	(0.232)	234489	50.0000	54.04
61	Ethylbenzene	106	7.799	7.799	(1.017)	298007	50.0000	55.88
91	Hexachlorobutadiene	225	11.488	11.488	(1.188)	114559	50.0000	56.82
67	Isopropylbenzene	105	8.566	8.566	(1.117)	870871	50.0000	54.72
62	m,p-Xylenes	106	7.907	7.907	(1.031)	727643	100.000	110.08
17	Methylene Chloride	84	2.305	2.305	(0.550)	224271	50.0000	50.67
87	n-Butylbenzene	91	9.999	9.999	(1.034)	676543	50.0000	57.03
73	n-Propylbenzene	91	8.917	8.917	(0.922)	1043743	50.0000	53.94
92	Naphthalene	128	11.546	11.546	(1.194)	303462	50.0000	57.86
63	o-Xylene	106	8.244	8.244	(1.075)	359327	50.0000	54.33
81	sec-Butylbenzene	105	9.526	9.526	(0.985)	857364	50.0000	53.19
64	Styrene	104	8.258	8.258	(1.077)	641036	50.0000	58.47
78	tert-Butylbenzene	119	9.340	9.340	(0.966)	607421	50.0000	53.12
56	Tetrachloroethene	164	6.933	6.933	(0.904)	178839	50.0000	53.99
50	Toluene	91	6.446	6.446	(0.840)	889451	50.0000	55.18
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	193128	50.0000	48.14
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	327868	50.0000	58.29
38	Trichloroethene	130	5.214	5.214	(1.049)	218993	50.0000	50.19
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	295185	50.0000	47.02
5	Vinyl Chloride	62	1.145	1.145	(0.273)	254183	50.0000	46.33

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032602.D
Report Date: 29-Mar-2019 20:42

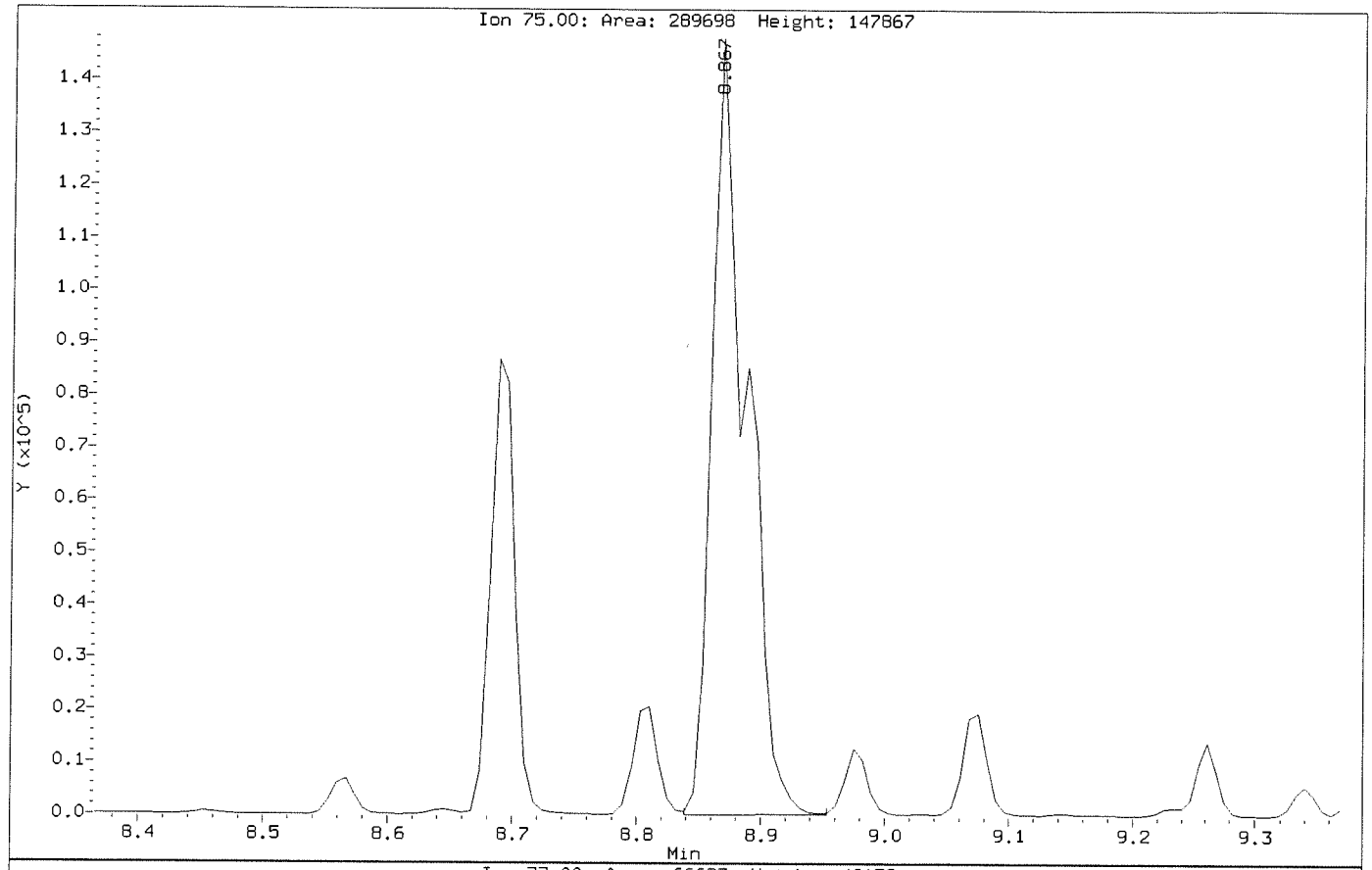
QC Flag Legend

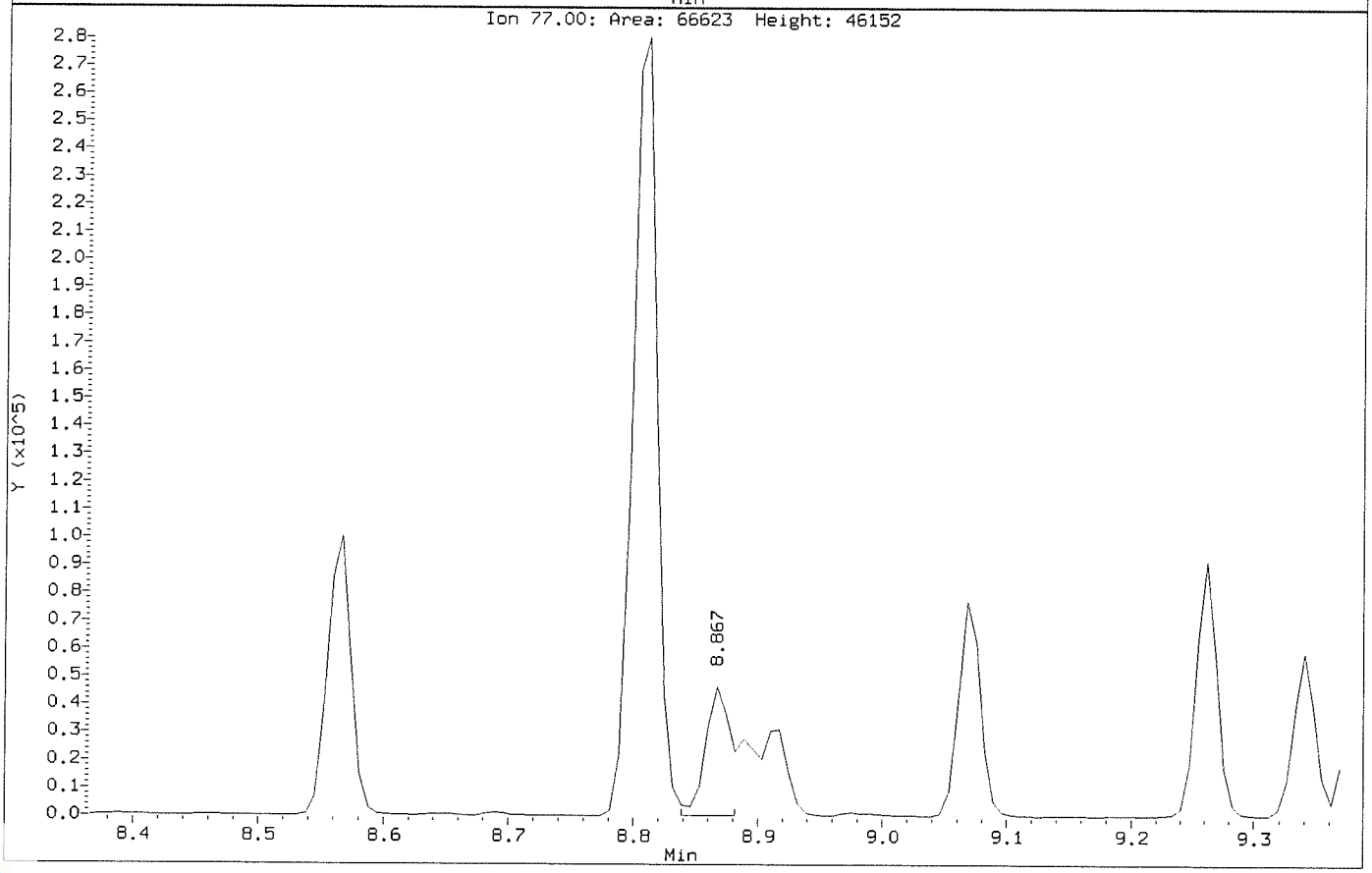
M - Compound response manually integrated.


Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032602.D
Date : 26-MAR-2019 13:02
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032602.D
Y (x10^6)
Min
-Bromomethane
-Chloroethane+
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate+
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl ethyl ether
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-n-Heptane
-1,4-Difluorobenzene
-Trichloroethene+
-1,2-Dichloropropane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Nitropropane
-2-Chloroethylvinyl ether+
-cis-1,3-Dichloropropene+
-4-Methyl-2-Pentanone
-Toluene-d8+
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate+
-1,3-Dichloropropane+
-2-Hexanone+
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-2-Furfural
m,p-Xylenes
o-Xylene+
-Bromoform+
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-alpha-Methylstyrene
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\BEFORE\X032602.D
Injection Date: 26-MAR-2019 13:02
Instrument: voa6.i
Client Sample ID: CCV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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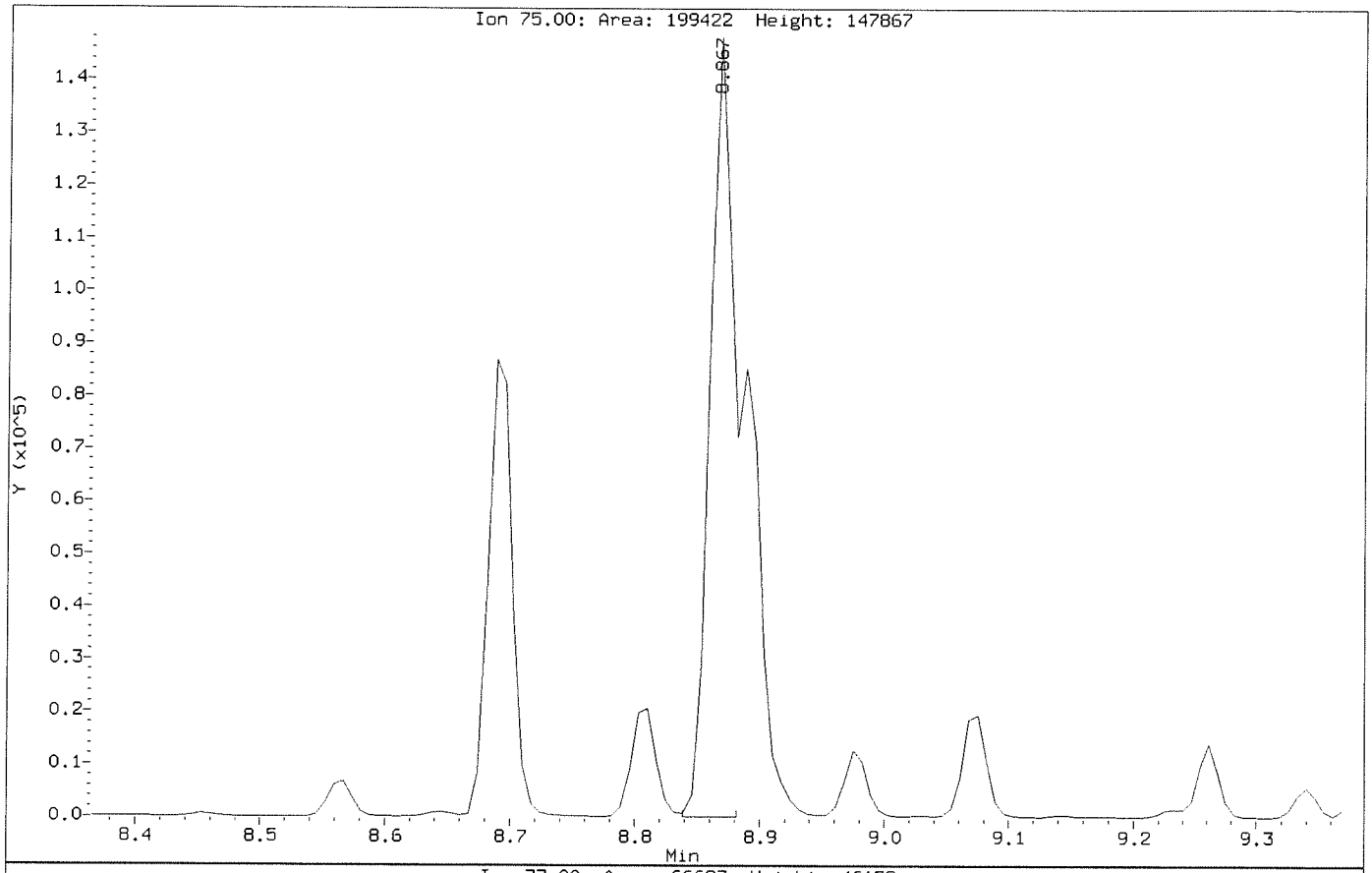
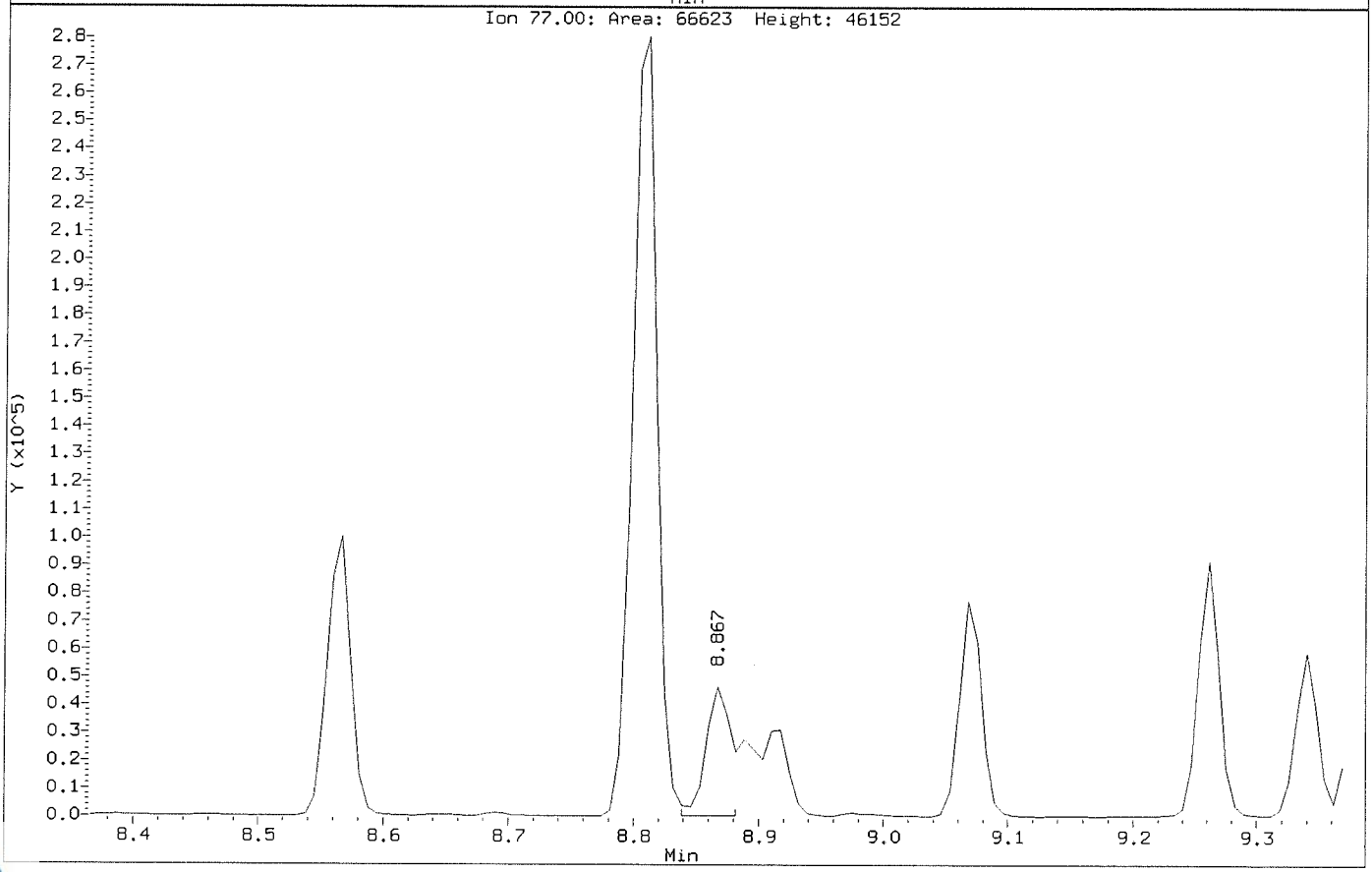
Instrument: voa6.i
Client Sample ID: CCV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032603.D
Lab Smp Id: VLCSW-190326 Client Smp ID: VLCSW-190326
Inj Date : 26-MAR-2019 13:26
Operator : PC Inst ID: voa6.i
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Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 2 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	419667	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	610344	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	539815	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	267257	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	189365	46.1365	46.13
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	206682	45.0786	45.07
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	709069	52.9304	52.93
$ 69 4-Bromofluorobenzene	95	8.695	8.688	(1.134)	243187	49.3238	49.32
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	215590	59.1788	59.17
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	305211	49.9072	49.90
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	243564	56.5063	56.50
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	168004	56.7578	56.75
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	376262	48.8220	48.82
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	174279	48.9650	48.96
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	275705	50.2474	50.24
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	118003	62.3773	62.37
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	200396	60.1587	60.15(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	207644	62.0815	62.08
79 1,2,4-Trimethylbenzene	105	9.382	9.383	(0.970)	793273	62.0501	62.05
89 1,2-Dibromo-3-Chloropropane	155	10.657	10.658	(1.102)	31901	60.8465	60.84
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	211241	59.4063	59.40
88 1,2-Dichlorobenzene	146	9.998	9.999	(1.034)	435376	57.1286	57.12

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032603.D
Report Date: 29-Mar-2019 20:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	275942	53.5740	53.57
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	224529	52.3551	52.35
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	765892	60.5545	60.55
83	1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	467175	57.8014	57.80
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	344016	57.0991	57.09
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	468144	56.8547	56.85
26	2,2-Dichloropropane	77	3.516	3.516	(0.839)	303849	51.2229	51.22
24	2-Butanone	43	3.580	3.580	(0.855)	157762	109.749	109.74
76	2-Chlorotoluene	91	8.974	8.974	(0.928)	638879	56.0003	56.00
52	2-Hexanone	43	7.090	7.090	(0.924)	249228	117.113	117.11
77	4-Chlorotoluene	91	9.074	9.075	(0.939)	746265	57.3641	57.36
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	798776	60.4308	60.43
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	379538	115.850	115.84
10	Acetone	43	1.976	1.976	(0.472)	109571	104.457	104.45
37	Benzene	78	4.519	4.519	(0.909)	847550	54.2955	54.29
74	Bromobenzene	156	8.809	8.809	(0.911)	272717	59.6242	59.62
29	Bromochloromethane	128	3.802	3.803	(0.908)	121290	51.7203	51.72
39	Bromodichloromethane	83	5.729	5.729	(1.153)	294179	56.4956	56.49
66	Bromoform	173	8.415	8.416	(1.097)	163449	60.4897	60.48
6	Bromomethane	94	1.338	1.338	(0.320)	150171	52.7680	52.76
19	Carbon Disulfide	76	2.069	2.069	(0.494)	1158180	94.6028	94.60
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	263550	55.4633	55.46
59	Chlorobenzene	112	7.699	7.699	(1.004)	574764	54.6420	54.64
7	Chloroethane	64	1.403	1.403	(0.335)	145768	47.9445	47.94
28	Chloroform	83	3.910	3.910	(0.933)	375742	50.4782	50.47
3	Chloromethane	50	1.081	1.081	(0.258)	302422	51.7873	51.78
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	233937	50.0183	50.01
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	369981	53.8515	53.85
55	Dibromochloromethane	129	7.176	7.176	(0.936)	228848	59.6290	59.62
44	Dibromomethane	93	5.557	5.557	(1.118)	143114	55.7238	55.72
2	Dichlorodifluoromethane	85	0.973	0.973	(0.232)	255458	59.4396	59.43
61	Ethylbenzene	106	7.799	7.799	(1.017)	306004	58.5981	58.59
91	Hexachlorobutadiene	225	11.488	11.488	(1.188)	120663	62.0329	62.03
67	Isopropylbenzene	105	8.566	8.566	(1.117)	906568	58.1666	58.16
62	m,p-Xylenes	106	7.907	7.907	(1.031)	741412	114.531	114.53
17	Methylene Chloride	84	2.305	2.305	(0.550)	221444	50.6778	50.67
87	n-Butylbenzene	91	9.998	9.999	(1.034)	713534	62.5962	62.59
73	n-Propylbenzene	91	8.917	8.917	(0.922)	1091024	58.6725	58.67
92	Naphthalene	128	11.546	11.546	(1.194)	319893	63.4756	63.47
63	o-Xylene	106	8.244	8.244	(1.075)	362723	56.0076	56.00
81	sec-Butylbenzene	105	9.526	9.526	(0.985)	898577	58.0096	58.00
64	Styrene	104	8.258	8.258	(1.077)	638718	59.4930	59.49
78	tert-Butylbenzene	119	9.339	9.340	(0.966)	630715	57.3943	57.39
56	Tetrachloroethene	164	6.933	6.933	(0.904)	187955	57.9418	57.94
50	Toluene	91	6.446	6.446	(0.840)	903141	57.2122	57.21
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	195026	49.2397	49.23
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	324279	58.5624	58.56
38	Trichloroethene	130	5.214	5.214	(1.049)	222904	51.9000	51.90
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	310417	49.9868	49.98
5	Vinyl Chloride	62	1.145	1.145	(0.273)	263592	48.6623	48.66

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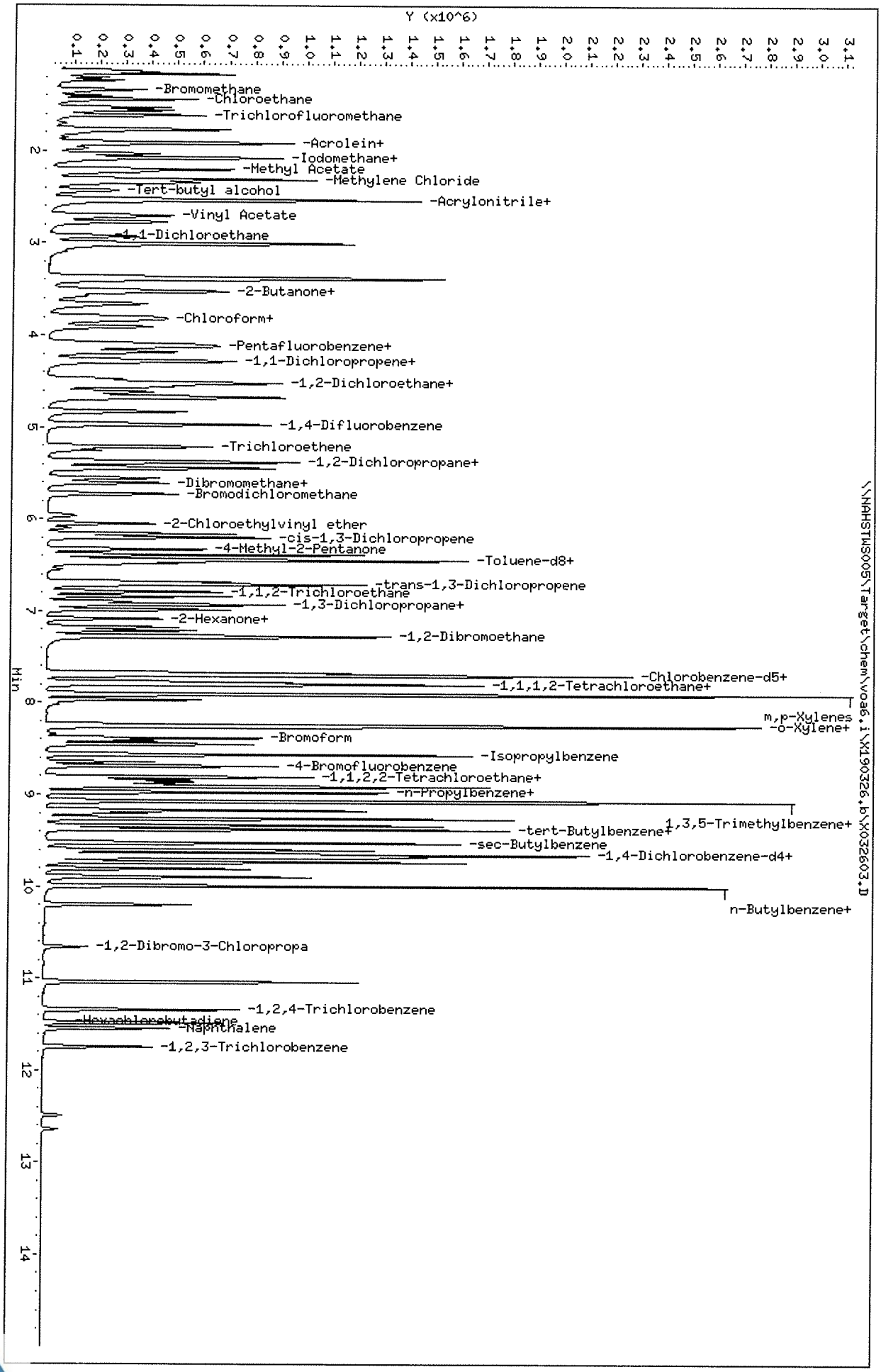
Report Date: 29-Mar-2019 20:42

QC Flag Legend

M - Compound response manually integrated.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Min
1 2 3 4 5 6 7 8 9 10 11 12 13 14
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-Acrolein+
-Iodomethane+
-Methyl Acetate
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate
-1,1-Dichloroethane
-2-Butanone+
-Chloroform+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-1,4-Difluorobenzene
-Trichloroethene
-1,2-Dichloropropane+
-Dibromomethane+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-4-Methyl-2-Pentanone
-Toluene-d8+
-trans-1,3-Dichloropropene
-1,1,2-Trichloroethane
-1,3-Dichloropropane+
-2-Hexanone+
-1,2-Dibromoethane
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
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Date : 26-MAR-2019 13:26
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Sample Info: VLCSW-190326;VLCSW-190326;3;;LCS
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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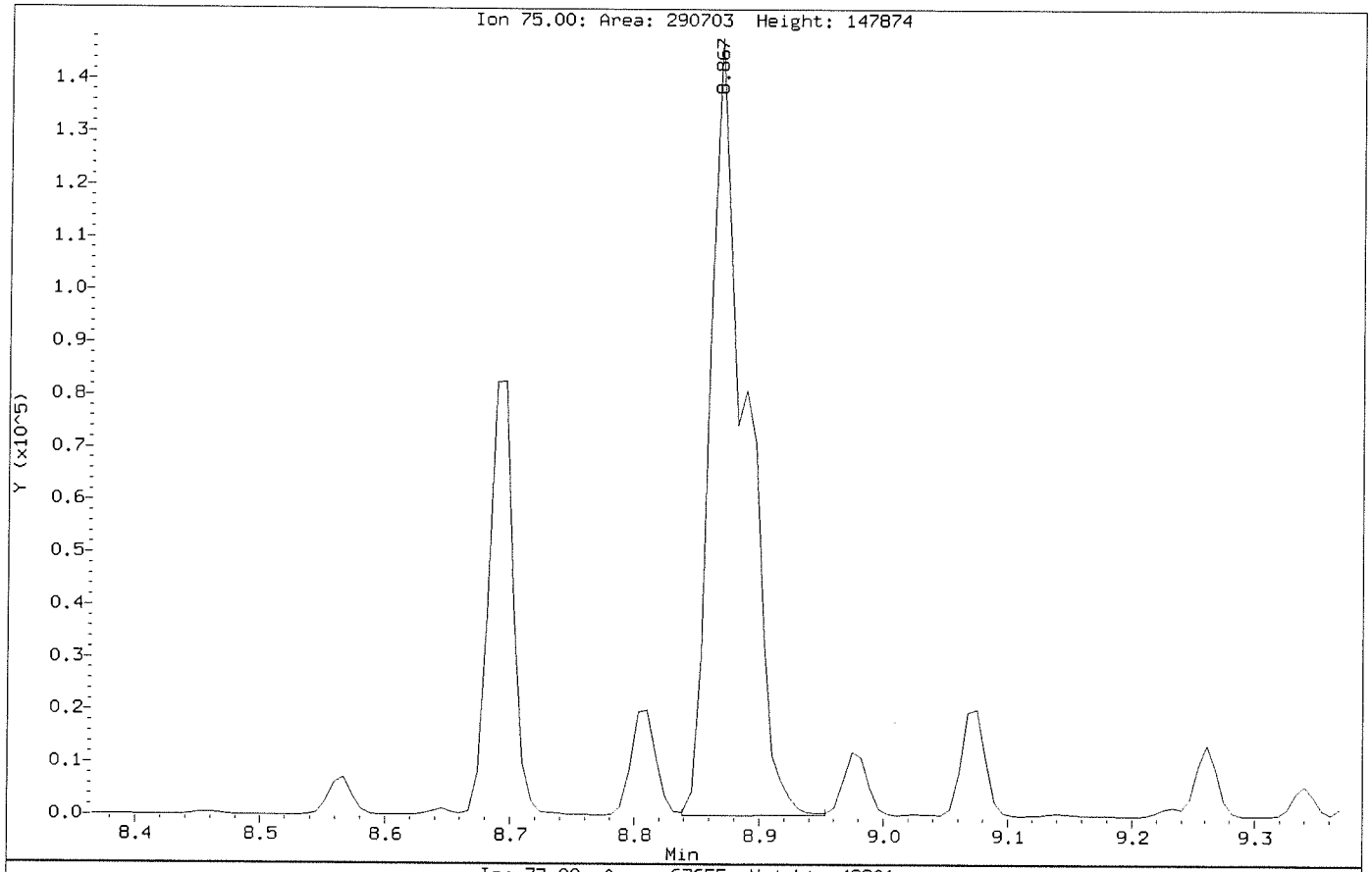
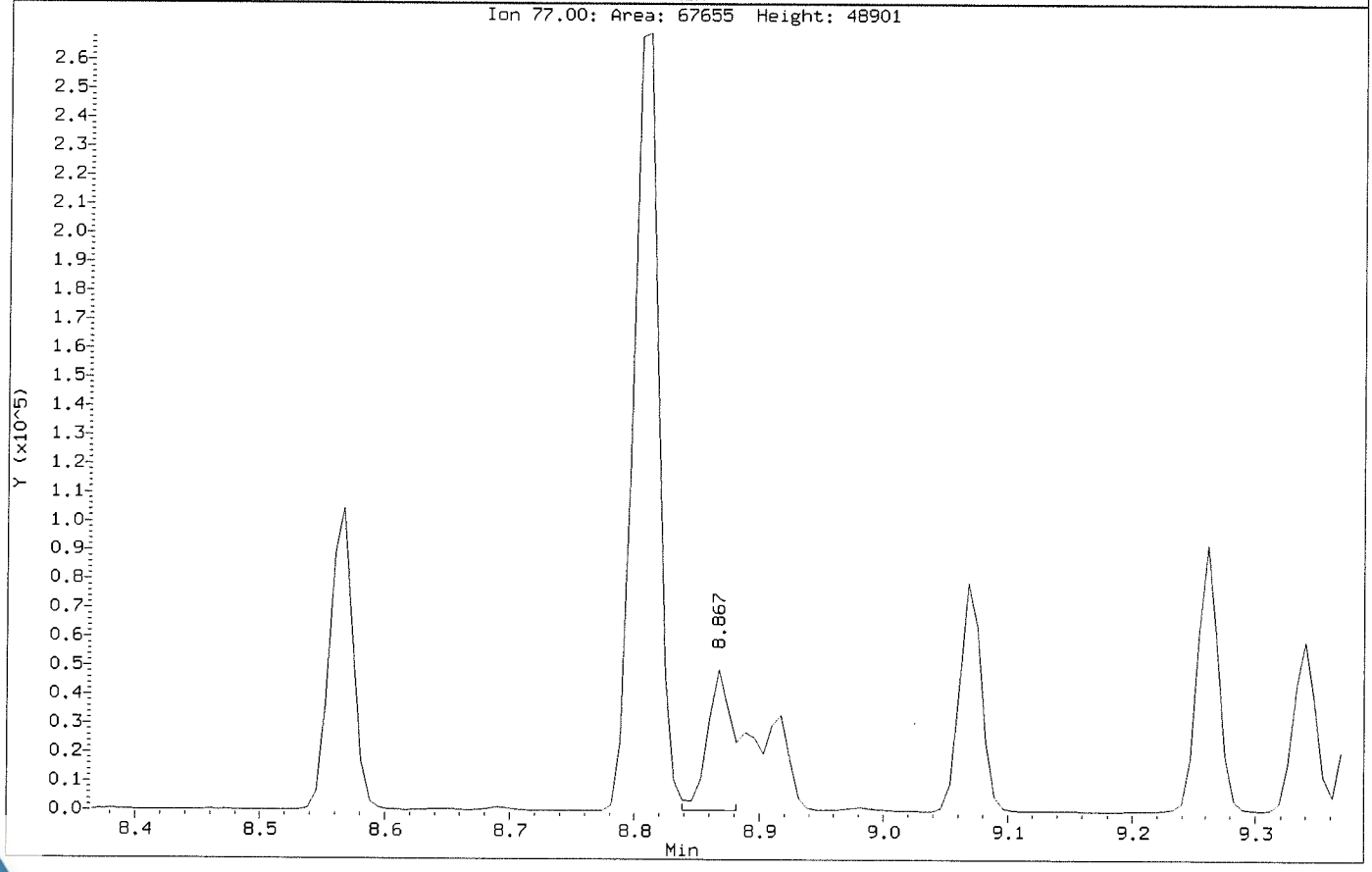
Injection Date: 26-MAR-2019 13:26
Instrument: voa6.i
Client Sample ID: VLCSW-190326

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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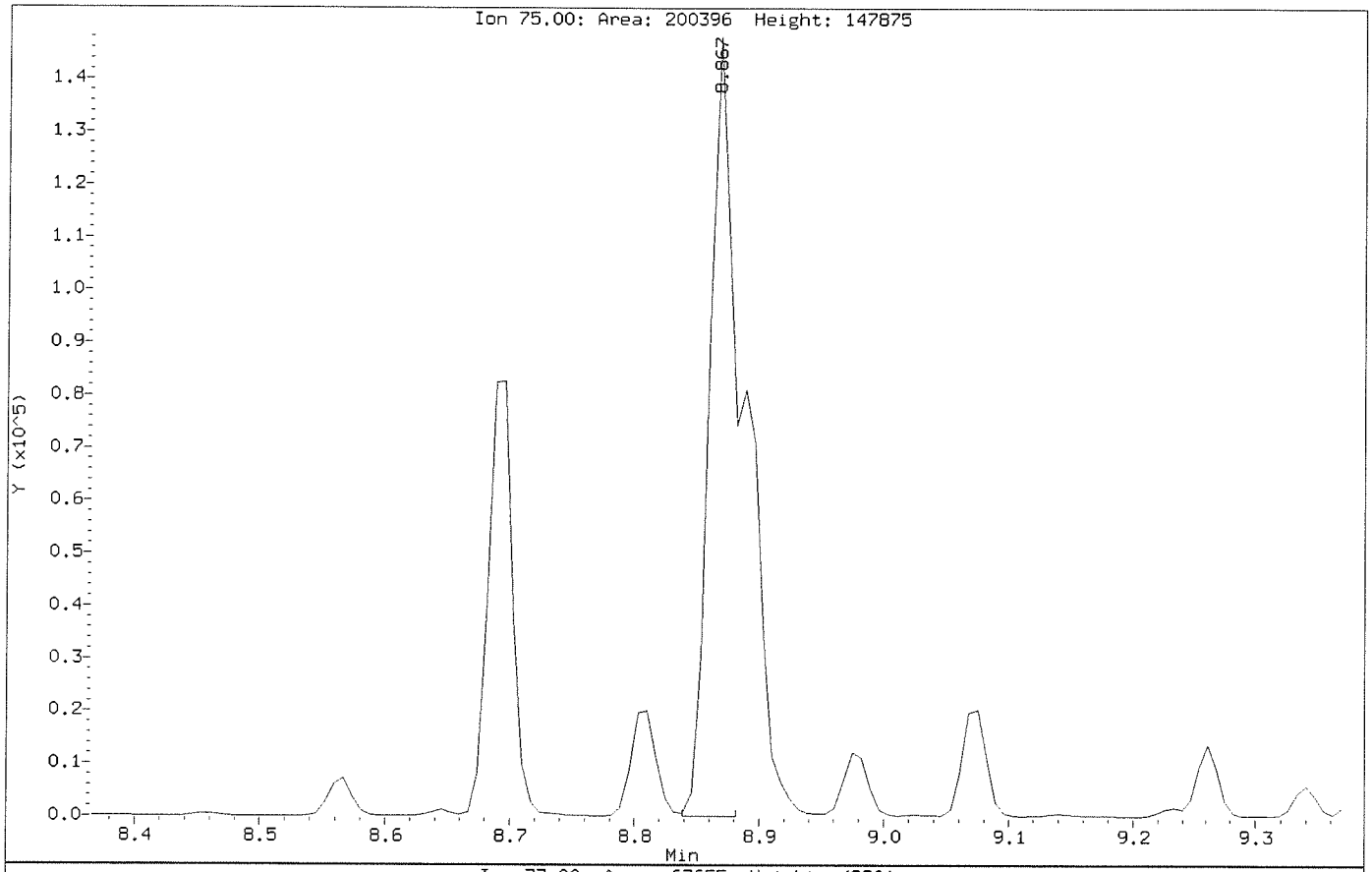
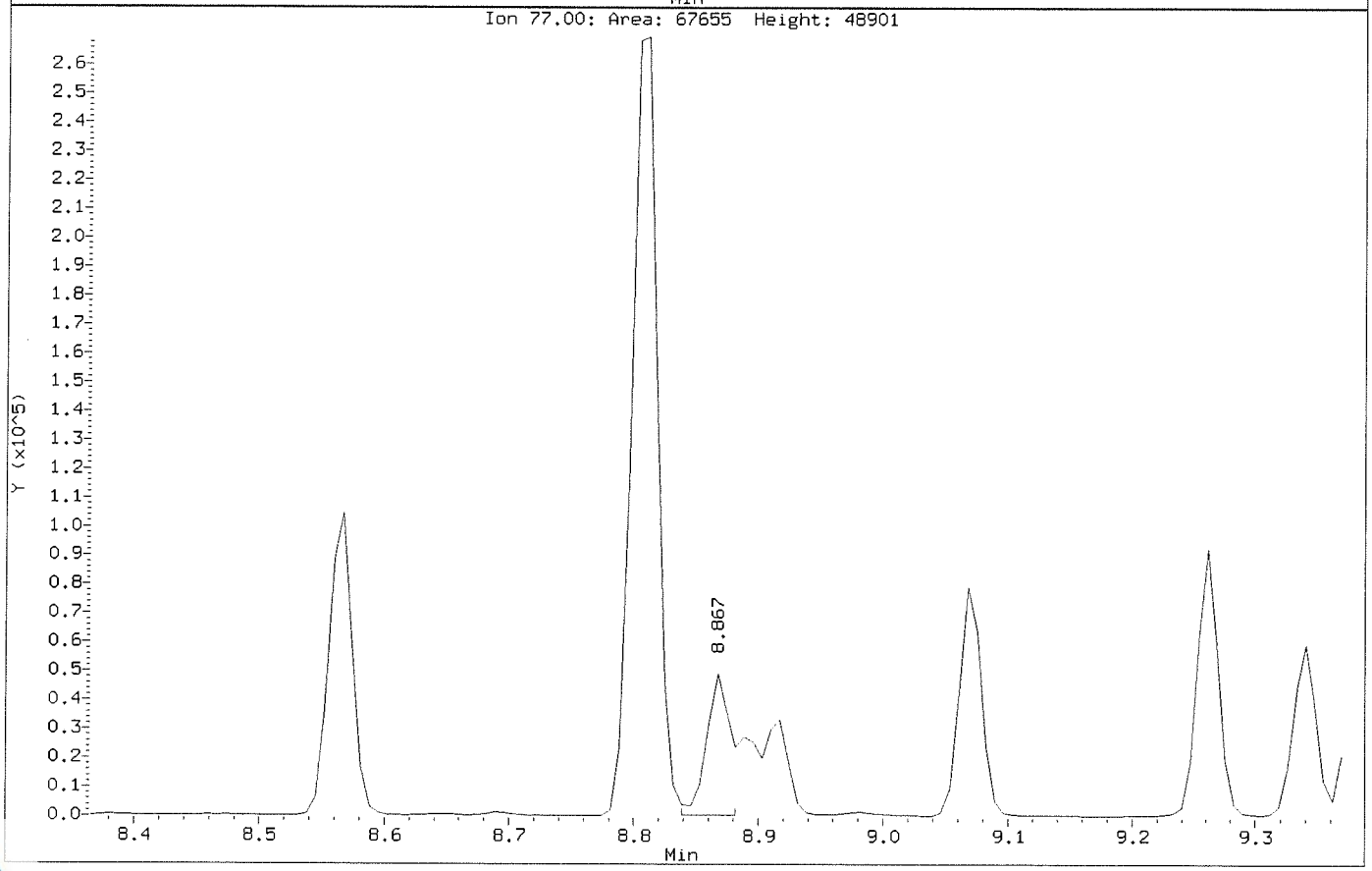
Instrument: voa6.i
Client Sample ID: VLCSW-190326

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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Report Date: 29-Mar-2019 20:42

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Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032607.D
Lab Smp Id: VBLKW-190325 Client Smp ID: VBLKW-190325
Inj Date : 26-MAR-2019 15:03
Operator : PC Inst ID: voa6.i
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Misc Info : HS18090001;WATER;0;1;
Comment :
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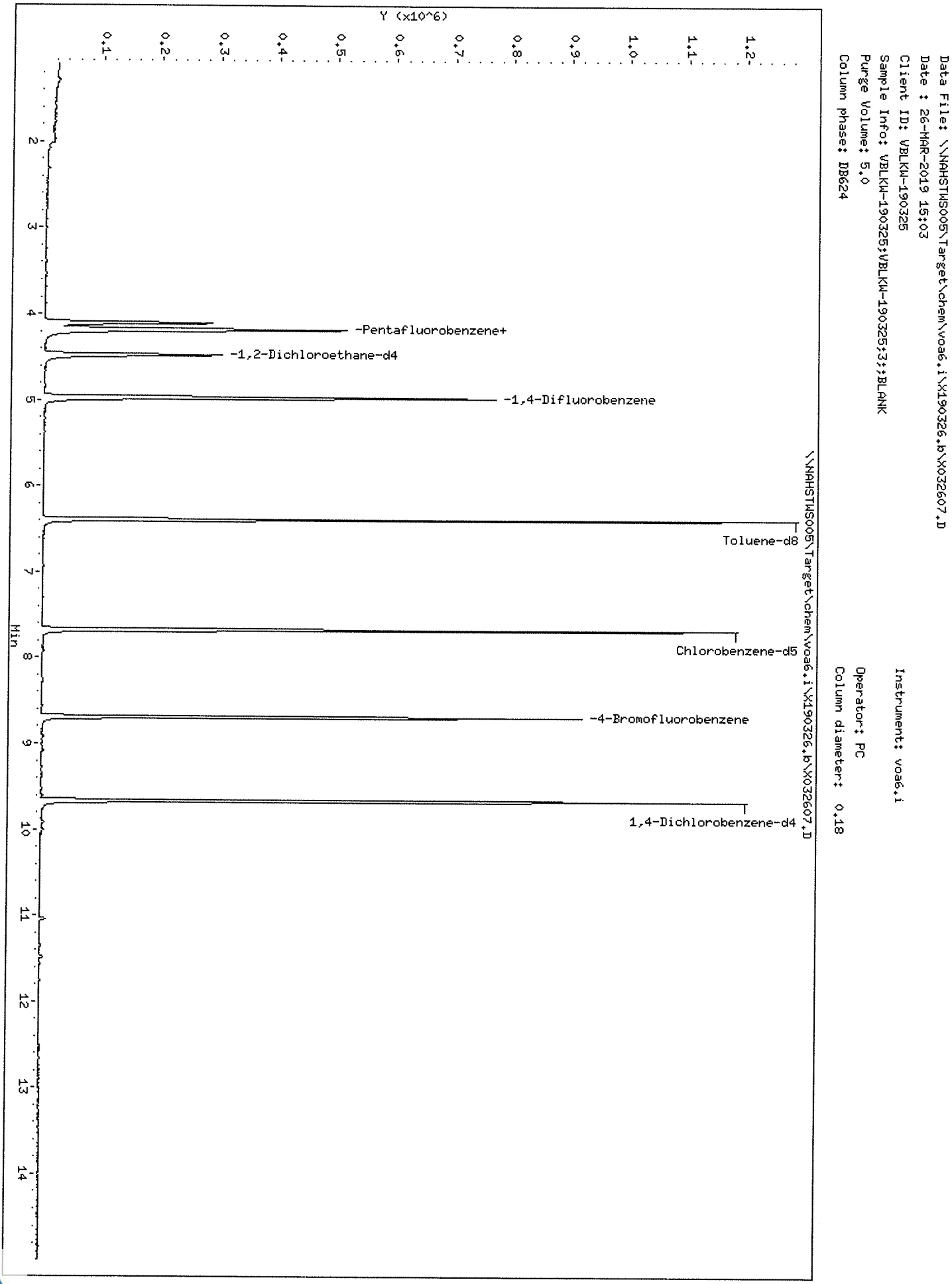
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 6 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.182	4.189	(1.000)	452532	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	652798	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	578209	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	292434	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	200557	45.3132	45.31
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	222933	45.0919	45.09
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	760299	52.9863	52.98
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	258222	48.8925	48.89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Date : 26-MAR-2019 15:03
Client ID: VBLKW-190325
Sample Info: VBLKW-190325;VBLKW-190325;3;;BLANK
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
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0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
2
3
4
5
6
7
8
9
10
11
12
13
14
Min
-Pentafluorobenzene+
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
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Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032608.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032608.D
Lab Smp Id: HS19031013-08 Client Smp ID: HS19031013-08
Inj Date : 26-MAR-2019 15:27
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-08;HS19031013-08;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
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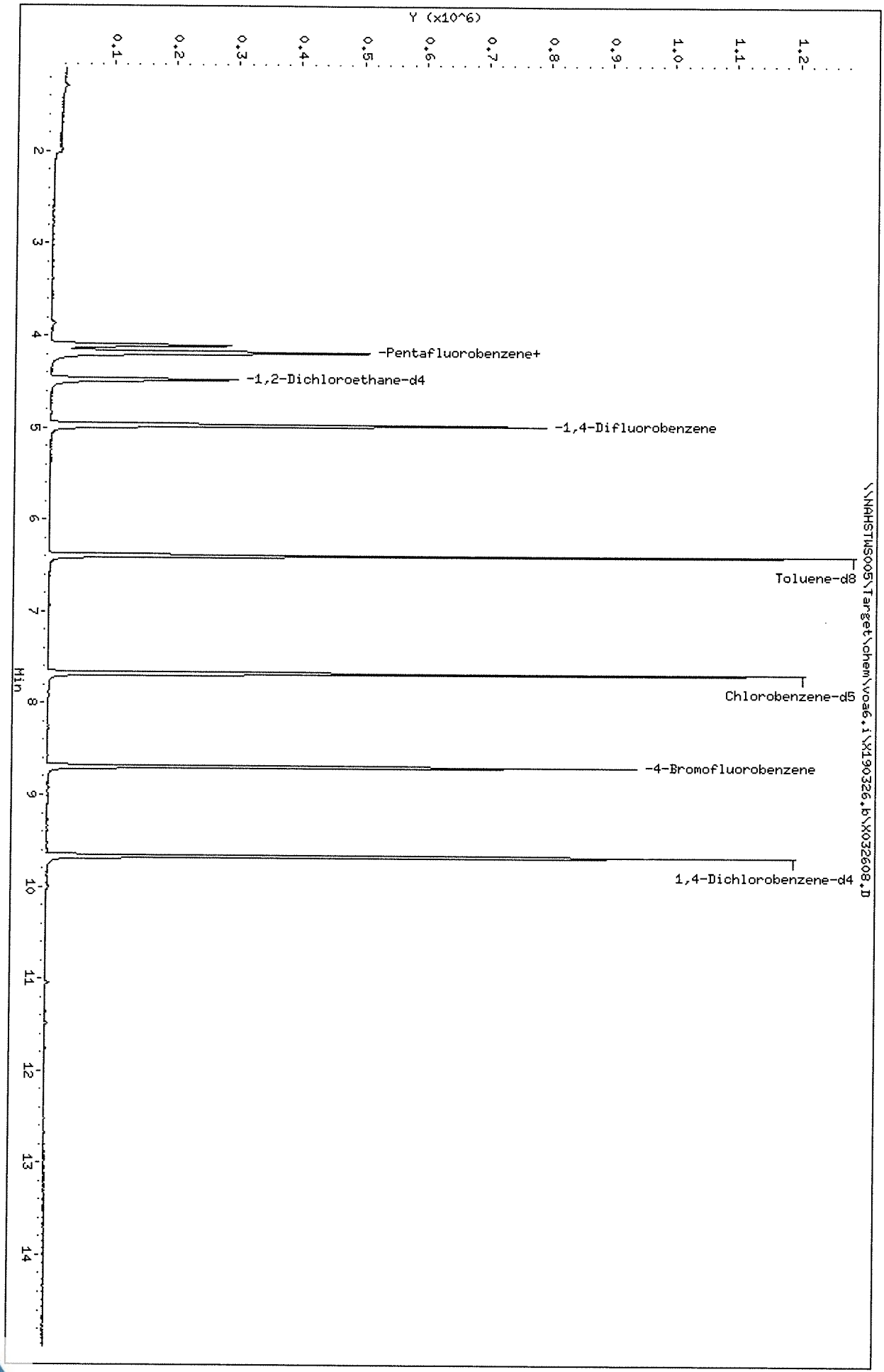
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	453999	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	659945	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	578987	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	293417	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	202069	45.5076	45.50
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	224457	45.2543	45.25
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	765223	53.2588	53.25
$ 69 4-Bromofluorobenzene	95	8.695	8.688	(1.134)	262378	49.6179	49.61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Date : 26-MAR-2019 15:27
Client ID: HS19031013-08
Sample Info: HS19031013-08;HS19031013-08;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
2
3
4
5
6
7
8
9
10
11
12
13
14
Min
-Pentafluorobenzene+
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032608.D

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032610.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032610.D
Lab Smp Id: HS19031013-01 Client Smp ID: HS19031013-01
Inj Date : 26-MAR-2019 16:15
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-01;HS19031013-01;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

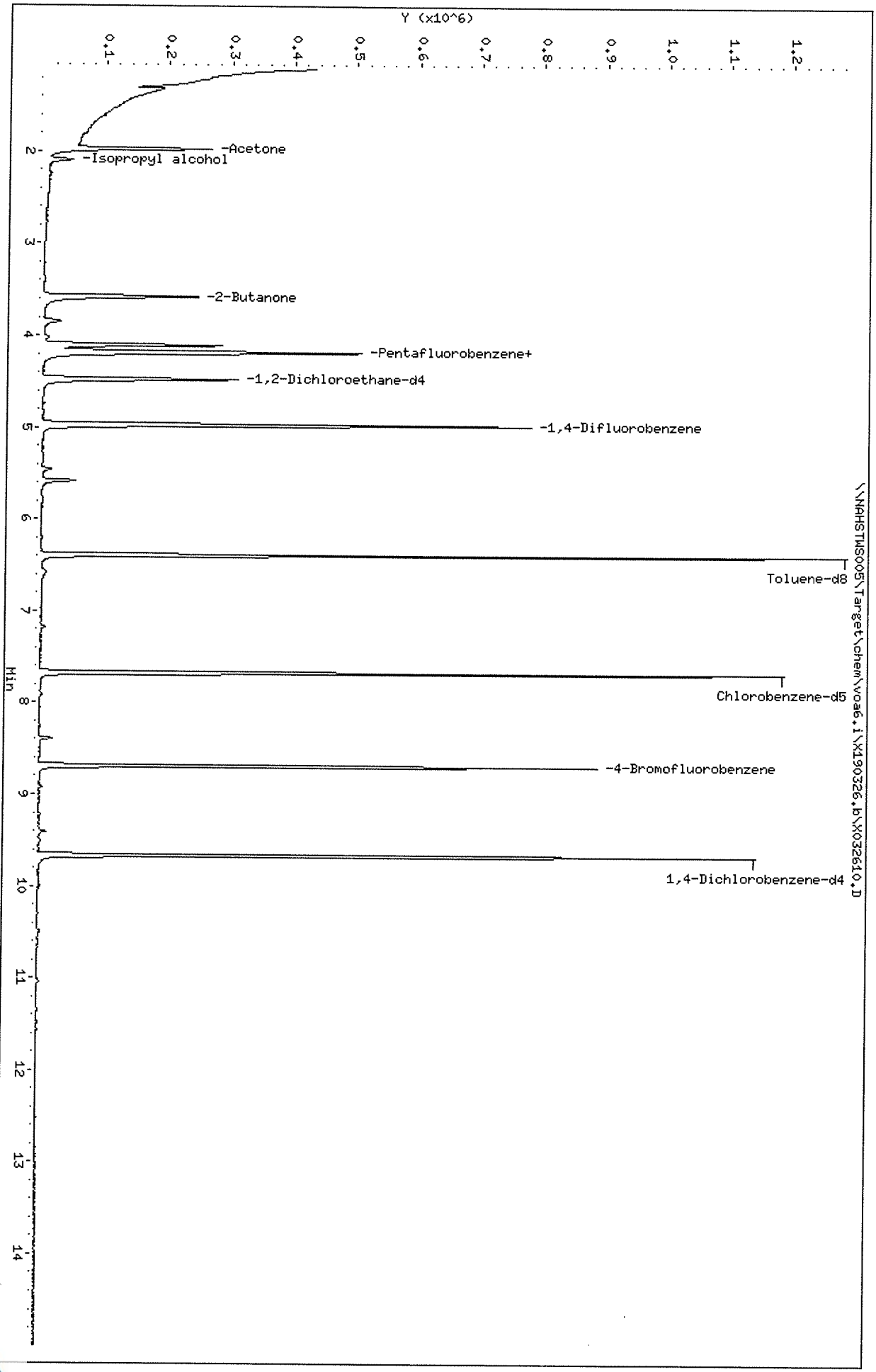
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	453595	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	652966	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	564464	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	277977	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	202309	45.6024	45.60
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	231925	46.8094	46.80
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	760185	54.2733	54.27
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	250185	48.5216	48.52
24 2-Butanone	43	3.573	3.580	(0.853)	373922	240.667	240.66(A)
10 Acetone	43	1.976	1.976	(0.472)	281870	255.040	255.04(A)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.


Y (x10^6)
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0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
-Acetone
-Isopropyl alcohol
-2-Butanone
-Pentafluorobenzene+
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
Min
2
3
4
5
6
7
8
9
10
11
12
13
14
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032610.D
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032610.D
Date : 26-MAR-2019 16:15
Client ID: HS19031013-01
Sample Info: HS19031013-01;HS19031013-01;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032610.D

Date : 26-MAR-2019 16:15

Client ID: HS19031013-01

Instrument: voa6.i

Sample Info: HS19031013-01;HS19031013-01;;;

Purge Volume: 5.0

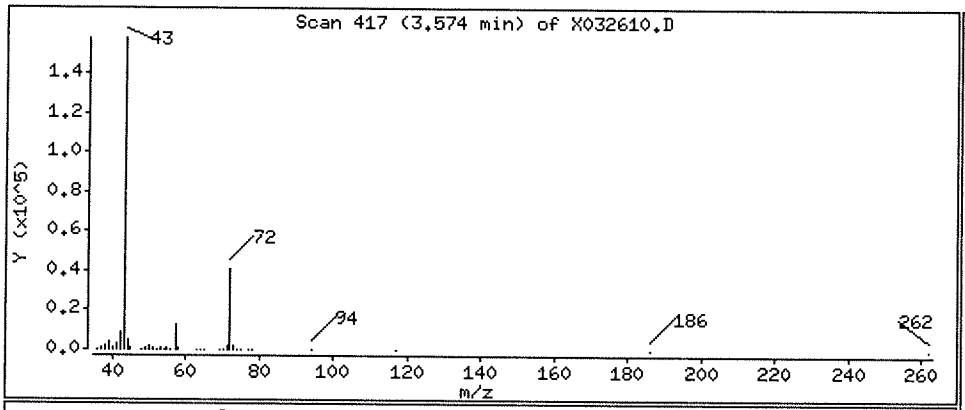
Operator: PC

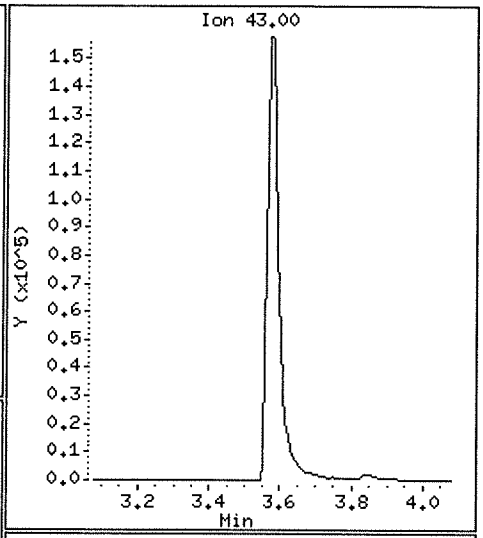
Column phase: DB624

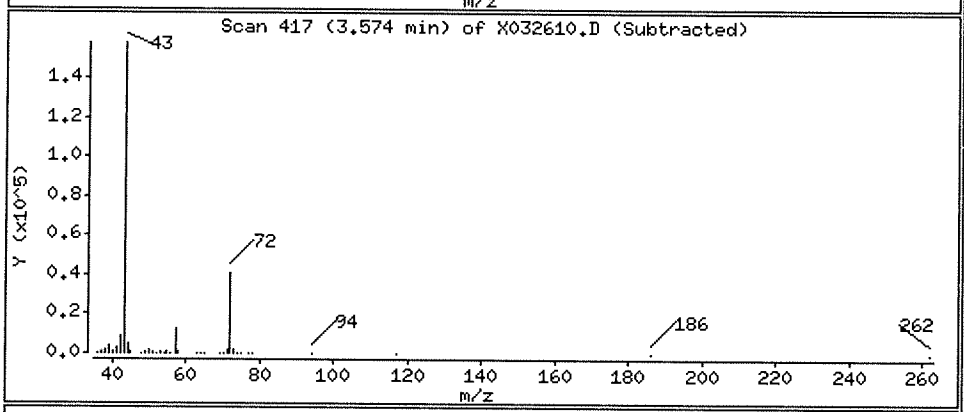
Column diameter: 0.18

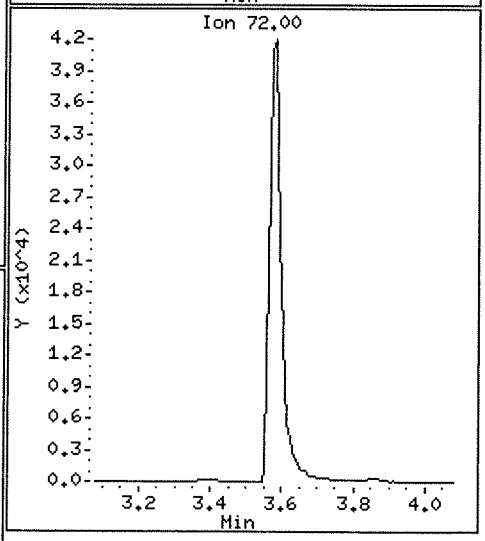
24 2-Butanone

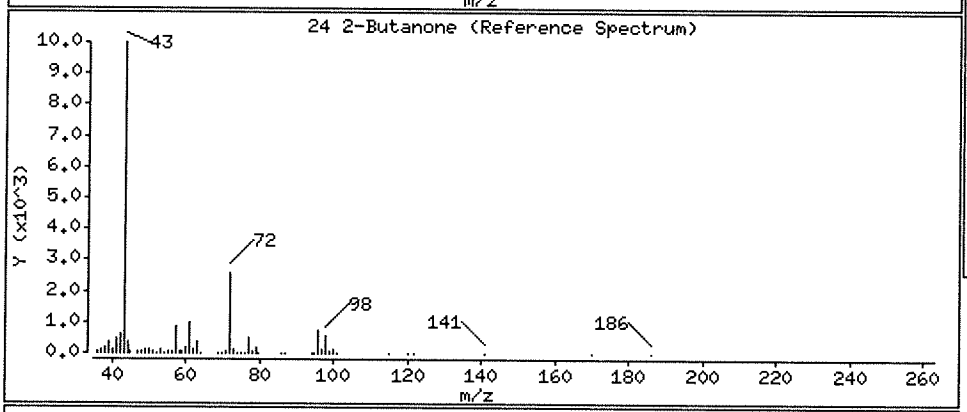
Concentration: 240.66 ug/l

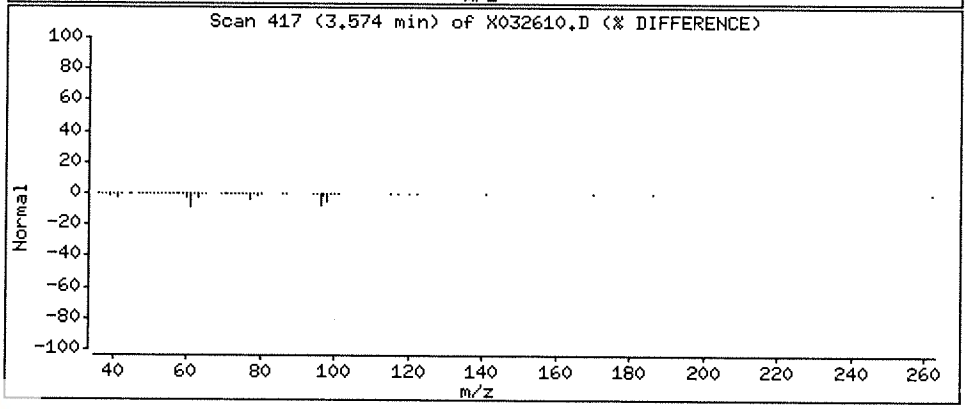












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032610.D

Date : 26-MAR-2019 16:15

Client ID: HS19031013-01

Instrument: voa6.i

Sample Info: HS19031013-01;HS19031013-01;;;

Purge Volume: 5.0

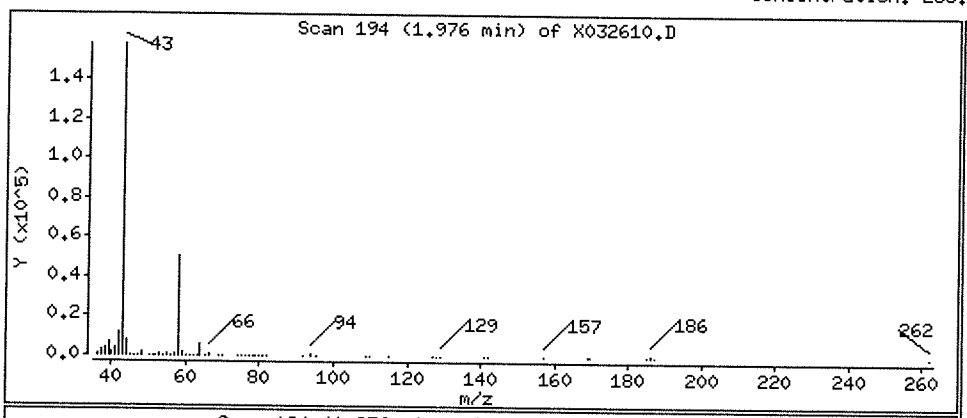
Operator: PC

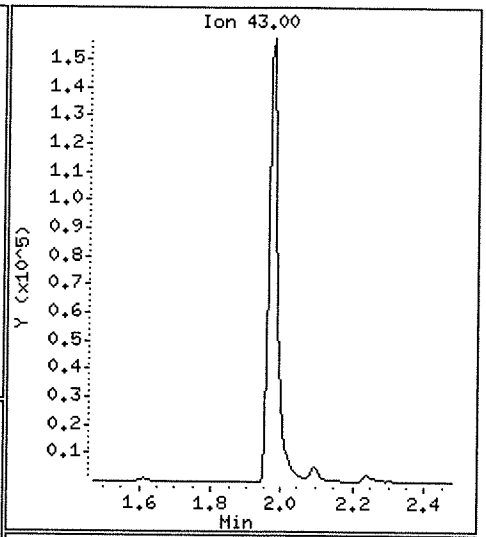
Column phase: DB624

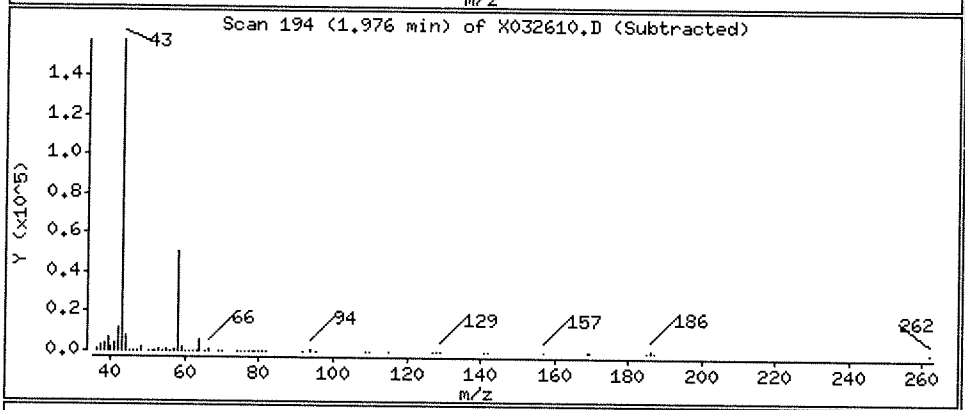
Column diameter: 0.18

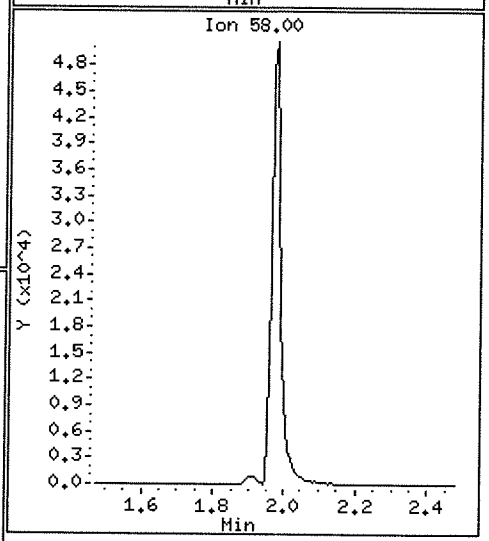
10 Acetone

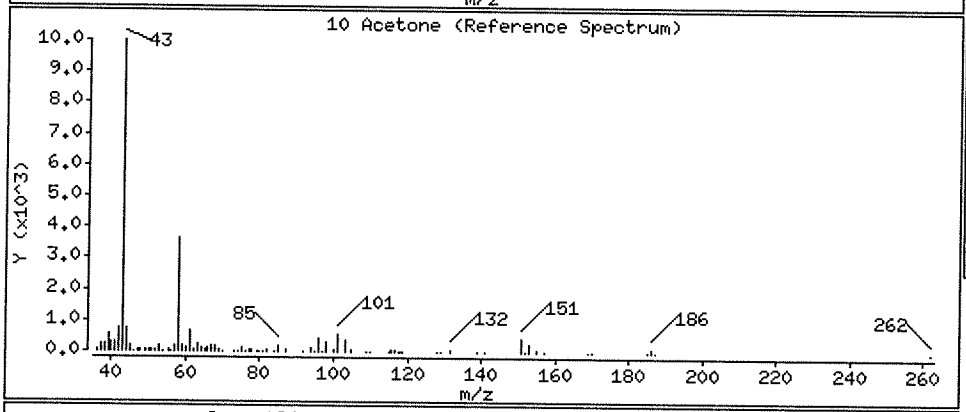
Concentration: 255.04 ug/l

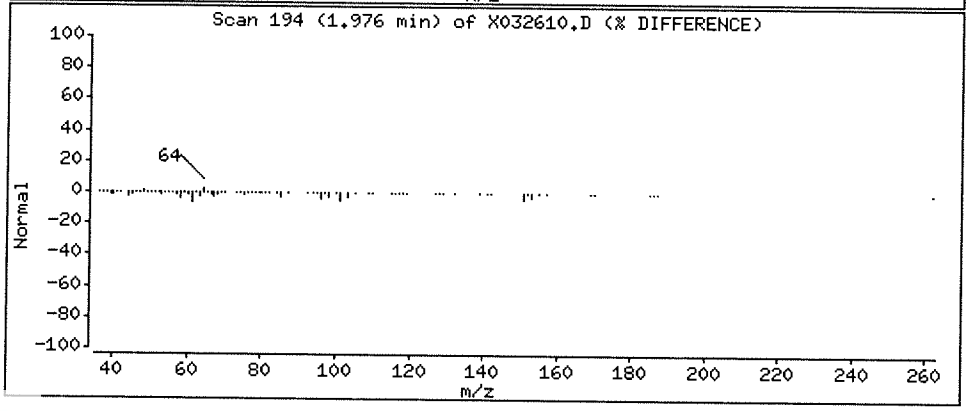












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D
Lab Smp Id: HS19031013-07 Client Smp ID: HS19031013-07
Inj Date : 26-MAR-2019 16:39
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-07;HS19031013-07;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

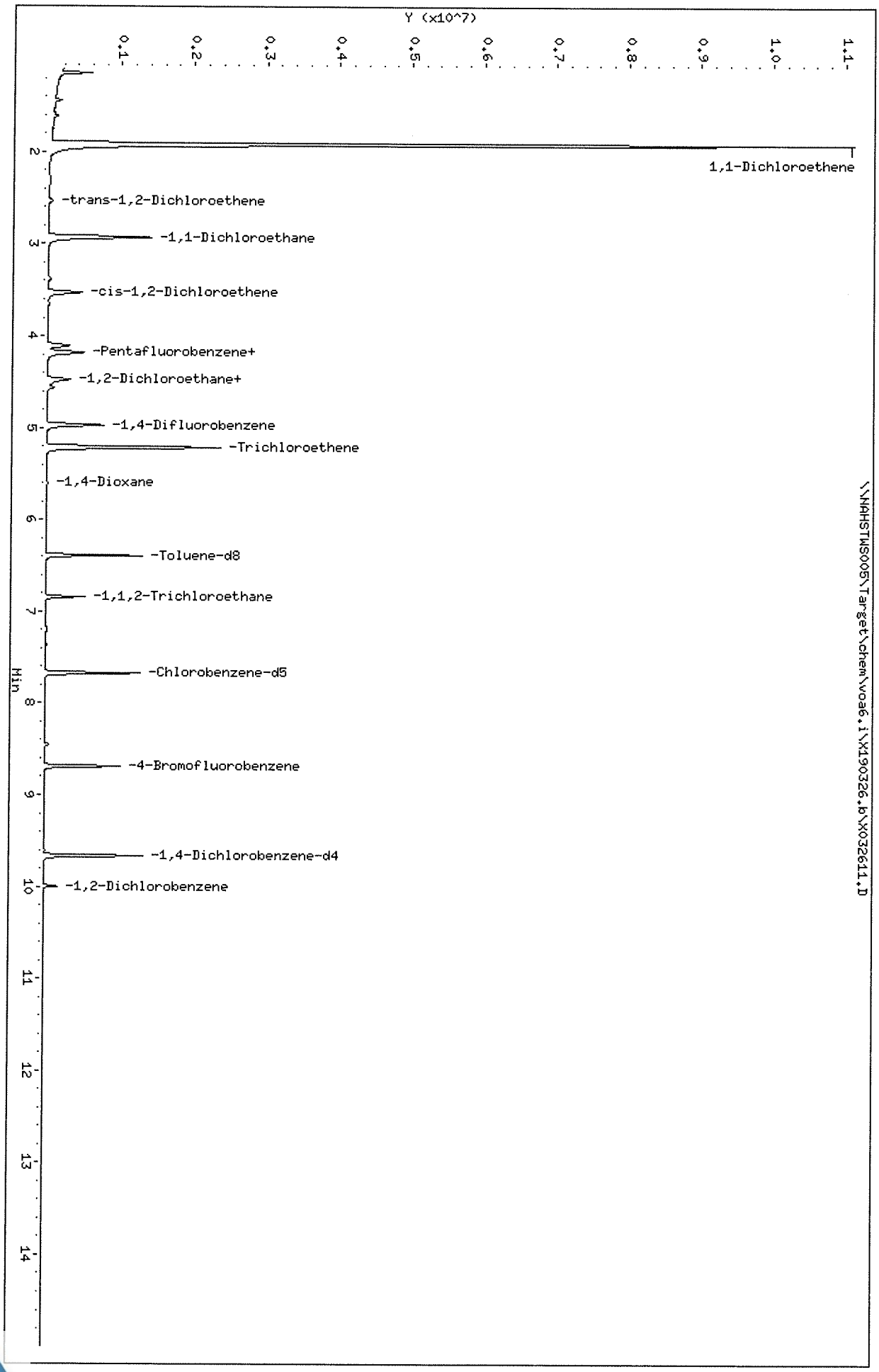
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.189	4.189	(1.000)	444081	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	660508	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	616395	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	328254	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	201069	46.2951	46.29
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	231952	47.8227	47.82
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	773422	50.5522	50.55
$ 69 4-Bromofluorobenzene	95	8.695	8.688	(1.134)	286990	50.9884	50.98
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	128229	37.9383	37.93
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	1516817	185.995	185.99
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	4133035	1097.37	1097.36(A)
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	70923	7.57696	7.57
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	76641	13.7497	13.74
37 Benzene	78	4.519	4.519	(0.909)	51362	3.04044	3.04(a)
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	244613	49.4256	49.42
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	20599	4.91487	4.91(a)
38 Trichloroethene	130	5.207	5.214	(1.048)	824154	177.319	177.31
5 Vinyl Chloride	62	1.145	1.145	(0.273)	308415	53.8070	53.80

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D
Report Date: 29-Mar-2019 20:42

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
    exceeded maximum amount.


Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D
Date : 26-MAR-2019 16:39
Client ID: HS19031013-07
Sample Info: HS19031013-07;HS19031013-07;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D
Y (x10^7)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
Min
2 1,1-Dichloroethene
3 -trans-1,2-Dichloroethene
-1,1-Dichloroethane
4 -cis-1,2-Dichloroethene
-Pentafluorobenzene+
-1,2-Dichloroethane+
5 -1,4-Difluorobenzene
-Trichloroethene
6 -1,4-Dioxane
-Toluene-d8
7 -1,1,2-Trichloroethane
-Chlorobenzene-d5
8
-4-Bromofluorobenzene
9
-1,4-Dichlorobenzene-d4
10 -1,2-Dichlorobenzene
11
12
13
14

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

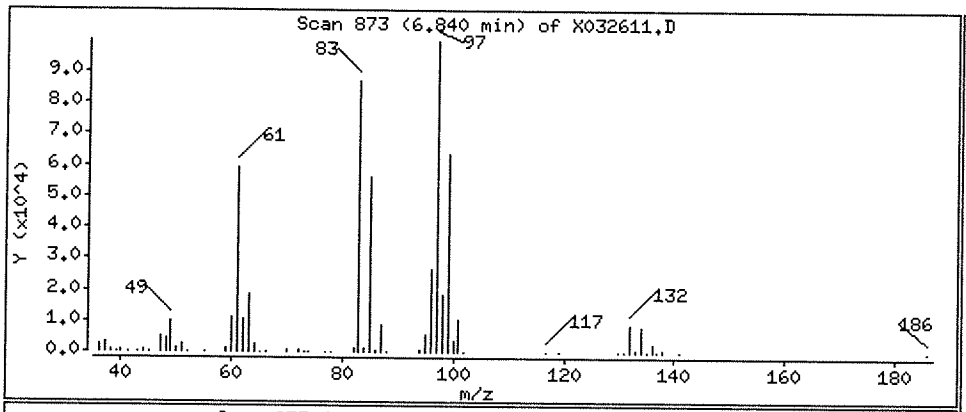
Operator: PC

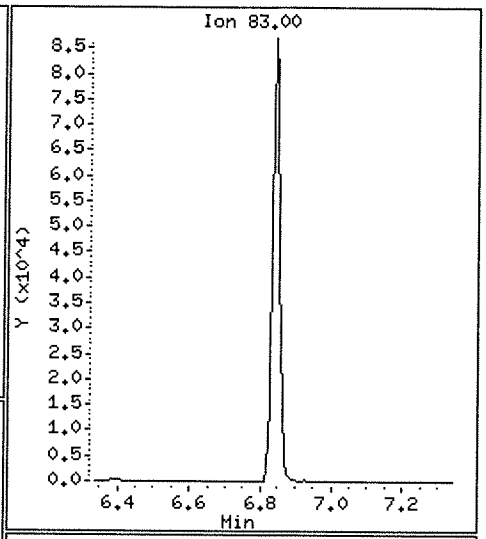
Column phase: DB624

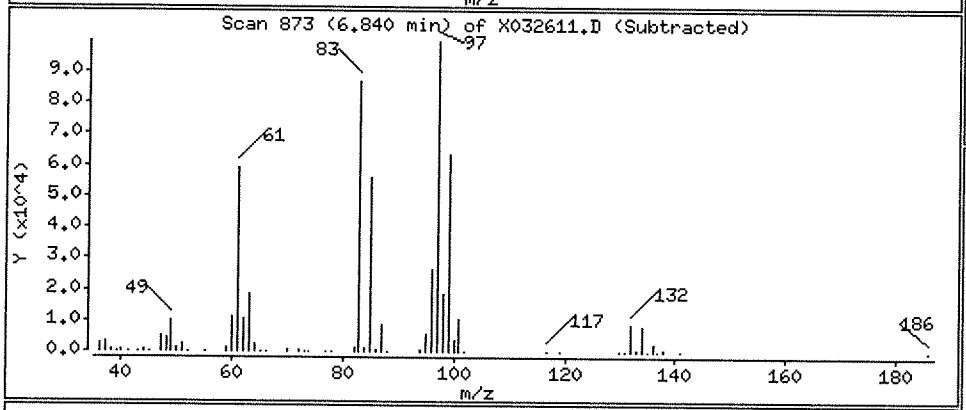
Column diameter: 0.18

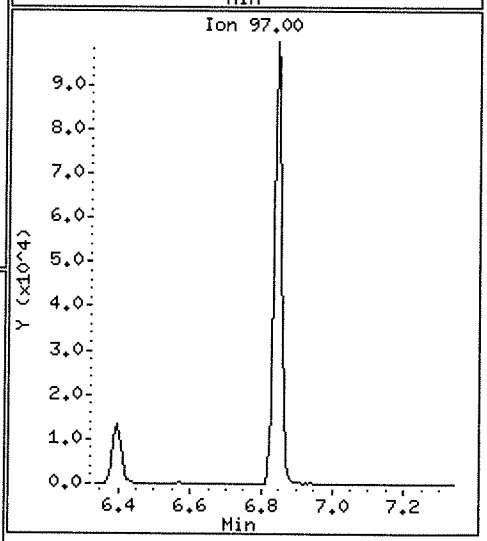
53 1,1,2-Trichloroethane

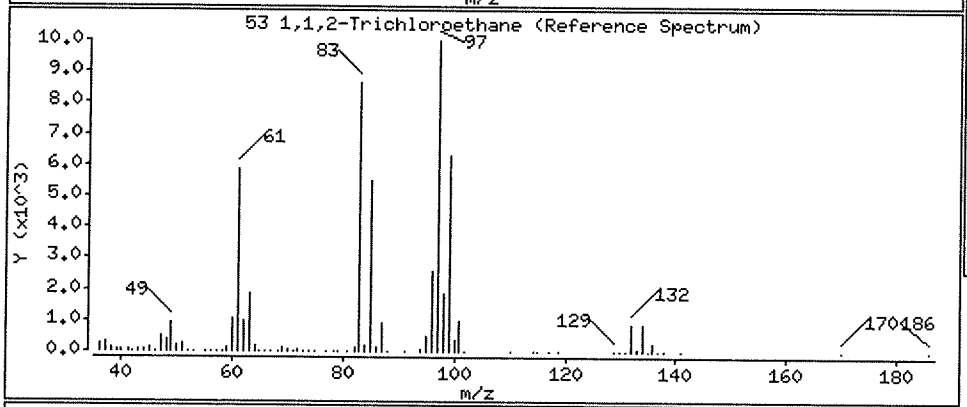
Concentration: 37.93 ug/l

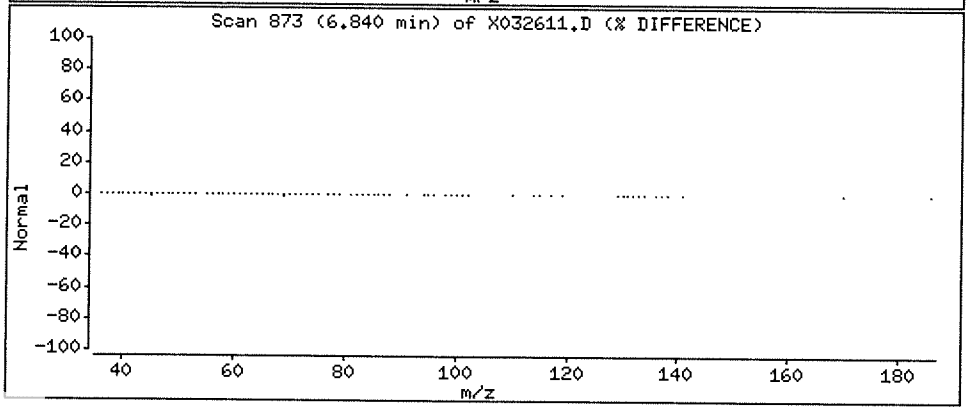












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

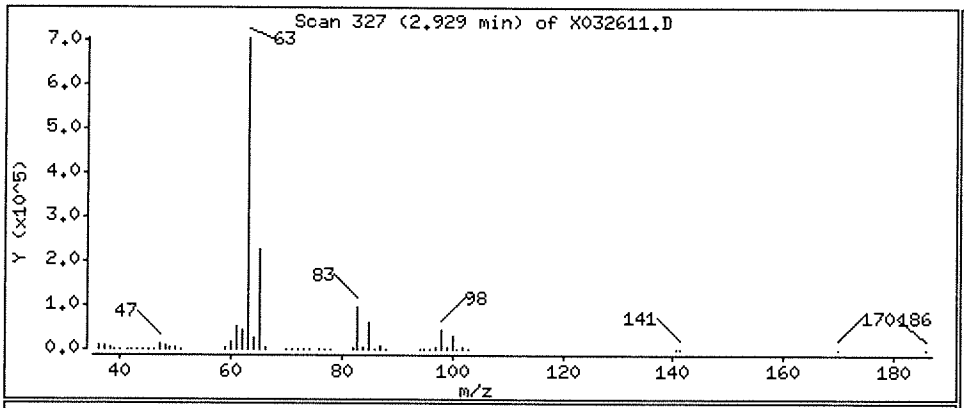
Client ID: HS19031013-07 Instrument: voa6.i

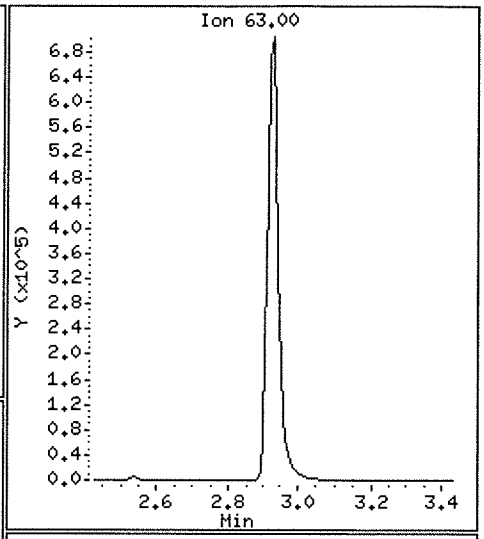
Sample Info: HS19031013-07;HS19031013-07;;;

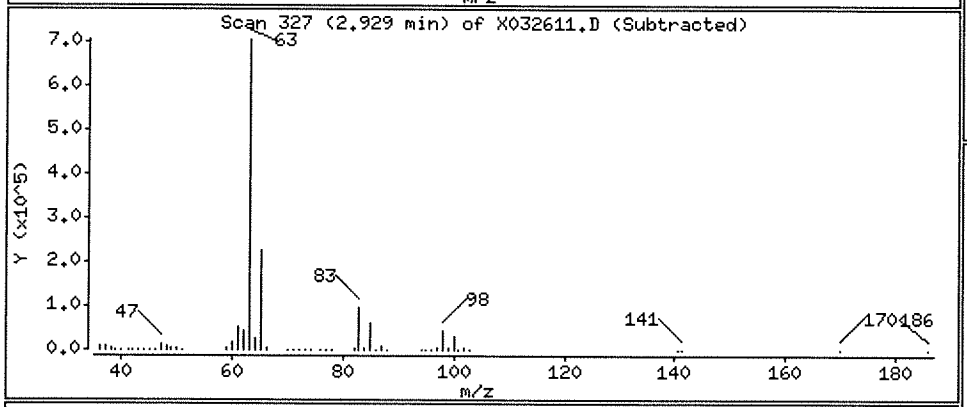
Purge Volume: 5.0 Operator: PC

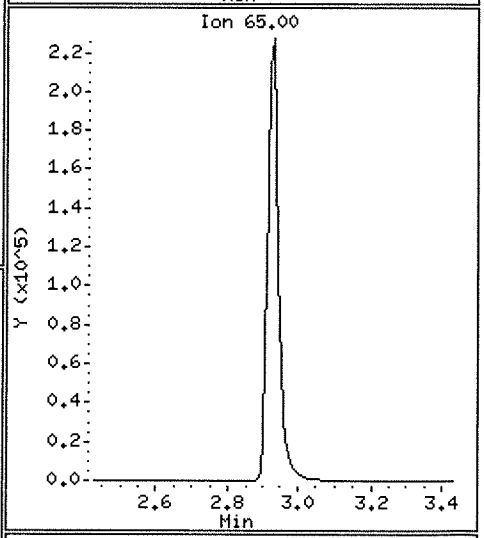
Column phase: DB624 Column diameter: 0.18

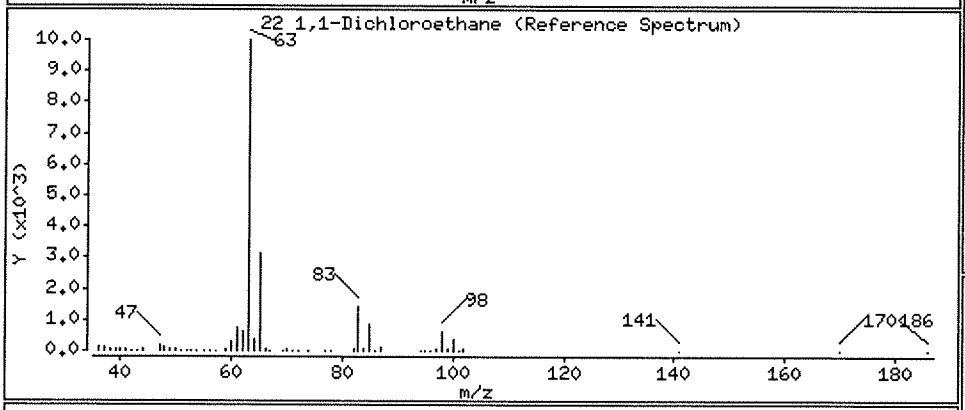
22 1,1-Dichloroethane Concentration: 185.99 ug/l

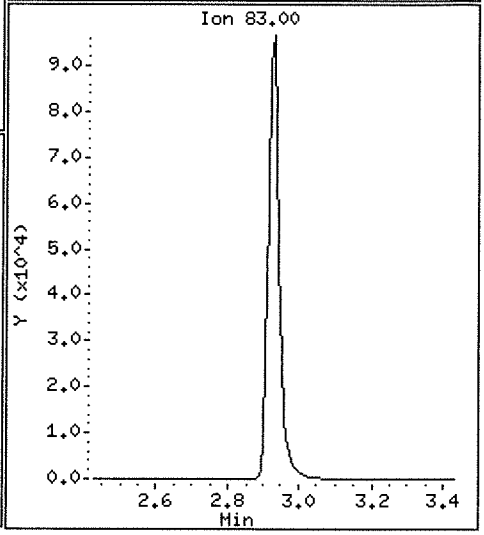


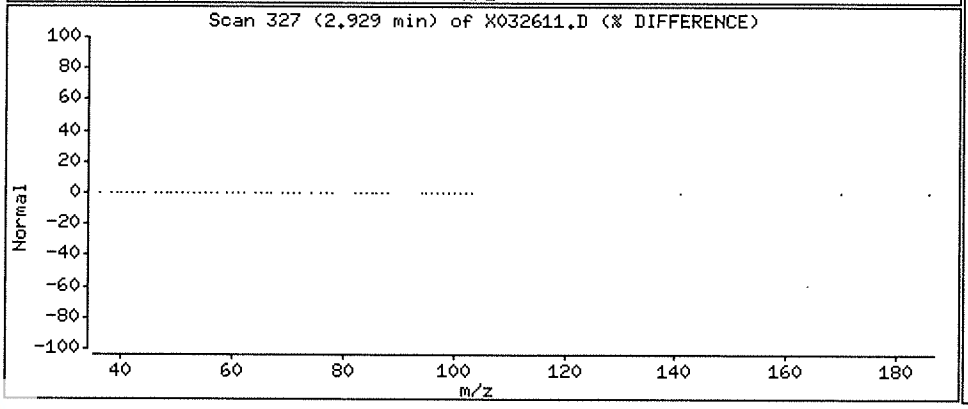












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

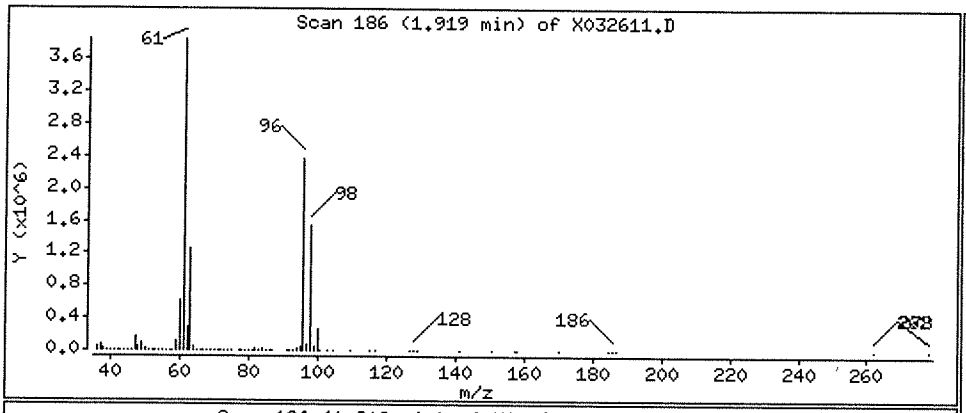
Operator: PC

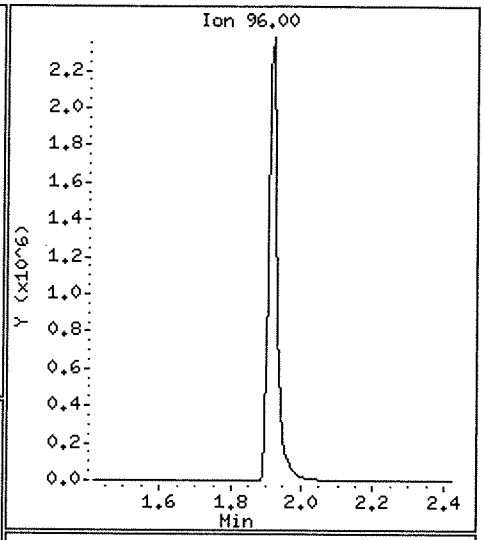
Column phase: DB624

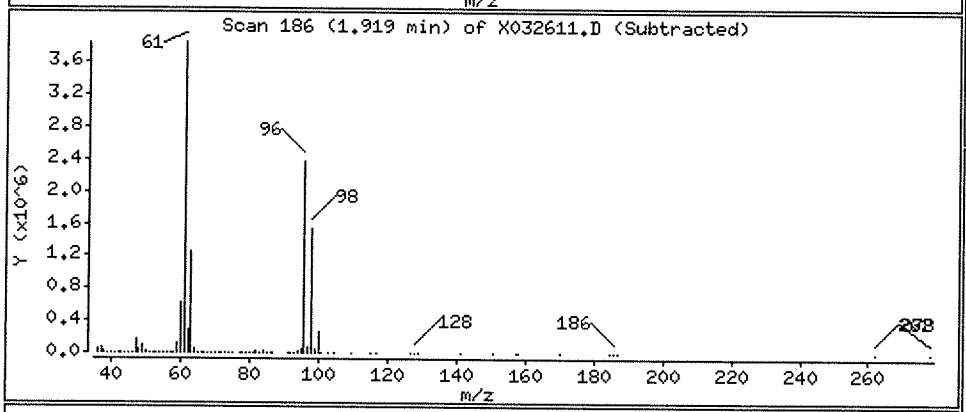
Column diameter: 0.18

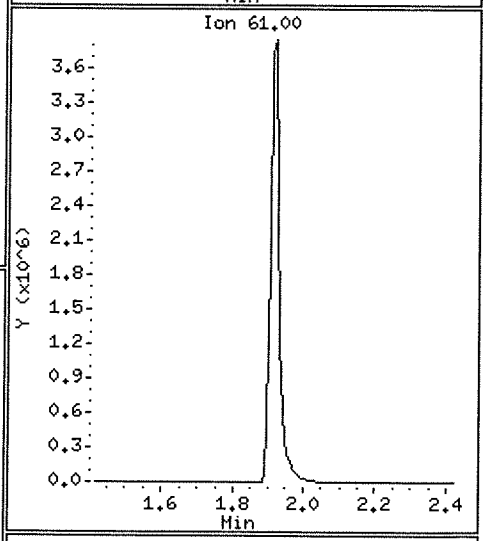
11 1,1-Dichloroethene

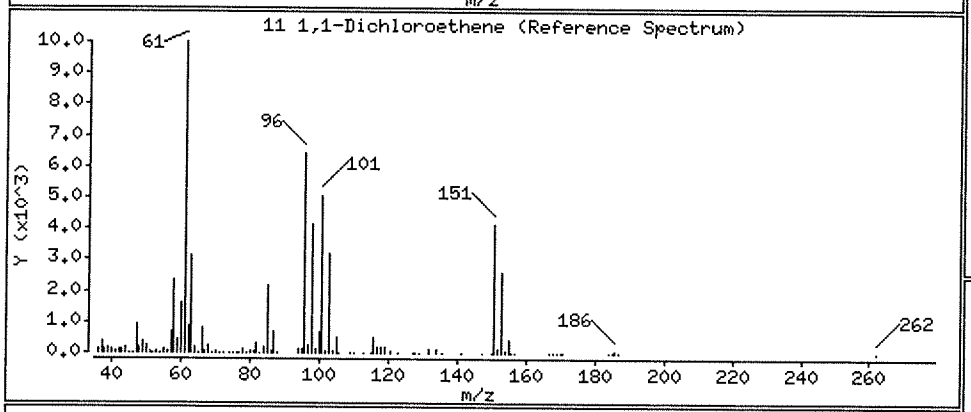
Concentration: 1097.36 ug/l

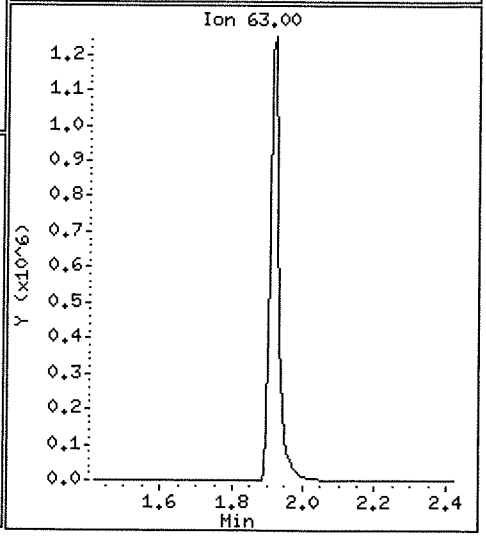


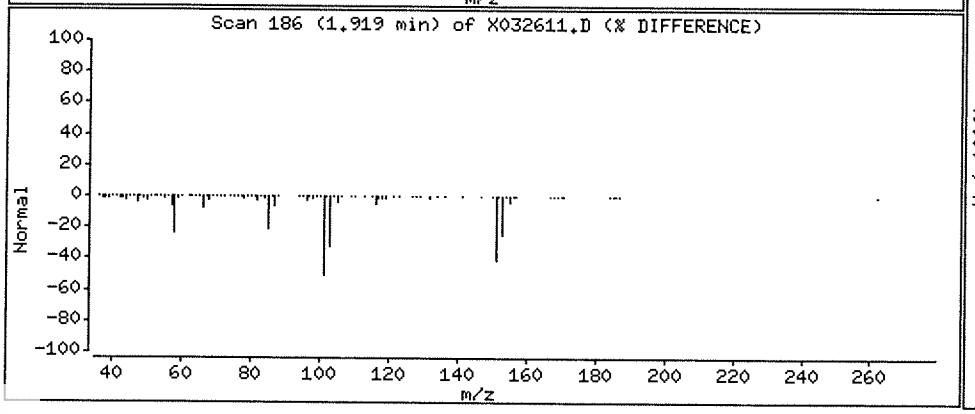












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

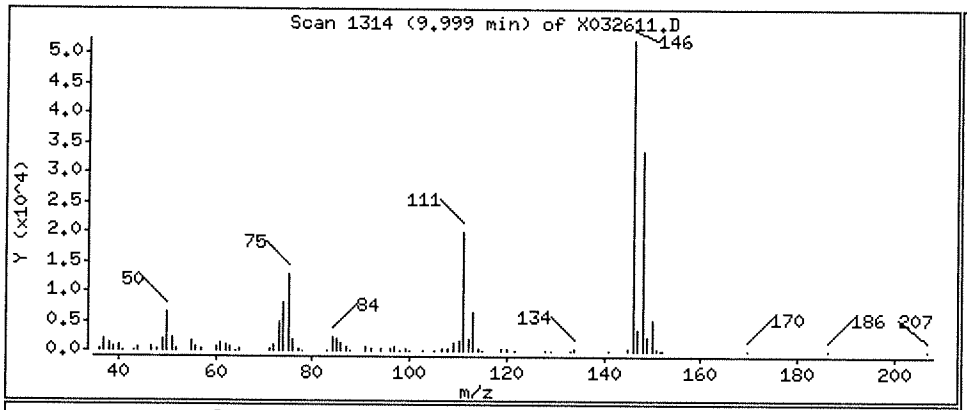
Operator: PC

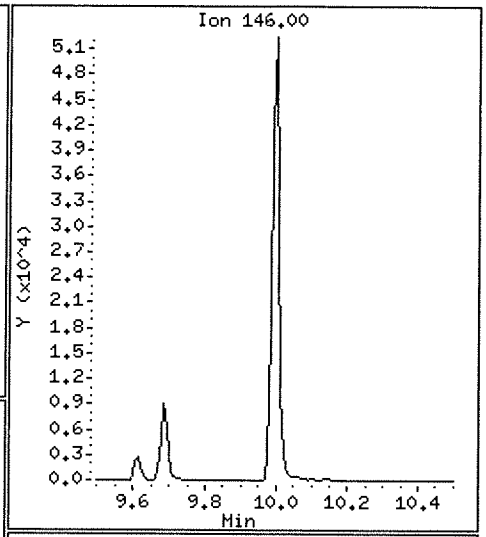
Column phase: DB624

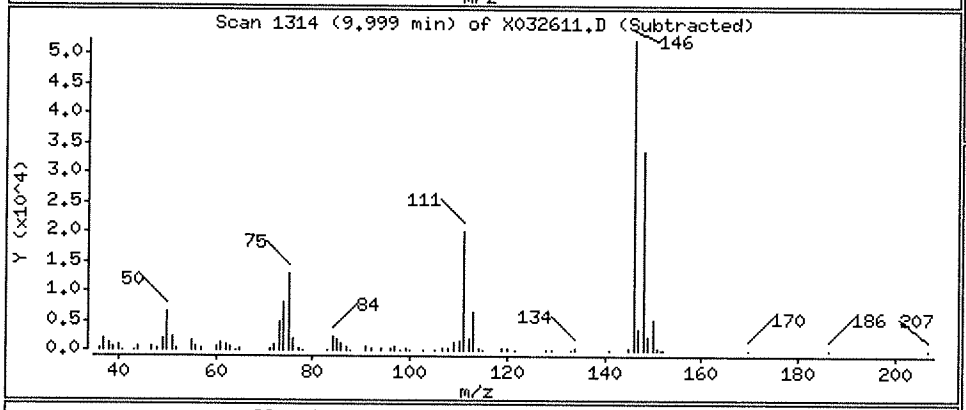
Column diameter: 0.18

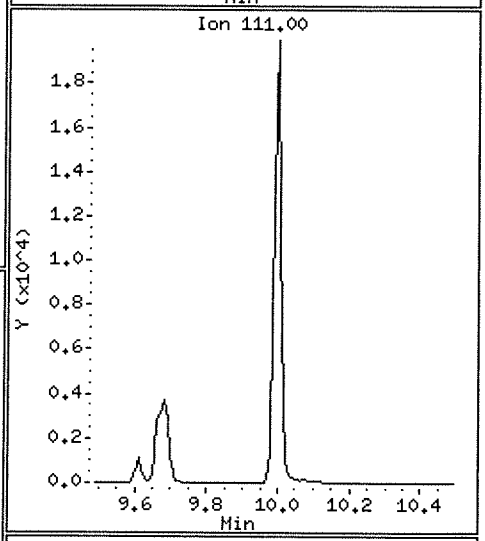
88 1,2-Dichlorobenzene

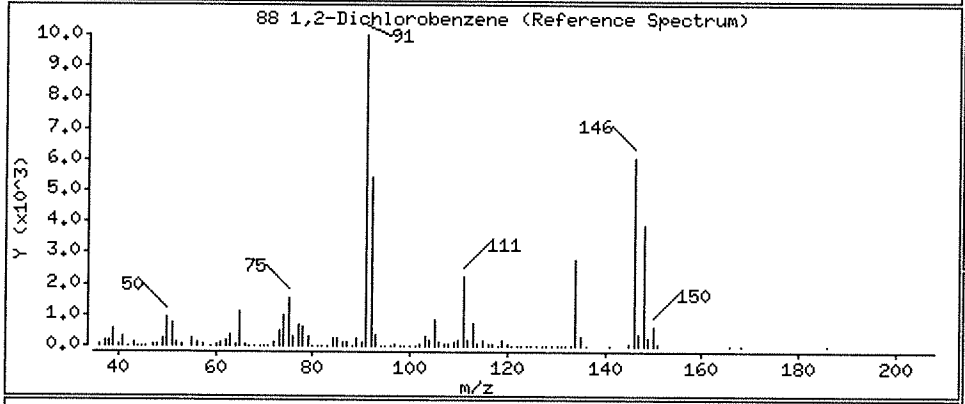
Concentration: 7.57 ug/l

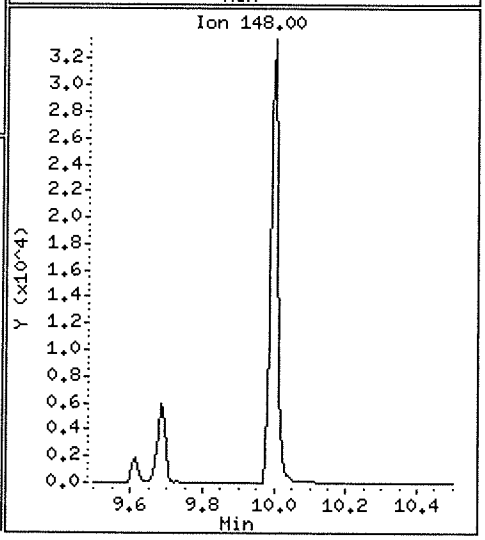


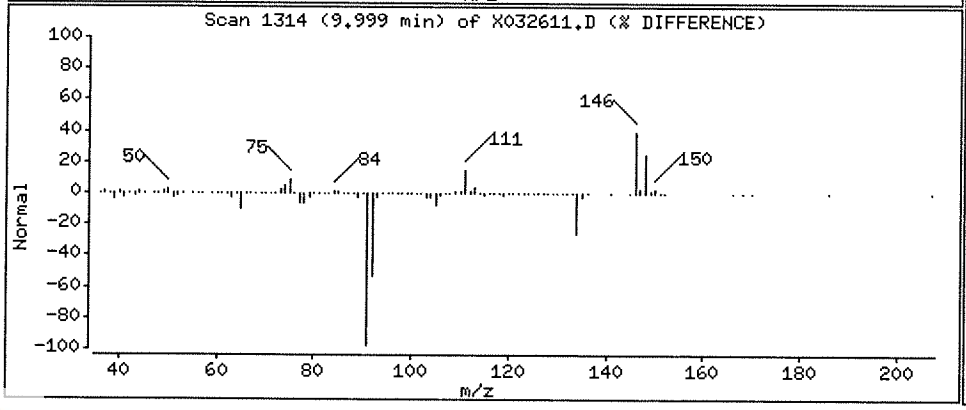












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Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

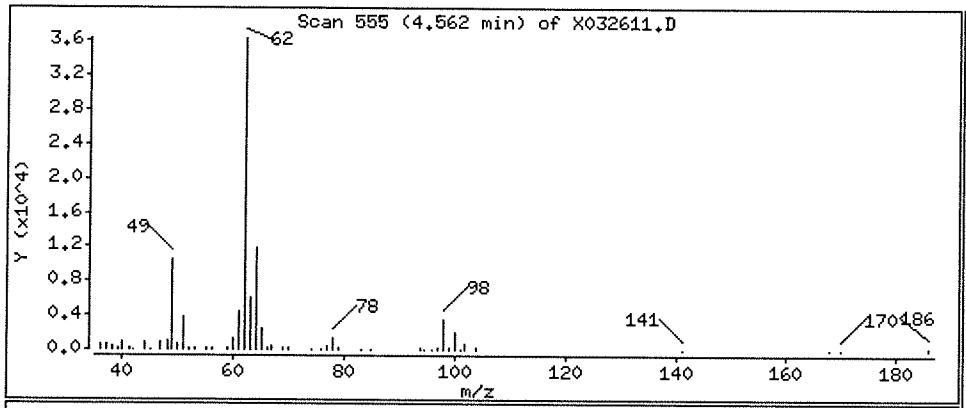
Operator: PC

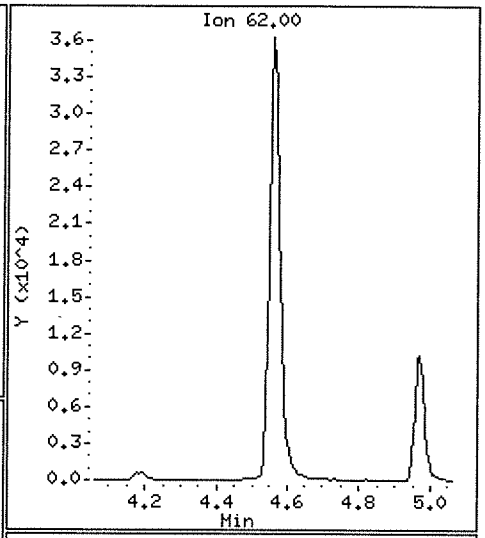
Column phase: DB624

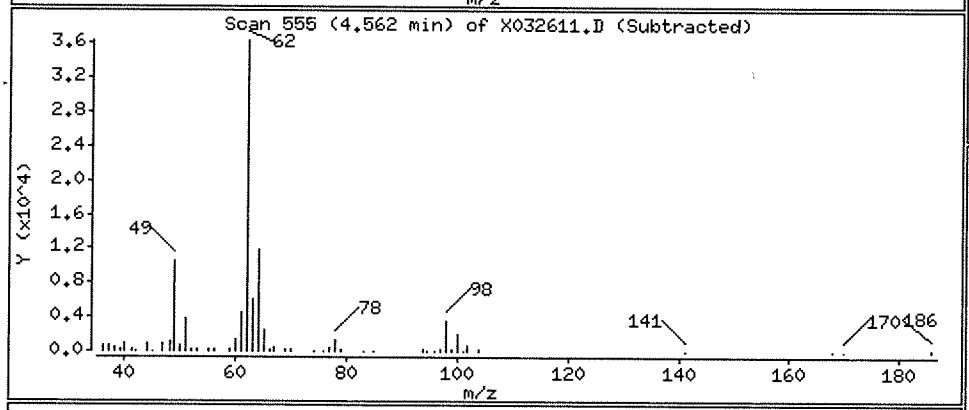
Column diameter: 0.18

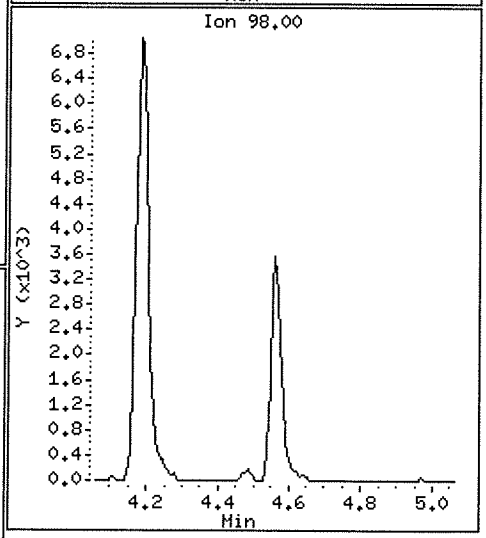
33 1,2-Dichloroethane

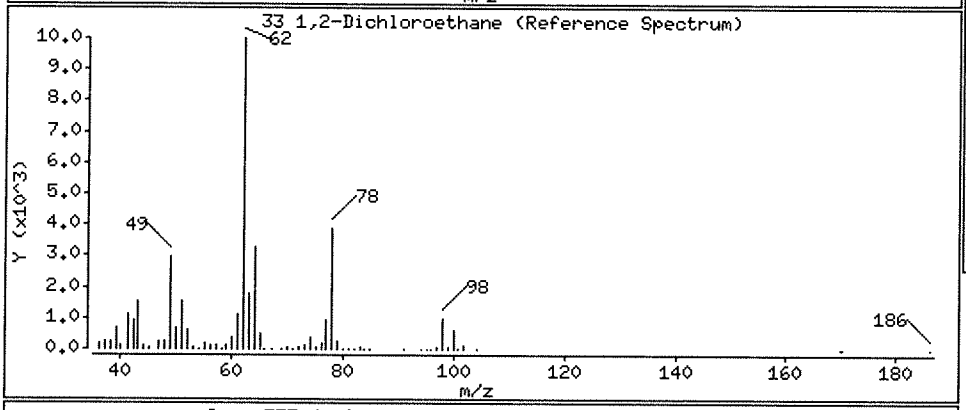
Concentration: 13.74 ug/l

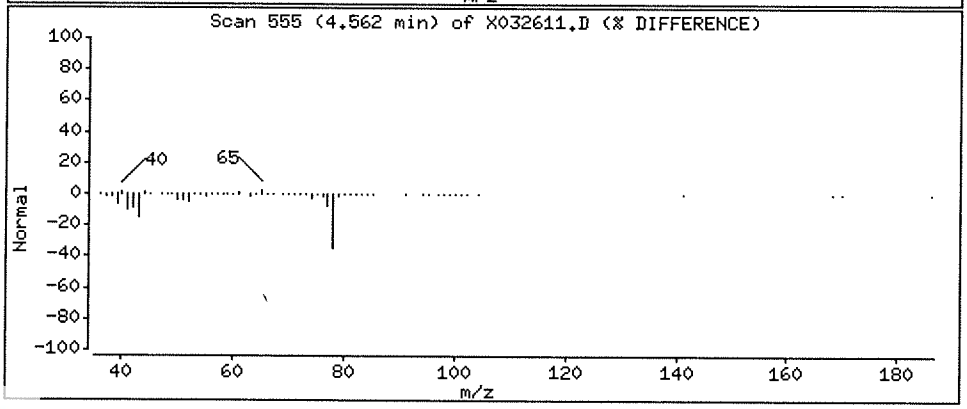












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

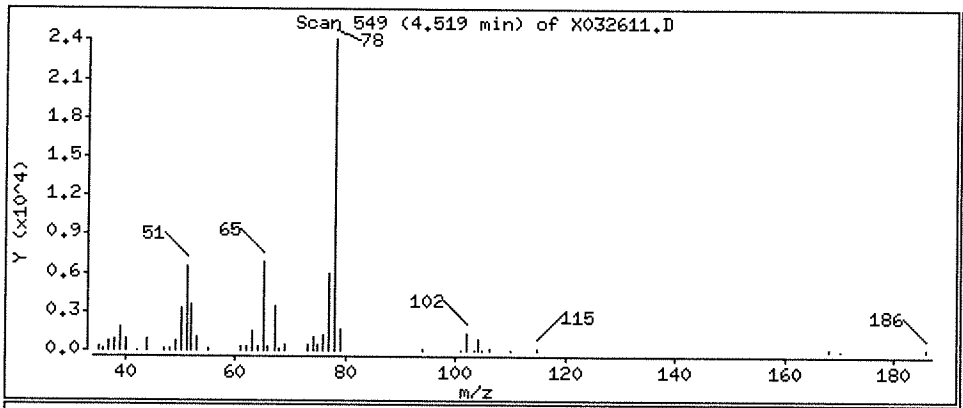
Operator: PC

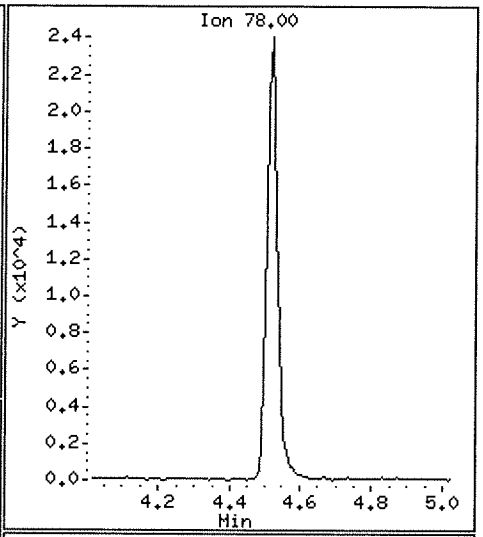
Column phase: DB624

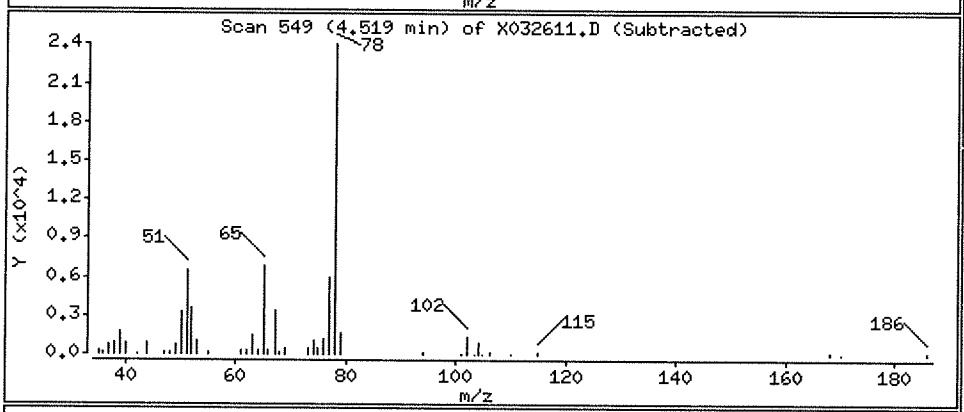
Column diameter: 0.18

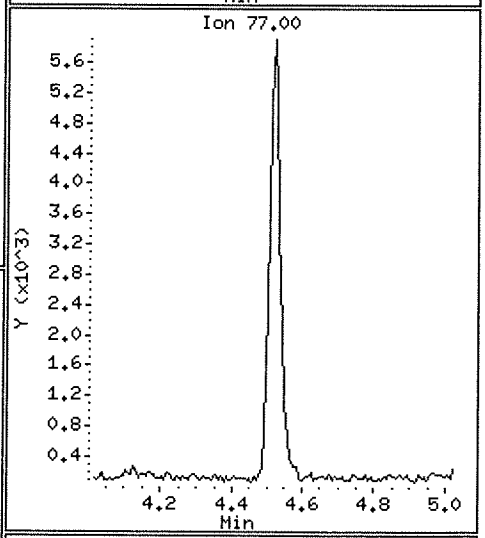
37 Benzene

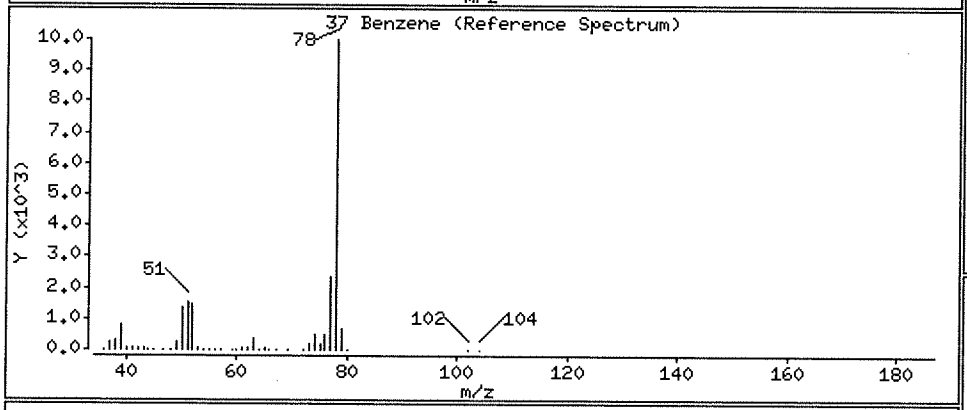
Concentration: 3.04 ug/l

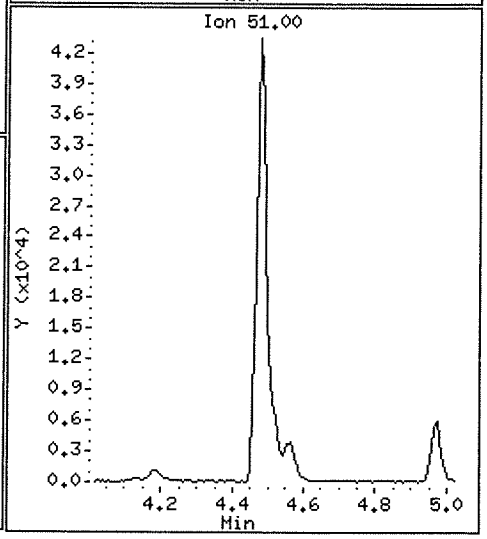


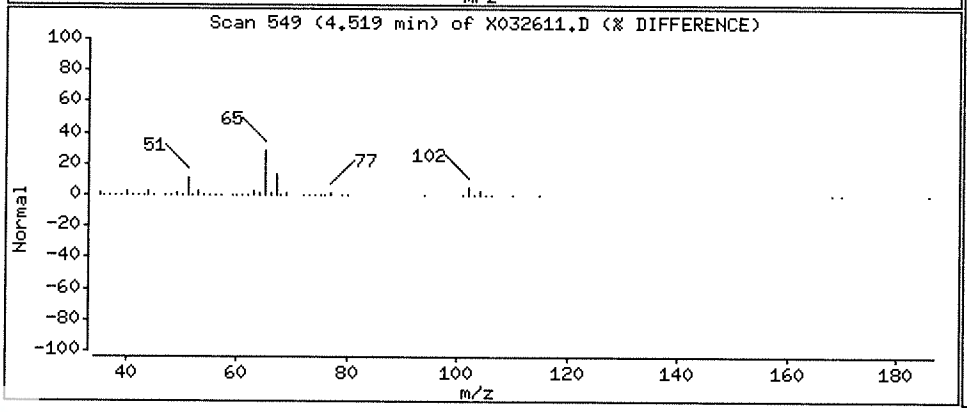












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Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

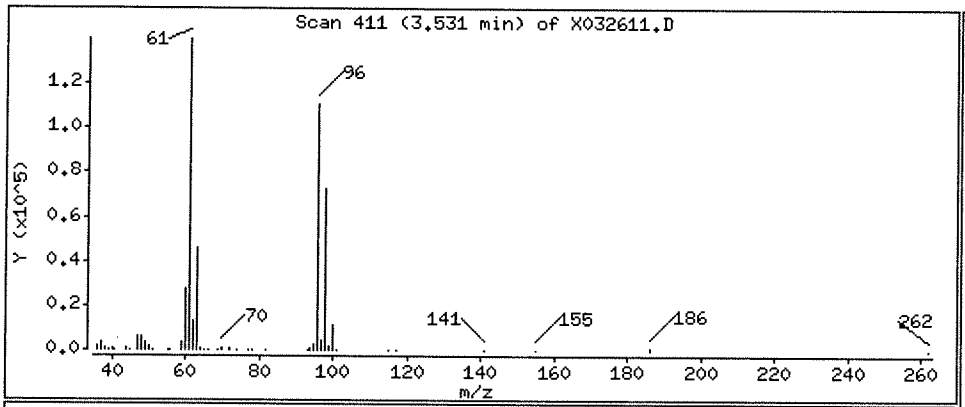
Operator: PC

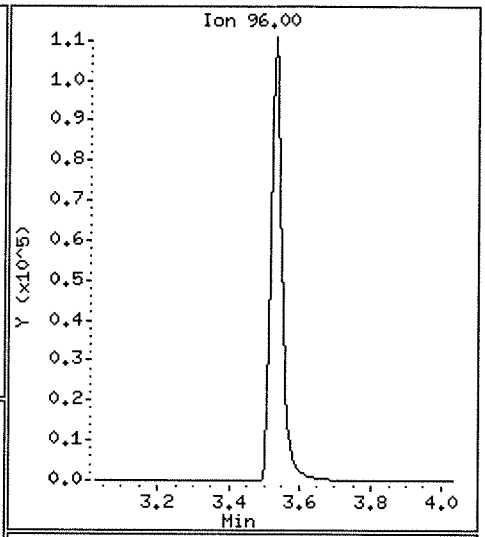
Column phase: DB624

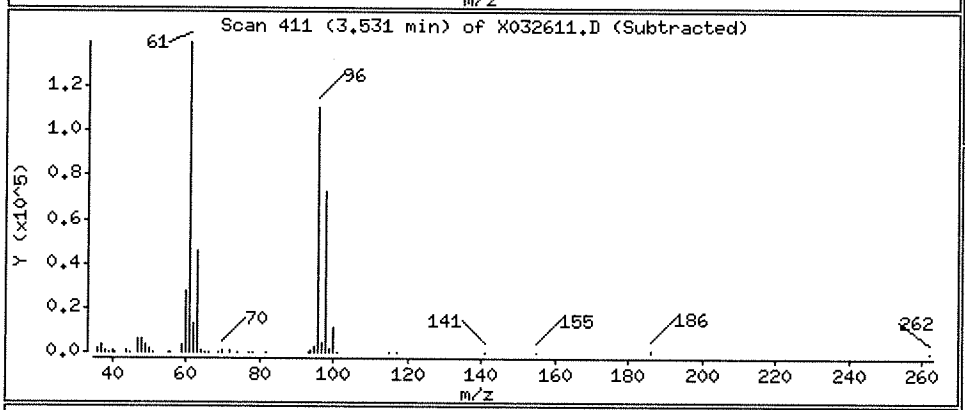
Column diameter: 0.18

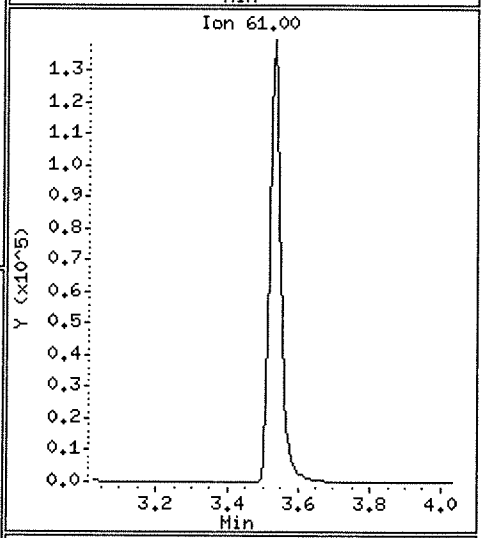
27 cis-1,2-Dichloroethene

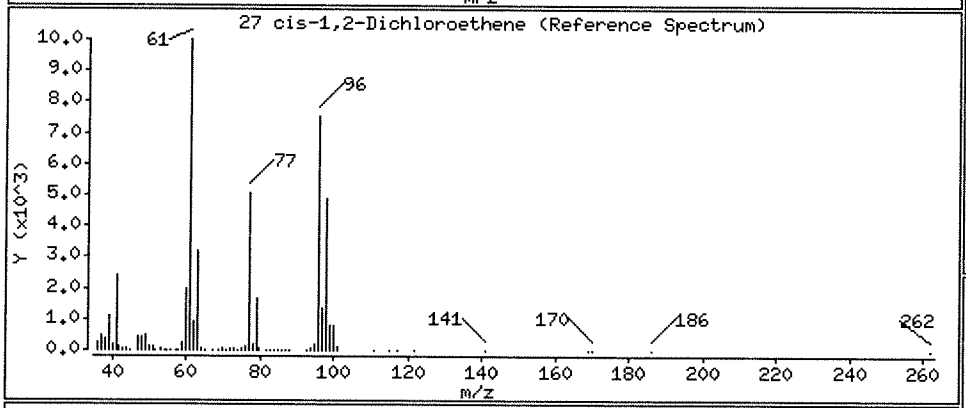
Concentration: 49.42 ug/l

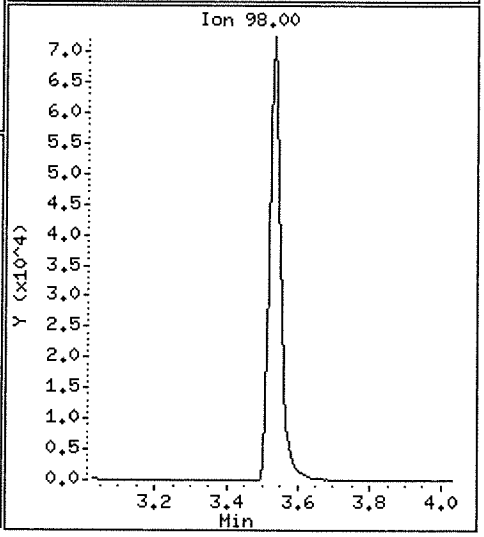


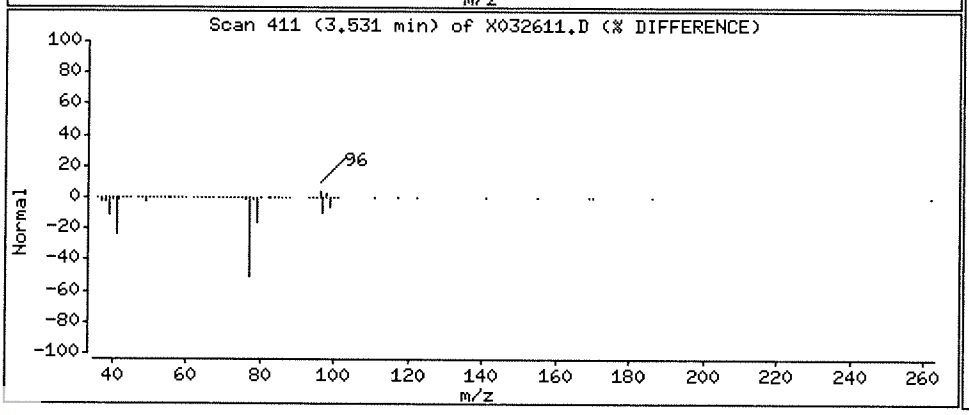












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Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

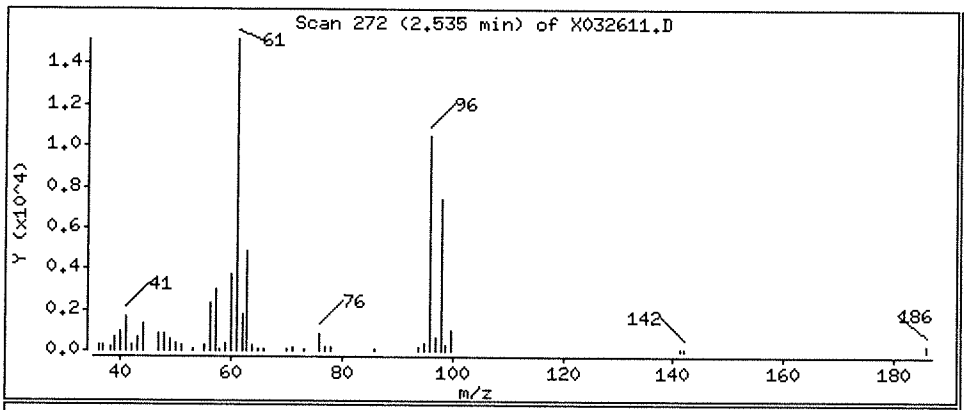
Operator: PC

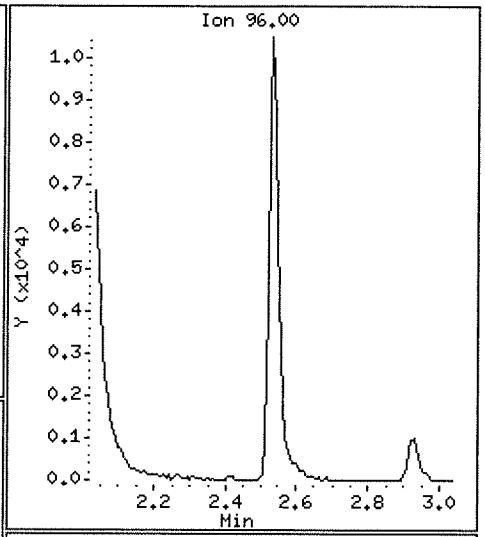
Column phase: DB624

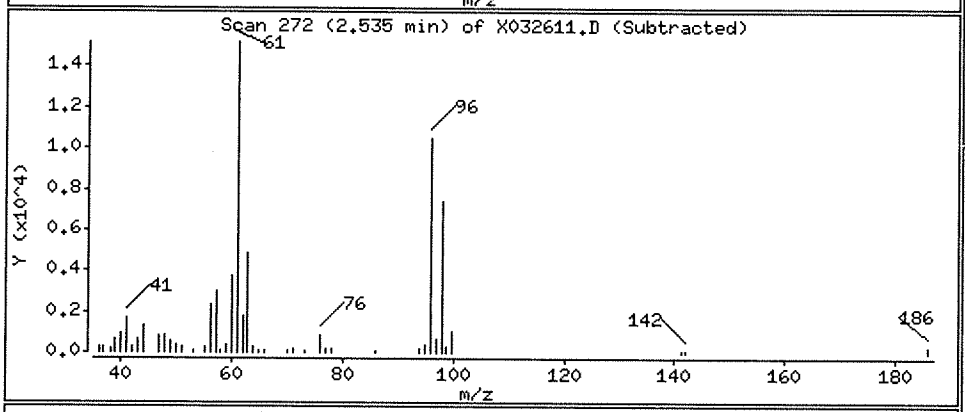
Column diameter: 0.18

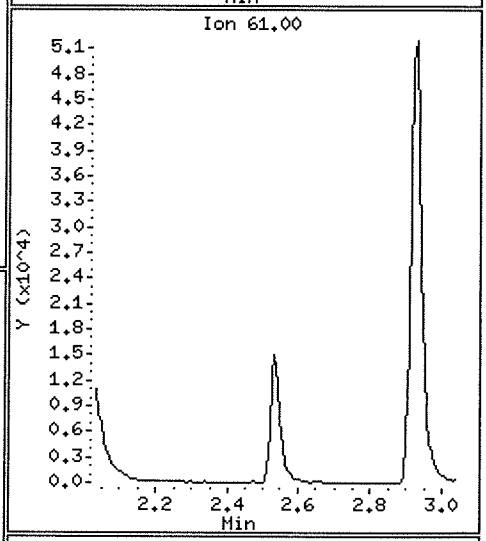
20 trans-1,2-Dichloroethene

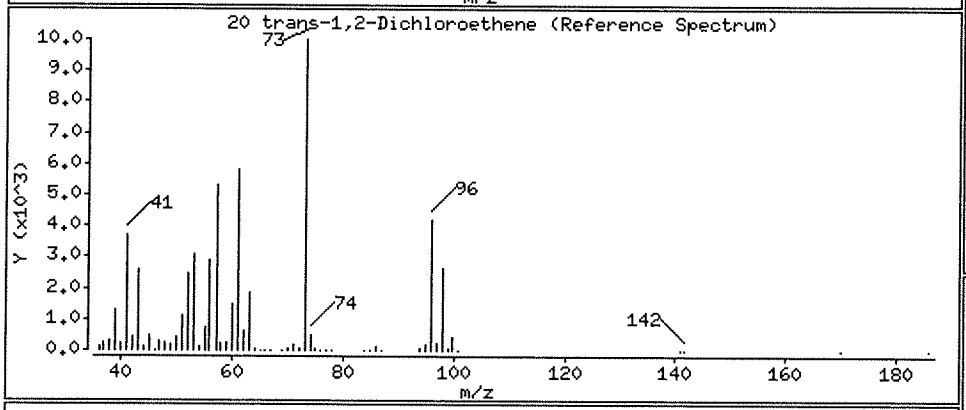
Concentration: 4.91 ug/l

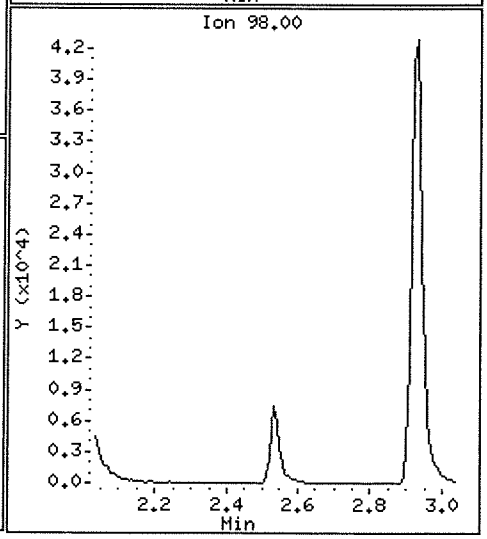


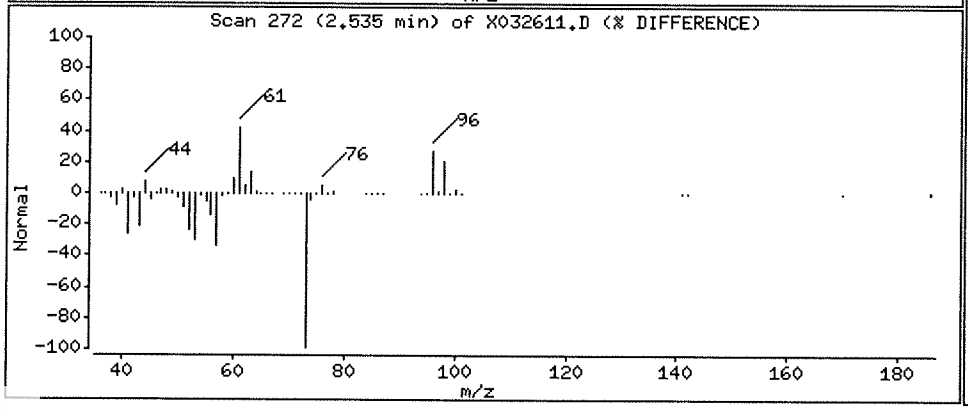












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

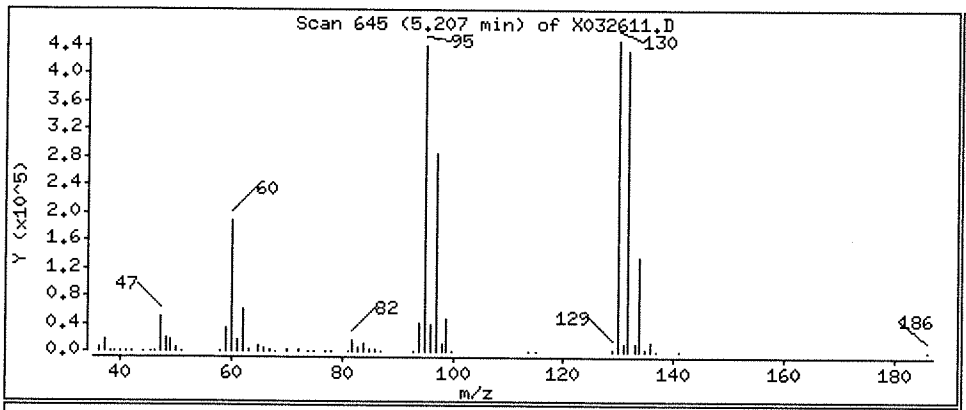
Operator: PC

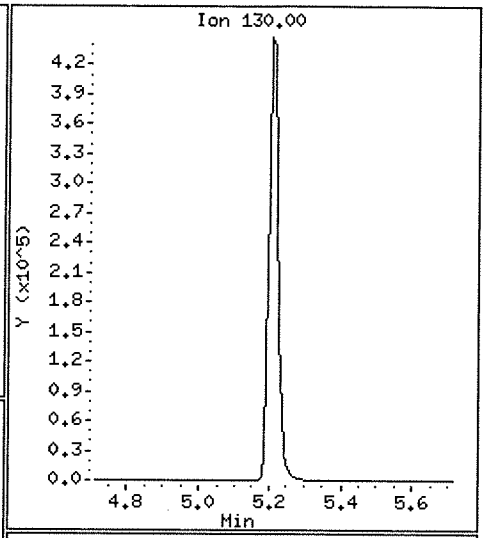
Column phase: DB624

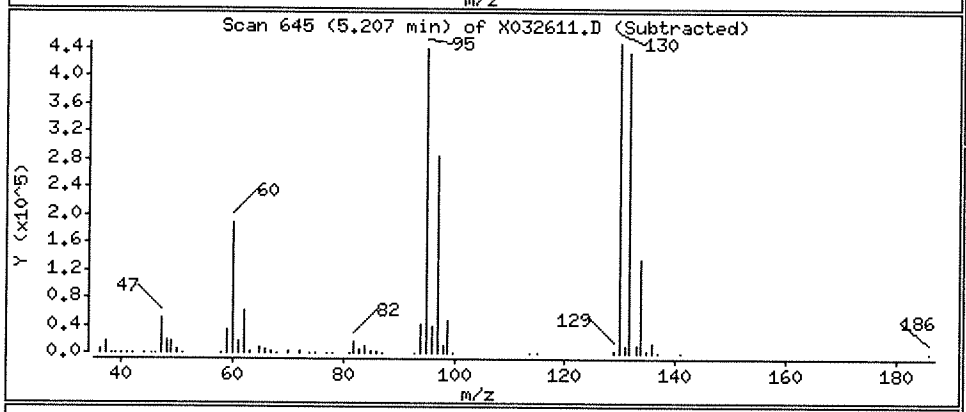
Column diameter: 0.18

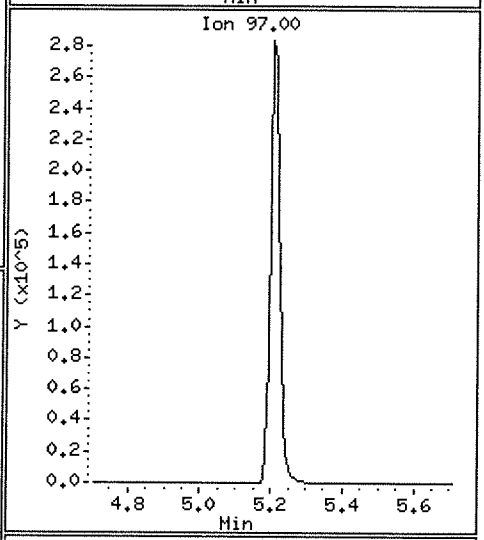
38 Trichloroethene

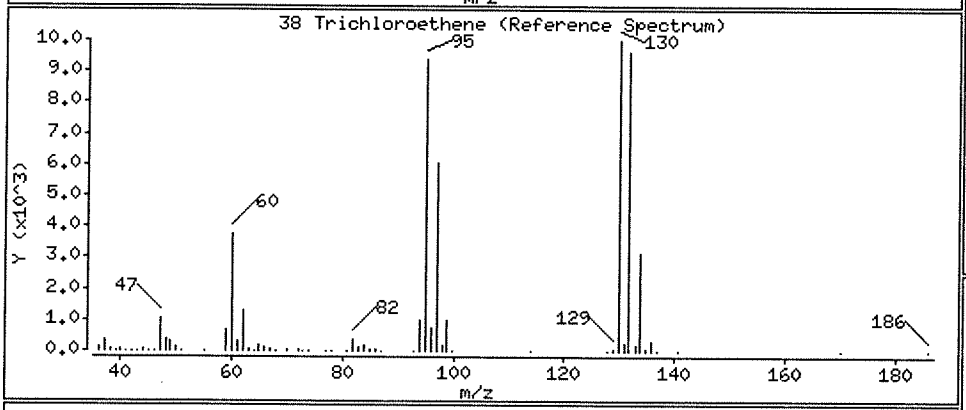
Concentration: 177.31 ug/l

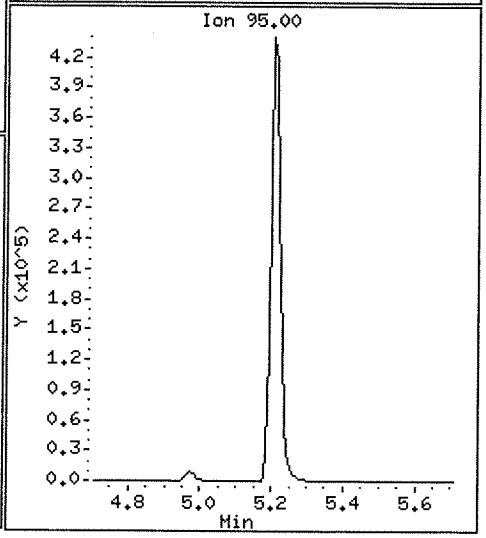


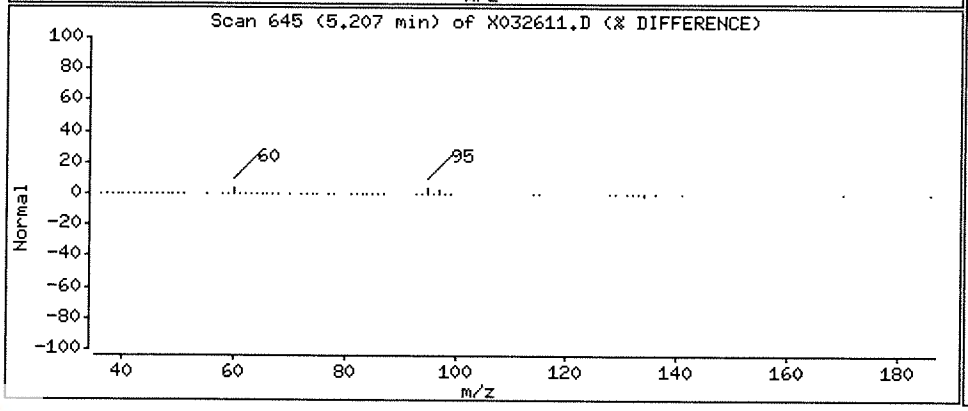












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032611.D

Date : 26-MAR-2019 16:39

Client ID: HS19031013-07

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

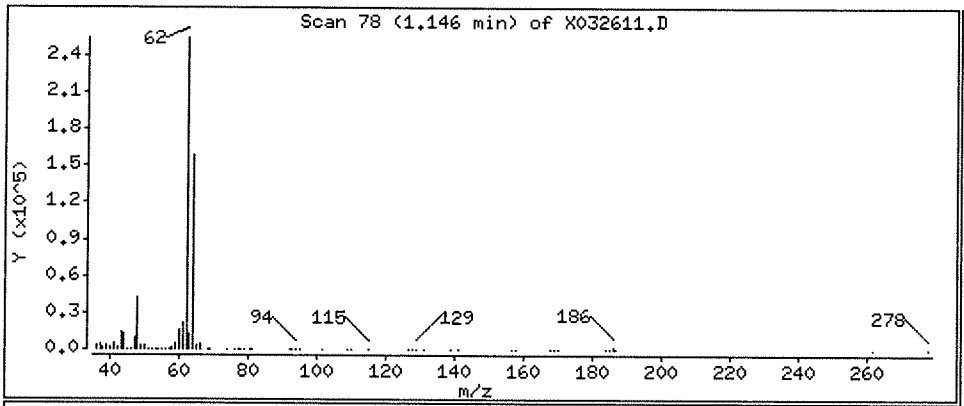
Operator: PC

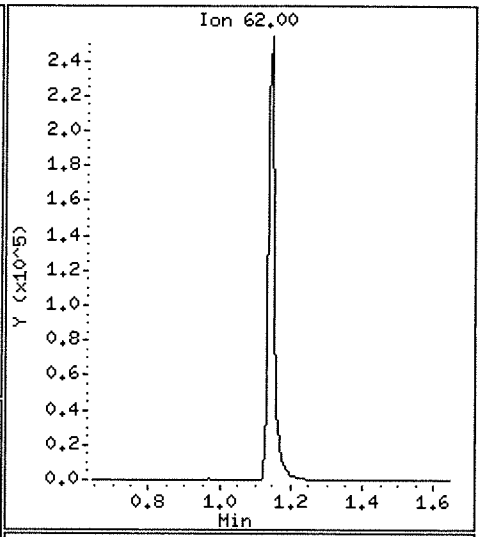
Column phase: DB624

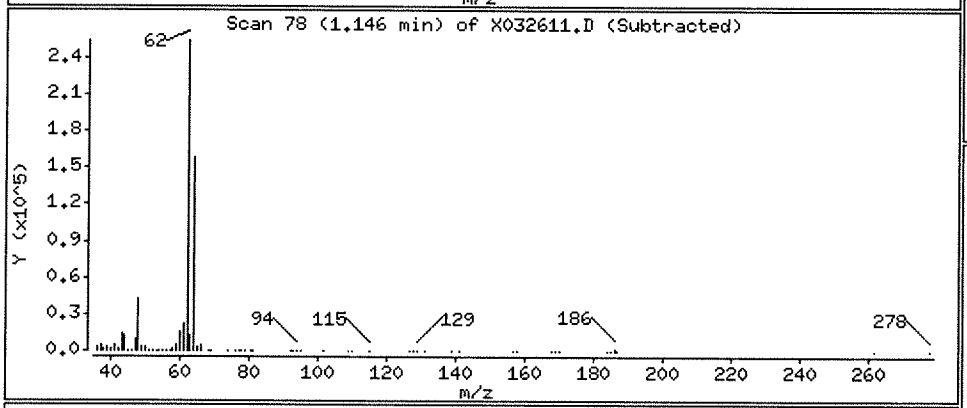
Column diameter: 0.18

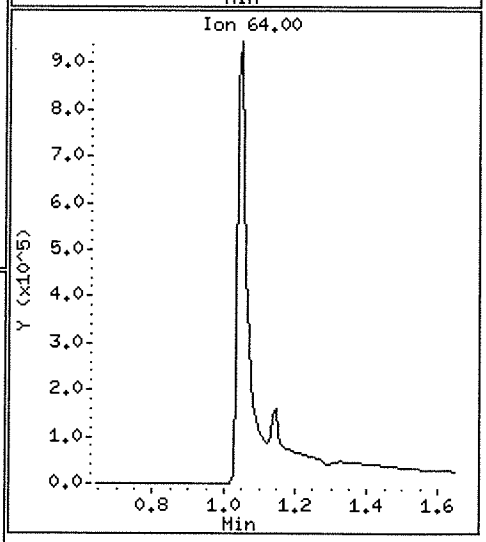
5 Vinyl Chloride

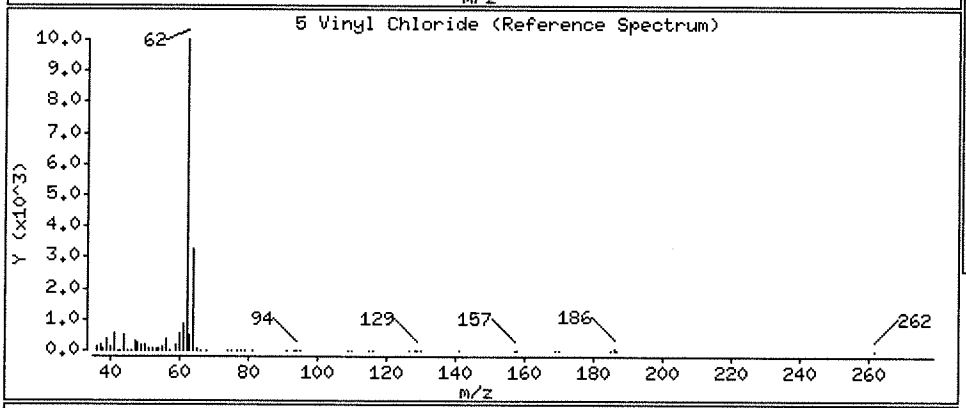
Concentration: 53.80 ug/l

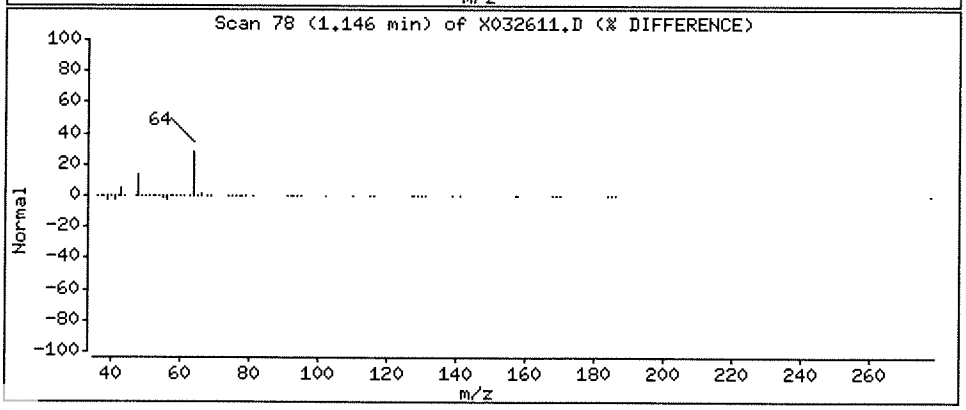












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Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032612.D
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Inj Date : 26-MAR-2019 17:03
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-07MS;HS19031013-07MS;3;;MS
Misc Info : HS18090001;WATER;0;1;
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Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 11 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.189	4.189	(1.000)	433309	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	631108	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	538651	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	253964	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	194834	45.9742	45.97
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	223834	47.2937	47.29
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	730679	54.6682	54.66
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	232978	47.3410	47.34
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	40558	11.1571	11.15
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.976)	70403	11.1497	11.14
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	64556	15.7608	15.76
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	156646	53.0350	53.03
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	1475988	185.488	185.48
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	3860316	1050.44	1050.43(A)
32 1,1-Dichloropropene	75	4.290	4.282	(0.863)	63231	11.1447	11.14
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	19395	10.7890	10.78
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	50889	16.0765	16.07(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.338	(1.173)	32201	10.1314	10.13
79 1,2,4-Trimethylbenzene	105	9.382	9.383	(0.970)	136119	11.2046	11.20
89 1,2-Dibromo-3-Chloropropane	155	10.657	10.658	(1.102)	9716	19.5018	19.50
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	44006	12.4023	12.40
88 1,2-Dichlorobenzene	146	9.998	9.999	(1.034)	147382	20.3512	20.35

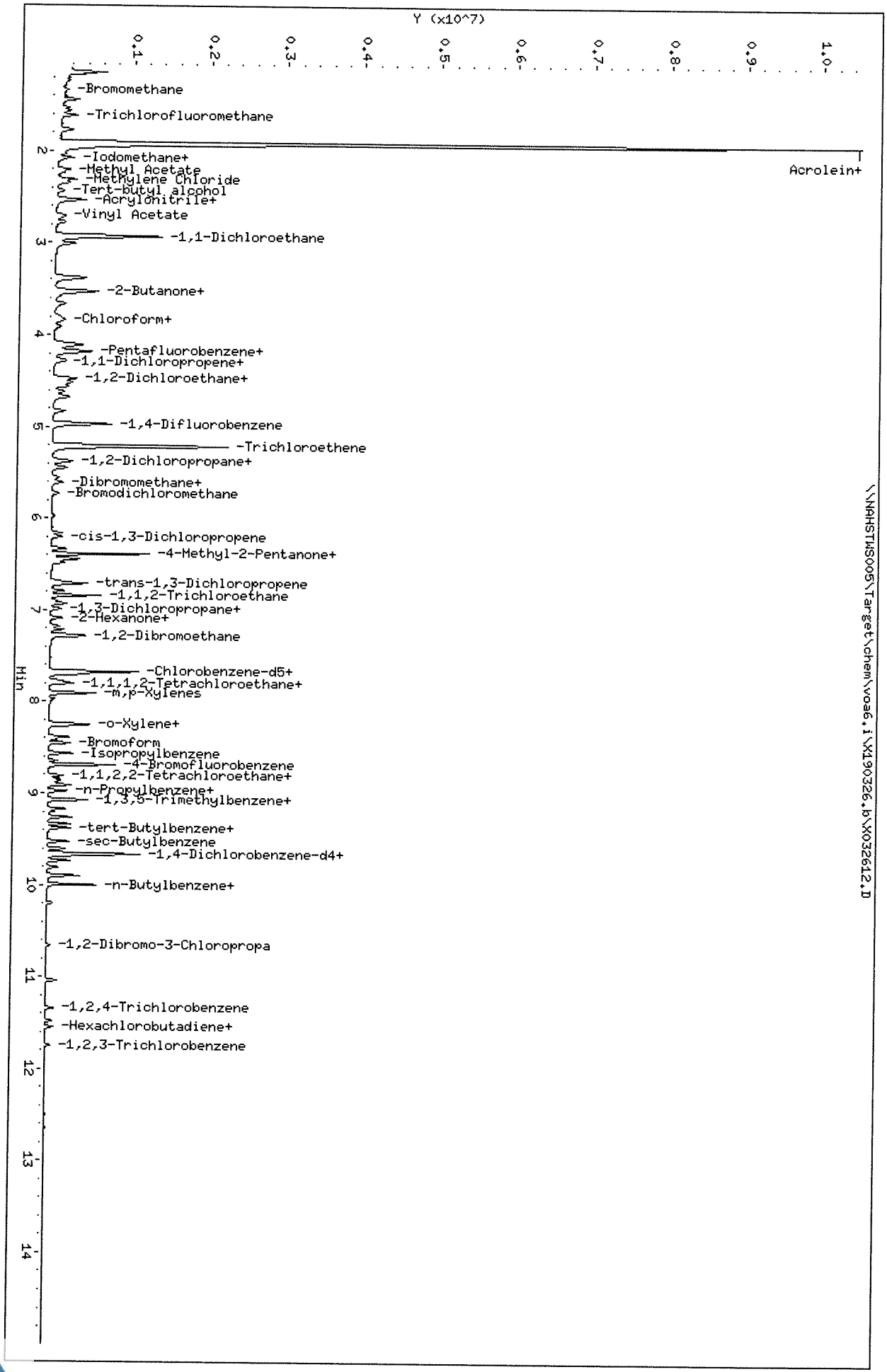
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032612.D
Report Date: 29-Mar-2019 20:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	127389	23.9188	23.91
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	42727	9.63519	9.63
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	131915	10.9756	10.97
83	1,3-Dichlorobenzene	146	9.612	9.612	(0.994)	83399	10.8587	10.85
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	70609	11.7449	11.74
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	93355	11.9311	11.93
26	2,2-Dichloropropane	77	3.516	3.516	(0.839)	66427	10.8457	10.84
24	2-Butanone	43	3.580	3.580	(0.855)	49661	33.4596	33.45
76	2-Chlorotoluene	91	8.974	8.974	(0.928)	118437	10.9249	10.92
52	2-Hexanone	43	7.090	7.090	(0.924)	81147	38.2137	38.21
77	4-Chlorotoluene	91	9.074	9.075	(0.939)	131916	10.6709	10.67
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	131469	10.4668	10.46
45	4-Methyl-2-Pentanone	43	6.331	6.324	(0.825)	116355	35.5927	35.59
10	Acetone	43	1.976	1.976	(0.472)	37390	31.4057	31.40
37	Benzene	78	4.519	4.519	(0.909)	214990	13.3195	13.31
74	Bromobenzene	156	8.809	8.809	(0.911)	49379	11.3608	11.36
29	Bromochloromethane	128	3.802	3.803	(0.908)	22308	9.21305	9.21
39	Bromodichloromethane	83	5.729	5.729	(1.153)	52973	9.83849	9.83
66	Bromoform	173	8.415	8.416	(1.097)	34473	13.5250	13.52
6	Bromomethane	94	1.338	1.338	(0.320)	29818	10.3231	10.32
19	Carbon Disulfide	76	2.069	2.069	(0.494)	297971	23.5727	23.57
34	Carbon Tetrachloride	117	4.275	4.268	(0.860)	60631	13.7270	13.72
59	Chlorobenzene	112	7.699	7.699	(1.004)	110333	10.5119	10.51
7	Chloroethane	64	1.145	1.403	(0.273)	549513	175.050	175.05
28	Chloroform	83	3.910	3.910	(0.933)	72926	9.48864	9.48
3	Chloromethane	50	1.080	1.081	(0.258)	53140	7.61330	7.61
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.843)	267621	55.4188	55.41
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	68164	9.59499	9.59
55	Dibromochloromethane	129	7.176	7.176	(0.936)	43934	11.4722	11.47
44	Dibromomethane	93	5.557	5.557	(1.118)	28201	10.6193	10.61
2	Dichlorodifluoromethane	85	0.973	0.973	(0.232)	55378	13.9437	13.94
61	Ethylbenzene	106	7.799	7.799	(1.017)	57071	10.9524	10.95
91	Hexachlorobutadiene	225	11.481	11.488	(1.187)	14436	8.84651	8.84
67	Isopropylbenzene	105	8.566	8.566	(1.117)	170740	10.9786	10.97
62	m,p-Xylenes	106	7.907	7.907	(1.031)	139544	21.6030	21.60
17	Methylene Chloride	84	2.305	2.305	(0.550)	42891	9.47797	9.47
87	n-Butylbenzene	91	9.998	9.999	(1.034)	104189	9.61860	9.61
73	n-Propylbenzene	91	8.917	8.917	(0.922)	195049	11.0383	11.03
92	Naphthalene	128	11.546	11.546	(1.194)	68423	14.2877	14.28
63	o-Xylene	106	8.244	8.244	(1.075)	71408	11.0498	11.04
81	sec-Butylbenzene	105	9.526	9.526	(0.985)	155537	10.5666	10.56
64	Styrene	104	8.265	8.258	(1.078)	111061	10.3671	10.36
78	tert-Butylbenzene	119	9.339	9.340	(0.966)	118470	11.3449	11.34
56	Tetrachloroethene	164	6.933	6.933	(0.904)	40951	12.6514	12.65
50	Toluene	91	6.453	6.446	(0.841)	180260	11.4438	11.44
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	59042	14.4375	14.43
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	58167	10.1589	10.15
38	Trichloroethene	130	5.214	5.214	(1.049)	793017	178.568	178.56
8	Trichlorofluoromethane	101	1.560	1.560	(0.373)	80198	13.1973	13.19
5	Vinyl Chloride	62	1.145	1.145	(0.273)	345684	61.8084	61.80

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032612.D
Report Date: 29-Mar-2019 20:42

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.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0.5
0.6
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Min
2
3
4
5
6
7
8
9
10
11
12
13
14
-Bromomethane
-Trichlorofluoromethane
-Iodomethane+
-Methyl Acetate
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate
-1,1-Dichloroethane
Acrolein+
-2-Butanone+
-Chloroform+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-1,4-Difluorobenzene
-Trichloroethene
-1,2-Dichloropropane+
-Dibromomethane+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-4-Methyl-2-Pentanone+
-trans-1,3-Dichloropropene
-1,1,2-Trichloroethane
-1,3-Dichloropropane+
-2-Hexanone+
-1,2-Dibromoethane
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
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Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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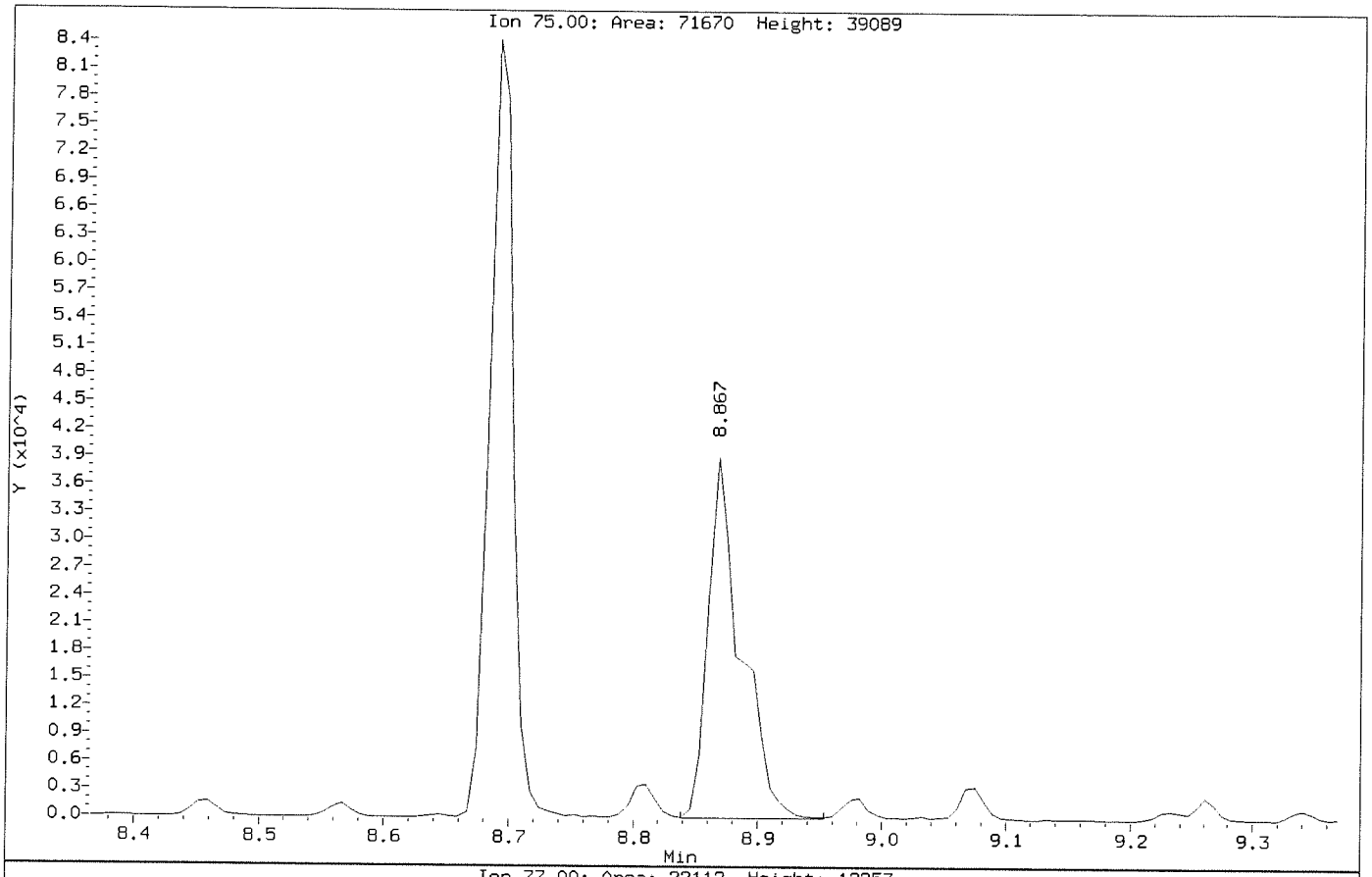
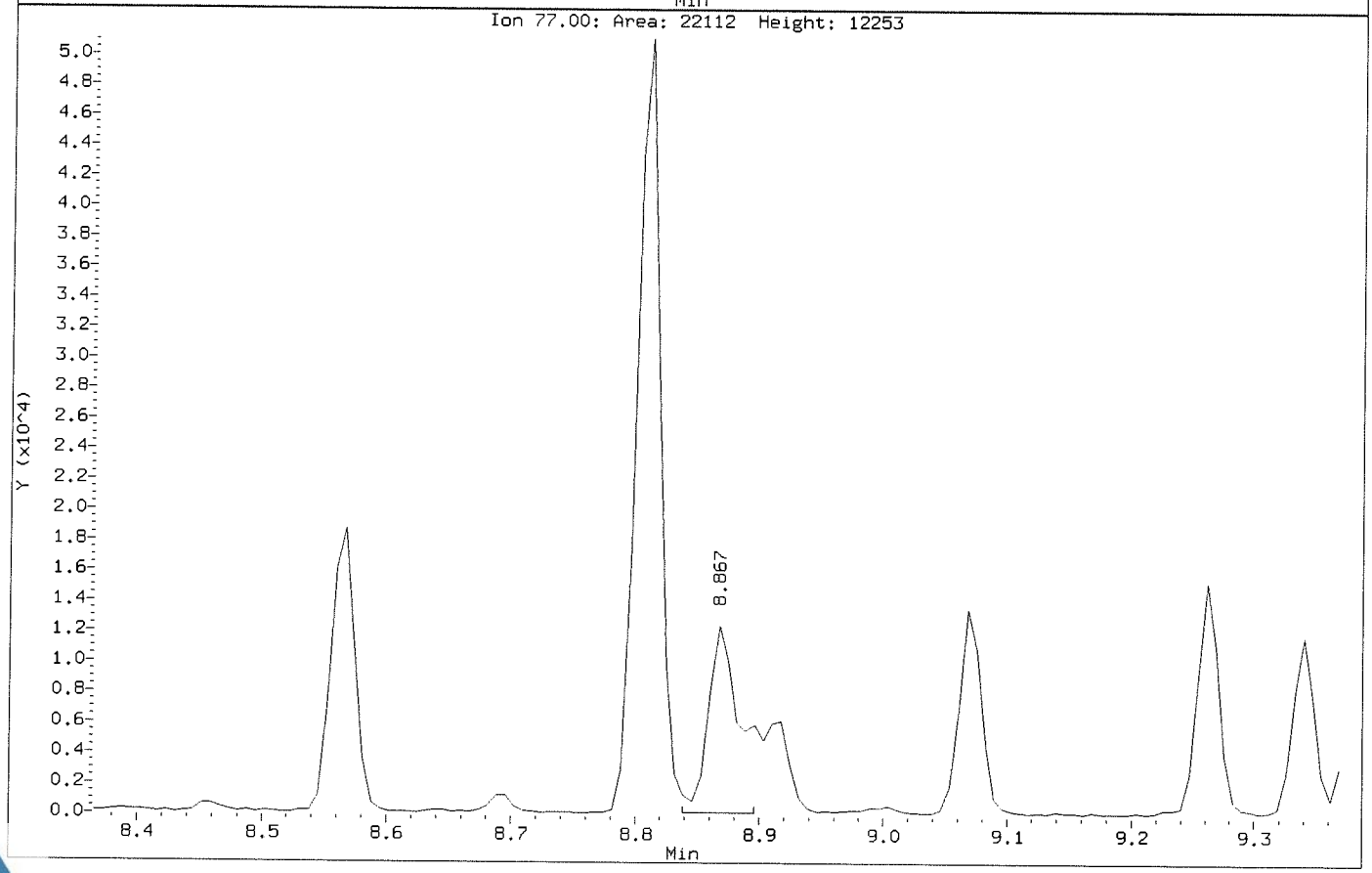
Injection Date: 26-MAR-2019 17:03
Instrument: voa6.i
Client Sample ID: HS19031013-07MS

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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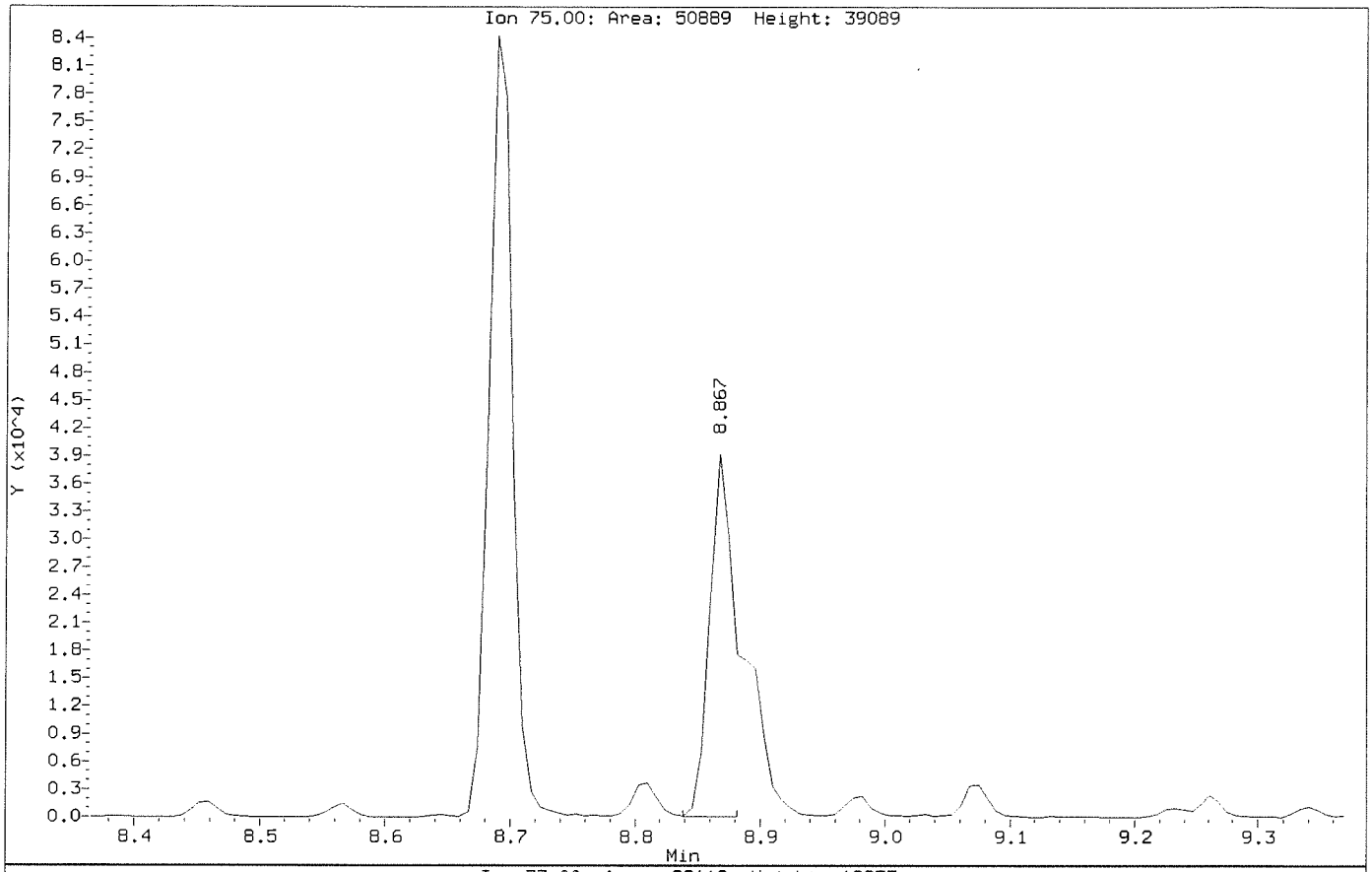
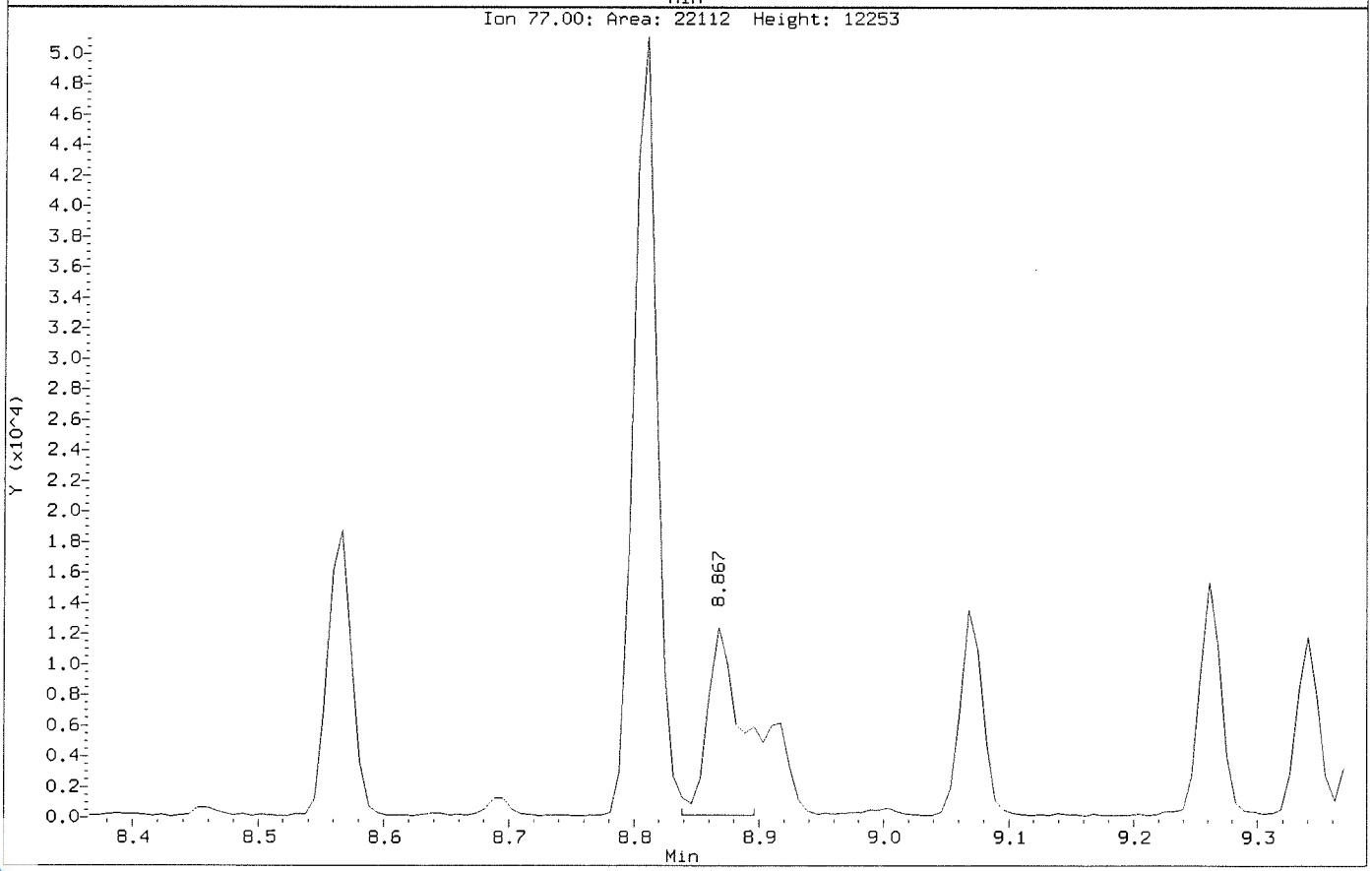
Instrument: voa6.i
Client Sample ID: HS19031013-07MS

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

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Inj Date : 26-MAR-2019 17:27
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-07MSD;HS19031013-07MSD;3;;MSD
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 11 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.182	4.189	(1.000)	438907	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	647862	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	603457	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	312908	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	198823	46.3176	46.31
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	224393	46.8048	46.80
$ 48 Toluene-d8	98	6.389	6.388	(0.833)	763069	50.9465	50.94
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	279316	50.6868	50.68
60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	58199	14.2906	14.29
31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	87817	13.7301	13.73
68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	82983	16.4432	16.44
53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	221322	66.8851	66.88
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	2006385	248.927	248.92(A)
11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	4698577	1262.23	1262.23(A)
32 1,1-Dichloropropene	75	4.283	4.282	(0.862)	81502	13.9936	13.99
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	30978	13.9862	13.98
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	64113	16.4387	16.43(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	53516	13.6659	13.66
79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	206994	13.8290	13.82
89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	11188	18.2262	18.22
57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	63291	15.9219	15.92
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	224716	25.1846	25.18

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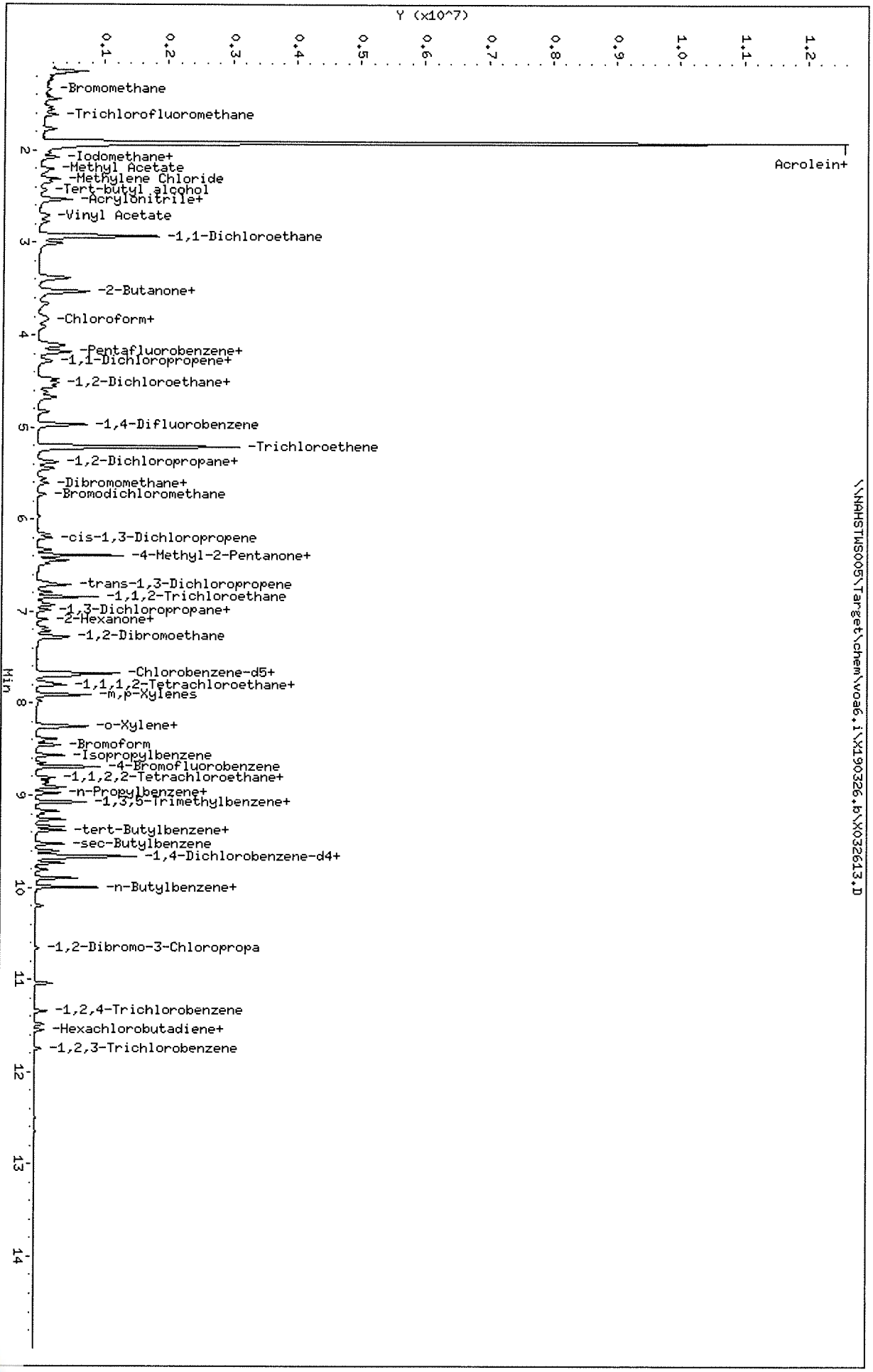
Report Date: 29-Mar-2019 20:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
33	1,2-Dichloroethane	62	4.562	4.562	(0.918)	181313	33.1633	33.16
42	1,2-Dichloropropane	63	5.443	5.443	(1.095)	61120	13.4265	13.42
75	1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	201567	13.6116	13.61
83	1,3-Dichlorobenzene	146	9.605	9.612	(0.993)	130853	13.8279	13.82
54	1,3-Dichloropropane	76	6.983	6.983	(0.910)	99840	14.8236	14.82
84	1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	143643	14.8999	14.89
26	2,2-Dichloropropane	77	3.516	3.516	(0.841)	83378	13.4397	13.43
24	2-Butanone	43	3.581	3.580	(0.856)	53621	35.6669	35.66
76	2-Chlorotoluene	91	8.974	8.974	(0.928)	180321	13.4999	13.49
52	2-Hexanone	43	7.090	7.090	(0.924)	92531	38.8951	38.89
77	4-Chlorotoluene	91	9.075	9.075	(0.939)	202636	13.3038	13.30
82	p-Isopropyltoluene	119	9.655	9.655	(0.999)	211080	13.6393	13.63
45	4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	138093	37.7059	37.70
10	Acetone	43	1.976	1.976	(0.473)	38463	31.9675	31.96
37	Benzene	78	4.519	4.519	(0.909)	297251	17.9396	17.93
74	Bromobenzene	156	8.810	8.809	(0.911)	73378	13.7021	13.70
29	Bromochloromethane	128	3.803	3.803	(0.909)	33127	13.5067	13.50
39	Bromodichloromethane	83	5.730	5.729	(1.153)	77938	14.1008	14.10
66	Bromoform	173	8.416	8.416	(1.097)	47413	16.3906	16.39
6	Bromomethane	94	1.339	1.338	(0.320)	38264	13.0203	13.02
19	Carbon Disulfide	76	2.069	2.069	(0.495)	376628	29.4153	29.41
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	72094	15.6177	15.61
59	Chlorobenzene	112	7.699	7.699	(1.004)	163885	13.9372	13.93
7	Chloroethane	64	1.145	1.403	(0.274)	679662	213.748	213.74(A)
28	Chloroform	83	3.910	3.910	(0.935)	103163	13.2517	13.25
3	Chloromethane	50	1.074	1.081	(0.257)	74173	11.0378	11.03
27	cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	377140	77.1018	77.10
46	cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	99875	13.6952	13.69
55	Dibromochloromethane	129	7.176	7.176	(0.936)	63646	14.8347	14.83
44	Dibromomethane	93	5.558	5.557	(1.118)	40039	14.6870	14.68
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	60495	14.8924	14.89
61	Ethylbenzene	106	7.800	7.799	(1.017)	83893	14.3708	14.37
91	Hexachlorobutadiene	225	11.489	11.488	(1.188)	26953	12.8890	12.88
67	Isopropylbenzene	105	8.566	8.566	(1.117)	249469	14.3182	14.31
62	m,p-Xylenes	106	7.907	7.907	(1.031)	203543	28.1268	28.12
17	Methylene Chloride	84	2.306	2.305	(0.551)	60442	13.1998	13.19
87	n-Butylbenzene	91	9.999	9.999	(1.034)	180597	13.5318	13.53
73	n-Propylbenzene	91	8.917	8.917	(0.922)	303053	13.9197	13.91
92	Naphthalene	128	11.546	11.546	(1.194)	98783	16.7416	16.74
63	o-Xylene	106	8.244	8.244	(1.075)	101921	14.0778	14.07
81	sec-Butylbenzene	105	9.526	9.526	(0.985)	250069	13.7885	13.78
64	Styrene	104	8.258	8.258	(1.077)	166801	13.8981	13.89
78	tert-Butylbenzene	119	9.340	9.340	(0.966)	176570	13.7235	13.72
56	Tetrachloroethene	164	6.933	6.933	(0.904)	56677	15.6294	15.62
50	Toluene	91	6.446	6.446	(0.840)	250504	14.1954	14.19
20	trans-1,2-Dichloroethene	96	2.535	2.535	(0.606)	80559	19.4477	19.44
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	85454	14.5387	14.53
38	Trichloroethene	130	5.207	5.214	(1.048)	1074394	235.671	235.67(A)
8	Trichlorofluoromethane	101	1.561	1.560	(0.373)	90746	14.6495	14.64
5	Vinyl Chloride	62	1.145	1.145	(0.274)	419531	74.0555	74.05

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032613.D
Report Date: 29-Mar-2019 20:42

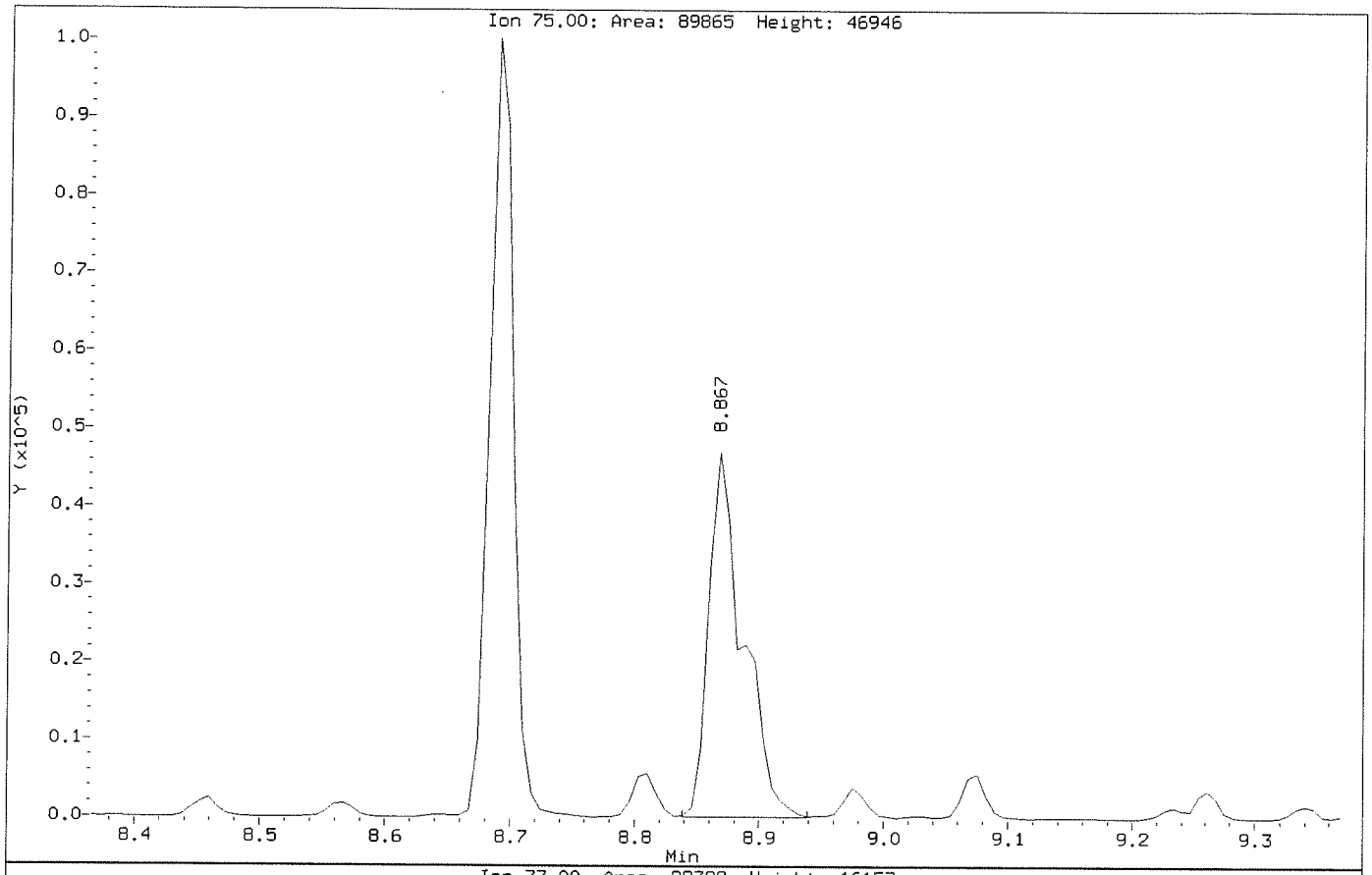
QC Flag Legend

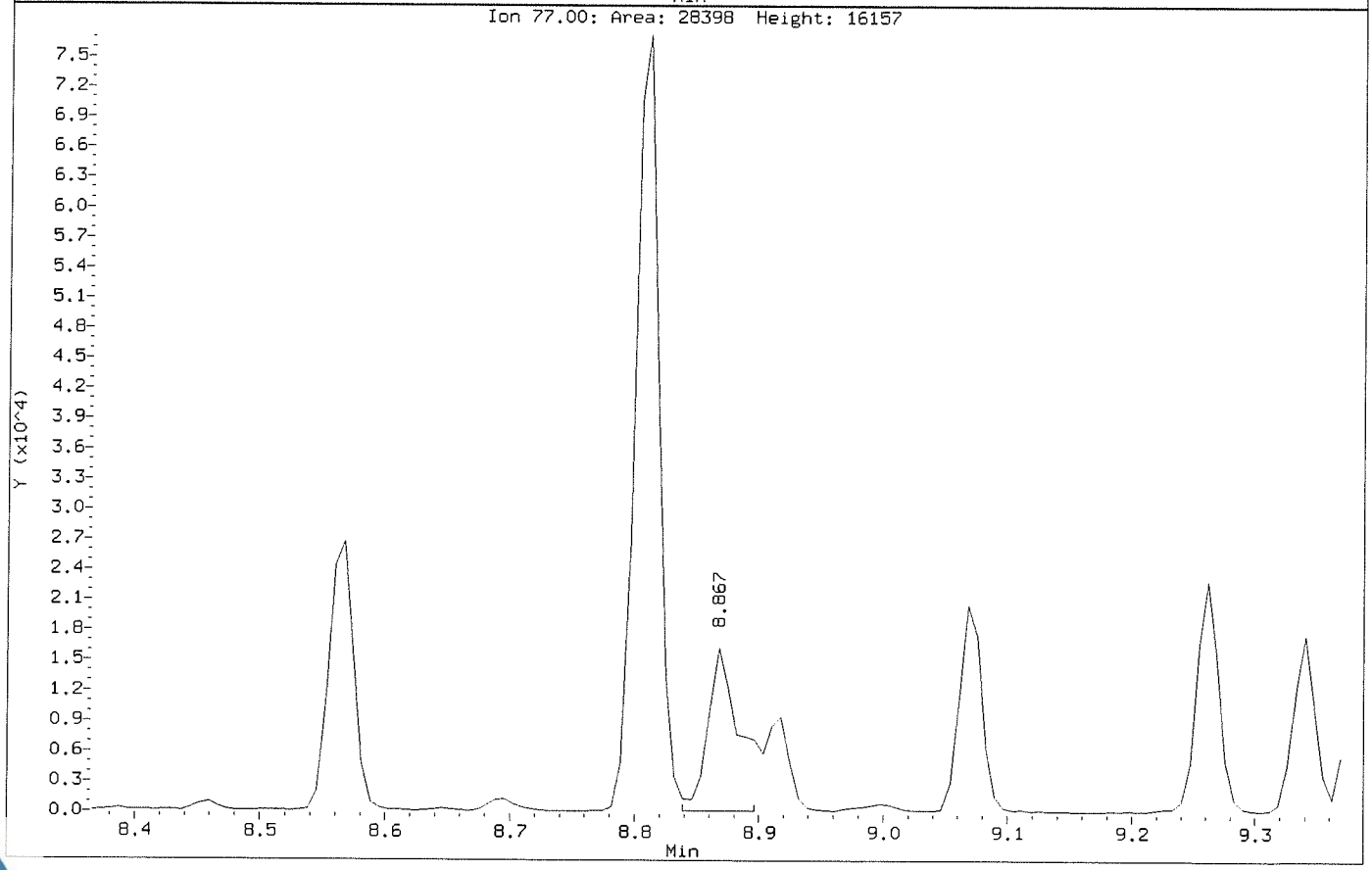
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.


Y (x10^7)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
Min
2
3
4
5
6
7
8
9
10
11
12
13
14
-Bromomethane
-Trichlorofluoromethane
-Iodomethane+
-Methyl Acetate
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-Vinyl Acetate
-1,1-Dichloroethane
-2-Butanone+
-Chloroform+
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-1,4-Difluorobenzene
-Trichloroethene
-1,2-Dichloropropane+
-Dibromomethane+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-4-Methyl-2-Pentanone+
-trans-1,3-Dichloropropene
-1,1,2-Trichloroethane
-1,3-Dichloropropane+
-2-Hexanone+
-1,2-Dibromoethane
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
Acrolein+
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032613.D
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032613.D
Date : 26-MAR-2019 17:27
Client ID: HS19031013-07MSD
Sample Info: HS19031013-07MSD;HS19031013-07MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\BEFORE\X032613.D
Injection Date: 26-MAR-2019 17:27
Instrument: voa6.i
Client Sample ID: HS19031013-07MSD

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





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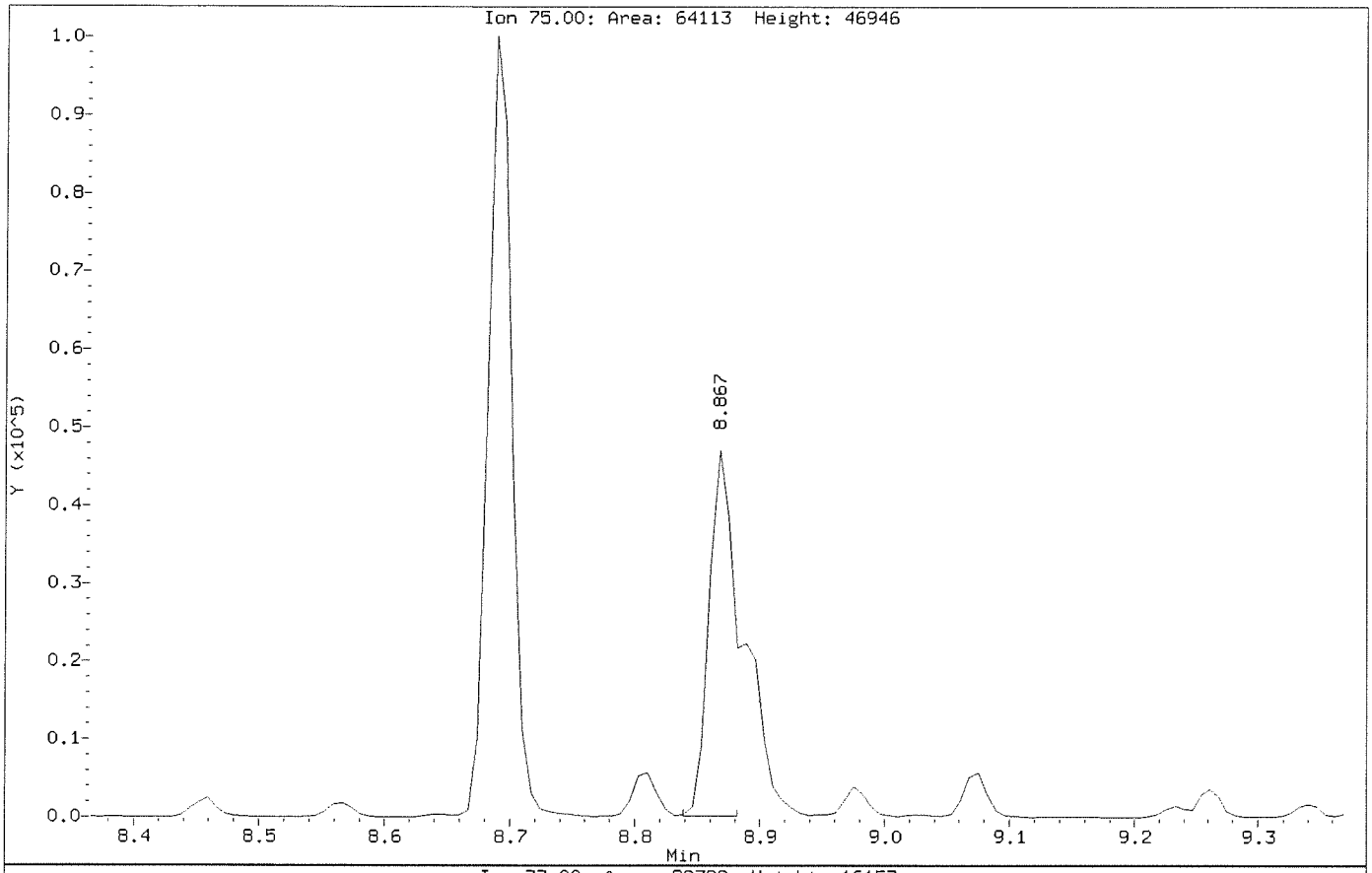
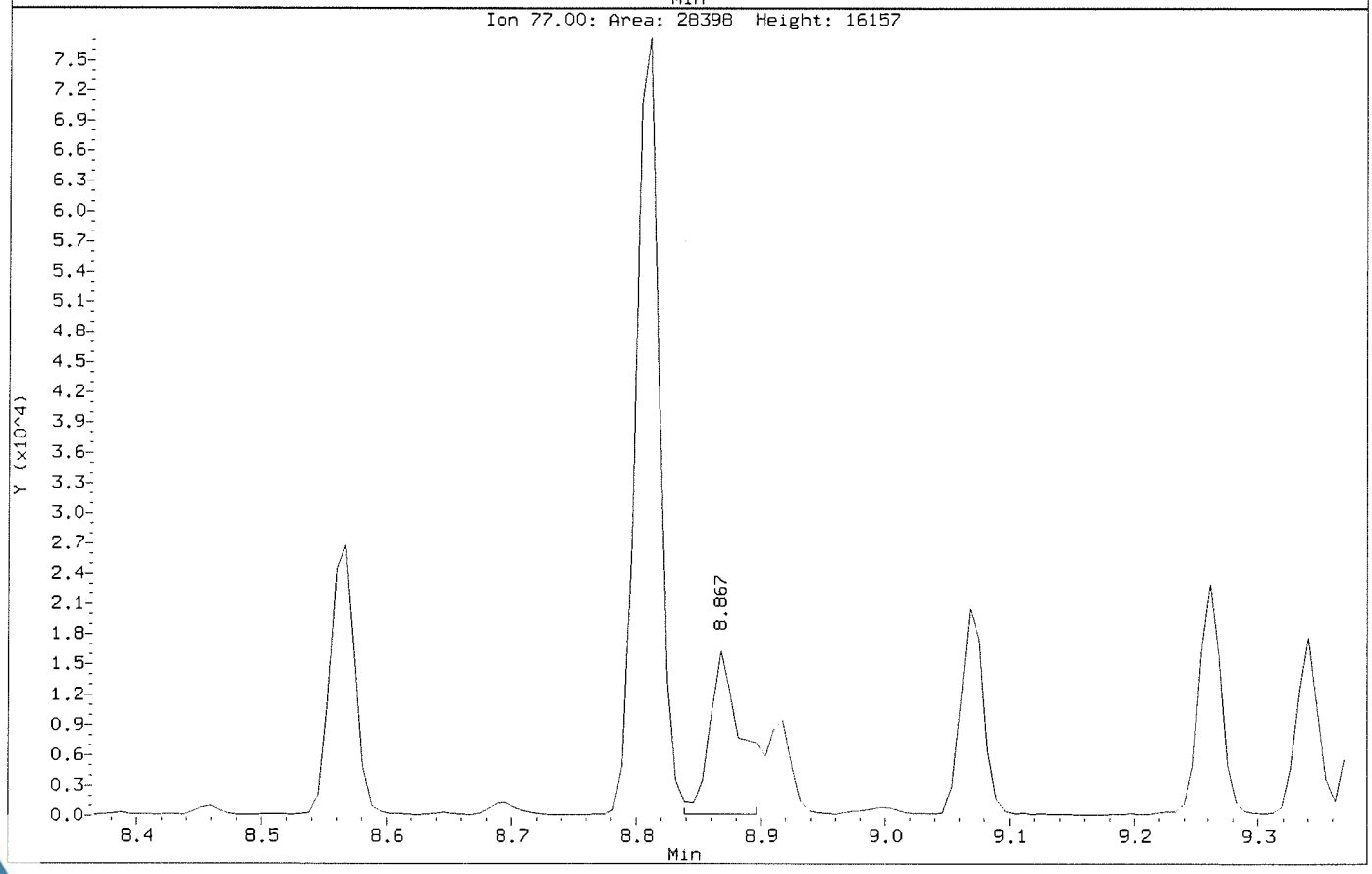
Injection Date: 26-MAR-2019 17:27
Instrument: voa6.i
Client Sample ID: HS19031013-07MSD

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4





Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032614.D
Report Date: 29-Mar-2019 20:43

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032614.D
Lab Smp Id: HS19031013-07DL Client Smp ID: HS19031013-07DL
Inj Date : 26-MAR-2019 17:54
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-07;HS19031013-07;;;
Misc Info : HS18090001;WATER;0;25;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 12
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

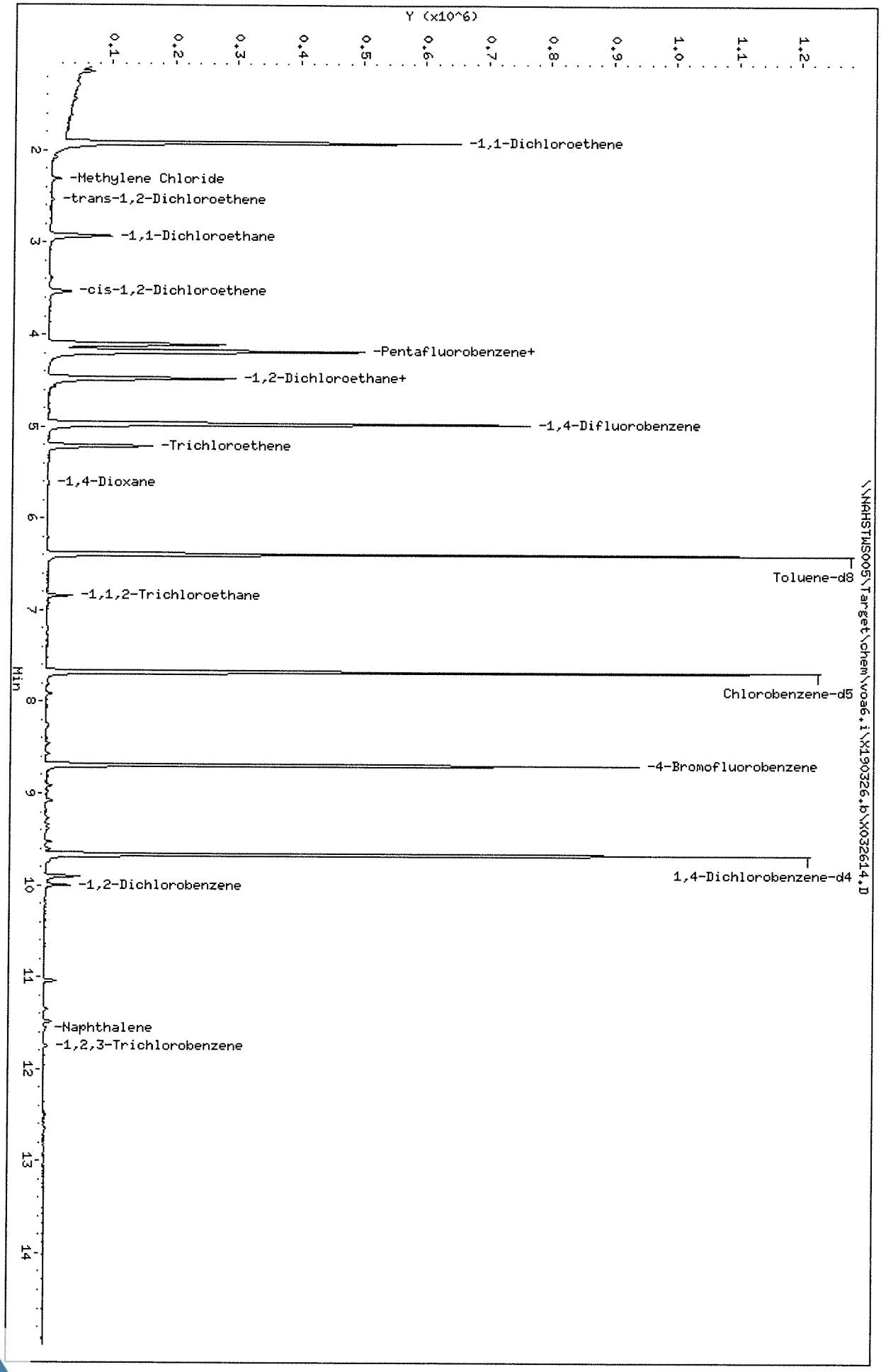
Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.189	4.182	(1.000)	439715	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	644234	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	575738	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	292307	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	195907	45.5532	45.55
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	218213	45.4254	45.42
$ 48 Toluene-d8	98	6.389	6.388	(0.833)	744136	52.0789	52.07
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	262298	49.8846	49.88
53 1,1,2-Trichloroethane	83	6.847	6.840	(0.893)	10182	3.22522	80.63(a)
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	106139	13.1442	328.60
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	231168	61.9872	1549.68
93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	1962	0.94825	23.70(a)
88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	9649	1.15761	28.94(a)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	6913	1.27155	31.78(a)
27 cis-1,2-Dichloroethene	96	3.538	3.530	(0.844)	18233	3.72067	93.01(a)
17 Methylene Chloride	84	2.306	2.306	(0.550)	5881	1.25012	31.25(a)
92 Naphthalene	128	11.553	11.546	(1.195)	4117	0.74692	18.67(a)
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.605)	1757	0.42338	10.58(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	58928	12.9988	324.96

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032614.D
Report Date: 29-Mar-2019 20:43

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032614.D
Date : 26-MAR-2019 17:54
Client ID: HS19031013-07DL
Sample Info: HS19031013-07;HS19031013-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032614.D

Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

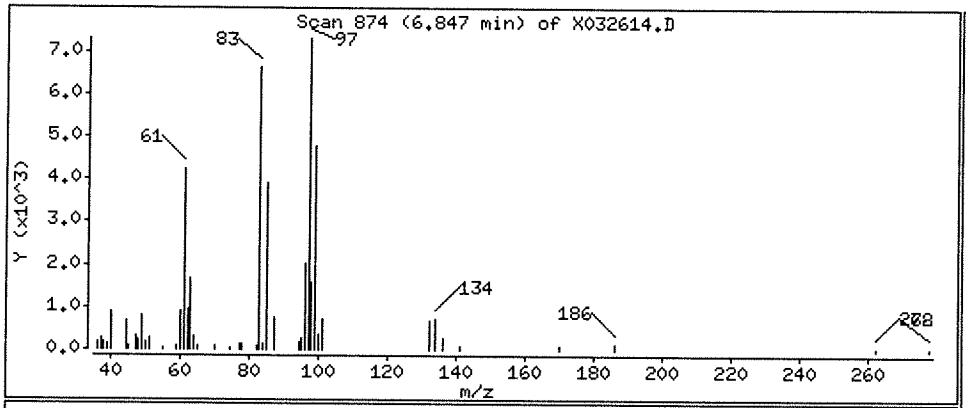
Operator: PC

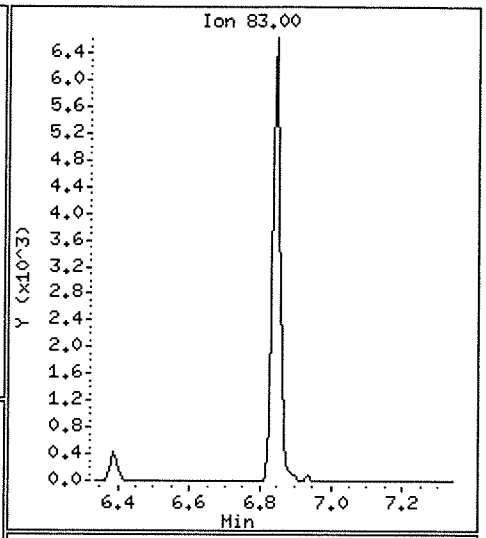
Column phase: DB624

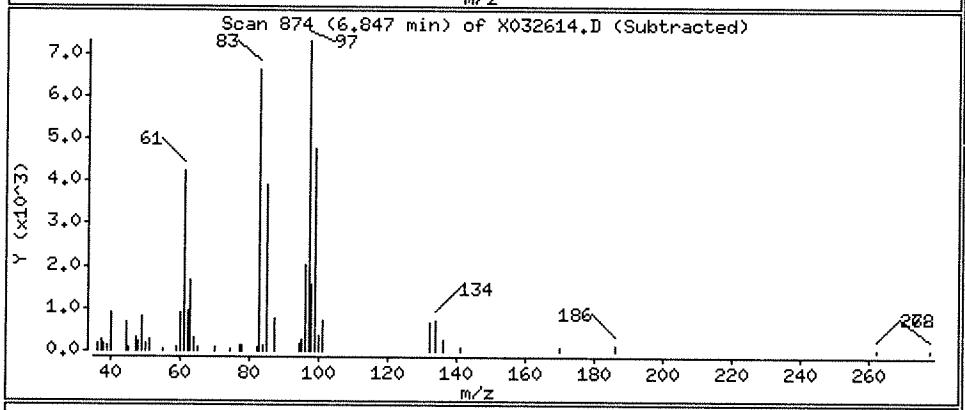
Column diameter: 0.18

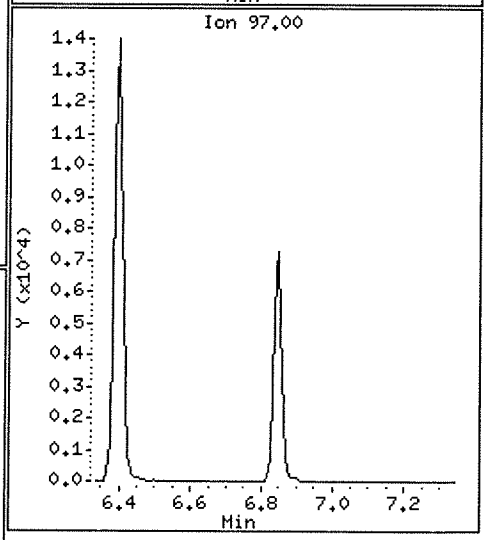
53 1,1,2-Trichloroethane

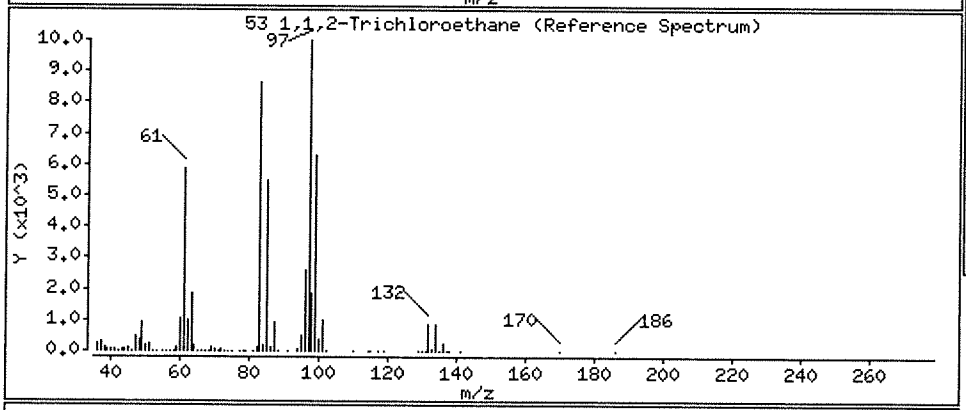
Concentration: 80.63 ug/l

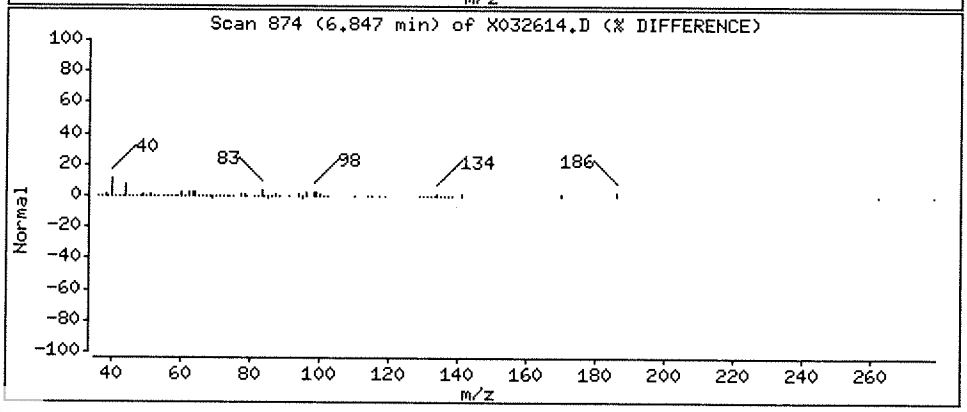












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

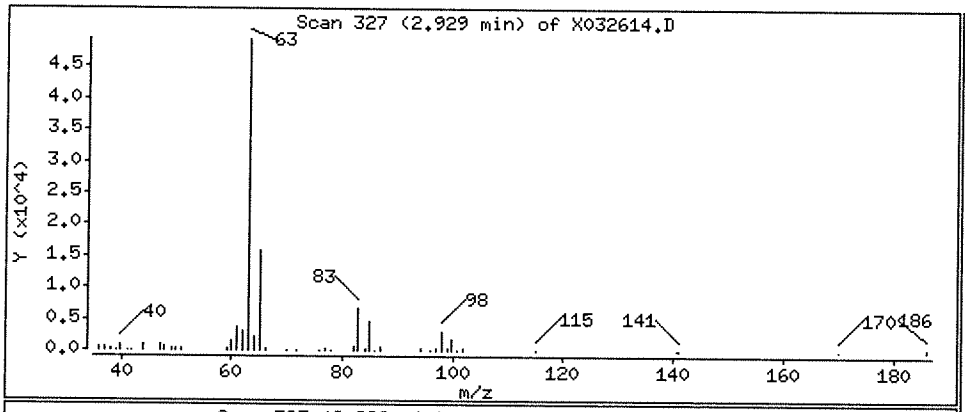
Operator: PC

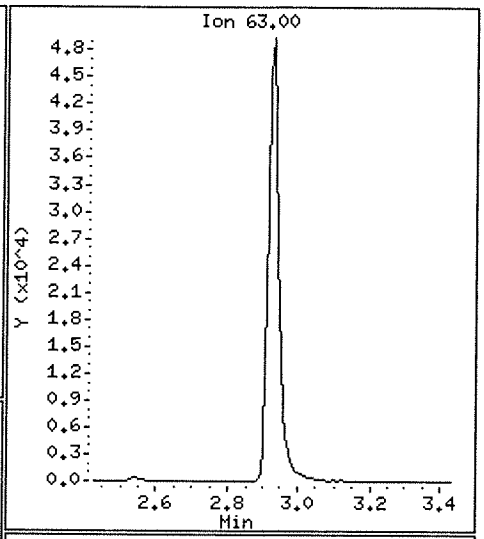
Column phase: DB624

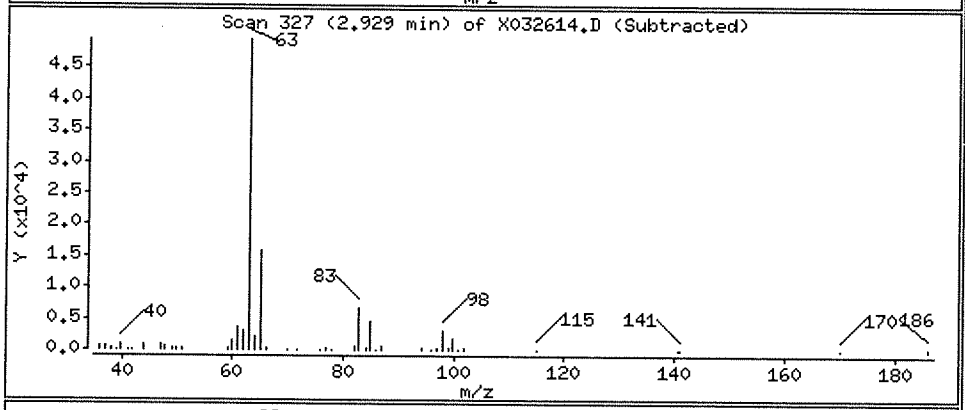
Column diameter: 0.18

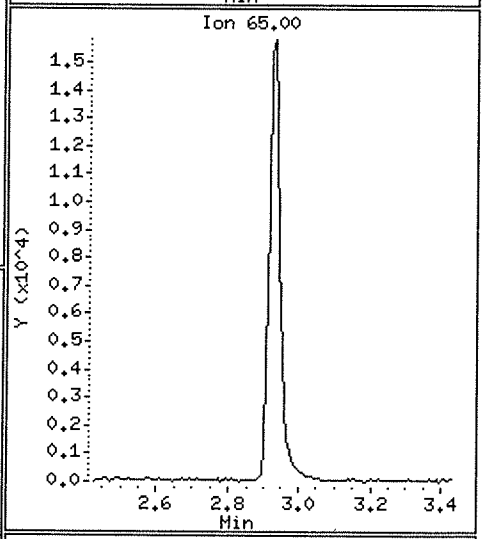
22 1,1-Dichloroethane

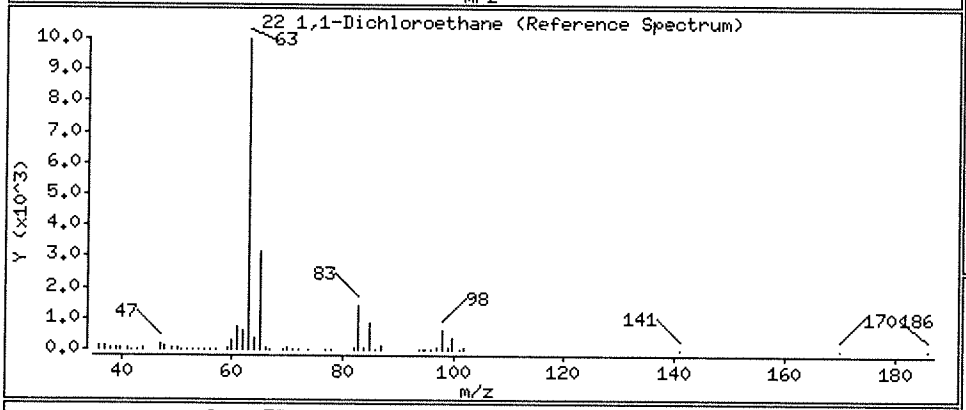
Concentration: 328.60 ug/l

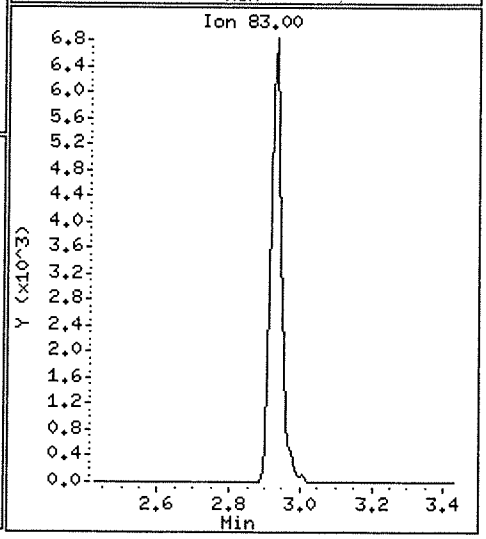


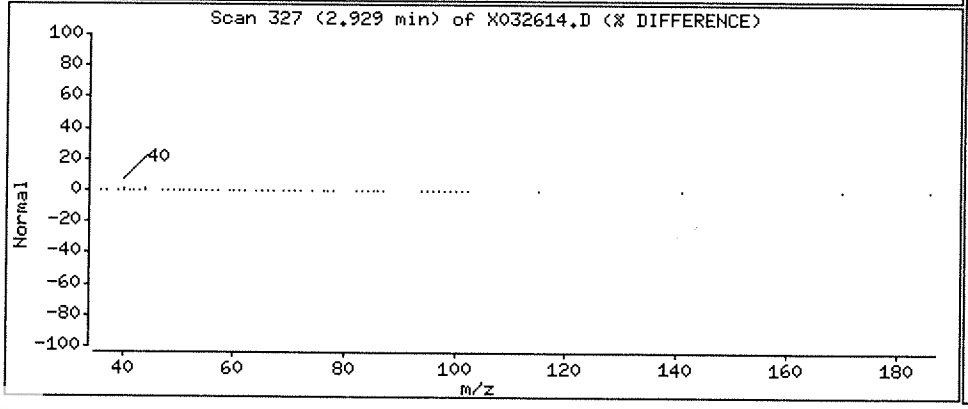












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

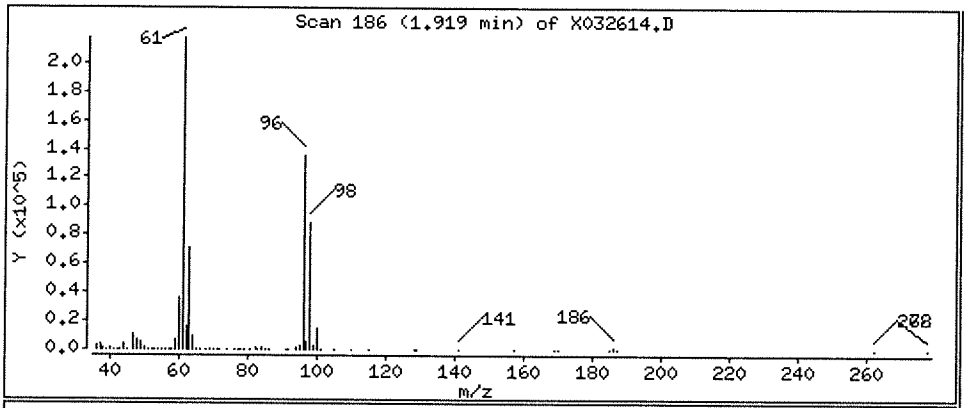
Operator: PC

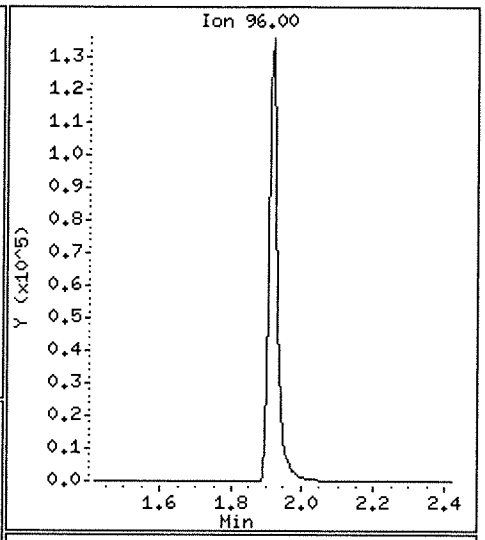
Column phase: DB624

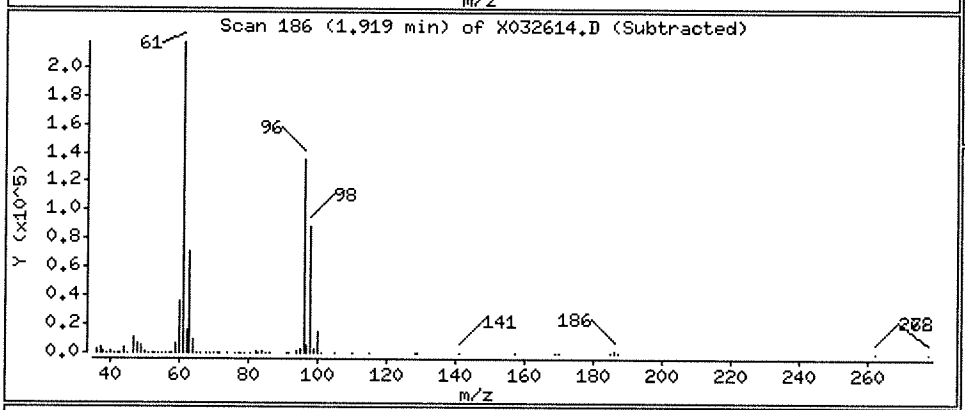
Column diameter: 0.18

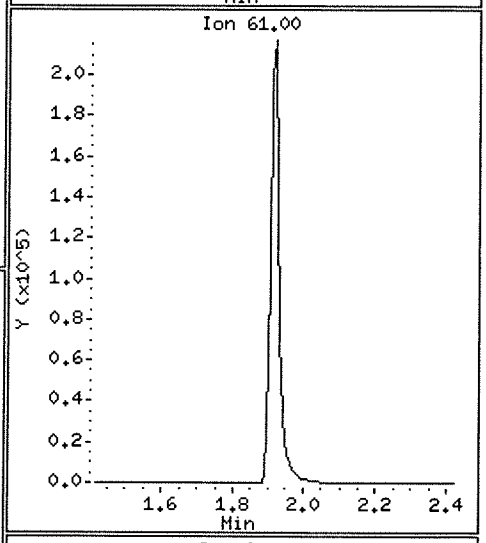
11 1,1-Dichloroethene

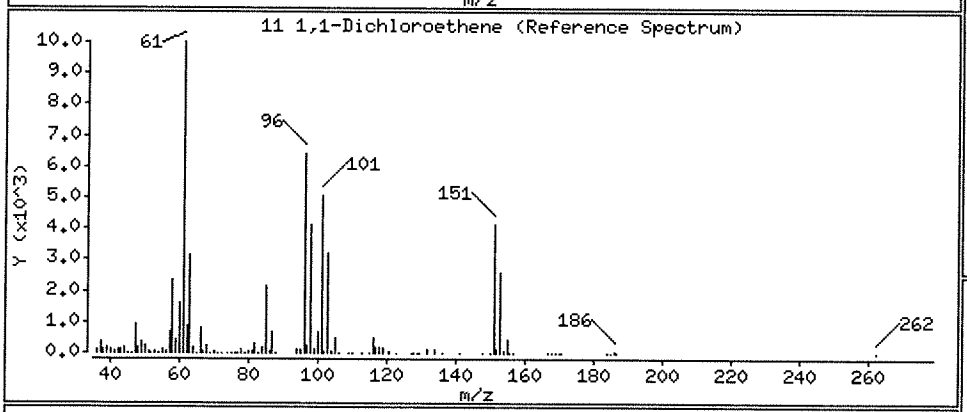
Concentration: 1549.68 ug/l

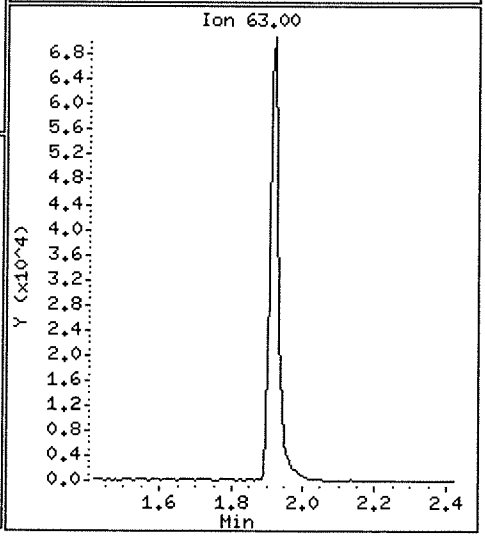


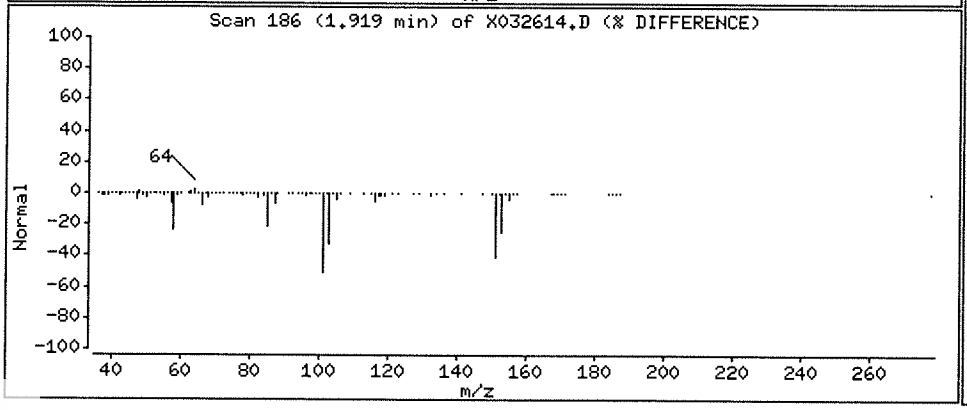












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

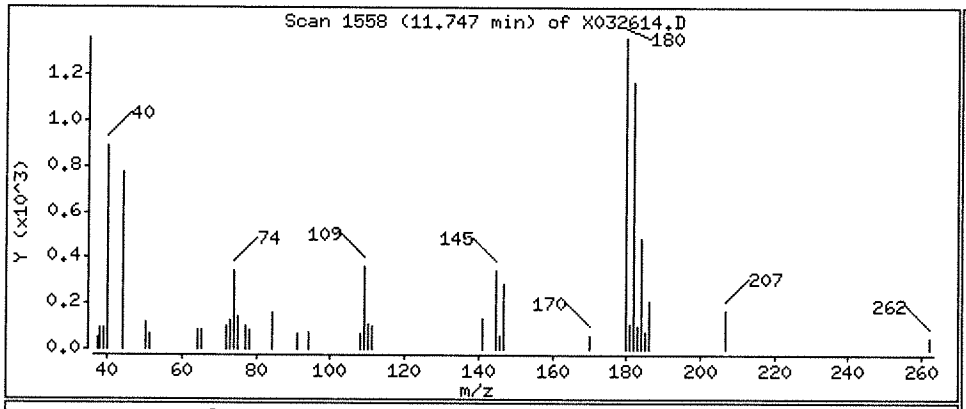
Operator: PC

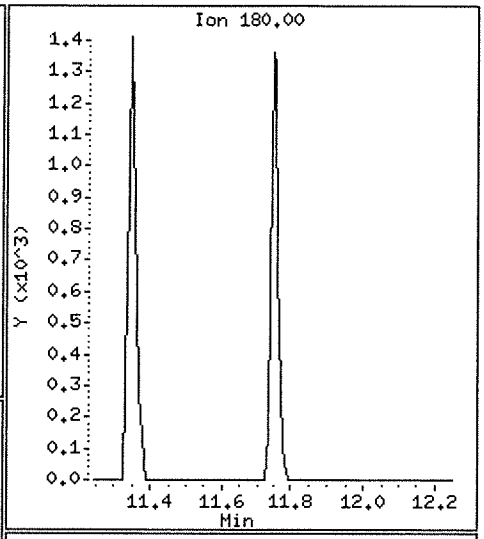
Column phase: DB624

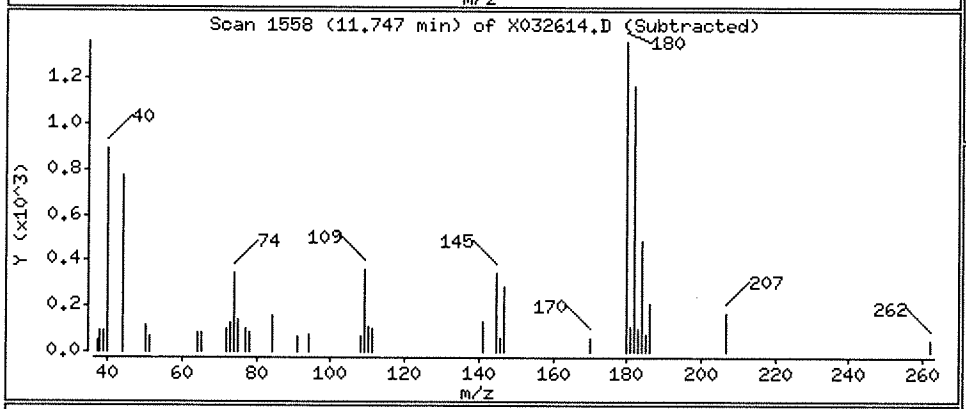
Column diameter: 0.18

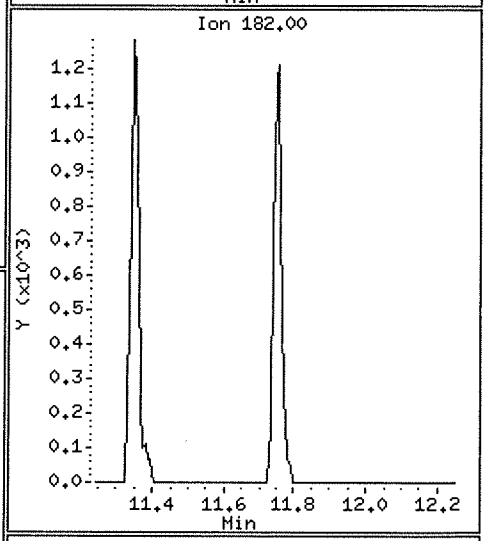
93 1,2,3-Trichlorobenzene

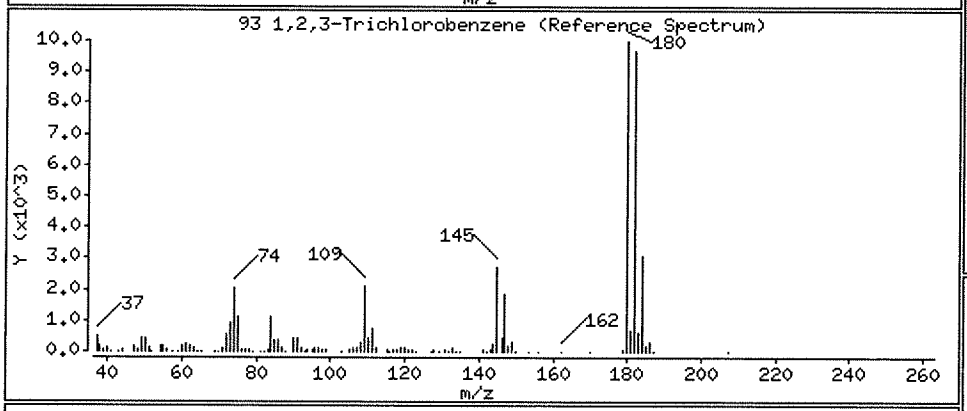
Concentration: 23.70 ug/l

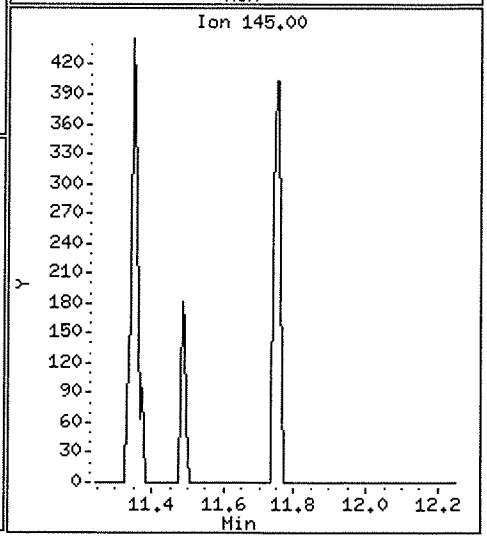


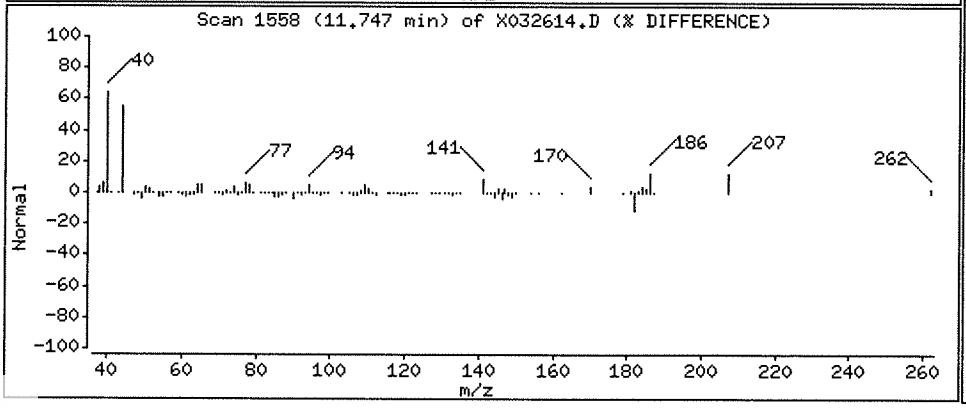












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032614.D

Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

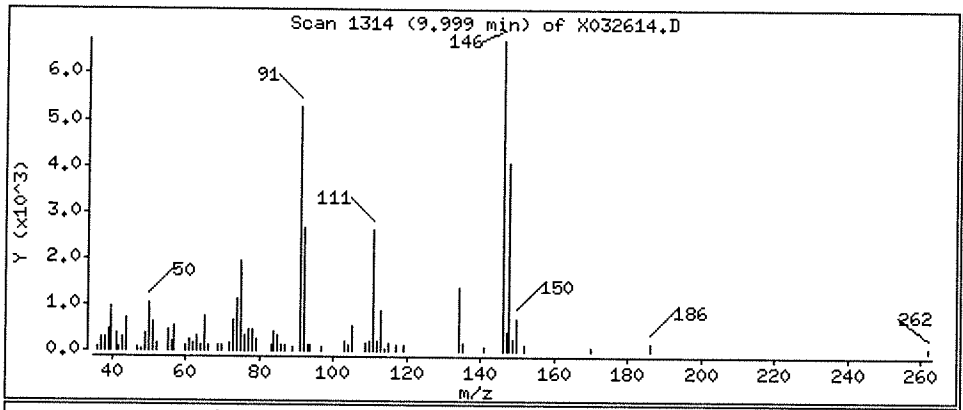
Operator: PC

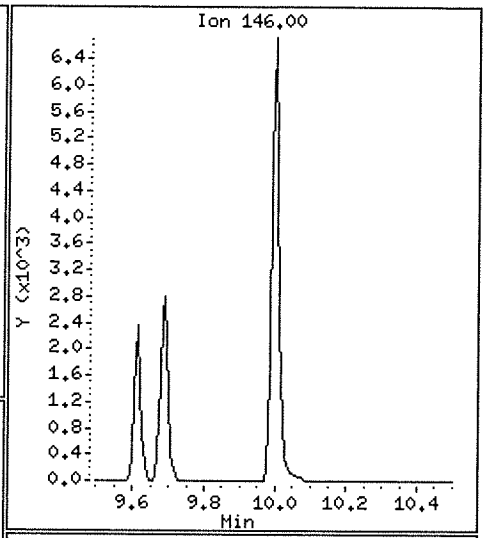
Column phase: DB624

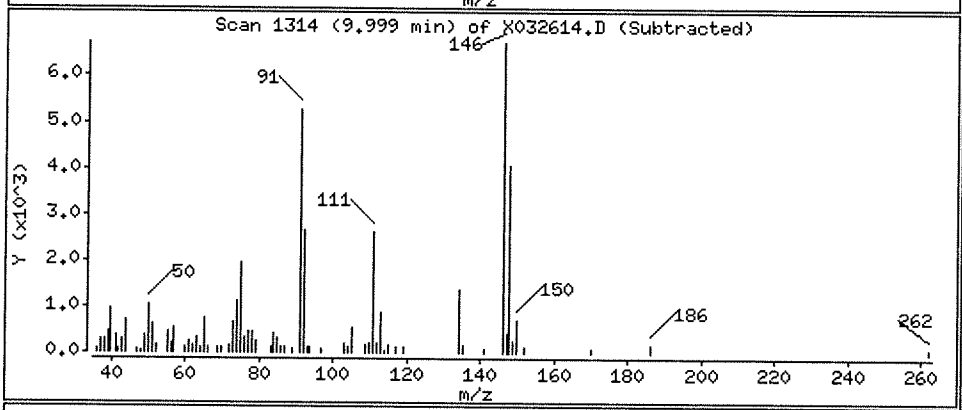
Column diameter: 0.18

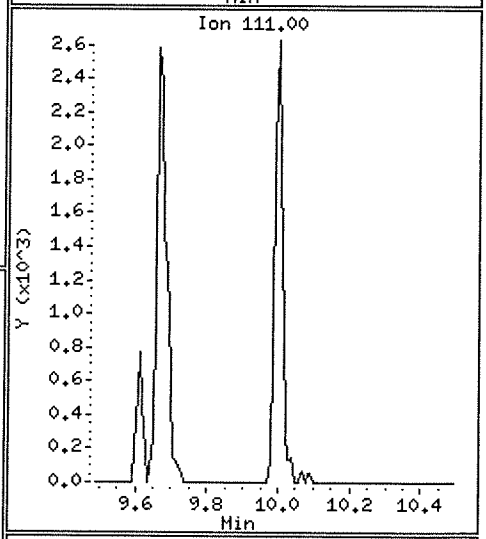
88 1,2-Dichlorobenzene

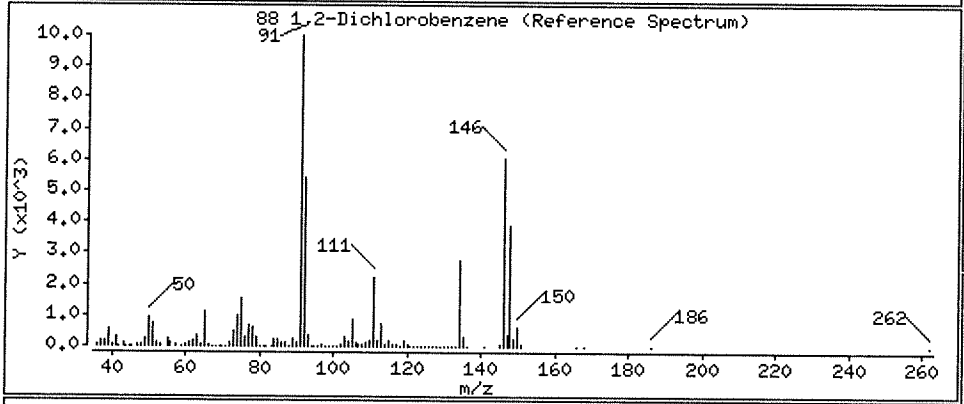
Concentration: 28.94 ug/l

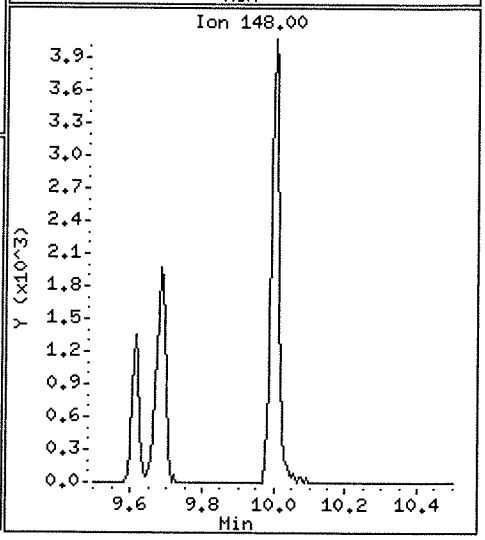


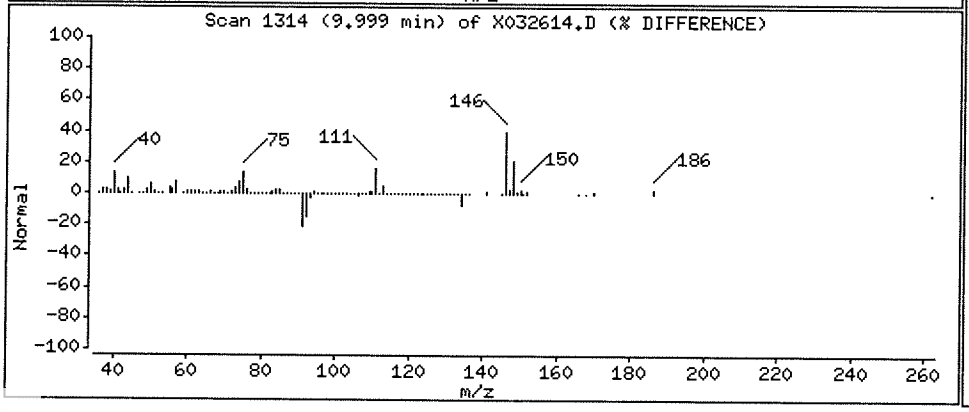












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

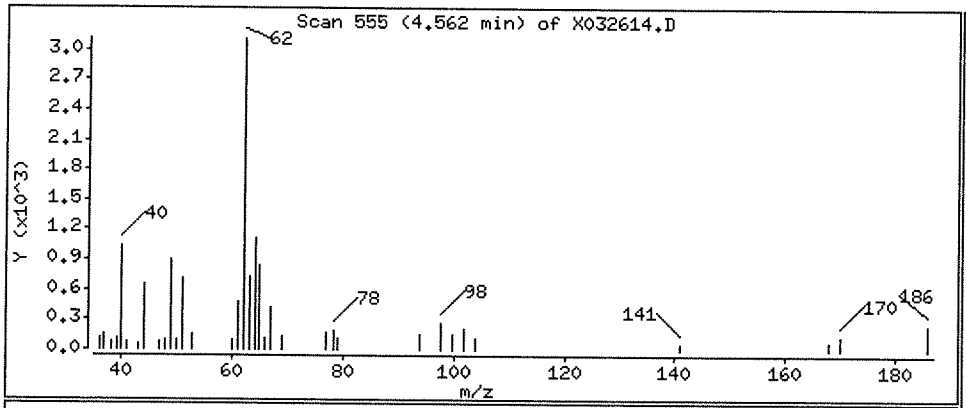
Operator: PC

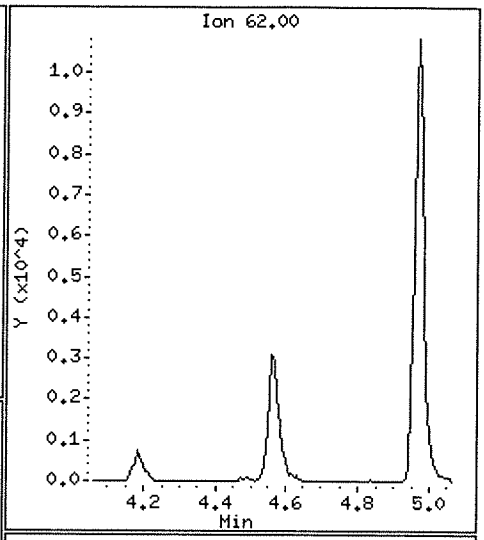
Column phase: DB624

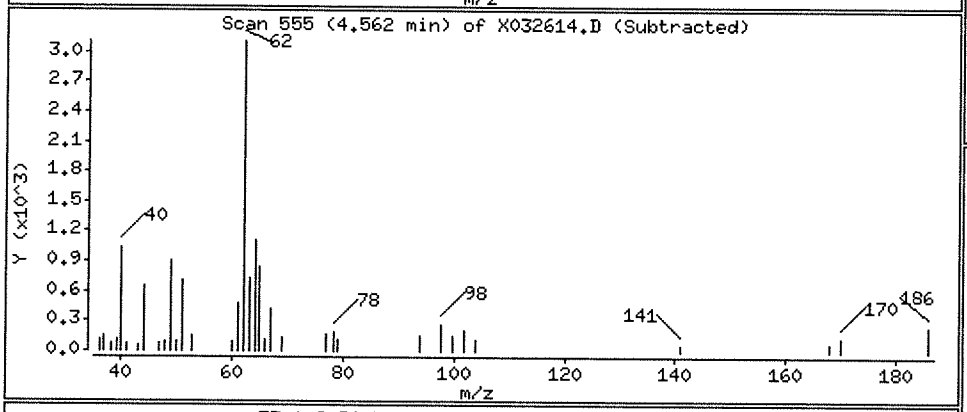
Column diameter: 0.18

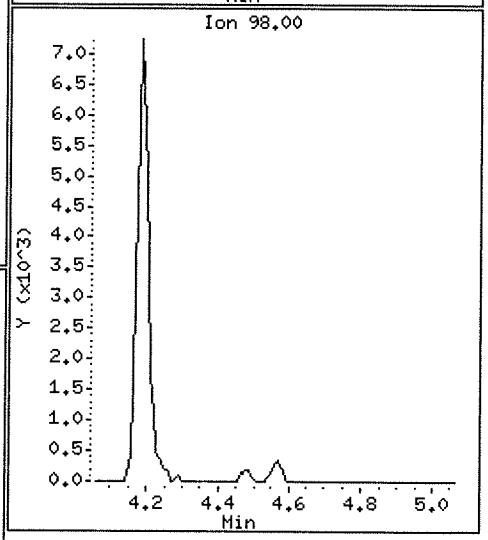
33 1,2-Dichloroethane

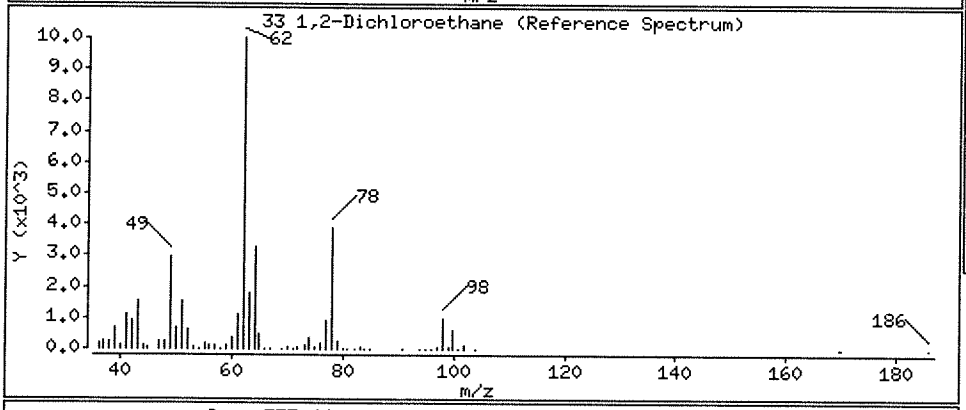
Concentration: 31.78 ug/l

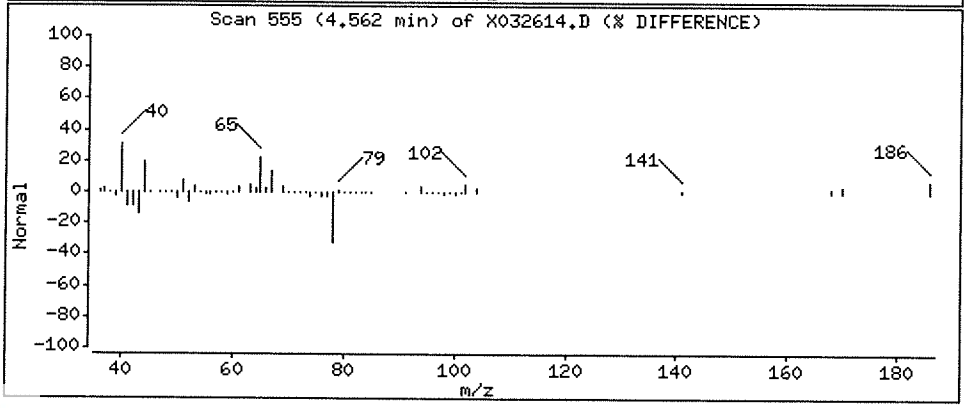












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

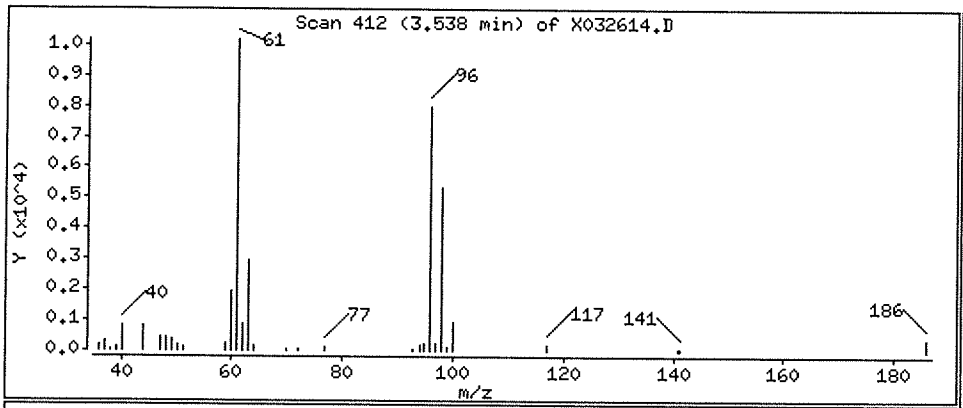
Operator: PC

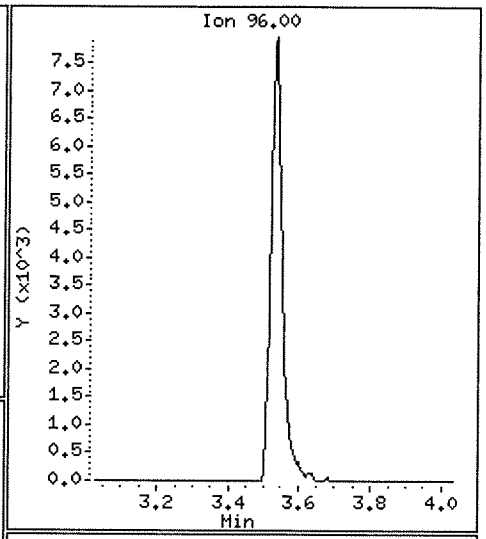
Column phase: DB624

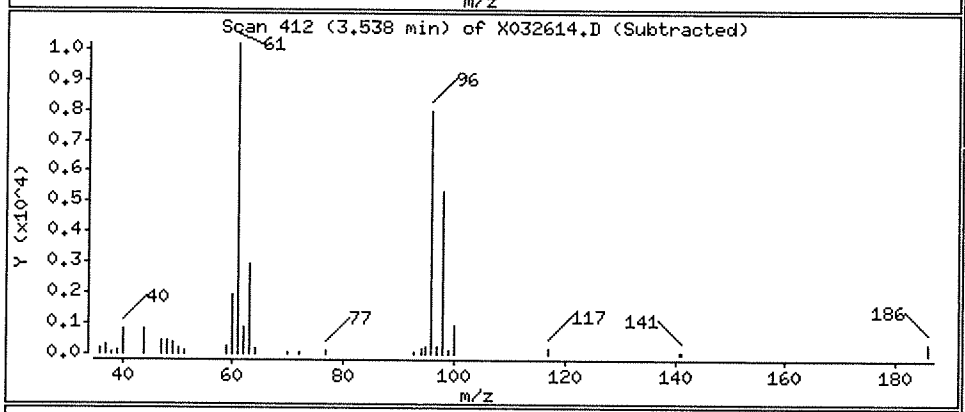
Column diameter: 0.18

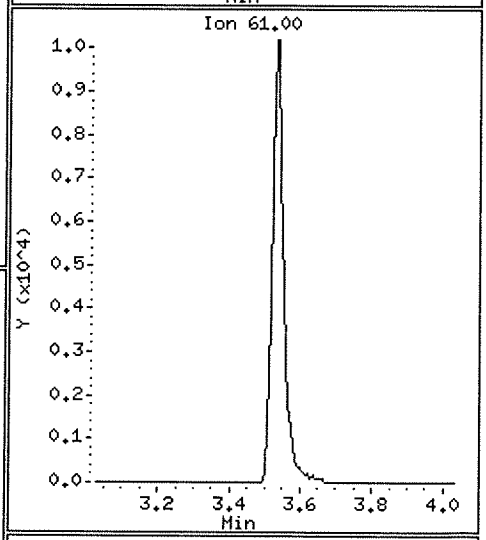
27 cis-1,2-Dichloroethene

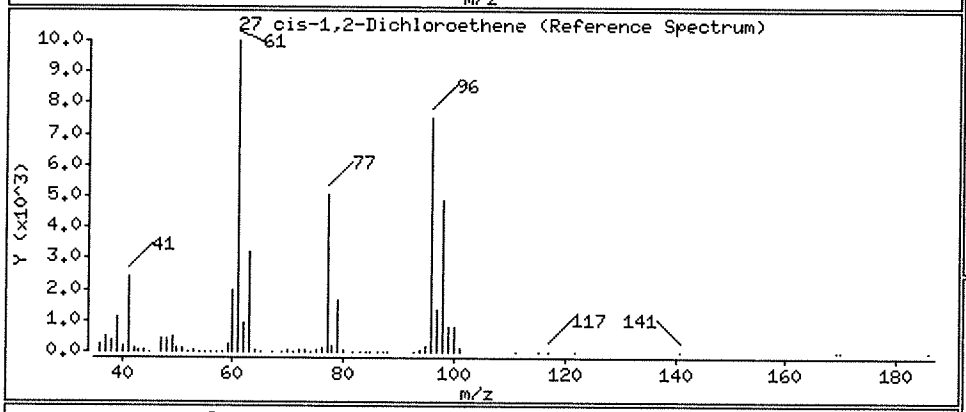
Concentration: 93.01 ug/l

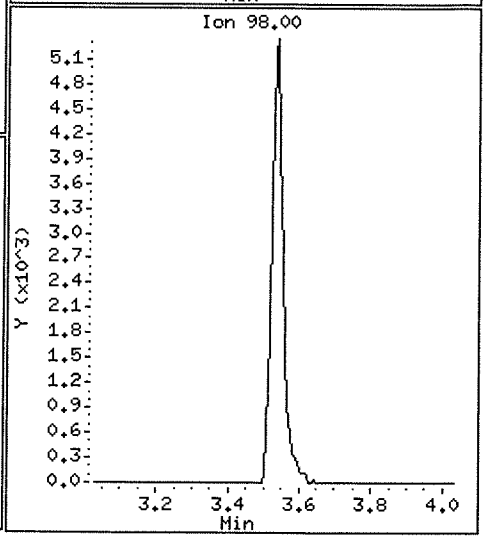


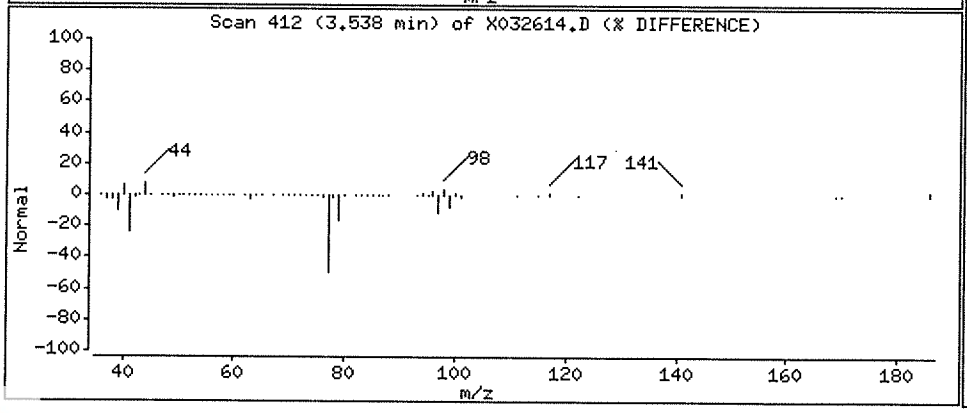












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

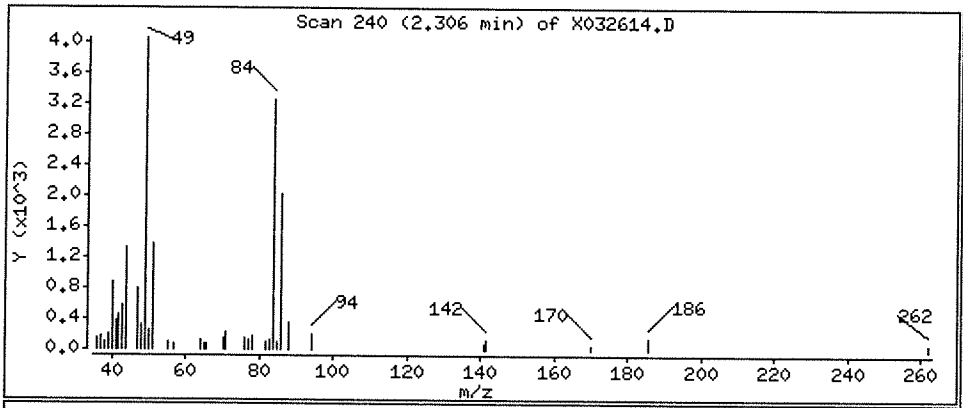
Operator: PC

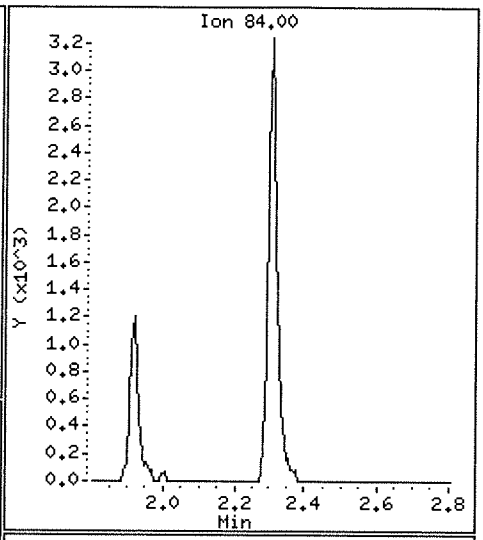
Column phase: DB624

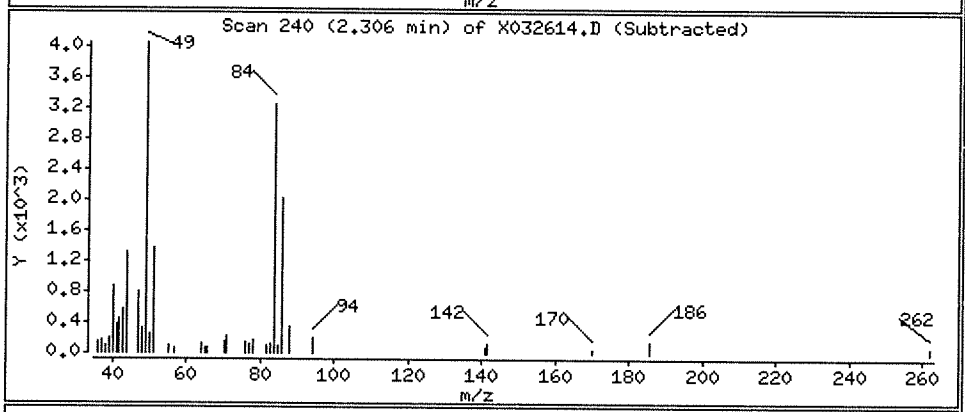
Column diameter: 0.18

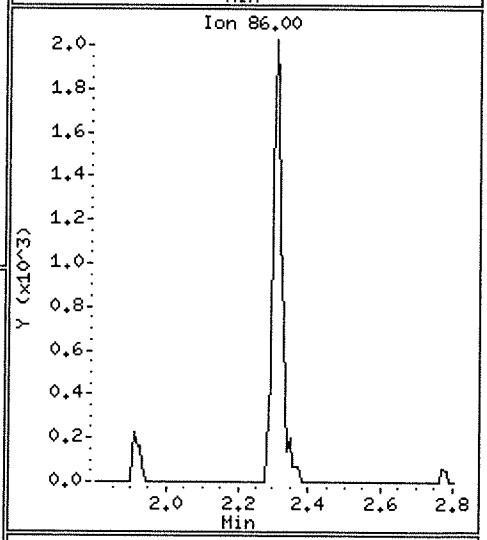
17 Methylene Chloride

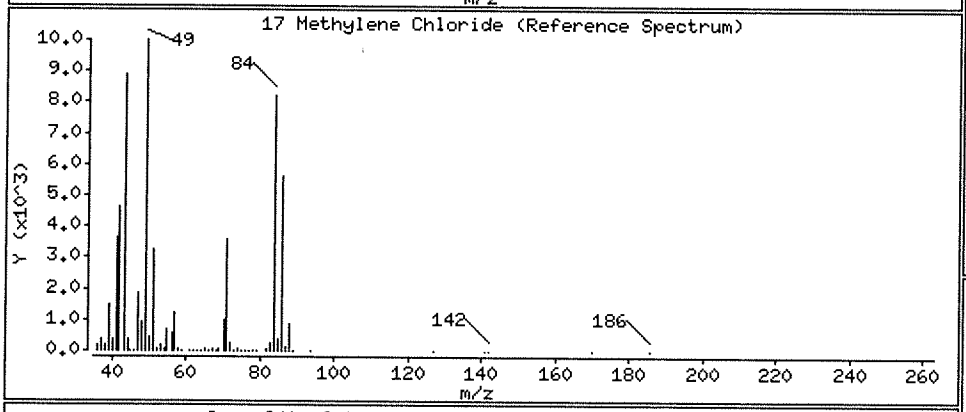
Concentration: 31.25 ug/l

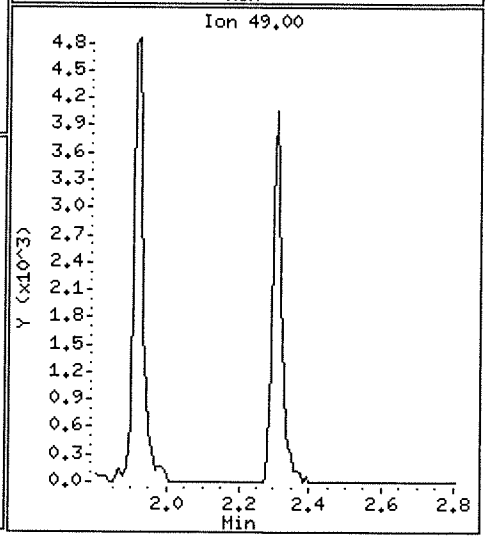


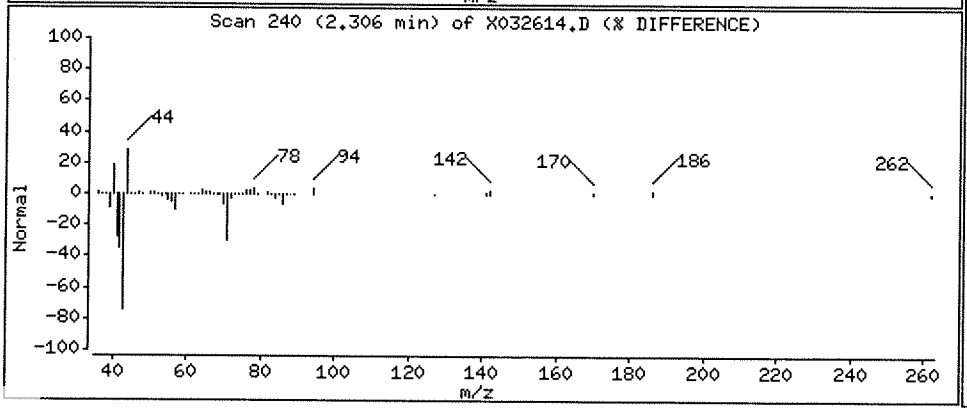












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

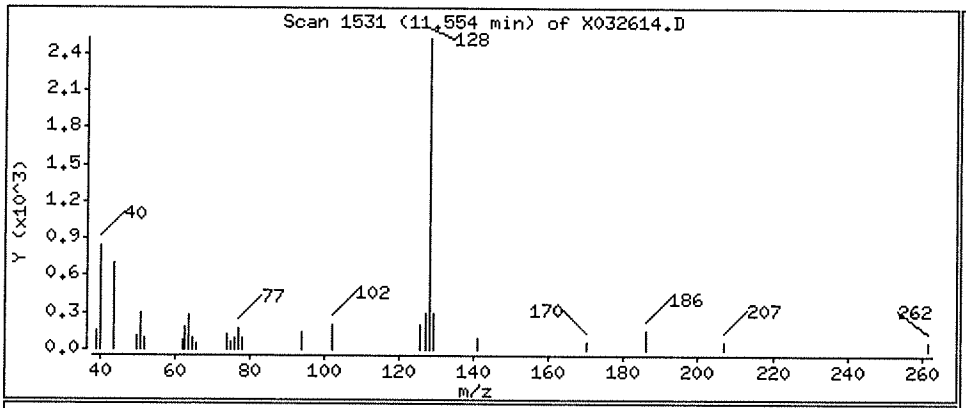
Operator: PC

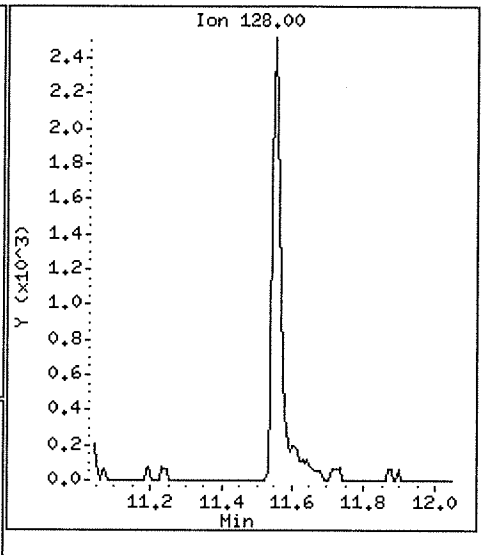
Column phase: DB624

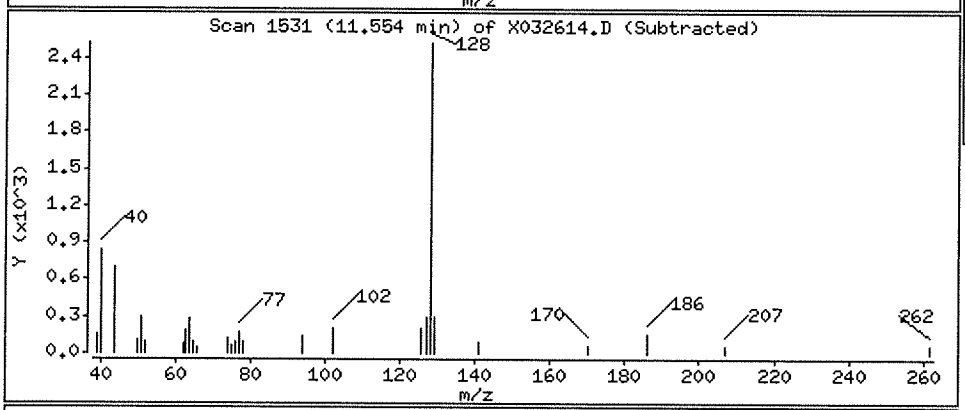
Column diameter: 0.18

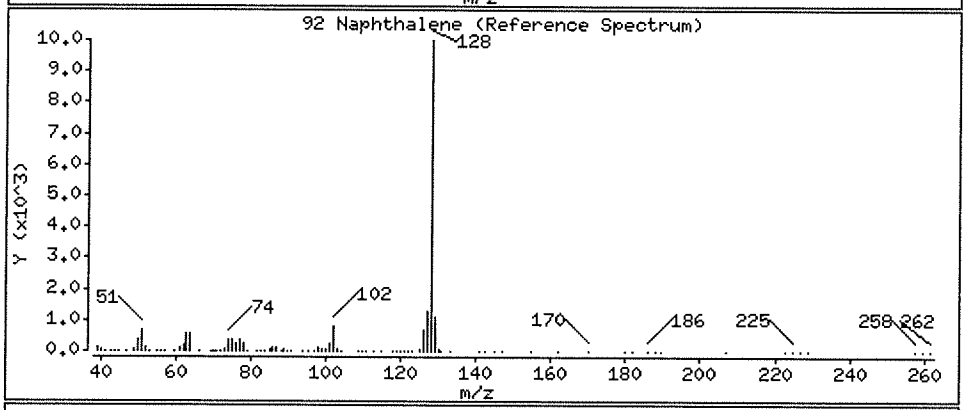
92 Naphthalene

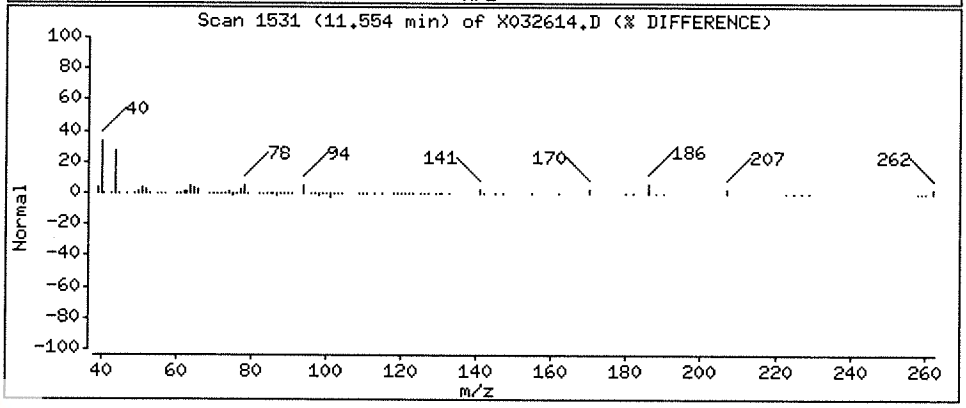
Concentration: 18.67 ug/l











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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

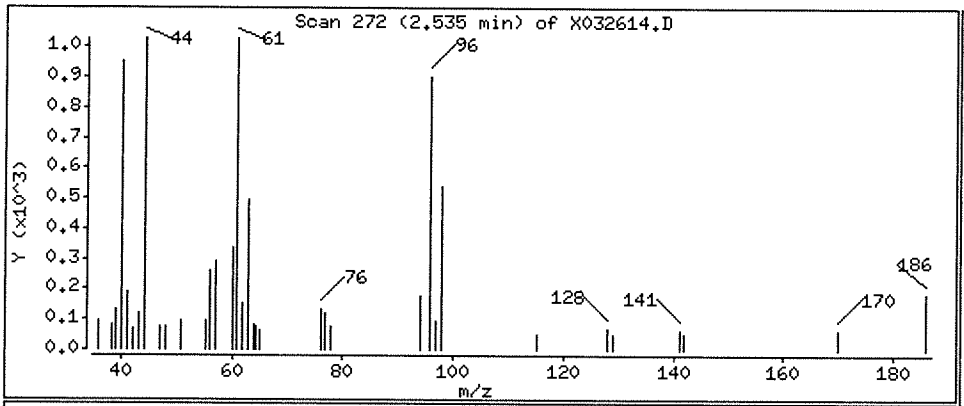
Operator: PC

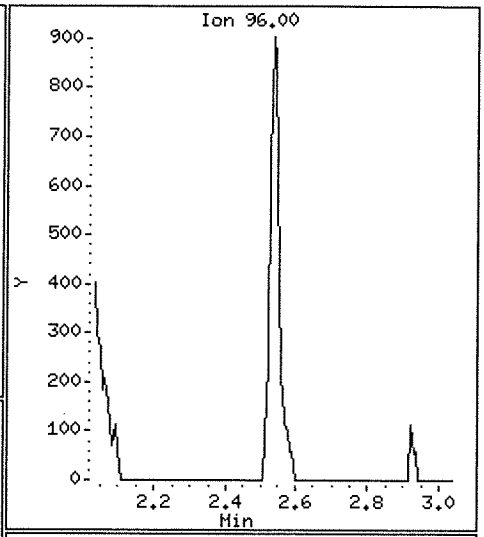
Column phase: DB624

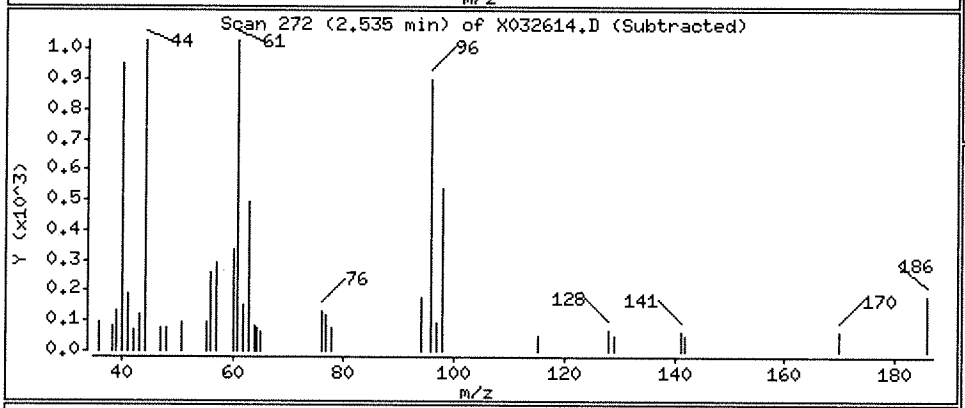
Column diameter: 0.18

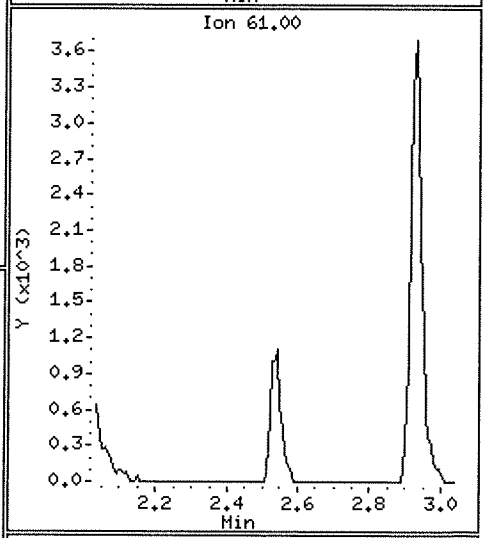
20 trans-1,2-Dichloroethene

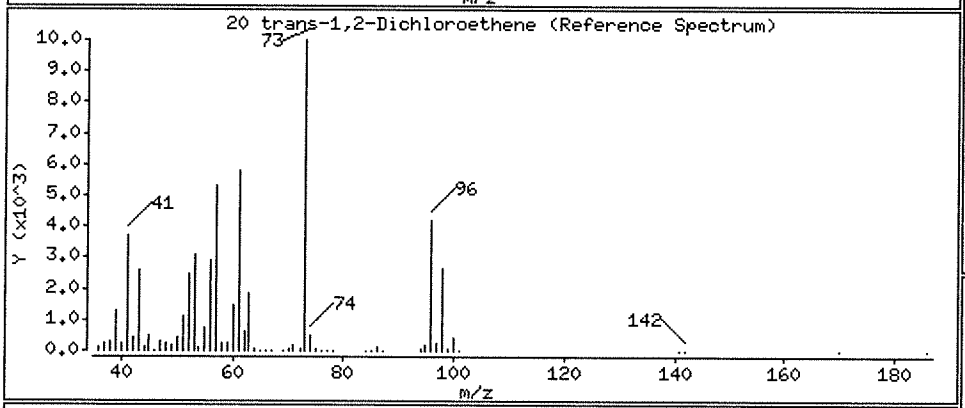
Concentration: 10.58 ug/l

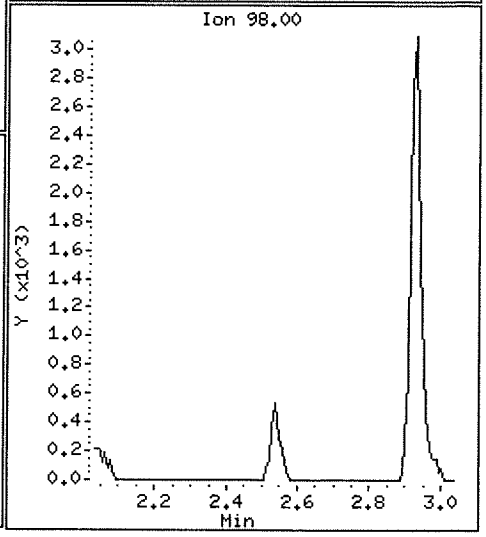


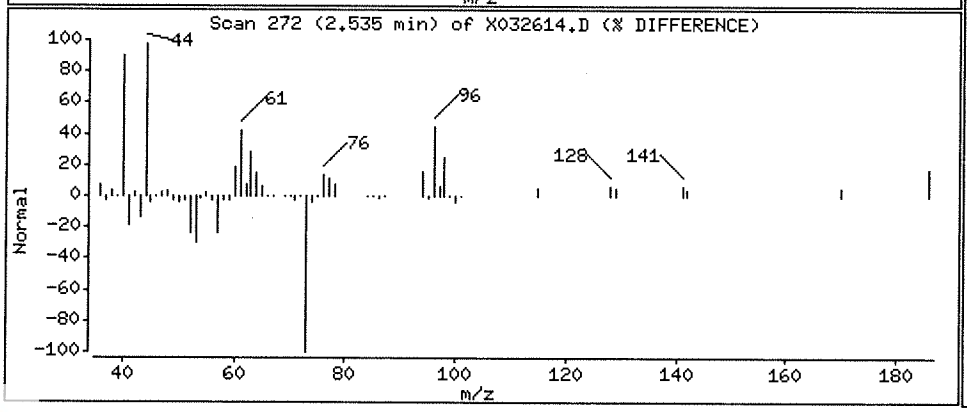












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Date : 26-MAR-2019 17:54

Client ID: HS19031013-07DL

Instrument: voa6.i

Sample Info: HS19031013-07;HS19031013-07;;;

Purge Volume: 5.0

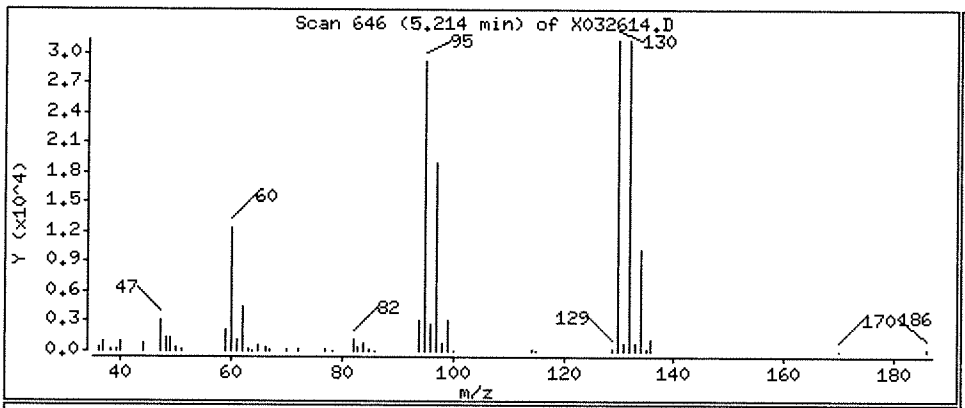
Operator: PC

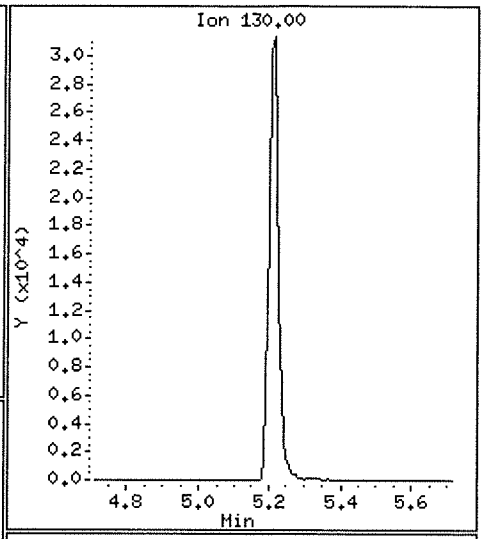
Column phase: DB624

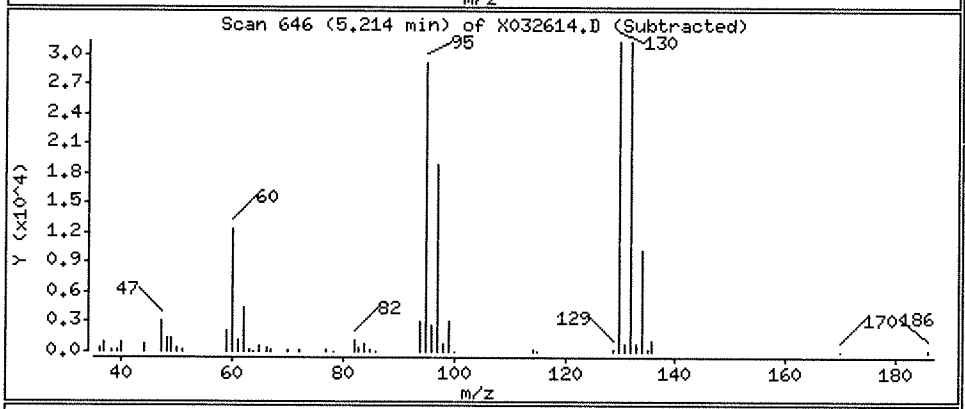
Column diameter: 0.18

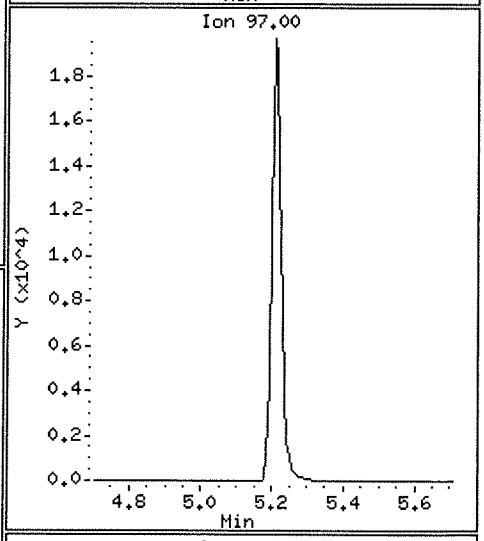
38 Trichloroethene

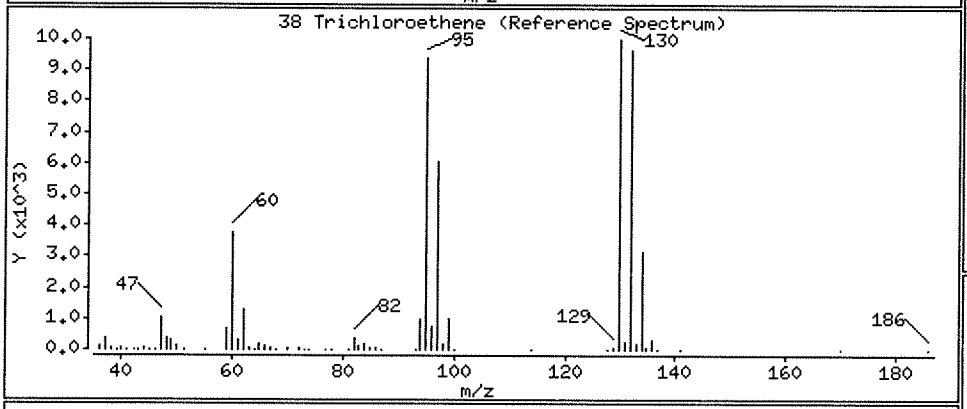
Concentration: 324.96 ug/l

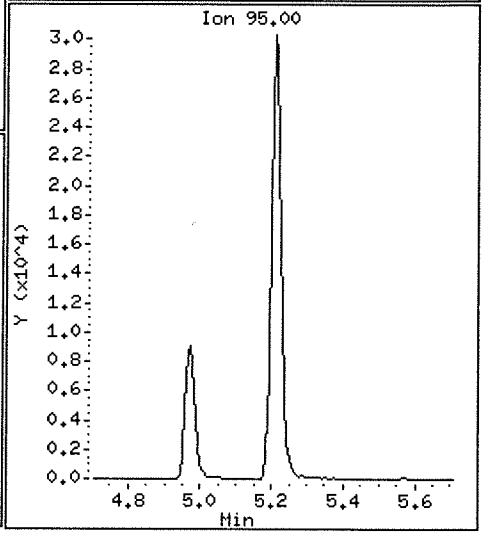


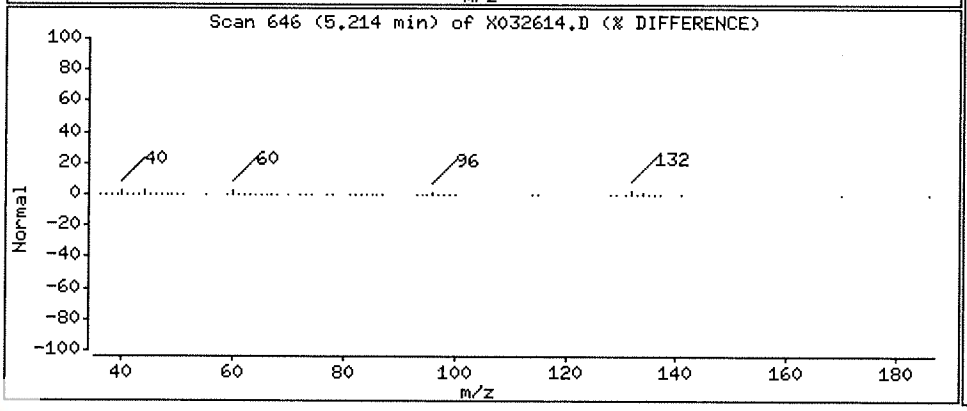












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Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032616.D
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Inj Date : 26-MAR-2019 18:42
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-02;HS19031013-02;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 14
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

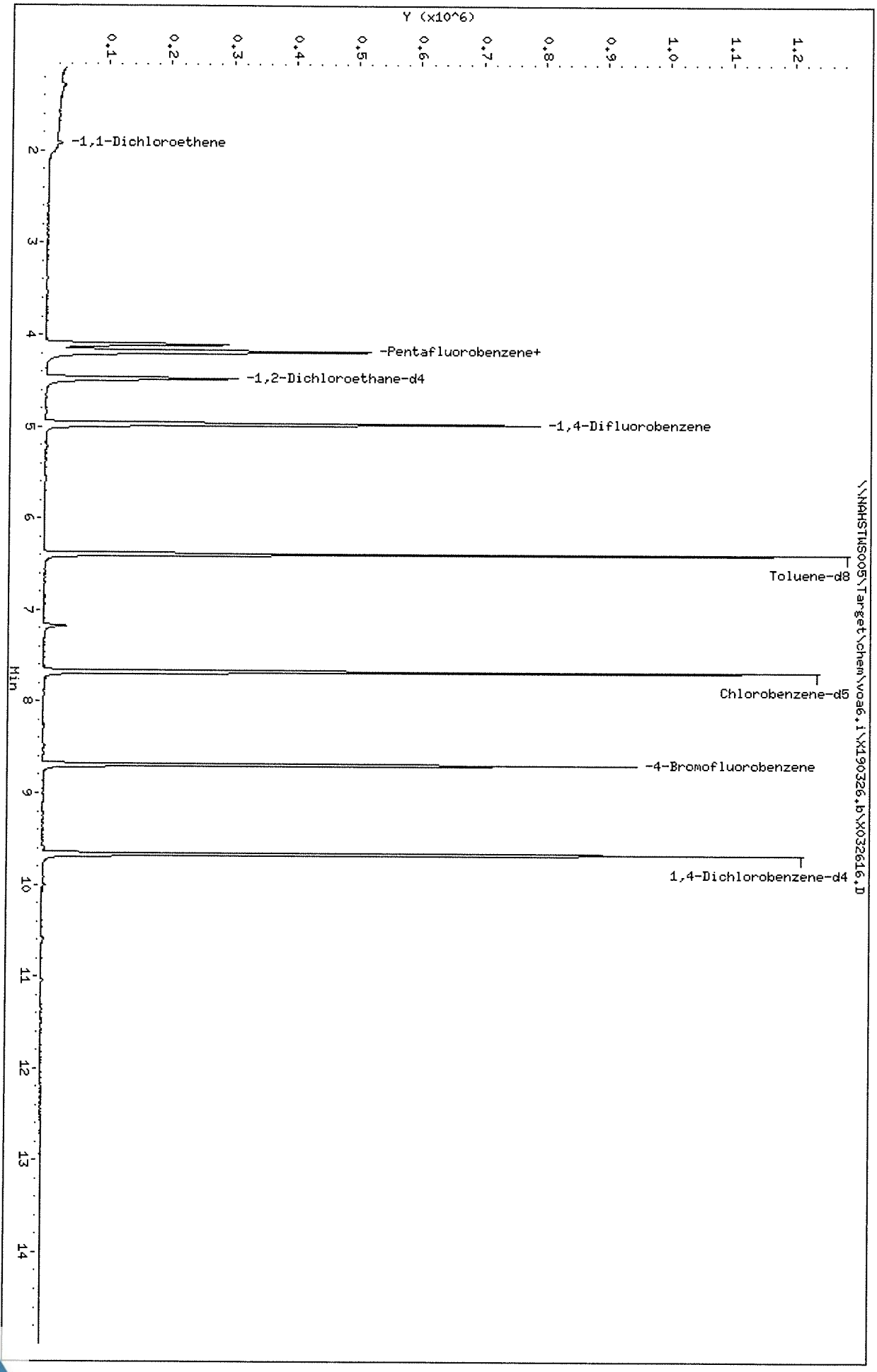
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	461743	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	660833	50.0000	
* 47 Chlorobenzene-d5	117	7.670	7.671	(1.000)	583602	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	298071	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	205824	45.5760	45.57
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	228205	45.2382	45.23
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	764111	52.7590	52.75
$ 69 4-Bromofluorobenzene	95	8.695	8.688	(1.134)	259618	48.7012	48.70
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	3185	0.81331	0.81(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).


Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032616.D
Date : 26-MAR-2019 18:42
Client ID: HS19031013-02
Sample Info: HS19031013-02,HS19031013-02,,,
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
Min
2
3
4
5
6
7
8
9
10
11
12
13
14
-1,1-Dichloroethene
-Pentafluorobenzene+
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032616.D

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032616.D

Date : 26-MAR-2019 18:42

Client ID: HS19031013-02

Instrument: voa6.i

Sample Info: HS19031013-02;HS19031013-02;;;

Purge Volume: 5.0

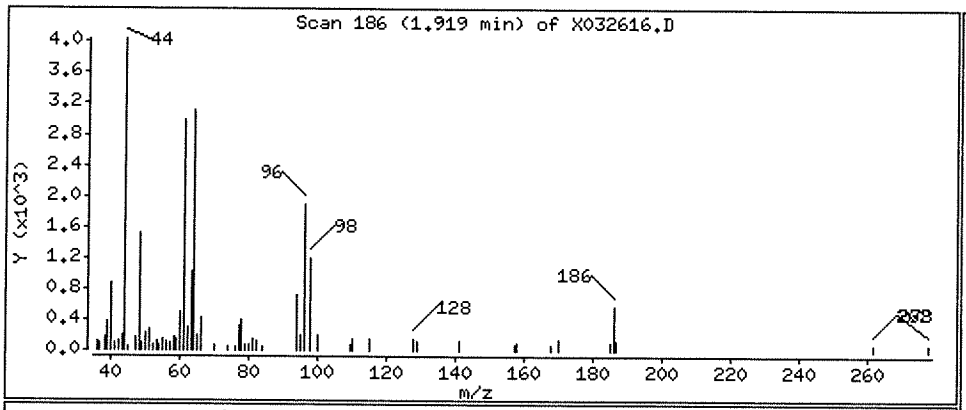
Operator: PC

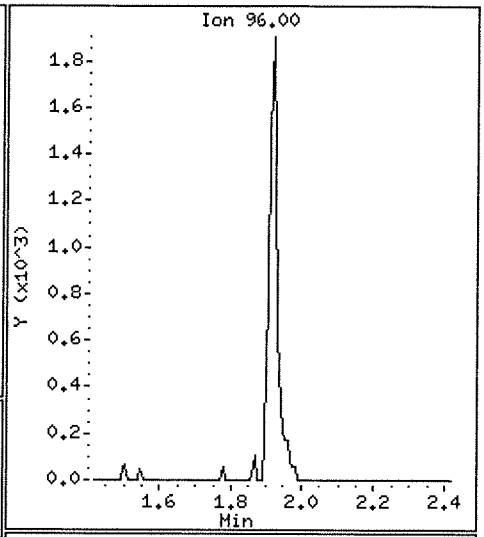
Column phase: DB624

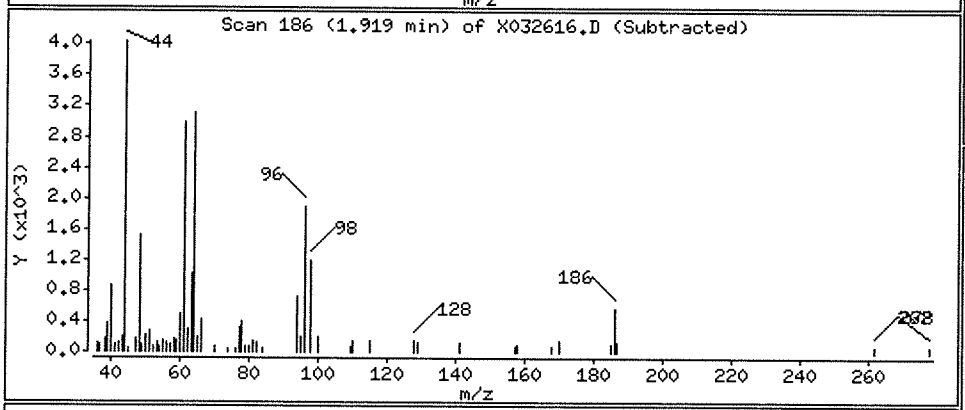
Column diameter: 0.18

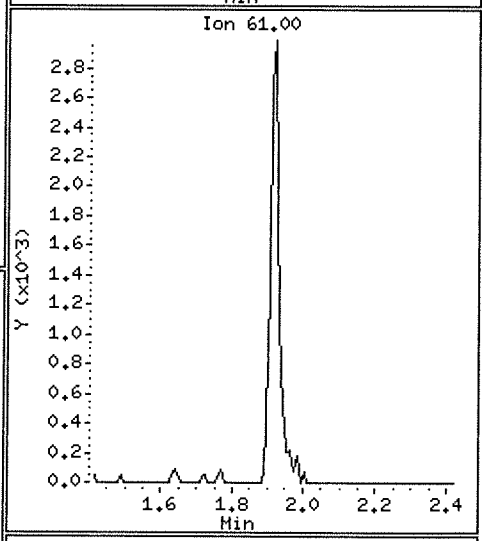
11 1,1-Dichloroethene

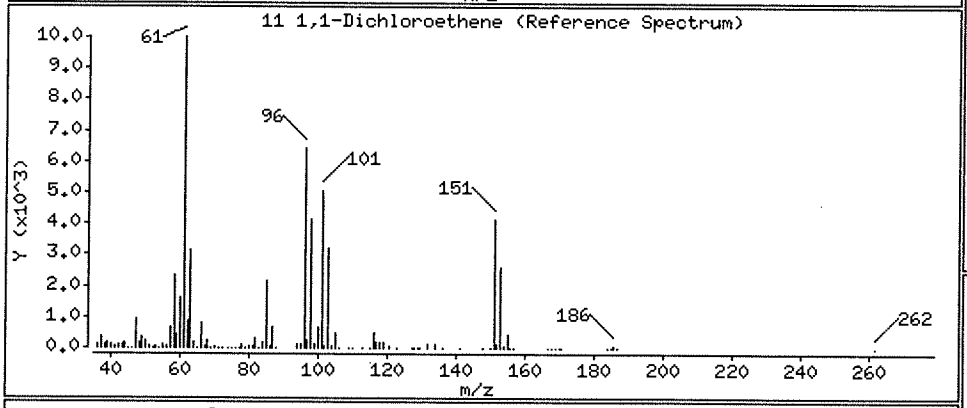
Concentration: 0.81 ug/l

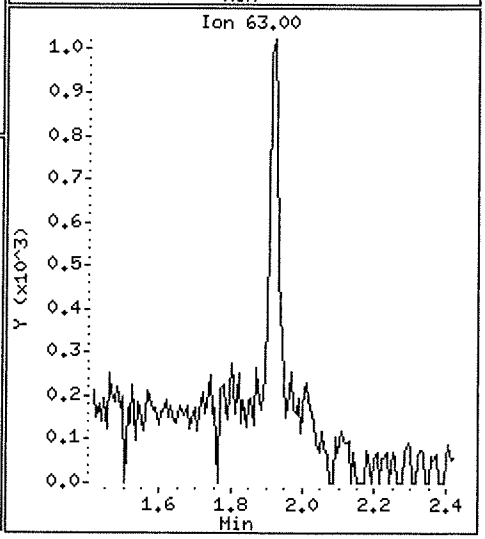


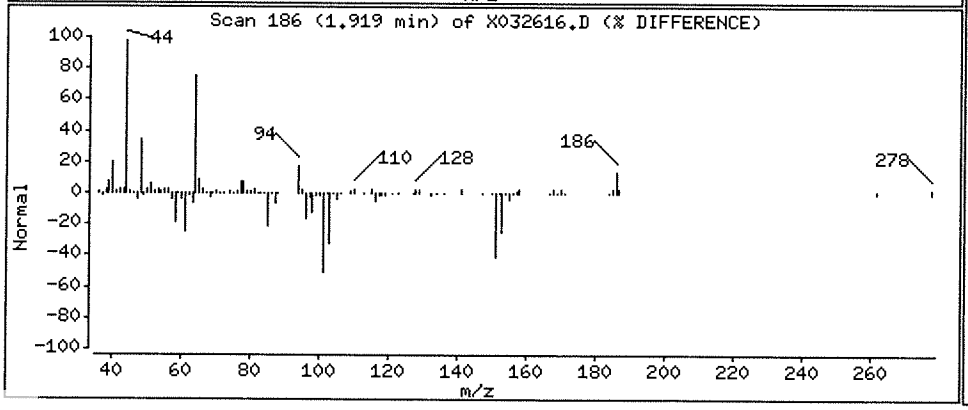












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032617.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032617.D
Lab Smp Id: HS19031013-03 Client Smp ID: HS19031013-03
Inj Date : 26-MAR-2019 19:06
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-03;HS19031013-03;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 15
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

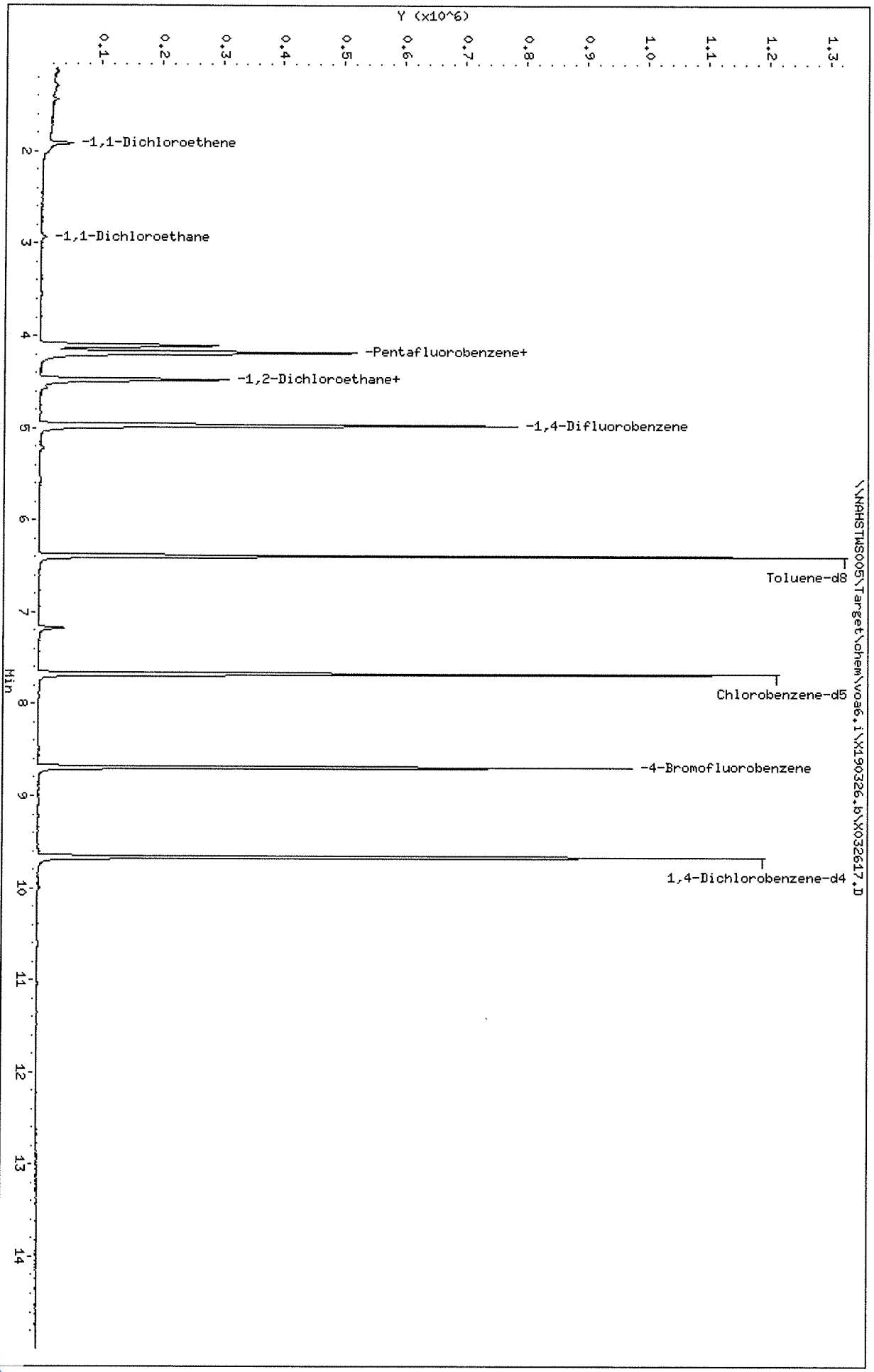
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	456136	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	662497	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	582207	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	298939	50.0000	
$ 30 Dibromofluoromethane	113	4.104	4.103	(0.979)	205127	45.9807	45.98
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	229119	45.9814	45.98
$ 48 Toluene-d8	98	6.389	6.388	(0.833)	770168	53.3067	53.30
$ 69 4-Bromofluorobenzene	95	8.695	8.688	(1.134)	261786	49.2294	49.22
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	8130	0.97057	0.97(a)
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	13992	3.61686	3.61(a)
33 1,2-Dichloroethane	62	4.569	4.562	(0.919)	8246	1.47493	1.47(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).


Data File: \\NAHSTWS005\Target\chem\voa6,i\X190326,b\X032617.D
Date : 26-MAR-2019 19:06
Client ID: HS19031013-03
Sample Info: HS19031013-03;HS19031013-03;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6,i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
-1,1-Dichloroethene
-1,1-Dichloroethane
-Pentafluorobenzene+
-1,2-Dichloroethane+
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6,i\X190326,b\X032617.D
Min
2
3
4
5
6
7
8
9
10
11
12
13
14

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032617.D

Date : 26-MAR-2019 19:06

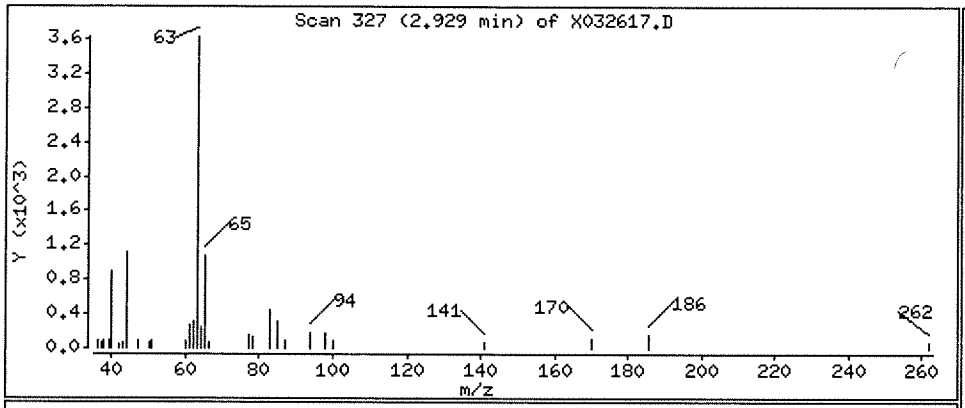
Client ID: HS19031013-03 Instrument: voa6.i

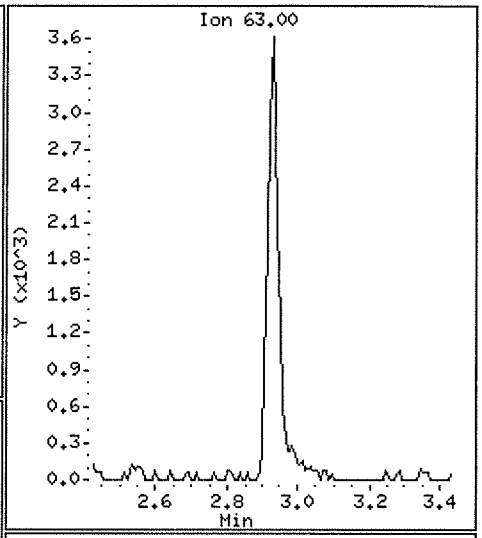
Sample Info: HS19031013-03;HS19031013-03;;;

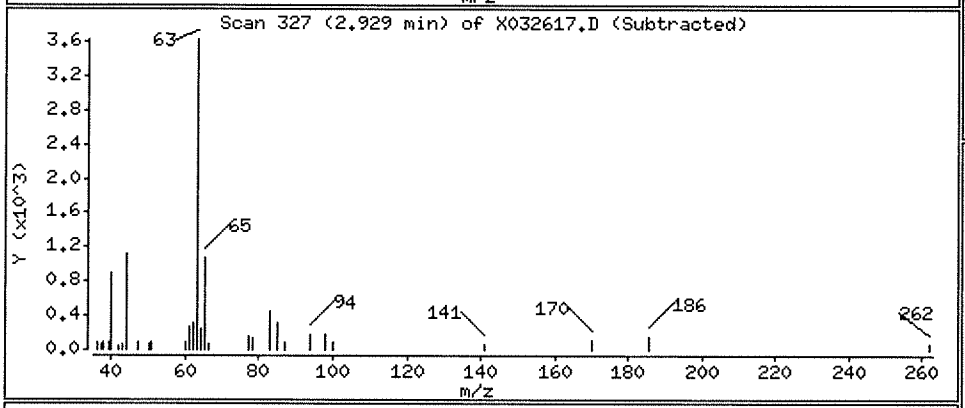
Purge Volume: 5.0 Operator: PC

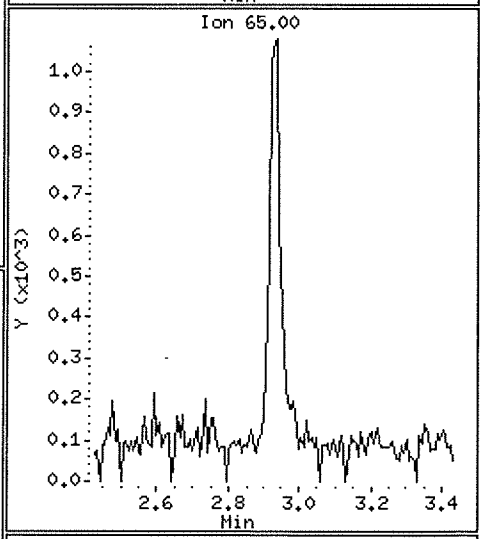
Column phase: DB624 Column diameter: 0.18

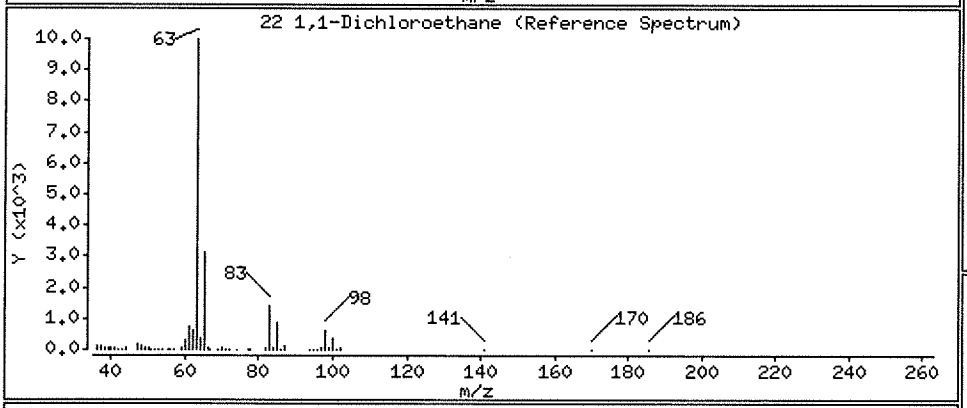
22 1,1-Dichloroethane Concentration: 0.97 ug/l

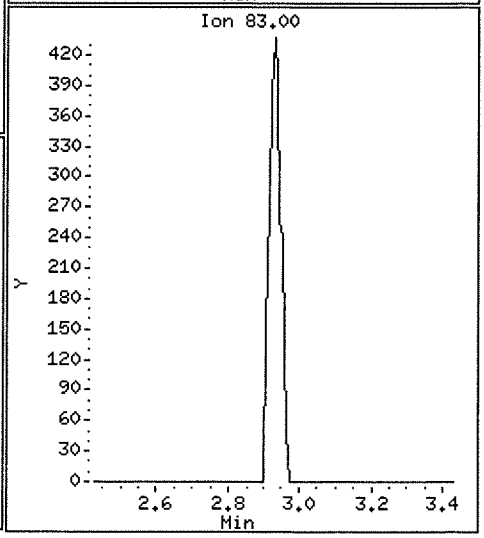


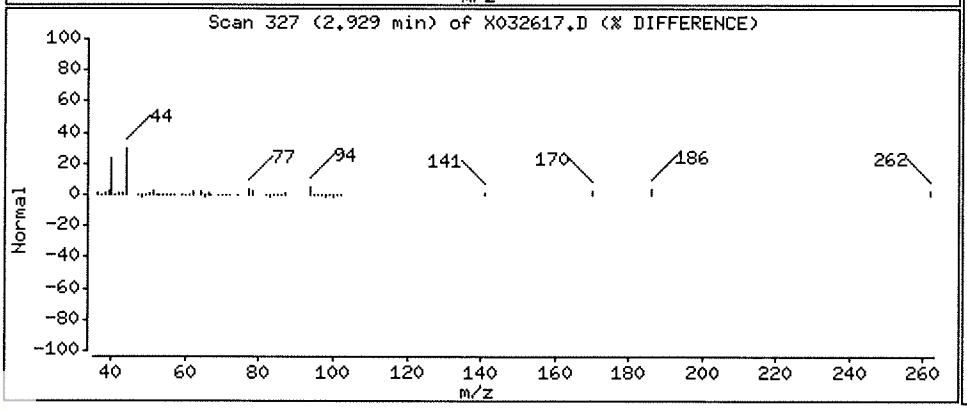












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032617.D

Date : 26-MAR-2019 19:06

Client ID: HS19031013-03

Instrument: voa6.i

Sample Info: HS19031013-03;HS19031013-03;;;

Purge Volume: 5.0

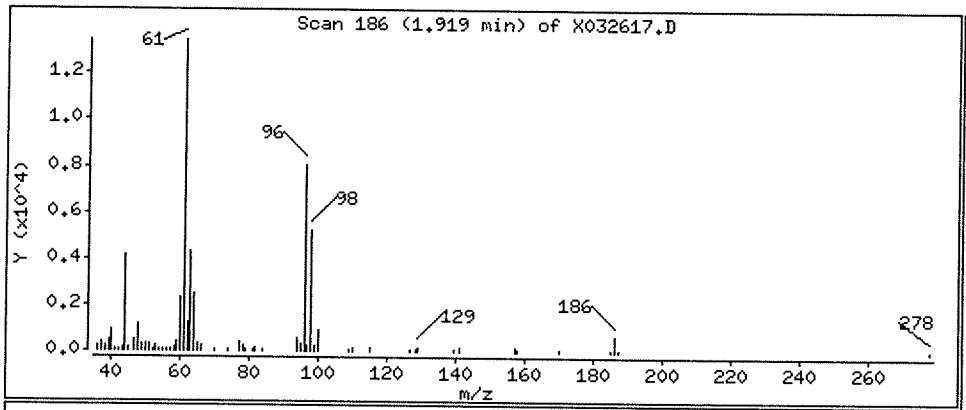
Operator: PC

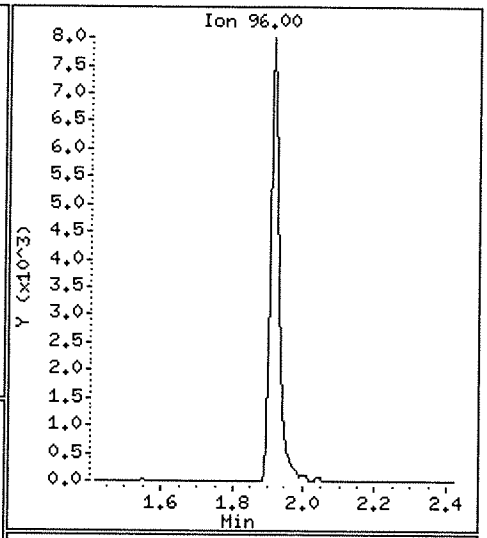
Column phase: DB624

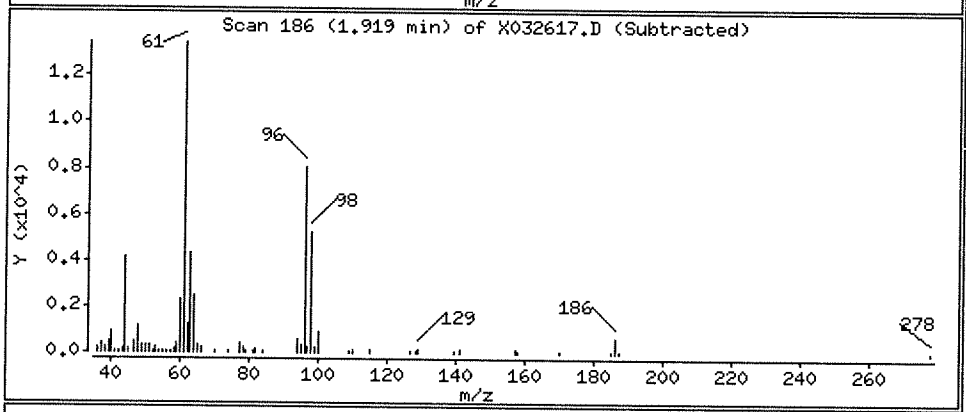
Column diameter: 0.18

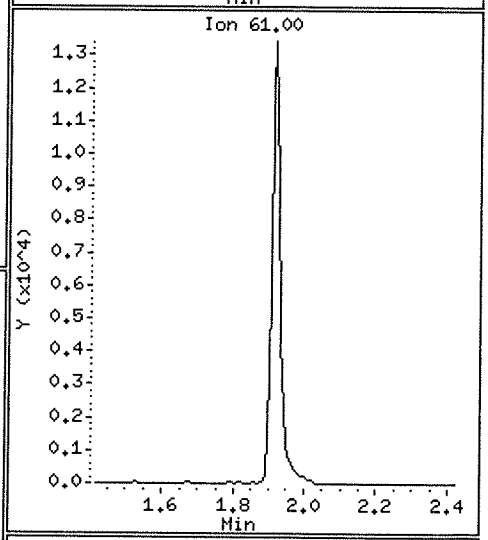
11 1,1-Dichloroethene

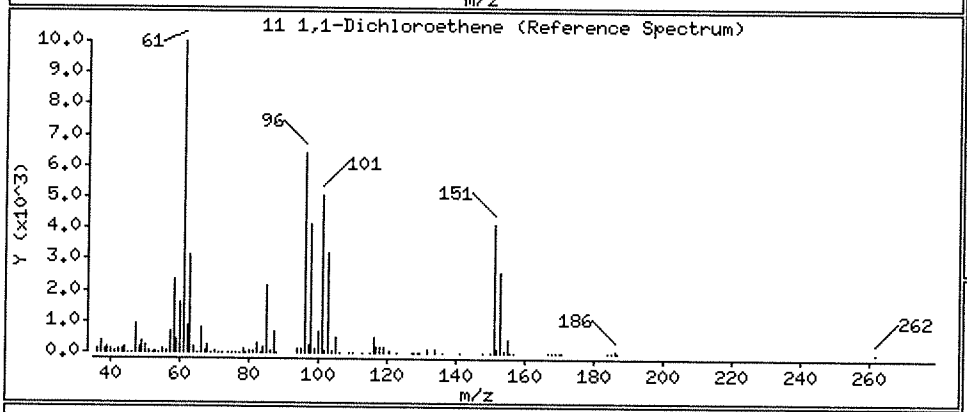
Concentration: 3.61 ug/l

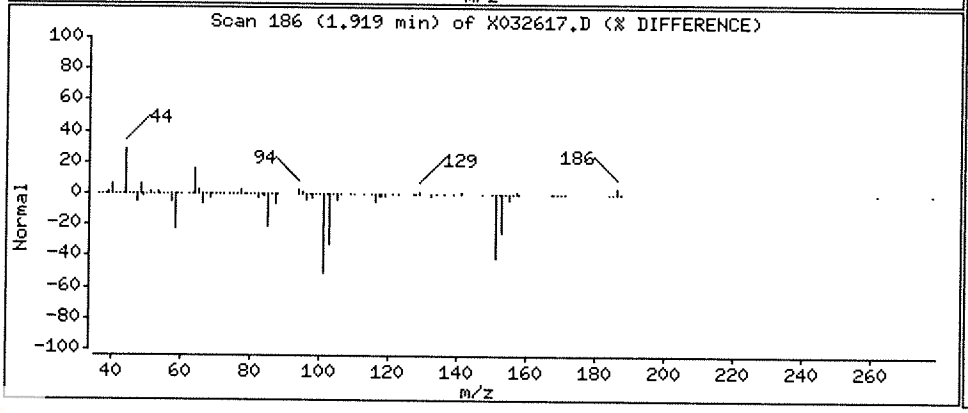


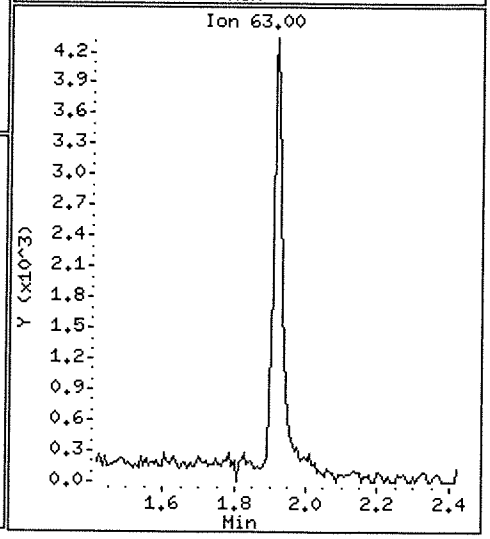












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032617.D

Date : 26-MAR-2019 19:06

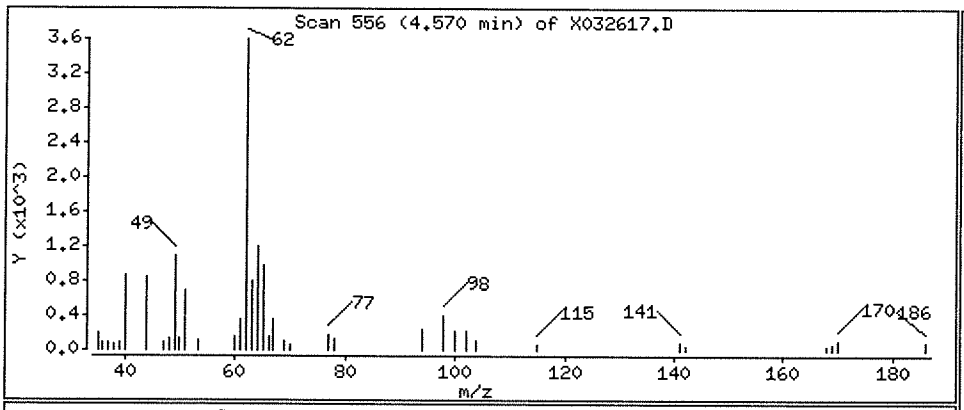
Client ID: HS19031013-03 Instrument: voa6.i

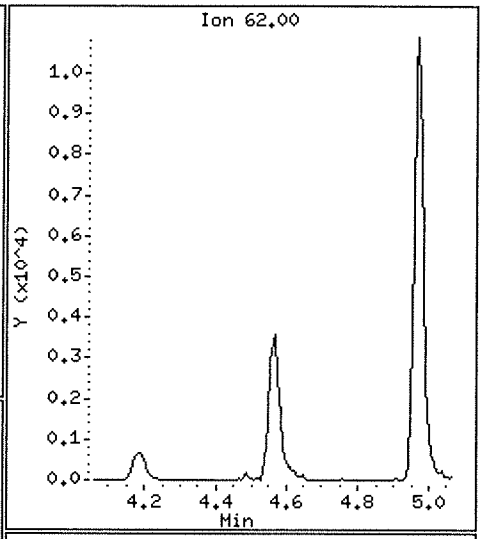
Sample Info: HS19031013-03;HS19031013-03;;;

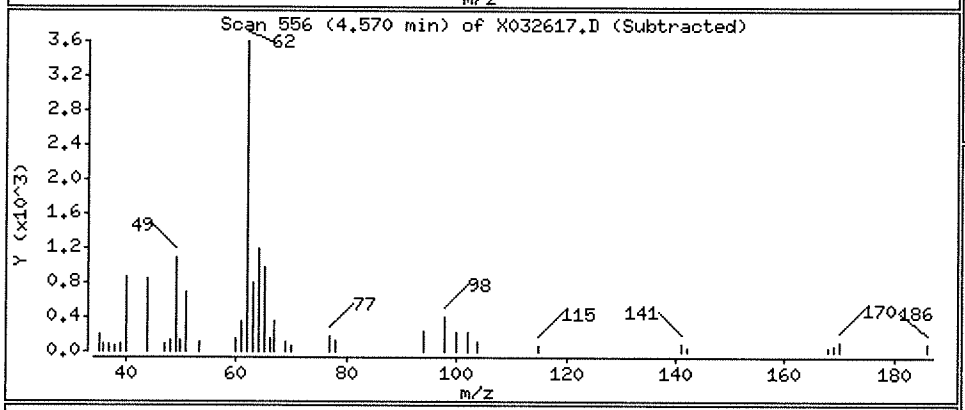
Purge Volume: 5.0 Operator: PC

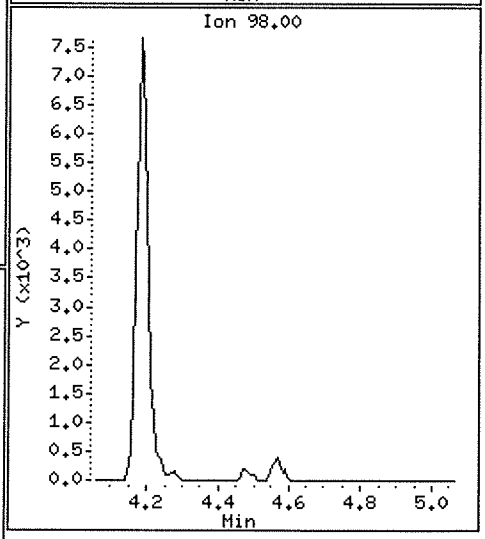
Column phase: DB624 Column diameter: 0.18

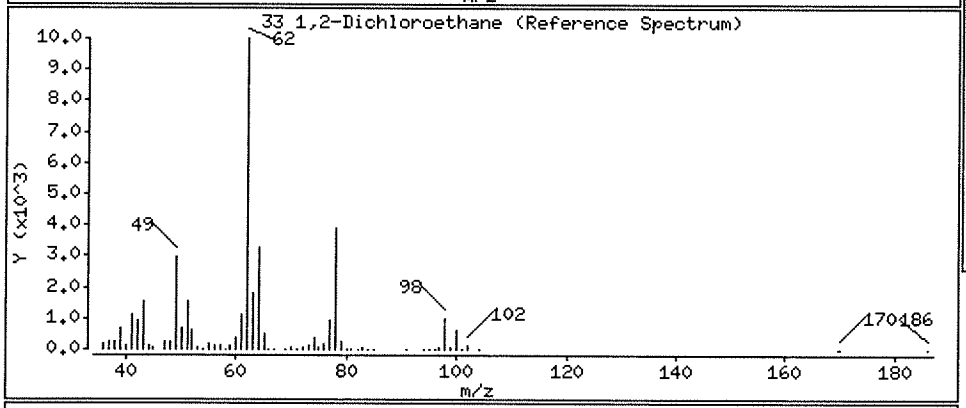
33 1,2-Dichloroethane Concentration: 1.47 ug/l

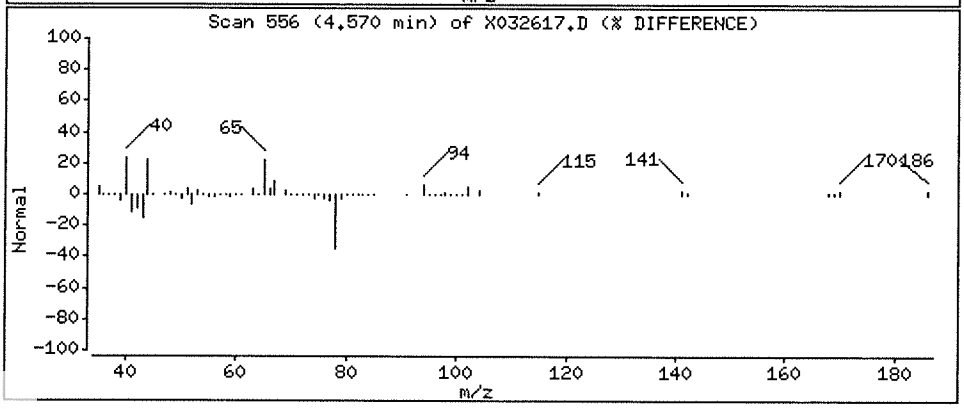












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D
Lab Smp Id: HS19031013-04 Client Smp ID: HS19031013-04
Inj Date : 26-MAR-2019 19:30
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-04;HS19031013-04;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 16
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

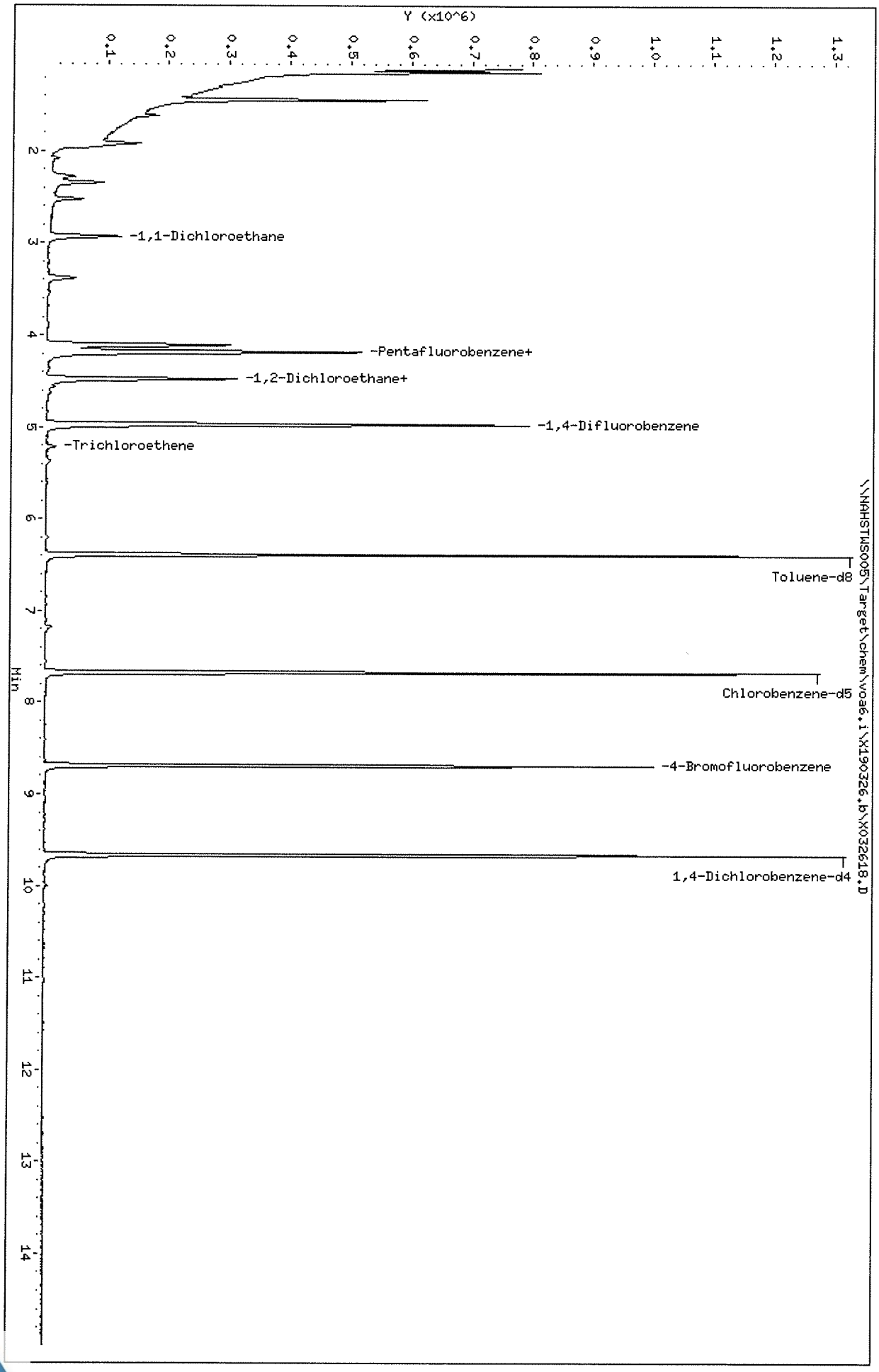
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	452653	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	661119	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	601827	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.669	(1.000)	313253	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	202598	45.7629	45.76
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	229291	46.3719	46.37
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	773180	51.7646	51.76
$ 69 4-Bromofluorobenzene	95	8.695	8.688	(1.134)	276973	50.3957	50.39
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	127013	15.2796	15.27
33 1,2-Dichloroethane	62	4.569	4.562	(0.919)	5307	0.95122	0.95(a)
38 Trichloroethene	130	5.214	5.214	(1.049)	4927	1.05908	1.05(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).


Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D
Date : 26-MAR-2019 19:30
Client ID: HS19031013-04
Sample Info: HS19031013-04;HS19031013-04;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
-1,1-Dichloroethane
-Pentafluorobenzene+
-1,2-Dichloroethane+
-1,4-Difluorobenzene
-Trichloroethene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D
Min
2
3
4
5
6
7
8
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Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D

Date : 26-MAR-2019 19:30

Client ID: HS19031013-04

Instrument: voa6.i

Sample Info: HS19031013-04;HS19031013-04;;;

Purge Volume: 5.0

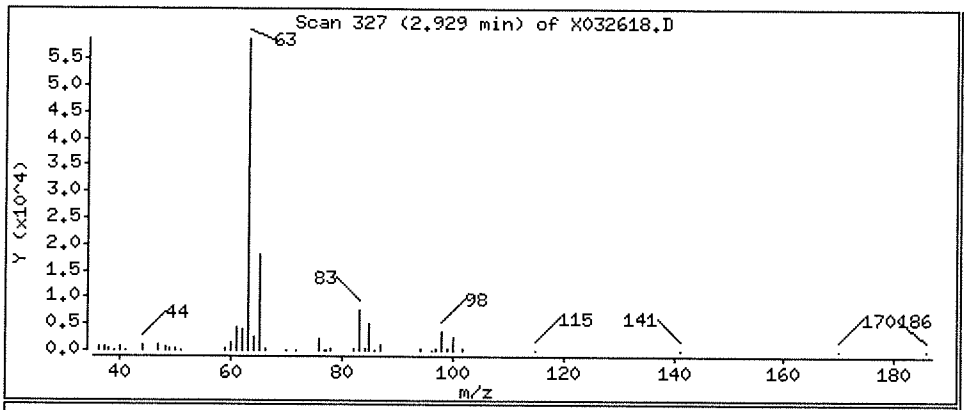
Operator: PC

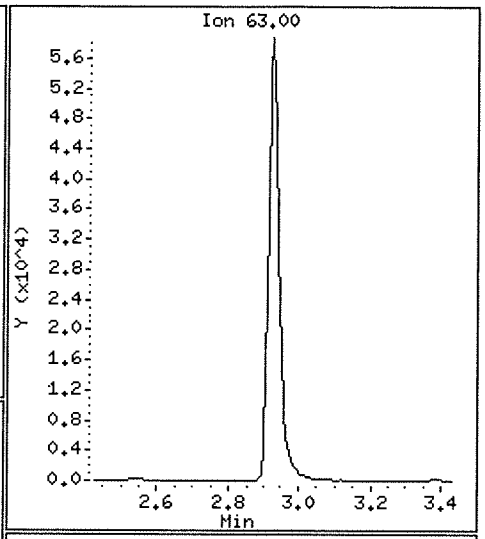
Column phase: DB624

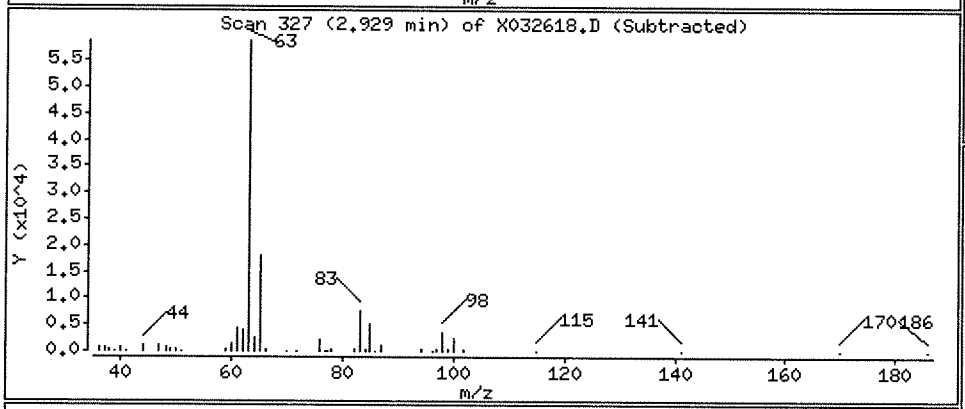
Column diameter: 0.18

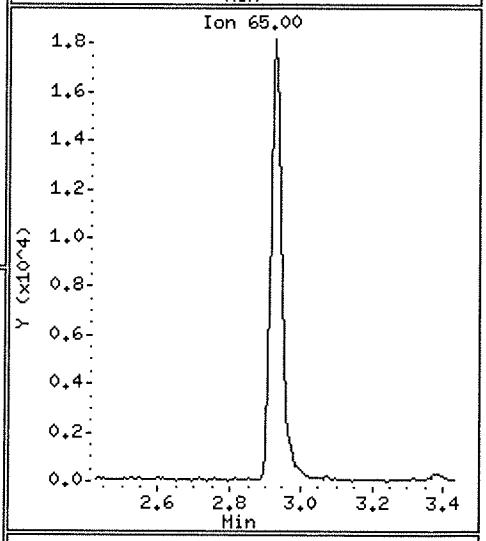
22 1,1-Dichloroethane

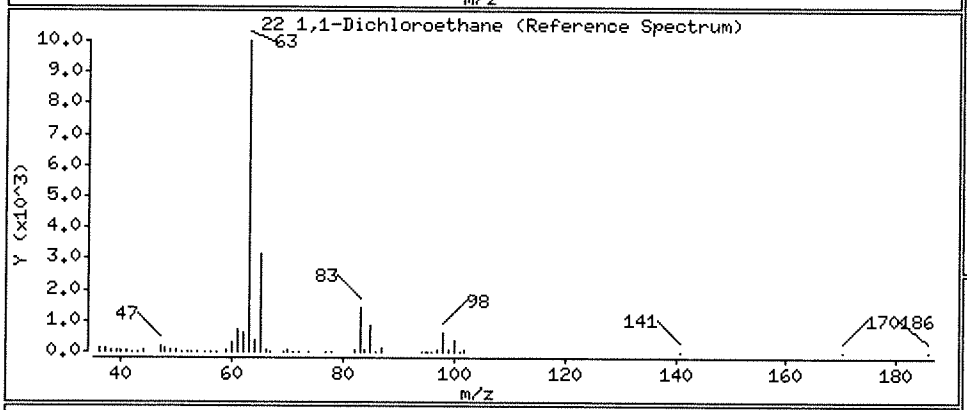
Concentration: 15.27 ug/l

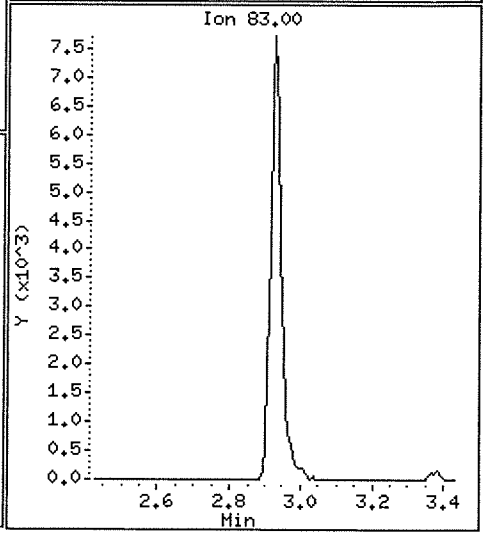


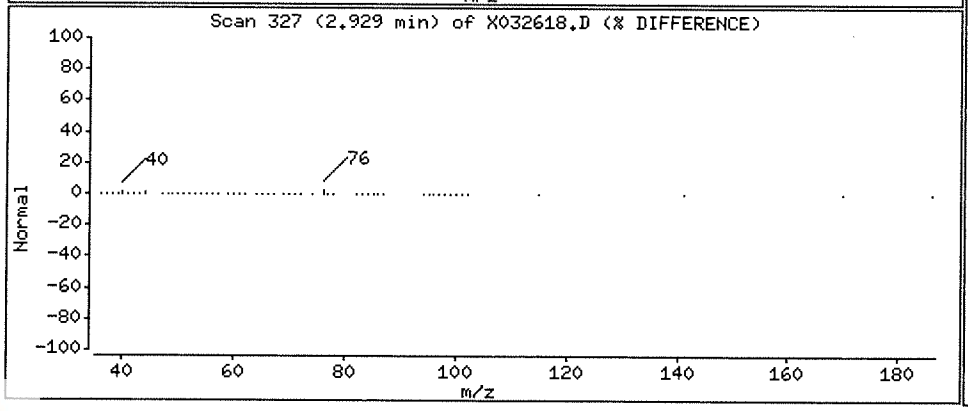












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D

Date : 26-MAR-2019 19:30

Client ID: HS19031013-04

Instrument: voa6.i

Sample Info: HS19031013-04;HS19031013-04;;;

Purge Volume: 5.0

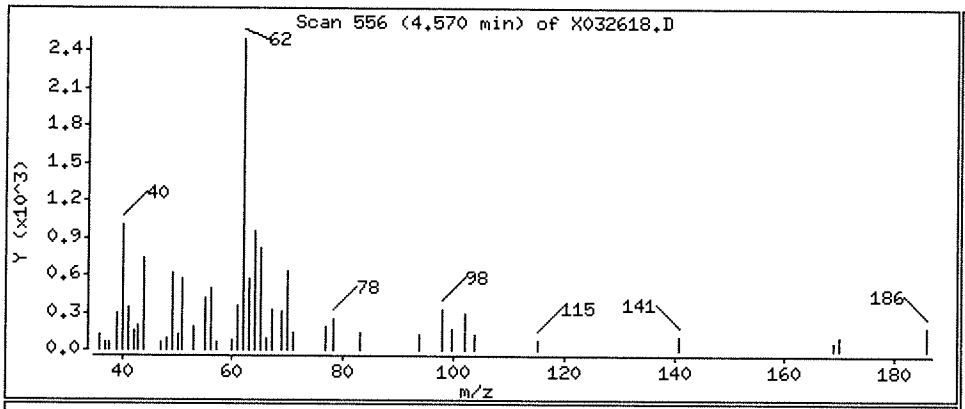
Operator: PC

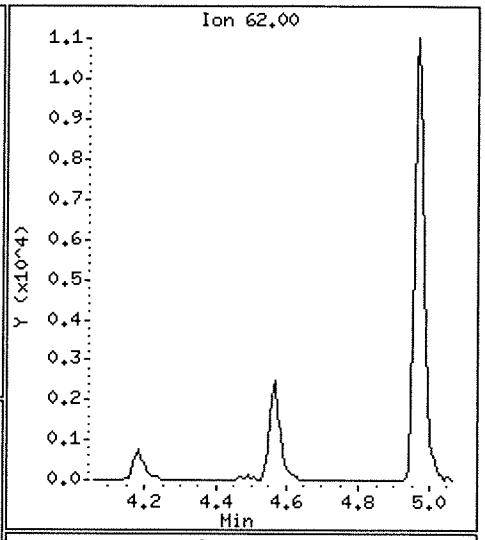
Column phase: DB624

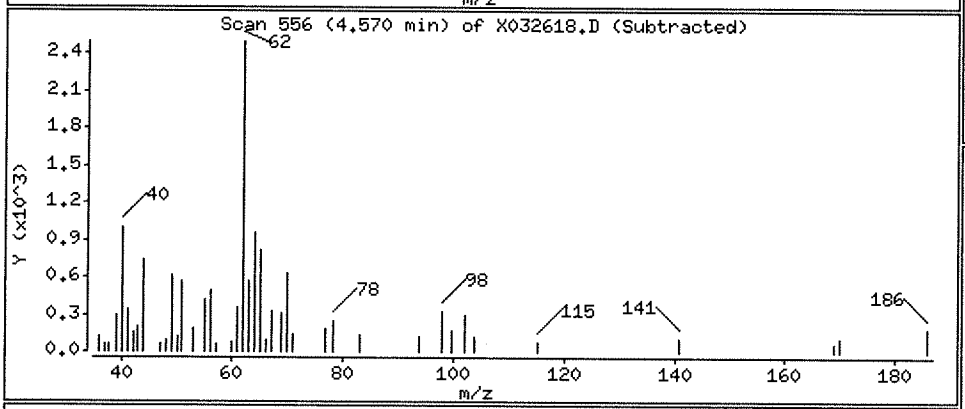
Column diameter: 0.18

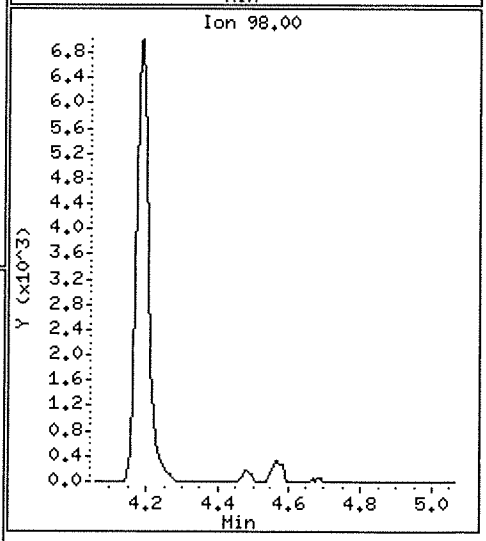
33 1,2-Dichloroethane

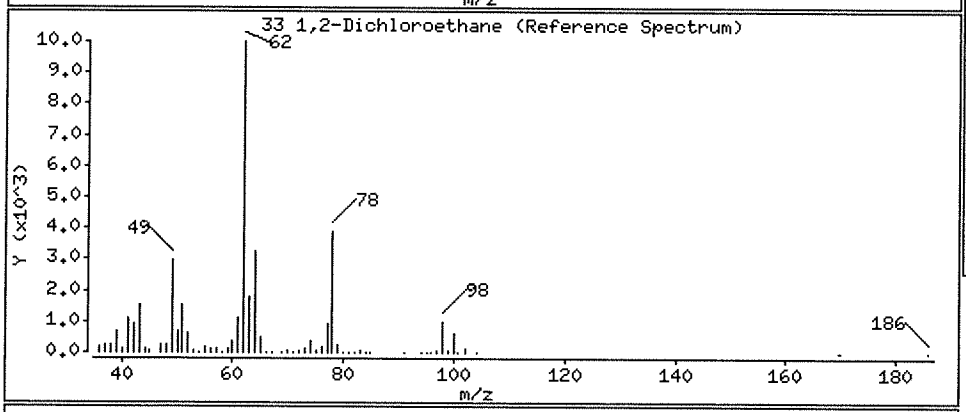
Concentration: 0.95 ug/l

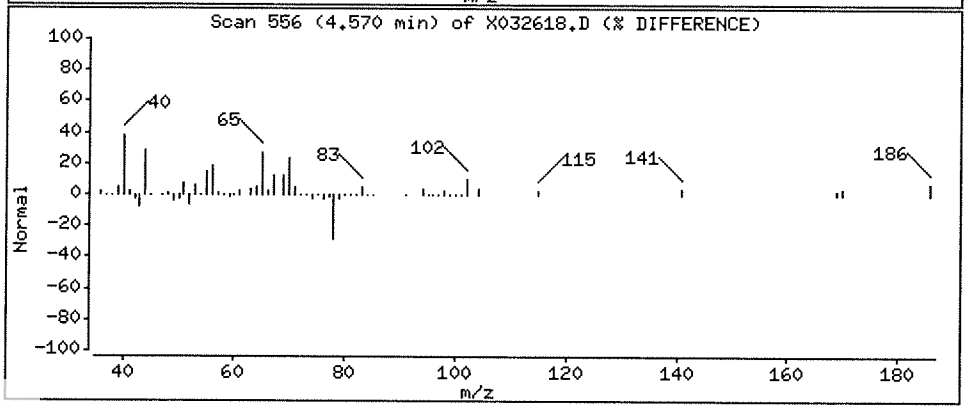












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032618.D

Date : 26-MAR-2019 19:30

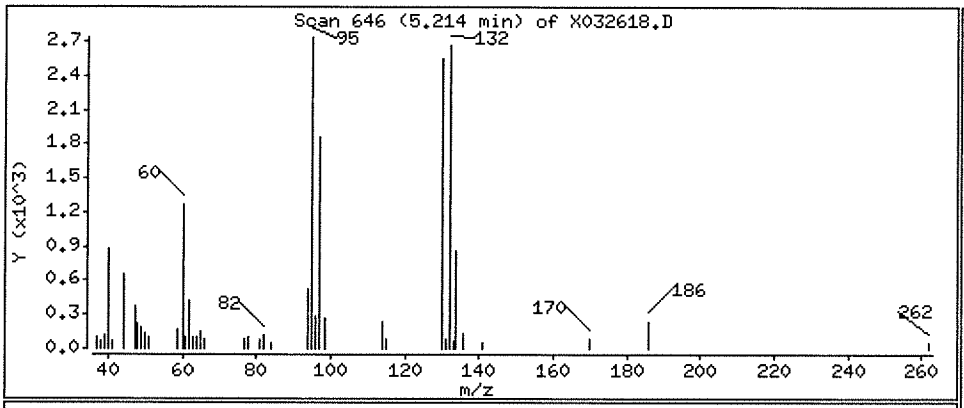
Client ID: HS19031013-04 Instrument: voa6.i

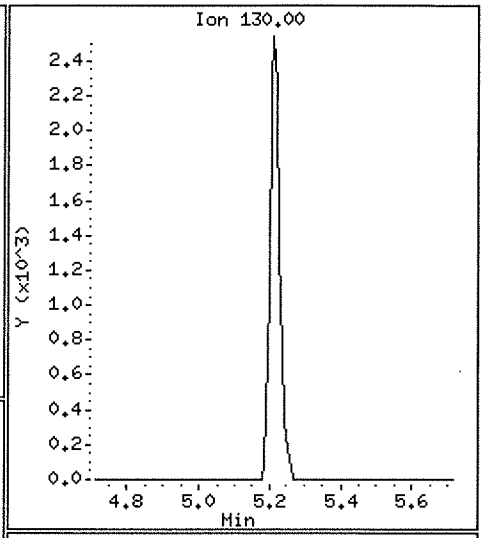
Sample Info: HS19031013-04;HS19031013-04;;;

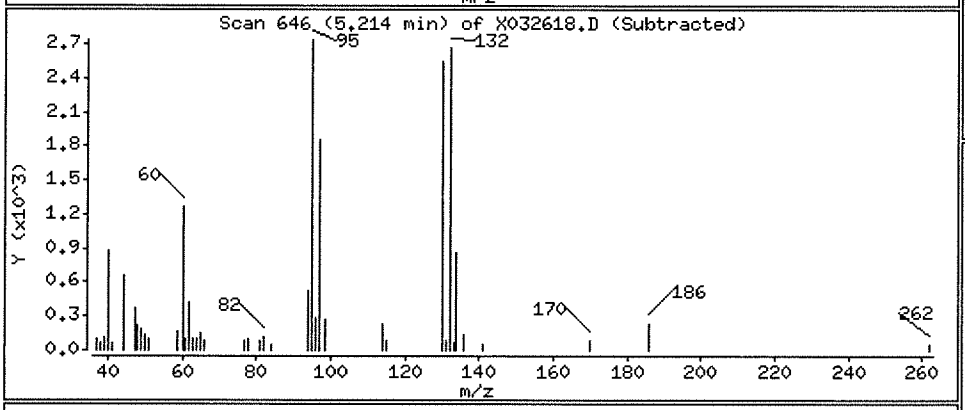
Purge Volume: 5.0 Operator: PC

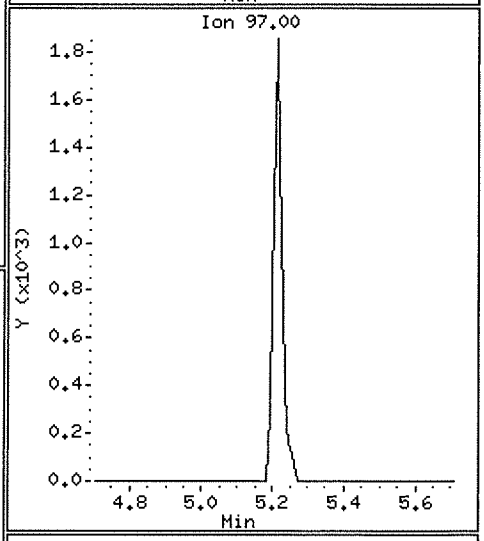
Column phase: DB624 Column diameter: 0.18

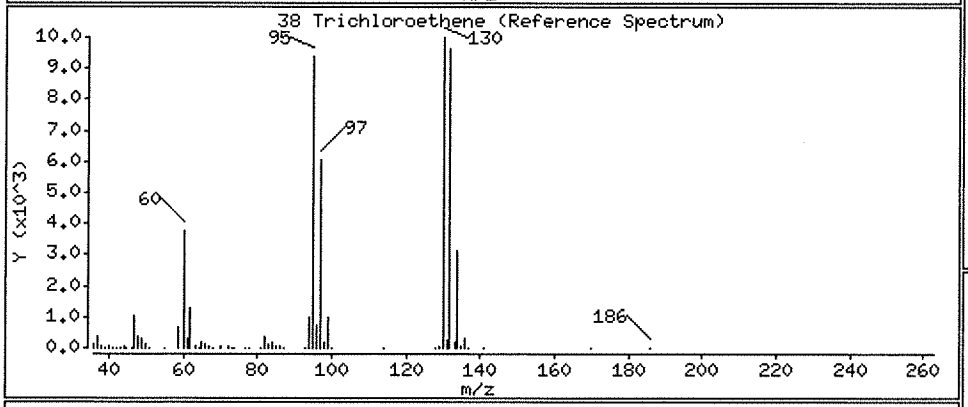
38 Trichloroethene Concentration: 1.05 ug/l

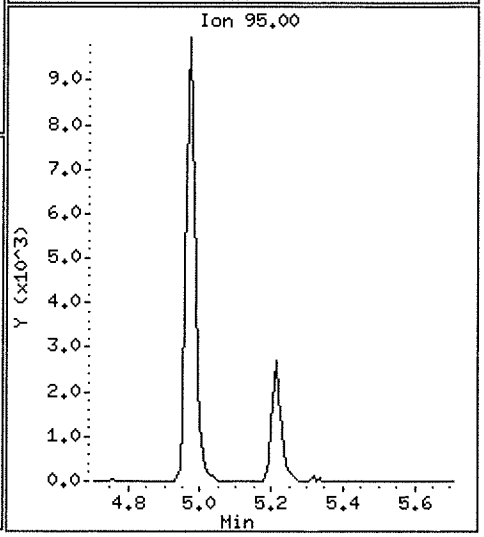


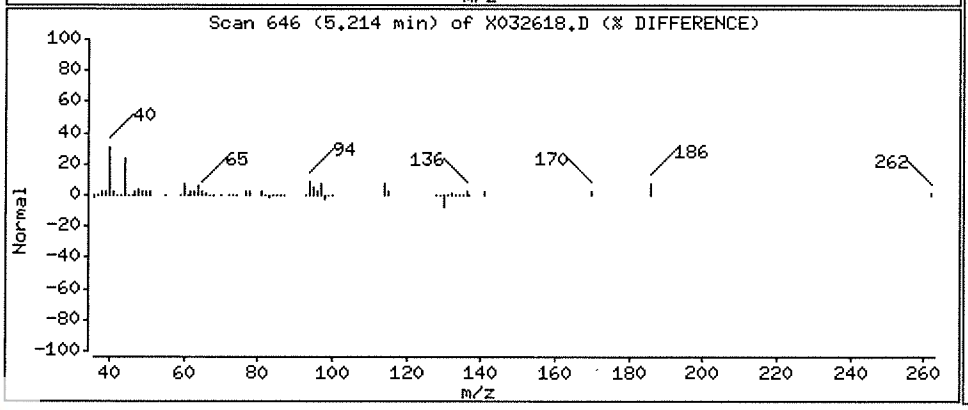












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D
Lab Smp Id: HS19031013-05 Client Smp ID: HS19031013-05
Inj Date : 26-MAR-2019 19:54
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-05;HS19031013-05;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

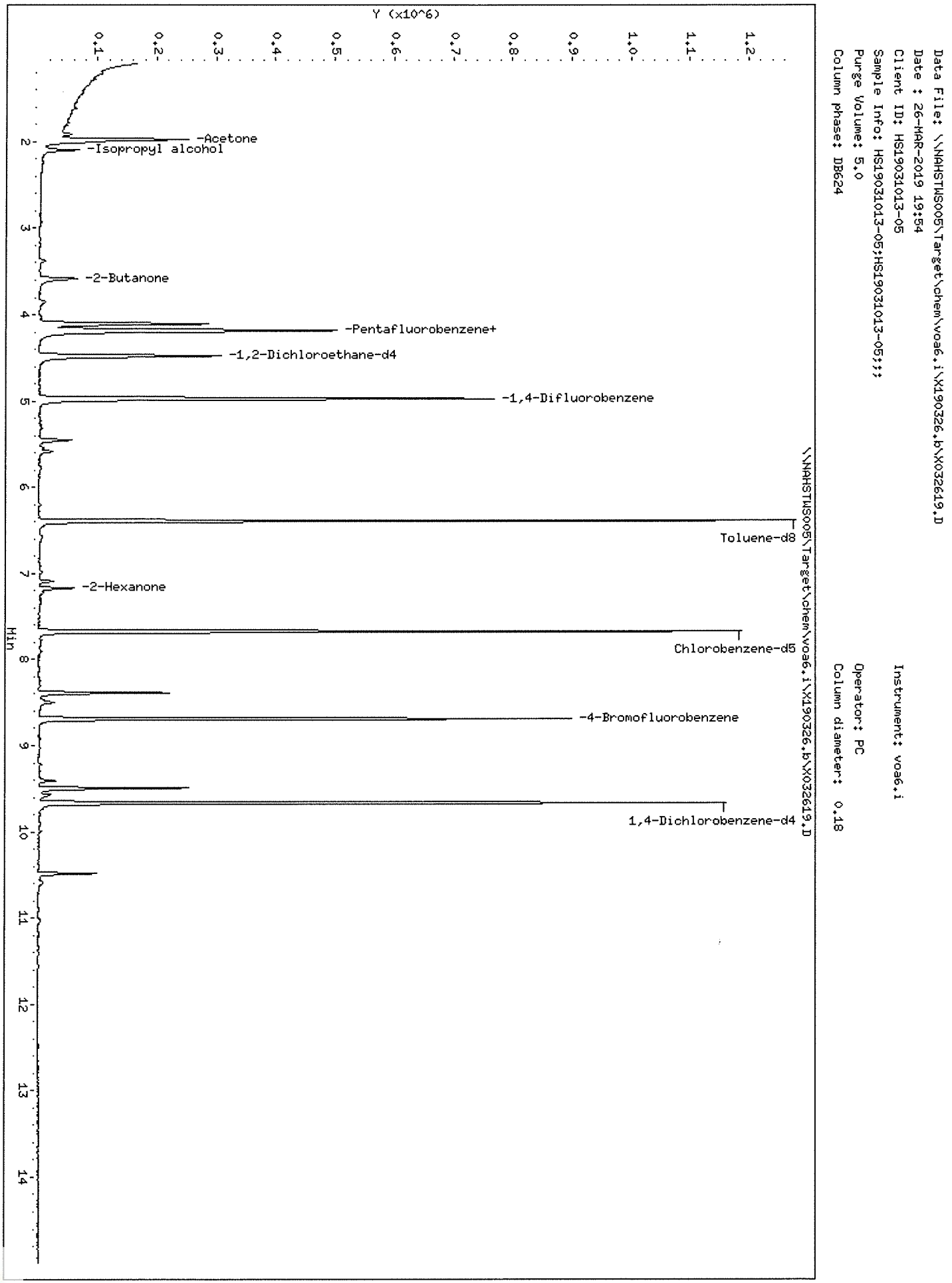
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	443609	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	641824	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	560050	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	281586	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	200042	46.1073	46.10
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	227983	47.0507	47.05
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	746158	53.6895	53.68
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	252140	49.2918	49.29
24 2-Butanone	43	3.580	3.580	(0.855)	94966	62.4987	62.49
52 2-Hexanone	43	7.090	7.090	(0.924)	14606	6.61543	6.61
10 Acetone	43	1.976	1.976	(0.472)	267727	247.563	247.56(A)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.


Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D
Date : 26-MAR-2019 19:54
Client ID: HS19031013-05
Sample Info: HS19031013-05;HS19031013-05;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
Min
2
3
4
5
6
7
8
9
10
11
12
13
14
-Acetone
-Isopropyl alcohol
-2-Butanone
-Pentafluorobenzene+
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
-2-Hexanone
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D

Date : 26-MAR-2019 19:54

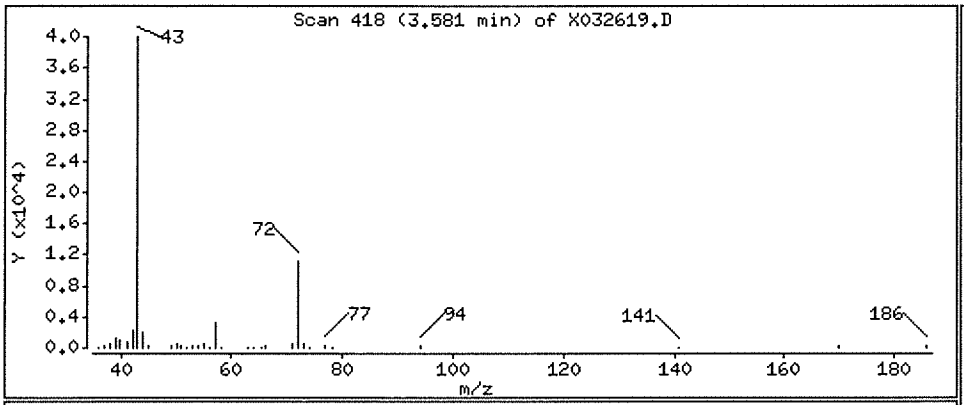
Client ID: HS19031013-05 Instrument: voa6.i

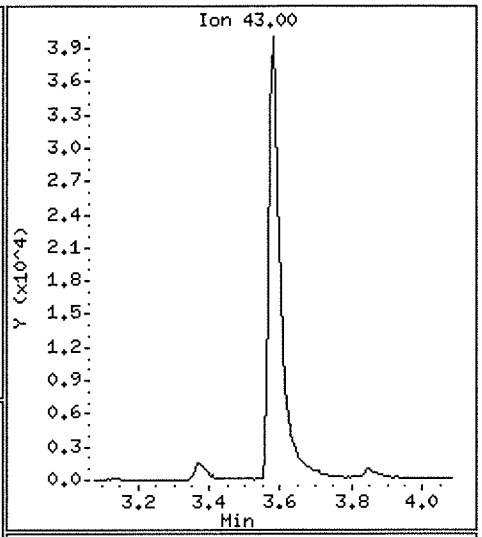
Sample Info: HS19031013-05;HS19031013-05;;;

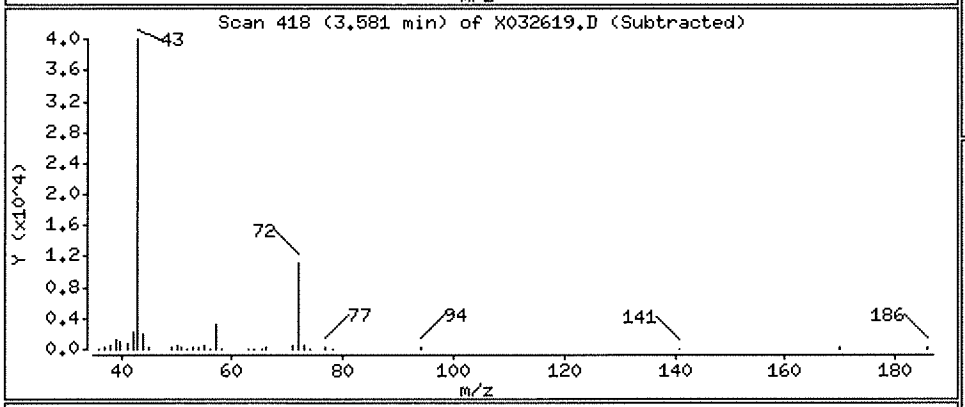
Purge Volume: 5.0 Operator: PC

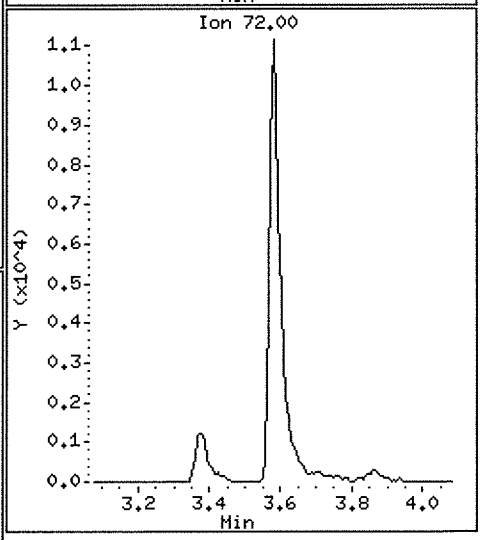
Column phase: DB624 Column diameter: 0.18

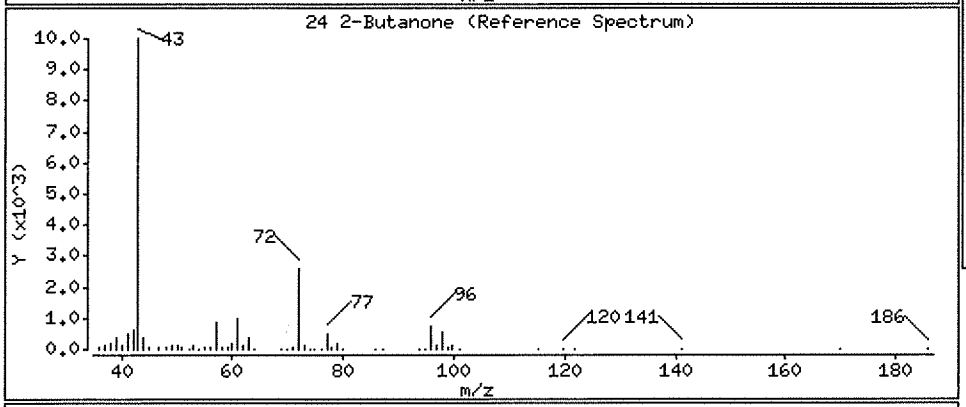
24 2-Butanone Concentration: 62.49 ug/l

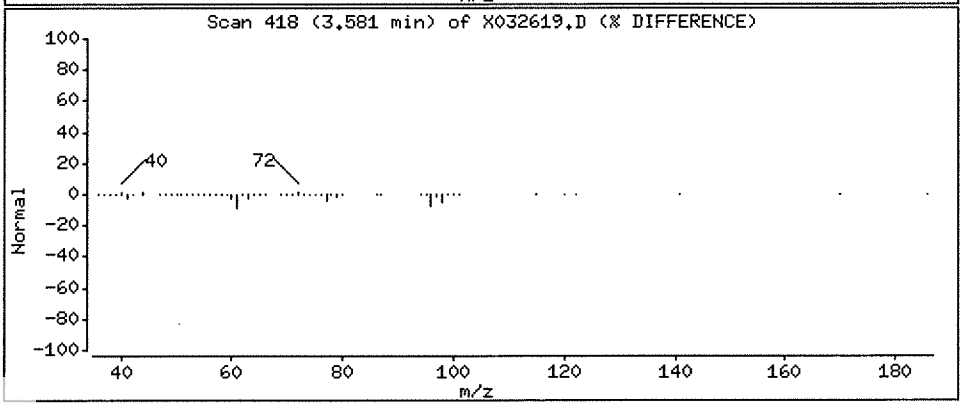












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D

Date : 26-MAR-2019 19:54

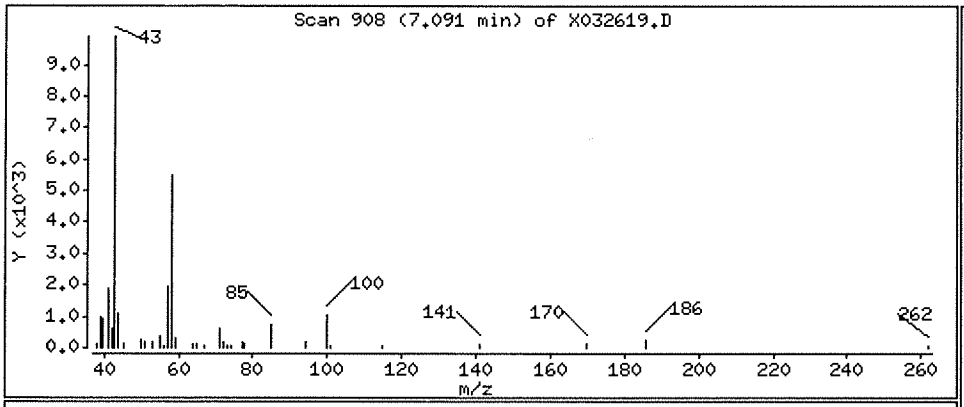
Client ID: HS19031013-05 Instrument: voa6.i

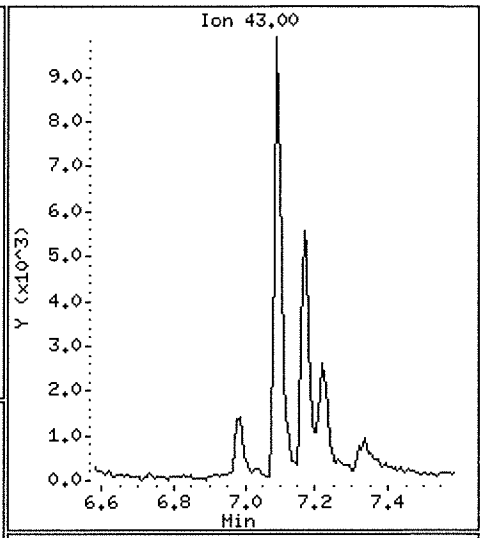
Sample Info: HS19031013-05;HS19031013-05;;;

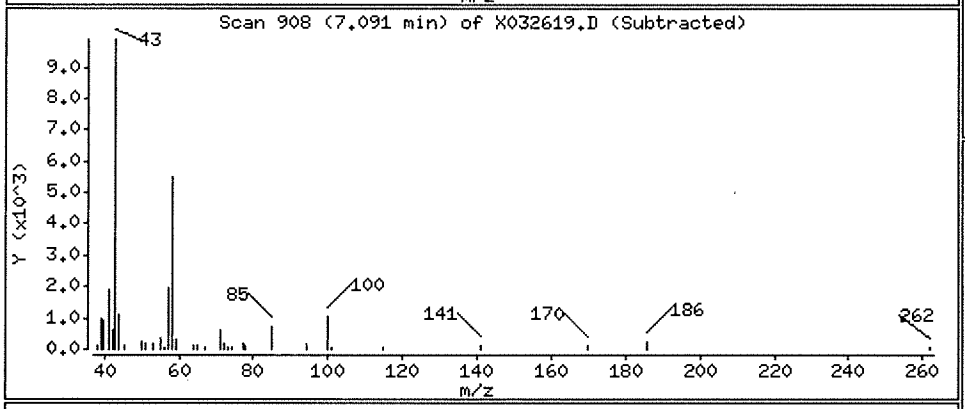
Purge Volume: 5.0 Operator: PC

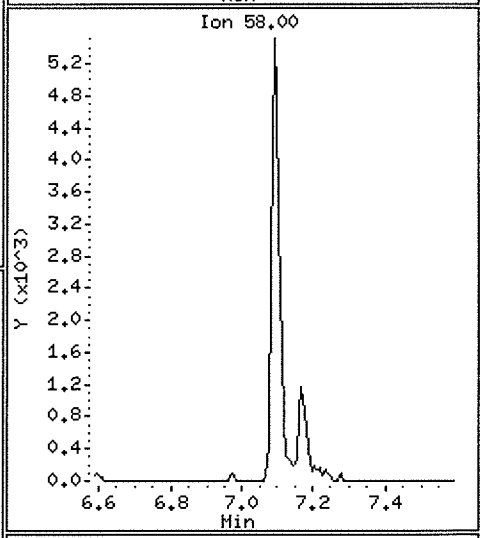
Column phase: DB624 Column diameter: 0.18

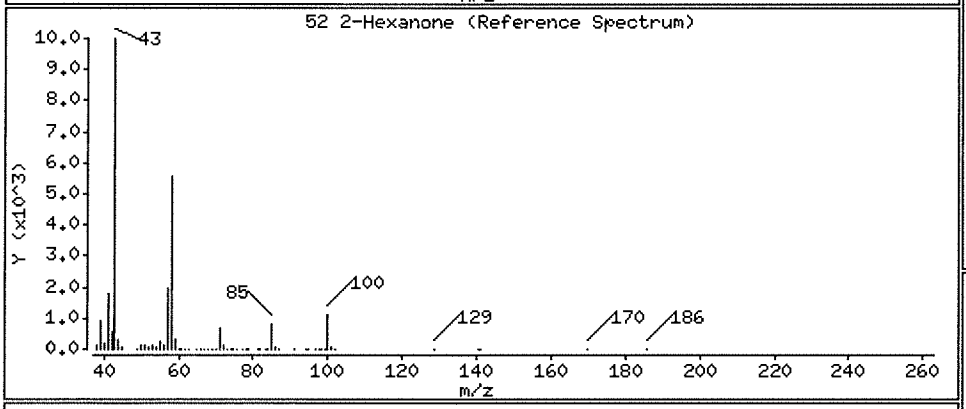
52 2-Hexanone Concentration: 6.61 ug/l

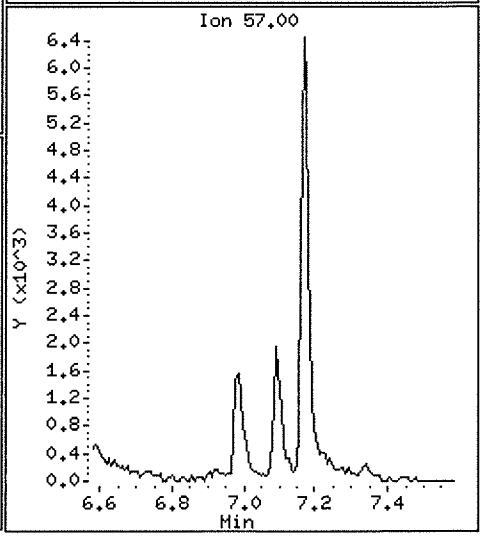


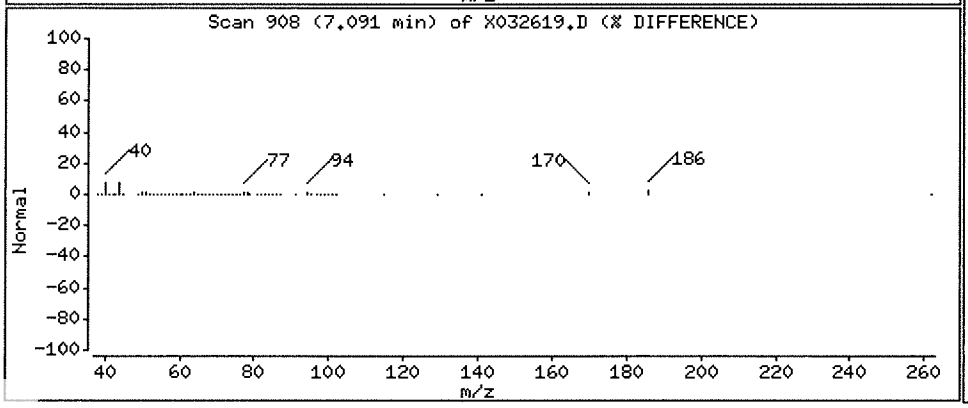












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032619.D

Date : 26-MAR-2019 19:54

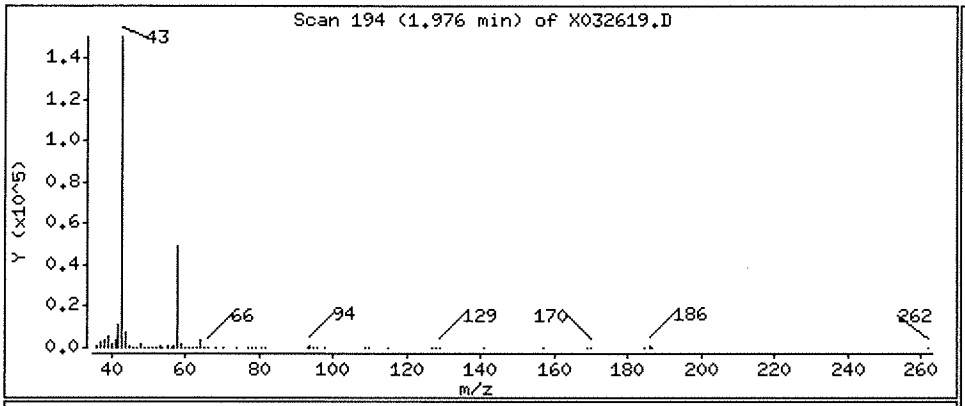
Client ID: HS19031013-05 Instrument: voa6.i

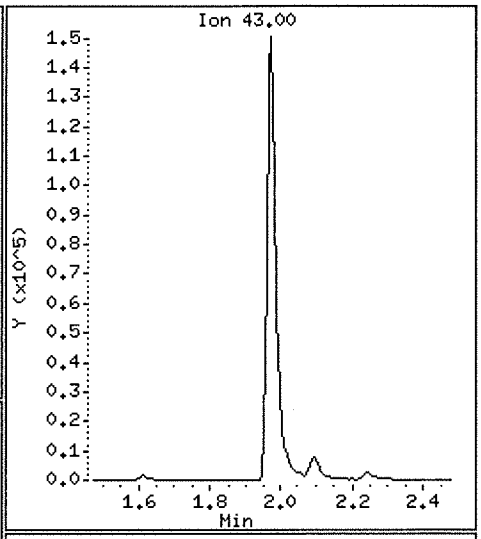
Sample Info: HS19031013-05;HS19031013-05;;;

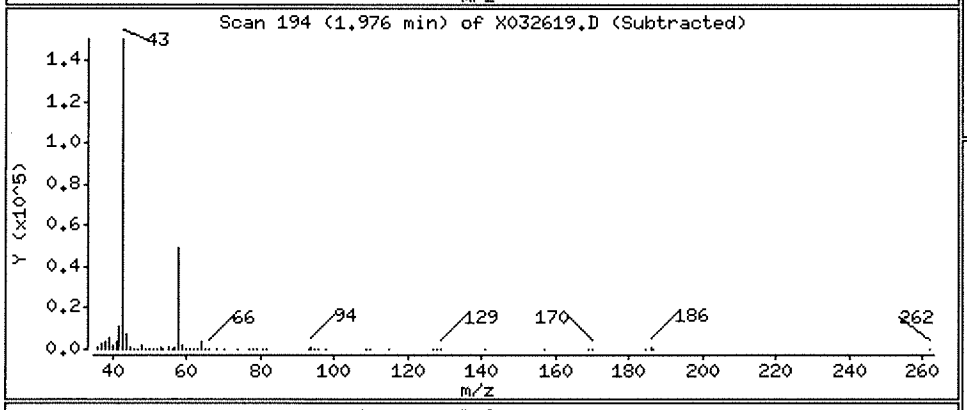
Purge Volume: 5.0 Operator: PC

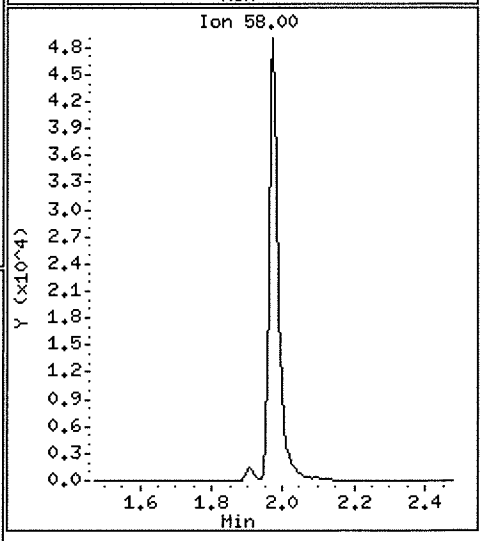
Column phase: DB624 Column diameter: 0.18

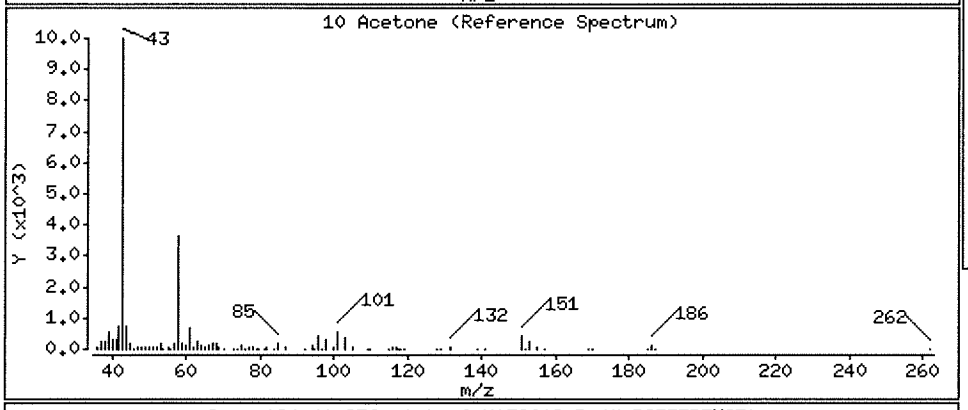
10 Acetone Concentration: 247.56 ug/l

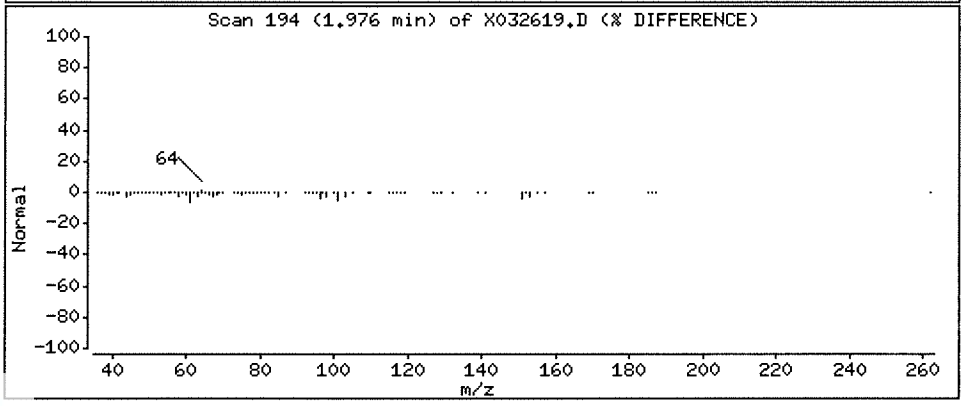












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D
Lab Smp Id: HS19031013-06 Client Smp ID: HS19031013-06
Inj Date : 26-MAR-2019 20:18
Operator : PC Inst ID: voa6.i
Smp Info : HS19031013-06;HS19031013-06;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

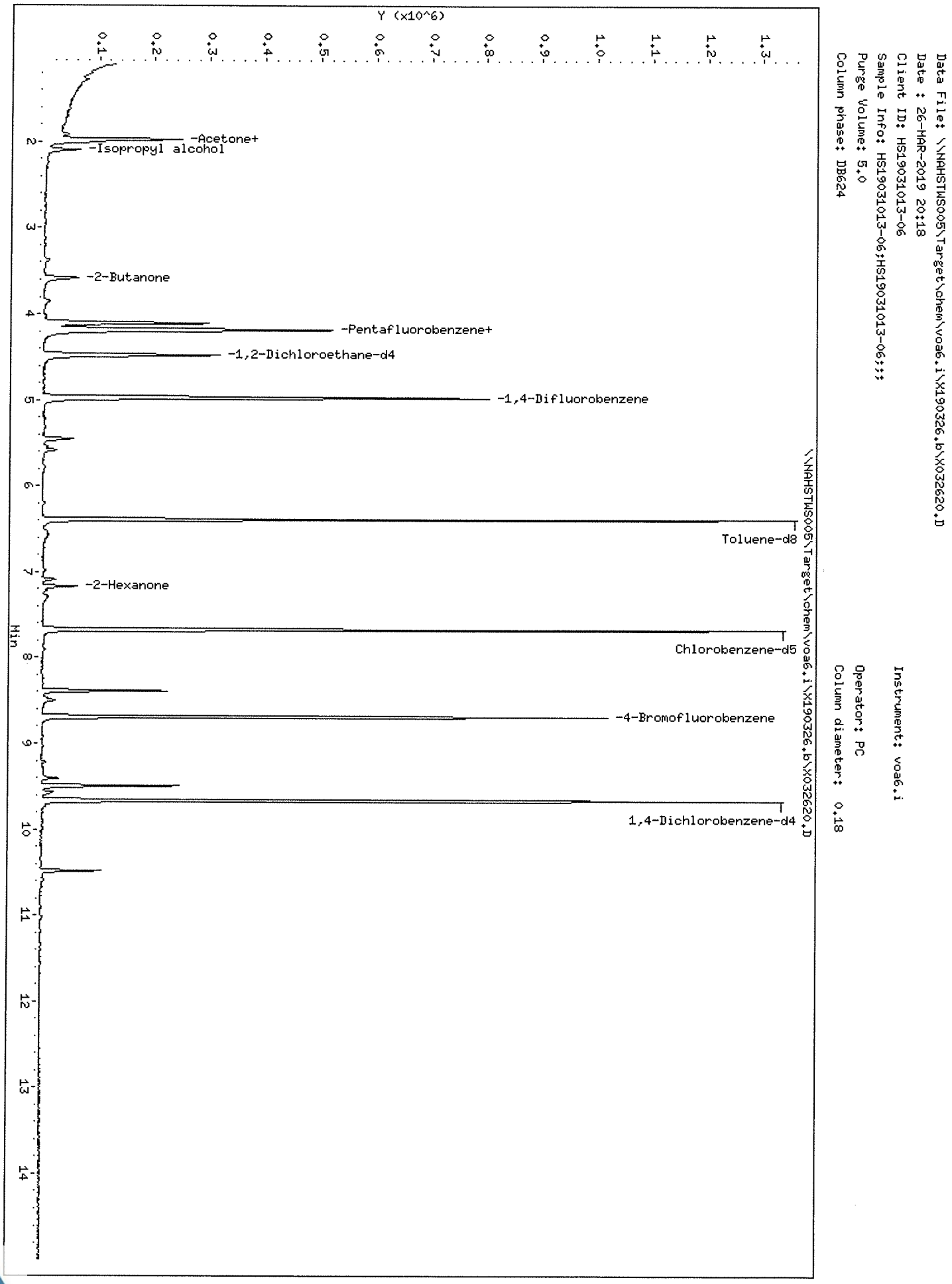
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	464782	50.0000	
* 36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	673306	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	626015	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	322660	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	207356	45.6151	45.61
$ 35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.068)	235161	46.3177	46.31
$ 48 Toluene-d8	98	6.388	6.388	(0.833)	786877	50.6417	50.64
$ 69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	286880	50.1800	50.17
11 1,1-Dichloroethene	96	1.919	1.919	(0.458)	5443	1.38081	1.38(a)
24 2-Butanone	43	3.580	3.580	(0.855)	94652	59.4543	59.45
52 2-Hexanone	43	7.090	7.090	(0.924)	14614	5.92159	5.92
10 Acetone	43	1.976	1.976	(0.472)	266866	235.299	235.29(A)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.


Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D
Date : 26-MAR-2019 20:18
Client ID: HS19031013-06
Sample Info: HS19031013-06;HS19031013-06;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
-Acetone+
-Isopropyl alcohol
-2-Butanone
-Pentafluorobenzene+
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
-2-Hexanone
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D
Min
2
3
4
5
6
7
8
9
10
11
12
13
14

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D

Date : 26-MAR-2019 20:18

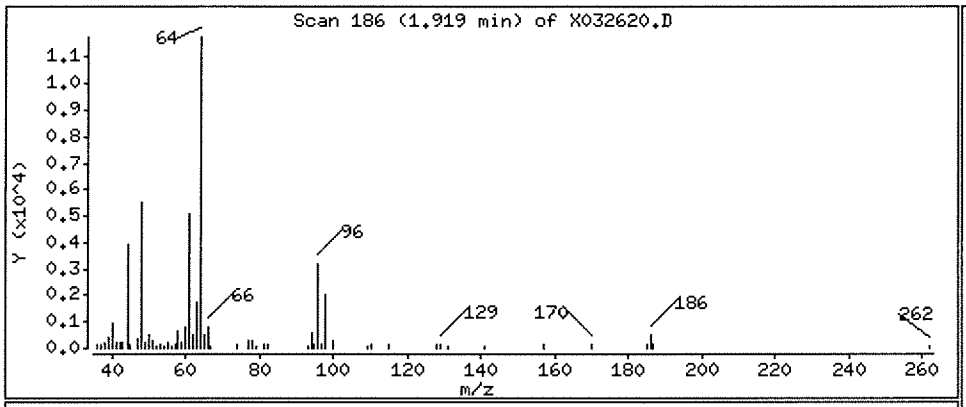
Client ID: HS19031013-06 Instrument: voa6.i

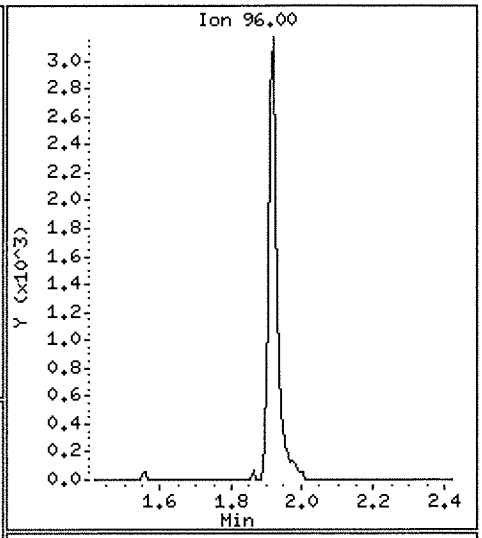
Sample Info: HS19031013-06;HS19031013-06;;;

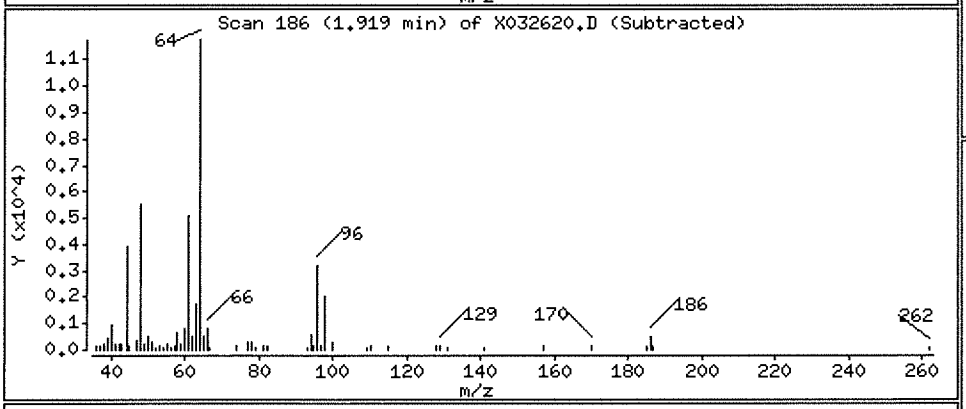
Purge Volume: 5.0 Operator: PC

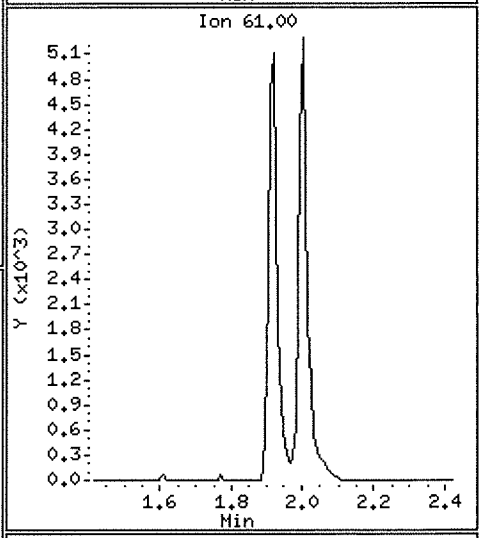
Column phase: DB624 Column diameter: 0.18

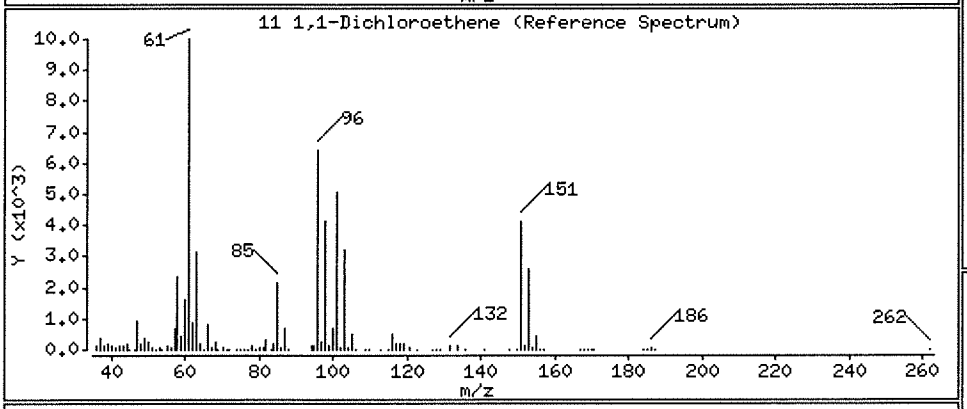
11 1,1-Dichloroethene Concentration: 1.38 ug/l

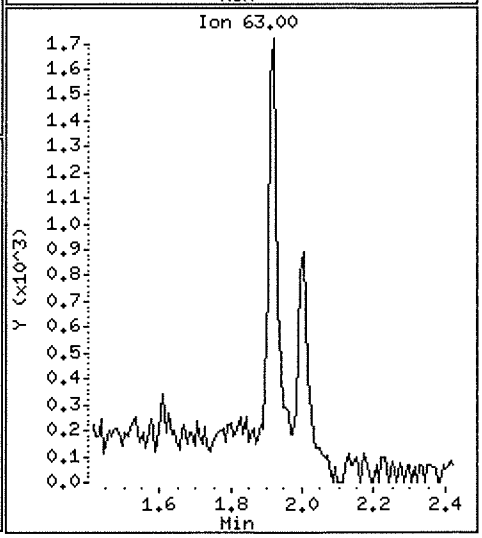


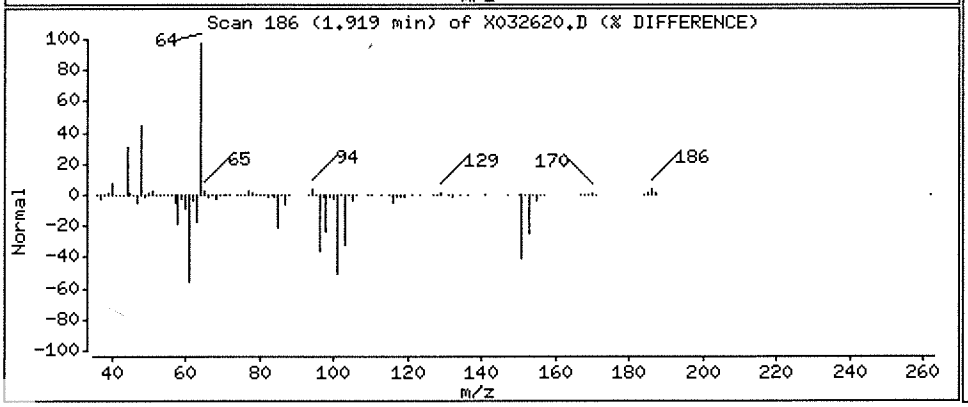












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D

Date : 26-MAR-2019 20:18

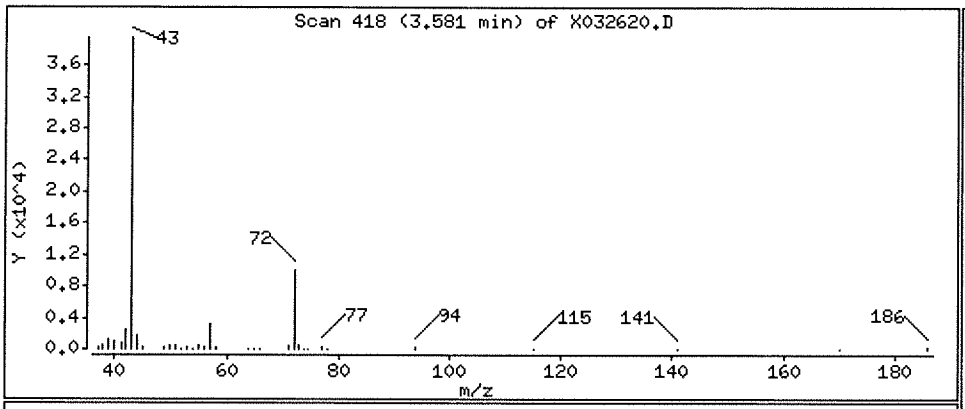
Client ID: HS19031013-06 Instrument: voa6.i

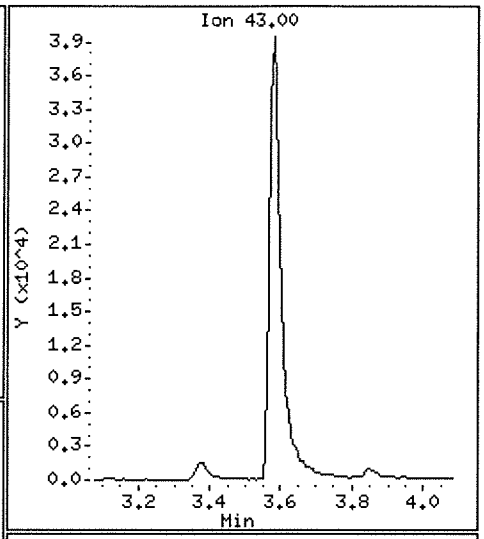
Sample Info: HS19031013-06;HS19031013-06;;;

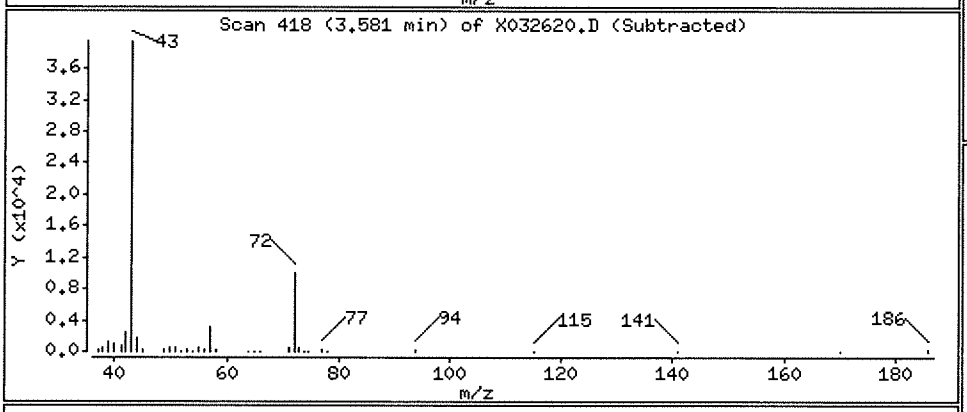
Purge Volume: 5.0 Operator: PC

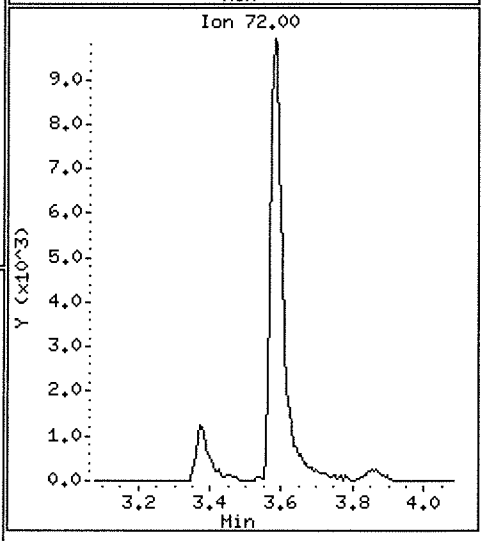
Column phase: DB624 Column diameter: 0.18

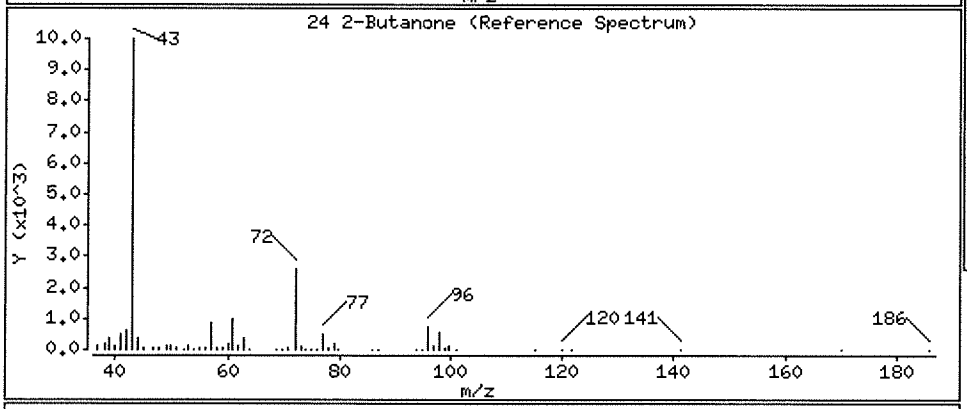
24 2-Butanone Concentration: 59.45 ug/l

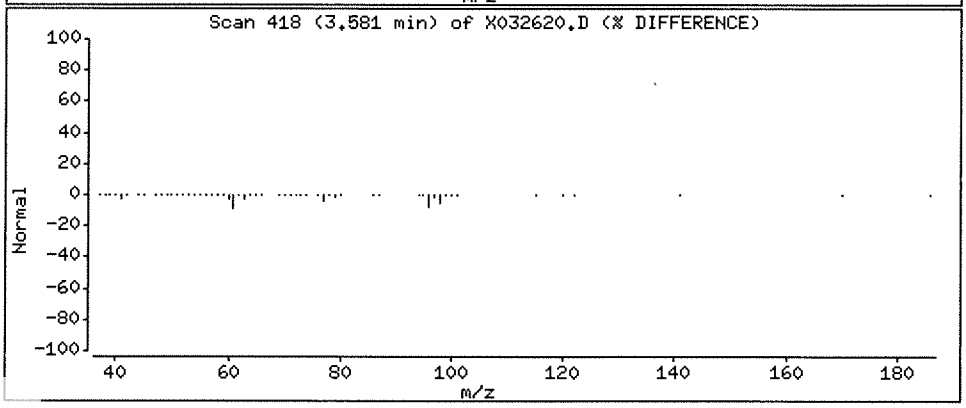












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Date : 26-MAR-2019 20:18

Client ID: HS19031013-06

Instrument: voa6.i

Sample Info: HS19031013-06;HS19031013-06;;;

Purge Volume: 5.0

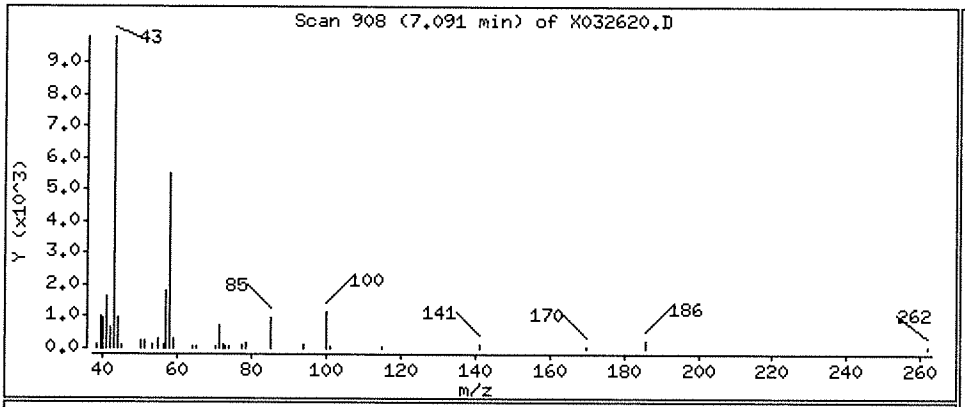
Operator: PC

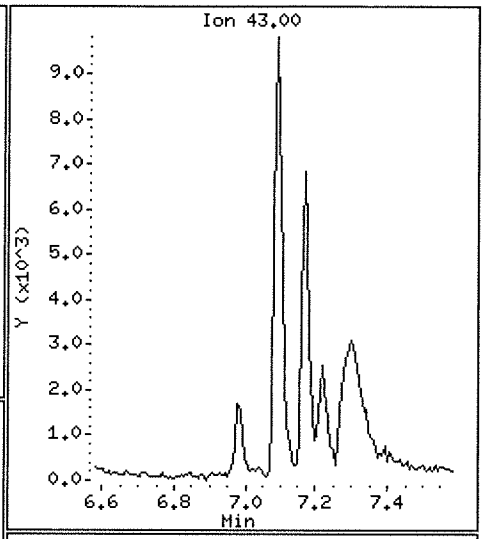
Column phase: DB624

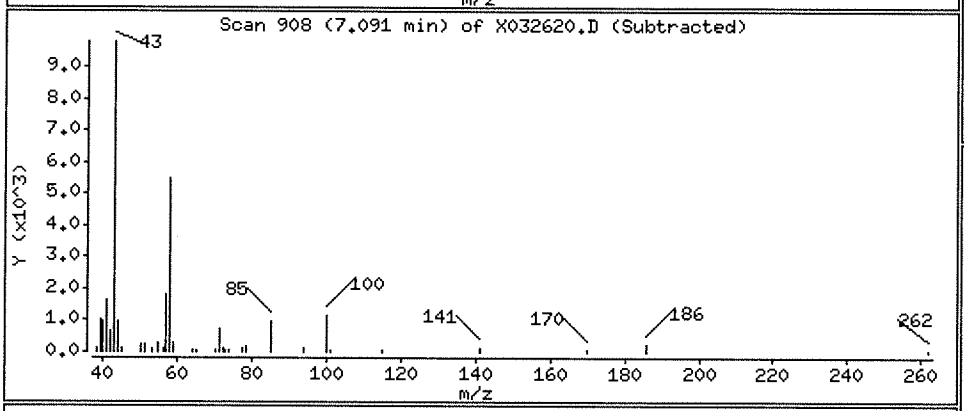
Column diameter: 0.18

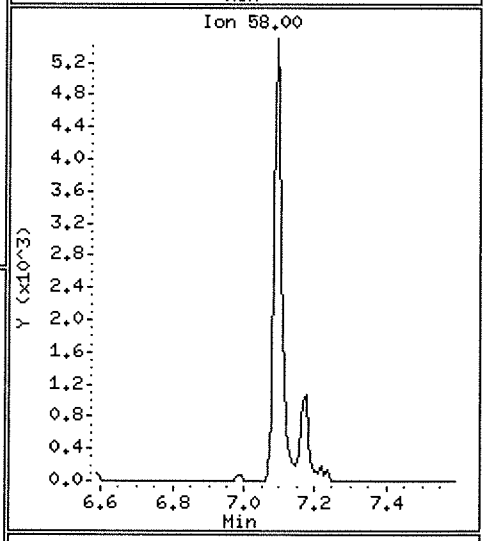
52 2-Hexanone

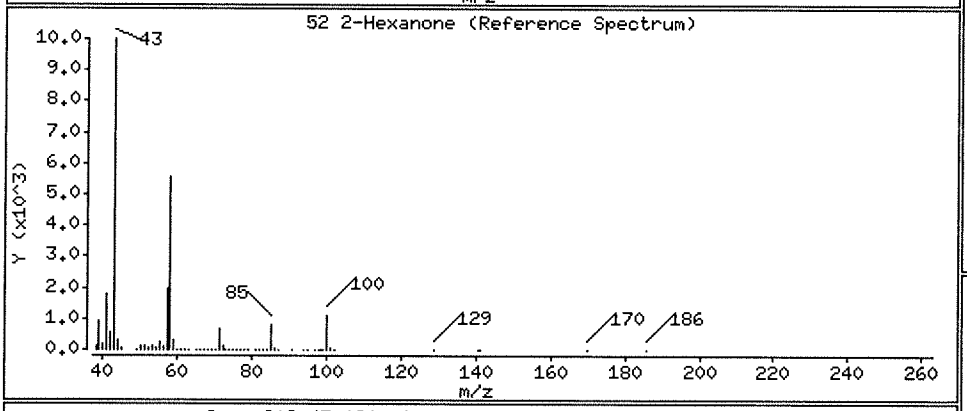
Concentration: 5.92 ug/l

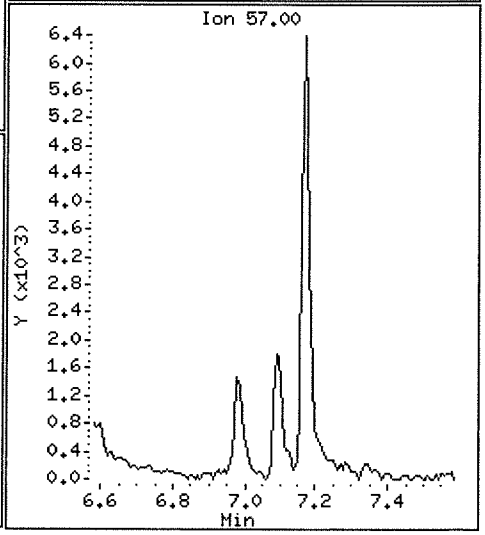


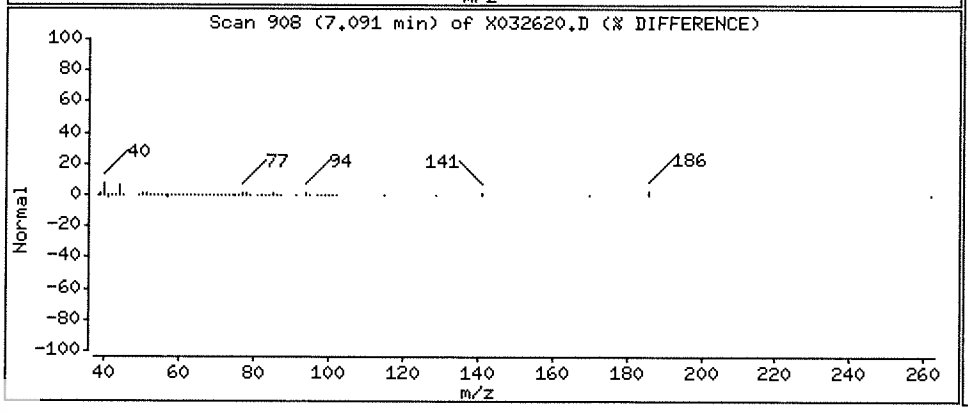












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032620.D

Date : 26-MAR-2019 20:18

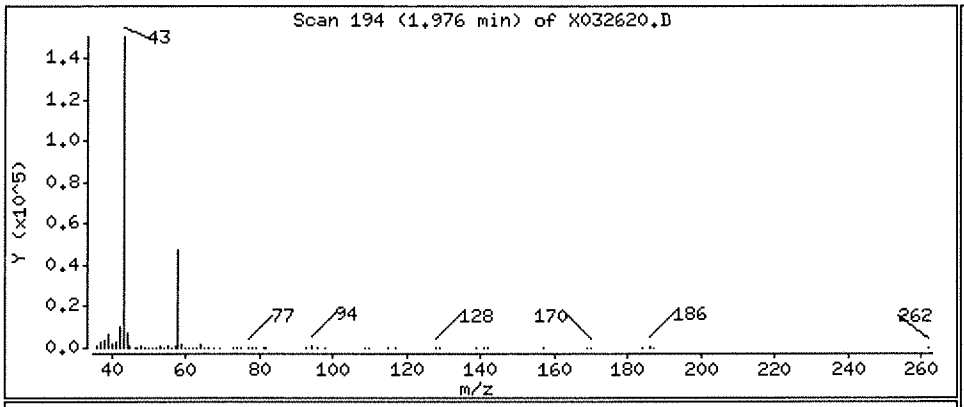
Client ID: HS19031013-06 Instrument: voa6.i

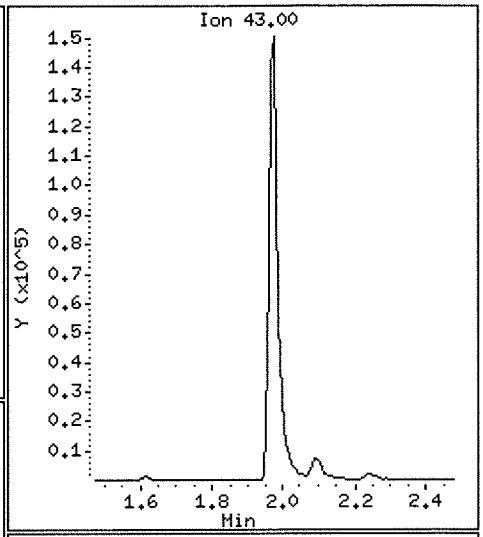
Sample Info: HS19031013-06;HS19031013-06;;;

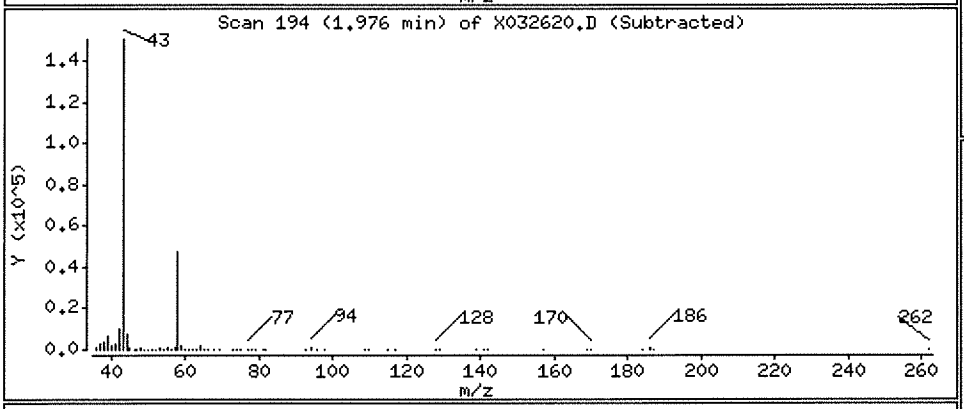
Purge Volume: 5.0 Operator: PC

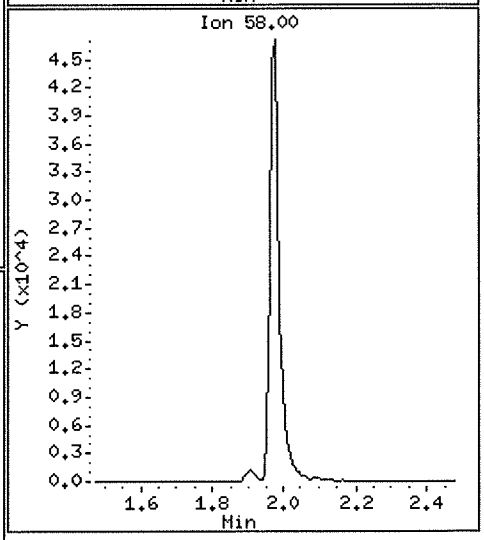
Column phase: DB624 Column diameter: 0.18

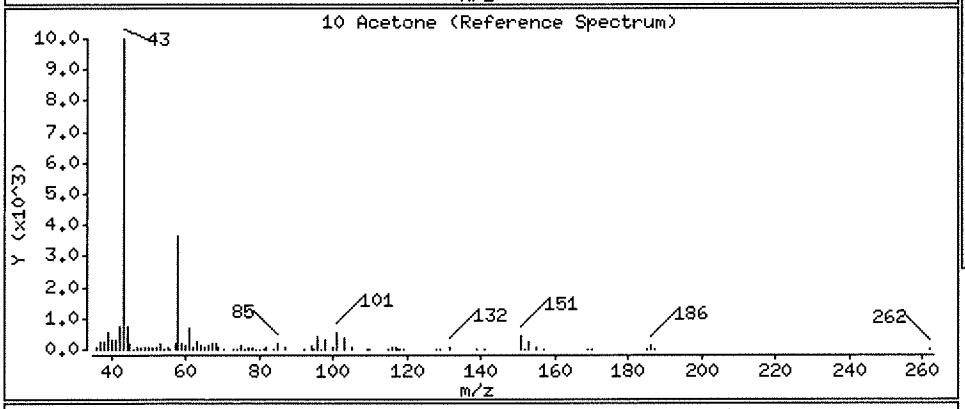
10 Acetone Concentration: 235.29 ug/l

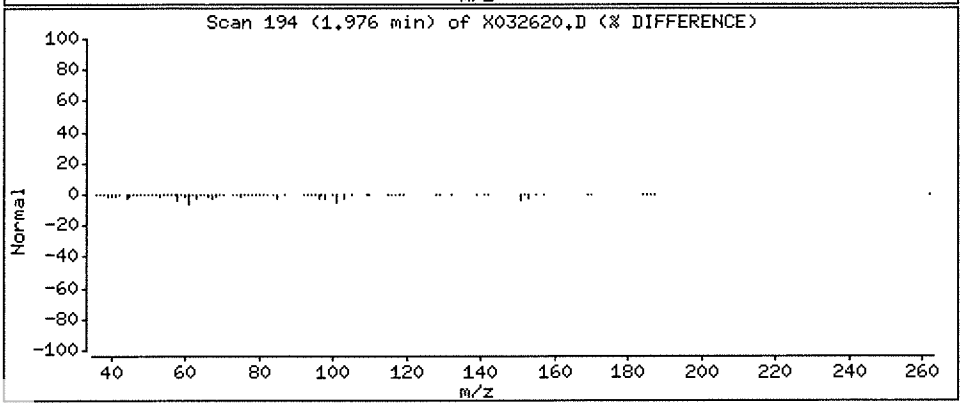












Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032629.D
Report Date: 29-Mar-2019 20:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032629.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 27-MAR-2019 00:12
Operator : PC Inst ID: voa6.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X190326.b\8260W.m
Meth Date : 29-Mar-2019 20:42 voa6.i Quant Type: ISTD
Cal Date : 14-MAR-2019 14:20 Cal File: X031408.D
Als bottle: 27 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7087

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
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	4.182	4.182	(1.000)	414431	50.0000	
*	36 1,4-Difluorobenzene	114	4.970	4.970	(1.000)	601466	50.0000	
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	533096	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	9.669	9.669	(1.000)	263101	50.0000	
$	30 Dibromofluoromethane	113	4.103	4.103	(0.981)	189902	50.0000	46.85
$	35 1,2-Dichloroethane-d4	65	4.476	4.476	(1.070)	203075	50.0000	44.85
$	48 Toluene-d8	98	6.388	6.388	(0.833)	697816	50.0000	52.74
$	69 4-Bromofluorobenzene	95	8.688	8.688	(1.133)	238404	50.0000	48.96
	60 1,1,1,2-Tetrachloroethane	131	7.778	7.778	(1.014)	213159	50.0000	59.24
	31 1,1,1-Trichloroethane	97	4.089	4.089	(0.978)	297684	50.0000	49.29
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	230374	50.0000	54.29
	53 1,1,2-Trichloroethane	83	6.840	6.840	(0.892)	165178	50.0000	56.50
	22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	375879	50.0000	49.38
	11 1,1-Dichloroethene	96	1.919	1.919	(0.459)	169170	50.0000	48.13
	32 1,1-Dichloropropene	75	4.283	4.283	(0.862)	264956	50.0000	49.00
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.215)	86173	50.0000	46.27
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	191181	50.0000	58.29(M)
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	164917	50.0000	50.08
	79 1,2,4-Trimethylbenzene	105	9.383	9.383	(0.970)	846096	50.0000	67.22
	89 1,2-Dibromo-3-Chloropropane	155	10.658	10.658	(1.102)	28309	50.0000	54.84
	57 1,2-Dibromoethane	107	7.262	7.262	(0.947)	204445	50.0000	58.21
	88 1,2-Dichlorobenzene	146	9.999	9.999	(1.034)	417047	50.0000	55.58

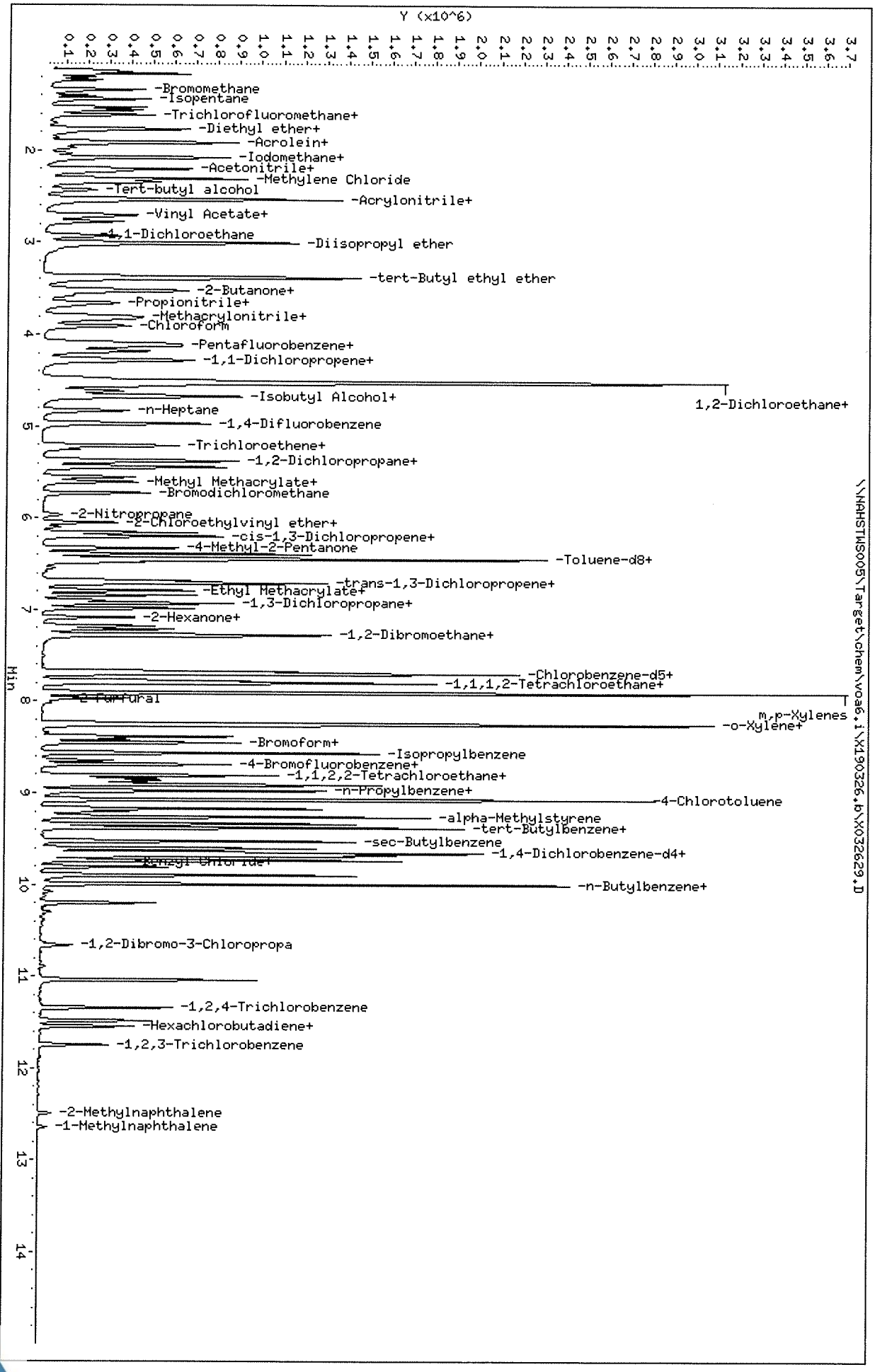
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032629.D
Report Date: 29-Mar-2019 20:42

						AMOUNTS	
	QUANT SIG					CAL-AMT	ON-COL
Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
33 1,2-Dichloroethane	62	4.562	4.562	(0.918)	283983	50.0000	55.94
42 1,2-Dichloropropane	63	5.443	5.443	(1.095)	224181	50.0000	53.04
75 1,3,5-Trimethylbenzene	105	9.067	9.067	(0.938)	745285	50.0000	59.85
83 1,3-Dichlorobenzene	146	9.605	9.605	(0.993)	447365	50.0000	56.22
54 1,3-Dichloropropane	76	6.983	6.983	(0.910)	338186	50.0000	56.83
84 1,4-Dichlorobenzene	146	9.683	9.683	(1.001)	445086	50.0000	54.90
26 2,2-Dichloropropane	77	3.516	3.516	(0.841)	266500	50.0000	45.49
24 2-Butanone	43	3.581	3.581	(0.856)	144620	100.000	101.87
76 2-Chlorotoluene	91	8.974	8.974	(0.928)	626643	50.0000	55.79
52 2-Hexanone	43	7.083	7.083	(0.923)	241471	100.000	114.89
77 4-Chlorotoluene	91	9.075	9.075	(0.939)	717573	50.0000	56.02
82 p-Isopropyltoluene	119	9.655	9.655	(0.999)	725813	50.0000	55.77
45 4-Methyl-2-Pentanone	43	6.324	6.324	(0.824)	372170	100.000	115.03
10 Acetone	43	1.976	1.976	(0.473)	101681	100.000	97.87
37 Benzene	78	4.519	4.519	(0.909)	3059350	50.0000	198.87
74 Bromobenzene	156	8.810	8.810	(0.911)	269788	50.0000	59.91
29 Bromochloromethane	128	3.803	3.803	(0.909)	121538	50.0000	52.48
39 Bromodichloromethane	83	5.729	5.729	(1.153)	289848	50.0000	56.48
66 Bromoform	173	8.416	8.416	(1.097)	154795	50.0000	58.04
6 Bromomethane	94	1.339	1.339	(0.320)	199999	50.0000	71.08
19 Carbon Disulfide	76	2.069	2.069	(0.495)	1118117	100.000	92.48
34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	249296	50.0000	53.30
59 Chlorobenzene	112	7.699	7.699	(1.004)	574094	50.0000	55.26
7 Chloroethane	64	1.145	1.145	(0.274)	91695	50.0000	30.54
28 Chloroform	83	3.910	3.910	(0.935)	376821	50.0000	51.26
3 Chloromethane	50	1.081	1.081	(0.258)	290528	50.0000	50.33
27 cis-1,2-Dichloroethene	96	3.530	3.530	(0.844)	233466	50.0000	50.54
46 cis-1,3-Dichloropropene	75	6.159	6.159	(1.239)	356068	50.0000	52.59
55 Dibromochloromethane	129	7.176	7.176	(0.936)	223069	50.0000	58.85
44 Dibromomethane	93	5.558	5.558	(1.118)	142183	50.0000	56.17
2 Dichlorodifluoromethane	85	0.973	0.973	(0.233)	227475	50.0000	53.77
61 Ethylbenzene	106	7.800	7.800	(1.017)	321614	50.0000	62.36
91 Hexachlorobutadiene	225	11.489	11.489	(1.188)	95566	50.0000	50.37
67 Isopropylbenzene	105	8.566	8.566	(1.117)	870280	50.0000	56.54
62 m,p-Xylenes	106	7.907	7.907	(1.031)	856437	100.000	133.96
17 Methylene Chloride	84	2.306	2.306	(0.551)	226030	50.0000	52.38
87 n-Butylbenzene	91	9.999	9.999	(1.034)	629574	50.0000	56.10
73 n-Propylbenzene	91	8.917	8.917	(0.922)	1032490	50.0000	56.40
92 Naphthalene	128	11.546	11.546	(1.194)	285414	50.0000	57.52
63 o-Xylene	106	8.244	8.244	(1.075)	414450	50.0000	64.80
81 sec-Butylbenzene	105	9.526	9.526	(0.985)	824153	50.0000	54.04
64 Styrene	104	8.258	8.258	(1.077)	705493	50.0000	66.54
78 tert-Butylbenzene	119	9.340	9.340	(0.966)	591750	50.0000	54.69
56 Tetrachloroethene	164	6.933	6.933	(0.904)	176168	50.0000	54.99
50 Toluene	91	6.446	6.446	(0.840)	1360672	50.0000	87.28
20 trans-1,2-Dichloroethene	96	2.535	2.535	(0.606)	192024	50.0000	49.09
51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	313337	50.0000	57.42
38 Trichloroethene	130	5.214	5.214	(1.049)	217811	50.0000	51.46
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	291715	50.0000	47.63
5 Vinyl Chloride	62	1.145	1.145	(0.274)	251569	50.0000	47.02

Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032629.D
Report Date: 29-Mar-2019 20:42

QC Flag Legend

M - Compound response manually integrated.

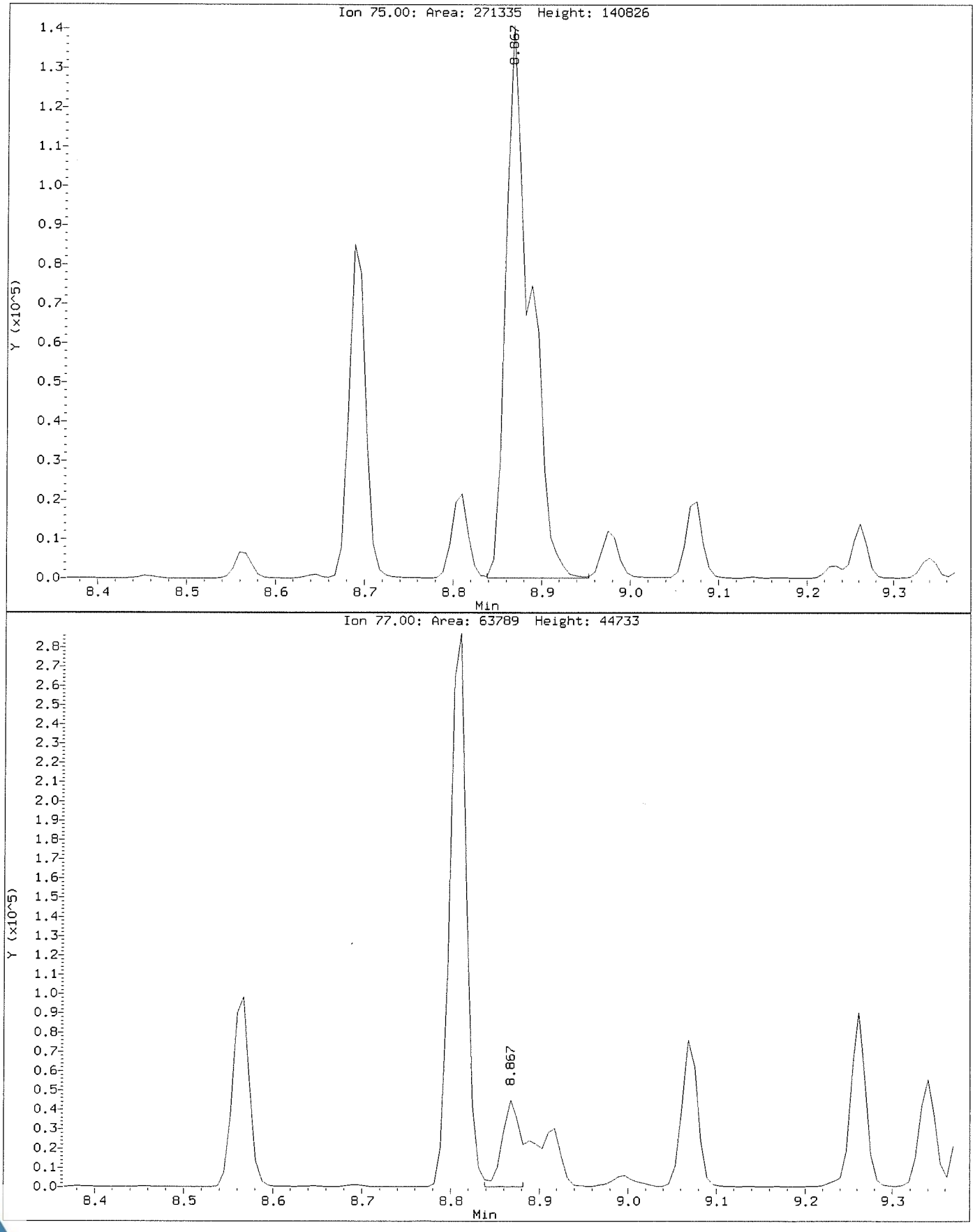


Data File: \\NAHSTWS005\Target\chem\voa6,i\X190326,b\X032629,D
Date : 27-MAR-2019 00:12
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

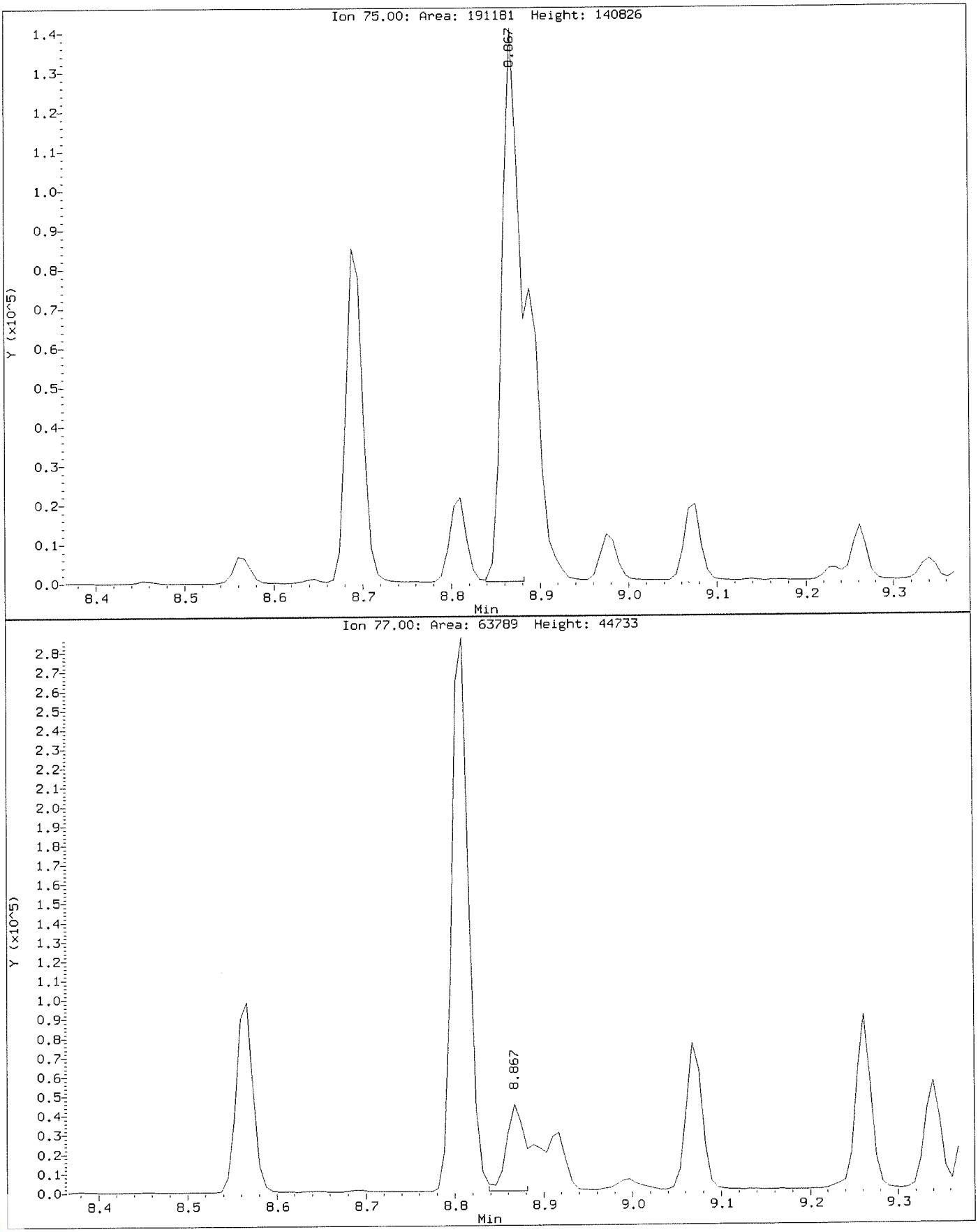
Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\BEFORE\X032629.D
Injection Date: 27-MAR-2019 00:12
Instrument: voa6.i
Client Sample ID: CCV_END

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\NAHSTWS005\Target\chem\voa6.i\X190326.b\X032629.D
Injection Date: 27-MAR-2019 00:12
Instrument: voa6.i
Client Sample ID: CCV_END

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



HS19031013 Wet Chem Raw Data

ALS WO# HS19031013

HS19031613

Sequence: 031919
Operator: ALSHS.NoUser

Printed: 4/1/2019 4:06:25 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
1	STD1	297.020.7208	Standard	91	1.0000	030519	Finished
2	STD2		Standard	92	1.0000	030519	Finished
3	STD3		Standard	93	1.0000	030519	Finished
4	STD4		Standard	94	1.0000	030519	Finished
5	STD5		Standard	95	1.0000	030519	Finished
6	STD6		Standard	96	1.0000	030519	Finished
7	ICV	297.020.6806	Unknown	97	1.0000	030519	Finished
8	ICB		Unknown	98	1.0000	030519	Finished
9	CCV		Unknown	1	1.0000	030519	Finished
10	CCB		Unknown	2	1.0000	030519	Finished
11	WBLKW1-031919		Unknown	5	1.0000	030519	Finished
12	WLCSW1-031919		Unknown	6	1.0000	030519	Finished
13	WLCSDW1-031919		Unknown	7	1.0000	030519	Finished
14	HS19030910-03		Unknown	11	1.0000	030519	Finished
15	HS19030918-01		Unknown	12	1.0000	030519	Finished
16	HS19030918-01MS		Unknown	13	1.0000	030519	Finished
17	HS19030918-01MSD		Unknown	14	1.0000	030519	Finished
18	HS19030918-02		Unknown	15	1.0000	030519	Finished
19	HS19030918-02DF20		Unknown	16	20.0000	030519	Finished
20	CCV1		Unknown	3	1.0000	030519	Finished
21	CCB		Unknown	4	1.0000	030519	Finished
22	HS19030918-03		Unknown	17	1.0000	030519	Finished
23	HS19030918-03DF20		Unknown	18	20.0000	030519	Finished
24	HS19030933-01DF5		Unknown	19	5.0000	030519	Finished
25	DI H2O		Unknown	10	1.0000	030519	Finished
26	HS19030933-01DF20		Unknown	20	20.0000	030519	Finished
27	HS19030933-01DF100		Unknown	21	100.0000	030519	Finished
28	HS19030936-01		Unknown	22	1.0000	030519	Finished
29	HS19030936-01DF10		Unknown	23	10.0000	030519	Finished
30	HS19030945-01		Unknown	24	1.0000	030519	Finished
31	HS19030945-01DF10		Unknown	25	10.0000	030519	Finished
32	CCV		Unknown	1	1.0000	030519	Finished
33	CCB		Unknown	2	1.0000	030519	Finished
34	HS19030948-01		Unknown	26	1.0000	030519	Finished
35	HS19030948-01DF10		Unknown	27	10.0000	030519	Finished
36	HS19030949-01		Unknown	28	1.0000	030519	Finished
37	HS19030949-01DF10		Unknown	29	10.0000	030519	Finished
38	HS19030850-03DF40		Unknown	43	40.0000	030519	Finished
39	HS19030850-04DF20		Unknown	36	20.0000	030519	Finished
40	HS19030850-04MSDF20		Unknown	37	20.0000	030519	Finished
41	HS19030850-04MSDDF20		Unknown	38	20.0000	030519	Finished
42	DI H2O		Unknown	10	1.0000	030519	Finished

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
1	STD1	3/5/2019 3:11:28 PM	Anions Gradient Program-150mA	10.0	1.00
2	STD2	3/5/2019 3:26:07 PM	Anions Gradient Program-150mA	10.0	1.00
3	STD3	3/5/2019 3:40:45 PM	Anions Gradient Program-150mA	10.0	1.00
4	STD4	3/5/2019 3:55:24 PM	Anions Gradient Program-150mA	10.0	1.00
5	STD5	3/5/2019 4:10:02 PM	Anions Gradient Program-150mA	10.0	1.00
6	STD6	3/5/2019 4:24:41 PM	Anions Gradient Program-150mA	10.0	1.00
7	ICV	3/5/2019 4:39:19 PM	Anions Gradient Program-150mA	10.0	1.00
8	ICB	3/5/2019 5:13:31 PM	Anions Gradient Program-150mA	10.0	1.00
9	CCV	3/19/2019 5:25:30 PM	Anions Gradient Program-150mA	10.0	1.00
10	CCB	3/19/2019 5:40:08 PM	Anions Gradient Program-150mA	10.0	1.00
11	WBLKW1-031919	3/19/2019 5:54:47 PM	Anions Gradient Program-150mA	10.0	1.00
12	WLCSW1-031919	3/19/2019 6:09:26 PM	Anions Gradient Program-150mA	10.0	1.00
13	WLCSDW1-031919	3/19/2019 6:24:04 PM	Anions Gradient Program-150mA	10.0	1.00
14	HS19030910-03	3/19/2019 6:38:42 PM	Anions Gradient Program-150mA	10.0	1.00
15	HS19030918-01	3/19/2019 6:58:44 PM	Anions Gradient Program-150mA	10.0	1.00
16	HS19030918-01MS	3/19/2019 7:13:23 PM	Anions Gradient Program-150mA	10.0	1.00
17	HS19030918-01MSD	3/19/2019 7:28:01 PM	Anions Gradient Program-150mA	10.0	1.00
18	HS19030918-02	3/19/2019 7:42:40 PM	Anions Gradient Program-150mA	10.0	1.00
19	HS19030918-02DF20	3/19/2019 7:57:19 PM	Anions Gradient Program-150mA	10.0	1.00
20	CCV1	3/19/2019 8:11:57 PM	Anions Gradient Program-150mA	10.0	1.00
21	CCB	3/19/2019 8:26:36 PM	Anions Gradient Program-150mA	10.0	1.00
22	HS19030918-03	3/19/2019 8:41:14 PM	Anions Gradient Program-150mA	10.0	1.00
23	HS19030918-03DF20	3/19/2019 8:55:53 PM	Anions Gradient Program-150mA	10.0	1.00
24	HS19030933-01DF5	3/19/2019 9:10:32 PM	Anions Gradient Program-150mA	10.0	1.00
25	DI H2O	3/19/2019 9:25:10 PM	Anions Gradient Program-150mA	10.0	1.00
26	HS19030933-01DF20	3/19/2019 9:39:49 PM	Anions Gradient Program-150mA	10.0	1.00
27	HS19030933-01DF100	3/19/2019 9:54:27 PM	Anions Gradient Program-150mA	10.0	1.00
28	HS19030936-01	3/19/2019 10:09:06 PM	Anions Gradient Program-150mA	10.0	1.00
29	HS19030936-01DF10	3/19/2019 10:23:44 PM	Anions Gradient Program-150mA	10.0	1.00
30	HS19030945-01	3/19/2019 10:38:22 PM	Anions Gradient Program-150mA	10.0	1.00
31	HS19030945-01DF10	3/19/2019 10:53:01 PM	Anions Gradient Program-150mA	10.0	1.00
32	CCV	3/19/2019 11:07:39 PM	Anions Gradient Program-150mA	10.0	1.00
33	CCB	3/19/2019 11:22:18 PM	Anions Gradient Program-150mA	10.0	1.00
34	HS19030948-01	3/19/2019 11:36:56 PM	Anions Gradient Program-150mA	10.0	1.00
35	HS19030948-01DF10	3/19/2019 11:51:34 PM	Anions Gradient Program-150mA	10.0	1.00
36	HS19030949-01	3/20/2019 12:06:13 AM	Anions Gradient Program-150mA	10.0	1.00
37	HS19030949-01DF10	3/20/2019 12:20:51 AM	Anions Gradient Program-150mA	10.0	1.00
38	HS19030850-03DF40	3/20/2019 12:35:30 AM	Anions Gradient Program-150mA	10.0	1.00
39	HS19030850-04DF20	3/20/2019 12:50:08 AM	Anions Gradient Program-150mA	10.0	1.00
40	HS19030850-04MSDF20	3/20/2019 1:04:47 AM	Anions Gradient Program-150mA	10.0	1.00
41	HS19030850-04MSDDF20	3/20/2019 1:19:26 AM	Anions Gradient Program-150mA	10.0	1.00
42	DI H2O	3/20/2019 1:34:04 AM	Anions Gradient Program-150mA	10.0	1.00

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	*Final_Volume	GUID	Auto Purif.Frac.	Auto Purif.Ref.
1	STD1	1.00	bd7715c6-3f8a-11e9-b6db-bd957e66751c		
2	STD2	1.00	2839b443-3f8d-11e9-b6db-bd957e66751c		
3	STD3	1.00	33daa50d-3f8f-11e9-b6db-bd957e66751c		
4	STD4	1.00	3f6d47d9-3f91-11e9-b6db-bd957e66751c		
5	STD5	1.00	4b0711a4-3f93-11e9-b6db-bd957e66751c		
6	STD6	1.00	56a5a019-3f95-11e9-b6db-bd957e66751c		
7	ICV	1.00	624db7e2-3f97-11e9-b6db-bd957e66751c		
8	ICB	1.00	ca4c4f9c-3f9b-11e9-b6db-bd957e66751c		
9	CCV	1.00	6672fb1b-4a95-11e9-b6db-bd957e66751c		
10	CCB	1.00	d19135e5-4a97-11e9-b6db-bd957e66751c		
11	WBLKW1-031919	1.00	dd24b44d-4a99-11e9-b6db-bd957e66751c		
12	WLCSW1-031919	1.00	e8d4cebd-4a9b-11e9-b6db-bd957e66751c		
13	WLCSDW1-031919	1.00	f47438d3-4a9d-11e9-b6db-bd957e66751c		
14	HS19030910-03	1.00	001d2c41-4aa0-11e9-b6db-bd957e66751c		
15	HS19030918-01	1.00	6d0e0013-4aa2-11e9-b6db-bd957e66751c		
16	HS19030918-01MS	1.00	d80e0c63-4aa4-11e9-b6db-bd957e66751c		
17	HS19030918-01MSD	1.00	e3b7a057-4aa6-11e9-b6db-bd957e66751c		
18	HS19030918-02	1.00	ef54a817-4aa8-11e9-b6db-bd957e66751c		
19	HS19030918-02DF20	1.00	faea88d5-4aaa-11e9-b6db-bd957e66751c		
20	CCV1	1.00	06dfc703-4aad-11e9-b6db-bd957e66751c		
21	CCB	1.00	1288ba71-4aaf-11e9-b6db-bd957e66751c		
22	HS19030918-03	1.00	1e235fdb-4ab1-11e9-b6db-bd957e66751c		
23	HS19030918-03DF20	1.00	29afb741-4ab3-11e9-b6db-bd957e66751c		
24	HS19030933-01DF5	1.00	355183ad-4ab5-11e9-b6db-bd957e66751c		
25	DI H2O	1.00	413f9ad9-4ab7-11e9-b6db-bd957e66751c		
26	HS19030933-01DF20	1.00	4cbda43b-4ab9-11e9-b6db-bd957e66751c		
27	HS19030933-01DF100	1.00	585f70a7-4abb-11e9-b6db-bd957e66751c		
28	HS19030936-01	1.00	64013d13-4abd-11e9-b6db-bd957e66751c		
29	HS19030936-01DF10	1.00	6fa7ce2b-4abf-11e9-b6db-bd957e66751c		
30	HS19030945-01	1.00	7b31c33b-4ac1-11e9-b6db-bd957e66751c		
31	HS19030945-01DF10	1.00	86cecafb-4ac3-11e9-b6db-bd957e66751c		
32	CCV	1.00	924a7207-4ac5-11e9-b6db-bd957e66751c		
33	CCB	1.00	9de9dc1d-4ac7-11e9-b6db-bd957e66751c		
34	HS19030948-01	1.00	a97d5a85-4ac9-11e9-b6db-bd957e66751c		
35	HS19030948-01DF10	1.00	b510d8ed-4acb-11e9-b6db-bd957e66751c		
36	HS19030949-01	1.00	c0a1f4ff-4acd-11e9-b6db-bd957e66751c		
37	HS19030949-01DF10	1.00	cc415f15-4acf-11e9-b6db-bd957e66751c		
38	HS19030850-03DF40	1.00	d7bf6877-4ad1-11e9-b6db-bd957e66751c		
39	HS19030850-04DF20	1.00	e35c7037-4ad3-11e9-b6db-bd957e66751c		
40	HS19030850-04MSDF20	1.00	eefbda4d-4ad5-11e9-b6db-bd957e66751c		
41	HS19030850-04MSDDF20	1.00	fad47c73-4ad7-11e9-b6db-bd957e66751c		
42	DI H2O	1.00	067d6fe1-4ada-11e9-b6db-bd957e66751c		

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
43	HS19030850-04DF40		Unknown	42	40.0000	030519	Finished
44	CCV1		Unknown	3	1.0000	030519	Finished
45	CCB		Unknown	4	1.0000	030519	Finished
46	MBLK-138831		Unknown	44	1.0000	030519	Finished
47	LCS-138831		Unknown	45	1.0000	030519	Finished
48	LCSD-138831		Unknown	46	1.0000	030519	Finished
49	HS19030344-07DF10		Unknown	47	10.0000	030519	Finished
50	HS19030344-08DF5		Unknown	48	5.0000	030519	Finished
51	HS19030344-09		Unknown	49	1.0000	030519	Finished
52	HS19030344-10		Unknown	50	1.0000	030519	Finished
53	HS19030344-11DF10		Unknown	51	10.0000	030519	Finished
54	HS19030344-12		Unknown	52	1.0000	030519	Finished
55	HS19030344-13		Unknown	53	1.0000	030519	Finished
56	CCV		Unknown	1	1.0000	030519	Finished
57	CCB		Unknown	2	1.0000	030519	Finished
58	HS19030344-14		Unknown	54	1.0000	030519	Finished
59	HS19030559-01		Unknown	55	1.0000	030519	Finished
60	HS19030559-01MS		Unknown	56	1.0000	030519	Finished
61	HS19030559-01MSD		Unknown	57	1.0000	030519	Finished
62	HS19030559-02		Unknown	58	1.0000	030519	Finished
63	HS19030559-03		Unknown	59	1.0000	030519	Finished
64	HS19030642-01		Unknown	60	1.0000	030519	Finished
65	HS19030642-02		Unknown	61	1.0000	030519	Finished
66	HS19030642-03		Unknown	62	1.0000	030519	Finished
67	HS19030642-04		Unknown	63	1.0000	030519	Finished
68	CCV1		Unknown	3	1.0000	030519	Finished
69	CCB		Unknown	4	1.0000	030519	Finished
70	MBLK-138870		Unknown	69	1.0000	030519	Finished
71	LCS-138870		Unknown	70	1.0000	030519	Finished
72	LCSD-138870		Unknown	71	1.0000	030519	Finished
73	HS19030919-06X		Unknown	79	1.0000	030519	Finished
74	HS19030919-05X		Unknown	76	1.0000	030519	Finished
75	HS19030919-05XMS		Unknown	77	1.0000	030519	Finished
76	HS19030919-05XMSD		Unknown	78	1.0000	030519	Finished
77	HS19030919-05		Unknown	81	1.0000	030519	Finished
78	HS19030919-05XMS		Unknown	82	1.0000	030519	Finished
79	HS19030919-06		Unknown	87	1.0000	030519	Finished
80	CCV		Unknown	1	1.0000	030519	Finished
81	CCB		Unknown	2	1.0000	030519	Finished
82	HS19030919-05MS		Unknown	88	1.0000	030519	Finished
83	HS19030919-05MSD		Unknown	89	1.0000	030519	Finished
84	WBLKW1-032019		Unknown	11	1.0000	030519	Finished

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
43	HS19030850-04DF40	3/20/2019 1:48:42 AM	Anions Gradient Program-150mA	10.0	1.00
44	CCV1	3/20/2019 2:03:21 AM	Anions Gradient Program-150mA	10.0	1.00
45	CCB	3/20/2019 2:17:59 AM	Anions Gradient Program-150mA	10.0	1.00
46	MBLK-138831	3/20/2019 2:32:38 AM	Anions Gradient Program-150mA	10.0	1.00
47	LCS-138831	3/20/2019 2:47:17 AM	Anions Gradient Program-150mA	10.0	1.00
48	LCSD-138831	3/20/2019 3:01:55 AM	Anions Gradient Program-150mA	10.0	1.00
49	HS19030344-07DF10	3/20/2019 3:16:34 AM	Anions Gradient Program-150mA	10.0	1.00
50	HS19030344-08DF5	3/20/2019 3:31:12 AM	Anions Gradient Program-150mA	10.0	1.00
51	HS19030344-09	3/20/2019 3:45:51 AM	Anions Gradient Program-150mA	10.0	1.00
52	HS19030344-10	3/20/2019 4:00:29 AM	Anions Gradient Program-150mA	10.0	1.00
53	HS19030344-11DF10	3/20/2019 4:15:08 AM	Anions Gradient Program-150mA	10.0	1.00
54	HS19030344-12	3/20/2019 4:29:46 AM	Anions Gradient Program-150mA	10.0	1.00
55	HS19030344-13	3/20/2019 4:44:25 AM	Anions Gradient Program-150mA	10.0	1.00
56	CCV	3/20/2019 4:59:03 AM	Anions Gradient Program-150mA	10.0	1.00
57	CCB	3/20/2019 5:13:42 AM	Anions Gradient Program-150mA	10.0	1.00
58	HS19030344-14	3/20/2019 5:28:20 AM	Anions Gradient Program-150mA	10.0	1.00
59	HS19030559-01	3/20/2019 5:42:59 AM	Anions Gradient Program-150mA	10.0	1.00
60	HS19030559-01MS	3/20/2019 5:57:37 AM	Anions Gradient Program-150mA	10.0	1.00
61	HS19030559-01MSD	3/20/2019 6:12:16 AM	Anions Gradient Program-150mA	10.0	1.00
62	HS19030559-02	3/20/2019 6:26:54 AM	Anions Gradient Program-150mA	10.0	1.00
63	HS19030559-03	3/20/2019 6:41:32 AM	Anions Gradient Program-150mA	10.0	1.00
64	HS19030642-01	3/20/2019 6:56:11 AM	Anions Gradient Program-150mA	10.0	1.00
65	HS19030642-02	3/20/2019 7:10:49 AM	Anions Gradient Program-150mA	10.0	1.00
66	HS19030642-03	3/20/2019 7:25:28 AM	Anions Gradient Program-150mA	10.0	1.00
67	HS19030642-04	3/20/2019 7:40:06 AM	Anions Gradient Program-150mA	10.0	1.00
68	CCV1	3/20/2019 7:54:45 AM	Anions Gradient Program-150mA	10.0	1.00
69	CCB	3/20/2019 8:09:24 AM	Anions Gradient Program-150mA	10.0	1.00
70	MBLK-138870	3/20/2019 8:24:02 AM	Anions Gradient Program-150mA	10.0	1.00
71	LCS-138870	3/20/2019 8:38:41 AM	Anions Gradient Program-150mA	10.0	1.00
72	LCSD-138870	3/20/2019 8:53:19 AM	Anions Gradient Program-150mA	10.0	1.00
73	HS19030919-06X	3/20/2019 9:07:58 AM	Anions Gradient Program-150mA	10.0	1.00
74	HS19030919-05X	3/20/2019 9:22:36 AM	Anions Gradient Program-150mA	10.0	1.00
75	HS19030919-05XMS	3/20/2019 9:37:15 AM	Anions Gradient Program-150mA	10.0	1.00
76	HS19030919-05XMSD	3/20/2019 9:51:53 AM	Anions Gradient Program-150mA	10.0	1.00
77	HS19030919-05	3/20/2019 10:40:53 AM	Anions Gradient Program-150mA	10.0	1.00
78	HS19030919-05XMS	3/20/2019 10:55:32 AM	Anions Gradient Program-150mA	10.0	1.00
79	HS19030919-06	3/20/2019 11:15:01 AM	Anions Gradient Program-150mA	10.0	1.00
80	CCV	3/20/2019 11:29:40 AM	Anions Gradient Program-150mA	10.0	1.00
81	CCB	3/20/2019 11:44:18 AM	Anions Gradient Program-150mA	10.0	1.00
82	HS19030919-05MS	3/20/2019 12:10:27 PM	Anions Gradient Program-150mA	10.0	1.00
83	HS19030919-05MSD	3/20/2019 12:25:06 PM	Anions Gradient Program-150mA	10.0	1.00
84	WBLKW1-032019	3/20/2019 12:55:53 PM	Anions Gradient Program-150mA	10.0	1.00

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	*Final_Volume	GUID	Auto Purif.Frac.	Auto Purif.Ref.
43	HS19030850-04DF40	1.00	1209c747-4adc-11e9-b6db-bd957e66751c		
44	CCV1	1.00	1da6cf07-4ade-11e9-b6db-bd957e66751c		
45	CCB	1.00	293f121b-4ae0-11e9-b6db-bd957e66751c		
46	MBLK-138831	1.00	34d4f2d9-4ae2-11e9-b6db-bd957e66751c		
47	LCS-138831	1.00	407de647-4ae4-11e9-b6db-bd957e66751c		
48	LCSD-138831	1.00	4c58eac3-4ae6-11e9-b6db-bd957e66751c		
49	HS19030344-07DF10	1.00	57fab72f-4ae8-11e9-b6db-bd957e66751c		
50	HS19030344-08DF5	1.00	6384ac3f-4aea-11e9-b6db-bd957e66751c		
51	HS19030344-09	1.00	6f28db01-4aec-11e9-b6db-bd957e66751c		
52	HS19030344-10	1.00	7ad3fe17-4aee-11e9-b6db-bd957e66751c		
53	HS19030344-11DF10	1.00	8673504d-4af0-11e9-b6db-bd957e66751c		
54	HS19030344-12	1.00	920ef03d-4af2-11e9-b6db-bd957e66751c		
55	HS19030344-13	1.00	9d9b47a3-4af4-11e9-b6db-bd957e66751c		
56	CCV	1.00	a941d8bb-4af6-11e9-b6db-bd957e66751c		
57	CCB	1.00	b4e869d3-4af8-11e9-b6db-bd957e66751c		
58	HS19030344-14	1.00	c080ace7-4afa-11e9-b6db-bd957e66751c		
59	HS19030559-01	1.00	cc2016fd-4afc-11e9-b6db-bd957e66751c		
60	HS19030559-01MS	1.00	d7bd1ebd-4afe-11e9-b6db-bd957e66751c		
61	HS19030559-01MSD	1.00	e35561d1-4b00-11e9-b6db-bd957e66751c		
62	HS19030559-02	1.00	eef99093-4b02-11e9-b6db-bd957e66751c		
63	HS19030559-03	1.00	fa8aaca5-4b04-11e9-b6db-bd957e66751c		
64	HS19030642-01	1.00	0625520f-4b07-11e9-b6db-bd957e66751c		
65	HS19030642-02	1.00	11bb32cd-4b09-11e9-b6db-bd957e66751c		
66	HS19030642-03	1.00	1d583a8d-4b0b-11e9-b6db-bd957e66751c		
67	HS19030642-04	1.00	28fc694f-4b0d-11e9-b6db-bd957e66751c		
68	CCV1	1.00	349bd365-4b0f-11e9-b6db-bd957e66751c		
69	CCB	1.00	403d9fd1-4b11-11e9-b6db-bd957e66751c		
70	MBLK-138870	1.00	4c222da5-4b13-11e9-b6db-bd957e66751c		
71	LCS-138870	1.00	57bf3565-4b15-11e9-b6db-bd957e66751c		
72	LCSD-138870	1.00	63577879-4b17-11e9-b6db-bd957e66751c		
73	HS19030919-06X	1.00	6efe0991-4b19-11e9-b6db-bd957e66751c		
74	HS19030919-05X	1.00	7a87fea1-4b1b-11e9-b6db-bd957e66751c		
75	HS19030919-05XMS	1.00	862c2d63-4b1d-11e9-b6db-bd957e66751c		
76	HS19030919-05XMSD	1.00	91c93523-4b1f-11e9-b6db-bd957e66751c		
77	HS19030919-05	1.00	0aca387b-4b26-11e9-b6db-bd957e66751c		
78	HS19030919-05XMS	1.00	75cbd73d-4b28-11e9-b6db-bd957e66751c		
79	HS19030919-06	1.00	cfd595eb-4b2a-11e9-b6db-bd957e66751c		
80	CCV	1.00	3aa2c149-4b2d-11e9-b6db-bd957e66751c		
81	CCB	1.00	46422b5f-4b2f-11e9-b6db-bd957e66751c		
82	HS19030919-05MS	1.00	8e62104b-4b32-11e9-b6db-bd957e66751c		
83	HS19030919-05MSD	1.00	f92cd953-4b34-11e9-b6db-bd957e66751c		
84	WBLKW1-032019	1.00	e70b02ed-4b38-11e9-b6db-bd957e66751c		

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
85	WLCSW1-032019		Unknown	12	1.0000	030519	Finished
86	WLCSDW1-032019		Unknown	13	1.0000	030519	Finished
87	HS19030964-01DF10		Unknown	14	10.0000	030519	Finished
88	HS19030900-01		Unknown	21	1.0000	030519	Finished
89	HS19030575-01		Unknown	22	1.0000	030519	Finished
90	HS19030575-01MS		Unknown	23	1.0000	030519	Finished
91	HS19030575-01MSD		Unknown	24	1.0000	030519	Finished
92	CCV1		Unknown	3	1.0000	030519	Finished
93	CCB		Unknown	4	1.0000	030519	Finished
94	HS19030979-01		Unknown	25	1.0000	030519	Finished
95	HS19030979-01DF20		Unknown	26	20.0000	030519	Finished
96	HS19030979-02		Unknown	27	1.0000	030519	Finished
97	HS19030979-02DF20		Unknown	28	20.0000	030519	Finished
98	HS19030979-03		Unknown	29	1.0000	030519	Finished
99	HS19030979-03DF20		Unknown	42	20.0000	030519	Finished
100	HS19030995-01DF5		Unknown	57	5.0000	030519	Finished
101	HS19030995-02DF5		Unknown	58	5.0000	030519	Finished
102	HS19030995-03DF5		Unknown	59	5.0000	030519	Finished
103	HS19030995-04DF5		Unknown	60	5.0000	030519	Finished
104	CCV		Unknown	1	1.0000	030519	Finished
105	CCV	RERUN	Unknown	1	1.0000	030519	Finished
106	CCB		Unknown	2	1.0000	030519	Finished
107	HS19031013-02		Unknown	22	1.0000	030519	Finished
108	HS19031013-01DF5		Unknown	21	5.0000	030519	Finished
109	HS19031013-03DF5		Unknown	23	5.0000	030519	Finished
110	HS19031013-04DF5		Unknown	24	5.0000	030519	Finished
111	HS19031013-05DF5		Unknown	25	5.0000	030519	Finished
112	HS19031013-06DF5		Unknown	26	5.0000	030519	Finished
113	HS19031013-07DF5		Unknown	27	5.0000	030519	Finished
114	HS19031013-07MSDF5		Unknown	28	5.0000	030519	Finished
115	HS19031013-07MSDDF5		Unknown	29	5.0000	030519	Finished
116	DI H2O		Unknown	10	1.0000	030519	Finished
117	CCV1		Unknown	3	1.0000	030519	Finished
118	CCB		Unknown	4	1.0000	030519	Finished
119	HS19030937-01DF5		Unknown	39	5.0000	030519	Finished
120	HS19030937-02DF5		Unknown	40	5.0000	030519	Finished
121	HS19030937-03DF5		Unknown	41	5.0000	030519	Finished
122	DI H2O		Unknown	10	1.0000	030519	Finished
123	HS19030995-02DF10		Unknown	8	10.0000	030519	Finished
124	HS19030995-03DF10		Unknown	9	10.0000	030519	Finished
125	DI H2O		Unknown	10	1.0000	030519	Finished
126	HS19031002-02		Unknown	64	1.0000	030519	Finished

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Sequence: 031919
Operator: ALSHS.NoUser Printed: 4/1/2019 4:06:25 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100 Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
#Samples: 240 (Modified, not saved)

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
85	WLCSW1-032019	3/20/2019 1:10:32 PM	Anions Gradient Program-150mA	10.0	1.00
86	WLCSDW1-032019	3/20/2019 1:25:11 PM	Anions Gradient Program-150mA	10.0	1.00
87	HS19030964-01DF10	3/20/2019 1:39:49 PM	Anions Gradient Program-150mA	10.0	1.00
88	HS19030900-01	3/20/2019 1:58:48 PM	Anions Gradient Program-150mA	10.0	1.00
89	HS19030575-01	3/20/2019 2:22:16 PM	Anions Gradient Program-150mA	10.0	1.00
90	HS19030575-01MS	3/20/2019 2:36:54 PM	Anions Gradient Program-150mA	10.0	1.00
91	HS19030575-01MSD	3/20/2019 2:51:32 PM	Anions Gradient Program-150mA	10.0	1.00
92	CCV1	3/20/2019 3:06:11 PM	Anions Gradient Program-150mA	10.0	1.00
93	CCB	3/20/2019 3:20:49 PM	Anions Gradient Program-150mA	10.0	1.00
94	HS19030979-01	3/20/2019 3:35:28 PM	Anions Gradient Program-150mA	10.0	1.00
95	HS19030979-01DF20	3/20/2019 3:50:06 PM	Anions Gradient Program-150mA	10.0	1.00
96	HS19030979-02	3/20/2019 4:04:45 PM	Anions Gradient Program-150mA	10.0	1.00
97	HS19030979-02DF20	3/20/2019 4:19:23 PM	Anions Gradient Program-150mA	10.0	1.00
98	HS19030979-03	3/20/2019 4:34:02 PM	Anions Gradient Program-150mA	10.0	1.00
99	HS19030979-03DF20	3/20/2019 5:08:54 PM	Anions Gradient Program-150mA	10.0	1.00
100	HS19030995-01DF5	3/20/2019 5:23:33 PM	Anions Gradient Program-150mA	10.0	1.00
101	HS19030995-02DF5	3/20/2019 5:38:11 PM	Anions Gradient Program-150mA	10.0	1.00
102	HS19030995-03DF5	3/20/2019 5:52:50 PM	Anions Gradient Program-150mA	10.0	1.00
103	HS19030995-04DF5	3/20/2019 6:07:28 PM	Anions Gradient Program-150mA	10.0	1.00
104	CCV	3/20/2019 6:34:32 PM	Anions Gradient Program-150mA	10.0	1.00
105	CCV	3/20/2019 7:06:08 PM	Anions Gradient Program-150mA	10.0	1.00
106	CCB	3/20/2019 7:26:29 PM	Anions Gradient Program-150mA	10.0	1.00
107	HS19031013-02	3/20/2019 7:41:08 PM	Anions Gradient Program-150mA	10.0	1.00
108	HS19031013-01DF5	3/20/2019 7:55:46 PM	Anions Gradient Program-150mA	10.0	1.00
109	HS19031013-03DF5	3/20/2019 8:10:24 PM	Anions Gradient Program-150mA	10.0	1.00
110	HS19031013-04DF5	3/20/2019 8:25:03 PM	Anions Gradient Program-150mA	10.0	1.00
111	HS19031013-05DF5	3/20/2019 8:39:41 PM	Anions Gradient Program-150mA	10.0	1.00
112	HS19031013-06DF5	3/20/2019 8:54:20 PM	Anions Gradient Program-150mA	10.0	1.00
113	HS19031013-07DF5	3/20/2019 9:08:58 PM	Anions Gradient Program-150mA	10.0	1.00
114	HS19031013-07MSDF5	3/20/2019 9:23:36 PM	Anions Gradient Program-150mA	10.0	1.00
115	HS19031013-07MSDDF5	3/20/2019 9:38:15 PM	Anions Gradient Program-150mA	10.0	1.00
116	DI H2O	3/20/2019 9:52:53 PM	Anions Gradient Program-150mA	10.0	1.00
117	CCV1	3/20/2019 10:07:32 PM	Anions Gradient Program-150mA	10.0	1.00
118	CCB	3/20/2019 10:22:11 PM	Anions Gradient Program-150mA	10.0	1.00
119	HS19030937-01DF5	3/20/2019 10:36:49 PM	Anions Gradient Program-150mA	10.0	1.00
120	HS19030937-02DF5	3/20/2019 10:51:28 PM	Anions Gradient Program-150mA	10.0	1.00
121	HS19030937-03DF5	3/20/2019 11:06:06 PM	Anions Gradient Program-150mA	10.0	1.00
122	DI H2O	3/20/2019 11:20:45 PM	Anions Gradient Program-150mA	10.0	1.00
123	HS19030995-02DF10	3/20/2019 11:35:23 PM	Anions Gradient Program-150mA	10.0	1.00
124	HS19030995-03DF10	3/20/2019 11:50:02 PM	Anions Gradient Program-150mA	10.0	1.00
125	DI H2O	3/21/2019 12:04:40 AM	Anions Gradient Program-150mA	10.0	1.00
126	HS19031002-02	3/21/2019 12:19:18 AM	Anions Gradient Program-150mA	10.0	1.00

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Sequence: 031919
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 240

Created: 3/19/2019 6:54:50 PM by ALSHS.NoUser
(Modified, not saved)

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85	WLCSW1-032019	1.00	522b63df-4b3b-11e9-b6db-bd957e66751c		
86	WLCSDW1-032019	1.00	5dd89cdf-4b3d-11e9-b6db-bd957e66751c		
87	HS19030964-01DF10	1.00	696cc9d5-4b3f-11e9-b6db-bd957e66751c		
88	HS19030900-01	1.00	b10abc07-4b41-11e9-b6db-bd957e66751c		
89	HS19030575-01	1.00	f7c2a039-4b44-11e9-b6db-bd957e66751c		
90	HS19030575-01MS	1.00	62c1dca5-4b47-11e9-b6db-bd957e66751c		
91	HS19030575-01MSD	1.00	6e57bd63-4b49-11e9-b6db-bd957e66751c		
92	CCV1	1.00	79f989cf-4b4b-11e9-b6db-bd957e66751c		
93	CCB	1.00	8588438b-4b4d-11e9-b6db-bd957e66751c		
94	HS19030979-01	1.00	911e2449-4b4f-11e9-b6db-bd957e66751c		
95	HS19030979-01DF20	1.00	9cc717b7-4b51-11e9-b6db-bd957e66751c		
96	HS19030979-02	1.00	a8536f1d-4b53-11e9-b6db-bd957e66751c		
97	HS19030979-02DF20	1.00	b3fec4e1-4b55-11e9-b6db-bd957e66751c		
98	HS19030979-03	1.00	bf924349-4b57-11e9-b6db-bd957e66751c		
99	HS19030979-03DF20	1.00	3f751e0d-4b5c-11e9-b6db-bd957e66751c		
100	HS19030995-01DF5	1.00	aa791f25-4b5e-11e9-b6db-bd957e66751c		
101	HS19030995-02DF5	1.00	b61aeb91-4b60-11e9-b6db-bd957e66751c		
102	HS19030995-03DF5	1.00	c1b7f351-4b62-11e9-b6db-bd957e66751c		
103	HS19030995-04DF5	1.00	cd444ab7-4b64-11e9-b6db-bd957e66751c		
104	CCV	1.00	3644257f-4b68-11e9-b6db-bd957e66751c		
105	CCV	1.00	a022ee1b-4b6c-11e9-b6db-bd957e66751c		
106	CCB	1.00	778239d5-4b6f-11e9-b6db-bd957e66751c		
107	HS19031013-02	1.00	e27a4f3f-4b71-11e9-b6db-bd957e66751c		
108	HS19031013-01DF5	1.00	ee71efc3-4b73-11e9-b6db-bd957e66751c		
109	HS19031013-03DF5	1.00	fa1880db-4b75-11e9-b6db-bd957e66751c		
110	HS19031013-04DF5	1.00	05562b2b-4b78-11e9-b6db-bd957e66751c		
111	HS19031013-05DF5	1.00	11123149-4b7a-11e9-b6db-bd957e66751c		
112	HS19031013-06DF5	1.00	1caf3909-4b7c-11e9-b6db-bd957e66751c		
113	HS19031013-07DF5	1.00	28320717-4b7e-11e9-b6db-bd957e66751c		
114	HS19031013-07MSDF5	1.00	33c7e7d5-4b80-11e9-b6db-bd957e66751c		
115	HS19031013-07MSDDF5	1.00	3f5dc893-4b82-11e9-b6db-bd957e66751c		
116	DI H2O	1.00	4afd32a9-4b84-11e9-b6db-bd957e66751c		
117	CCV1	1.00	568e4ebb-4b86-11e9-b6db-bd957e66751c		
118	CCB	1.00	6259b447-4b88-11e9-b6db-bd957e66751c		
119	HS19030937-01DF5	1.00	6dfd2ee7-4b8a-11e9-b6db-bd957e66751c		
120	HS19030937-02DF5	1.00	79a3bfff-4b8c-11e9-b6db-bd957e66751c		
121	HS19030937-03DF5	1.00	85242bb7-4b8e-11e9-b6db-bd957e66751c		
122	DI H2O	1.00	90c395cd-4b90-11e9-b6db-bd957e66751c		
123	HS19030995-02DF10	1.00	9c6a26e5-4b92-11e9-b6db-bd957e66751c		
124	HS19030995-03DF10	1.00	a80e55a7-4b94-11e9-b6db-bd957e66751c		
125	DI H2O	1.00	b3a8fb11-4b96-11e9-b6db-bd957e66751c		
126	HS19031002-02	1.00	bf3c7979-4b98-11e9-b6db-bd957e66751c		

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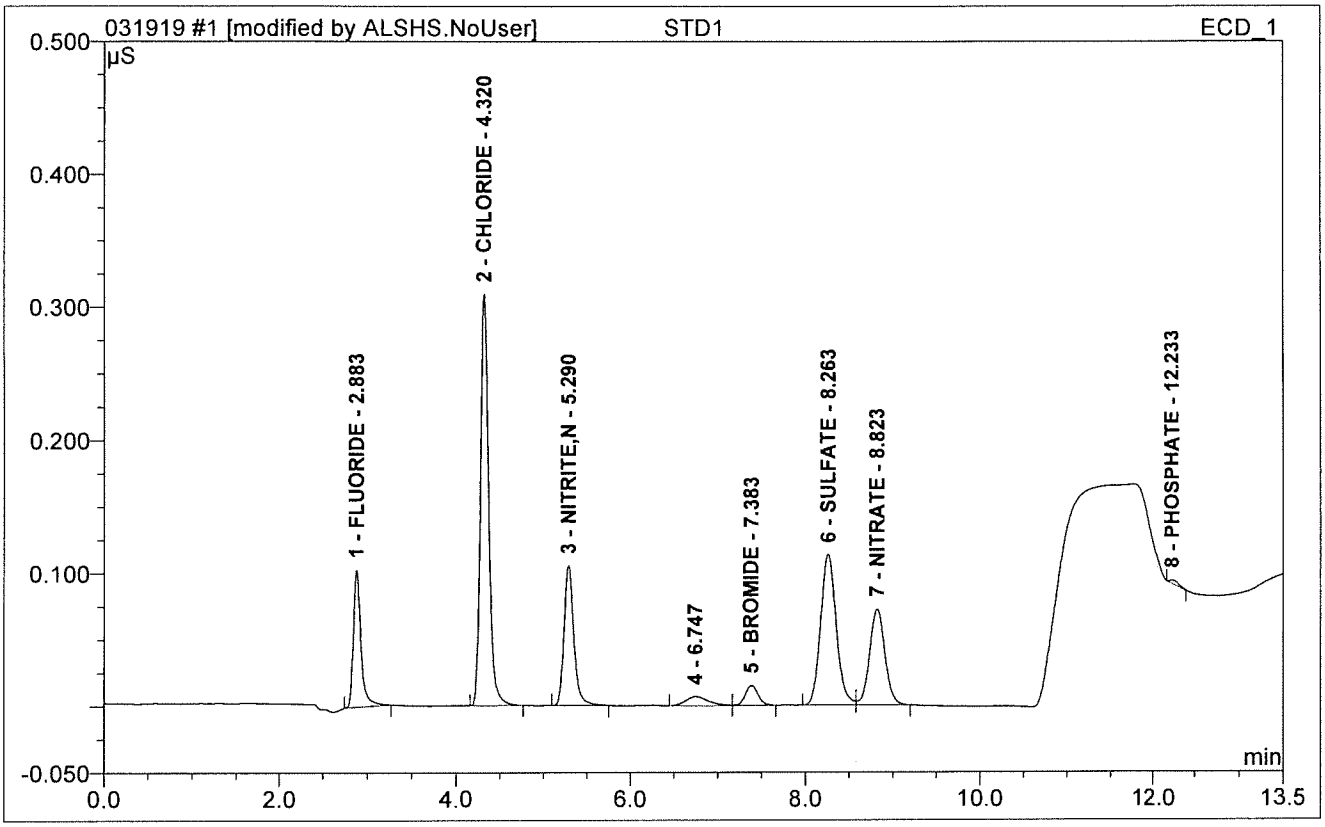
1 STD1

297.020.7208

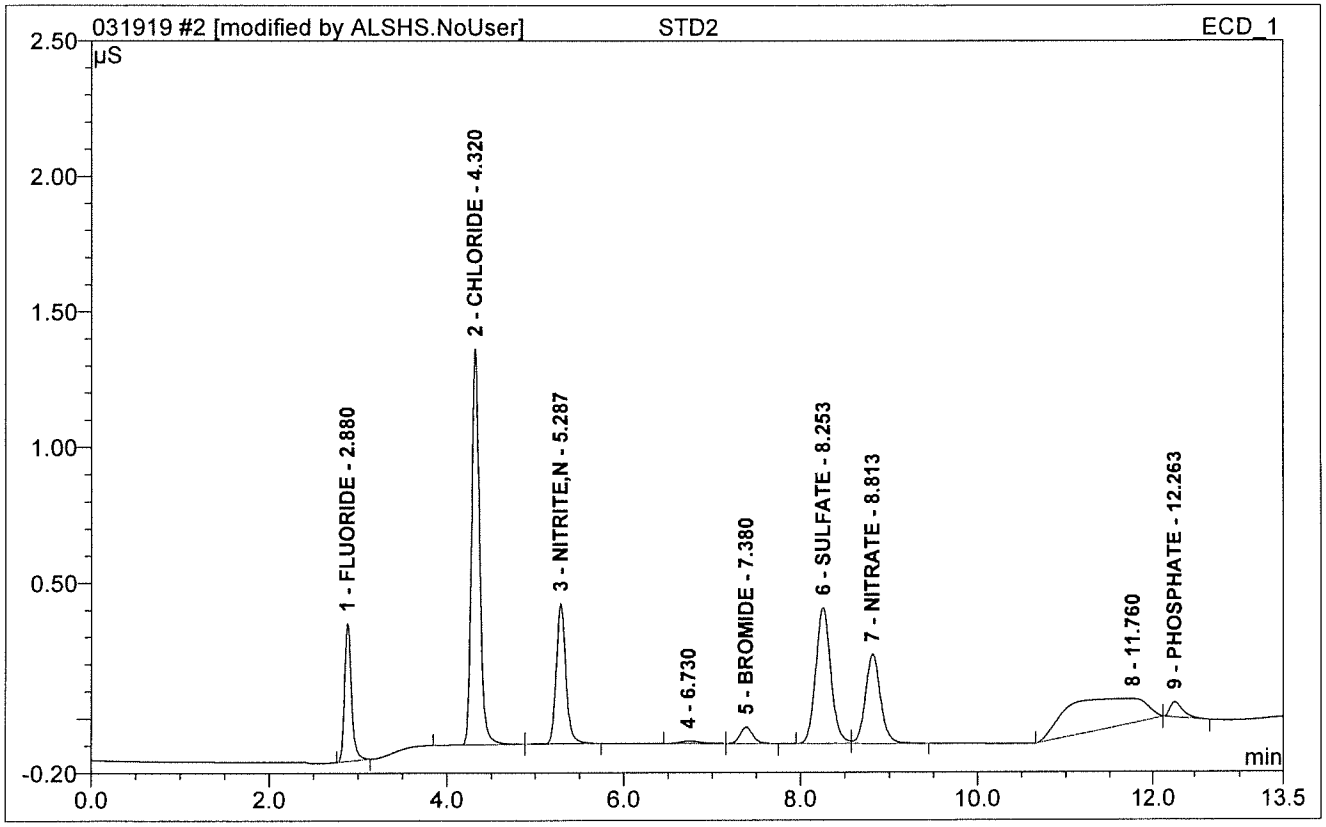
Sample Name:	**STD1**	*Injection Volume:*	**10.0**
Vial Number:	**91**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 15:11**	*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	2.88	FLUORIDE	0.103	0.010	10.17	0.106	1.
2	4.32	CHLORIDE	0.309	0.034	33.41	0.535	1.
3	5.29	NITRITE,N	0.105	0.014	13.70	0.099	1.
5	7.38	BROMIDE	0.015	0.003	2.55	0.137	1.
6	8.26	SULFATE	0.113	0.024	23.32	0.586	1.
7	8.82	NITRATE	0.072	0.015	14.50	0.122	1.
8	12.23	PHOSPHATE	0.002	0.000	0.33	0.159	1.
Total:			0.721	0.099	97.98	1.745	

2 STD2

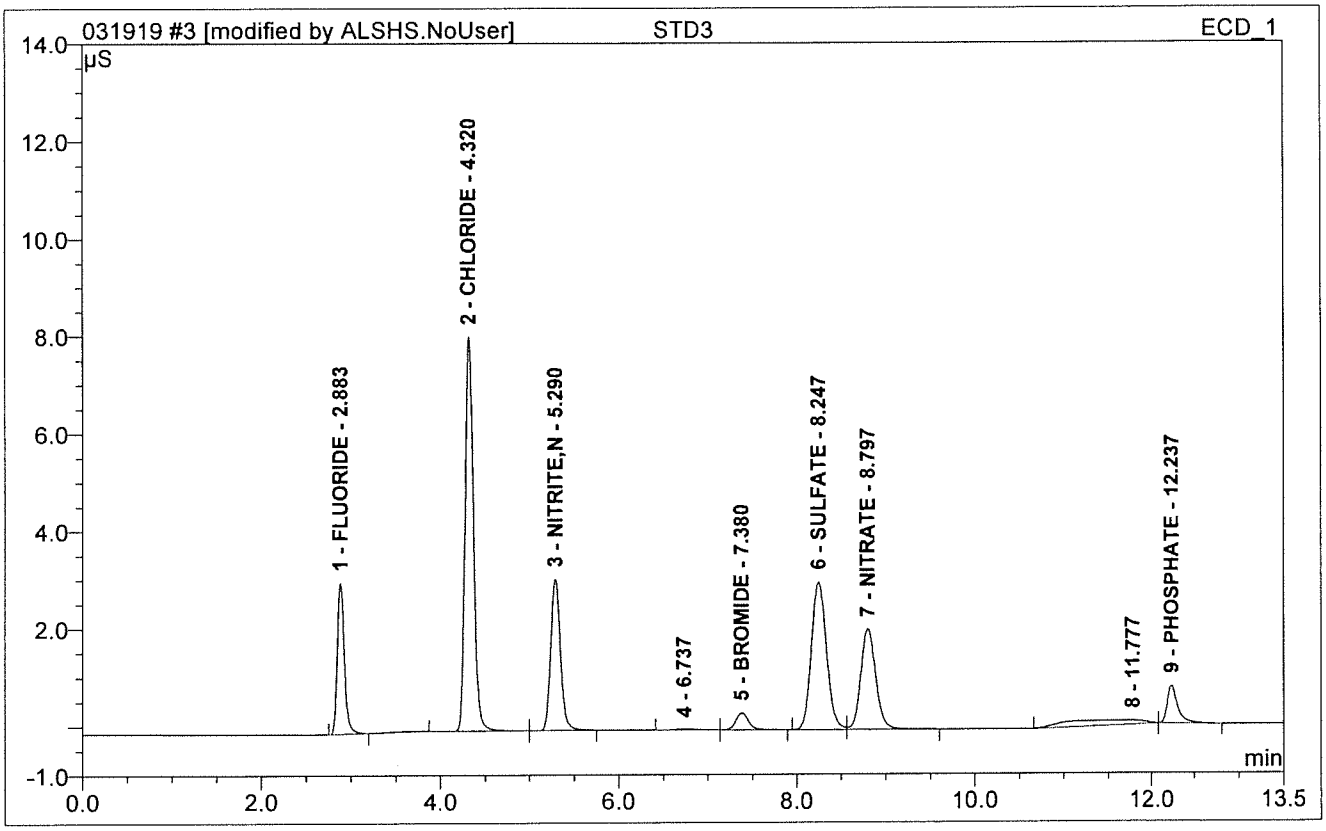
Sample Name:	**STD2**	*Injection Volume:*	**10.0**
Vial Number:	**92**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 15:26**	*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	2.88	FLUORIDE	0.507	0.046	8.06	0.354	1.
2	4.32	CHLORIDE	1.461	0.154	27.16	1.865	1.
3	5.29	NITRITE,N	0.516	0.065	11.53	0.366	1.
5	7.38	BROMIDE	0.061	0.010	1.80	0.349	1.
6	8.25	SULFATE	0.500	0.099	17.55	1.752	1.
7	8.81	NITRATE	0.328	0.064	11.35	0.345	1.
9	12.26	PHOSPHATE	0.057	0.010	1.75	0.279	1.
Total:			3.429	0.449	79.20	5.310	

3 STD3

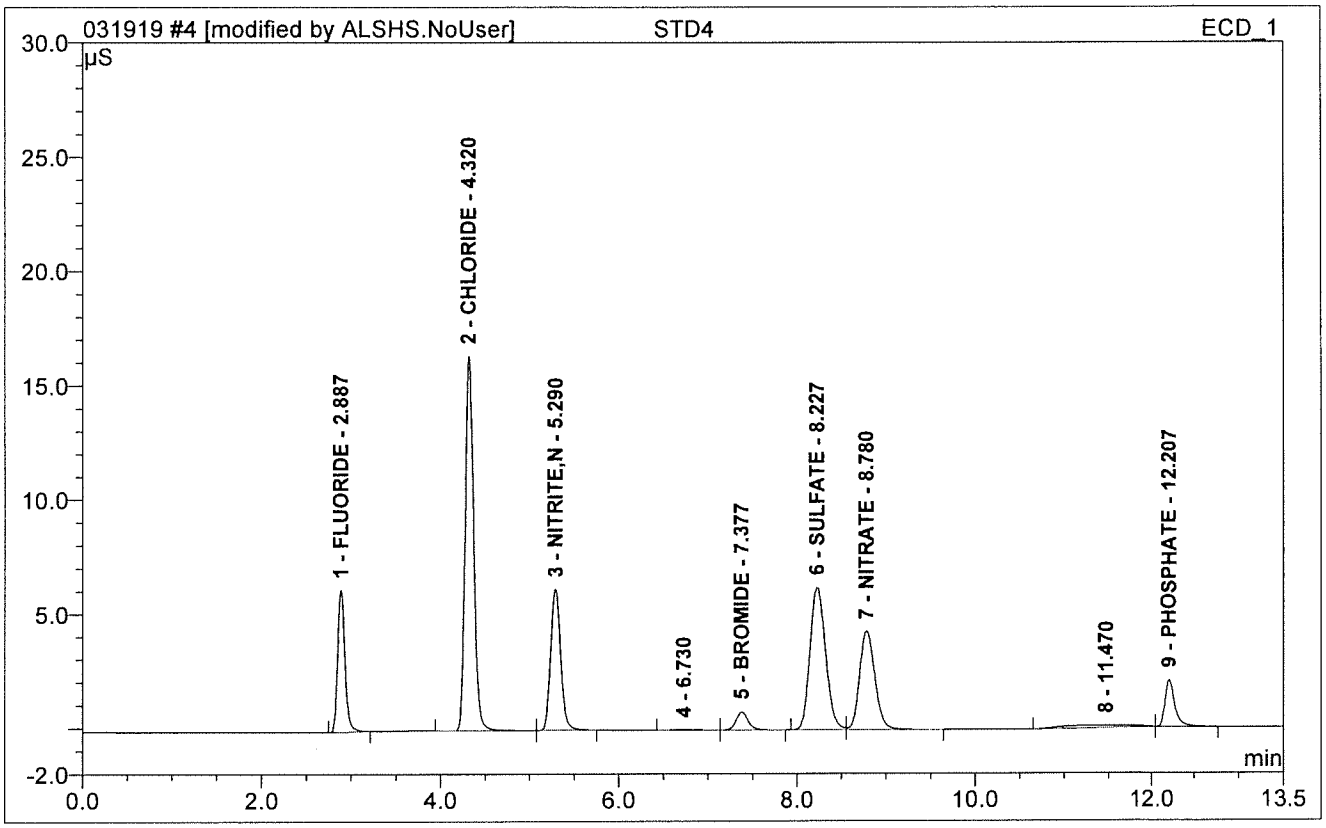
Sample Name:	**STD3**	*Injection Volume:*	**10.0**
Vial Number:	**93**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 15:40**	*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	2.88	FLUORIDE	3.101	0.283	9.98	2.015	1.
2	4.32	CHLORIDE	8.078	0.876	30.91	9.853	1.
3	5.29	NITRITE,N	3.102	0.393	13.87	2.067	1.
5	7.38	BROMIDE	0.352	0.057	2.03	1.666	1.
6	8.25	SULFATE	3.034	0.602	21.25	9.473	1.
7	8.80	NITRATE	2.069	0.398	14.07	1.842	1.
9	12.24	PHOSPHATE	0.783	0.111	3.91	1.535	1.
Total:			20.519	2.720	96.03	28.450	

4 STD4

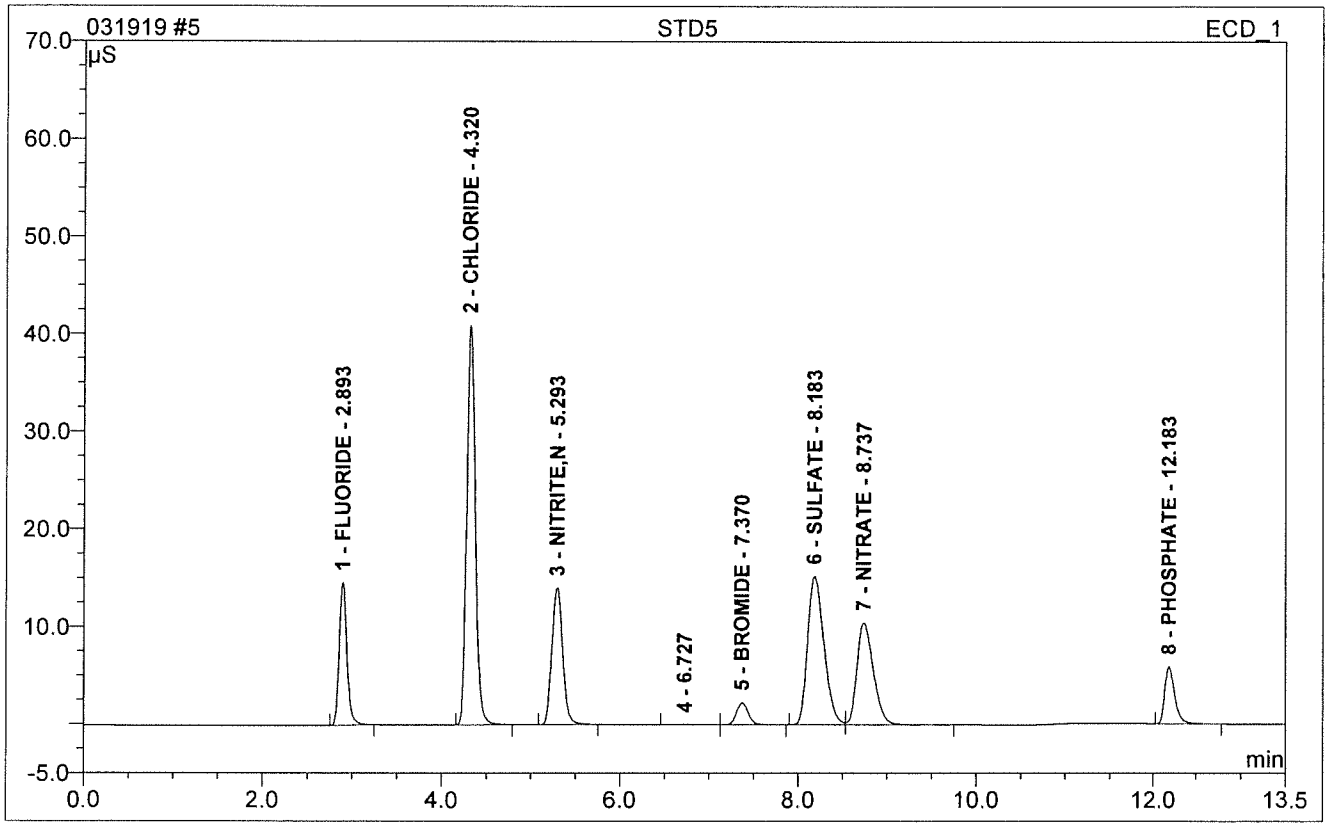
Sample Name:	**STD4**	*Injection Volume:*	**10.0**
Vial Number:	**94**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 15:55**	*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	2.89	FLUORIDE	6.201	0.586	10.07	4.141	1.
2	4.32	CHLORIDE	16.375	1.798	30.85	20.058	1.
3	5.29	NITRITE,N	6.162	0.811	13.93	4.239	1.
5	7.38	BROMIDE	0.791	0.125	2.15	3.554	1.
6	8.23	SULFATE	6.226	1.269	21.79	19.725	1.
7	8.78	NITRATE	4.308	0.856	14.69	3.891	1.
9	12.21	PHOSPHATE	2.030	0.271	4.66	3.533	1.
Total:			42.094	5.717	98.13	59.141	

5 STD5

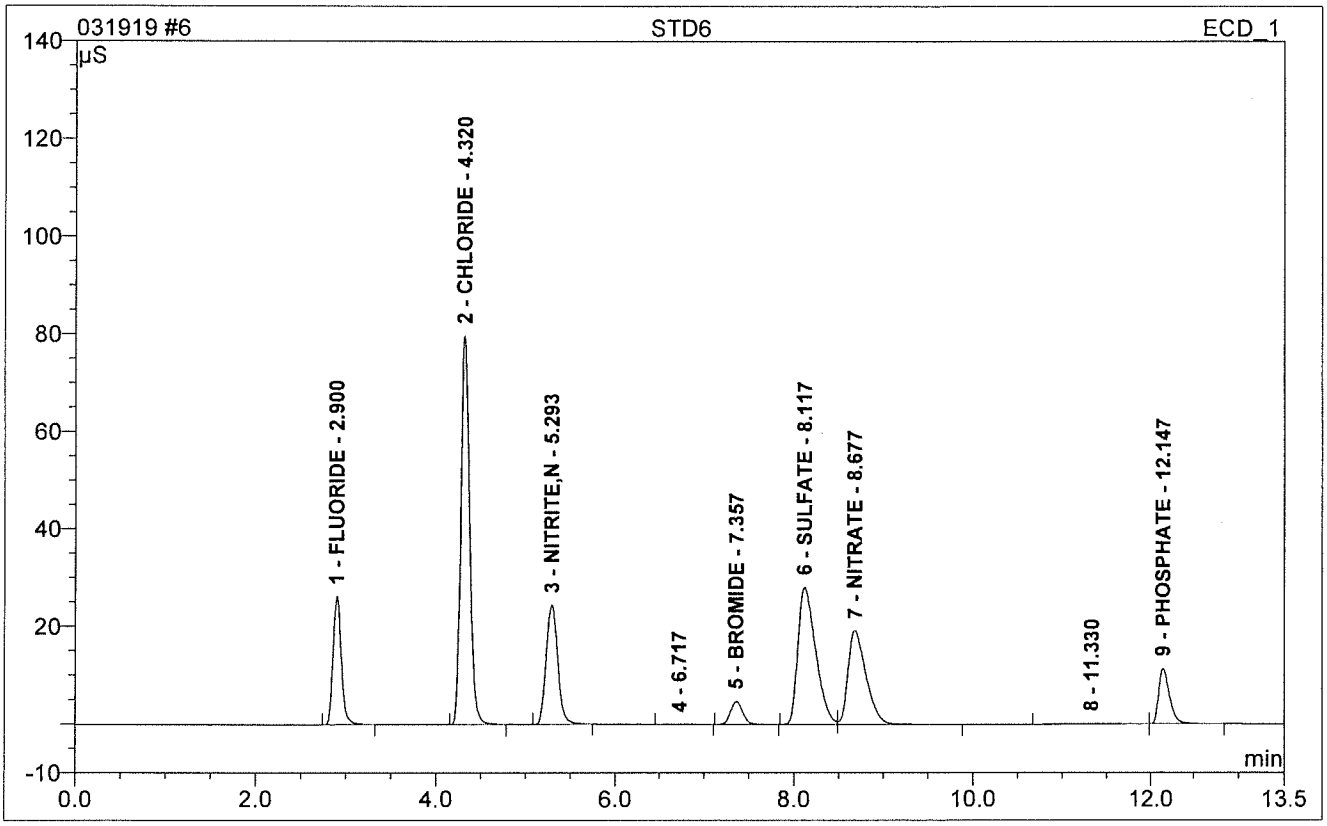
Sample Name:	**STD5**	*Injection Volume:*	**10.0**
Vial Number:	**95**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 16:10**	*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	2.89	FLUORIDE	14.651	1.468	9.96	10.311	1.
2	4.32	CHLORIDE	40.959	4.562	30.95	50.652	1.
3	5.29	NITRITE,N	14.100	1.998	13.55	10.395	1.
5	7.37	BROMIDE	2.266	0.356	2.41	9.992	1.
6	8.18	SULFATE	15.306	3.294	22.35	50.830	1.
7	8.74	NITRATE	10.552	2.251	15.27	10.142	1.
8	12.18	PHOSPHATE	5.866	0.802	5.44	10.139	1.
Total:			103.700	14.730	99.94	152.461	

6 STD6

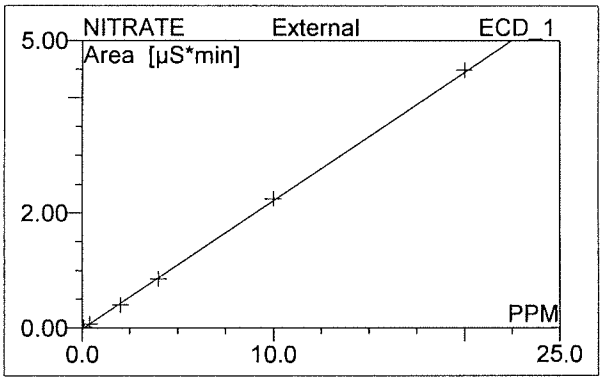
Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 16:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**

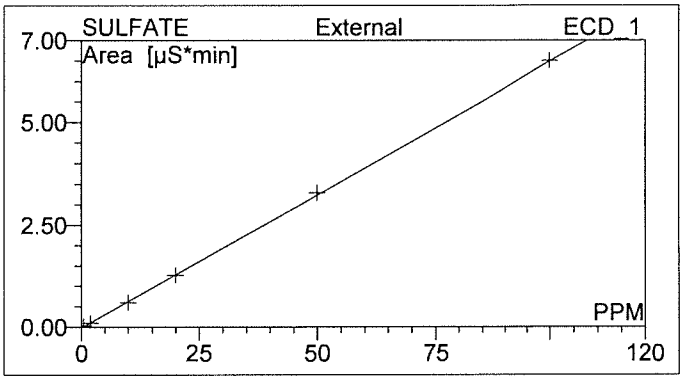


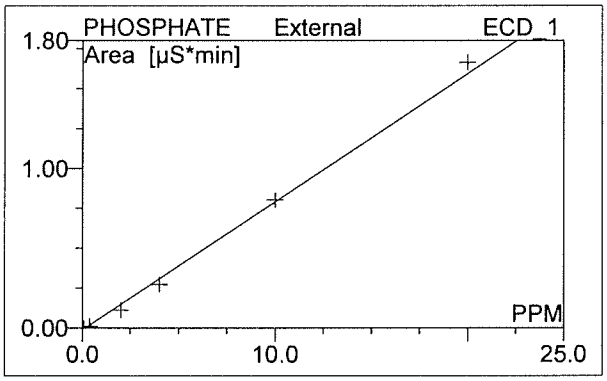
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.90	FLUORIDE	26.301	2.790	9.63	19.573	1.
2	4.32	CHLORIDE	79.715	8.978	30.97	99.536	1.
3	5.29	NITRITE,N	24.461	3.720	12.83	19.336	1.
5	7.36	BROMIDE	4.675	0.743	2.56	20.802	1.
6	8.12	SULFATE	28.081	6.504	22.44	100.134	1.
7	8.68	NITRATE	19.220	4.487	15.48	20.159	1.
9	12.15	PHOSPHATE	11.248	1.663	5.74	20.854	1.
Total:			193.701	28.885	99.65	300.393	

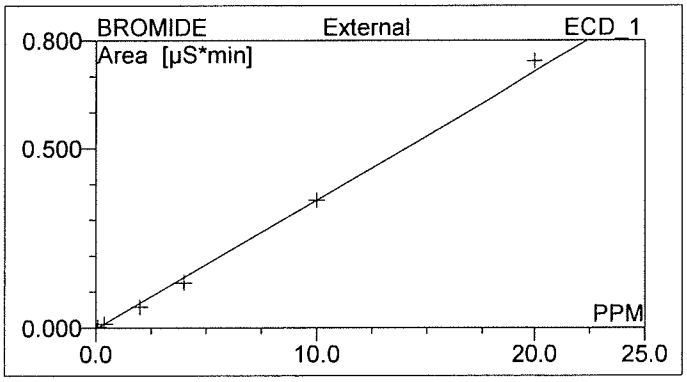
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 16:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**









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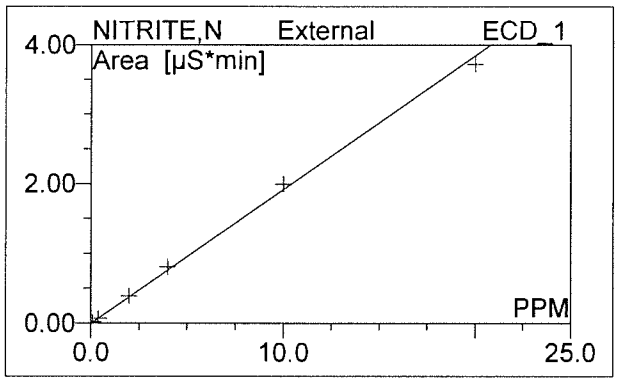
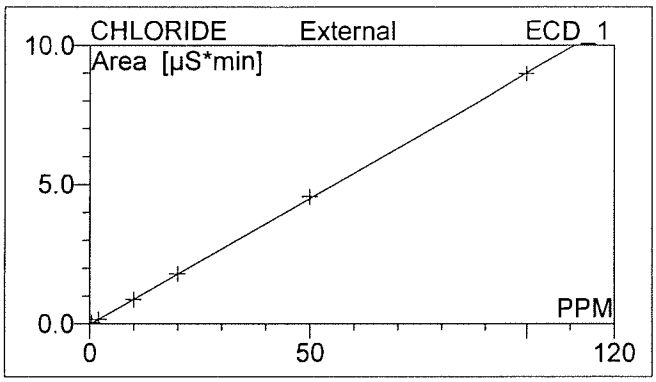
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.90	FLUORIDE	XLOff	6	99.913	-0.0049	0.1428	0.000
2	4.32	CHLORIDE	XLOff	6	99.985	-0.0146	0.0903	0.000
3	5.29	NITRITE,N	XLOff	6	99.832	-0.0052	0.1927	0.000
5	7.36	BROMIDE	XLOff	6	99.537	-0.0023	0.0358	0.000
6	8.12	SULFATE	XLOff	6	99.946	-0.0146	0.0651	0.000
7	8.68	NITRATE	XLOff	6	99.908	-0.0126	0.2232	0.000
9	12.15	PHOSPHATE	XLOff	6	99.200	-0.0125	0.0803	0.000
Average:					99.7599	-0.0095	0.1186	0.0000

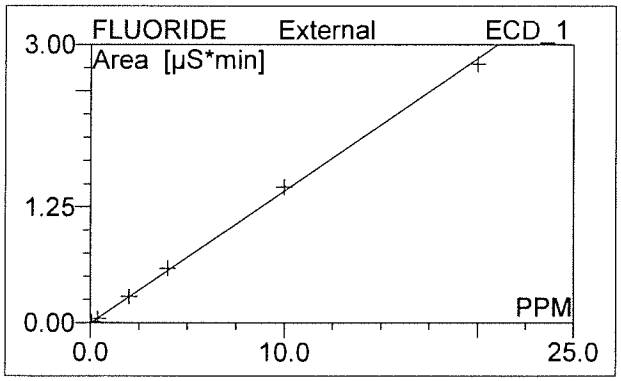
No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.90	FLUORIDE	XLOff	6	99.956	7.003	0.008	13.916
2	4.32	CHLORIDE	XLOff	6	99.993	11.068	0.011	5.649
3	5.29	NITRITE,N	XLOff	6	99.916	5.190	0.015	18.978
5	7.36	BROMIDE	XLOff	6	99.768	27.906	0.005	34.648
6	8.12	SULFATE	XLOff	6	99.973	15.361	0.015	11.225
7	8.68	NITRATE	XLOff	6	99.954	4.481	0.013	15.130
9	12.15	PHOSPHATE	XLOff	6	99.599	12.448	0.014	59.760
Average:					99.8798	11.9224	0.0116	22.7581

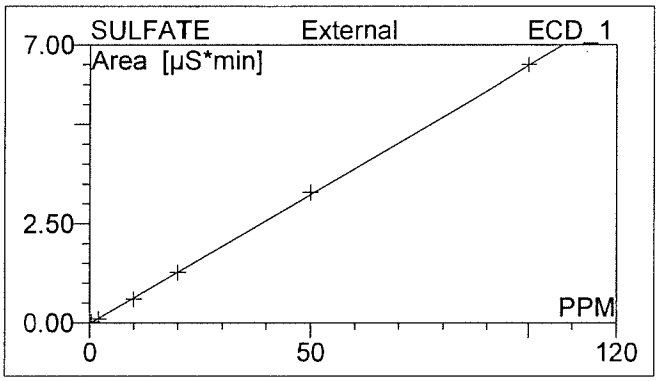
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.000**
Recording Time:	**3/5/2019 16:24**	*Sample Weight/Volume:*	**1.000**
Run Time (min):	**13.50**	*Final Volume:*	**1.000**









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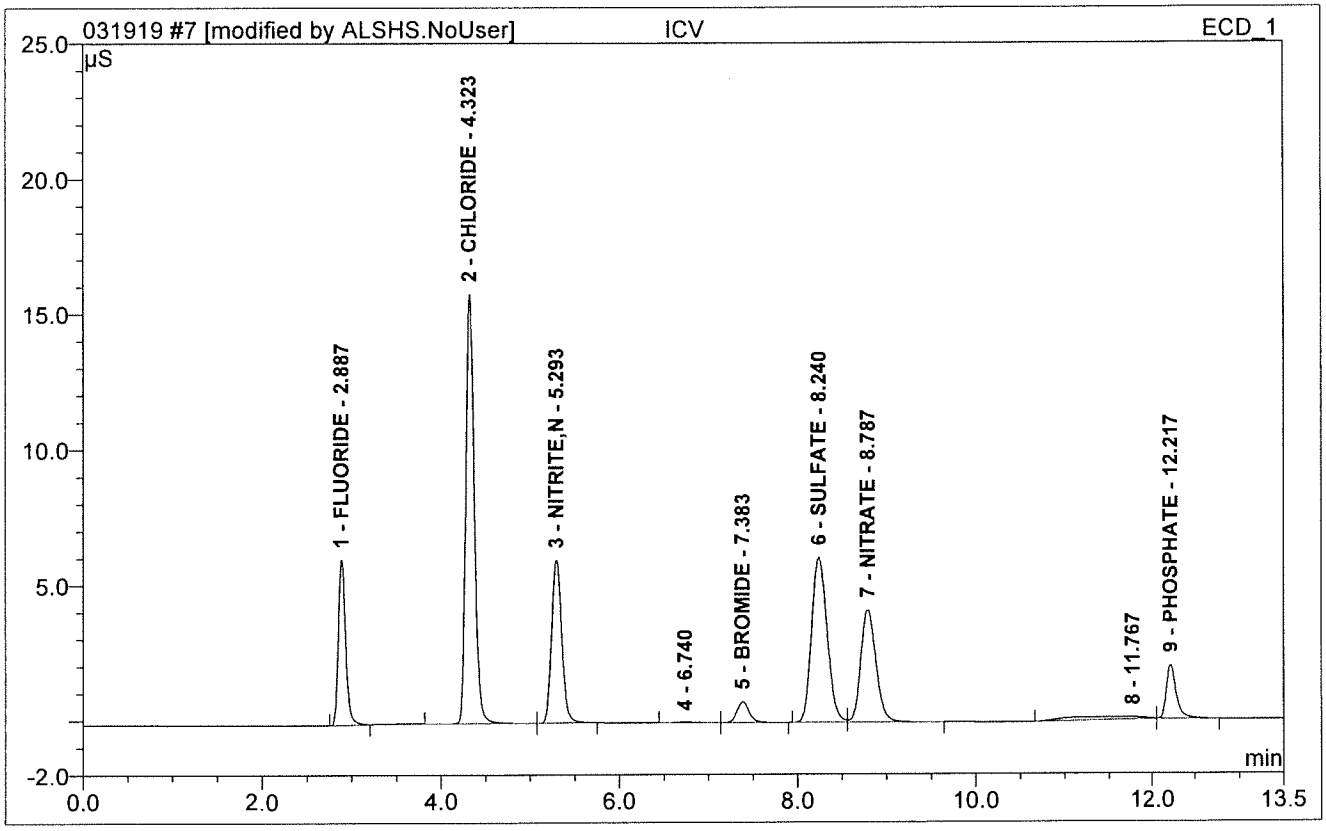
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.90	FLUORIDE	XLOff	6	99.9126	-0.0049	0.1428	0.000
2	4.32	CHLORIDE	XLOff	6	99.9855	-0.0146	0.0903	0.000
3	5.29	NITRITE,N	XLOff	6	99.8316	-0.0052	0.1927	0.000
5	7.36	BROMIDE	XLOff	6	99.5368	-0.0023	0.0358	0.000
6	8.12	SULFATE	XLOff	6	99.9460	-0.0146	0.0651	0.000
7	8.68	NITRATE	XLOff	6	99.9075	-0.0126	0.2232	0.000
9	12.15	PHOSPHATE	XLOff	6	99.1996	-0.0125	0.0803	0.000
Average:					99.7599	-0.0095	0.1186	0.000

No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.90	FLUORIDE	XLOff	6	99.956	7.003	0.008	13.916
2	4.32	CHLORIDE	XLOff	6	99.993	11.068	0.011	5.649
3	5.29	NITRITE,N	XLOff	6	99.916	5.190	0.015	18.978
5	7.36	BROMIDE	XLOff	6	99.768	27.906	0.005	34.648
6	8.12	SULFATE	XLOff	6	99.973	15.361	0.015	11.225
7	8.68	NITRATE	XLOff	6	99.954	4.481	0.013	15.130
9	12.15	PHOSPHATE	XLOff	6	99.599	12.448	0.014	59.760
Average:					99.8798	11.922	0.012	22.758

7 ICV

297.020.6806

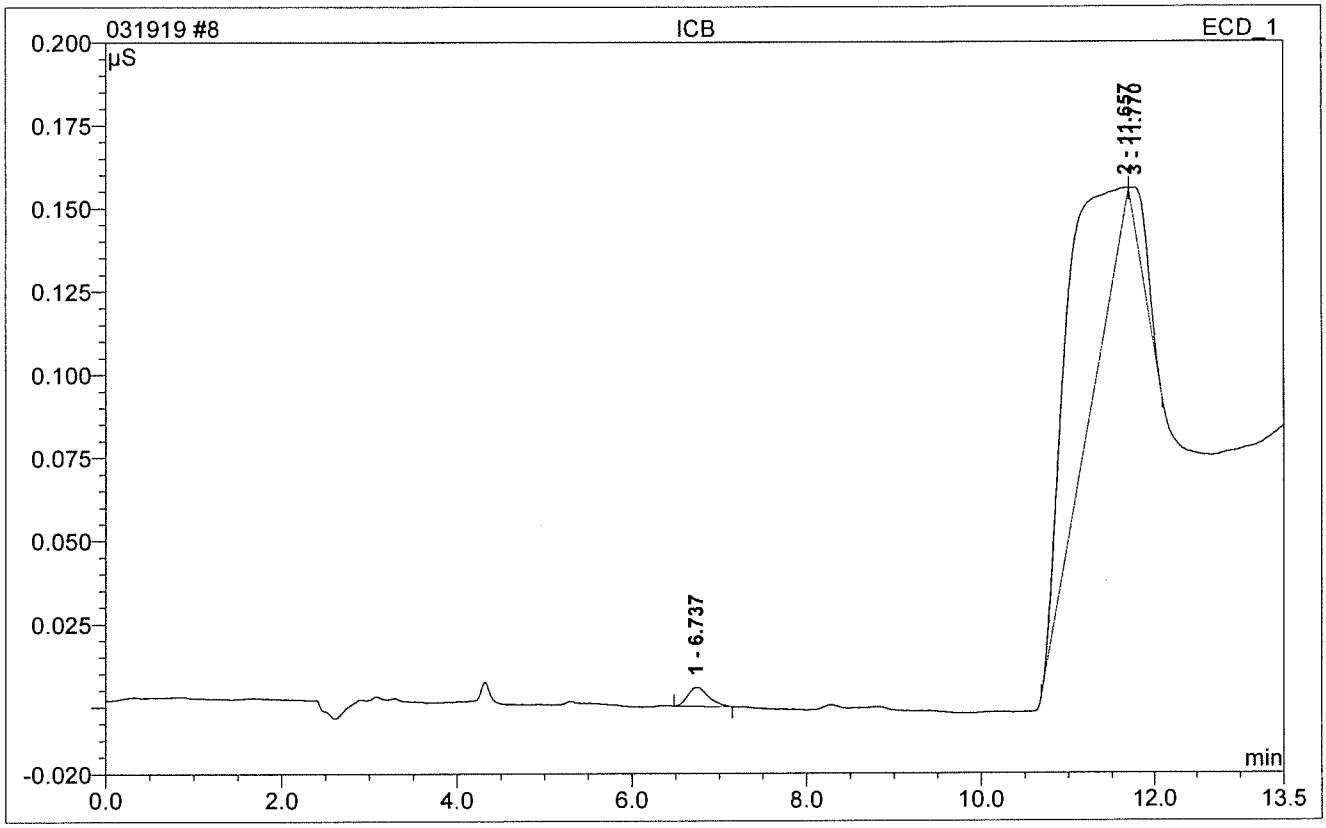
Sample Name:	**ICV**	*Injection Volume:*	**10.0**
Vial Number:	**97**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 16:39**	*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	2.89	FLUORIDE	6.100	0.575	10.17	4.062	1.
2	4.32	CHLORIDE	15.827	1.738	30.72	19.393	1.
3	5.29	NITRITE,N	6.017	0.792	14.00	4.137	1.
5	7.38	BROMIDE	0.764	0.121	2.14	3.443	1.
6	8.24	SULFATE	6.100	1.235	21.84	19.196	1.
7	8.79	NITRATE	4.154	0.823	14.54	3.742	1.
9	12.22	PHOSPHATE	1.972	0.264	4.68	3.447	1.
Total:			40.935	5.548	98.09	57.420	

8 ICB

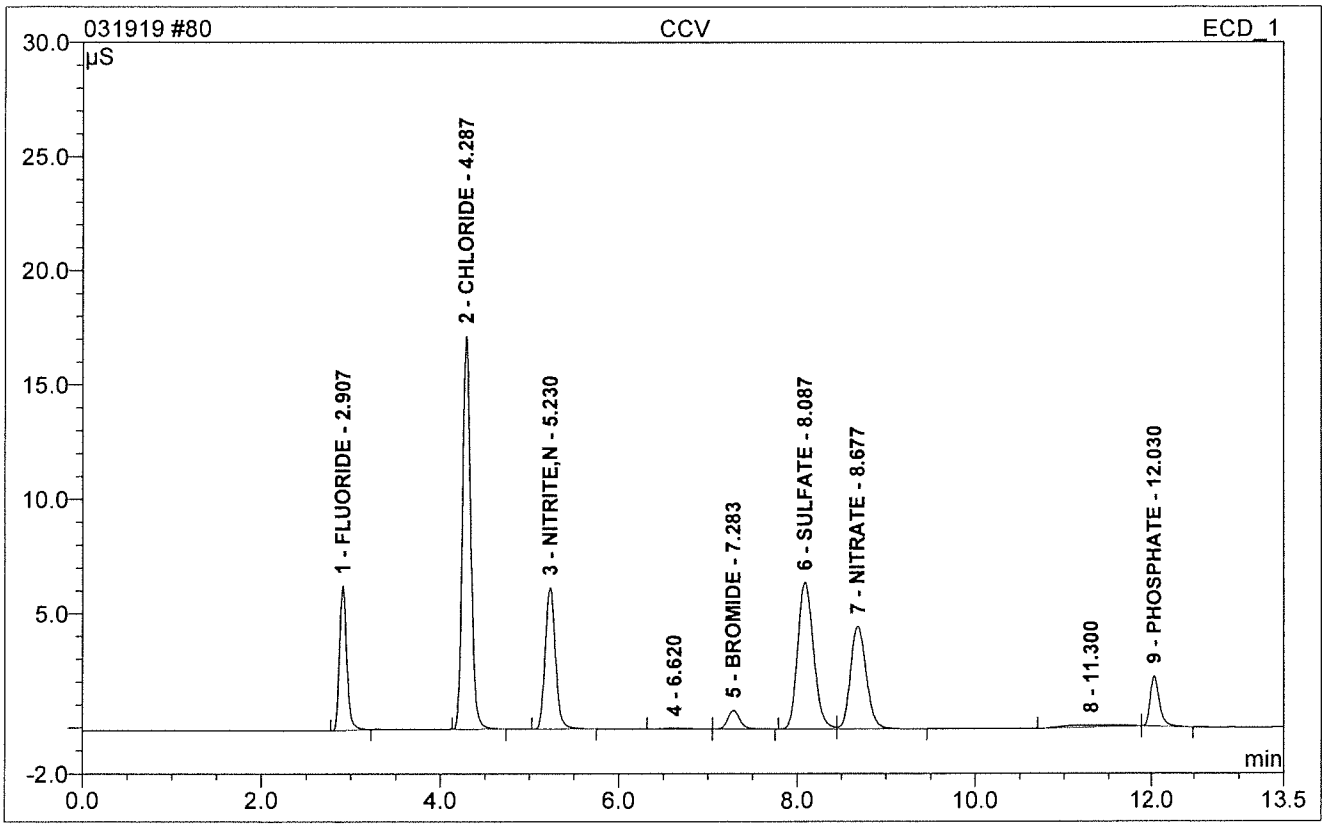
Sample Name:	**ICB**	*Injection Volume:*	**10.0**
Vial Number:	**98**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/5/2019 17:13**	*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.
Total:			0.000	0.000	0.00	0.000	

80 CCV

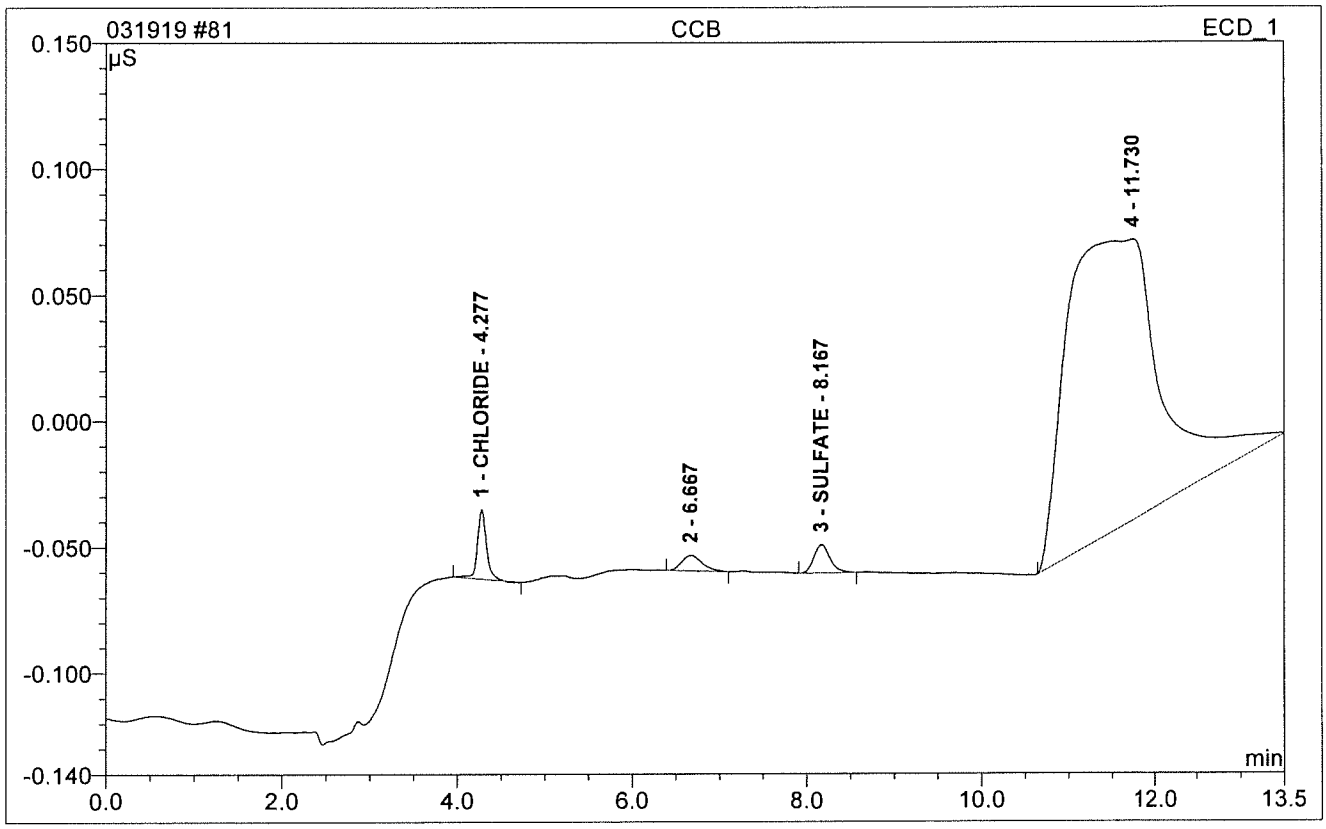
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 11:29**	*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	2.91	FLUORIDE	6.310	0.589	9.81	4.159	1.
2	4.29	CHLORIDE	17.190	1.848	30.77	20.614	1.
3	5.23	NITRITE,N	6.183	0.831	13.85	4.342	1.
5	7.28	BROMIDE	0.821	0.128	2.13	3.641	1.
6	8.09	SULFATE	6.413	1.331	22.17	20.676	1.
7	8.68	NITRATE	4.496	0.914	15.23	4.154	1.
9	12.03	PHOSPHATE	2.184	0.280	4.67	3.645	1.
Total:			43.598	5.923	98.64	61.232	

81 CCB

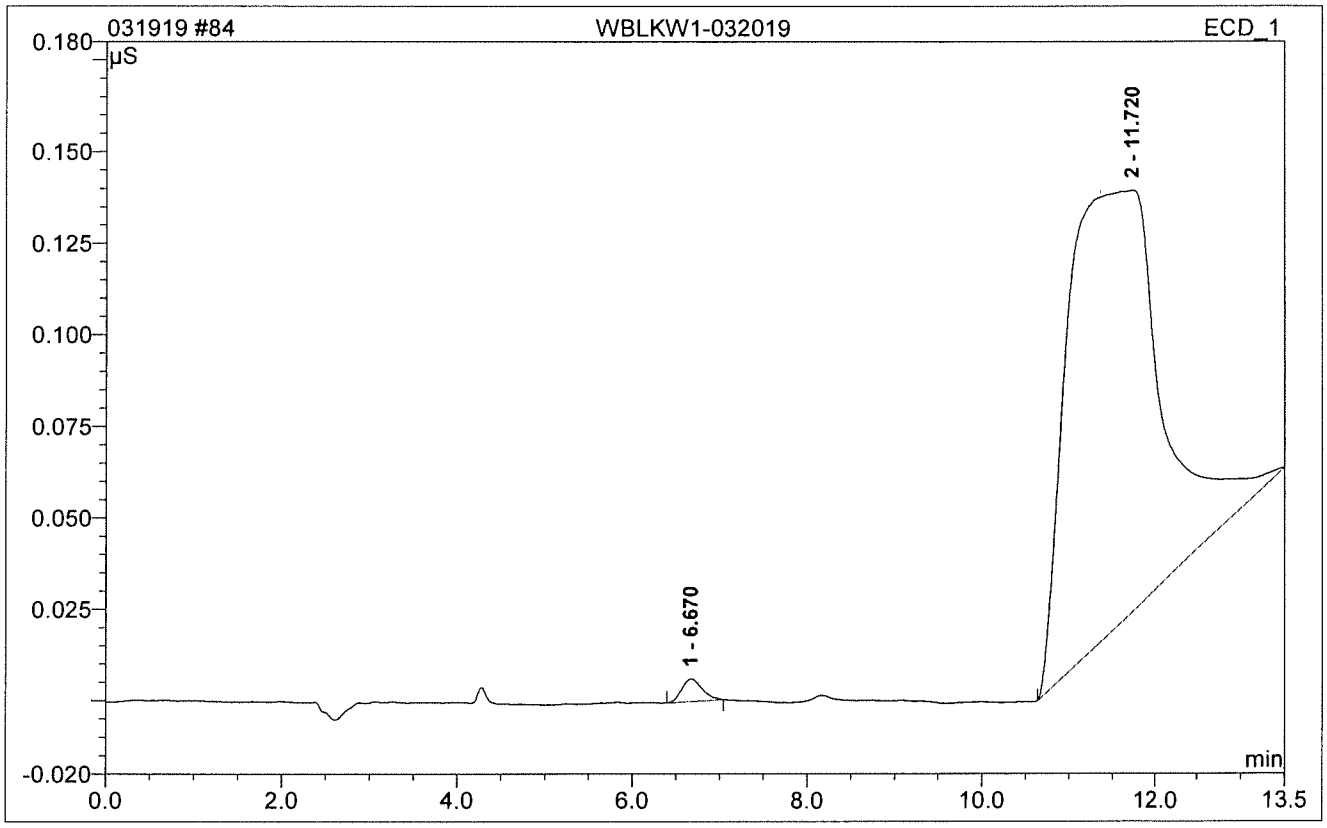
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 11:44**	*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	4.28	CHLORIDE	0.027	0.003	2.13	0.198	1.
3	8.17	SULFATE	0.011	0.002	1.57	0.262	1.
Total:			0.039	0.006	3.71	0.460	

84 WBLKW1-032019

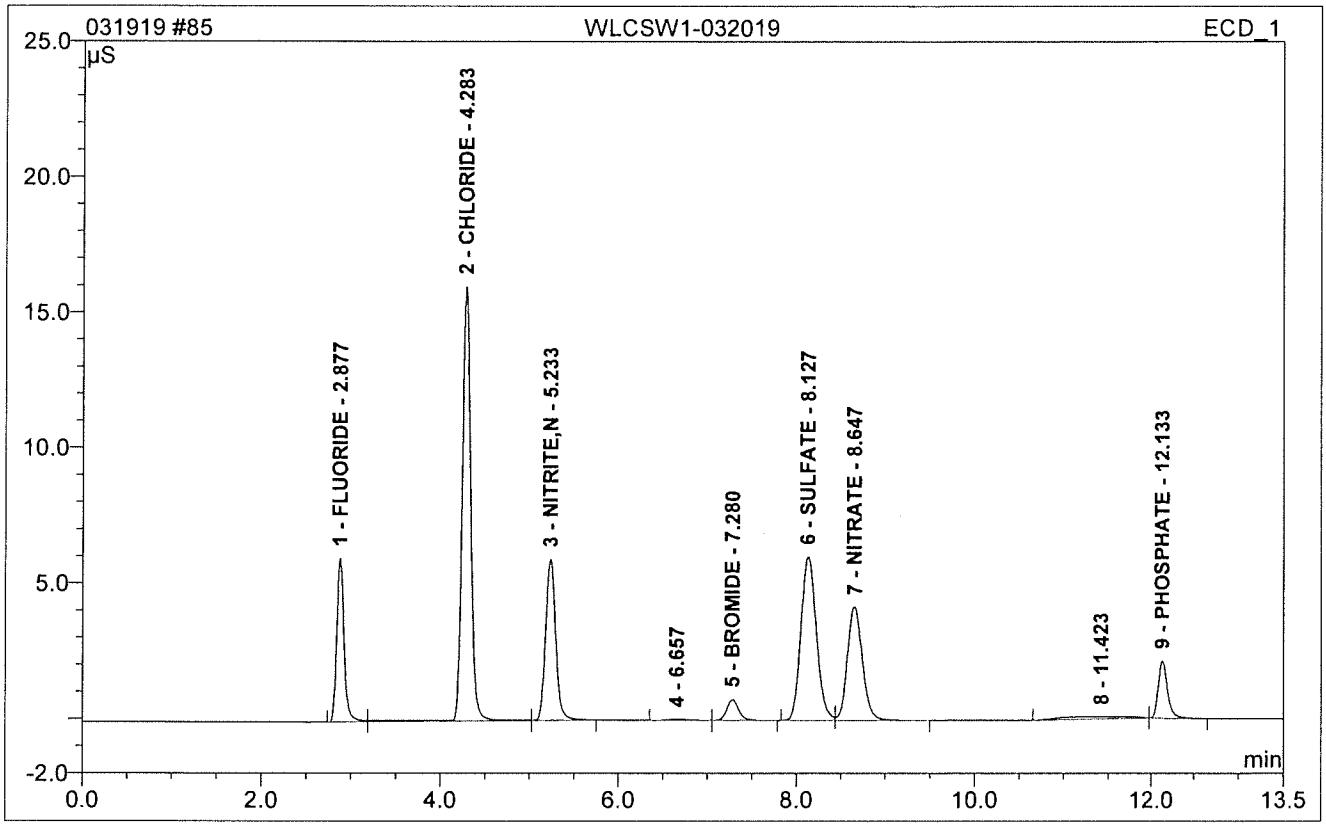
Sample Name:	**WBLKW1-032019**	*Injection Volume:*	**10.0**
Vial Number:	**11**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 12:55**	*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.
Total:			0.000	0.000	0.00	0.000	

85 WLCSW1-032019

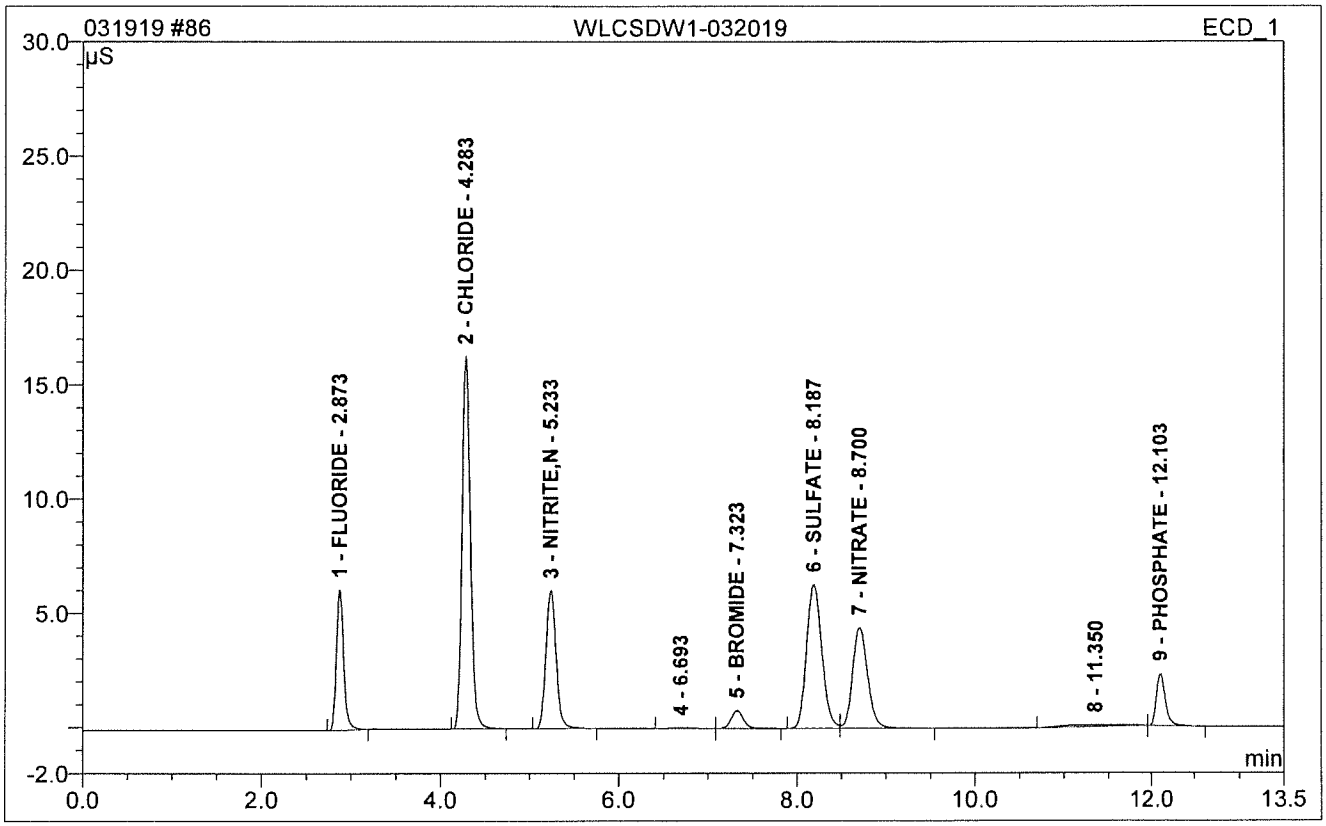
Sample Name:	**WLCSW1-032019**	*Injection Volume:*	**10.0**
Vial Number:	**12**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 13:10**	*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	2.88	FLUORIDE	6.030	0.571	10.05	4.031	1.
2	4.28	CHLORIDE	16.034	1.788	31.49	19.951	1.
3	5.23	NITRITE,N	5.939	0.788	13.87	4.114	1.
5	7.28	BROMIDE	0.768	0.120	2.11	3.415	1.
6	8.13	SULFATE	6.037	1.224	21.56	19.033	1.
7	8.65	NITRATE	4.202	0.826	14.55	3.758	1.
9	12.13	PHOSPHATE	2.104	0.268	4.71	3.486	1.
Total:			41.115	5.584	98.35	57.789	

86 WLCSDW1-032019

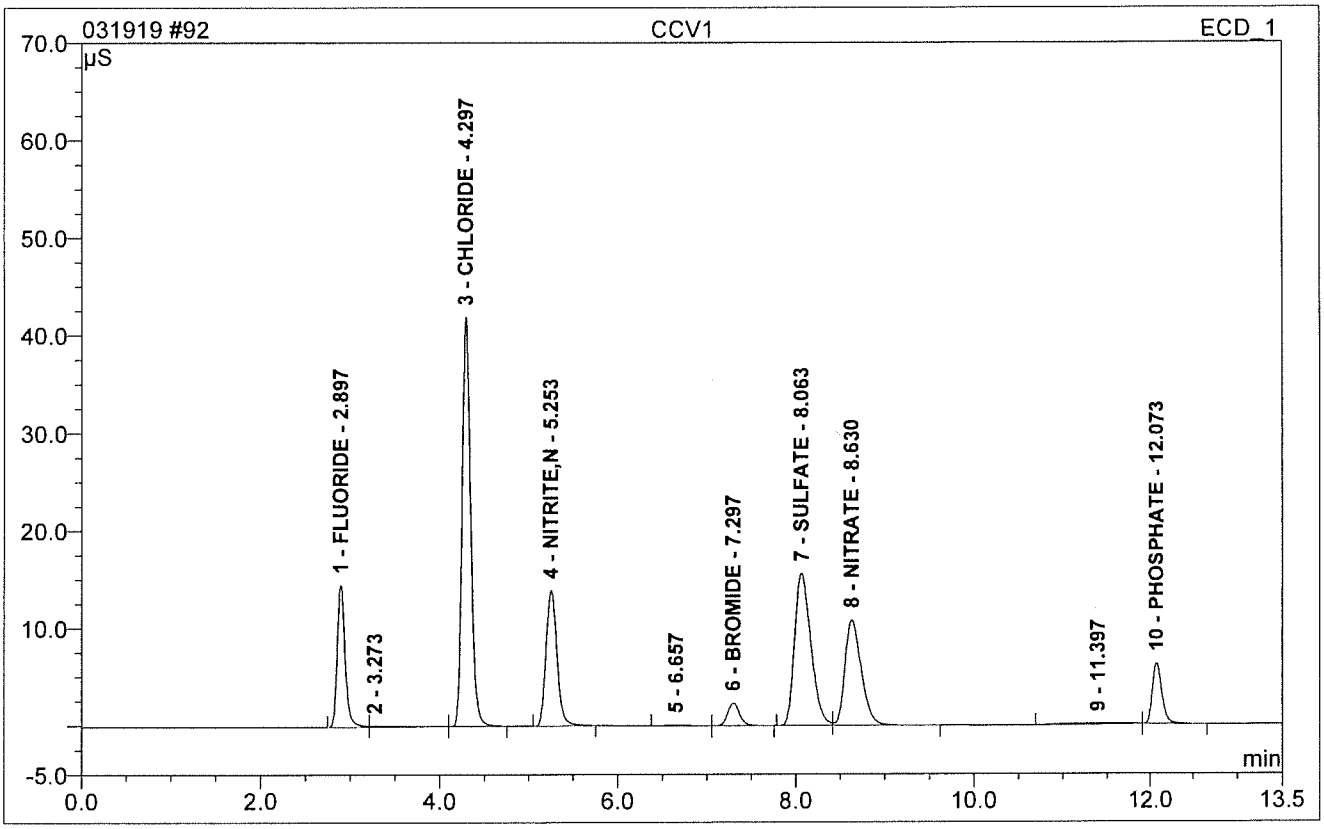
Sample Name:	**WLCSDW1-032019**	*Injection Volume:*	**10.0**
Vial Number:	**13**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 13:25**	*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	2.87	FLUORIDE	6.146	0.576	9.99	4.066	1.
2	4.28	CHLORIDE	16.300	1.769	30.70	19.743	1.
3	5.23	NITRITE,N	6.035	0.799	13.87	4.176	1.
5	7.32	BROMIDE	0.786	0.125	2.16	3.542	1.
6	8.19	SULFATE	6.292	1.264	21.94	19.648	1.
7	8.70	NITRATE	4.418	0.868	15.07	3.948	1.
9	12.10	PHOSPHATE	2.280	0.280	4.86	3.641	1.
Total:			42.257	5.682	98.60	58.765	

92 CCV1

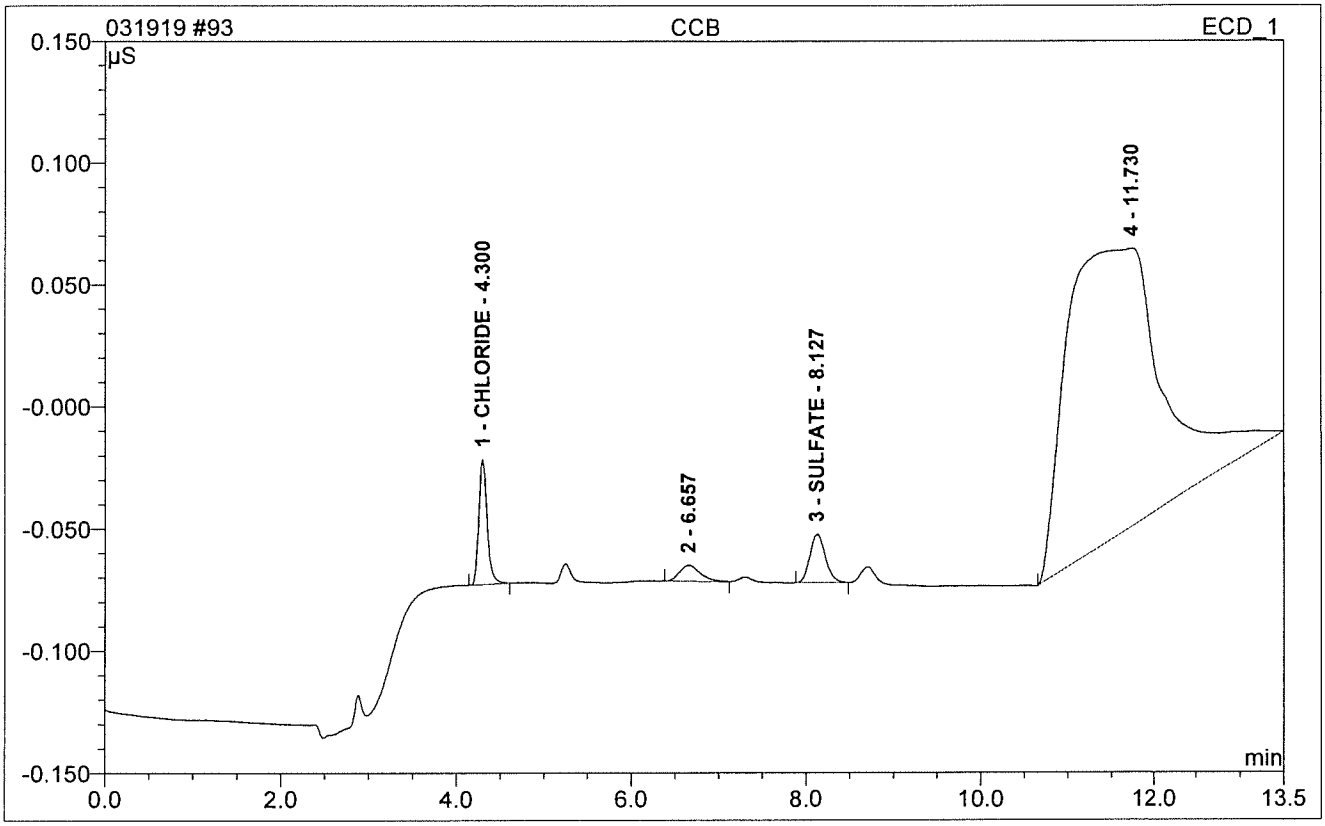
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 15:06**	*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	2.90	FLUORIDE	14.579	1.471	9.76	10.338	1.
3	4.30	CHLORIDE	41.926	4.656	30.89	51.694	1.
4	5.25	NITRITE,N	13.935	2.008	13.32	10.450	1.
6	7.30	BROMIDE	2.317	0.360	2.39	10.115	1.
7	8.06	SULFATE	15.645	3.348	22.21	51.649	1.
8	8.63	NITRATE	10.838	2.295	15.23	10.339	1.
10	12.07	PHOSPHATE	6.205	0.819	5.44	10.352	1.
Total:			105.445	14.958	99.25	154.937	

93 CCB

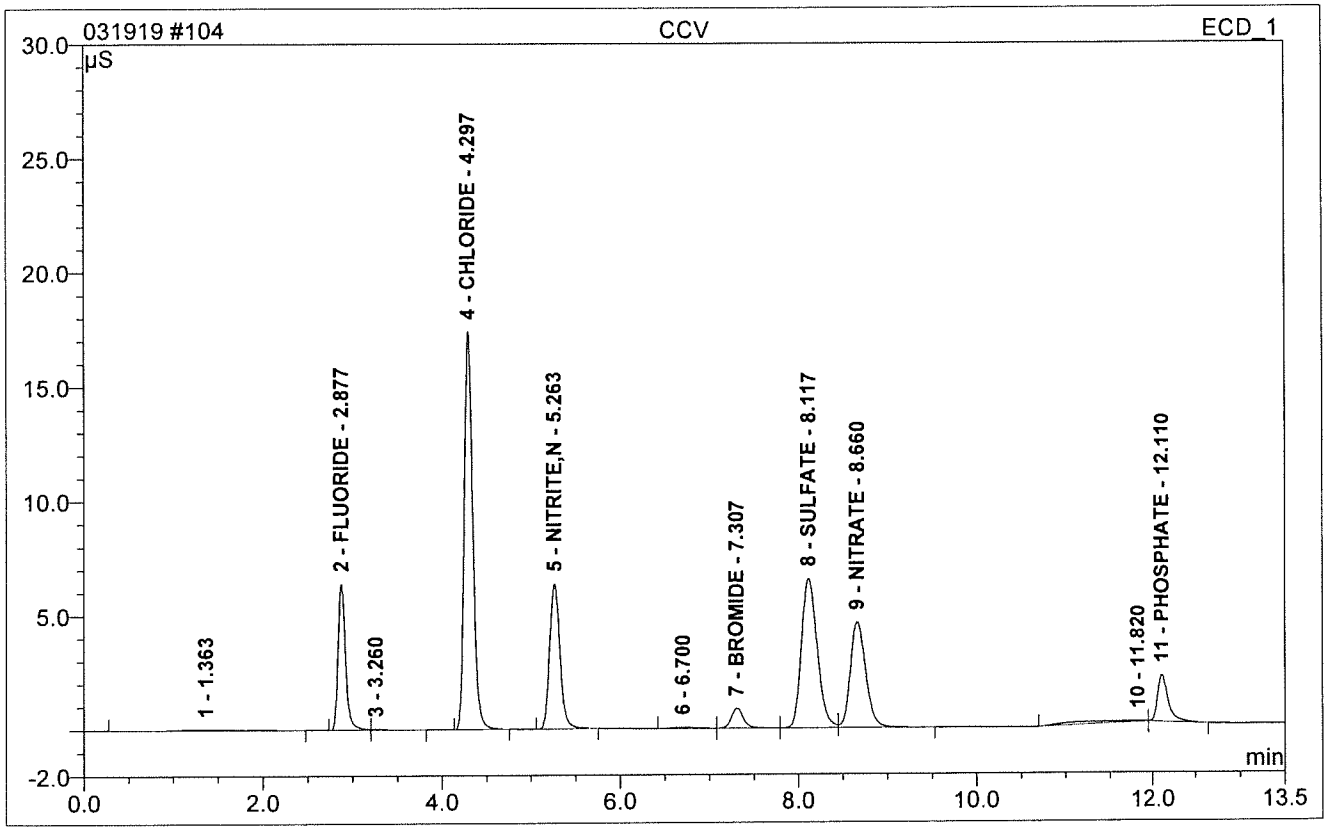
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 15:20**	*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	4.30	CHLORIDE	0.051	0.006	3.43	0.225	1.
3	8.13	SULFATE	0.020	0.004	2.45	0.287	1.
Total:			0.071	0.010	5.88	0.512	

104 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-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 18:34**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**

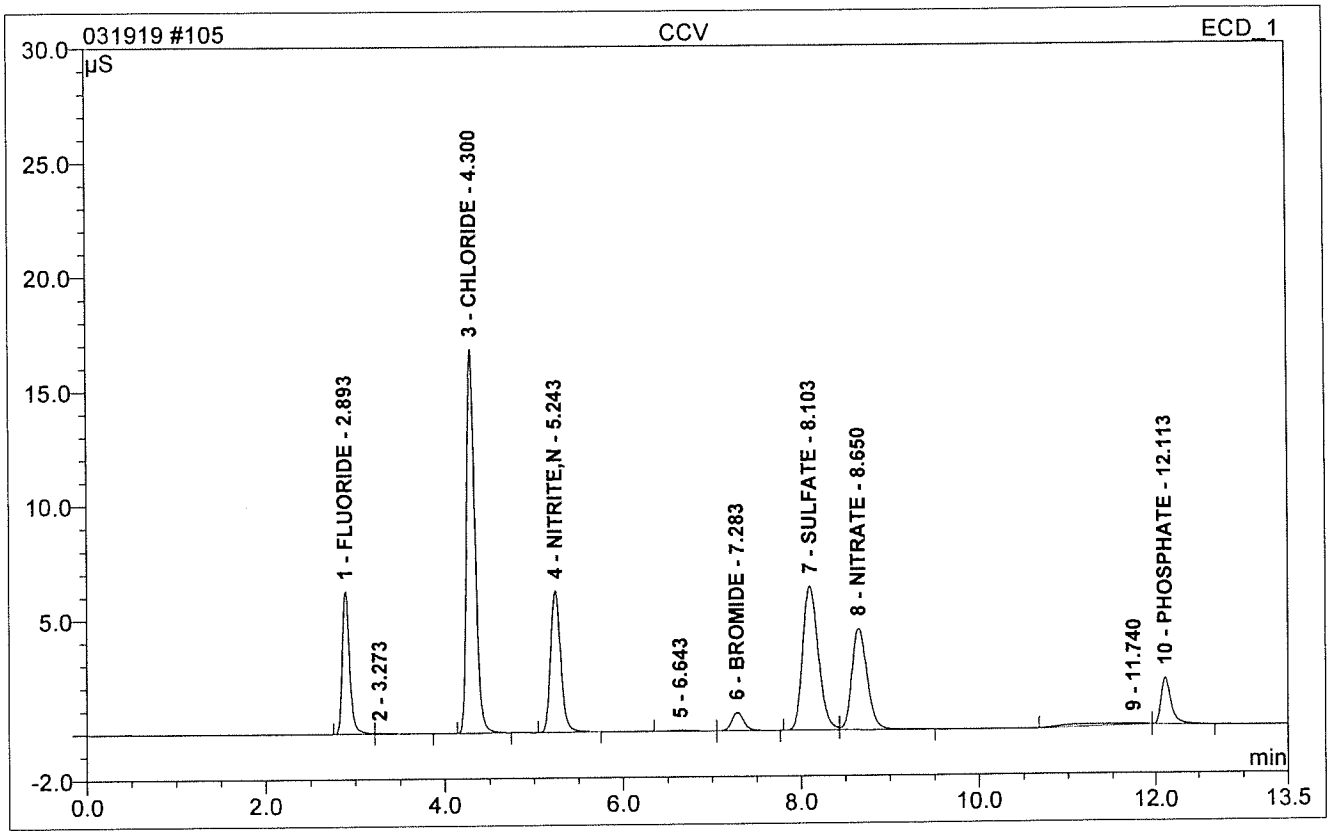


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	2.88	FLUORIDE	6.396	0.613	9.84	4.328	1.
4	4.30	CHLORIDE	17.407	1.925	30.90	21.468	1.
5	5.26	NITRITE,N	6.363	0.860	13.80	4.490	1.
7	7.31	BROMIDE	0.871	0.135	2.17	3.843	1.
8	8.12	SULFATE	6.555	1.349	21.66	20.948	1.
9	8.66	NITRATE	4.646	0.924	14.83	4.196	1.
11	12.11	PHOSPHATE	2.033	0.292	4.69	3.789	1.
Total:			44.271	6.098	97.90	63.061	

105 CCV

RERUN

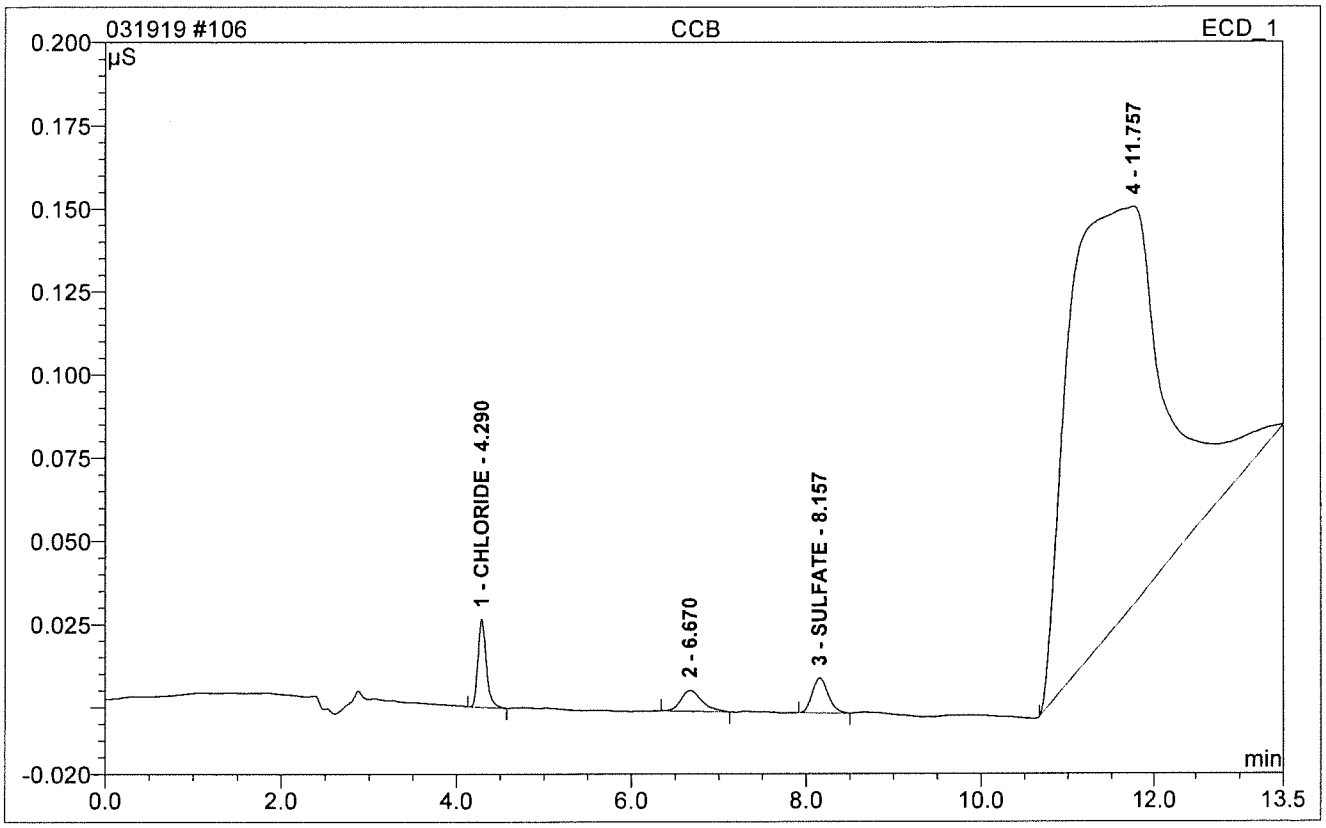
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 19:06**	*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	2.89	FLUORIDE	6.242	0.595	10.00	4.198	1.
3	4.30	CHLORIDE	16.796	1.832	30.80	20.438	1.
4	5.24	NITRITE,N	6.194	0.824	13.86	4.304	1.
6	7.28	BROMIDE	0.818	0.129	2.17	3.663	1.
7	8.10	SULFATE	6.309	1.303	21.91	20.242	1.
8	8.65	NITRATE	4.451	0.883	14.84	4.012	1.
10	12.11	PHOSPHATE	2.040	0.279	4.70	3.632	1.
Total:			42.850	5.845	98.27	60.489	

106 CCB

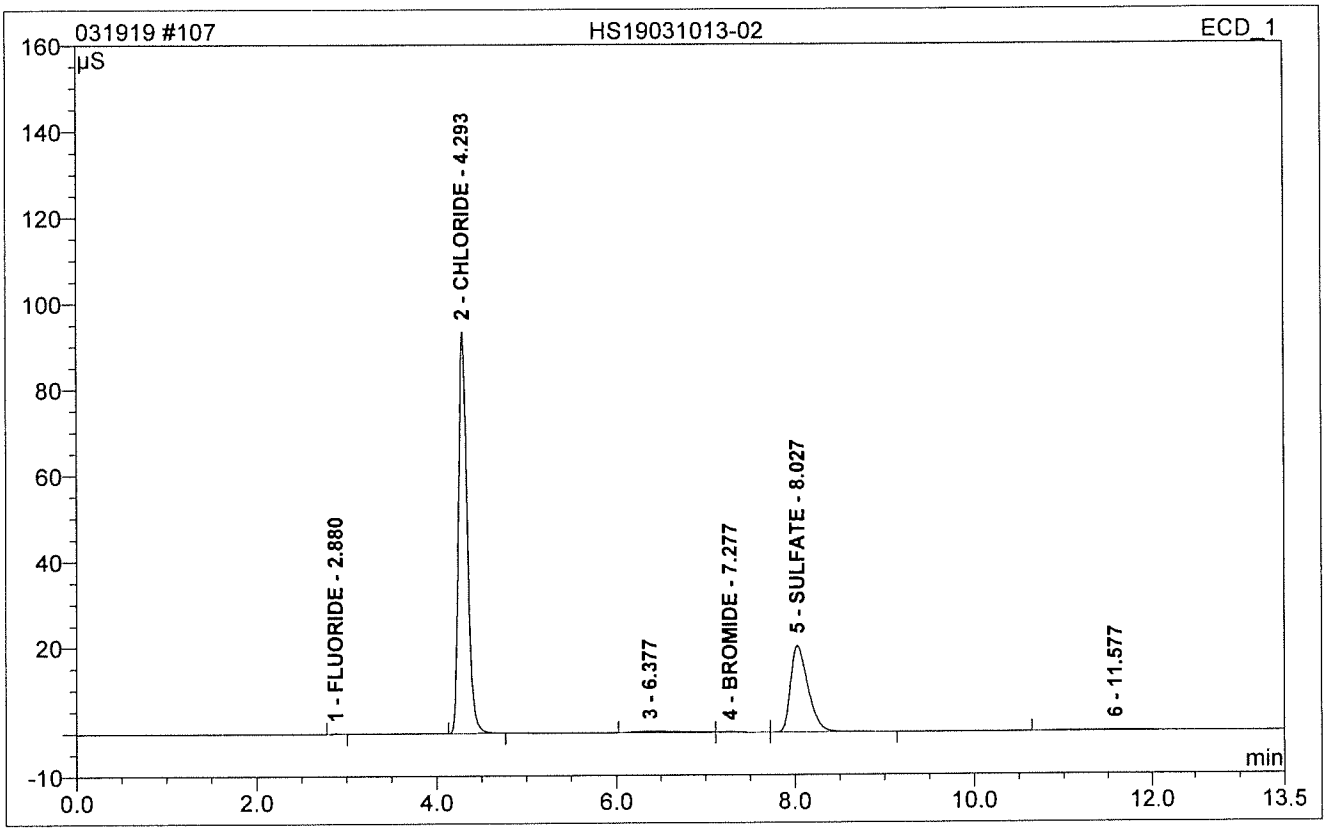
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 19:26**	*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	4.29	CHLORIDE	0.027	0.003	1.72	0.195	1.
3	8.16	SULFATE	0.011	0.002	1.29	0.258	1.
Total:			0.037	0.005	3.00	0.453	

107 HS19031013-02

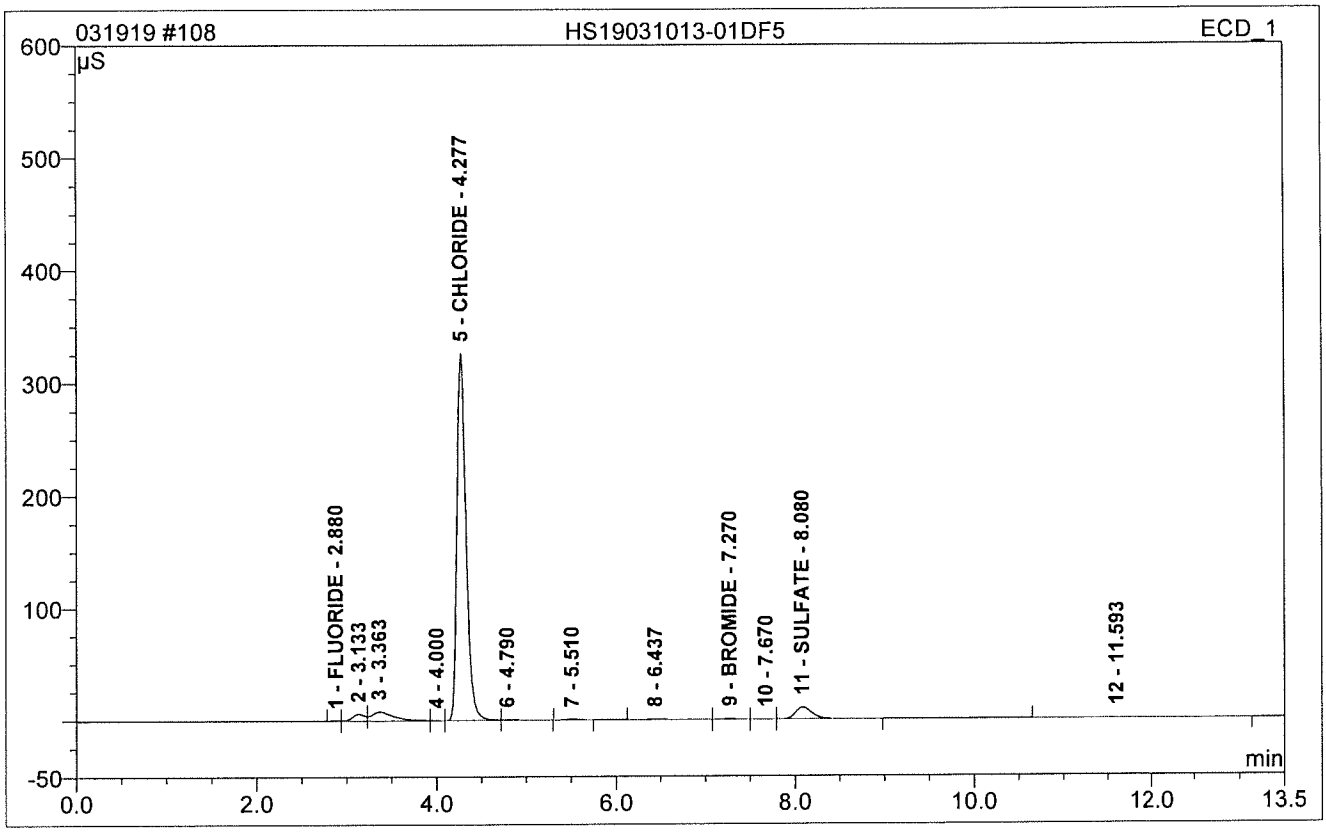
Sample Name:	**HS19031013-02**	*Injection Volume:*	**10.0**
Vial Number:	**22**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 19:41**	*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	2.88	FLUORIDE	0.083	0.007	0.04	0.082	1.
2	4.29	CHLORIDE	93.396	10.455	68.08	115.877	1.
4	7.28	BROMIDE	0.119	0.024	0.16	0.740	1.
5	8.03	SULFATE	20.089	4.545	29.60	70.046	1.
Total:			113.686	15.031	97.88	186.744	

108 HS19031013-01DF5

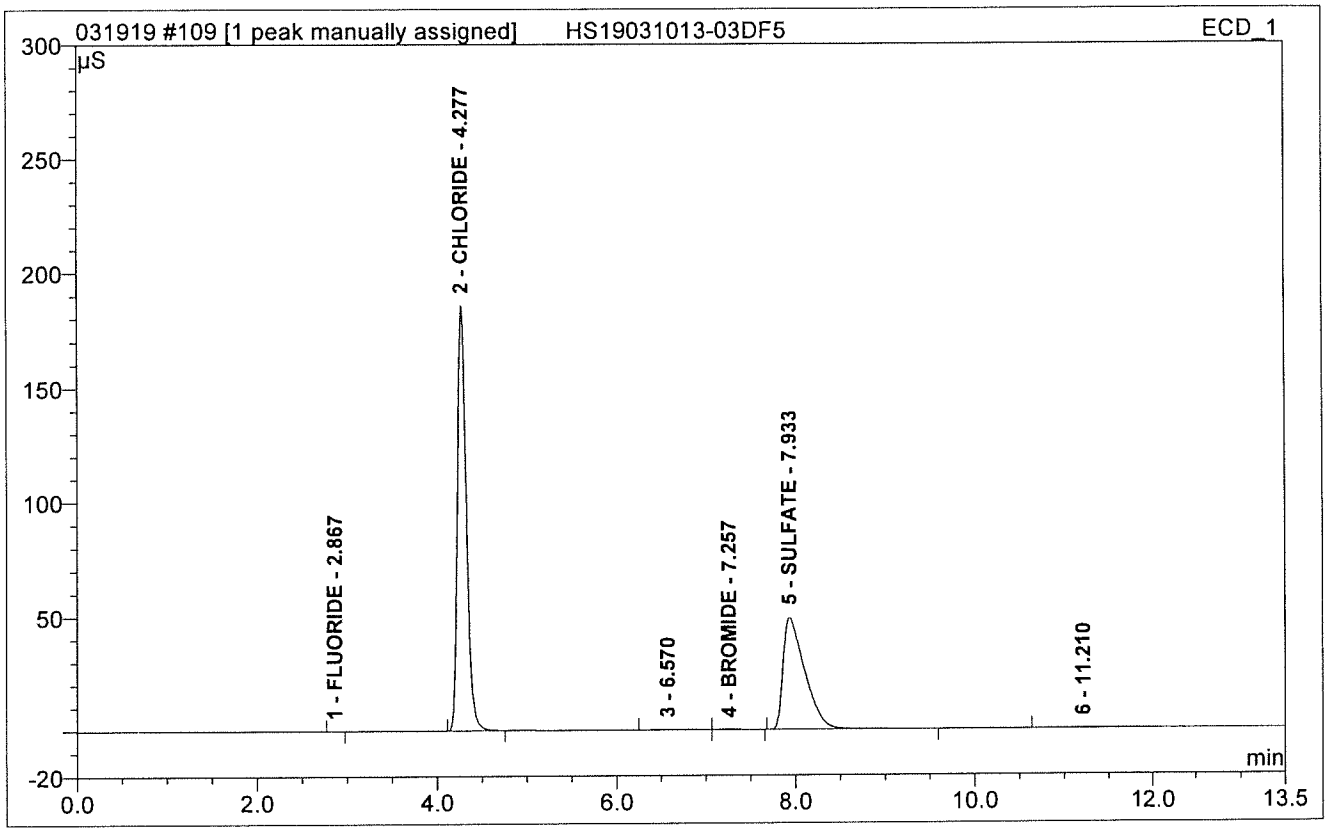
Sample Name:	**HS19031013-01DF5**	*Injection Volume:*	**10.0**
Vial Number:	**21**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 19:55**	*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	2.88	FLUORIDE	0.061	0.005	0.01	0.345	5.
5	4.28	CHLORIDE	325.685	38.020	86.60	2104.860	5.
9	7.27	BROMIDE	0.362	0.058	0.13	8.444	5.
11	8.08	SULFATE	10.366	2.229	5.08	172.303	5.
Total:			336.473	40.312	91.82	2285.952	

109 HS19031013-03DF5

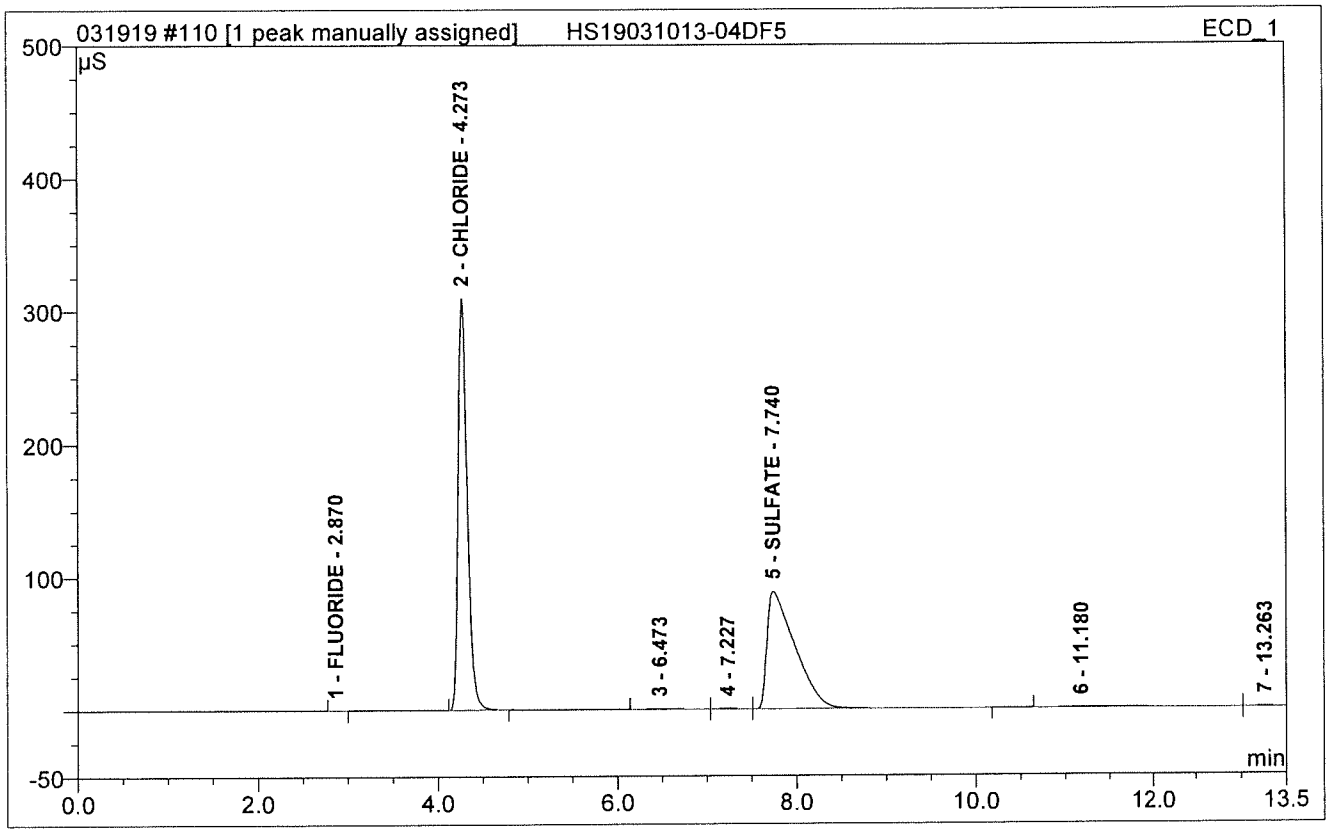
Sample Name:	**HS19031013-03DF5**	*Injection Volume:*	**10.0**
Vial Number:	**23**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 20:10**	*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	2.87	FLUORIDE	0.028	0.002	0.01	0.253	5.
2	4.28	CHLORIDE	185.908	21.344	60.40	1182.016	5.
4	7.26	BROMIDE	0.213	0.036	0.10	5.340	5.
5	7.93	SULFATE	49.086	13.720	38.83	1054.900	5.
Total:			235.236	35.103	99.34	2242.510	

110 HS19031013-04DF5

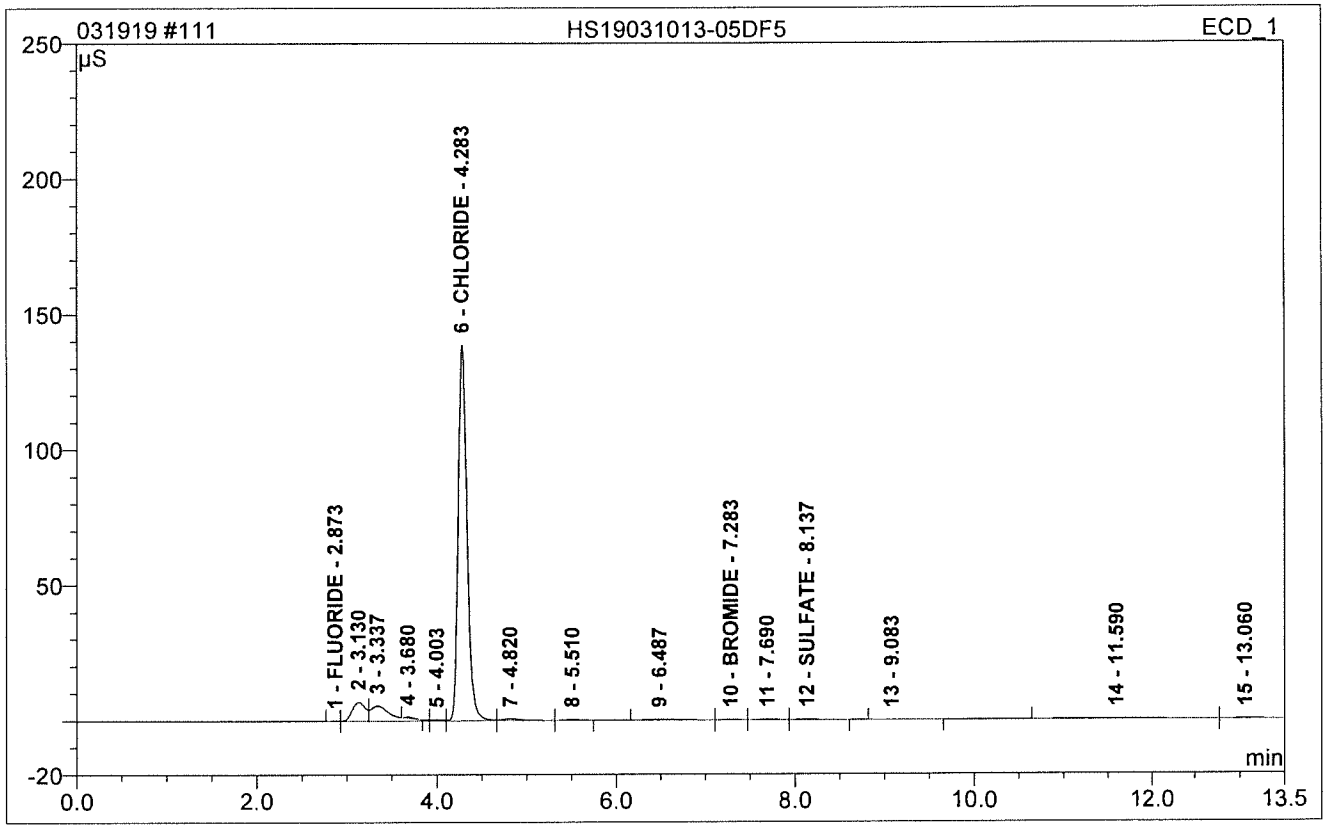
Sample Name:	**HS19031013-04DF5**	*Injection Volume:*	**10.0**
Vial Number:	**24**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 20:25**	*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	2.87	FLUORIDE	0.059	0.005	0.01	0.347	5.
2	4.27	CHLORIDE	309.280	36.218	53.15	2005.149	5.
5	7.74	SULFATE	88.208	31.551	46.30	2424.401	5.
Total:			397.547	67.774	99.45	4429.897	

111 HS19031013-05DF5

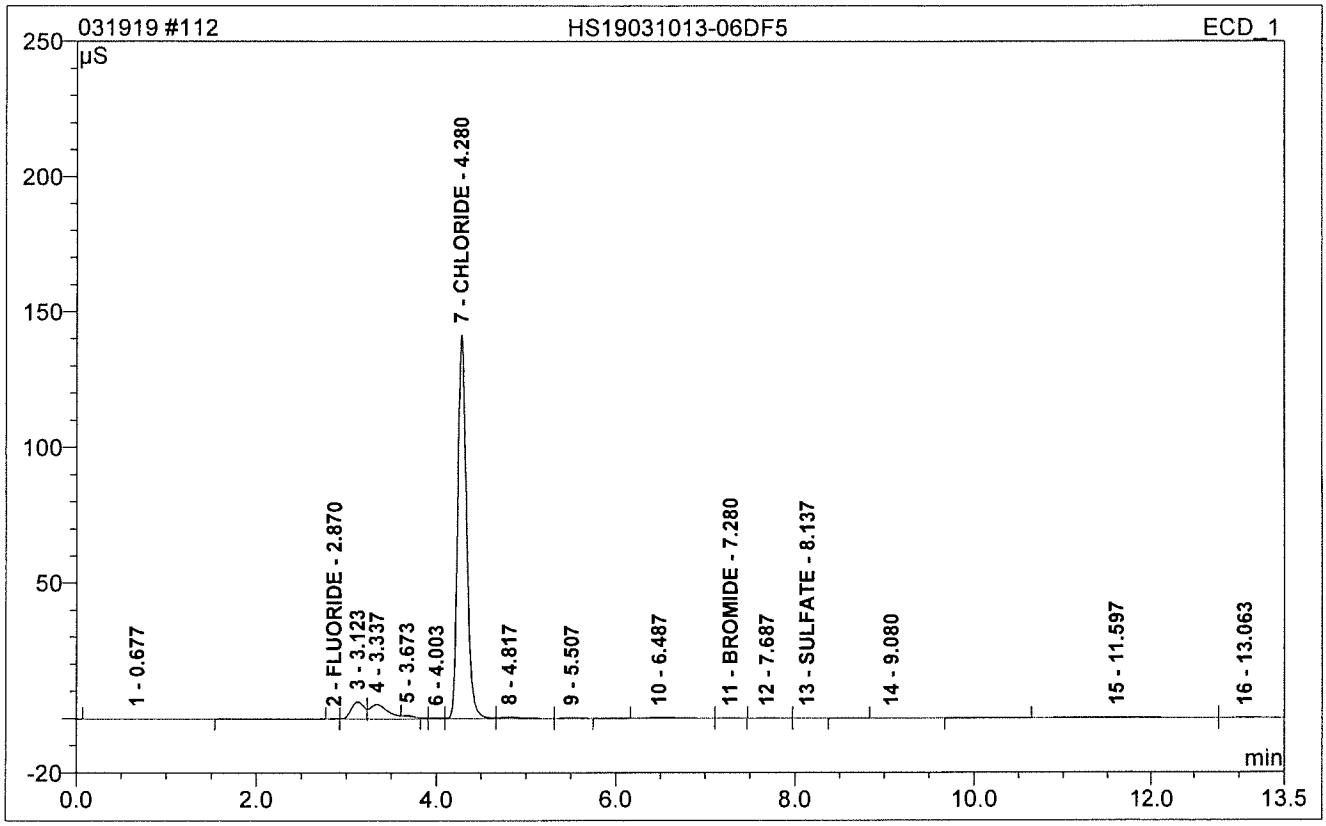
Sample Name:	**HS19031013-05DF5**	*Injection Volume:*	**10.0**
Vial Number:	**25**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 20:39**	*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	2.87	FLUORIDE	0.064	0.005	0.03	0.351	5.
6	4.28	CHLORIDE	138.723	15.816	82.42	876.055	5.
10	7.28	BROMIDE	0.157	0.028	0.14	4.163	5.
12	8.14	SULFATE	0.189	0.042	0.22	4.372	5.
Total:			139.133	15.891	82.81	884.941	

112 HS19031013-06DF5

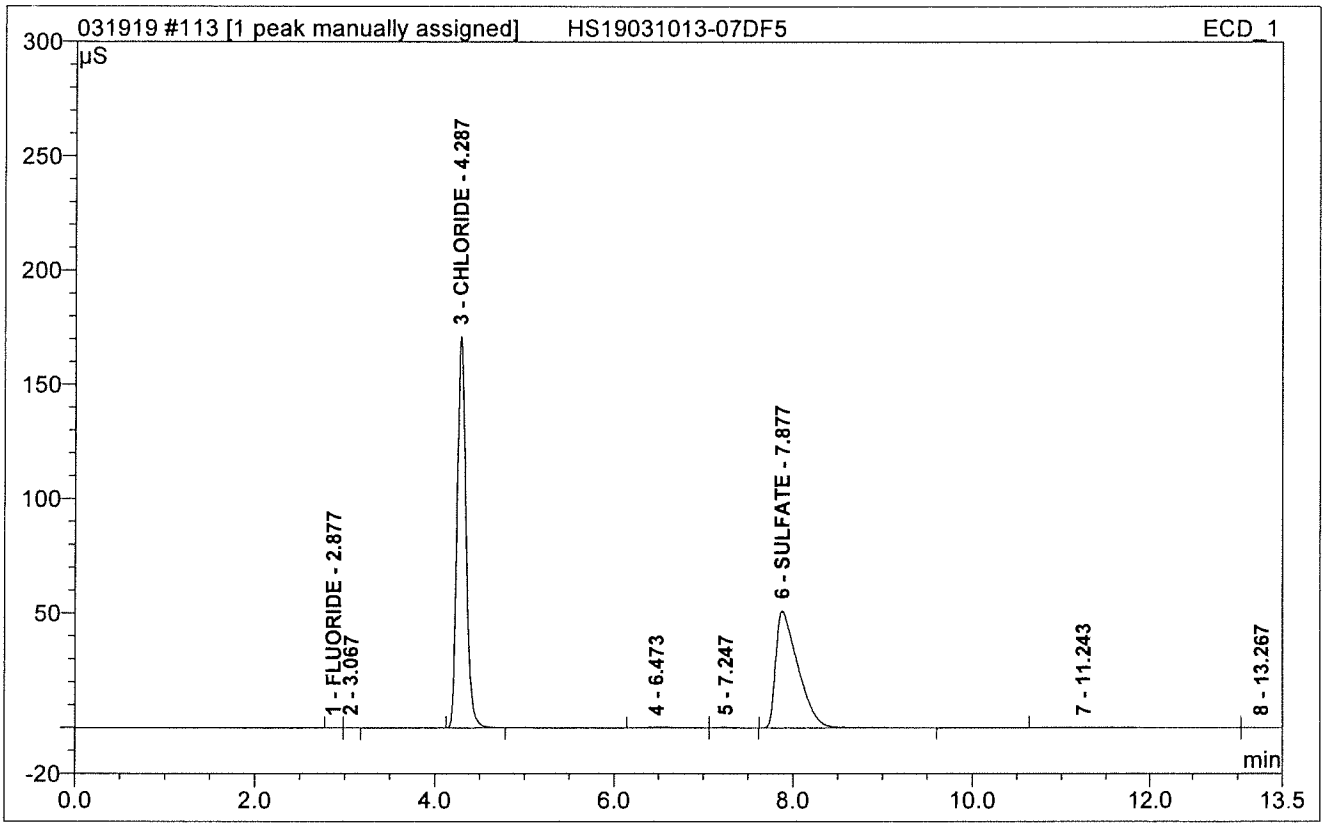
Sample Name:	**HS19031013-06DF5**	*Injection Volume:*	**10.0**
Vial Number:	**26**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 20:54**	*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	2.87	FLUORIDE	0.067	0.005	0.03	0.363	5.
7	4.28	CHLORIDE	141.488	16.166	84.25	895.456	5.
11	7.28	BROMIDE	0.140	0.021	0.11	3.232	5.
13	8.14	SULFATE	0.034	0.006	0.03	1.593	5.
Total:			141.729	16.199	84.42	900.644	

113 HS19031013-07DF5

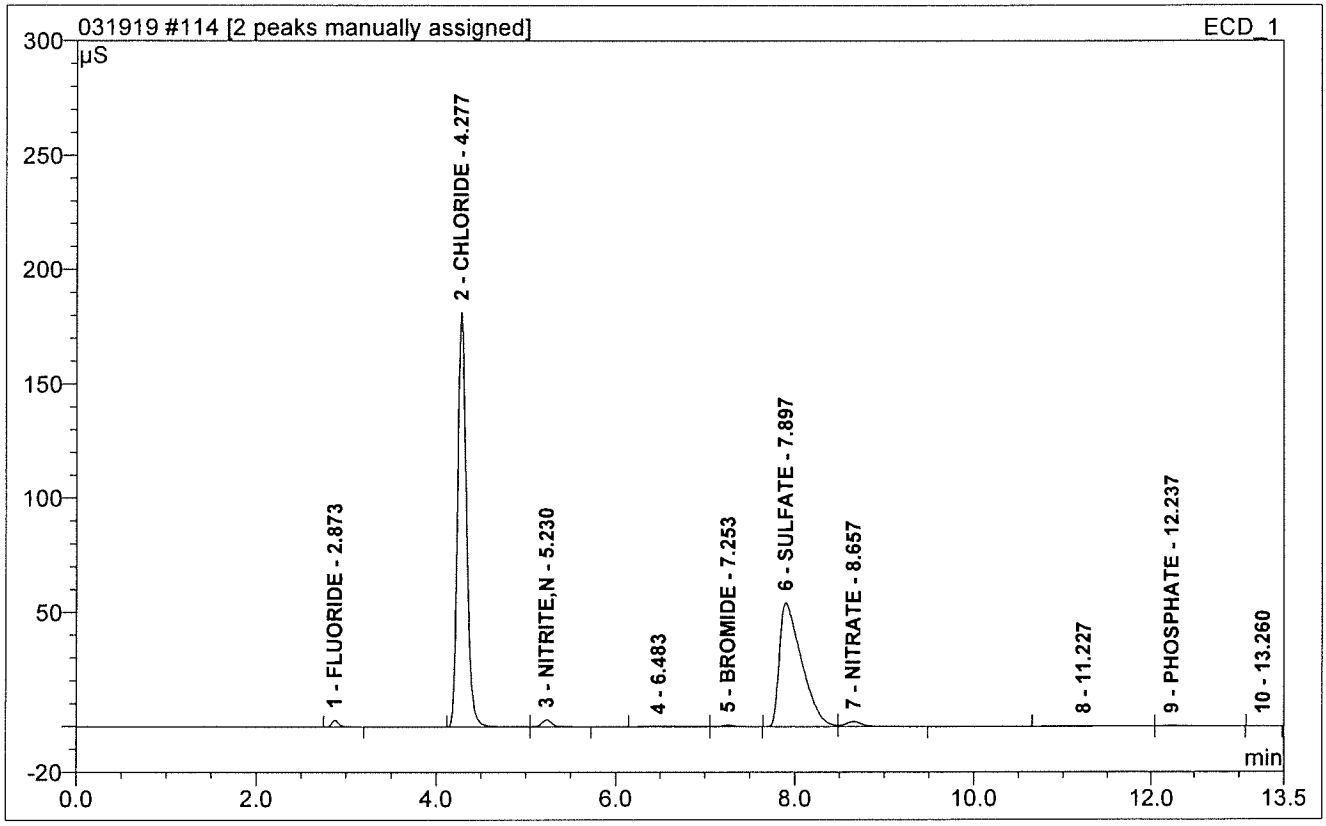
Sample Name:	**HS19031013-07DF5**	*Injection Volume:*	**10.0**
Vial Number:	**27**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 21:08**	*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	2.88	FLUORIDE	0.069	0.006	0.02	0.377	5.
3	4.29	CHLORIDE	170.936	19.716	56.87	1091.916	5.
6	7.88	SULFATE	51.187	14.640	42.23	1125.582	5.
Total:			222.191	34.363	99.11	2217.875	

114 HS19031013-07MSDF5

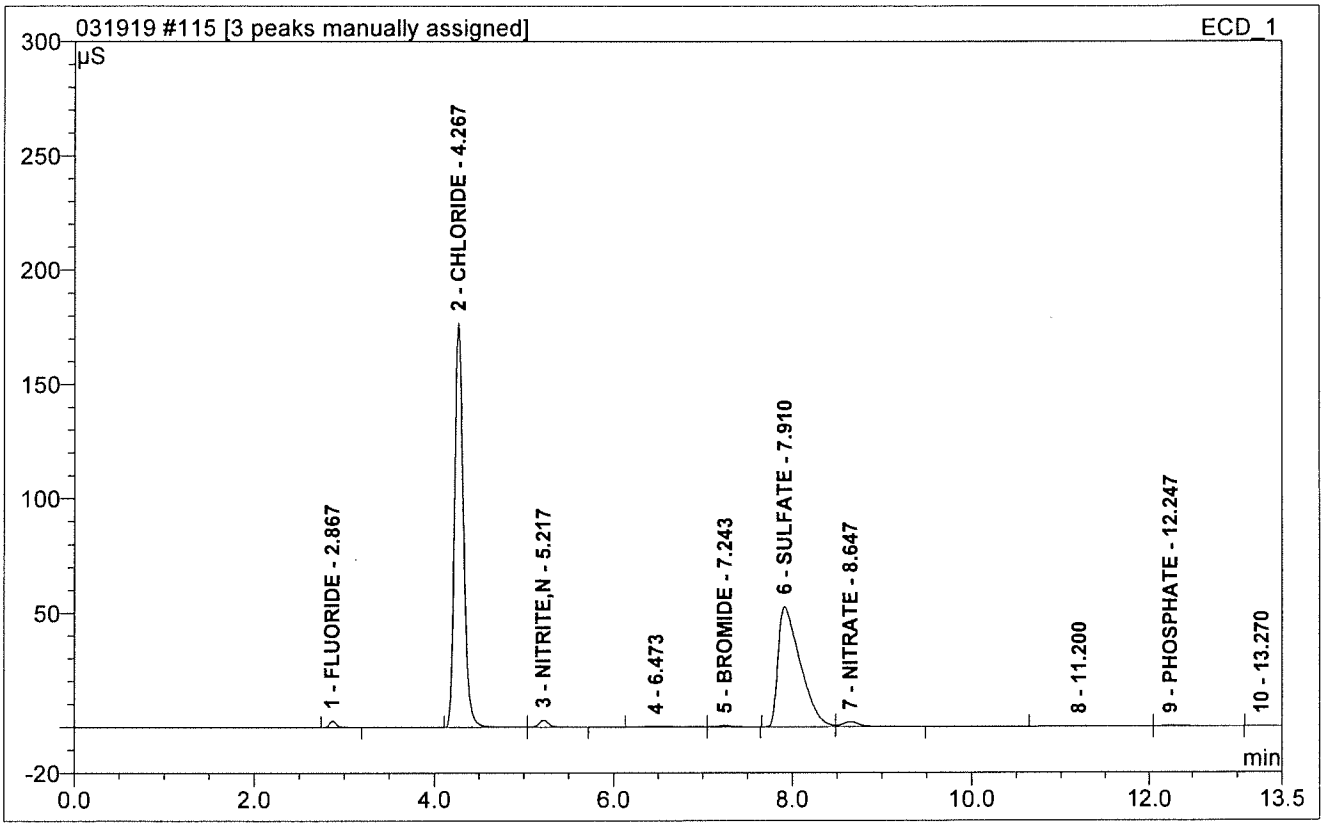
Sample Name:	**HS19031013-07MSDF5**	*Injection Volume:*	**10.0**
Vial Number:	**28**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 21:23**	*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	2.87	FLUORIDE	2.947	0.277	0.73	9.860	5.
2	4.28	CHLORIDE	181.231	20.844	54.97	1154.308	5.
3	5.23	NITRITE,N	3.118	0.396	1.05	10.417	5.
5	7.25	BROMIDE	0.651	0.104	0.27	14.795	5.
6	7.90	SULFATE	54.174	15.539	40.98	1194.630	5.
7	8.66	NITRATE	2.176	0.465	1.23	10.692	5.
9	12.24	PHOSPHATE	0.260	0.073	0.19	5.327	5.
Total:			244.556	37.697	99.43	2400.029	

115 HS19031013-07MSDDF5

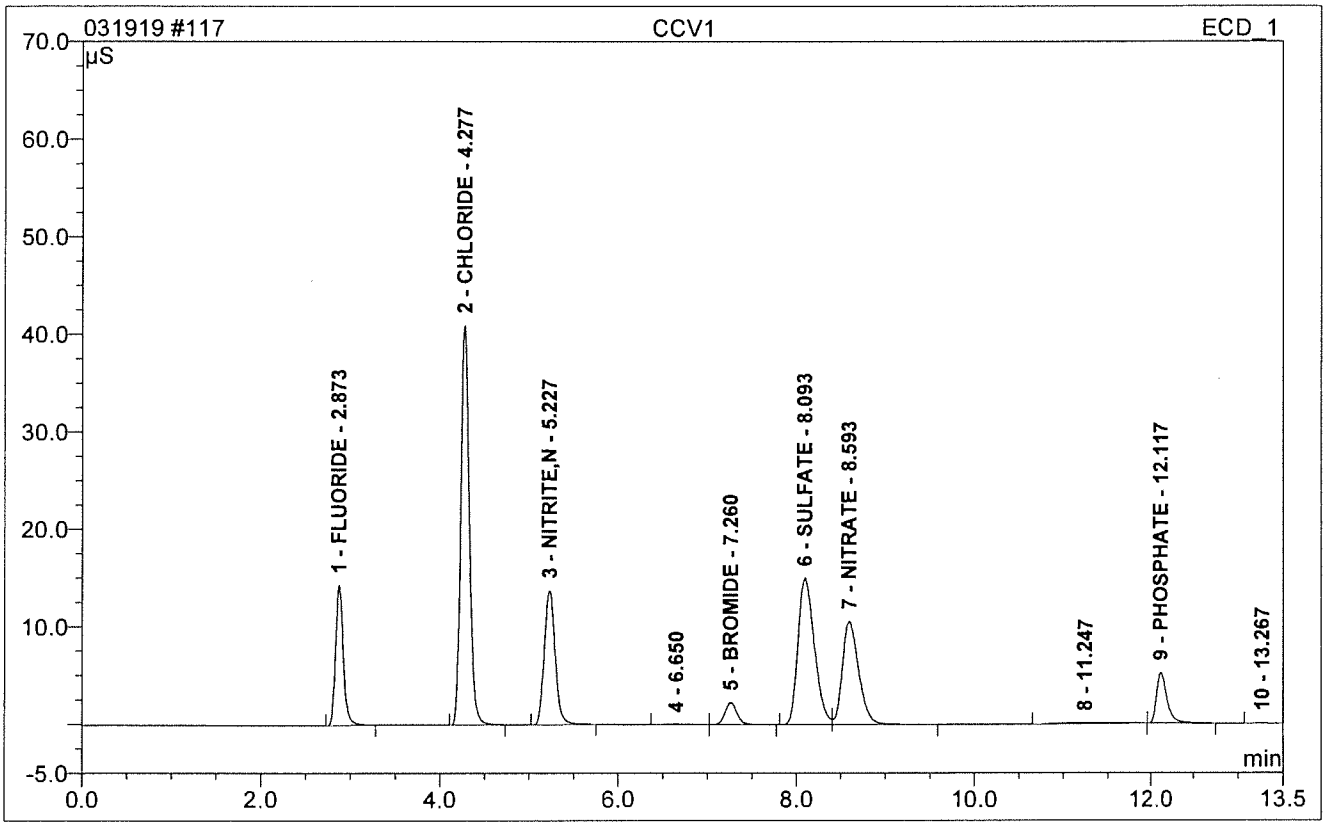
Sample Name:	**HS19031013-07MSDDF5**	*Injection Volume:*	**10.0**
Vial Number:	**29**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**5.**
Recording Time:	**3/20/2019 21:38**	*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	2.87	FLUORIDE	2.867	0.268	0.73	9.556	5.
2	4.27	CHLORIDE	176.749	20.272	55.00	1122.655	5.
3	5.22	NITRITE,N	3.029	0.383	1.04	10.085	5.
5	7.24	BROMIDE	0.630	0.101	0.27	14.425	5.
6	7.91	SULFATE	52.822	15.081	40.92	1159.415	5.
7	8.65	NITRATE	2.120	0.456	1.24	10.499	5.
9	12.25	PHOSPHATE	0.254	0.072	0.20	5.250	5.
Total:			238.471	36.633	99.39	2331.885	

117 CCV1

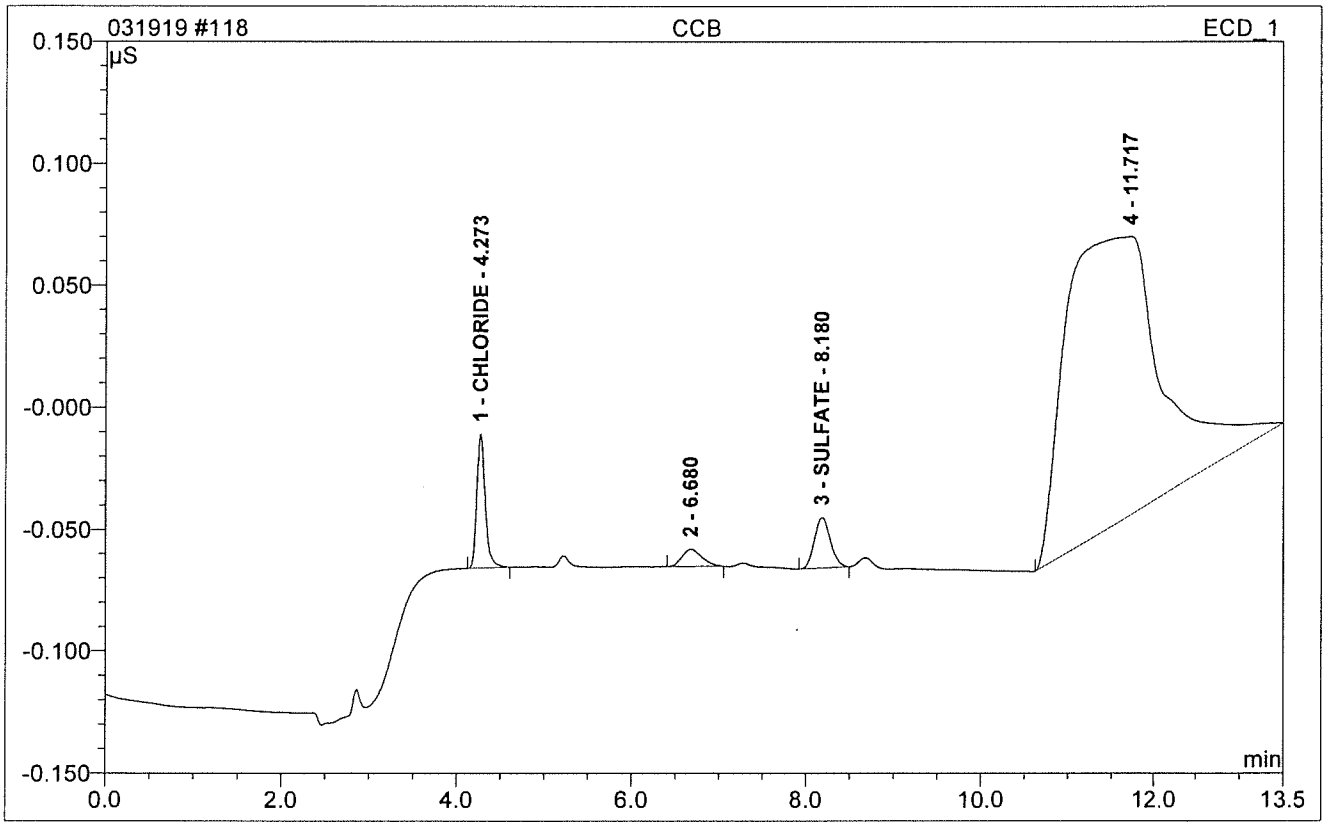
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 22:07**	*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	2.87	FLUORIDE	14.352	1.436	9.83	10.093	1.
2	4.28	CHLORIDE	40.941	4.534	31.03	50.344	1.
3	5.23	NITRITE,N	13.754	1.960	13.41	10.198	1.
5	7.26	BROMIDE	2.244	0.350	2.39	9.819	1.
6	8.09	SULFATE	14.993	3.230	22.11	49.845	1.
7	8.59	NITRATE	10.584	2.253	15.42	10.153	1.
9	12.12	PHOSPHATE	5.175	0.746	5.10	9.435	1.
Total:			102.043	14.509	99.29	149.887	

118 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-150mA**	*Bandwidth:*	**n.a.**
Quantif. Method:	**030519**	*Dilution Factor:*	**1.**
Recording Time:	**3/20/2019 22:22**	*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	4.27	CHLORIDE	0.055	0.006	3.71	0.230	1.
3	8.18	SULFATE	0.021	0.004	2.63	0.292	1.
Total:			0.076	0.011	6.34	0.522	

HS19031013

Sequence: 040219
Operator: ALSHS.NoUser

Printed: 4/11/2019 6:30:23 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 76

Created: 4/2/2019 2:16:42 PM by ALSHS.NoUser
Last Update: 4/11/2019 6:30:14 PM by ALSHS.NoUser

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
1	STD1	297.020.7208	Standard	91	1.0000	032119	Finished
2	STD2		Standard	92	1.0000	032119	Finished
3	STD3		Standard	93	1.0000	032119	Finished
4	STD4		Standard	94	1.0000	032119	Finished
5	STD5		Standard	95	1.0000	032119	Finished
6	STD6		Standard	96	1.0000	032119	Finished
7	ICV	297.020.6806	Unknown	97	1.0000	032119	Finished
8	ICB		Unknown	98	1.0000	032119	Finished
9	CCV		Unknown	1	1.0000	032119	Finished
10	CCB		Unknown	2	1.0000	032119	Finished
11	WBLKW-040219		Unknown	11	1.0000	032119	Finished
12	WLCSW-040219		Unknown	12	1.0000	032119	Finished
13	WLCSDW-040219		Unknown	13	1.0000	032119	Finished
14	HS19030042-01DF2		Unknown	14	2.0000	032119	Finished
15	HS19030042-01DF20		Unknown	15	20.0000	032119	Finished
16	HS19030046-01DF2		Unknown	16	2.0000	032119	Finished
17	HS19030046-01DF20		Unknown	17	20.0000	032119	Finished
18	HS19040040-01		Unknown	18	1.0000	032119	Finished
19	DI H2O		Unknown	10	1.0000	032119	Finished
20	DI H2O		Unknown	10	1.0000	032119	Finished
21	CCV1		Unknown	3	1.0000	032119	Finished
22	CCB		Unknown	4	1.0000	032119	Finished
23	HS19040115-01		Unknown	19	1.0000	032119	Finished
24	CCV1		Unknown	3	1.0000	032119	Finished
25	CCB		Unknown	4	1.0000	032119	Finished
26	HS19040105-01		Unknown	33	1.0000	032119	Finished
27	HS19031172-01DF500		Unknown	21	500.0000	032119	Finished
28	HS19031172-01MSDF500		Unknown	22	500.0000	032119	Finished
29	HS19031172-01MSDDF500		Unknown	23	500.0000	032119	Finished
30	HS19031172-02DF500		Unknown	24	500.0000	032119	Finished
31	HS19031172-03DF50		Unknown	25	50.0000	032119	Finished
32	HS19031172-04DF500		Unknown	26	500.0000	032119	Finished
33	HS19040063-01		Unknown	29	1.0000	032119	Finished
34	HS19040063-01MS		Unknown	30	1.0000	032119	Finished
35	HS19040063-01MSD		Unknown	31	1.0000	032119	Finished
36	CCV		Unknown	1	1.0000	032119	Finished
37	CCB		Unknown	2	1.0000	032119	Finished
38	DI H2O		Unknown	2	1.0000	032119	Finished
39	HS19040115-01		Unknown	19	1.0000	032119	Finished
40	HS19040065-01		Unknown	32	1.0000	032119	Finished
41	HS19031331-04DF20		Unknown	34	20.0000	032119	Finished
42	HS19031331-05DF10		Unknown	35	10.0000	032119	Finished

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Sequence: 040219
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 76

Created: 4/2/2019 2:16:42 PM by ALSHS.NoUser
Last Update: 4/11/2019 6:30:14 PM by ALSHS.NoUser

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
1	STD1	3/21/2019 3:01:53 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
2	STD2	3/21/2019 3:16:31 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
3	STD3	3/21/2019 3:31:10 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
4	STD4	3/21/2019 3:45:48 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
5	STD5	3/21/2019 4:00:26 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
6	STD6	3/21/2019 4:15:05 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
7	ICV	3/21/2019 4:29:42 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
8	ICB	3/21/2019 5:07:46 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
9	CCV	4/2/2019 1:32:28 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
10	CCB	4/2/2019 1:47:12 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
11	WBLKW-040219	4/2/2019 2:01:57 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
12	WLCSW-040219	4/2/2019 2:22:52 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
13	WLCSDW-040219	4/2/2019 2:37:36 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
14	HS19030042-01DF2	4/2/2019 2:52:21 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
15	HS19030042-01DF20	4/2/2019 3:07:06 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
16	HS19030046-01DF2	4/2/2019 3:21:50 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
17	HS19030046-01DF20	4/2/2019 3:36:35 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
18	HS19040040-01	4/2/2019 3:51:19 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
19	DI H2O	4/2/2019 4:06:04 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
20	DI H2O	4/2/2019 4:20:49 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
21	CCV1	4/2/2019 4:35:33 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
22	CCB	4/2/2019 4:50:18 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
23	HS19040115-01	4/2/2019 5:05:02 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
24	CCV1	4/2/2019 5:39:48 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
25	CCB	4/2/2019 5:54:33 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
26	HS19040105-01	4/2/2019 6:09:17 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
27	HS19031172-01DF500	4/2/2019 6:24:02 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
28	HS19031172-01MSDF500	4/2/2019 6:38:47 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
29	HS19031172-01MSDDF500	4/2/2019 6:53:31 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
30	HS19031172-02DF500	4/2/2019 7:08:16 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
31	HS19031172-03DF50	4/2/2019 7:23:00 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
32	HS19031172-04DF500	4/2/2019 7:37:45 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
33	HS19040063-01	4/2/2019 7:52:30 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
34	HS19040063-01MS	4/2/2019 8:07:15 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
35	HS19040063-01MSD	4/2/2019 8:21:59 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
36	CCV	4/2/2019 8:36:44 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
37	CCB	4/2/2019 8:51:28 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
38	DI H2O	4/2/2019 9:06:13 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
39	HS19040115-01	4/2/2019 9:20:58 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
40	HS19040065-01	4/2/2019 9:35:43 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
41	HS19031331-04DF20	4/2/2019 9:50:27 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
42	HS19031331-05DF10	4/2/2019 10:05:12 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00

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Sequence: 040219
Operator: ALSHS.NoUser

Printed: 4/11/2019 6:30:23 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 76

Created: 4/2/2019 2:16:42 PM by ALSHS.NoUser
Last Update: 4/11/2019 6:30:14 PM by ALSHS.NoUser

No.	Name	*Final_Volume	GUID	Auto Purif.Frac.	Auto Purif.Ref.
1	STD1	1.00	ab134b69-4c13-11e9-b6db-bd957e66751c		
2	STD2	1.00	16318633-4c16-11e9-b6db-bd957e66751c		
3	STD3	1.00	21bddd99-4c18-11e9-b6db-bd957e66751c		
4	STD4	1.00	2d5faa05-4c1a-11e9-b6db-bd957e66751c		
5	STD5	1.00	38e73cbf-4c1c-11e9-b6db-bd957e66751c		
6	STD6	1.00	442e7067-4c1e-11e9-b6db-bd957e66751c		
7	ICV	1.00	4fd763d5-4c20-11e9-b6db-bd957e66751c		
8	ICB	1.00	40d0abe3-4c25-11e9-b6db-bd957e66751c		
9	CCV	1.00	2a55883f-5575-11e9-b6db-bd957e66751c		
10	CCB	1.00	98cba9a3-5577-11e9-b6db-bd957e66751c		
11	WBLKW-040219	1.00	a80f4513-5579-11e9-b6db-bd957e66751c		
12	WLCSW-040219	1.00	3473fa2b-557c-11e9-b6db-bd957e66751c		
13	WLCSDW-040219	1.00	a323539f-557e-11e9-b6db-bd957e66751c		
14	HS19030042-01DF2	1.00	b272dabd-5580-11e9-b6db-bd957e66751c		
15	HS19030042-01DF20	1.00	c1cbeb33-5582-11e9-b6db-bd957e66751c		
16	HS19030046-01DF2	1.00	d10f86a3-5584-11e9-b6db-bd957e66751c		
17	HS19030046-01DF20	1.00	e05a4915-5586-11e9-b6db-bd957e66751c		
18	HS19040040-01	1.00	ef9de485-5588-11e9-b6db-bd957e66751c		
19	DI H2O	1.00	fef2304f-558a-11e9-b6db-bd957e66751c		
20	DI H2O	1.00	0e1b920d-558d-11e9-b6db-bd957e66751c		
21	CCV1	1.00	1d5a68d1-558f-11e9-b6db-bd957e66751c		
22	CCB	1.00	2c947ae9-5591-11e9-b6db-bd957e66751c		
23	HS19040115-01	1.00	3bdcdb05-5593-11e9-b6db-bd957e66751c		
24	CCV1	1.00	b7a44fa3-5597-11e9-b6db-bd957e66751c		
25	CCB	1.00	2653a917-559a-11e9-b6db-bd957e66751c		
26	HS19040105-01	1.00	35a33035-559c-11e9-b6db-bd957e66751c		
27	HS19031172-01DF500	1.00	44e4694f-559e-11e9-b6db-bd957e66751c		
28	HS19031172-01MSDF500	1.00	542804bf-55a0-11e9-b6db-bd957e66751c		
29	HS19031172-01MSDDF500	1.00	6379ee33-55a2-11e9-b6db-bd957e66751c		
30	HS19031172-02DF500	1.00	72b662a1-55a4-11e9-b6db-bd957e66751c		
31	HS19031172-03DF50	1.00	81f2d70f-55a6-11e9-b6db-bd957e66751c		
32	HS19031172-04DF500	1.00	914be785-55a8-11e9-b6db-bd957e66751c		
33	HS19040063-01	1.00	a07c7045-55aa-11e9-b6db-bd957e66751c		
34	HS19040063-01MS	1.00	afc9950d-55ac-11e9-b6db-bd957e66751c		
35	HS19040063-01MSD	1.00	bf715299-55ae-11e9-b6db-bd957e66751c		
36	CCV	1.00	ce68a349-55b0-11e9-b6db-bd957e66751c		
37	CCB	1.00	ddb10365-55b2-11e9-b6db-bd957e66751c		
38	DI H2O	1.00	ed054f2f-55b4-11e9-b6db-bd957e66751c		
39	HS19040115-01	1.00	fc48ea9f-55b6-11e9-b6db-bd957e66751c		
40	HS19040065-01	1.00	0be71ed3-55b9-11e9-b6db-bd957e66751c		
41	HS19031331-04DF20	1.00	1b108091-55bb-11e9-b6db-bd957e66751c		
42	HS19031331-05DF10	1.00	2a699107-55bd-11e9-b6db-bd957e66751c		

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Sequence: 040219
Operator: ALSHS.NoUser

Printed: 4/11/2019 6:30:23 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 76

Created: 4/2/2019 2:16:42 PM by ALSHS.NoUser
Last Update: 4/11/2019 6:30:14 PM by ALSHS.NoUser

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
43	HS19031331-05DF100		Unknown	36	100.0000	032119	Finished
44	HS19031331-06DF100		Unknown	37	100.0000	032119	Finished
45	HS19031331-07DF100		Unknown	38	100.0000	032119	Finished
46	HS19031331-08DF100		Unknown	39	100.0000	032119	Finished
47	CCV1		Unknown	3	1.0000	032119	Finished
48	CCB		Unknown	4	1.0000	032119	Finished
49	HS19031549-01DF10		Unknown	27	10.0000	032119	Finished
50	HS19031550-01DF10		Unknown	28	10.0000	032119	Finished
51	DI H2O		Unknown	10	1.0000	032119	Finished
52	DI H2O		Unknown	10	1.0000	032119	Finished
53	CCV		Unknown	1	1.0000	032119	Finished
54	CCB		Unknown	2	1.0000	032119	Finished
55	WBLKW2-040219		Unknown	42	1.0000	032119	Finished
56	WLCSW2-040219		Unknown	43	1.0000	032119	Finished
57	WLCSDW2-040219		Unknown	44	1.0000	032119	Finished
58	HS19031013-01DF50		Unknown	45	50.0000	032119	Finished
59	HS19031013-02DF5		Unknown	46	5.0000	032119	Finished
60	HS19031013-03DF50		Unknown	47	50.0000	032119	Finished
61	HS19031013-04DF50		Unknown	48	50.0000	032119	Finished
62	HS19031013-05DF50		Unknown	49	50.0000	032119	Finished
63	HS19031013-06DF50		Unknown	50	50.0000	032119	Finished
64	HS19031189-01DF10		Unknown	54	10.0000	032119	Finished
65	CCV1		Unknown	3	1.0000	032119	Finished
66	CCB		Unknown	4	1.0000	032119	Finished
67	HS19031013-07DF50		Unknown	51	50.0000	032119	Finished
68	HS19031013-07MSDF50		Unknown	52	50.0000	032119	Finished
69	HS19031013-07MSDDF50		Unknown	53	50.0000	032119	Finished
70	HS19031032-01		Unknown	57	1.0000	032119	Finished
71	HS19031032-01DF10		Unknown	58	10.0000	032119	Finished
72	DI H2O		Unknown	10	1.0000	032119	Finished
73	HS19031508-01DF10		Unknown	55	10.0000	032119	Finished
74	HS19031511-01DF10		Unknown	56	10.0000	032119	Finished
75	CCV		Unknown	1	1.0000	032119	Finished
76	CCB		Unknown	2	1.0000	032119	Finished

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Sequence: 040219
Operator: ALSHS.NoUser

Printed: 4/11/2019 6:30:23 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 76

Created: 4/2/2019 2:16:42 PM by ALSHS.NoUser
Last Update: 4/11/2019 6:30:14 PM by ALSHS.NoUser

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
43	HS19031331-05DF100	4/2/2019 10:19:57 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
44	HS19031331-06DF100	4/2/2019 10:34:42 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
45	HS19031331-07DF100	4/2/2019 10:49:26 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
46	HS19031331-08DF100	4/2/2019 11:04:11 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
47	CCV1	4/2/2019 11:18:55 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
48	CCB	4/2/2019 11:33:40 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
49	HS19031549-01DF10	4/2/2019 11:48:24 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
50	HS19031550-01DF10	4/3/2019 12:03:09 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
51	DI H2O	4/3/2019 12:17:54 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
52	DI H2O	4/3/2019 12:32:38 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
53	CCV	4/3/2019 12:47:23 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
54	CCB	4/3/2019 1:02:08 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
55	WBLKW2-040219	4/3/2019 1:16:52 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
56	WLCSW2-040219	4/3/2019 1:31:37 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
57	WLCSDW2-040219	4/3/2019 1:46:21 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
58	HS19031013-01DF50	4/3/2019 2:01:06 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
59	HS19031013-02DF5	4/3/2019 2:15:51 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
60	HS19031013-03DF50	4/3/2019 2:30:35 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
61	HS19031013-04DF50	4/3/2019 2:45:20 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
62	HS19031013-05DF50	4/3/2019 3:00:05 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
63	HS19031013-06DF50	4/3/2019 3:14:49 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
64	HS19031189-01DF10	4/3/2019 3:29:34 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
65	CCV1	4/3/2019 3:44:19 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
66	CCB	4/3/2019 3:59:03 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
67	HS19031013-07DF50	4/3/2019 4:13:48 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
68	HS19031013-07MSDF50	4/3/2019 4:28:32 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
69	HS19031013-07MSDDF50	4/3/2019 4:43:17 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
70	HS19031032-01	4/3/2019 4:58:03 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
71	HS19031032-01DF10	4/3/2019 5:12:47 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
72	DI H2O	4/3/2019 5:27:32 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
73	HS19031508-01DF10	4/3/2019 5:42:17 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
74	HS19031511-01DF10	4/3/2019 5:57:01 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
75	CCV	4/3/2019 6:11:46 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
76	CCB	4/3/2019 6:26:31 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00

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Operator: ALSHS.NoUser

Title:
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46	HS19031331-08DF100	1.00	67b85dd9-55c5-11e9-b6db-bd957e66751c		
47	CCV1	1.00	76f4d247-55c7-11e9-b6db-bd957e66751c		
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49	HS19031549-01DF10	1.00	957c0927-55cb-11e9-b6db-bd957e66751c		
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51	DI H2O	1.00	b40cc95f-55cf-11e9-b6db-bd957e66751c		
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53	CCV	1.00	d2919de9-55d3-11e9-b6db-bd957e66751c		
54	CCB	1.00	e1d79baf-55d5-11e9-b6db-bd957e66751c		
55	WBLKW2-040219	1.00	f118d4c9-55d7-11e9-b6db-bd957e66751c		
56	WLCSW2-040219	1.00	006abe3d-55da-11e9-b6db-bd957e66751c		
57	WLCSDW2-040219	1.00	0fa732ab-55dc-11e9-b6db-bd957e66751c		
58	HS19031013-01DF50	1.00	1eeace1b-55de-11e9-b6db-bd957e66751c		
59	HS19031013-02DF5	1.00	2e3f19e5-55e0-11e9-b6db-bd957e66751c		
60	HS19031013-03DF50	1.00	3d82b555-55e2-11e9-b6db-bd957e66751c		
61	HS19031013-04DF50	1.00	4ccb1571-55e4-11e9-b6db-bd957e66751c		
62	HS19031013-05DF50	1.00	5c1cfee5-55e6-11e9-b6db-bd957e66751c		
63	HS19031013-06DF50	1.00	6b655f01-55e8-11e9-b6db-bd957e66751c		
64	HS19031189-01DF10	1.00	7aadbf1d-55ea-11e9-b6db-bd957e66751c		
65	CCV1	1.00	89f3bce3-55ec-11e9-b6db-bd957e66751c		
66	CCB	1.00	993c1cff-55ee-11e9-b6db-bd957e66751c		
67	HS19031013-07DF50	1.00	a873ccc1-55f0-11e9-b6db-bd957e66751c		
68	HS19031013-07MSDF50	1.00	b7b76831-55f2-11e9-b6db-bd957e66751c		
69	HS19031013-07MSDDF50	1.00	c6fb03a1-55f4-11e9-b6db-bd957e66751c		
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74	HS19031511-01DF10	1.00	141e2aed-55ff-11e9-b6db-bd957e66751c		
75	CCV	1.00	23668b09-5601-11e9-b6db-bd957e66751c		
76	CCB	1.00	32aa2679-5603-11e9-b6db-bd957e66751c		

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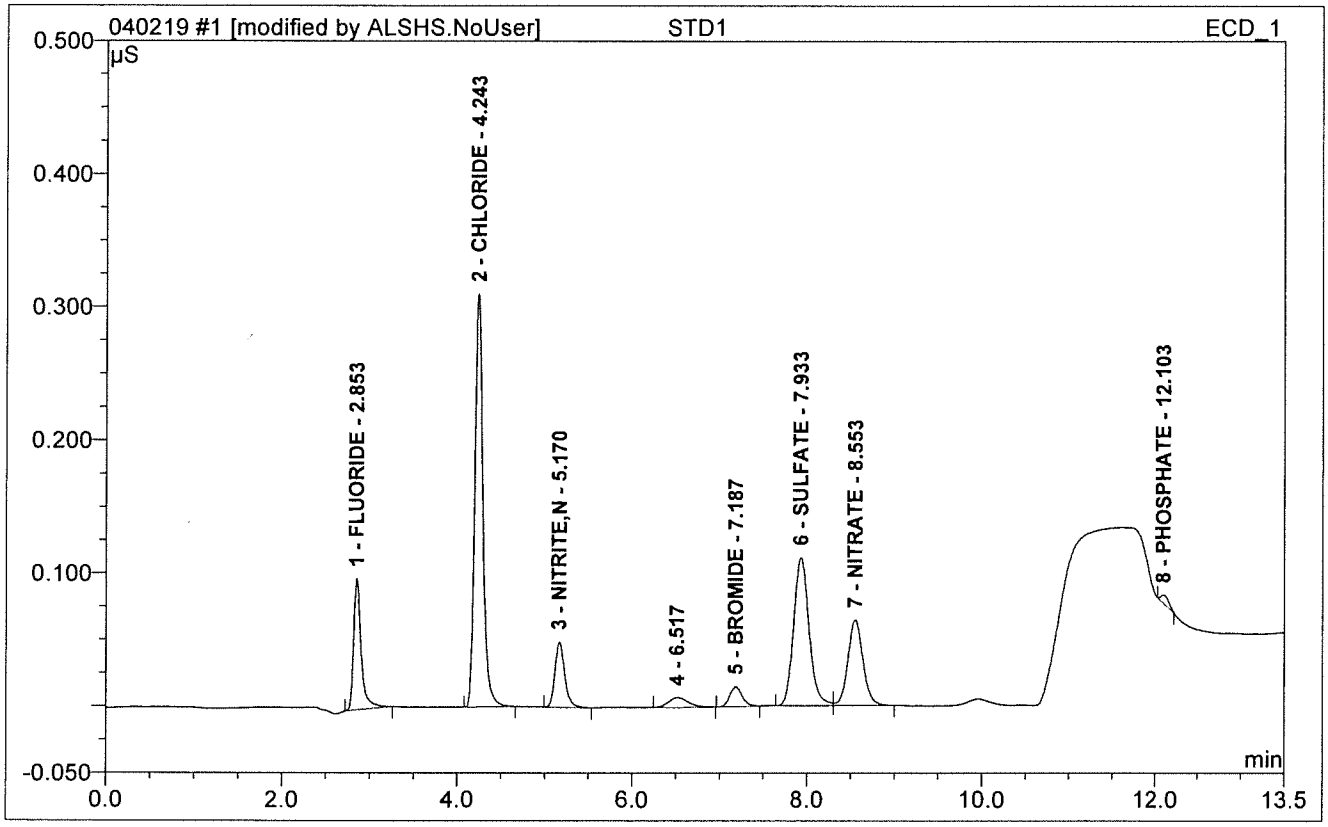
1 STD1

297.020.7208

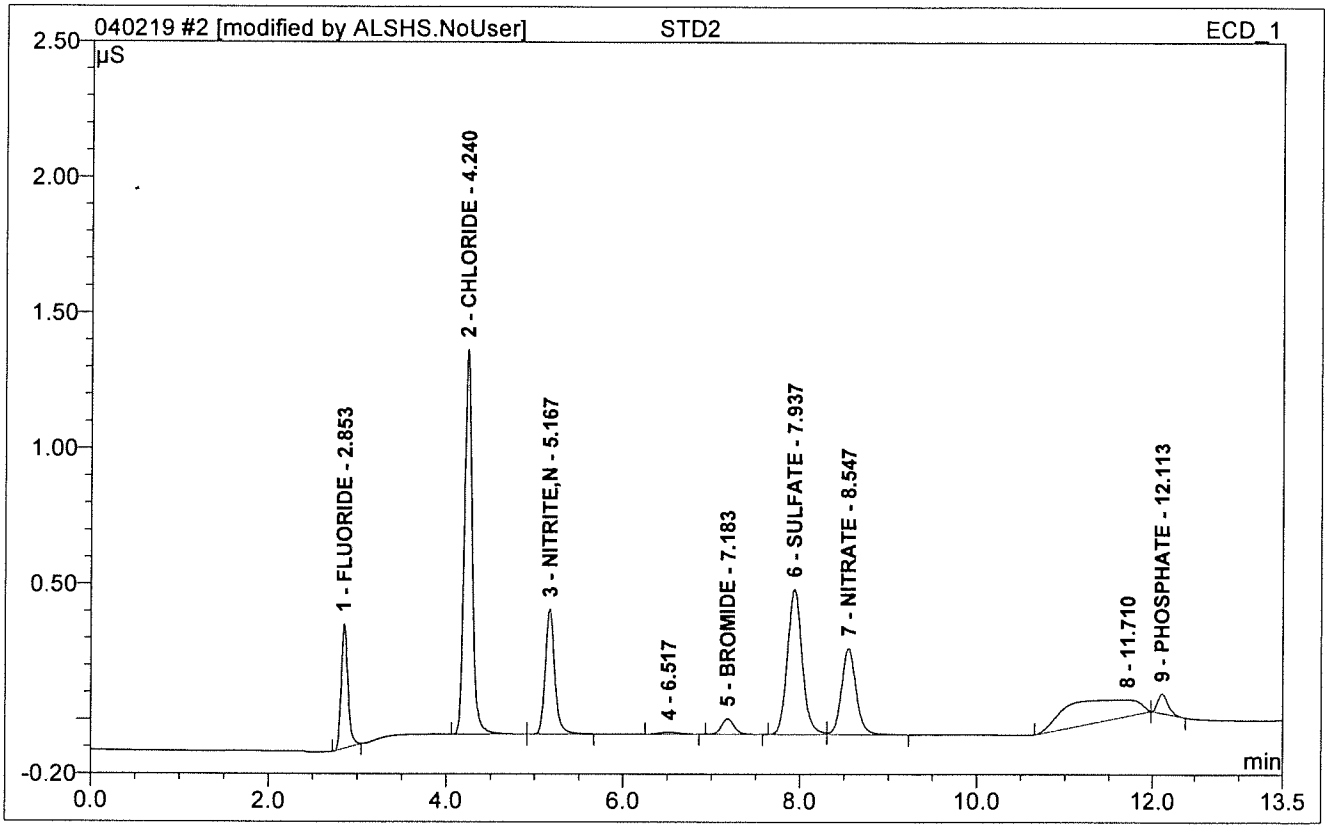
Sample Name:	**STD1**	*Injection Volume:*	**10.0**
Vial Number:	**91**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:01**	*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	2.85	FLUORIDE	0.099	0.010	10.95	0.113	1.
2	4.24	CHLORIDE	0.311	0.033	36.81	0.575	1.
3	5.17	NITRITE,N	0.049	0.006	7.07	0.103	1.
5	7.19	BROMIDE	0.015	0.002	2.71	0.132	1.
6	7.93	SULFATE	0.112	0.023	25.31	0.552	1.
7	8.55	NITRATE	0.065	0.013	14.26	0.127	1.
8	12.10	PHOSPHATE	0.006	0.001	0.79	0.163	1.
Total:			0.656	0.088	97.90	1.763	

2 STD2

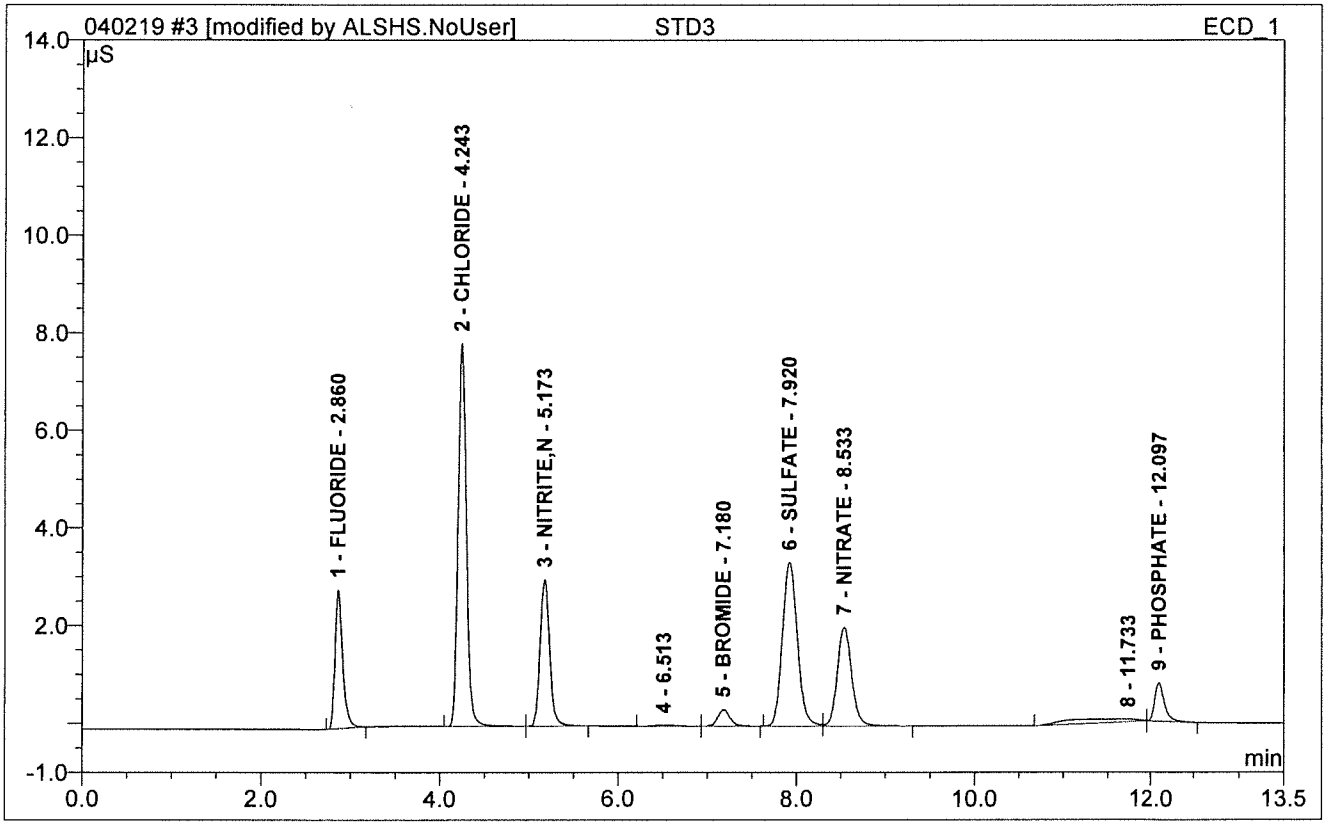
Sample Name:	**STD2**	*Injection Volume:*	**10.0**
Vial Number:	**92**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:16**	*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	2.85	FLUORIDE	0.460	0.040	7.80	0.326	1.
2	4.24	CHLORIDE	1.419	0.146	28.82	1.817	1.
3	5.17	NITRITE,N	0.462	0.057	11.26	0.364	1.
5	7.18	BROMIDE	0.058	0.009	1.85	0.342	1.
6	7.94	SULFATE	0.538	0.105	20.58	1.797	1.
7	8.55	NITRATE	0.319	0.061	12.03	0.343	1.
9	12.11	PHOSPHATE	0.073	0.010	2.00	0.282	1.
Total:			3.328	0.429	84.34	5.270	

3 STD3

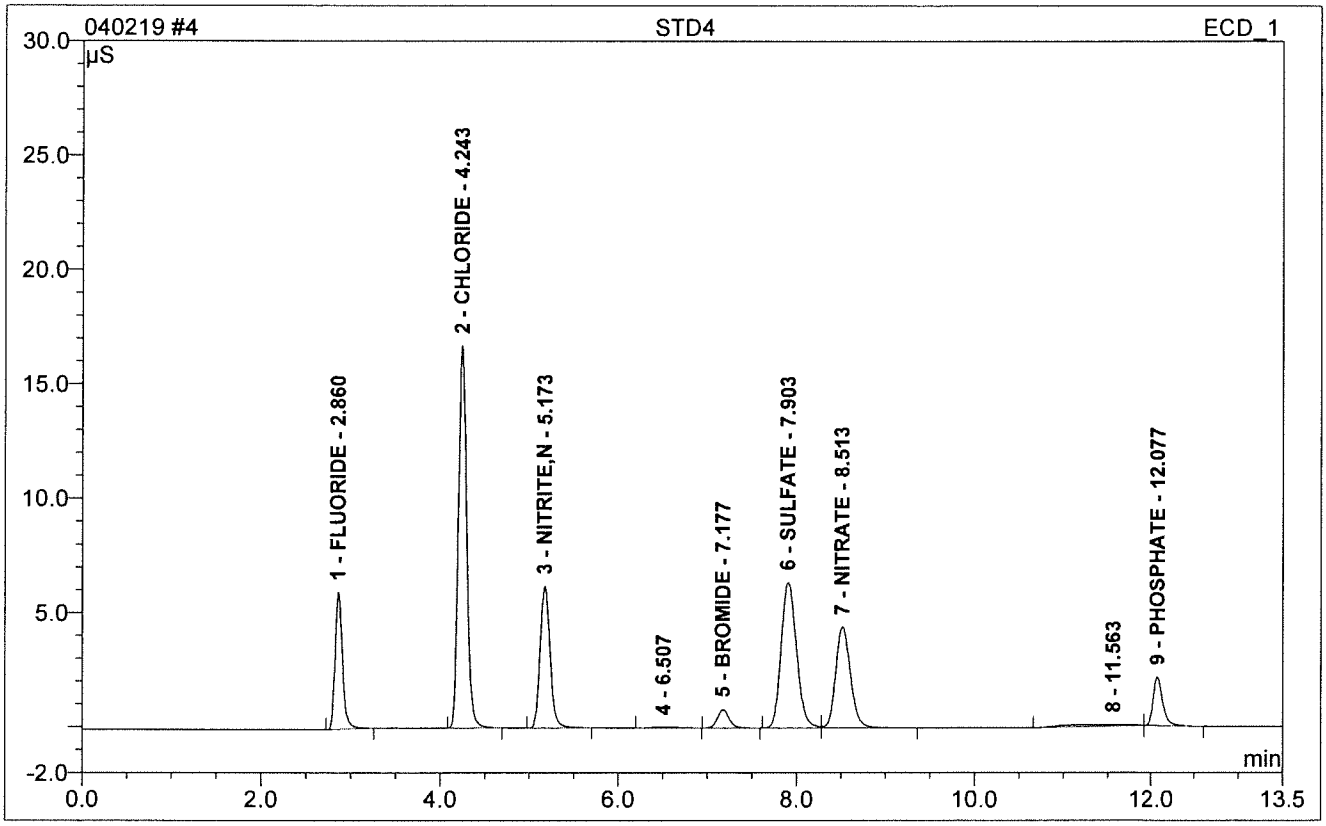
Sample Name:	**STD3**	*Injection Volume:*	**10.0**
Vial Number:	**93**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:31**	*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.
1	2.86	FLUORIDE	2.842	0.282	10.26	2.066	1.
2	4.24	CHLORIDE	7.837	0.836	30.35	9.380	1.
3	5.17	NITRITE,N	2.998	0.373	13.55	1.987	1.
5	7.18	BROMIDE	0.334	0.053	1.92	1.650	1.
6	7.92	SULFATE	3.346	0.654	23.76	10.172	1.
7	8.53	NITRATE	2.022	0.379	13.76	1.765	1.
9	12.10	PHOSPHATE	0.784	0.103	3.76	1.454	1.
Total:			20.164	2.681	97.36	28.476	

4 STD4

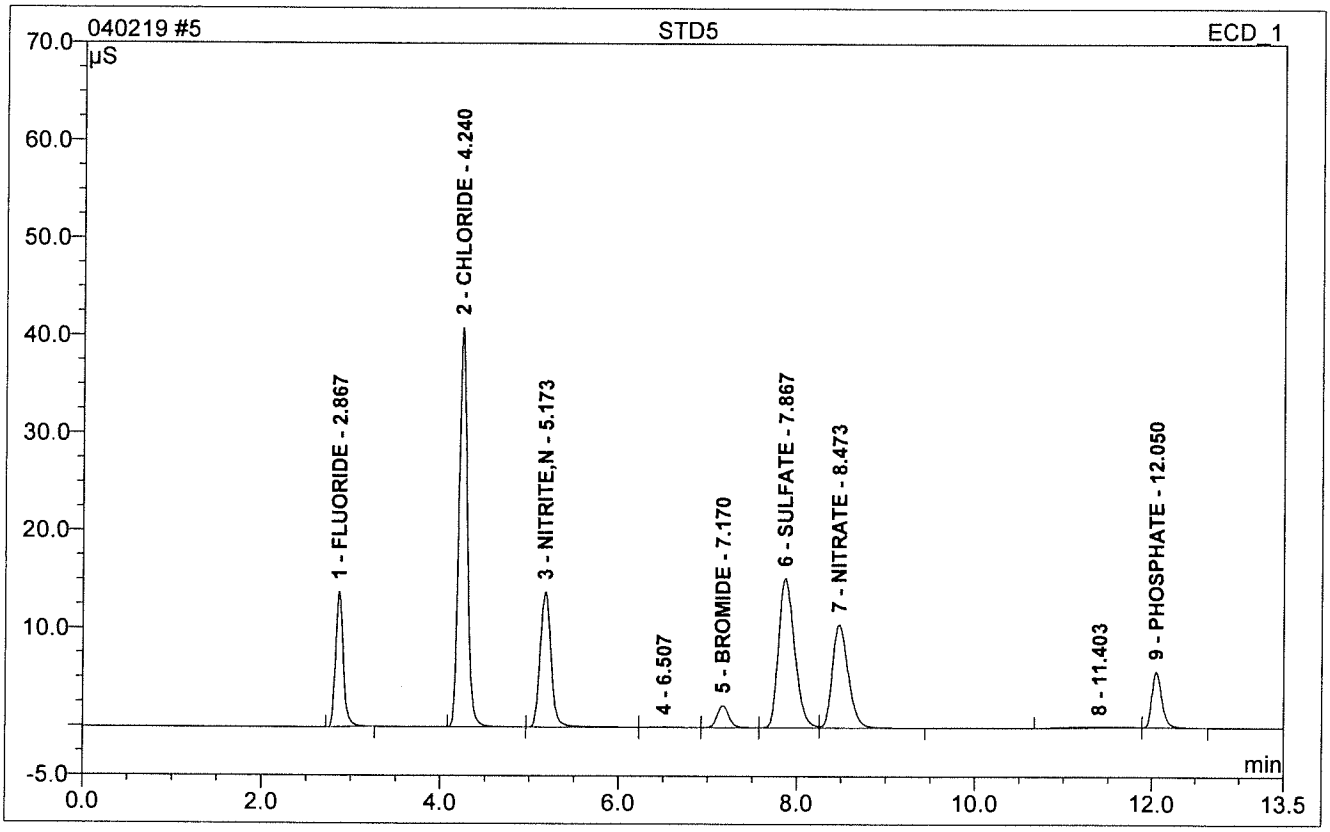
Sample Name:	**STD4**	*Injection Volume:*	**10.0**
Vial Number:	**94**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:45**	*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	2.86	FLUORIDE	6.004	0.570	9.81	4.124	1.
2	4.24	CHLORIDE	16.707	1.806	31.12	20.029	1.
3	5.17	NITRITE,N	6.216	0.811	13.98	4.239	1.
5	7.18	BROMIDE	0.805	0.123	2.13	3.779	1.
6	7.90	SULFATE	6.393	1.281	22.07	19.726	1.
7	8.51	NITRATE	4.433	0.859	14.80	3.914	1.
9	12.08	PHOSPHATE	2.112	0.274	4.73	3.603	1.
Total:			42.669	5.725	98.64	59.415	

5 STD5

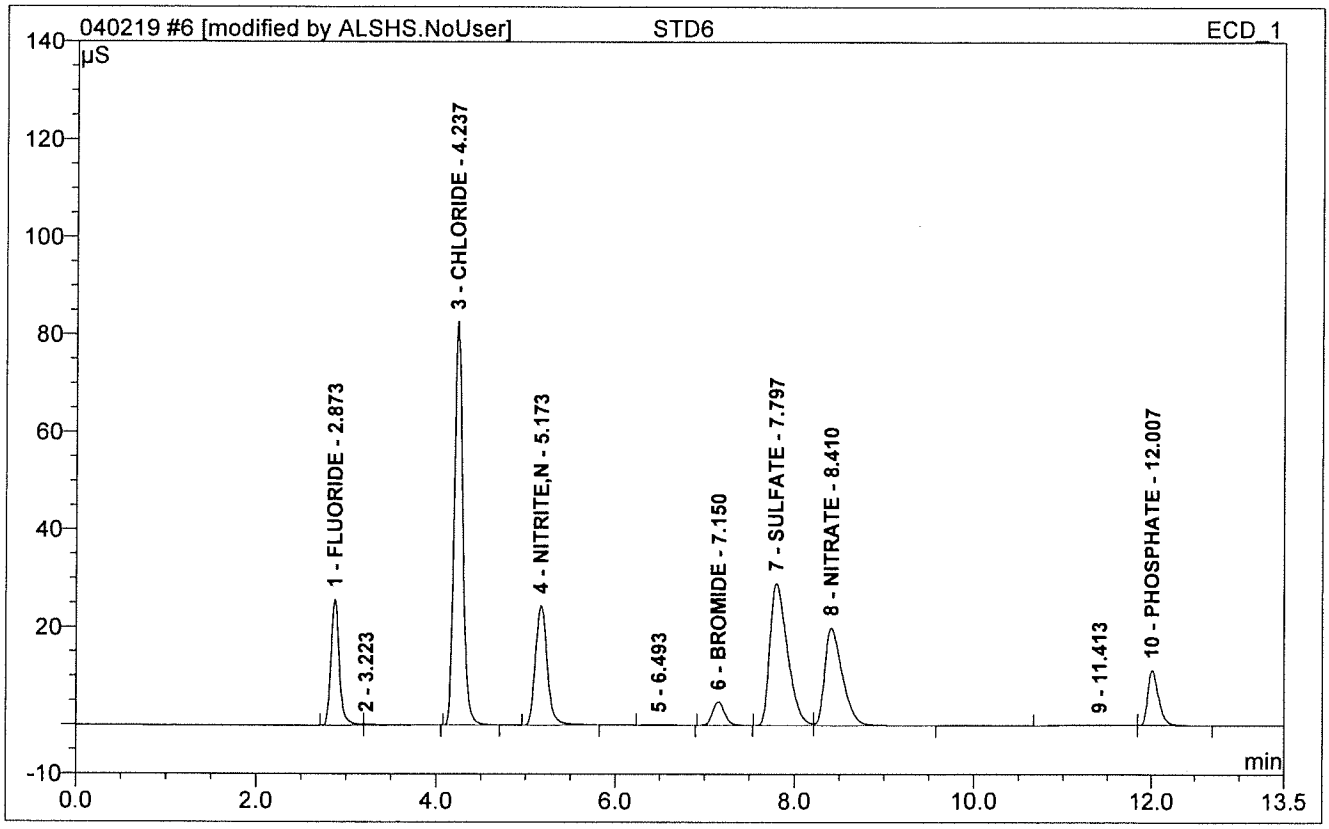
Sample Name:	**STD5**	*Injection Volume:*	**10.0**
Vial Number:	**95**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:00**	*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	2.87	FLUORIDE	13.878	1.390	9.60	10.006	1.
2	4.24	CHLORIDE	40.904	4.496	31.04	49.541	1.
3	5.17	NITRITE,N	13.858	1.984	13.70	10.264	1.
5	7.17	BROMIDE	2.267	0.349	2.41	10.597	1.
6	7.87	SULFATE	15.306	3.219	22.22	49.250	1.
7	8.47	NITRATE	10.619	2.196	15.16	9.898	1.
9	12.05	PHOSPHATE	5.690	0.772	5.33	9.855	1.
Total:			102.521	14.406	99.46	149.412	

6 STD6

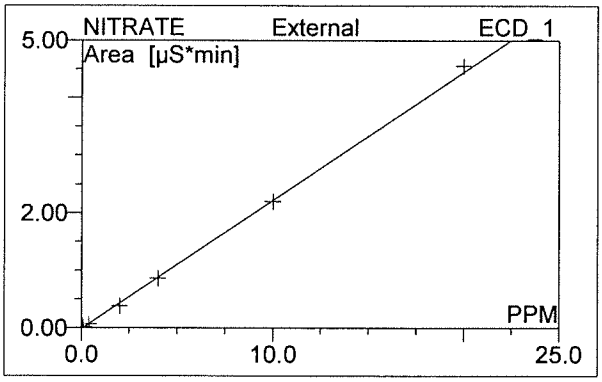
Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**

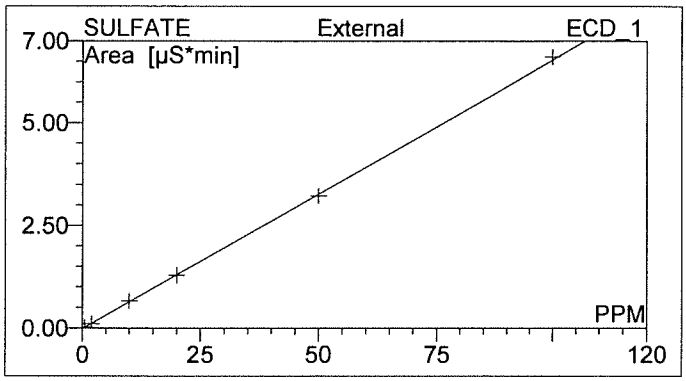


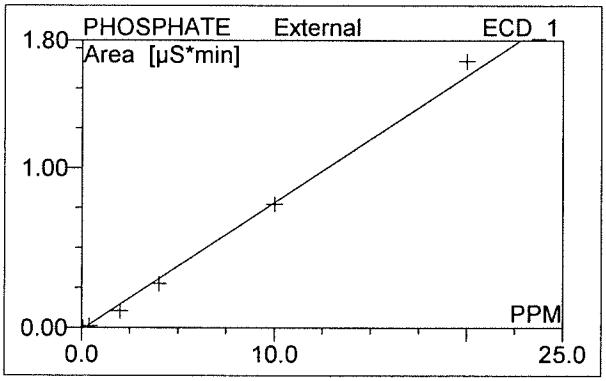
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	25.835	2.766	9.39	19.866	1.
3	4.24	CHLORIDE	82.765	9.200	31.22	101.157	1.
4	5.17	NITRITE,N	24.564	3.789	12.86	19.542	1.
6	7.15	BROMIDE	4.859	0.754	2.56	22.792	1.
7	7.80	SULFATE	29.202	6.615	22.45	101.003	1.
8	8.41	NITRATE	20.094	4.555	15.46	20.453	1.
10	12.01	PHOSPHATE	11.290	1.669	5.67	21.143	1.
Total:			198.610	29.348	99.61	305.956	

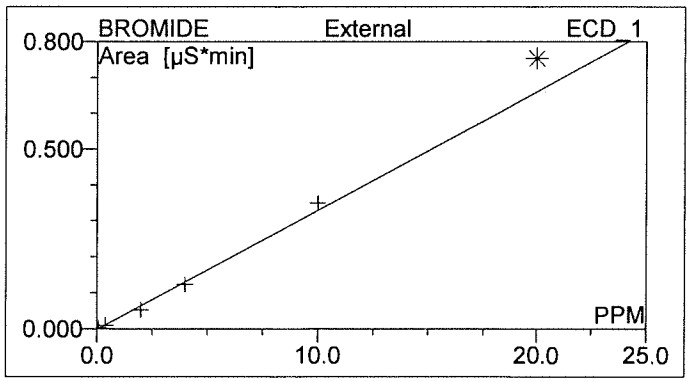
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**









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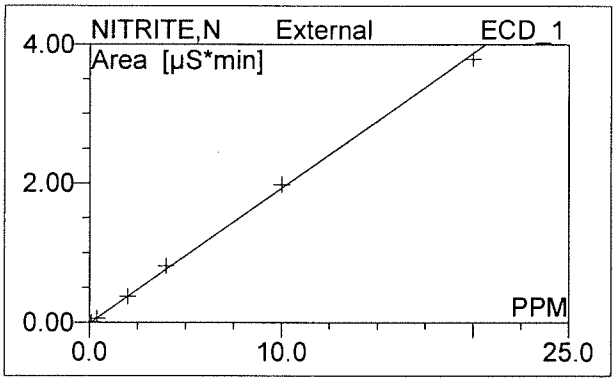
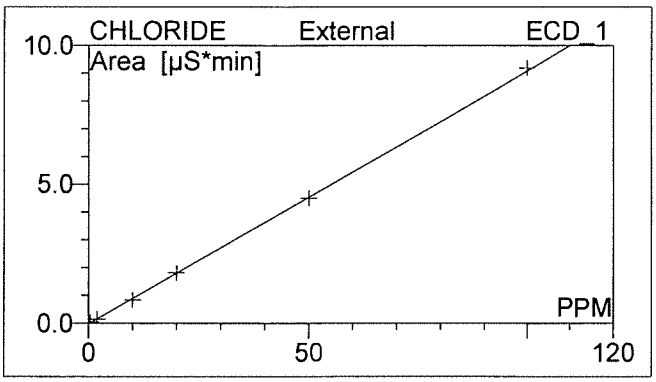
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.87	FLUORIDE	XLOff	6	99.934	-0.0058	0.1395	0.000
3	4.24	CHLORIDE	XLOff	6	99.950	-0.0191	0.0911	0.000
4	5.17	NITRITE,N	XLOff	6	99.896	-0.0137	0.1946	0.000
6	7.15	BROMIDE	XLOff	5	99.137	-0.0019	0.0331	0.000
7	7.80	SULFATE	XLOff	6	99.968	-0.0133	0.0656	0.000
8	8.41	NITRATE	XLOff	6	99.834	-0.0155	0.2235	0.000
10	12.01	PHOSPHATE	XLOff	6	99.034	-0.0122	0.0795	0.000
Average:					99.6790	-0.0117	0.1182	0.0000

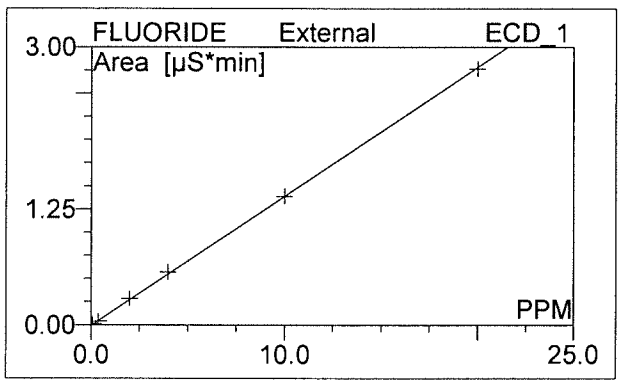
No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.87	FLUORIDE	XLOff	6	99.967	7.166	0.007	12.315
3	4.24	CHLORIDE	XLOff	6	99.975	10.973	0.020	10.687
4	5.17	NITRITE,N	XLOff	6	99.948	5.139	0.012	16.620
6	7.15	BROMIDE	XLOff	5	99.567	30.167	0.004	39.803
7	7.80	SULFATE	XLOff	6	99.984	15.239	0.011	8.539
8	8.41	NITRATE	XLOff	6	99.917	4.475	0.018	20.936
10	12.01	PHOSPHATE	XLOff	6	99.516	12.573	0.015	65.326
Average:					99.8392	12.2473	0.0125	24.8896

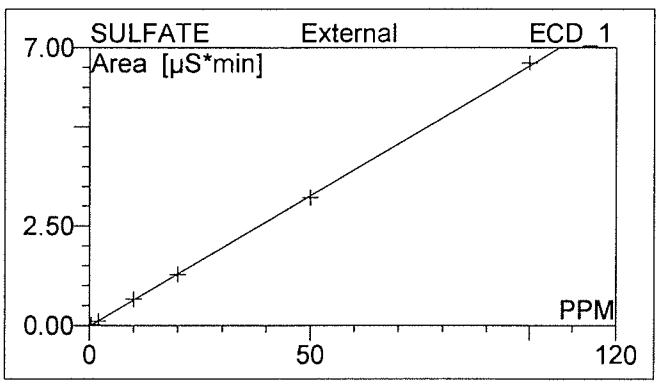
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.000**
Recording Time:	**3/21/2019 16:15**	*Sample Weight/Volume:*	**1.000**
Run Time (min):	**13.50**	*Final Volume:*	**1.000**









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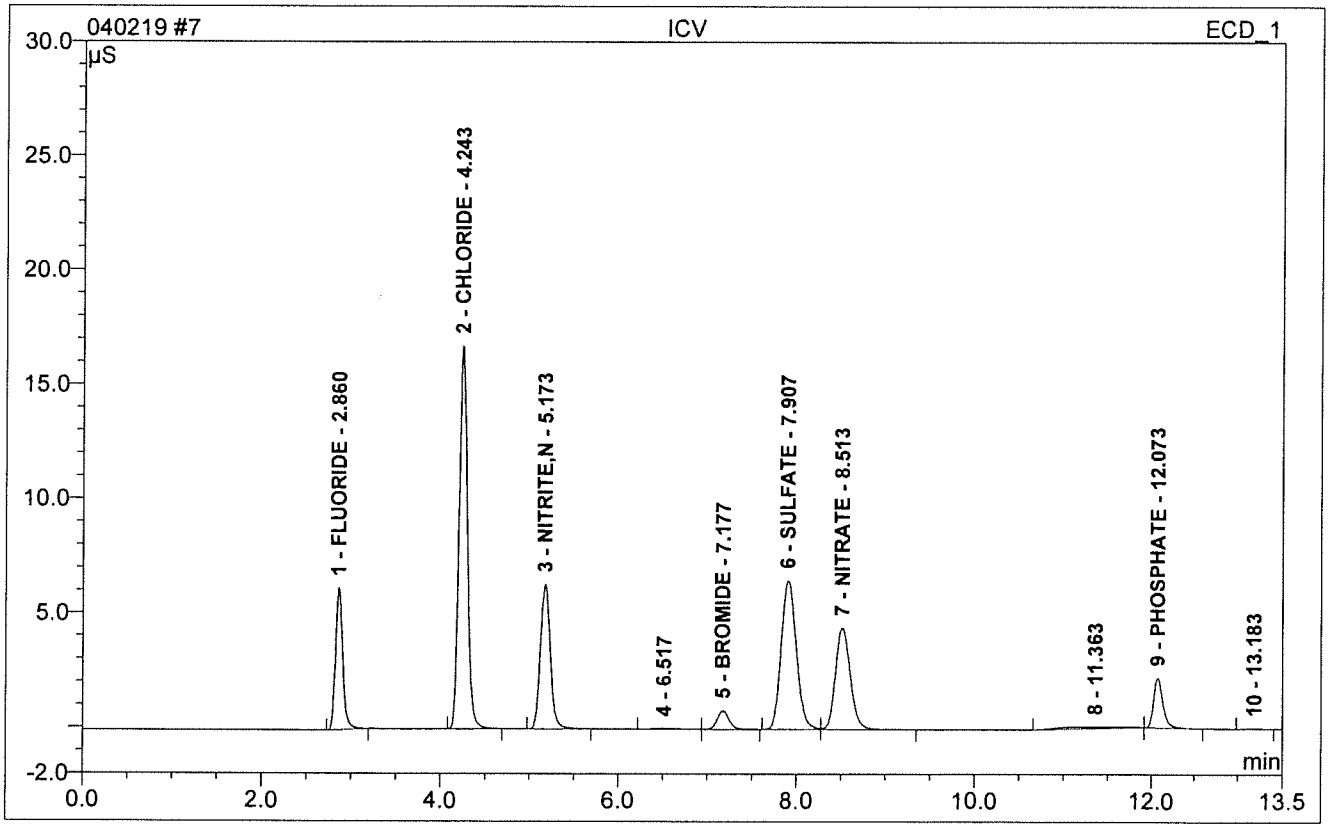
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.87	FLUORIDE	XLOff	6	99.9340	-0.0058	0.1395	0.000
3	4.24	CHLORIDE	XLOff	6	99.9503	-0.0191	0.0911	0.000
4	5.17	NITRITE,N	XLOff	6	99.8962	-0.0137	0.1946	0.000
6	7.15	BROMIDE	XLOff	5	99.1367	-0.0019	0.0331	0.000
7	7.80	SULFATE	XLOff	6	99.9681	-0.0133	0.0656	0.000
8	8.41	NITRATE	XLOff	6	99.8344	-0.0155	0.2235	0.000
10	12.01	PHOSPHATE	XLOff	6	99.0335	-0.0122	0.0795	0.000
Average:					99.6790	-0.0117	0.1182	0.000

No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.87	FLUORIDE	XLOff	6	99.967	7.166	0.007	12.315
3	4.24	CHLORIDE	XLOff	6	99.975	10.973	0.020	10.687
4	5.17	NITRITE,N	XLOff	6	99.948	5.139	0.012	16.620
6	7.15	BROMIDE	XLOff	5	99.567	30.167	0.004	39.803
7	7.80	SULFATE	XLOff	6	99.984	15.239	0.011	8.539
8	8.41	NITRATE	XLOff	6	99.917	4.475	0.018	20.936
10	12.01	PHOSPHATE	XLOff	6	99.516	12.573	0.015	65.326
Average:					99.8392	12.247	0.013	24.890

7 ICV

297.020.6806

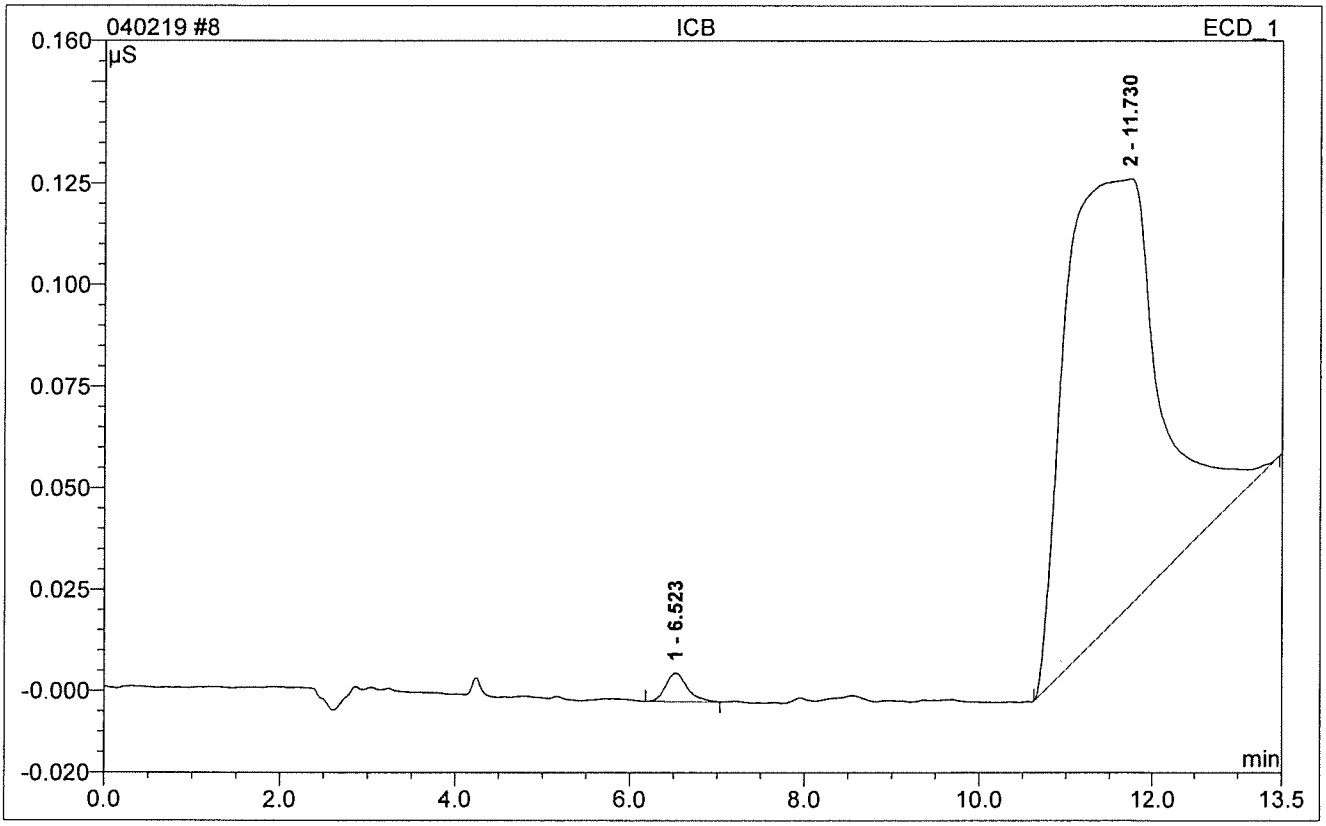
Sample Name:	**ICV**	*Injection Volume:*	**10.0**
Vial Number:	**97**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:29**	*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	2.86	FLUORIDE	6.193	0.582	9.95	4.212	1.
2	4.24	CHLORIDE	16.737	1.810	30.94	20.070	1.
3	5.17	NITRITE,N	6.300	0.821	14.03	4.288	1.
5	7.18	BROMIDE	0.816	0.126	2.15	3.850	1.
6	7.91	SULFATE	6.500	1.295	22.13	19.930	1.
7	8.51	NITRATE	4.441	0.858	14.67	3.909	1.
9	12.07	PHOSPHATE	2.166	0.279	4.77	3.663	1.
Total:			43.153	5.770	98.63	59.923	

8 ICB

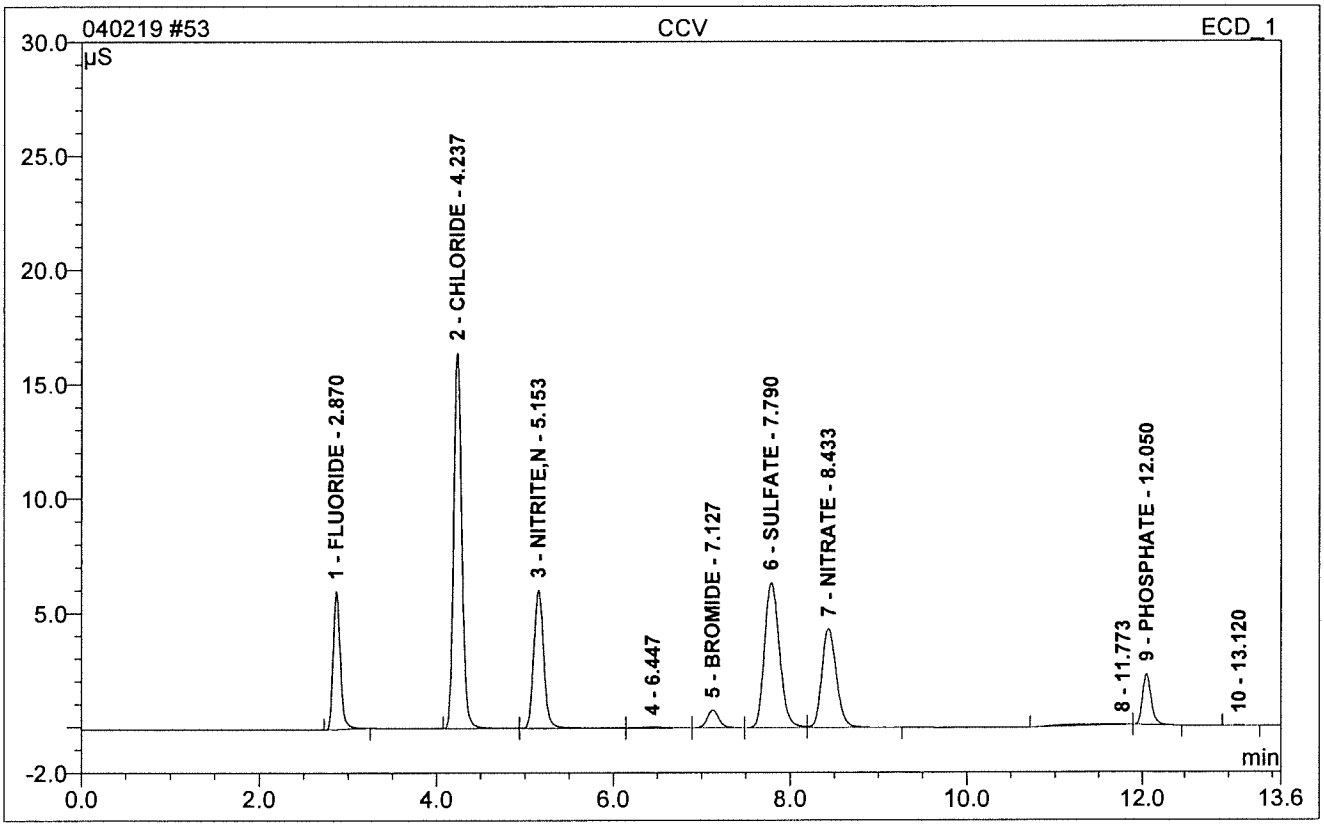
Sample Name:	**ICB**	*Injection Volume:*	**10.0**
Vial Number:	**98**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 17:07**	*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.
Total:			0.000	0.000	0.00	0.000	

53 CCV

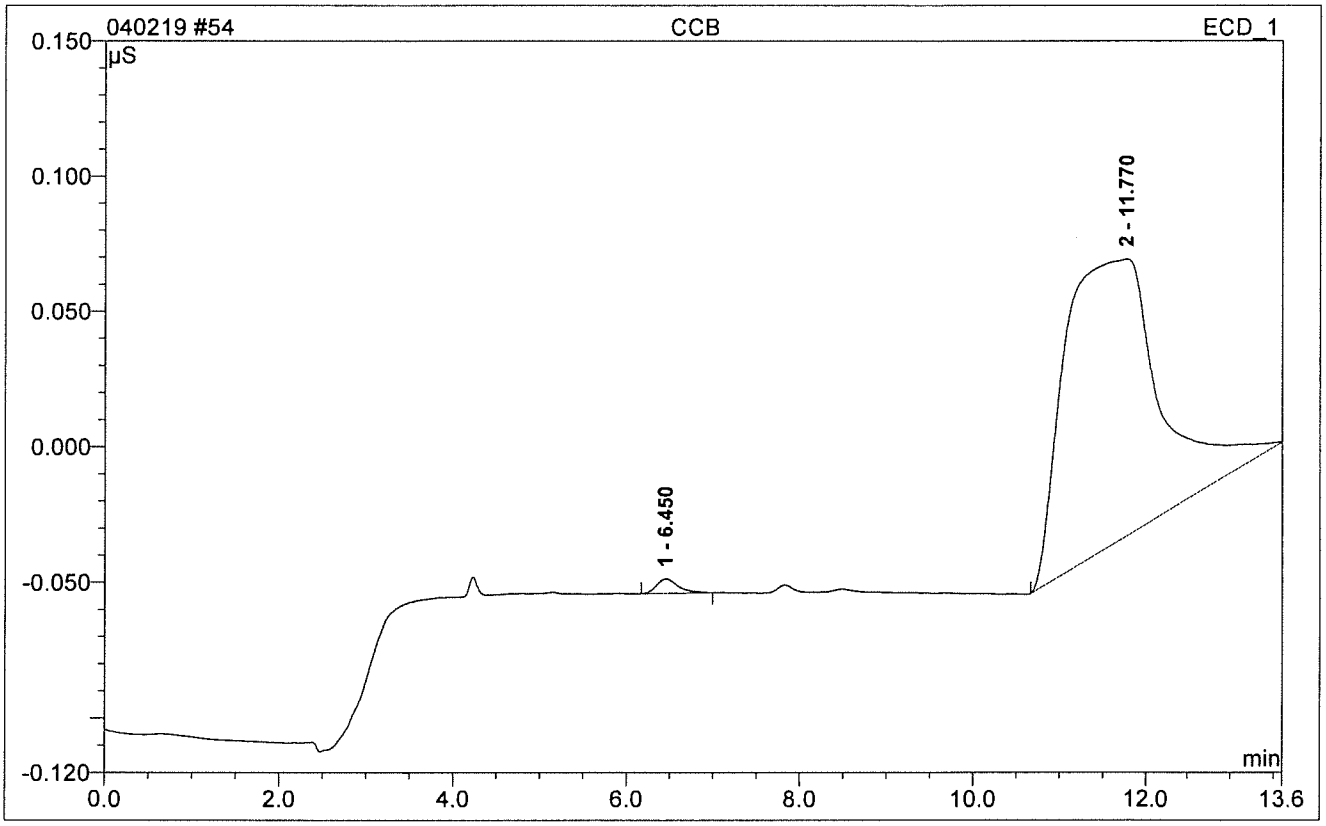
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 0:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	6.052	0.564	9.97	4.086	1.
2	4.24	CHLORIDE	16.435	1.758	31.06	19.504	1.
3	5.15	NITRITE,N	6.058	0.795	14.05	4.158	1.
5	7.13	BROMIDE	0.791	0.122	2.15	3.724	1.
6	7.79	SULFATE	6.377	1.255	22.17	19.325	1.
7	8.43	NITRATE	4.361	0.835	14.76	3.807	1.
9	12.05	PHOSPHATE	2.233	0.271	4.78	3.556	1.
Total:			42.307	5.600	98.93	58.160	

54 CCB

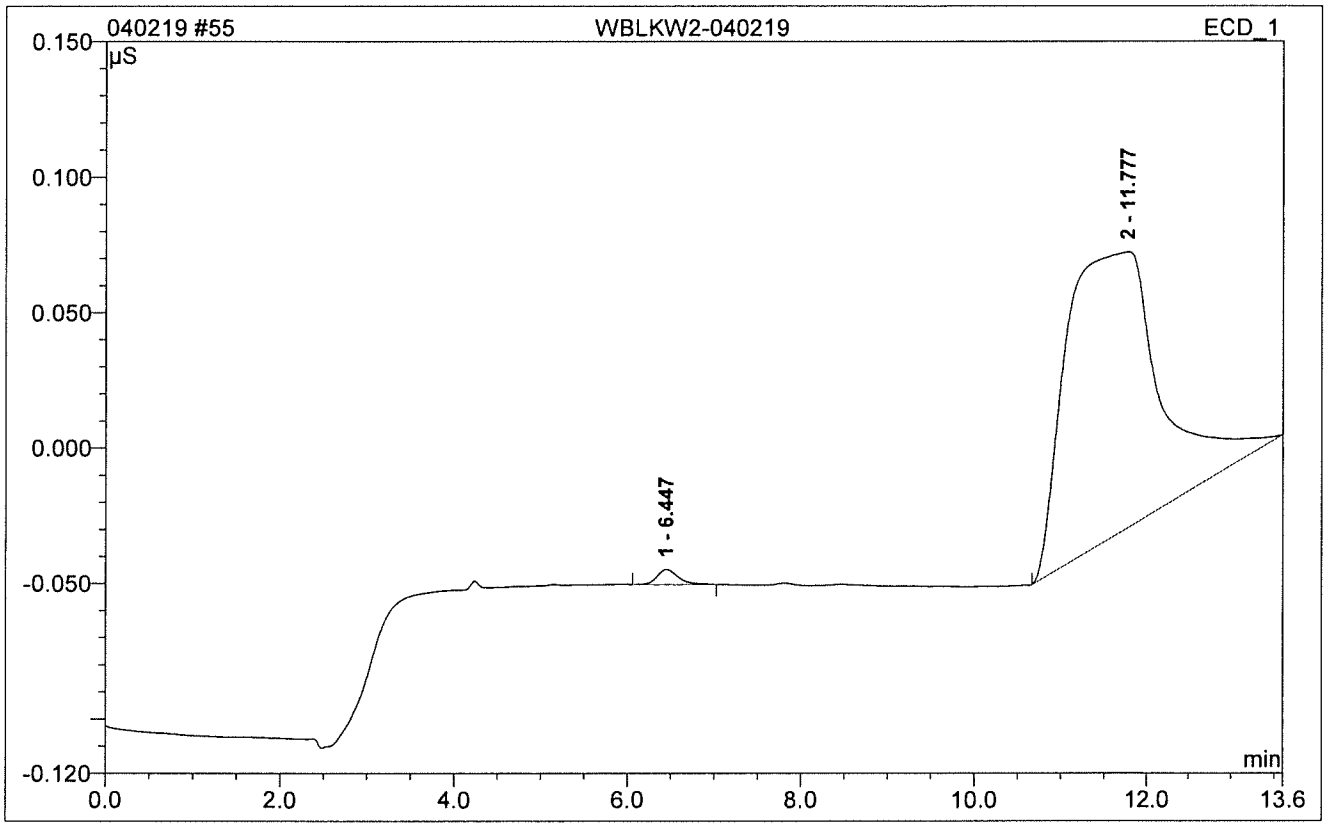
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**2**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 1:02**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*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	

55 WBLKW2-040219

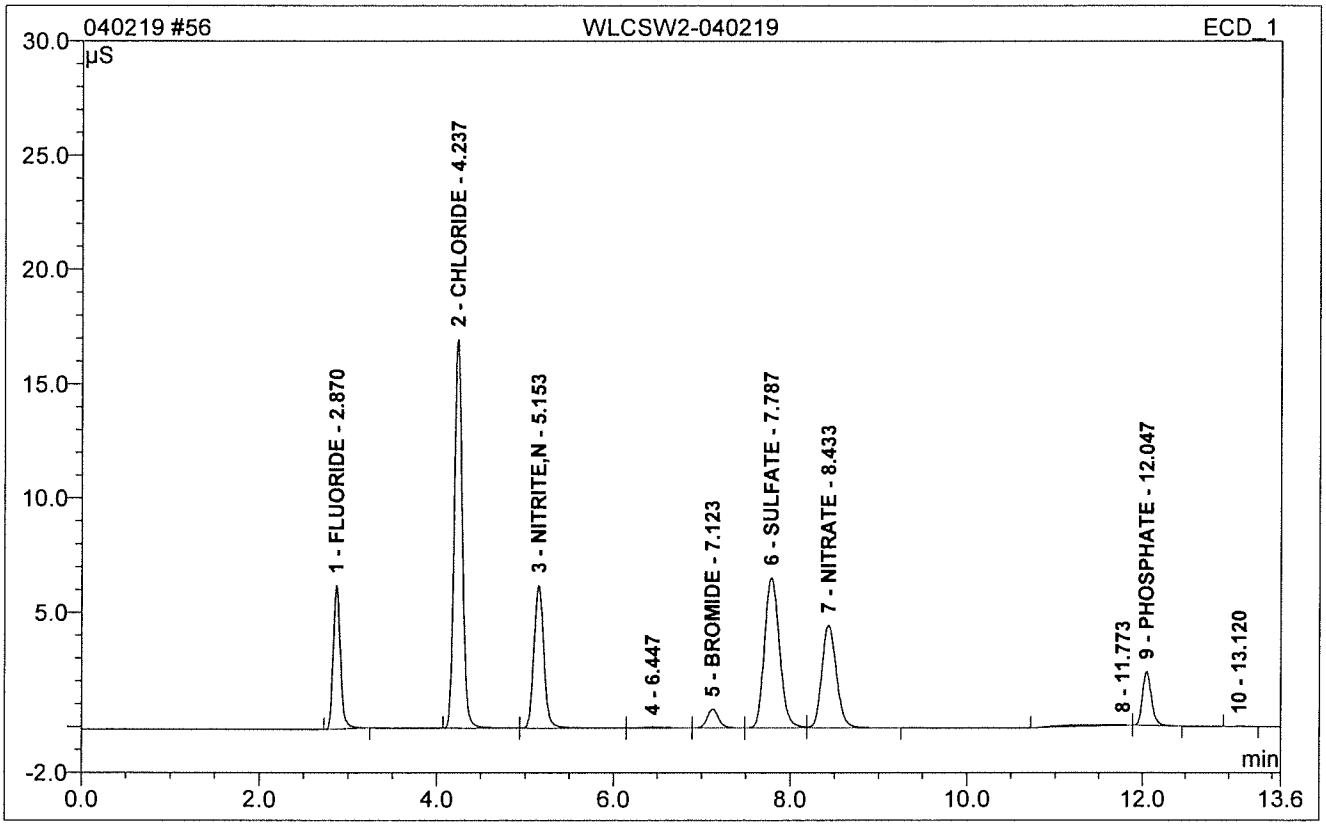
Sample Name:	**WBLKW2-040219**	*Injection Volume:*	**10.0**
Vial Number:	**42**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 1:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*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	

56 WLCSW2-040219

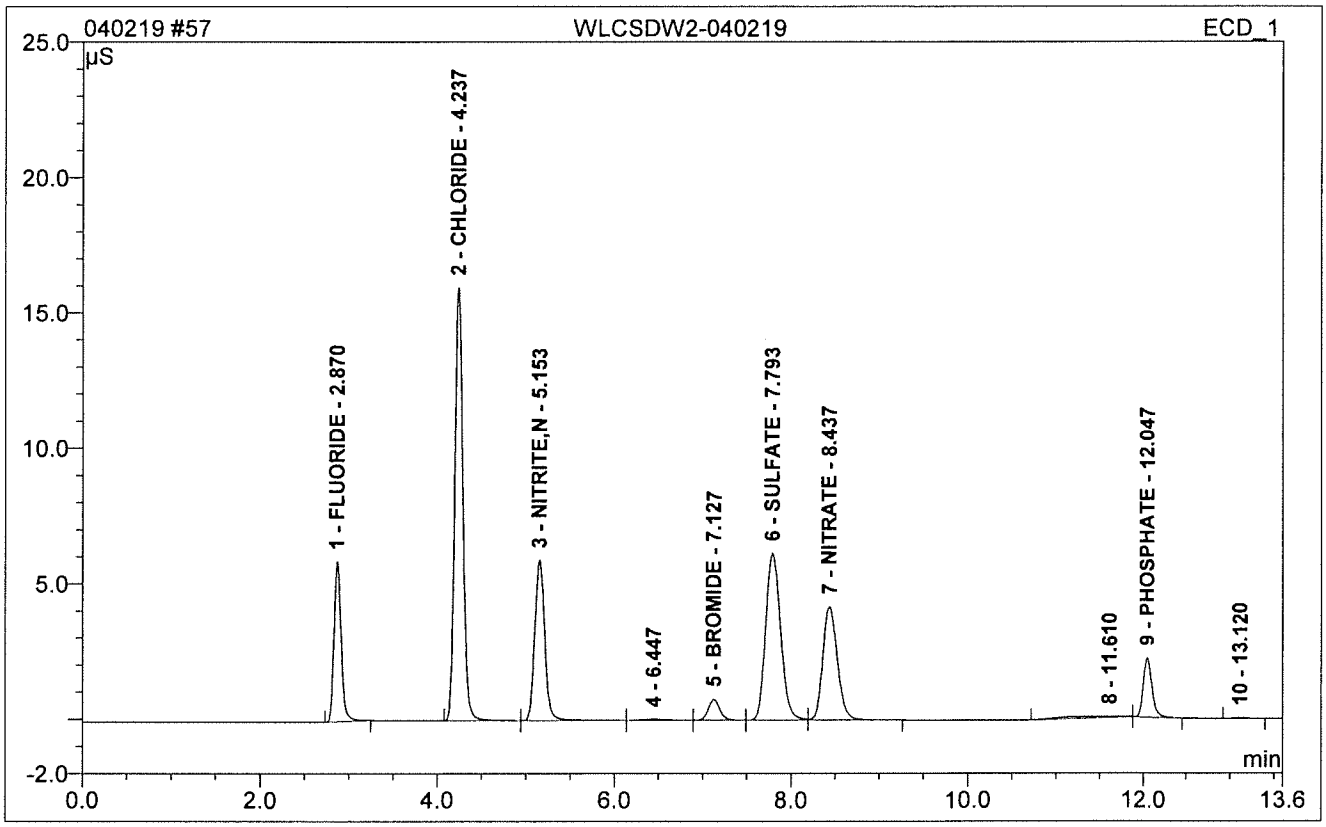
Sample Name:	**WLCSW2-040219**	*Injection Volume:*	**10.0**
Vial Number:	**43**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 1:31**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	6.281	0.585	9.98	4.235	1.
2	4.24	CHLORIDE	17.002	1.824	31.12	20.225	1.
3	5.15	NITRITE,N	6.238	0.822	14.02	4.294	1.
5	7.12	BROMIDE	0.826	0.126	2.16	3.873	1.
6	7.79	SULFATE	6.583	1.298	22.14	19.980	1.
7	8.43	NITRATE	4.500	0.863	14.73	3.932	1.
9	12.05	PHOSPHATE	2.345	0.284	4.84	3.720	1.
Total:			43.775	5.802	99.00	60.258	

57 WLCSDW2-040219

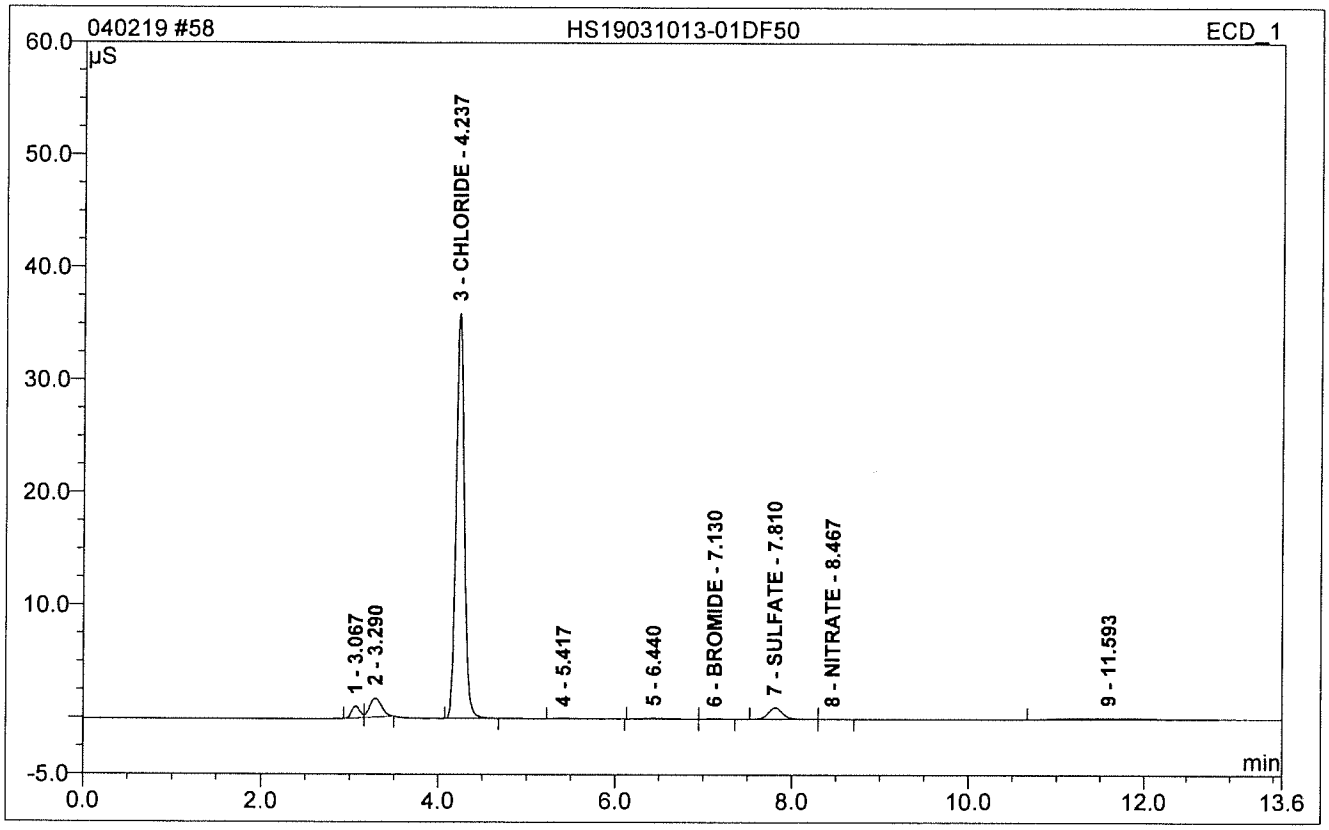
Sample Name:	**WLCSDW2-040219**	*Injection Volume:*	**10.0**
Vial Number:	**44**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 1:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	5.917	0.549	10.00	3.977	1.
2	4.24	CHLORIDE	15.974	1.708	31.10	18.950	1.
3	5.15	NITRITE,N	5.929	0.776	14.13	4.060	1.
5	7.13	BROMIDE	0.768	0.118	2.14	3.609	1.
6	7.79	SULFATE	6.171	1.212	22.06	18.667	1.
7	8.44	NITRATE	4.214	0.806	14.68	3.678	1.
9	12.05	PHOSPHATE	2.187	0.264	4.80	3.472	1.
Total:			41.161	5.433	98.92	56.412	

58 HS19031013-01DF50

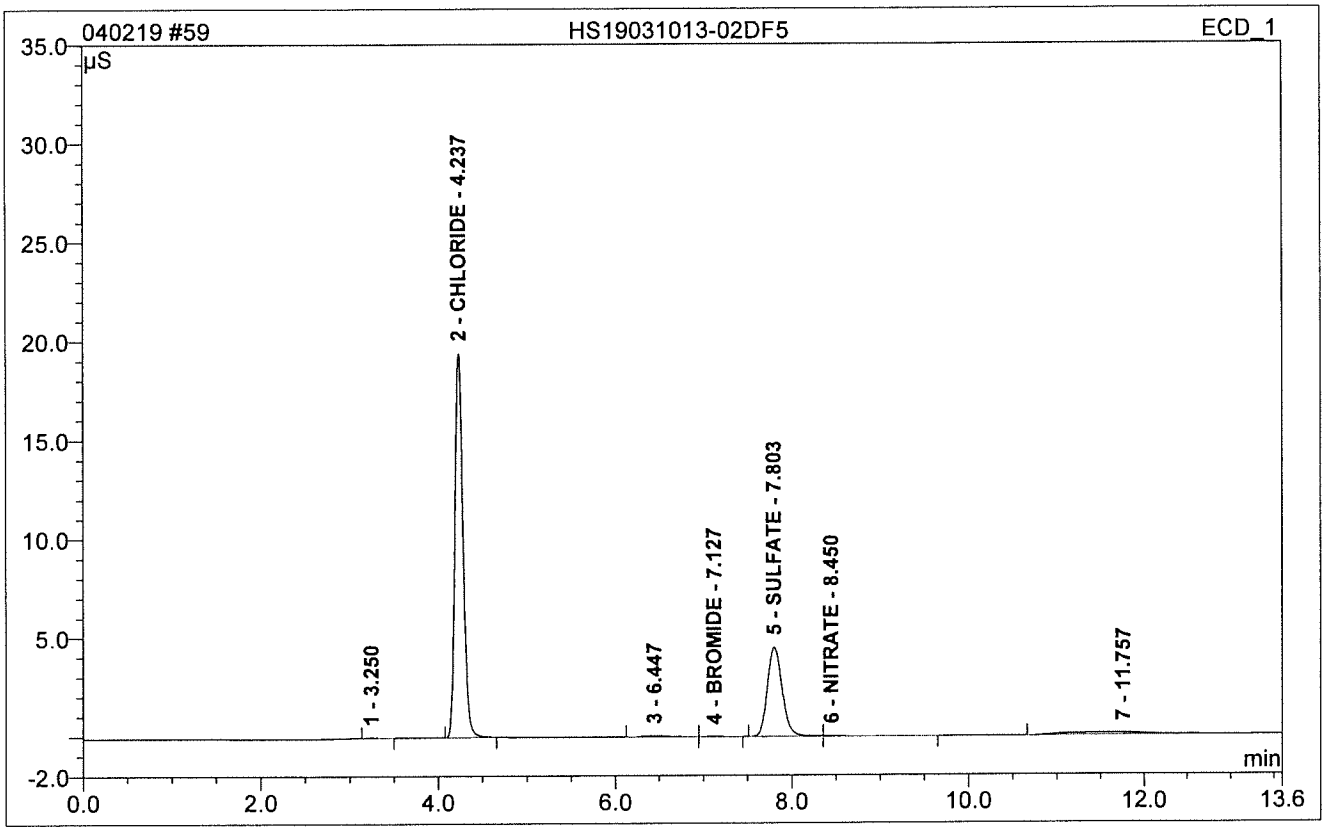
Sample Name:	**HS19031013-01DF50**	*Injection Volume:*	**10.0**
Vial Number:	**45**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 2:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
3	4.24	CHLORIDE	35.956	3.891	83.85	2145.430	50.
6	7.13	BROMIDE	0.031	0.005	0.11	10.570	50.
7	7.81	SULFATE	1.023	0.191	4.12	155.852	50.
8	8.47	NITRATE	0.009	0.002	0.03	3.804	50.
Total:			37.019	4.089	88.11	2315.655	

59 HS19031013-02DF5

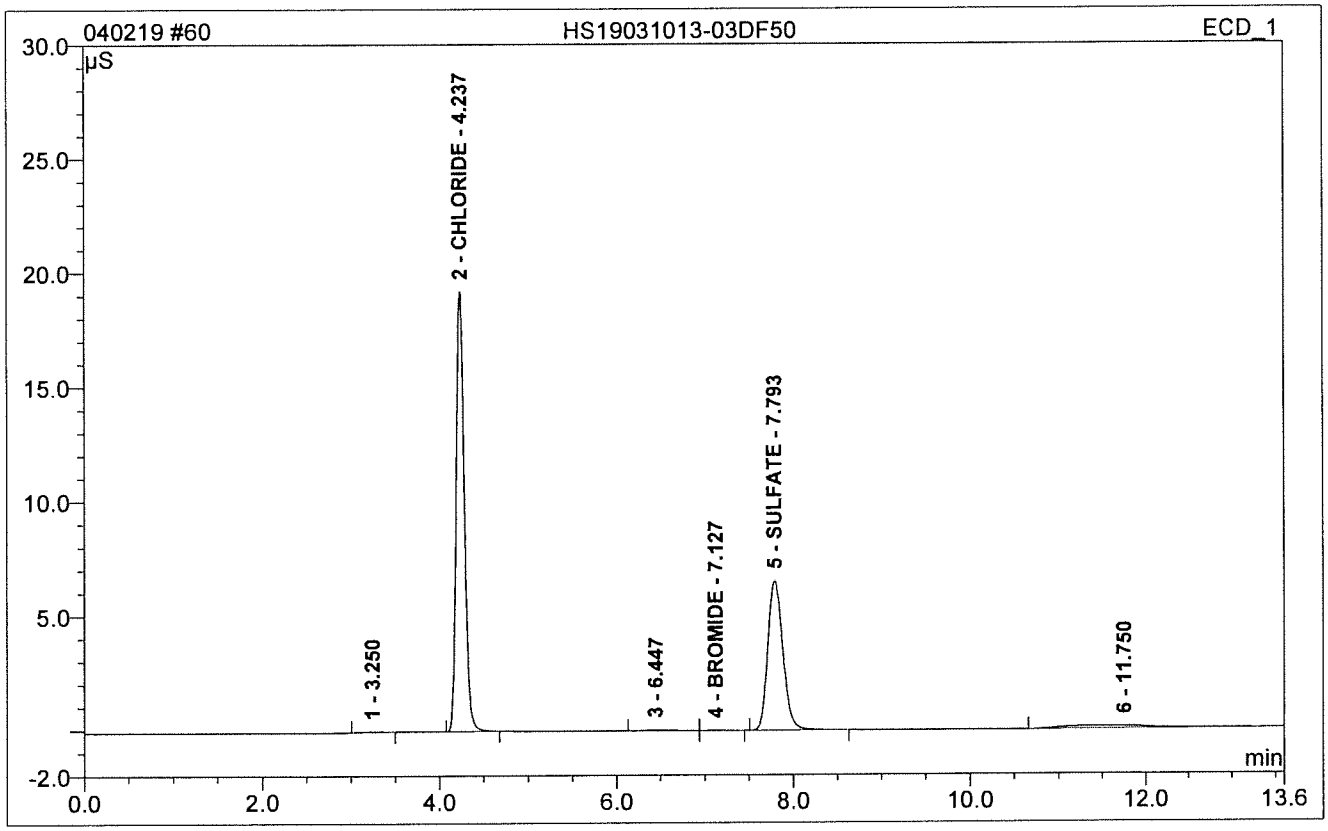
Sample Name:	**HS19031013-02DF5**	*Injection Volume:*	**10.0**
Vial Number:	**46**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**5.**
Recording Time:	**4/3/2019 2:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	4.24	CHLORIDE	19.421	2.080	66.58	115.141	5.
4	7.13	BROMIDE	0.020	0.004	0.11	0.826	5.
5	7.80	SULFATE	4.499	0.878	28.11	67.910	5.
6	8.45	NITRATE	0.016	0.005	0.17	0.463	5.
Total:			23.956	2.966	94.97	184.340	

60 HS19031013-03DF50

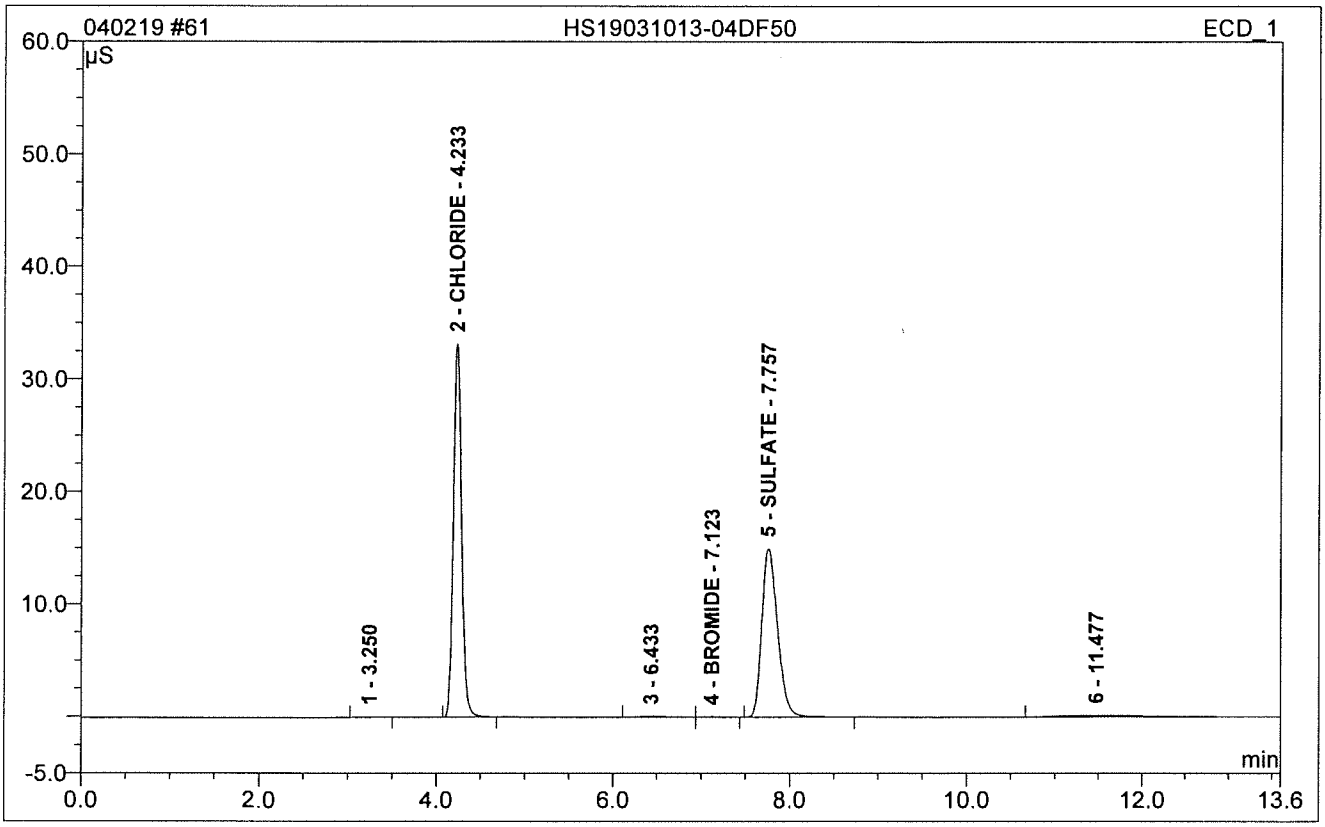
Sample Name:	**HS19031013-03DF50**	*Injection Volume:*	**10.0**
Vial Number:	**47**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 2:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	4.24	CHLORIDE	19.231	2.058	58.76	1139.691	50.
4	7.13	BROMIDE	0.018	0.003	0.09	7.572	50.
5	7.79	SULFATE	6.529	1.291	36.87	994.072	50.
Total:			25.778	3.353	95.72	2141.335	

61 HS19031013-04DF50

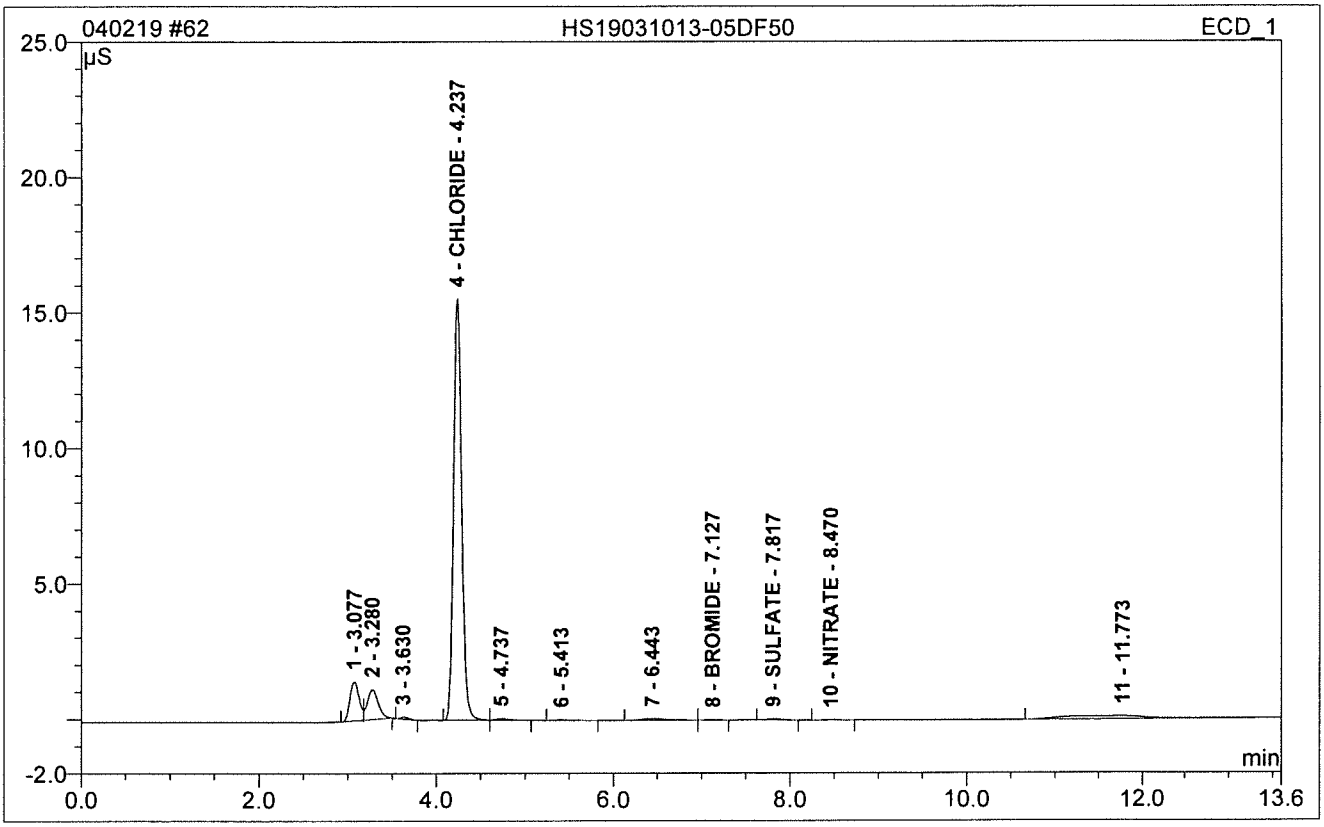
Sample Name:	**HS19031013-04DF50**	*Injection Volume:*	**10.0**
Vial Number:	**48**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 2:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	4.23	CHLORIDE	33.141	3.582	52.13	1975.504	50.
4	7.12	BROMIDE	0.037	0.006	0.09	12.340	50.
5	7.76	SULFATE	14.992	3.117	45.37	2385.019	50.
Total:			48.169	6.705	97.59	4372.864	

62 HS19031013-05DF50

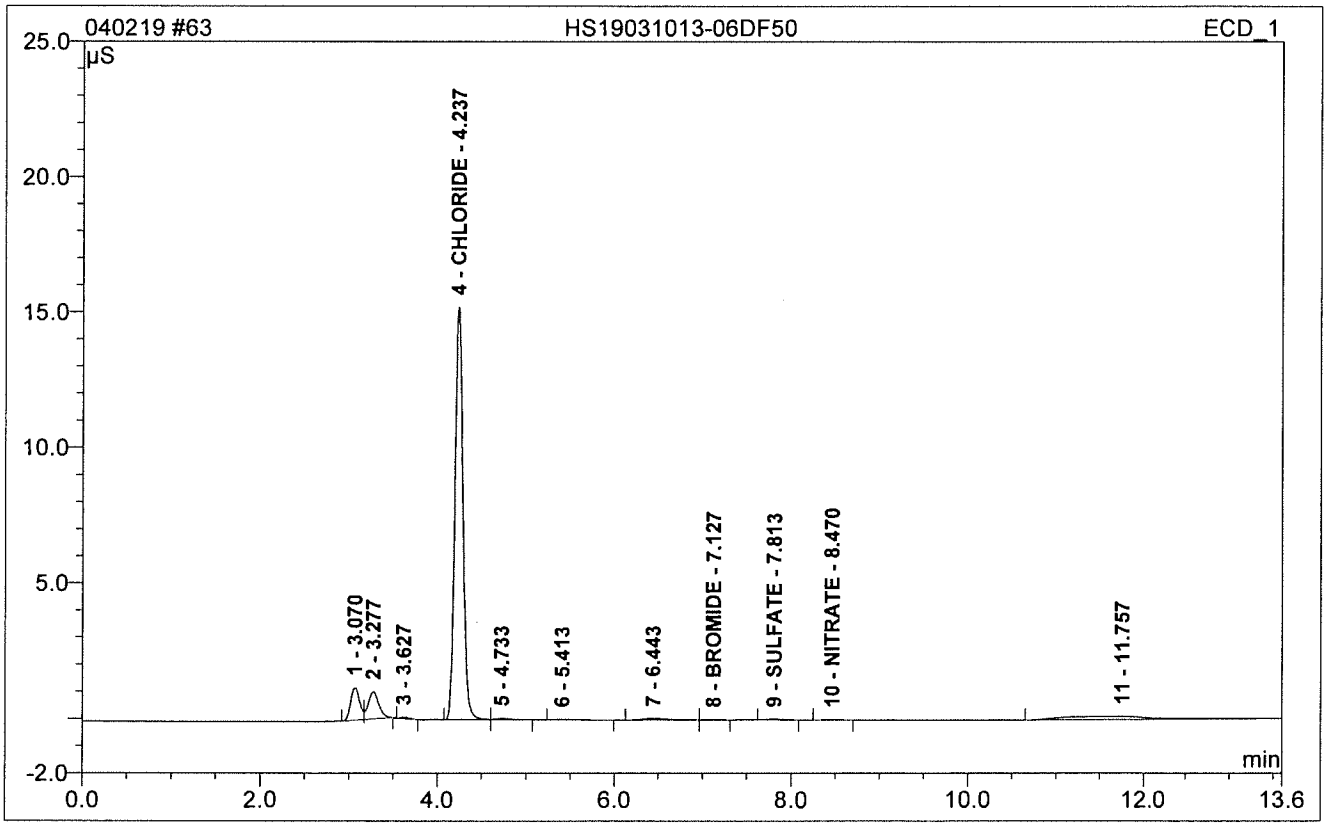
Sample Name:	**HS19031013-05DF50**	*Injection Volume:*	**10.0**
Vial Number:	**49**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 3:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
4	4.24	CHLORIDE	15.541	1.656	76.02	918.800	50.
8	7.13	BROMIDE	0.014	0.002	0.10	6.294	50.
9	7.82	SULFATE	0.038	0.007	0.31	15.374	50.
10	8.47	NITRATE	0.012	0.002	0.10	3.967	50.
Total:			15.605	1.667	76.55	944.435	

63 HS19031013-06DF50

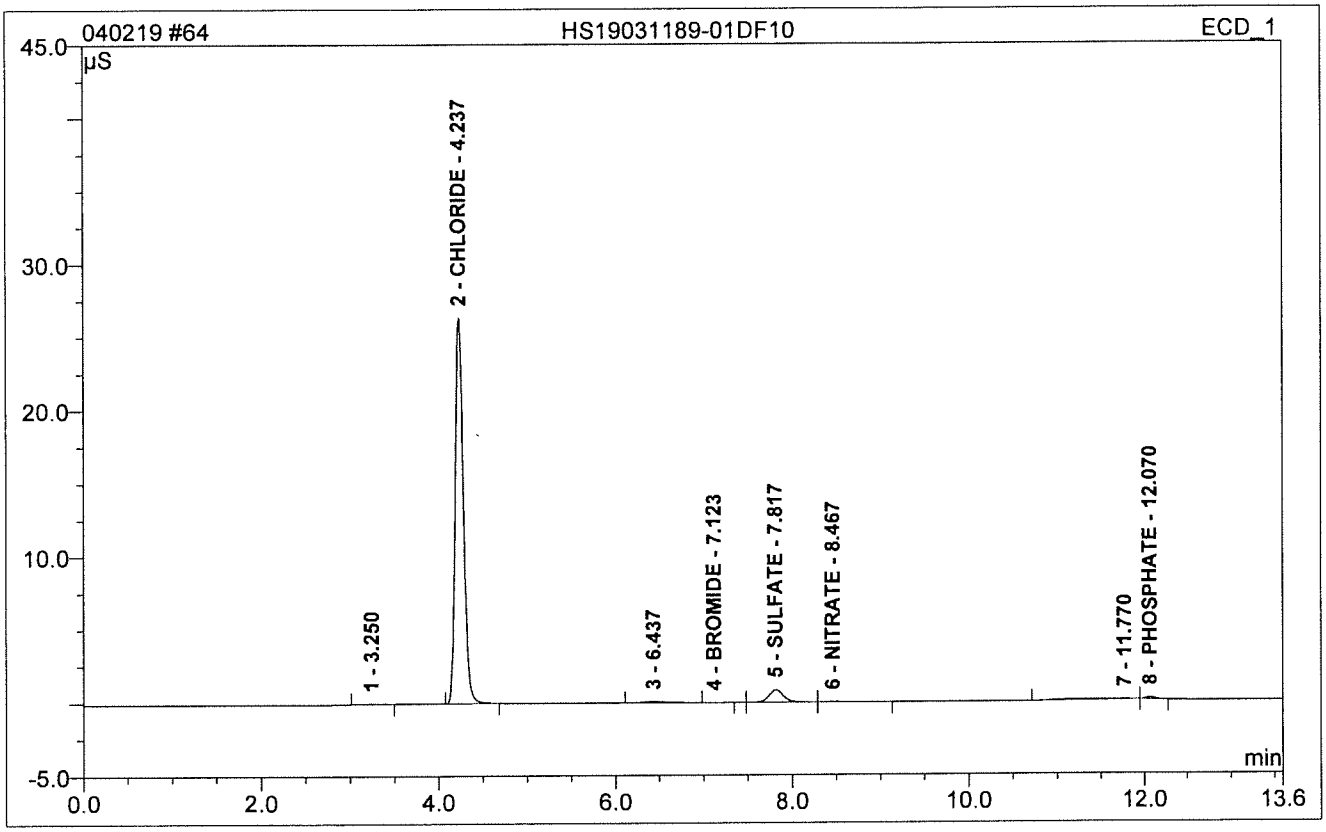
Sample Name:	**HS19031013-06DF50**	*Injection Volume:*	**10.0**
Vial Number:	**50**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 3:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
4	4.24	CHLORIDE	15.227	1.622	77.72	900.278	50.
8	7.13	BROMIDE	0.014	0.002	0.11	6.249	50.
9	7.81	SULFATE	0.025	0.005	0.22	13.648	50.
10	8.47	NITRATE	0.011	0.002	0.10	3.926	50.
Total:			15.278	1.631	78.15	924.100	

64 HS19031189-01DF10

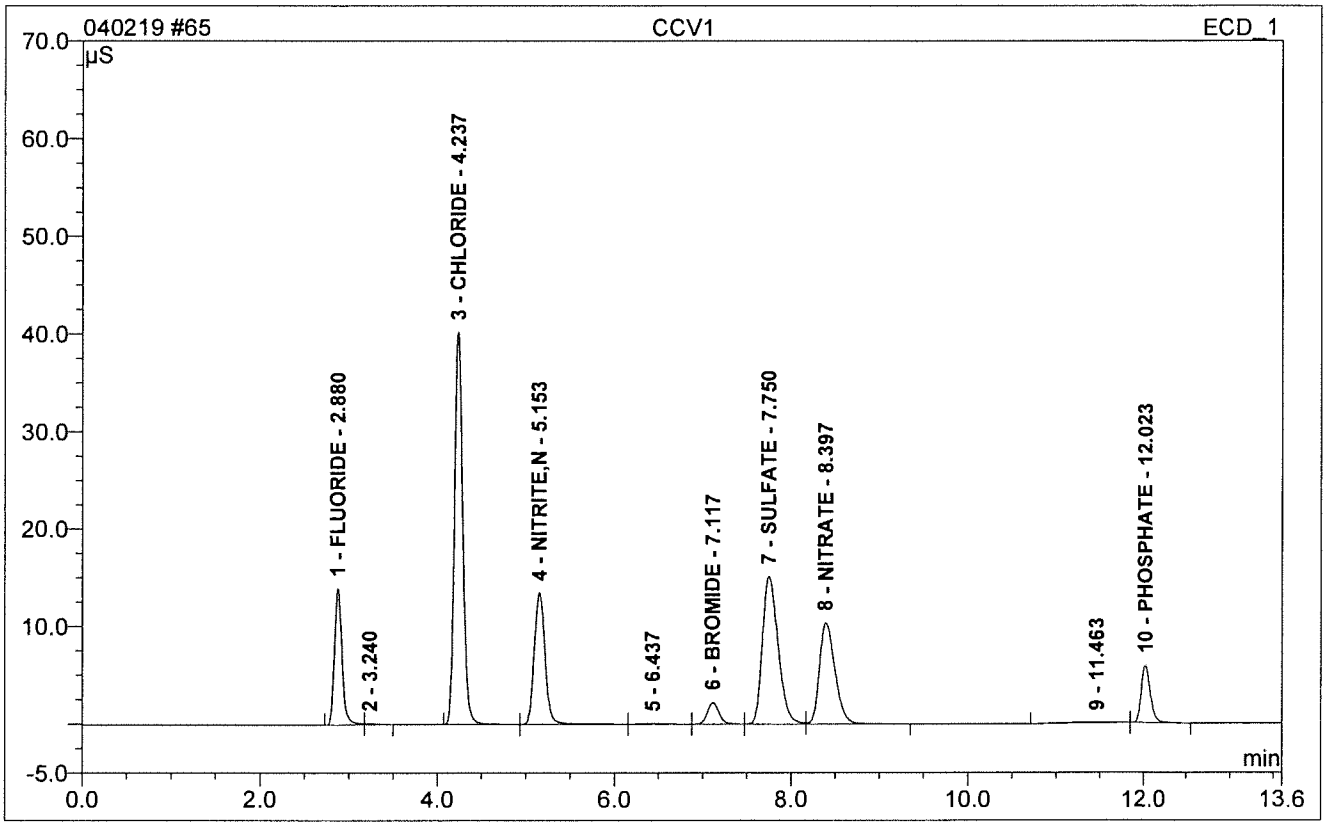
Sample Name:	**HS19031189-01DF10**	*Injection Volume:*	**10.0**
Vial Number:	**54**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**10.**
Recording Time:	**4/3/2019 3:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	4.24	CHLORIDE	26.372	2.841	91.44	313.880	10.
4	7.12	BROMIDE	0.007	0.001	0.03	0.887	10.
5	7.82	SULFATE	0.852	0.162	5.22	26.756	10.
6	8.47	NITRATE	0.017	0.004	0.13	0.869	10.
8	12.07	PHOSPHATE	0.130	0.016	0.50	3.495	10.
Total:			27.377	3.024	97.32	345.886	

65 CCV1

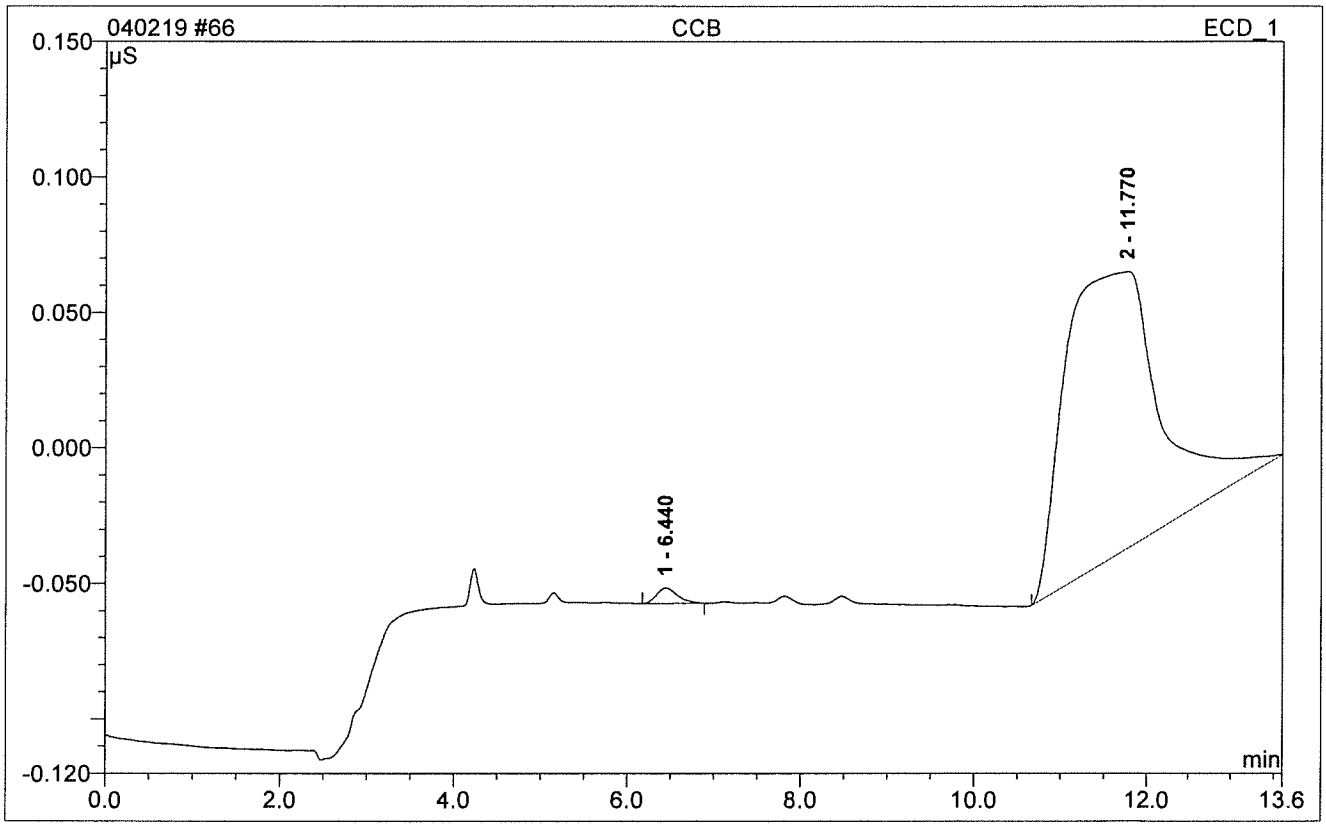
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 3:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.88	FLUORIDE	13.969	1.385	9.83	9.966	1.
3	4.24	CHLORIDE	40.218	4.363	30.97	48.079	1.
4	5.15	NITRITE,N	13.523	1.918	13.61	9.924	1.
6	7.12	BROMIDE	2.217	0.339	2.41	10.279	1.
7	7.75	SULFATE	15.149	3.136	22.26	47.997	1.
8	8.40	NITRATE	10.389	2.122	15.06	9.565	1.
10	12.02	PHOSPHATE	5.847	0.749	5.32	9.575	1.
Total:			101.312	14.011	99.46	145.385	

66 CCB

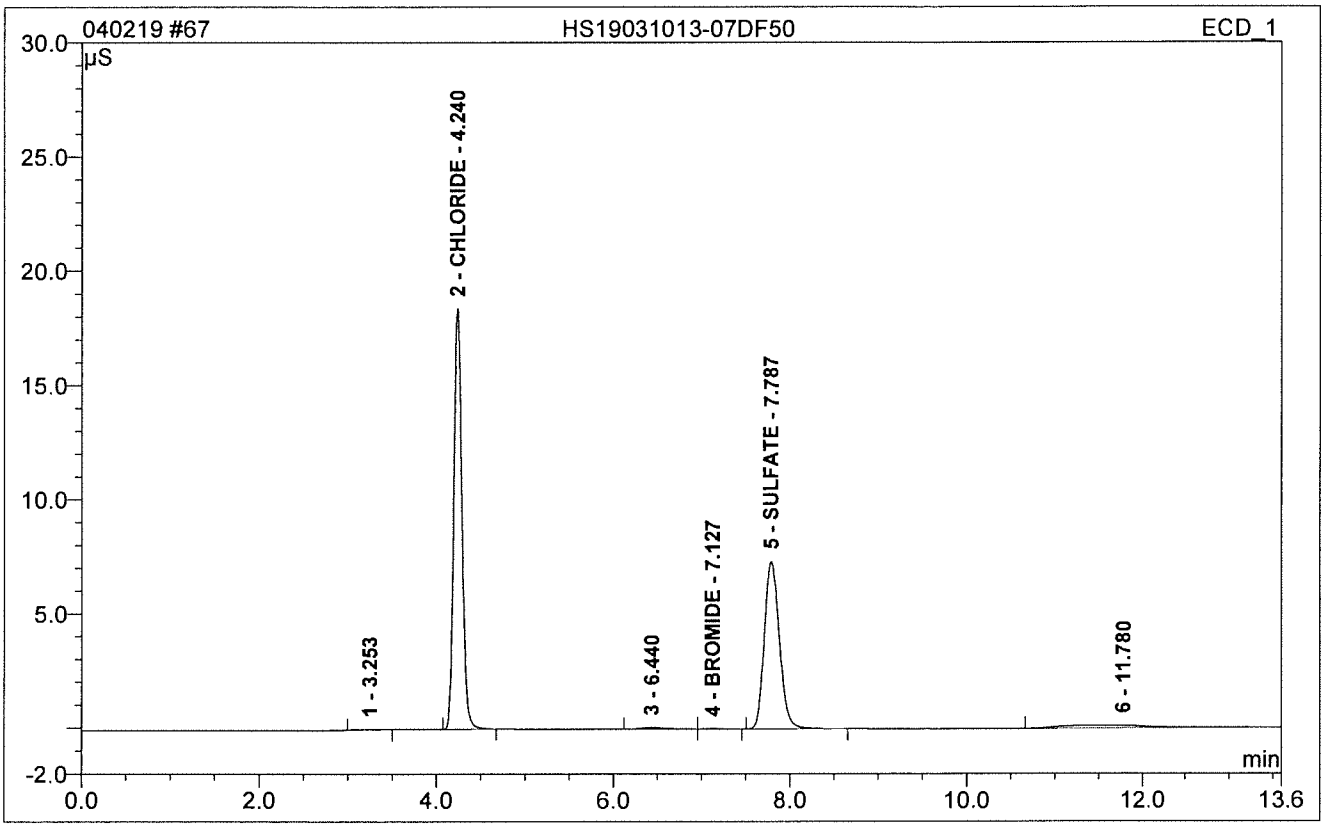
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 3:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*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	

67 HS19031013-07DF50

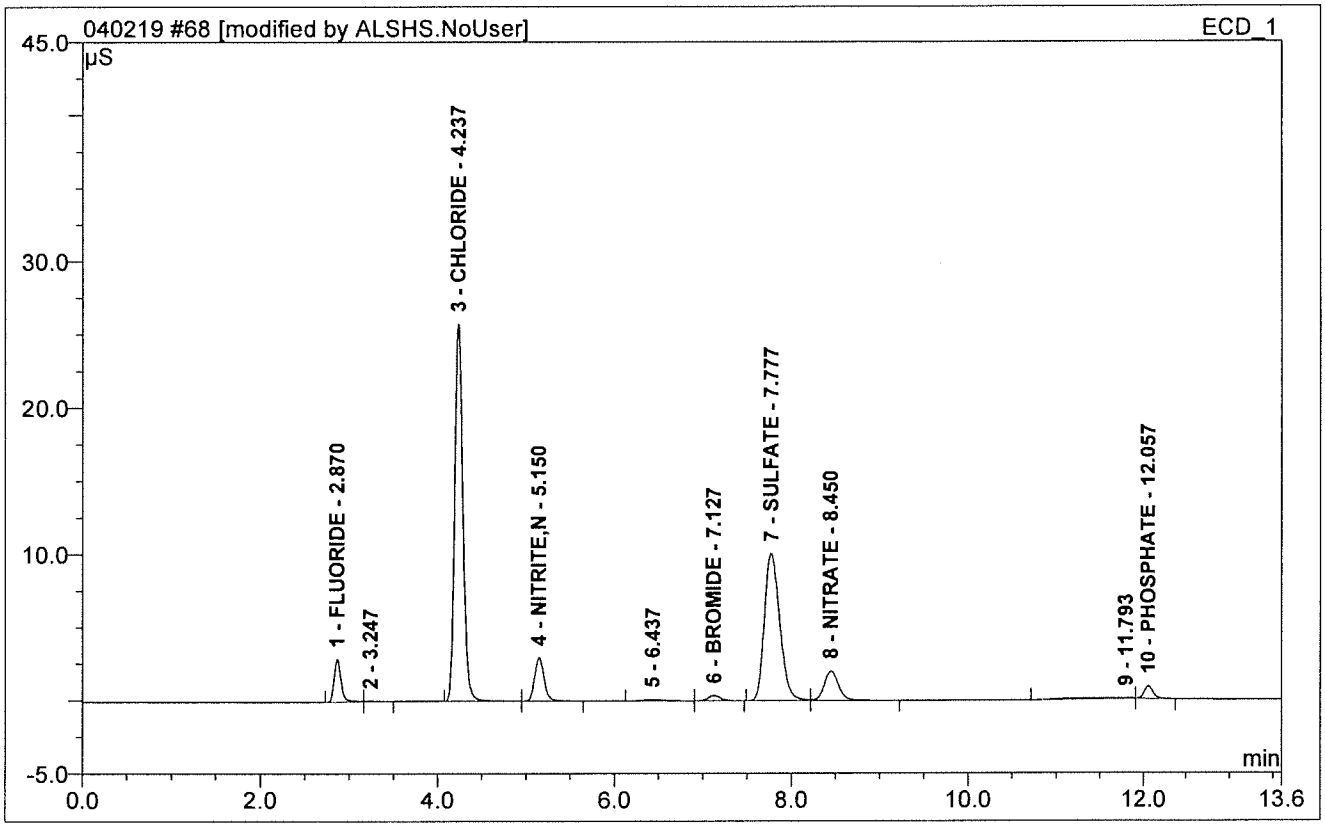
Sample Name:	**HS19031013-07DF50**	*Injection Volume:*	**10.0**
Vial Number:	**51**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 4:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
2	4.24	CHLORIDE	18.396	1.967	54.79	1089.749	50.
4	7.13	BROMIDE	0.022	0.004	0.11	8.737	50.
5	7.79	SULFATE	7.311	1.455	40.53	1118.930	50.
Total:			25.729	3.426	95.42	2217.416	

68 HS19031013-07MSDF50

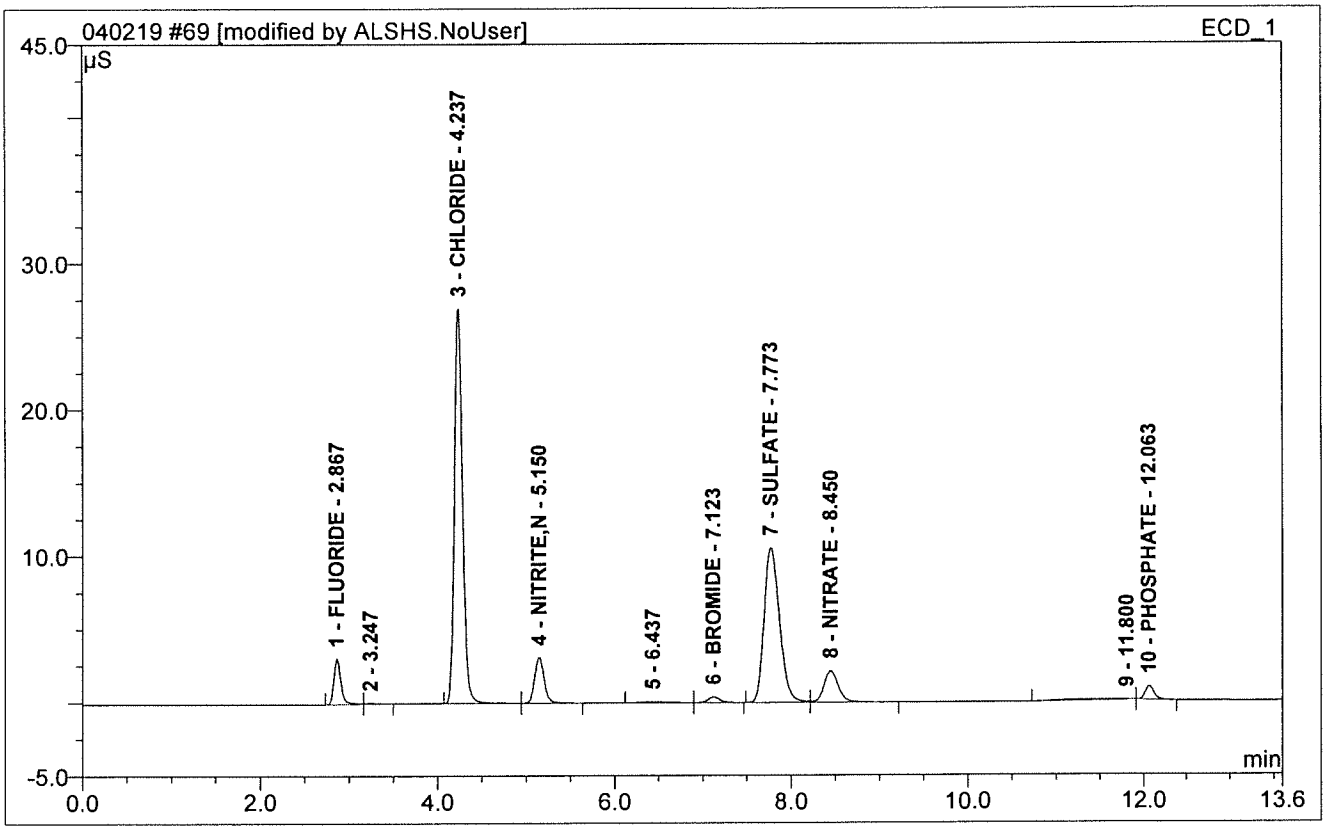
Sample Name:	**HS19031013-07MSDF50**	*Injection Volume:*	**10.0**
Vial Number:	**52**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 4:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	2.930	0.266	4.39	97.471	50.
3	4.24	CHLORIDE	25.769	2.779	45.80	1535.355	50.
4	5.15	NITRITE,N	2.984	0.371	6.11	98.720	50.
6	7.13	BROMIDE	0.364	0.057	0.93	88.367	50.
7	7.78	SULFATE	10.116	2.040	33.63	1564.863	50.
8	8.45	NITRATE	2.018	0.380	6.27	88.525	50.
10	12.06	PHOSPHATE	0.858	0.103	1.69	72.196	50.
Total:			45.039	5.996	98.82	3545.498	

69 HS19031013-07MSDDF50

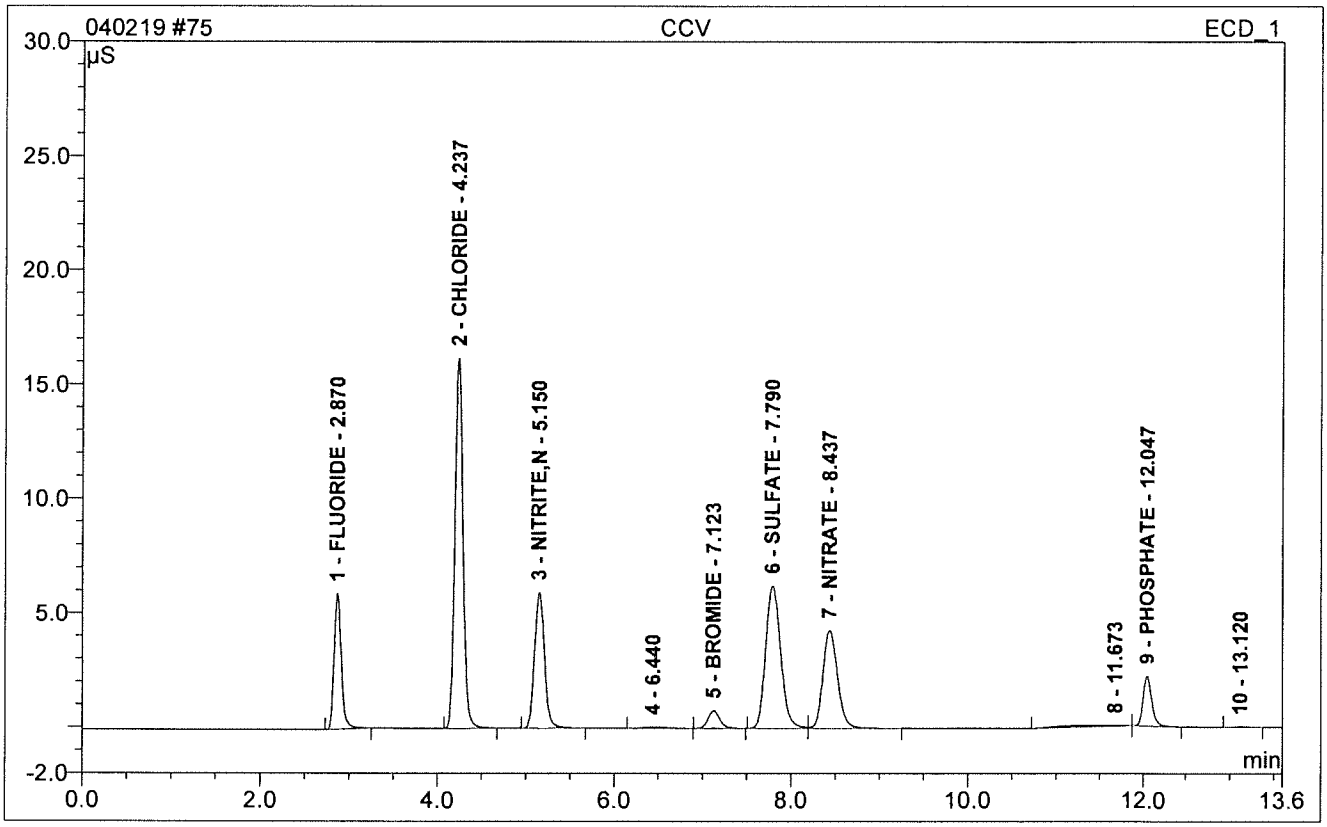
Sample Name:	**HS19031013-07MSDDF50**	*Injection Volume:*	**10.0**
Vial Number:	**53**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**50.**
Recording Time:	**4/3/2019 4:43**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	3.092	0.282	4.43	102.982	50.
3	4.24	CHLORIDE	26.946	2.907	45.72	1605.383	50.
4	5.15	NITRITE,N	3.131	0.390	6.14	103.751	50.
6	7.12	BROMIDE	0.385	0.060	0.94	92.957	50.
7	7.77	SULFATE	10.549	2.136	33.60	1637.971	50.
8	8.45	NITRATE	2.122	0.400	6.29	93.009	50.
10	12.06	PHOSPHATE	0.932	0.111	1.75	77.723	50.
Total:			47.157	6.286	98.87	3713.776	

75 CCV

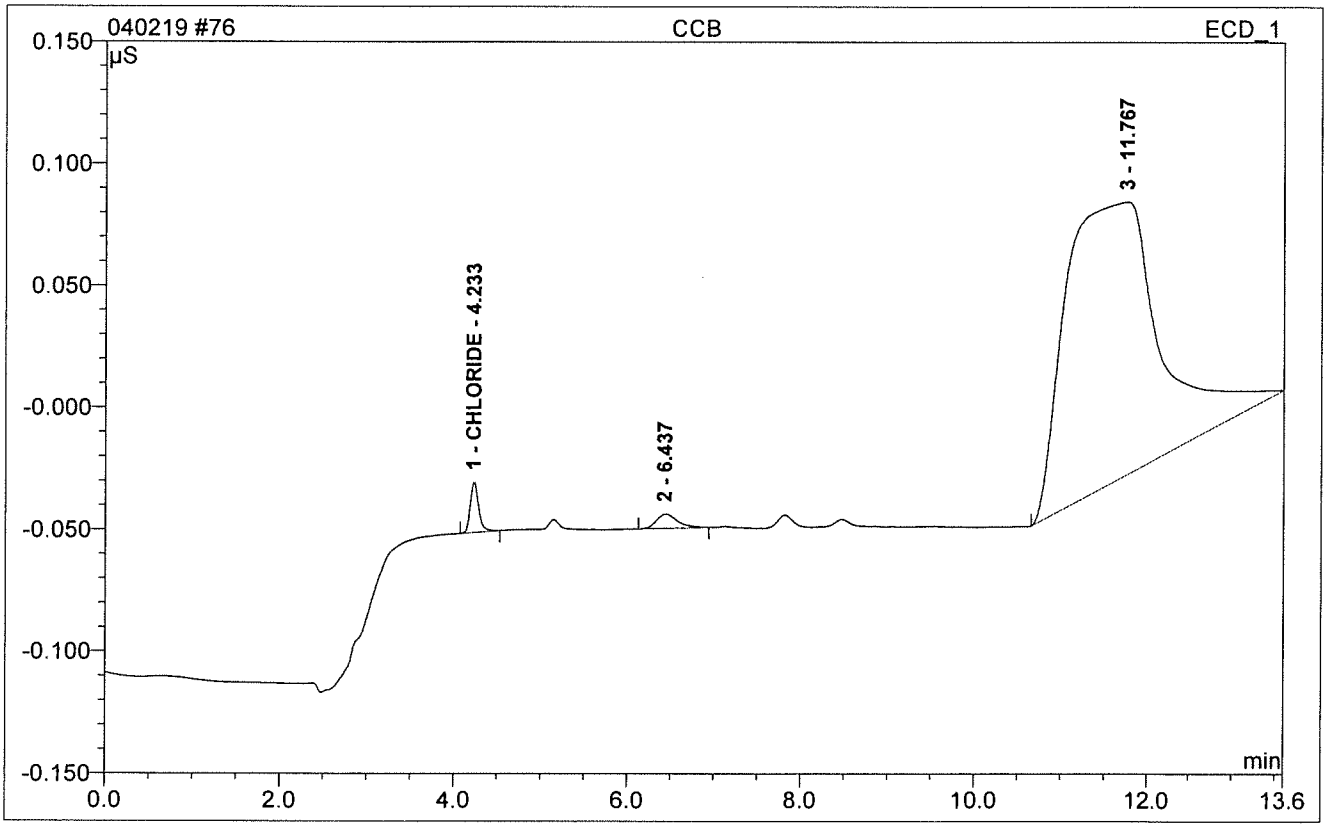
Sample Name:	**CCV**	*Injection Volume:*	**10.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 6:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	5.955	0.555	10.00	4.019	1.
2	4.24	CHLORIDE	16.187	1.729	31.15	19.181	1.
3	5.15	NITRITE,N	5.956	0.774	13.94	4.048	1.
5	7.12	BROMIDE	0.767	0.117	2.10	3.578	1.
6	7.79	SULFATE	6.258	1.232	22.19	18.971	1.
7	8.44	NITRATE	4.288	0.821	14.78	3.741	1.
9	12.05	PHOSPHATE	2.176	0.264	4.75	3.466	1.
Total:			41.587	5.490	98.92	57.004	

76 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-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/3/2019 6:26**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.23	CHLORIDE	0.021	0.002	1.52	0.235	1.
Total:			0.021	0.002	1.52	0.235	

HS19031013

Sequence: 040319
Operator: ALSHS.NoUser

Printed: 4/11/2019 6:36:33 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 294

Created: 4/3/2019 10:56:31 AM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
1	STD1	297.020.7208	Standard	91	1.0000	032119	Finished
2	STD2		Standard	92	1.0000	032119	Finished
3	STD3		Standard	93	1.0000	032119	Finished
4	STD4		Standard	94	1.0000	032119	Finished
5	STD5		Standard	95	1.0000	032119	Finished
6	STD6		Standard	96	1.0000	032119	Finished
7	ICV	297.020.6806	Unknown	97	1.0000	032119	Finished
8	ICB		Unknown	98	1.0000	032119	Finished
9	CCV		Unknown	1	1.0000	032119	Finished
10	CCB		Unknown	2	1.0000	032119	Finished
11	WBLKW-040319		Unknown	59	1.0000	032119	Finished
12	WLCSW-040319		Unknown	60	1.0000	032119	Finished
13	HS19040154-04DF5		Unknown	62	5.0000	032119	Finished
14	HS19040154-03DF5		Unknown	64	5.0000	032119	Finished
15	HS19040154-02DF5		Unknown	66	5.0000	032119	Finished
16	HS19040154-01DF5		Unknown	68	5.0000	032119	Finished
17	DI H2O		Unknown	10	1.0000	032119	Finished
18	HS19040154-04DF50		Unknown	63	50.0000	032119	Finished
19	HS19040154-02DF50		Unknown	67	50.0000	032119	Finished
20	WLCSDW-040319		Unknown	61	1.0000	032119	Finished
21	CCV1		Unknown	3	1.0000	032119	Finished
22	CCB		Unknown	4	1.0000	032119	Finished
23	HS19040154-01DF100		Unknown	69	100.0000	032119	Finished
24	HS19040154-03DF100		Unknown	65	100.0000	032119	Finished
25	HS19040064-01DF10		Unknown	40	10.0000	032119	Finished
26	HS19040064-02DF10		Unknown	41	10.0000	032119	Finished
27	DI H2O		Unknown	10	1.0000	032119	Finished
28	HS19031550-01DF5		Unknown	71	5.0000	032119	Finished
29	HS19031549-01DF5		Unknown	70	5.0000	032119	Finished
30	HS19040173-03		Unknown	72	1.0000	032119	Finished
31	HS19040173-05		Unknown	73	1.0000	032119	Finished
32	HS19040173-06		Unknown	74	1.0000	032119	Finished
33	CCV		Unknown	1	1.0000	032119	Finished
34	CCB		Unknown	2	1.0000	032119	Finished
35	MBLK-139466		Unknown	75	1.0000	032119	Finished
36	LCS-139466		Unknown	76	1.0000	032119	Finished
37	LCSD-139466		Unknown	77	1.0000	032119	Finished
38	HS19040144-01DF5		Unknown	21	5.0000	032119	Finished
39	HS19040144-02DF5		Unknown	22	5.0000	032119	Finished
40	HS19040144-03DF5		Unknown	23	5.0000	032119	Finished
41	DI H2O		Unknown	10	1.0000	032119	Finished
42	HS19031513-01		Unknown	78	1.0000	032119	Finished

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Sequence: 040319
Operator: ALSHS.NoUser

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Title:
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Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 294

Created: 4/3/2019 10:56:31 AM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
1	STD1	3/21/2019 3:01:53 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
2	STD2	3/21/2019 3:16:31 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
3	STD3	3/21/2019 3:31:10 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
4	STD4	3/21/2019 3:45:48 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
5	STD5	3/21/2019 4:00:26 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
6	STD6	3/21/2019 4:15:05 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
7	ICV	3/21/2019 4:29:42 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
8	ICB	3/21/2019 5:07:46 PM	Anions Gradient Program-150mA-26Mm	10.0	1.00
9	CCV	4/3/2019 9:52:06 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
10	CCB	4/3/2019 10:09:30 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
11	WBLKW-040319	4/3/2019 10:24:15 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
12	WLCSW-040319	4/3/2019 10:39:00 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
13	HS19040154-04DF5	4/3/2019 11:00:20 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
14	HS19040154-03DF5	4/3/2019 11:22:33 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
15	HS19040154-02DF5	4/3/2019 11:37:17 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
16	HS19040154-01DF5	4/3/2019 11:52:02 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
17	DI H2O	4/3/2019 12:16:53 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
18	HS19040154-04DF50	4/3/2019 12:31:38 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
19	HS19040154-02DF50	4/3/2019 12:46:22 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
20	WLCSDW-040319	4/3/2019 1:01:07 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
21	CCV1	4/3/2019 1:15:51 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
22	CCB	4/3/2019 1:30:36 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
23	HS19040154-01DF100	4/3/2019 1:45:21 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
24	HS19040154-03DF100	4/3/2019 2:00:05 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
25	HS19040064-01DF10	4/3/2019 2:14:50 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
26	HS19040064-02DF10	4/3/2019 2:29:35 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
27	DI H2O	4/3/2019 2:44:19 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
28	HS19031550-01DF5	4/3/2019 2:59:04 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
29	HS19031549-01DF5	4/3/2019 3:13:49 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
30	HS19040173-03	4/3/2019 3:57:04 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
31	HS19040173-05	4/3/2019 4:11:49 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
32	HS19040173-06	4/3/2019 4:26:33 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
33	CCV	4/3/2019 4:41:18 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
34	CCB	4/3/2019 4:56:03 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
35	MBLK-139466	4/3/2019 5:32:09 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
36	LCS-139466	4/3/2019 6:13:46 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
37	LCSD-139466	4/3/2019 6:28:31 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
38	HS19040144-01DF5	4/3/2019 6:50:38 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
39	HS19040144-02DF5	4/3/2019 7:05:22 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
40	HS19040144-03DF5	4/3/2019 7:20:07 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
41	DI H2O	4/3/2019 7:34:51 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
42	HS19031513-01	4/3/2019 7:49:36 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00

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Sequence: 040319
Operator: ALSHS.NoUser

Printed: 4/11/2019 6:36:33 PM

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 294

Created: 4/3/2019 10:56:31 AM by ALSHS.NoUser
(Modified, not saved)

No.	Name	*Final_Volume	GUID	Auto Purif.Frac.	Auto Purif.Ref.
1	STD1	1.00	ab134b69-4c13-11e9-b6db-bd957e66751c		
2	STD2	1.00	16318633-4c16-11e9-b6db-bd957e66751c		
3	STD3	1.00	21bddd99-4c18-11e9-b6db-bd957e66751c		
4	STD4	1.00	2d5faa05-4c1a-11e9-b6db-bd957e66751c		
5	STD5	1.00	38e73cbf-4c1c-11e9-b6db-bd957e66751c		
6	STD6	1.00	442e7067-4c1e-11e9-b6db-bd957e66751c		
7	ICV	1.00	4fd763d5-4c20-11e9-b6db-bd957e66751c		
8	ICB	1.00	40d0abe3-4c25-11e9-b6db-bd957e66751c		
9	CCV	1.00	eb1e7fc1-561f-11e9-b6db-bd957e66751c		
10	CCB	1.00	fa5af42f-5621-11e9-b6db-bd957e66751c		
11	WBLKW-040319	1.00	6907eb4d-5624-11e9-b6db-bd957e66751c		
12	WLCSW-040319	1.00	78635e19-5626-11e9-b6db-bd957e66751c		
13	HS19040154-04DF5	1.00	13d00d65-5629-11e9-b6db-bd957e66751c		
14	HS19040154-03DF5	1.00	2e7fcd47-562c-11e9-b6db-bd957e66751c		
15	HS19040154-02DF5	1.00	9d10285d-562e-11e9-b6db-bd957e66751c		
16	HS19040154-01DF5	1.00	ac4eff21-5630-11e9-b6db-bd957e66751c		
17	DI H2O	1.00	c631b61f-5633-11e9-b6db-bd957e66751c		
18	HS19040154-04DF50	1.00	348b3b7b-5636-11e9-b6db-bd957e66751c		
19	HS19040154-02DF50	1.00	43d39b97-5638-11e9-b6db-bd957e66751c		
20	WLCSDW-040319	1.00	52c162ef-563a-11e9-b6db-bd957e66751c		
21	CCV1	1.00	620e87b7-563c-11e9-b6db-bd957e66751c		
22	CCB	1.00	71522327-563e-11e9-b6db-bd957e66751c		
23	HS19040154-01DF100	1.00	809f47ef-5640-11e9-b6db-bd957e66751c		
24	HS19040154-03DF100	1.00	90022cb7-5642-11e9-b6db-bd957e66751c		
25	HS19040064-01DF10	1.00	9f54178b-5644-11e9-b6db-bd957e66751c		
26	HS19040064-02DF10	1.00	aea8719d-5646-11e9-b6db-bd957e66751c		
27	DI H2O	1.00	bdfa5b11-5648-11e9-b6db-bd957e66751c		
28	HS19031550-01DF5	1.00	cd320ad3-564a-11e9-b6db-bd957e66751c		
29	HS19031549-01DF5	1.00	dc780899-564c-11e9-b6db-bd957e66751c		
30	HS19040173-03	1.00	883e16e3-5652-11e9-b6db-bd957e66751c		
31	HS19040173-05	1.00	f6bdc19f-5654-11e9-b6db-bd957e66751c		
32	HS19040173-06	1.00	05f0acb5-5657-11e9-b6db-bd957e66751c		
33	CCV	1.00	153b6f27-5659-11e9-b6db-bd957e66751c		
34	CCB	1.00	2483cf43-565b-11e9-b6db-bd957e66751c		
35	MBLK-139466	1.00	d07d1c5b-565f-11e9-b6db-bd957e66751c		
36	LCS-139466	1.00	a11ac39d-5665-11e9-b6db-bd957e66751c		
37	LCSD-139466	1.00	0fbbcf0d-5668-11e9-b6db-bd957e66751c		
38	HS19040144-01DF5	1.00	c760643d-566a-11e9-b6db-bd957e66751c		
39	HS19040144-02DF5	1.00	35bc4bef-566d-11e9-b6db-bd957e66751c		
40	HS19040144-03DF5	1.00	4504ac0b-566f-11e9-b6db-bd957e66751c		
41	DI H2O	1.00	544aa9d1-5671-11e9-b6db-bd957e66751c		
42	HS19031513-01	1.00	6384bbe9-5673-11e9-b6db-bd957e66751c		

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Sequence: 040319
Operator: ALSHS.NoUser

Title:
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Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 294

Created: 4/3/2019 10:56:31 AM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Comment	Type	Pos.	Dil. Factor	Method	Status
169	HS19040244-01		Unknown	90	1.0000	032119	Finished
170	HS19040251-15		Unknown	97	1.0000	032119	Finished
171	HS19040251-18		Unknown	98	1.0000	032119	Finished
172	HS19040251-01		Unknown	91	1.0000	032119	Finished
173	HS19040251-09		Unknown	92	1.0000	032119	Finished
174	HS19040251-09MS		Unknown	93	1.0000	032119	Finished
175	HS19040251-09MSD		Unknown	94	1.0000	032119	Finished
176	CCV1		Unknown	3	1.0000	032119	Finished
177	CCB		Unknown	4	1.0000	032119	Finished
178	HS19040251-10		Unknown	95	1.0000	032119	Finished
179	HS19040251-12		Unknown	96	1.0000	032119	Finished
180	HS19040246-01DF20		Unknown	99	20.0000	032119	Finished
181	HS19031548-01		Unknown	11	1.0000	032119	Finished
182	HS19031548-02		Unknown	13	1.0000	032119	Finished
183	HS19031548-03		Unknown	15	1.0000	032119	Finished
184	HS19031548-03MS		Unknown	16	1.0000	032119	Finished
185	HS19031548-03MSD		Unknown	17	1.0000	032119	Finished
186	HS19031548-01DF10		Unknown	12	10.0000	032119	Finished
187	HS19031548-02DF10		Unknown	14	10.0000	032119	Finished
188	CCV		Unknown	1	1.0000	032119	Finished
189	CCB		Unknown	2	1.0000	032119	Finished
190	HS19031548-04		Unknown	21	1.0000	032119	Finished
191	HS19031548-05		Unknown	23	1.0000	032119	Finished
192	HS19031548-06		Unknown	25	1.0000	032119	Finished
193	HS19031548-04DF10		Unknown	22	10.0000	032119	Finished
194	HS19031548-05DF10		Unknown	24	10.0000	032119	Finished
195	HS19031548-06DF10		Unknown	26	10.0000	032119	Finished
196	HS19031548-03DF10		Unknown	18	10.0000	032119	Finished
197	HS19031548-03MSDF10		Unknown	19	10.0000	032119	Finished
198	HS19031548-03MSDDF10		Unknown	20	10.0000	032119	Finished
199	CCV1		Unknown	3	1.0000	032119	Finished
200	CCB		Unknown	4	1.0000	032119	Finished
201	WBLKW1-040519		Unknown	27	1.0000	032119	Finished
202	WLCSW1-040519		Unknown	28	1.0000	032119	Finished
203	WLCSDW1-040519		Unknown	29	1.0000	032119	Finished
204	HS19031013-05DF5	BSLN KMU 4.05.19	Unknown	30	5.0000	032119	Finished
205	HS19031013-06DF5	BSLN KMU 4.05.19	Unknown	31	5.0000	032119	Finished
206	HS19040017-01DF10		Unknown	32	10.0000	032119	Finished
207	HS19040017-01MSDF10		Unknown	33	10.0000	032119	Finished
208	HS19040017-01MSDDF10		Unknown	34	10.0000	032119	Finished
209	CCV		Unknown	1	1.0000	032119	Finished
210	CCB		Unknown	2	1.0000	032119	Finished

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Sequence: 040319
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 294

Created: 4/3/2019 10:56:31 AM by ALSHS.NoUser
(Modified, not saved)

No.	Name	Inj. Date/Time	Program	Inj. Vol.	*Initial_Vol_Wt
169	HS19040244-01	4/5/2019 5:47:11 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
170	HS19040251-15	4/5/2019 6:01:55 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
171	HS19040251-18	4/5/2019 6:16:40 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
172	HS19040251-01	4/5/2019 6:31:25 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
173	HS19040251-09	4/5/2019 6:46:09 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
174	HS19040251-09MS	4/5/2019 7:00:54 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
175	HS19040251-09MSD	4/5/2019 7:15:38 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
176	CCV1	4/5/2019 7:30:23 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
177	CCB	4/5/2019 7:45:08 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
178	HS19040251-10	4/5/2019 7:59:52 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
179	HS19040251-12	4/5/2019 8:14:37 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
180	HS19040246-01DF20	4/5/2019 8:29:22 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
181	HS19031548-01	4/5/2019 8:44:07 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
182	HS19031548-02	4/5/2019 8:58:51 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
183	HS19031548-03	4/5/2019 9:13:36 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
184	HS19031548-03MS	4/5/2019 9:28:20 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
185	HS19031548-03MSD	4/5/2019 9:43:05 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
186	HS19031548-01DF10	4/5/2019 9:57:50 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
187	HS19031548-02DF10	4/5/2019 10:12:34 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
188	CCV	4/5/2019 10:34:33 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
189	CCB	4/5/2019 10:49:18 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
190	HS19031548-04	4/5/2019 11:04:02 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
191	HS19031548-05	4/5/2019 11:18:47 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
192	HS19031548-06	4/5/2019 11:33:31 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
193	HS19031548-04DF10	4/5/2019 11:48:16 AM	Anions Gradient Program-200mA-26Mm	10.0	1.00
194	HS19031548-05DF10	4/5/2019 12:03:00 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
195	HS19031548-06DF10	4/5/2019 12:17:45 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
196	HS19031548-03DF10	4/5/2019 12:32:30 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
197	HS19031548-03MSDF10	4/5/2019 12:47:14 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
198	HS19031548-03MSDDF10	4/5/2019 1:01:59 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
199	CCV1	4/5/2019 1:16:43 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
200	CCB	4/5/2019 1:31:28 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
201	WBLKW1-040519	4/5/2019 2:09:52 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
202	WLCSW1-040519	4/5/2019 2:24:37 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
203	WLCSDW1-040519	4/5/2019 2:39:22 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
204	HS19031013-05DF5	4/5/2019 2:54:06 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
205	HS19031013-06DF5	4/5/2019 3:08:51 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
206	HS19040017-01DF10	4/5/2019 3:23:35 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
207	HS19040017-01MSDF10	4/5/2019 3:38:20 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
208	HS19040017-01MSDDF10	4/5/2019 3:53:05 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
209	CCV	4/5/2019 4:07:49 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00
210	CCB	4/5/2019 4:22:34 PM	Anions Gradient Program-200mA-26Mm	10.0	1.00

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Sequence: 040319
Operator: ALSHS.NoUser

Title:
Datasource: DB7CGHK1_local
Location: ICS2100\Sequences and Data\2019
Timebase: ICS2100
#Samples: 294

Created: 4/3/2019 10:56:31 AM by ALSHS.NoUser
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No.	Name	*Final_Volume	GUID	Auto Purif.Frac.	Auto Purif.Ref.
169	HS19040244-01	1.00	09130359-5790-11e9-b6db-bd957e66751c		
170	HS19040251-15	1.00	18569ec9-5792-11e9-b6db-bd957e66751c		
171	HS19040251-18	1.00	2790b0e1-5794-11e9-b6db-bd957e66751c		
172	HS19040251-01	1.00	36cac2f9-5796-11e9-b6db-bd957e66751c		
173	HS19040251-09	1.00	460e5e69-5798-11e9-b6db-bd957e66751c		
174	HS19040251-09MS	1.00	5551f9d9-579a-11e9-b6db-bd957e66751c		
175	HS19040251-09MSD	1.00	648e6e47-579c-11e9-b6db-bd957e66751c		
176	CCV1	1.00	73d46c0d-579e-11e9-b6db-bd957e66751c		
177	CCB	1.00	831ccc29-57a0-11e9-b6db-bd957e66751c		
178	HS19040251-10	1.00	92652c45-57a2-11e9-b6db-bd957e66751c		
179	HS19040251-12	1.00	a1c09f11-57a4-11e9-b6db-bd957e66751c		
180	HS19040246-01DF20	1.00	b1495e3f-57a6-11e9-b6db-bd957e66751c		
181	HS19031548-01	1.00	c07eabab-57a8-11e9-b6db-bd957e66751c		
182	HS19031548-02	1.00	cfc2471b-57aa-11e9-b6db-bd957e66751c		
183	HS19031548-03	1.00	df011ddf-57ac-11e9-b6db-bd957e66751c		
184	HS19031548-03MS	1.00	ee50a4fd-57ae-11e9-b6db-bd957e66751c		
185	HS19031548-03MSD	1.00	fd94406d-57b0-11e9-b6db-bd957e66751c		
186	HS19031548-01DF10	1.00	0cd31731-57b3-11e9-b6db-bd957e66751c		
187	HS19031548-02DF10	1.00	1c11edf5-57b5-11e9-b6db-bd957e66751c		
188	CCV	1.00	cec6ed19-57b7-11e9-b6db-bd957e66751c		
189	CCB	1.00	3d6333dd-57ba-11e9-b6db-bd957e66751c		
190	HS19031548-04	1.00	4cab93f9-57bc-11e9-b6db-bd957e66751c		
191	HS19031548-05	1.00	5bef2f69-57be-11e9-b6db-bd957e66751c		
192	HS19031548-06	1.00	6b352d2f-57c0-11e9-b6db-bd957e66751c		
193	HS19031548-04DF10	1.00	7a6cdcf1-57c2-11e9-b6db-bd957e66751c		
194	HS19031548-05DF10	1.00	89a9515f-57c4-11e9-b6db-bd957e66751c		
195	HS19031548-06DF10	1.00	98f1b17b-57c6-11e9-b6db-bd957e66751c		
196	HS19031548-03DF10	1.00	a830883f-57c8-11e9-b6db-bd957e66751c		
197	HS19031548-03MSDF10	1.00	b76a9a57-57ca-11e9-b6db-bd957e66751c		
198	HS19031548-03MSDDF10	1.00	c6b7bf1f-57cc-11e9-b6db-bd957e66751c		
199	CCV1	1.00	d5fb5a8f-57ce-11e9-b6db-bd957e66751c		
200	CCB	1.00	e53c93a9-57d0-11e9-b6db-bd957e66751c		
201	WBLKW1-040519	1.00	e352b4b7-57d5-11e9-b6db-bd957e66751c		
202	WLCSW1-040519	1.00	51eefb7b-57d8-11e9-b6db-bd957e66751c		
203	WLCSDW1-040519	1.00	613296eb-57da-11e9-b6db-bd957e66751c		
204	HS19031013-05DF5	1.00	707d595d-57dc-11e9-b6db-bd957e66751c		
205	HS19031013-06DF5	1.00	7fbc3021-57de-11e9-b6db-bd957e66751c		
206	HS19040017-01DF10	1.00	8efb06e5-57e0-11e9-b6db-bd957e66751c		
207	HS19040017-01MSDF10	1.00	9e4104ab-57e2-11e9-b6db-bd957e66751c		
208	HS19040017-01MSDDF10	1.00	ad8bc71d-57e4-11e9-b6db-bd957e66751c		
209	CCV	1.00	bccd0037-57e6-11e9-b6db-bd957e66751c		
210	CCB	1.00	cc0974a5-57e8-11e9-b6db-bd957e66751c		

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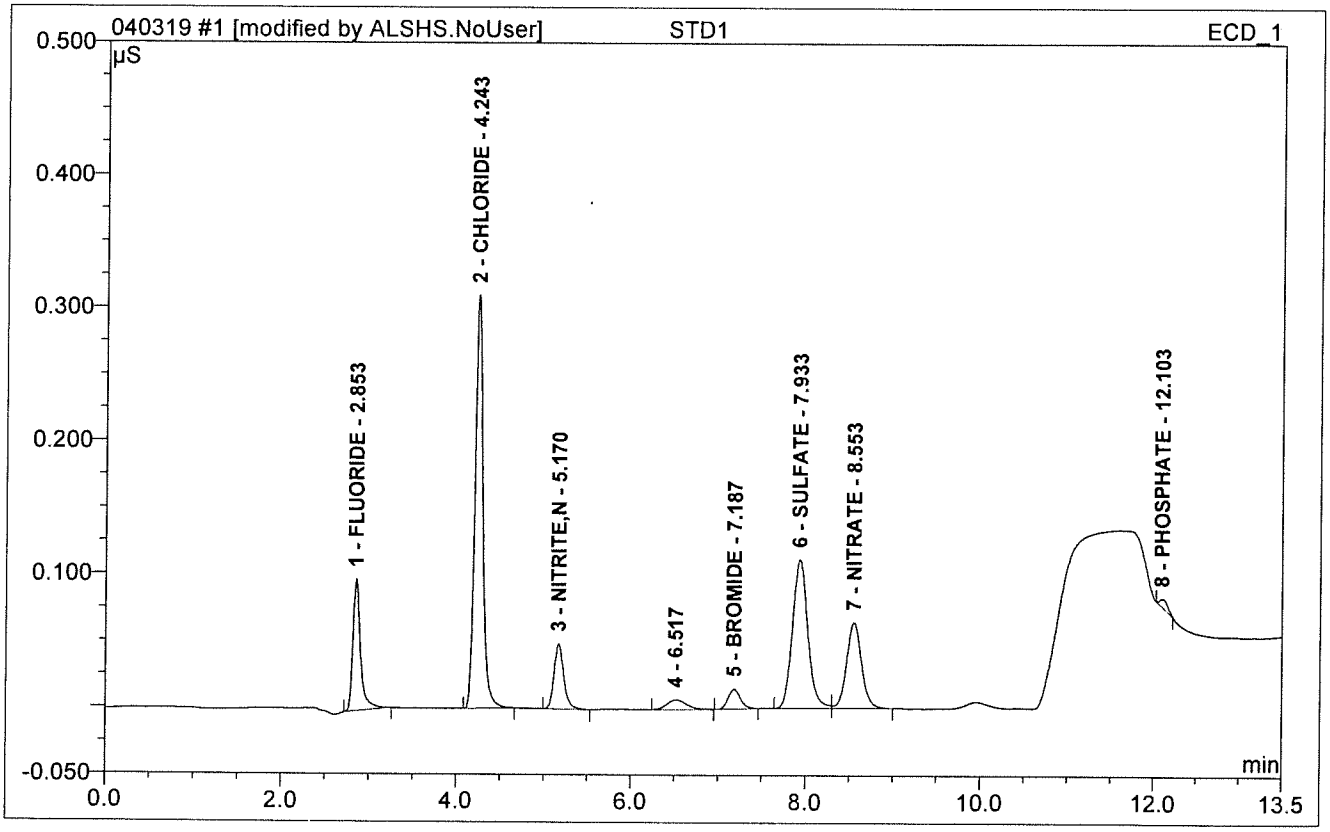
1 STD1

297.020.7208

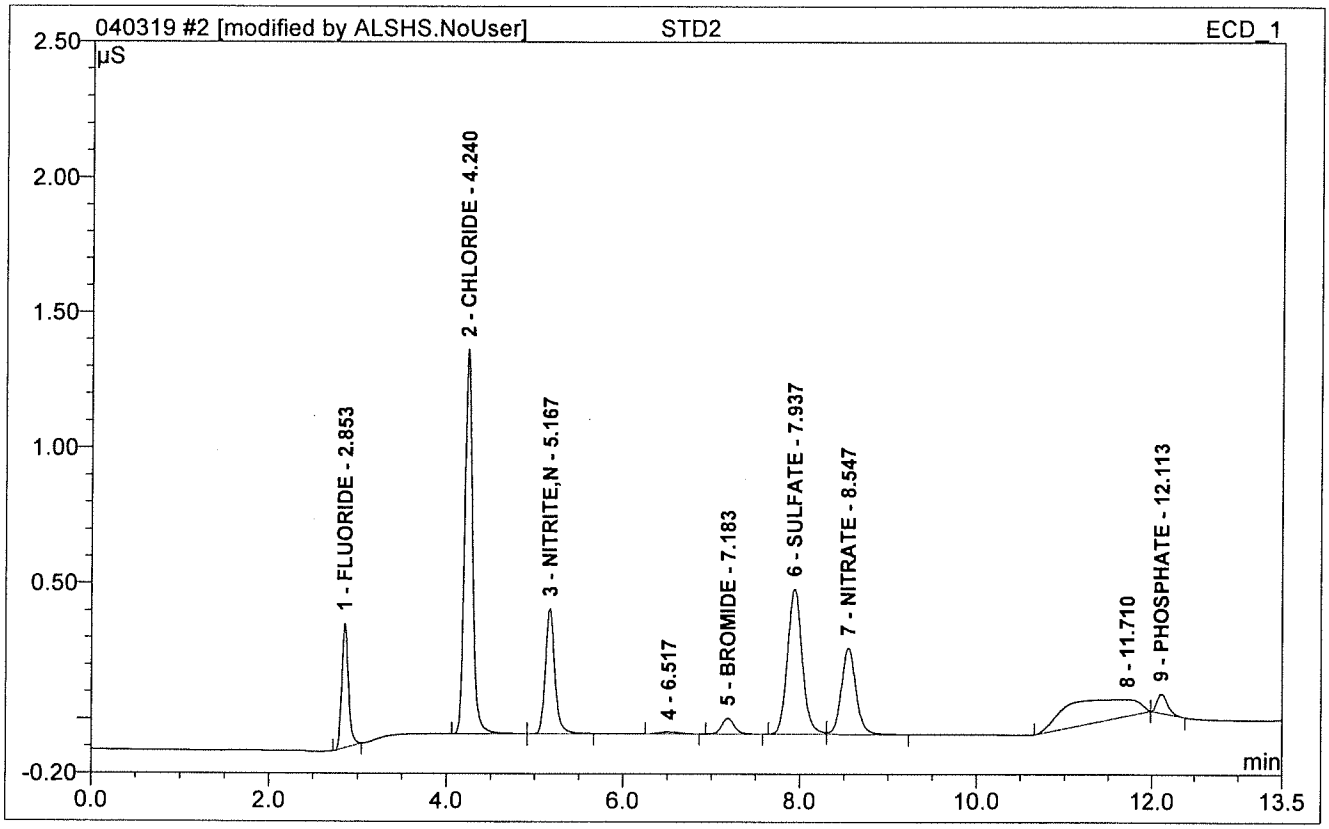
Sample Name:	**STD1**	*Injection Volume:*	**10.0**
Vial Number:	**91**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:01**	*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	2.85	FLUORIDE	0.099	0.010	10.95	0.113	1.
2	4.24	CHLORIDE	0.311	0.033	36.81	0.575	1.
3	5.17	NITRITE,N	0.049	0.006	7.07	0.103	1.
5	7.19	BROMIDE	0.015	0.002	2.71	0.132	1.
6	7.93	SULFATE	0.112	0.023	25.31	0.552	1.
7	8.55	NITRATE	0.065	0.013	14.26	0.127	1.
8	12.10	PHOSPHATE	0.006	0.001	0.79	0.163	1.
Total:			0.656	0.088	97.90	1.763	

2 STD2

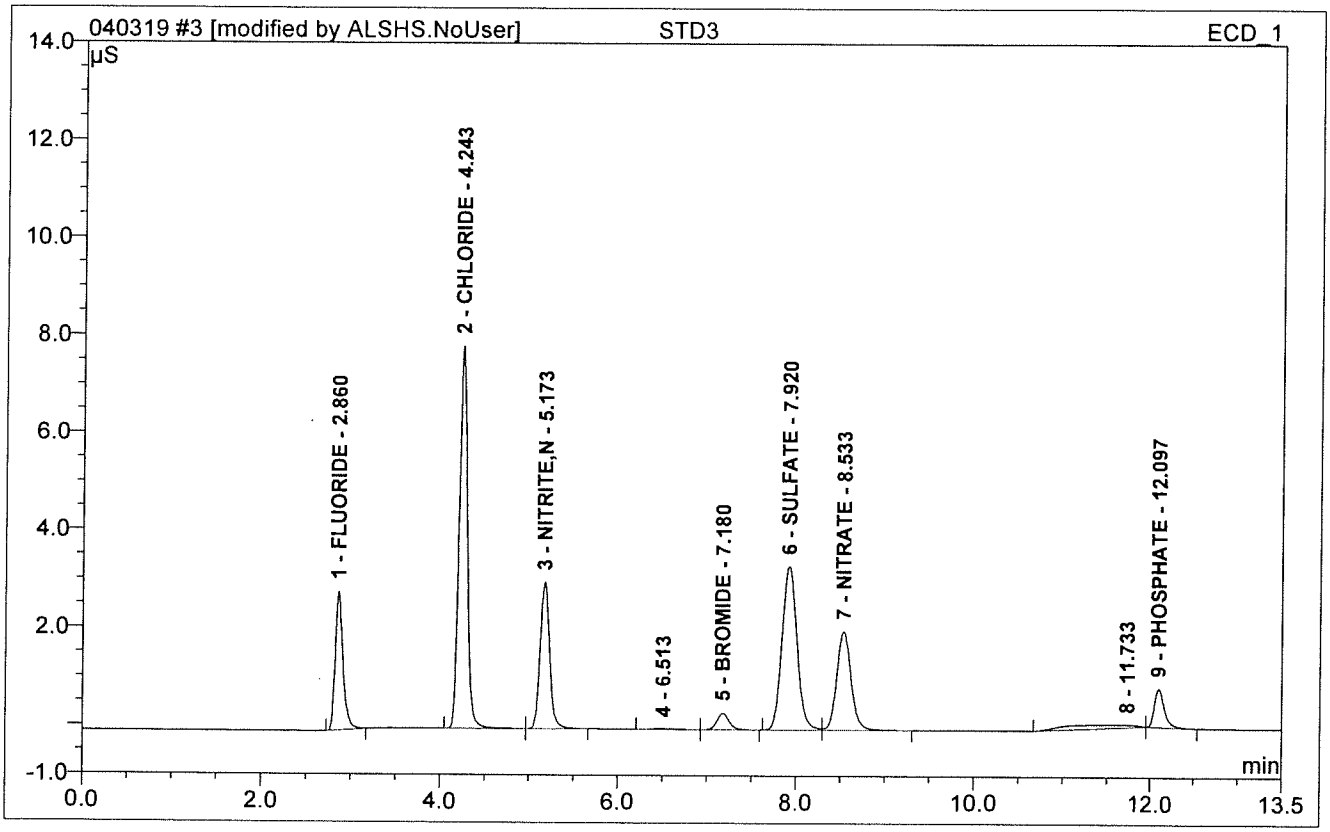
Sample Name:	**STD2**	*Injection Volume:*	**10.0**
Vial Number:	**92**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:16**	*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	2.85	FLUORIDE	0.460	0.040	7.80	0.326	1.
2	4.24	CHLORIDE	1.419	0.146	28.82	1.817	1.
3	5.17	NITRITE,N	0.462	0.057	11.26	0.364	1.
5	7.18	BROMIDE	0.058	0.009	1.85	0.342	1.
6	7.94	SULFATE	0.538	0.105	20.58	1.797	1.
7	8.55	NITRATE	0.319	0.061	12.03	0.343	1.
9	12.11	PHOSPHATE	0.073	0.010	2.00	0.282	1.
Total:			3.328	0.429	84.34	5.270	

3 STD3

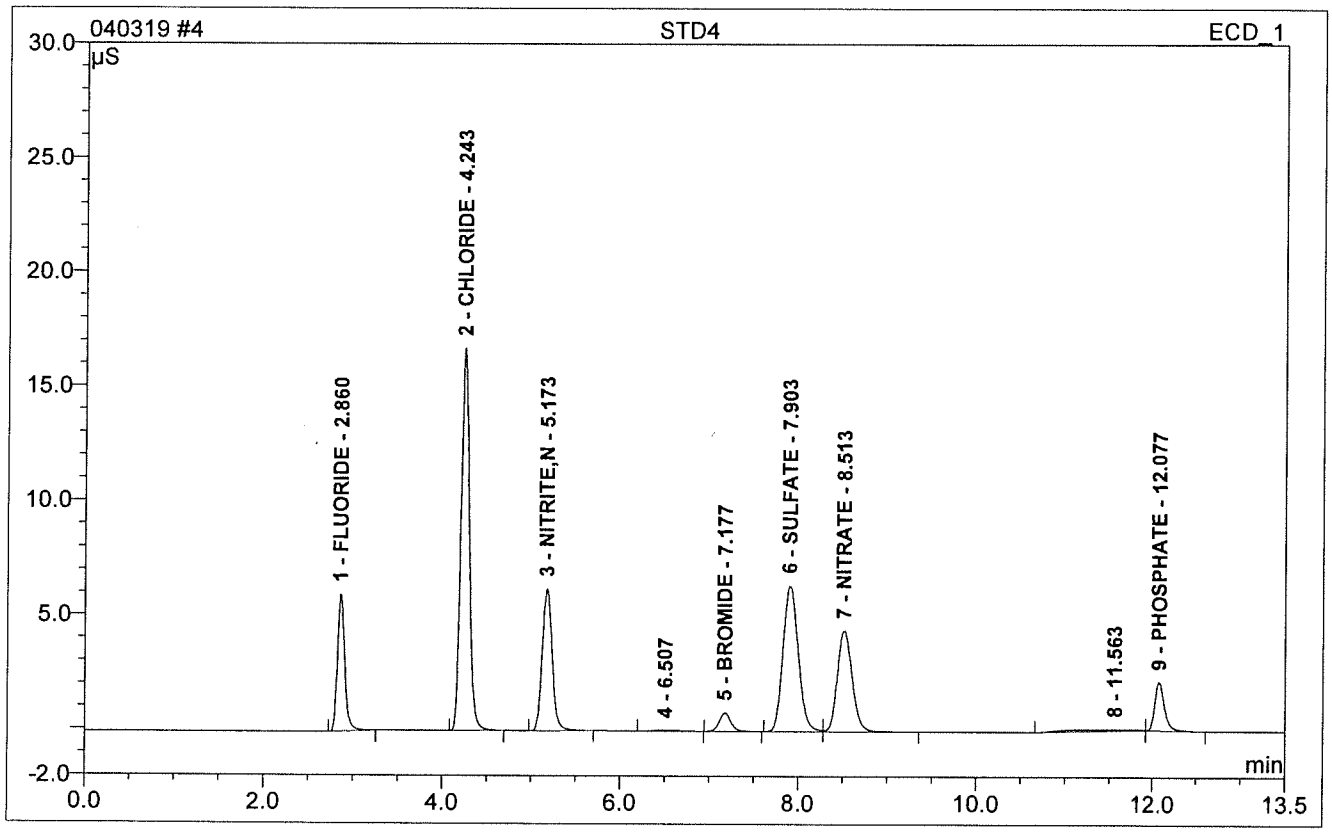
Sample Name:	**STD3**	*Injection Volume:*	**10.0**
Vial Number:	**93**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:31**	*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.
1	2.86	FLUORIDE	2.842	0.282	10.26	2.066	1.
2	4.24	CHLORIDE	7.837	0.836	30.35	9.380	1.
3	5.17	NITRITE,N	2.998	0.373	13.55	1.987	1.
5	7.18	BROMIDE	0.334	0.053	1.92	1.650	1.
6	7.92	SULFATE	3.346	0.654	23.76	10.172	1.
7	8.53	NITRATE	2.022	0.379	13.76	1.765	1.
9	12.10	PHOSPHATE	0.784	0.103	3.76	1.454	1.
Total:			20.164	2.681	97.36	28.476	

4 STD4

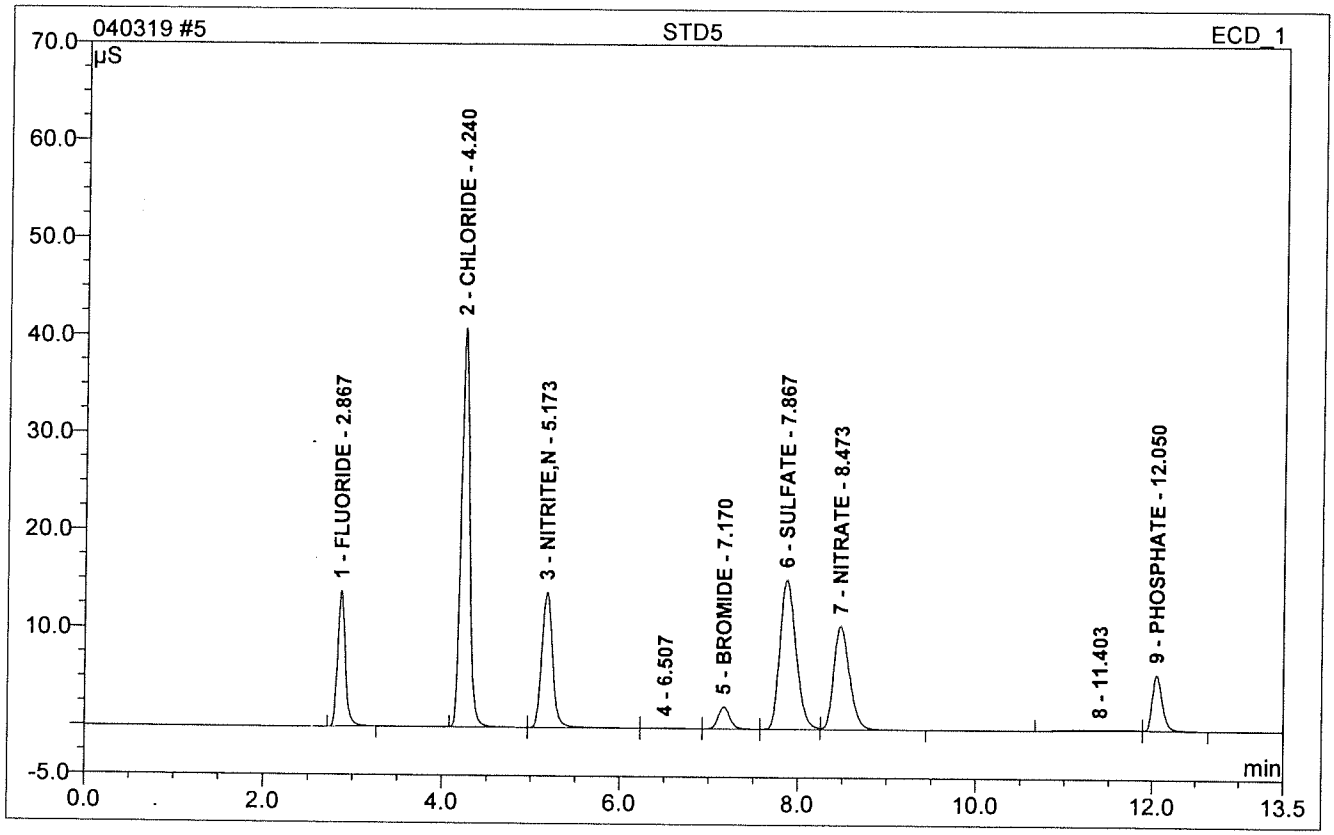
Sample Name:	**STD4**	*Injection Volume:*	**10.0**
Vial Number:	**94**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 15:45**	*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	2.86	FLUORIDE	6.004	0.570	9.81	4.124	1.
2	4.24	CHLORIDE	16.707	1.806	31.12	20.029	1.
3	5.17	NITRITE,N	6.216	0.811	13.98	4.239	1.
5	7.18	BROMIDE	0.805	0.123	2.13	3.779	1.
6	7.90	SULFATE	6.393	1.281	22.07	19.726	1.
7	8.51	NITRATE	4.433	0.859	14.80	3.914	1.
9	12.08	PHOSPHATE	2.112	0.274	4.73	3.603	1.
Total:			42.669	5.725	98.64	59.415	

5 STD5

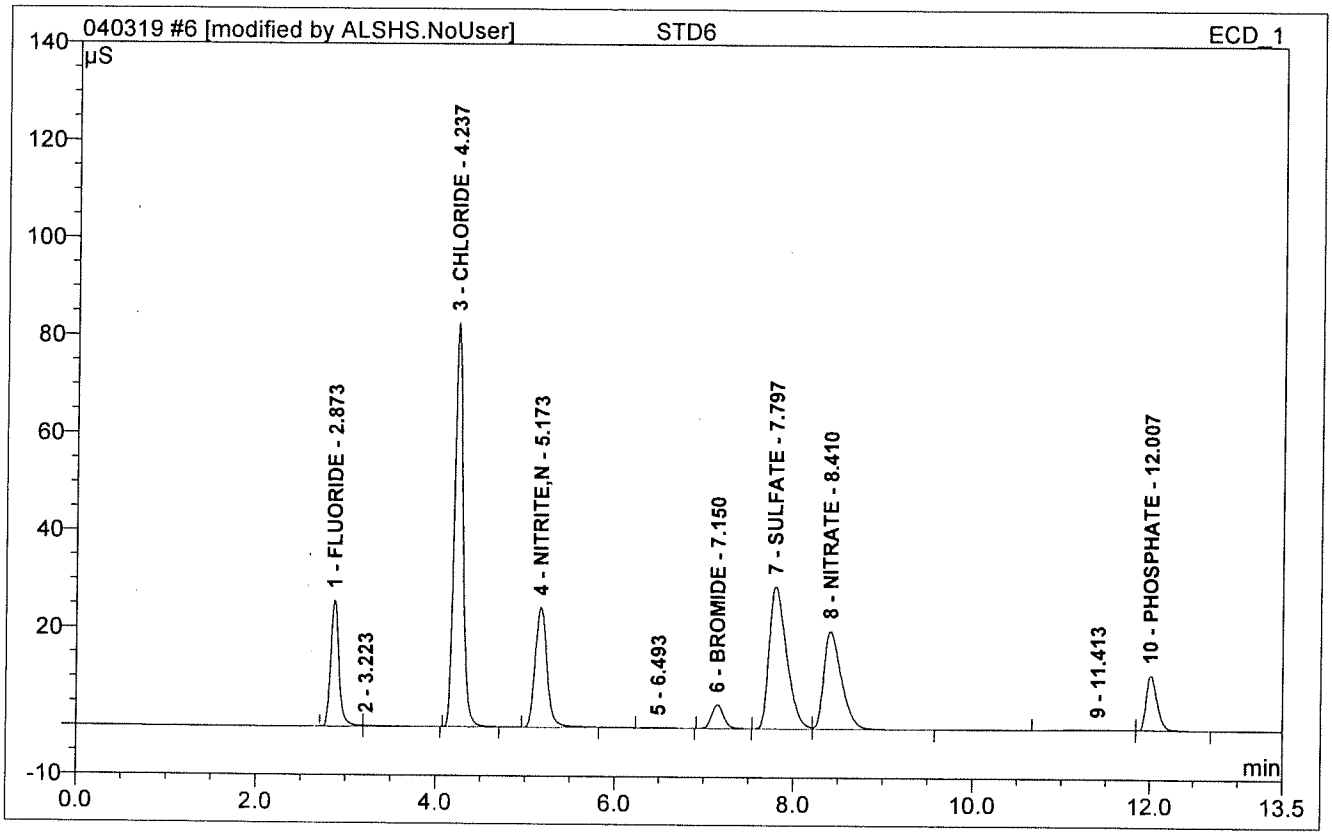
Sample Name:	**STD5**	*Injection Volume:*	**10.0**
Vial Number:	**95**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:00**	*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	2.87	FLUORIDE	13.878	1.390	9.60	10.006	1.
2	4.24	CHLORIDE	40.904	4.496	31.04	49.541	1.
3	5.17	NITRITE,N	13.858	1.984	13.70	10.264	1.
5	7.17	BROMIDE	2.267	0.349	2.41	10.597	1.
6	7.87	SULFATE	15.306	3.219	22.22	49.250	1.
7	8.47	NITRATE	10.619	2.196	15.16	9.898	1.
9	12.05	PHOSPHATE	5.690	0.772	5.33	9.855	1.
Total:			102.521	14.406	99.46	149.412	

6 STD6

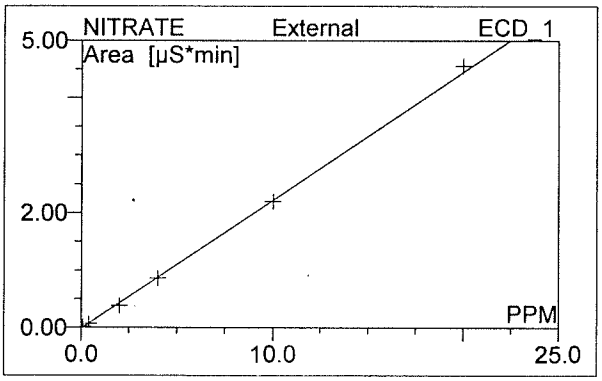
Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**

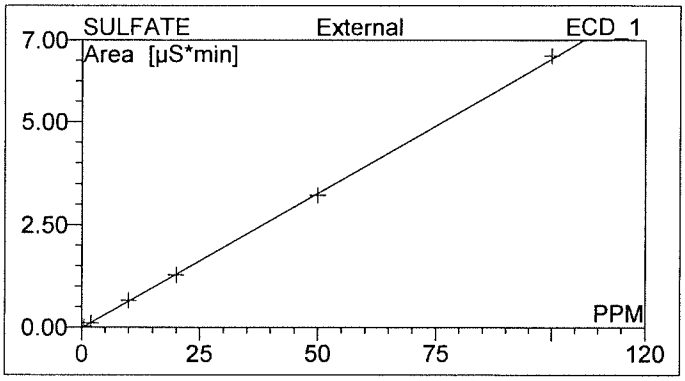


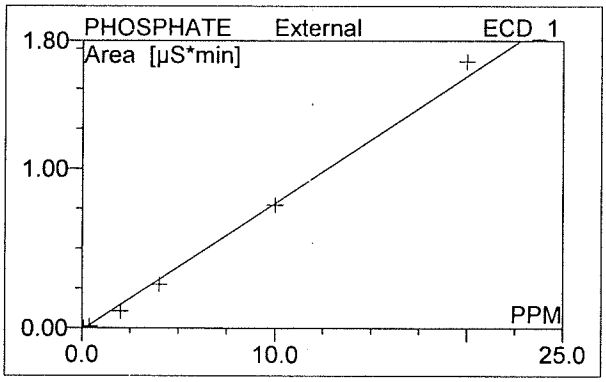
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	25.835	2.766	9.39	19.866	1.
3	4.24	CHLORIDE	82.765	9.200	31.22	101.157	1.
4	5.17	NITRITE,N	24.564	3.789	12.86	19.542	1.
6	7.15	BROMIDE	4.859	0.754	2.56	22.792	1.
7	7.80	SULFATE	29.202	6.615	22.45	101.003	1.
8	8.41	NITRATE	20.094	4.555	15.46	20.453	1.
10	12.01	PHOSPHATE	11.290	1.669	5.67	21.143	1.
Total:			198.610	29.348	99.61	305.956	

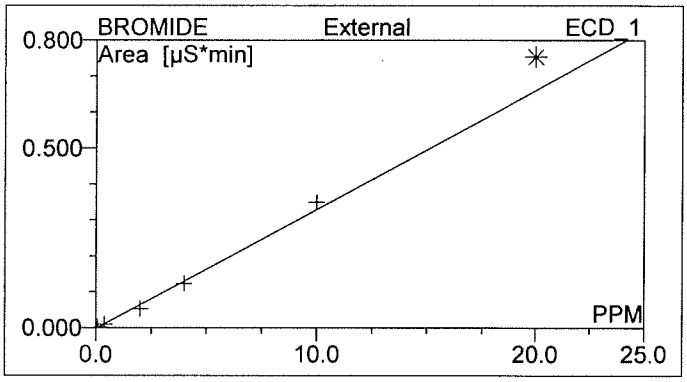
6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**10.0**
Vial Number:	**96**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.50**	*Sample Amount:*	**1.0000**









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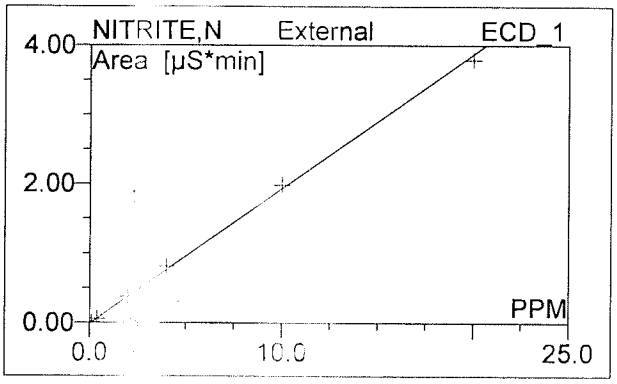
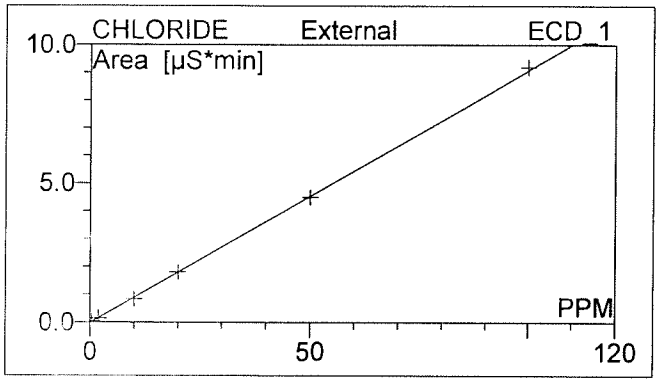
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.87	FLUORIDE	XLOff	6	99.934	-0.0058	0.1395	0.000
3	4.24	CHLORIDE	XLOff	6	99.950	-0.0191	0.0911	0.000
4	5.17	NITRITE,N	XLOff	6	99.896	-0.0137	0.1946	0.000
6	7.15	BROMIDE	XLOff	5	99.137	-0.0019	0.0331	0.000
7	7.80	SULFATE	XLOff	6	99.968	-0.0133	0.0656	0.000
8	8.41	NITRATE	XLOff	6	99.834	-0.0155	0.2235	0.000
10	12.01	PHOSPHATE	XLOff	6	99.034	-0.0122	0.0795	0.000
Average:					99.6790	-0.0117	0.1182	0.0000

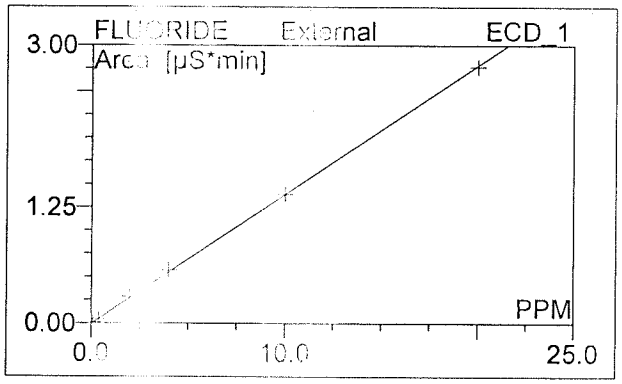
No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.87	FLUORIDE	XLOff	6	99.967	7.166	0.007	12.315
3	4.24	CHLORIDE	XLOff	6	99.975	10.973	0.020	10.687
4	5.17	NITRITE,N	XLOff	6	99.948	5.139	0.012	16.620
6	7.15	BROMIDE	XLOff	5	99.567	30.167	0.004	39.803
7	7.80	SULFATE	XLOff	6	99.984	15.239	0.011	8.539
8	8.41	NITRATE	XLOff	6	99.917	4.475	0.018	20.936
10	12.01	PHOSPHATE	XLOff	6	99.516	12.573	0.015	65.326
Average:					99.8392	12.2473	0.0125	24.8896

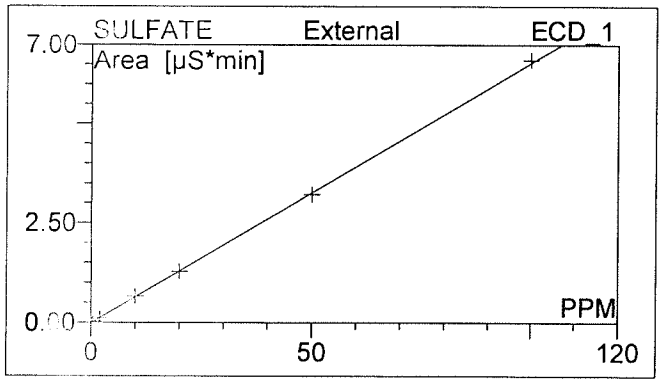
6 STD6

Sample Name:	STD6	*Injection Volume:*	**10.0**
Vial Number:	96	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.000**
Recording Time:	**3/21/2019 16:15**	*Sample Weight/Volume:*	**1.000**
Run Time (min):	13.50	*Final Volume:*	**1.000**









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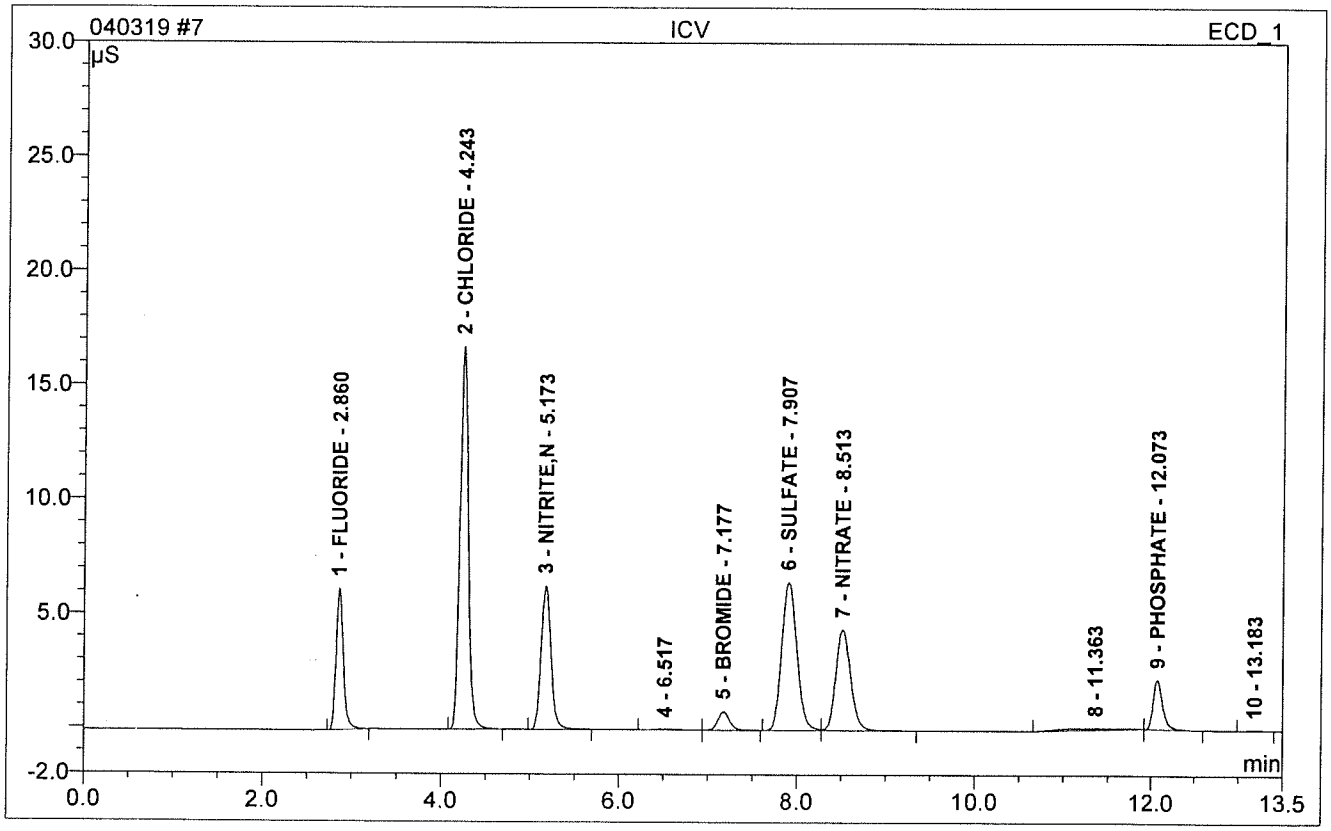
No.	Ret.Time min	Peak Name	Cal.Type	Points	Coeff.Det. %	Offset	Slope	Curve
1	2.87	FLUORIDE	XLOff	6	99.9340	-0.0058	0.1395	0.000
3	4.24	CHLORIDE	XLOff	6	99.9503	-0.0191	0.0911	0.000
4	5.17	NITRITE,N	XLOff	6	99.8962	-0.0137	0.1946	0.000
6	7.15	BROMIDE	XLOff	5	99.1367	-0.0019	0.0331	0.000
7	7.80	SULFATE	XLOff	6	99.9681	-0.0133	0.0656	0.000
8	8.41	NITRATE	XLOff	6	99.8344	-0.0155	0.2235	0.000
10	12.01	PHOSPHATE	XLOff	6	99.0335	-0.0122	0.0795	0.000
Average:					99.6790	-0.0117	0.1182	0.000

No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	RF-Value	Std.Dev.	RSD %
1	2.87	FLUORIDE	XLOff	6	99.967	7.166	0.007	12.315
3	4.21	CHLORIDE	XLOff	6	99.975	10.973	0.020	10.687
4	5.17	NITRITE,N	XLOff	6	99.948	5.139	0.012	16.620
6	7.15	BROMIDE	XLOff	5	99.567	30.167	0.004	39.803
7	7.80	SULFATE	XLOff	6	99.984	15.239	0.011	8.539
8	8.41	NITRATE	XLOff	6	99.917	4.475	0.018	20.936
10	12.01	PHOSPHATE	XLOff	6	99.516	12.573	0.015	65.326
Average:					99.8392	12.247	0.013	24.890

7 ICV

297.020.6806

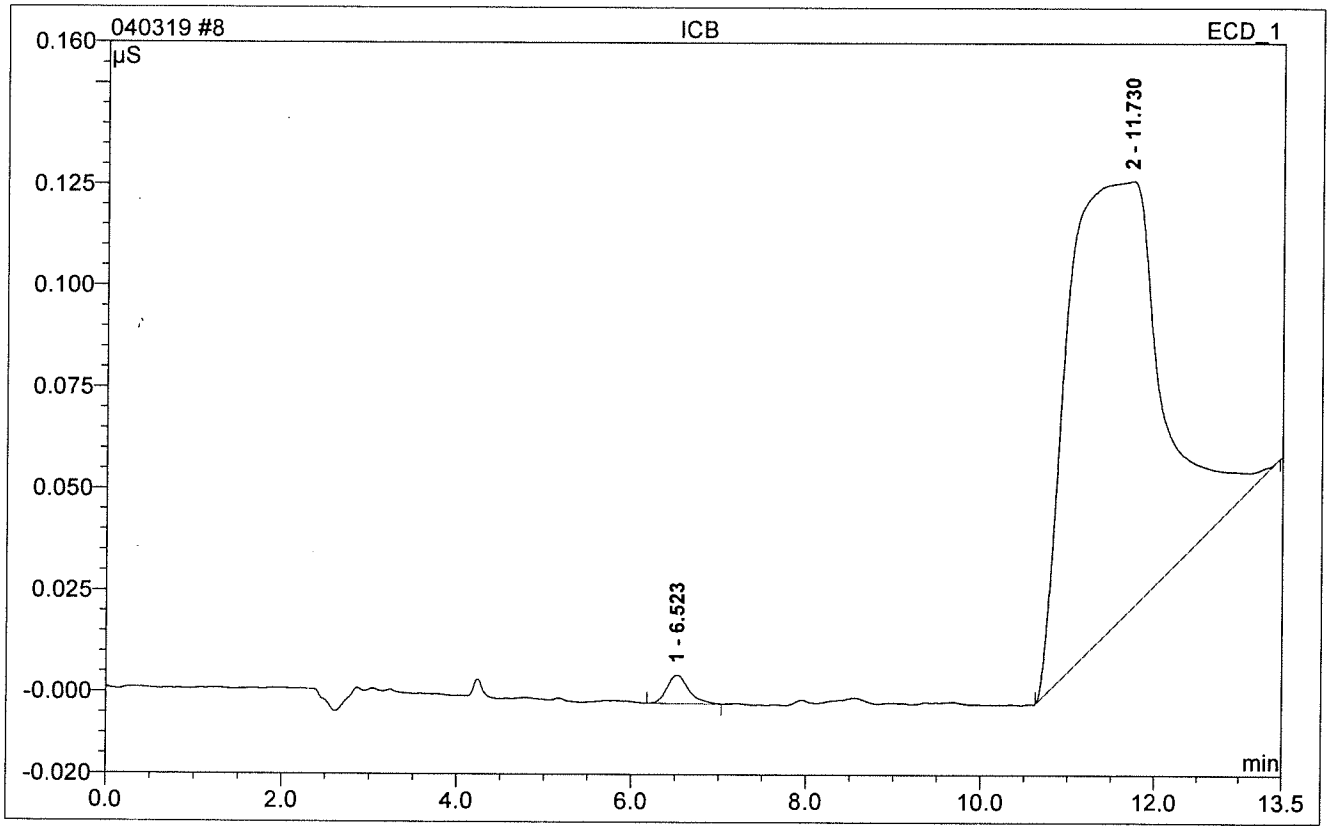
Sample Name:	**ICV**	*Injection Volume:*	**10.0**
Vial Number:	**97**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 16:29**	*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	2.86	FLUORIDE	6.193	0.582	9.95	4.212	1.
2	4.24	CHLORIDE	16.737	1.810	30.94	20.070	1.
3	5.17	NITRITE,N	6.300	0.821	14.03	4.288	1.
5	7.18	BROMIDE	0.816	0.126	2.15	3.850	1.
6	7.91	SULFATE	6.500	1.295	22.13	19.930	1.
7	8.51	NITRATE	4.441	0.858	14.67	3.909	1.
9	12.07	PHOSPHATE	2.166	0.279	4.77	3.663	1.
Total:			43.153	5.770	98.63	59.923	

8 ICB

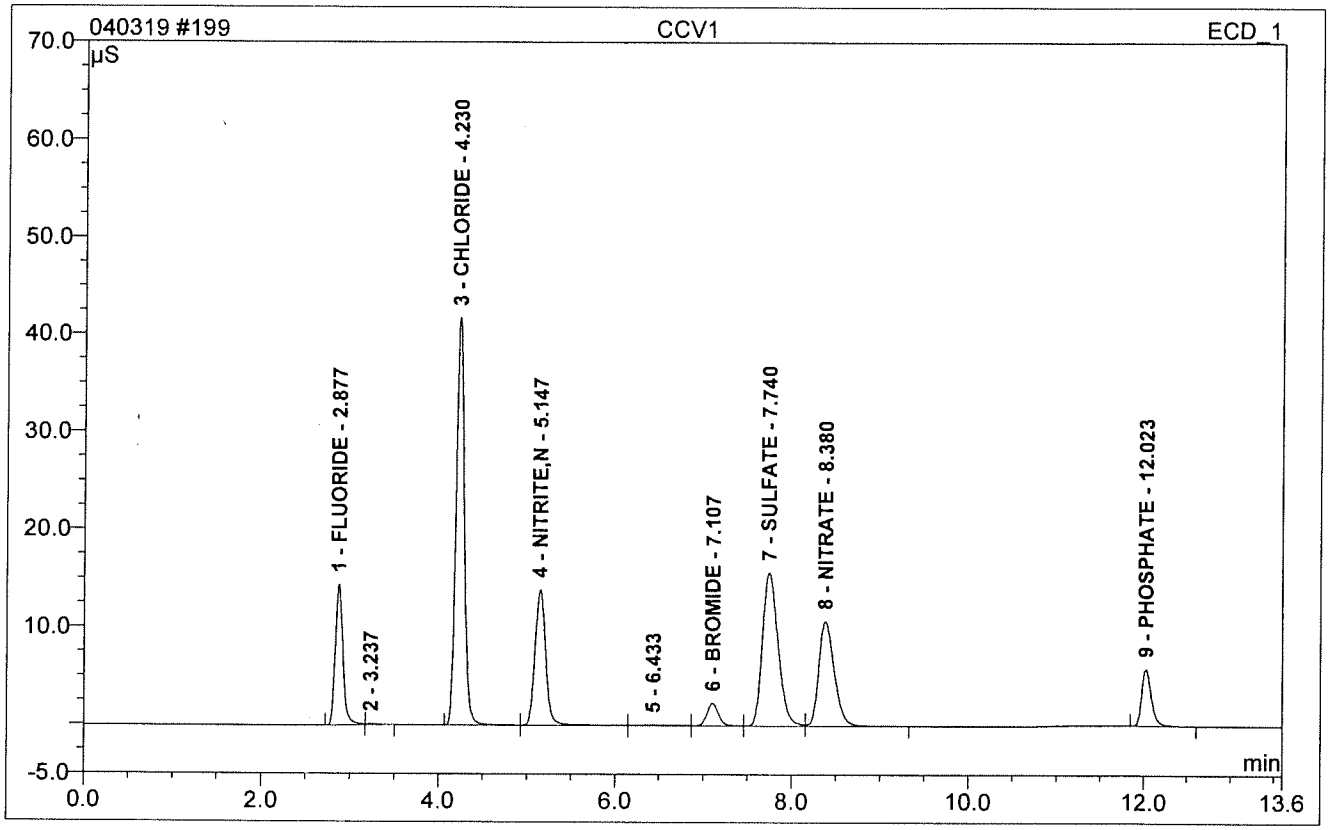
Sample Name:	**ICB**	*Injection Volume:*	**10.0**
Vial Number:	**98**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-150mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**3/21/2019 17:07**	*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.
Total:			0.000	0.000	0.00	0.000	

199 CCV1

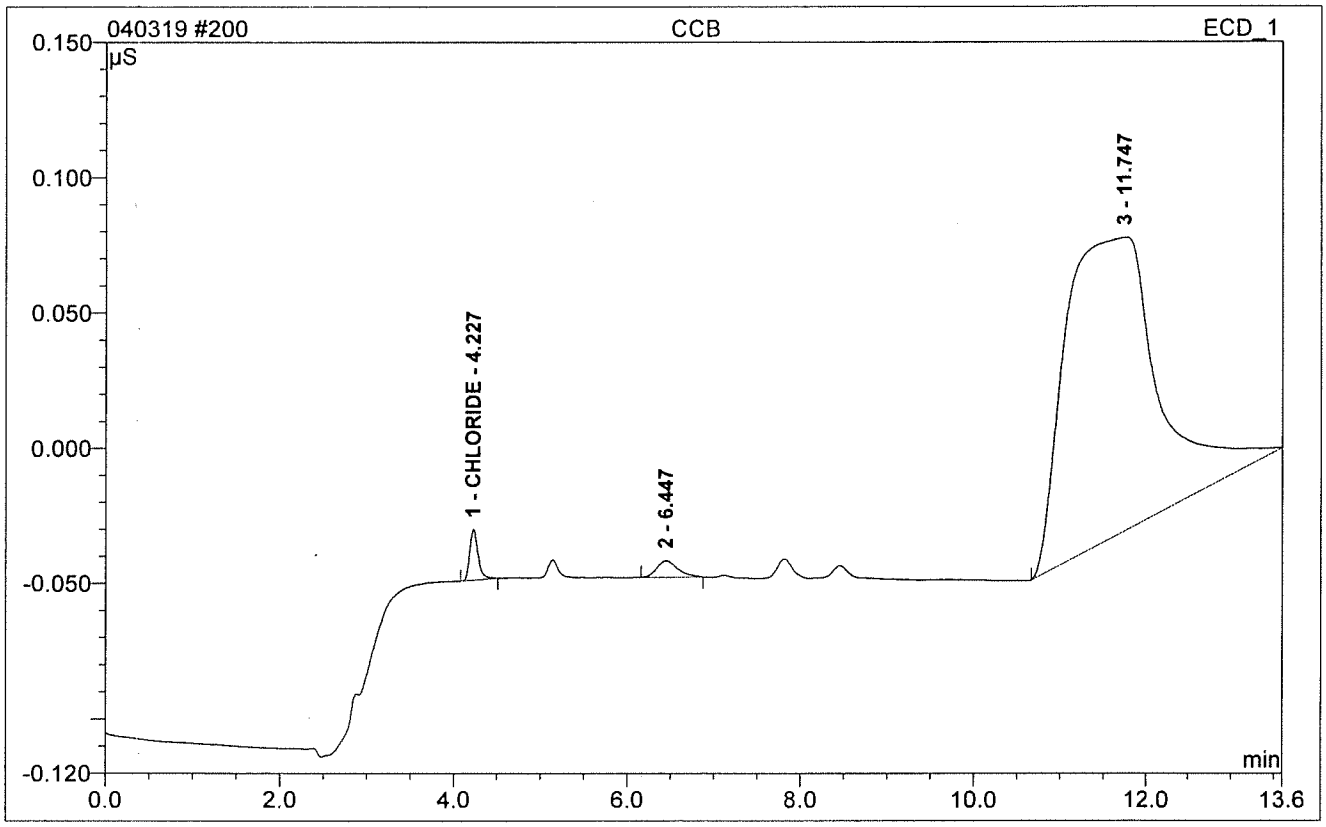
Sample Name:	**CCV1**	*Injection Volume:*	**10.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/5/2019 13:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.88	FLUORIDE	14.476	1.446	9.91	10.407	1.
3	4.23	CHLORIDE	41.746	4.540	31.09	50.022	1.
4	5.15	NITRITE,N	13.953	1.987	13.61	10.281	1.
6	7.11	BROMIDE	2.303	0.351	2.40	10.650	1.
7	7.74	SULFATE	15.774	3.265	22.36	49.961	1.
8	8.38	NITRATE	10.813	2.212	15.15	9.966	1.
9	12.02	PHOSPHATE	5.792	0.765	5.24	9.768	1.
Total:			104.858	14.566	99.76	151.054	

200 CCB

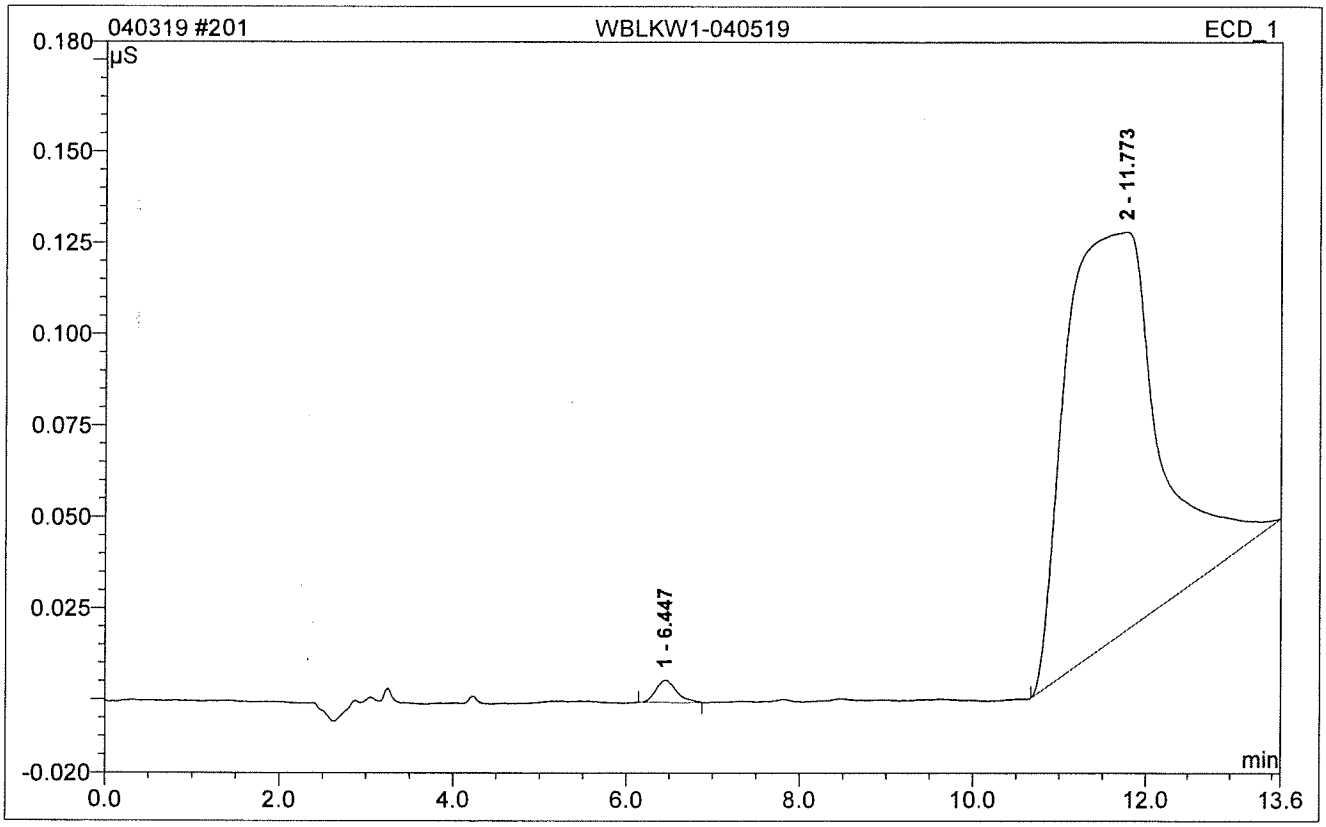
Sample Name:	**CCB**	*Injection Volume:*	**10.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/5/2019 13:31**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	4.23	CHLORIDE	0.019	0.002	1.45	0.233	1.
Total:			0.019	0.002	1.45	0.233	

201 WBLKW1-040519

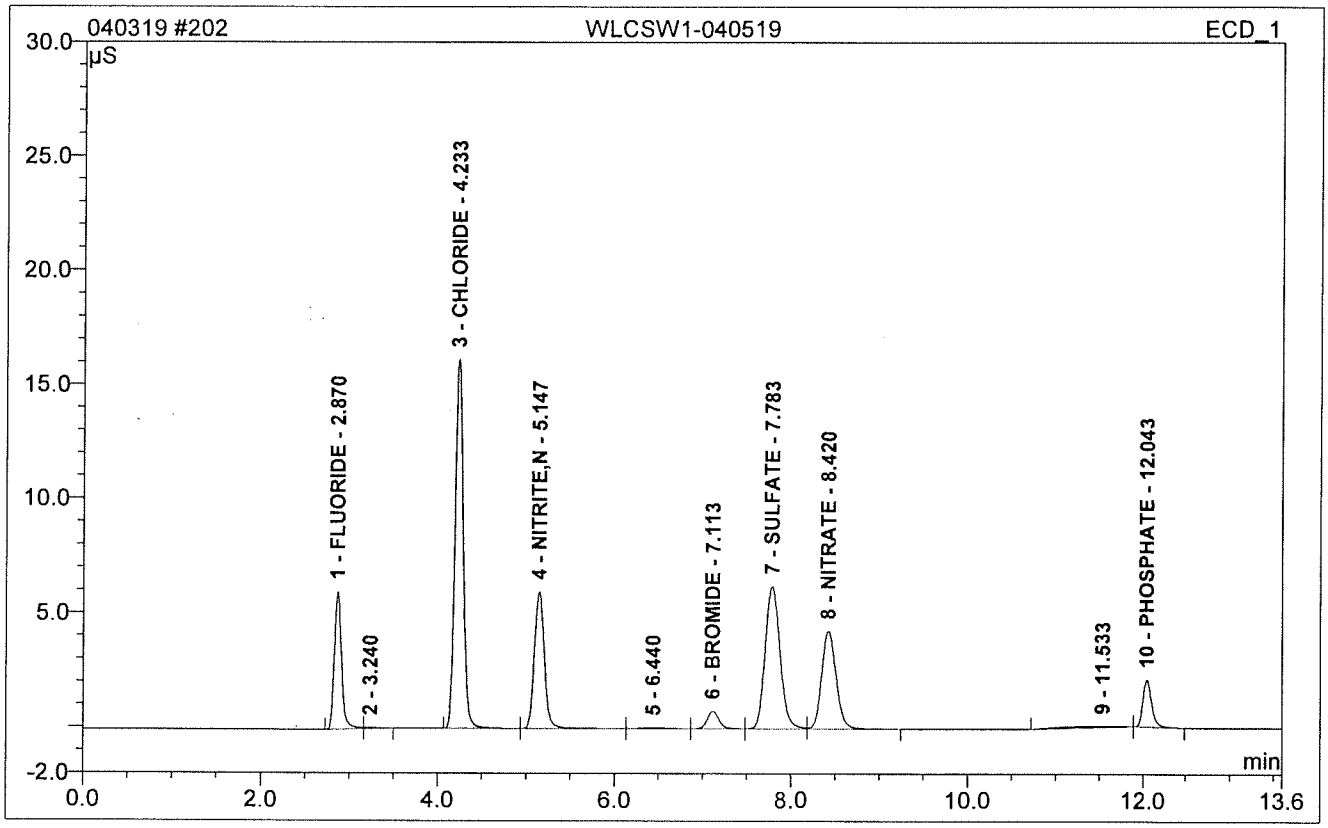
Sample Name:	**WBLKW1-040519**	*Injection Volume:*	**10.0**
Vial Number:	**27**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/5/2019 14:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*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	

202 WLCSW1-040519

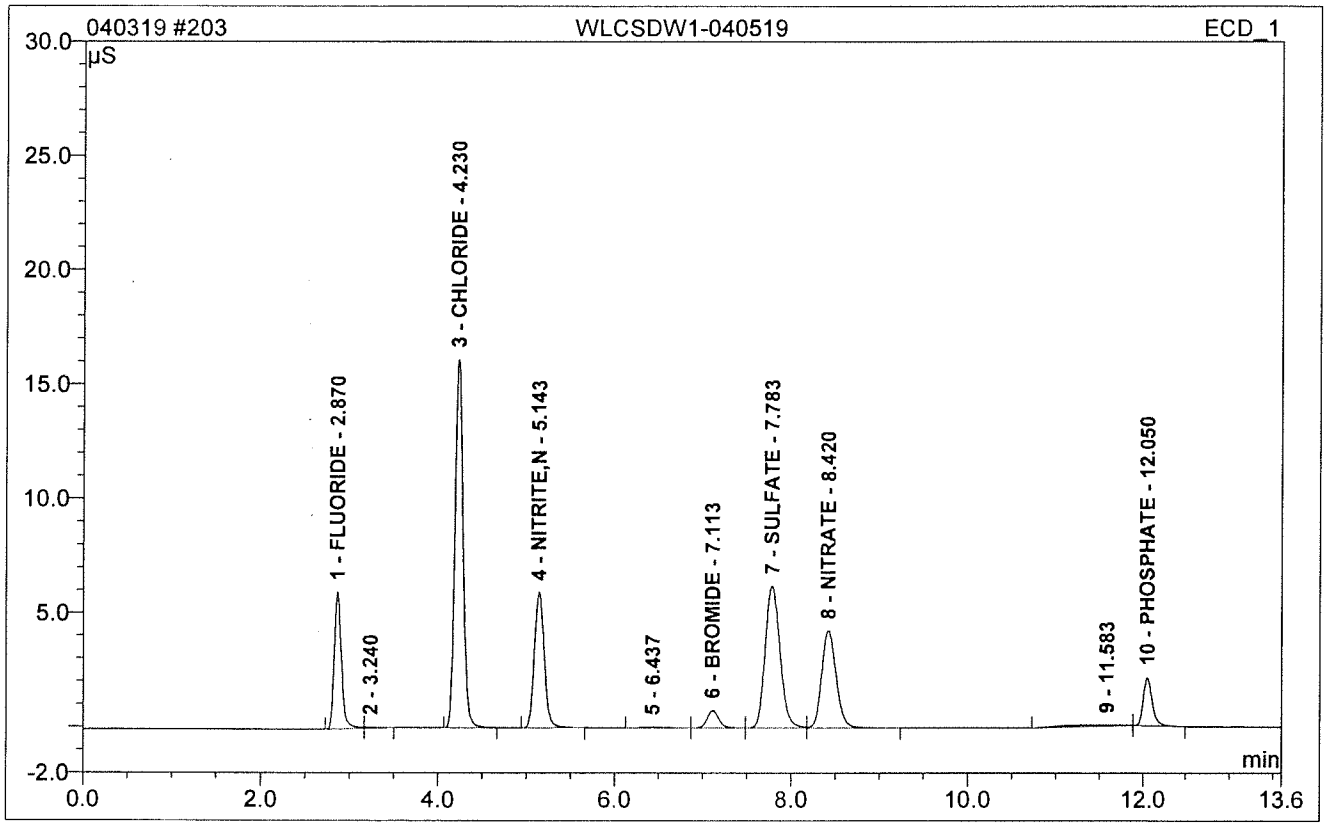
Sample Name:	**WLCSW1-040519**	*Injection Volume:*	**10.0**
Vial Number:	**28**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/5/2019 14:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	6.009	0.564	10.16	4.082	1.
3	4.23	CHLORIDE	16.147	1.729	31.16	19.182	1.
4	5.15	NITRITE,N	5.977	0.784	14.14	4.101	1.
6	7.11	BROMIDE	0.769	0.118	2.12	3.609	1.
7	7.78	SULFATE	6.235	1.223	22.04	18.843	1.
8	8.42	NITRATE	4.263	0.814	14.66	3.710	1.
10	12.04	PHOSPHATE	2.056	0.255	4.60	3.363	1.
Total:			41.457	5.487	98.88	56.891	

203 WLCSDW1-040519

Sample Name:	**WLCSDW1-040519**	*Injection Volume:*	**10.0**
Vial Number:	**29**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**1.**
Recording Time:	**4/5/2019 14:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**

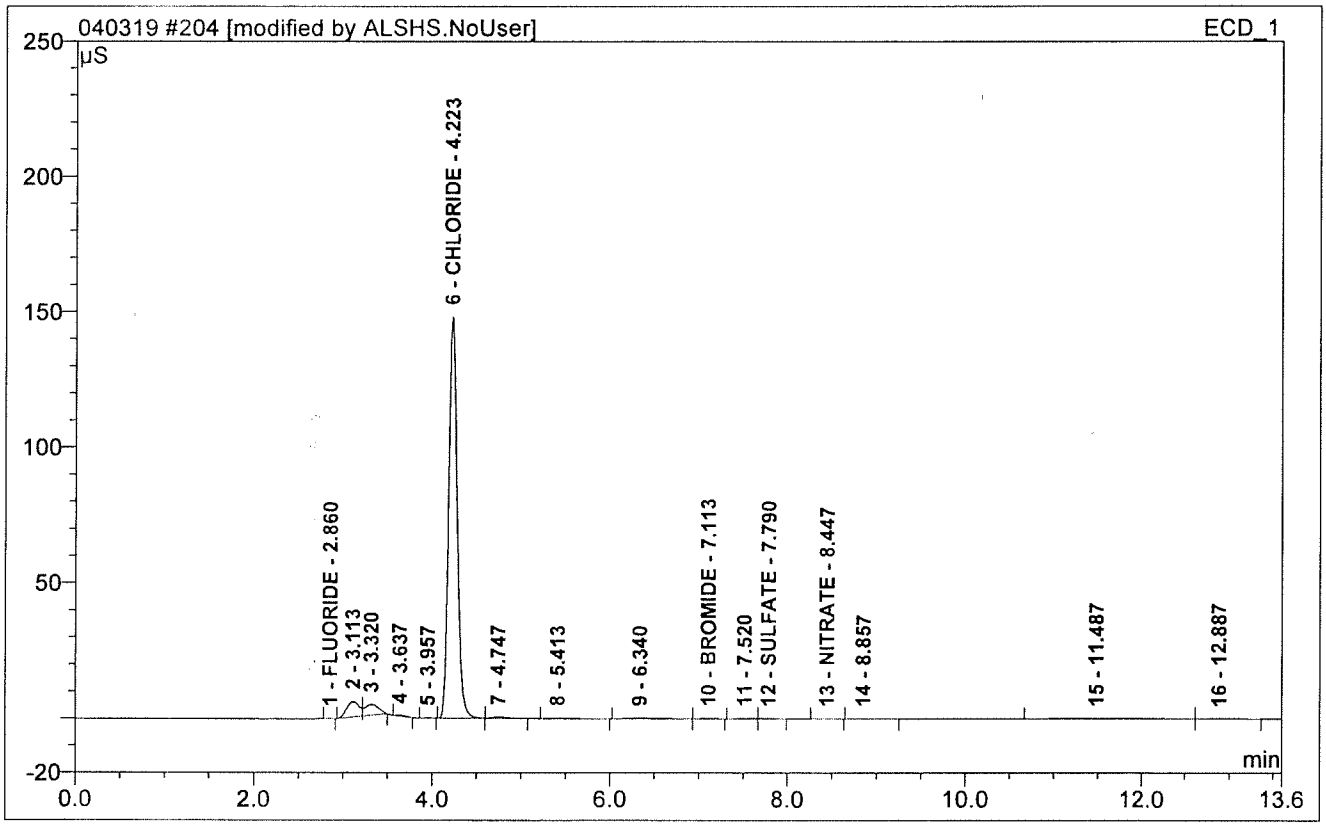


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	5.998	0.563	10.19	4.080	1.
3	4.23	CHLORIDE	16.110	1.719	31.09	19.070	1.
4	5.14	NITRITE,N	5.957	0.774	14.00	4.048	1.
6	7.11	BROMIDE	0.766	0.117	2.12	3.592	1.
7	7.78	SULFATE	6.246	1.224	22.15	18.860	1.
8	8.42	NITRATE	4.254	0.811	14.68	3.700	1.
10	12.05	PHOSPHATE	2.090	0.259	4.68	3.404	1.
Total:			41.421	5.468	98.90	56.753	

204 HS19031013-05DF5

BSLN KMU 4.05.19

Sample Name:	**HS19031013-05DF5**	*Injection Volume:*	**10.0**
Vial Number:	**30**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**5.**
Recording Time:	**4/5/2019 14:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**

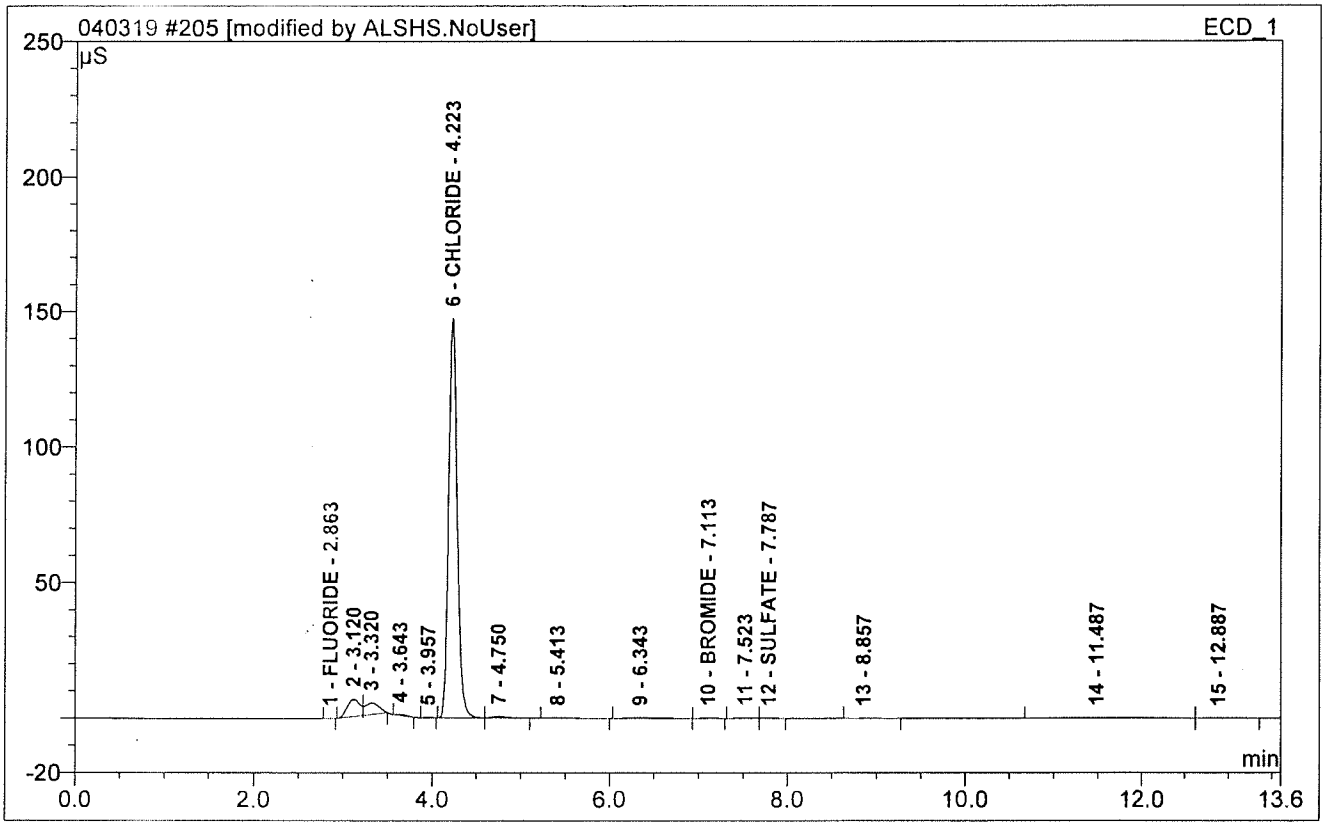


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.86	FLUORIDE	0.045	0.003	0.02	0.314	5.
6	4.22	CHLORIDE	147.944	16.420	88.77	901.889	5.
10	7.11	BROMIDE	0.146	0.021	0.12	3.528	5.
12	7.79	SULFATE	0.087	0.017	0.09	2.329	5.
13	8.45	NITRATE	0.015	0.003	0.01	0.404	5.
Total:			148.237	16.464	89.01	908.464	

205 HS19031013-06DF5

BSLN KMU 4.05.19

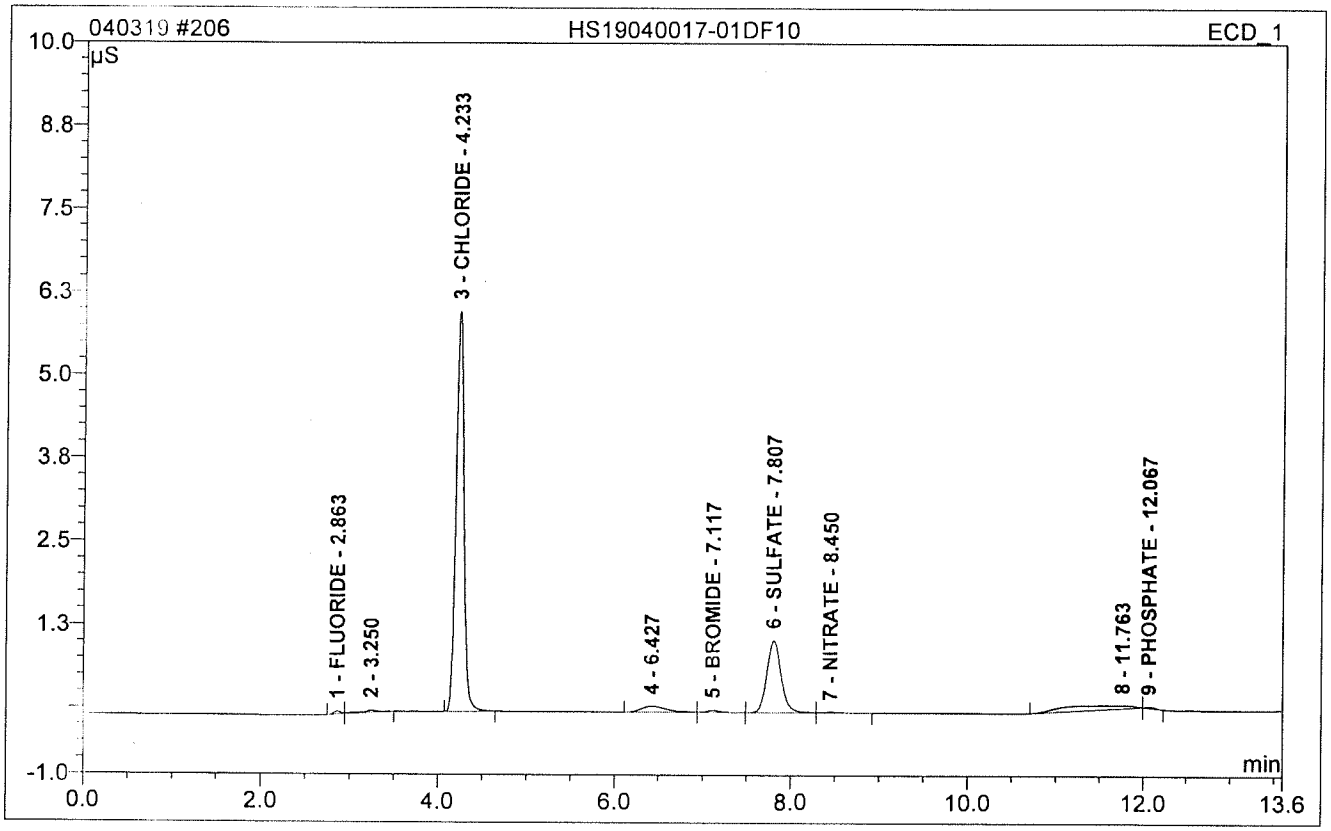
Sample Name:	**HS19031013-06DF5**	*Injection Volume:*	**10.0**
Vial Number:	**31**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**5.**
Recording Time:	**4/5/2019 15:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.86	FLUORIDE	0.042	0.003	0.01	0.308	5.
6	4.22	CHLORIDE	147.307	16.374	87.86	899.384	5.
10	7.11	BROMIDE	0.145	0.021	0.11	3.506	5.
12	7.79	SULFATE	0.077	0.015	0.08	2.132	5.
Total:			147.572	16.413	88.07	905.331	

206 HS19040017-01DF10

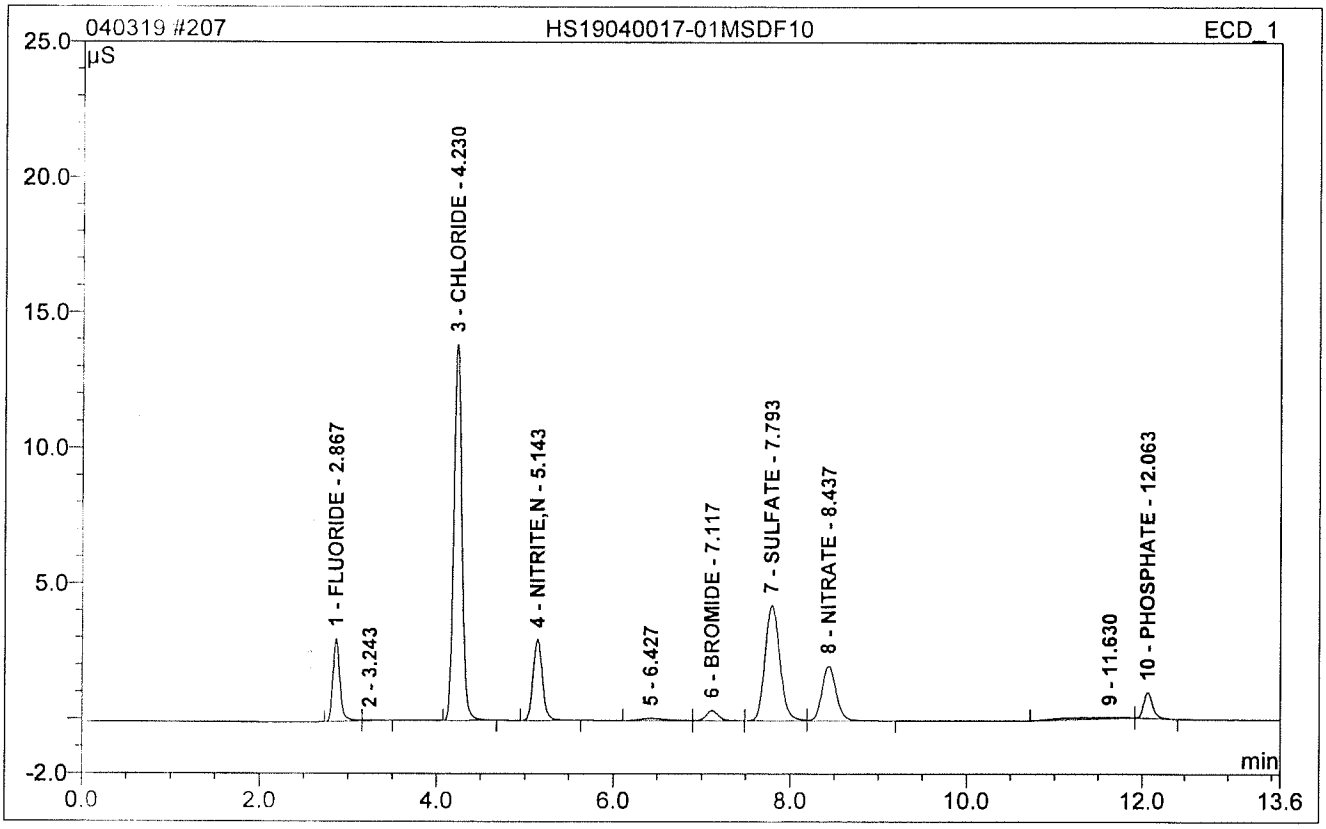
Sample Name:	**HS19040017-01DF10**	*Injection Volume:*	**10.0**
Vial Number:	**32**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**10.**
Recording Time:	**4/5/2019 15:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.86	FLUORIDE	0.047	0.004	0.45	0.724	10.
3	4.23	CHLORIDE	6.016	0.629	66.16	71.161	10.
5	7.12	BROMIDE	0.033	0.006	0.66	2.473	10.
6	7.81	SULFATE	1.089	0.207	21.73	33.537	10.
7	8.45	NITRATE	0.014	0.003	0.34	0.837	10.
9	12.07	PHOSPHATE	0.018	0.002	0.22	1.799	10.
Total:			7.215	0.852	89.56	110.532	

207 HS19040017-01MSDF10

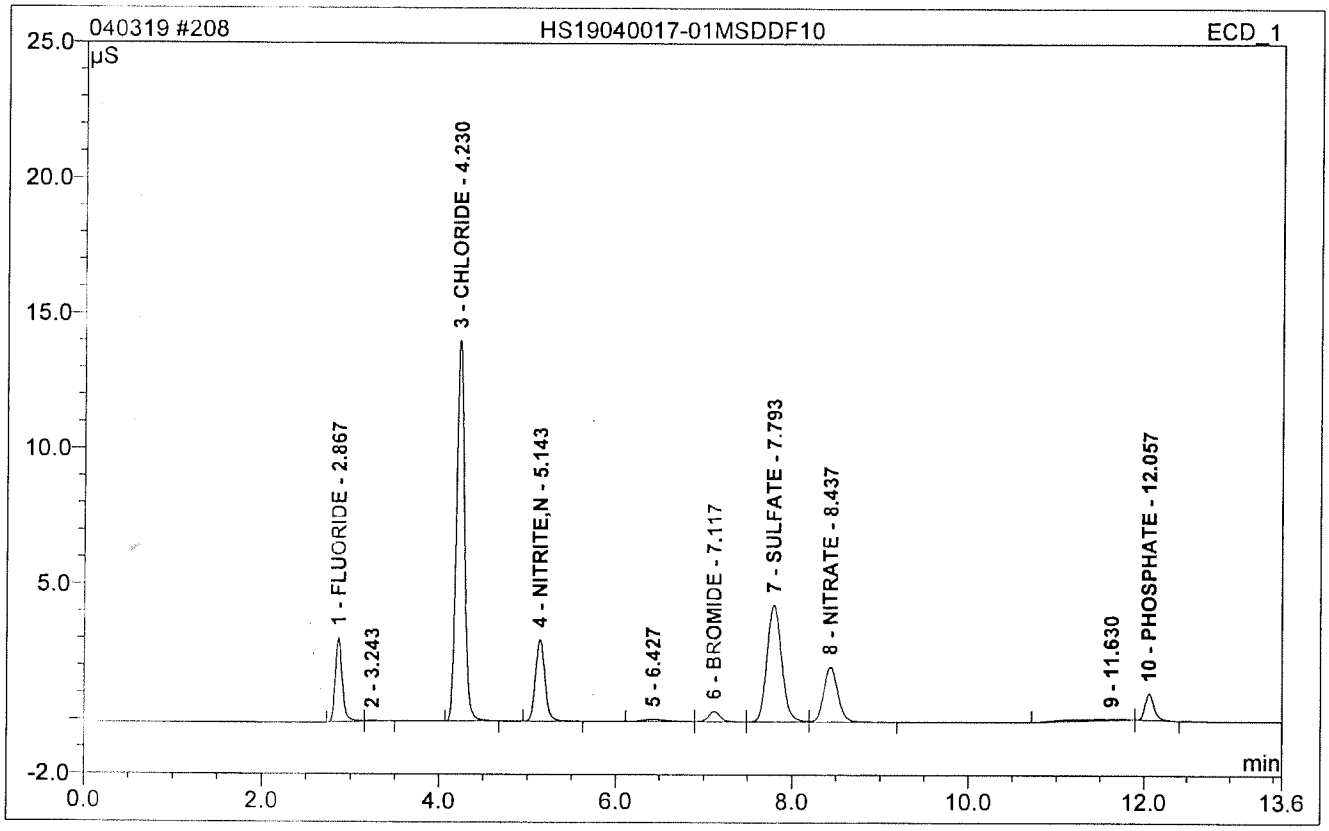
Sample Name:	**HS19040017-01MSDF10**	*Injection Volume:*	**10.0**
Vial Number:	**33**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**10.**
Recording Time:	**4/5/2019 15:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	3.058	0.280	7.78	20.456	10.
3	4.23	CHLORIDE	13.866	1.479	41.15	164.435	10.
4	5.14	NITRITE,N	2.987	0.371	10.31	19.748	10.
6	7.12	BROMIDE	0.375	0.060	1.66	18.550	10.
7	7.79	SULFATE	4.270	0.830	23.08	128.498	10.
8	8.44	NITRATE	2.022	0.376	10.46	17.515	10.
10	12.06	PHOSPHATE	0.959	0.119	3.30	16.451	10.
Total:			27.536	3.514	97.73	385.654	

208 HS19040017-01MSDDF10

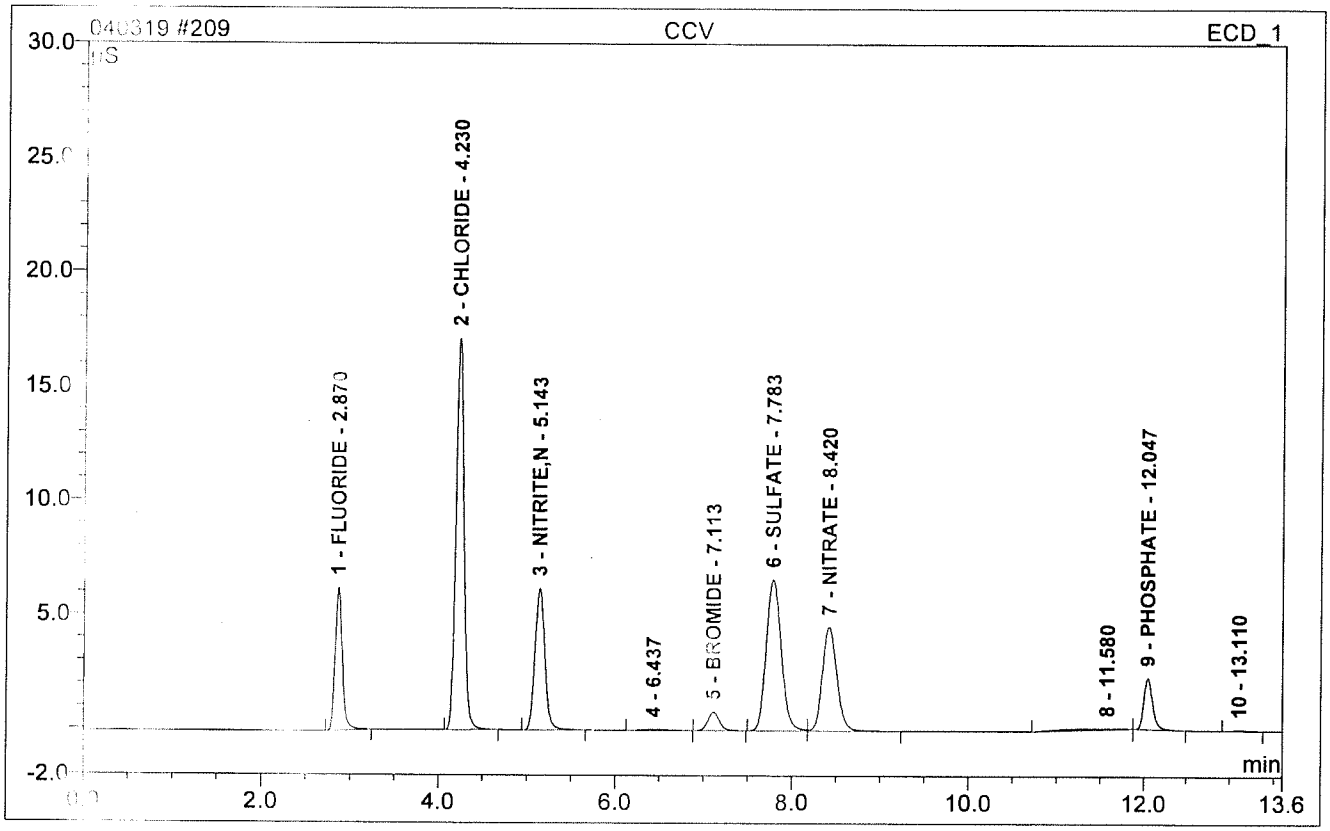
Sample Name:	**HS19040017-01MSDDF10**	*Injection Volume:*	**10.0**
Vial Number:	**34**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	**032119**	*Dilution Factor:*	**10.**
Recording Time:	**4/5/2019 15:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	3.111	0.284	7.79	20.796	10.
3	4.23	CHLORIDE	14.064	1.501	41.09	166.764	10.
4	5.14	NITRITE,N	3.034	0.377	10.31	20.058	10.
6	7.12	BROMIDE	0.382	0.061	1.66	18.906	10.
7	7.79	SULFATE	4.344	0.843	23.10	130.561	10.
8	8.44	NITRATE	2.056	0.382	10.47	17.806	10.
10	12.06	PHOSPHATE	0.991	0.122	3.35	16.919	10.
Total:			27.982	3.571	97.78	391.811	

209 CCV

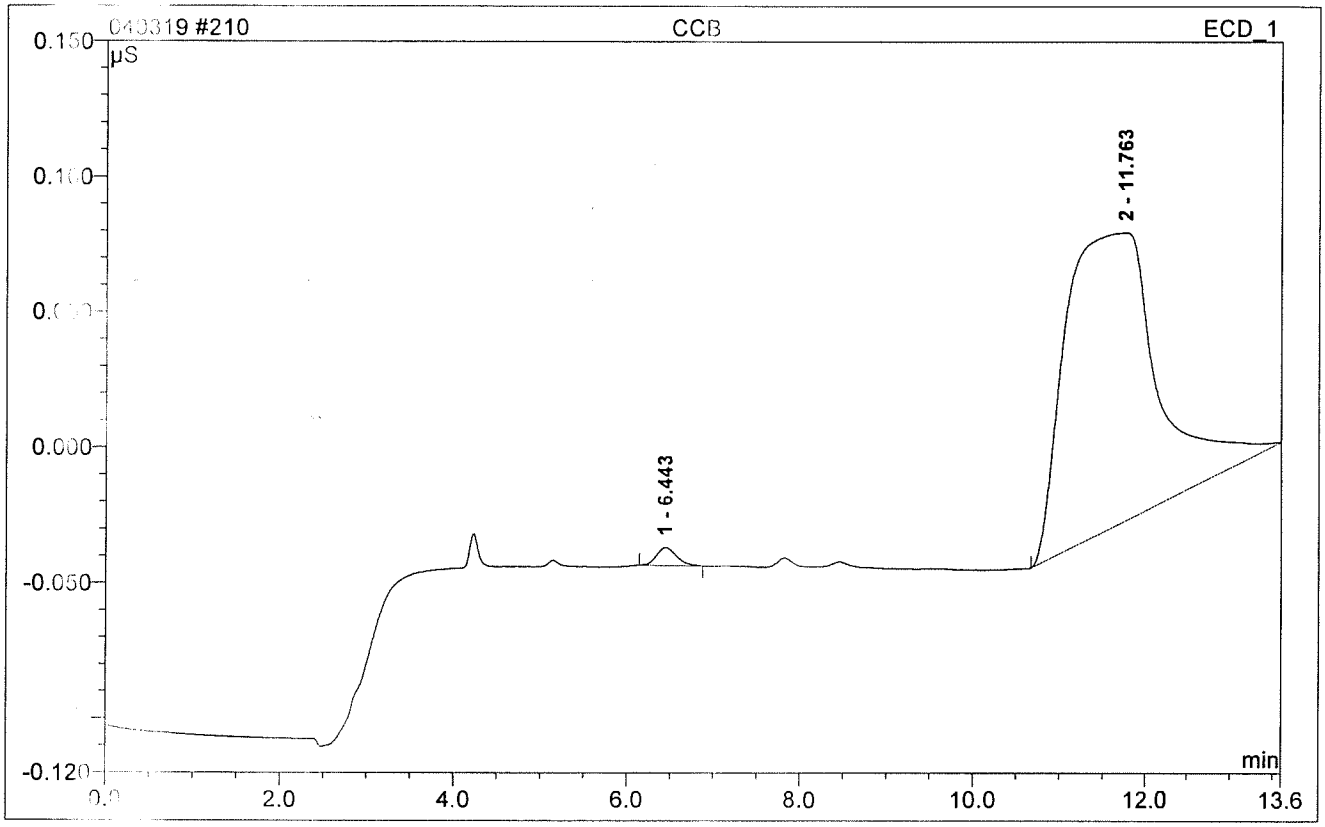
Sample Name:	CCV	*Injection Volume:*	**10.0**
Vial Number:	1	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Gradient Program-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	032119	*Dilution Factor:*	**1.**
Recording Time:	4/5/2019 **16:07**	*Sample Weight:*	**1.0000**
Run Time (min):	13.60	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount PPM	Dil.Fac.
1	2.87	FLUORIDE	6.235	0.584	9.98	4.225	1.
2	4.23	CHLORIDE	17.119	1.830	31.27	20.290	1.
3	5.14	NITRITE,N	6.189	0.807	13.79	4.216	1.
5	7.11	BROMIDE	0.813	0.123	2.11	3.776	1.
6	7.78	SULFATE	6.608	1.301	22.24	20.032	1.
7	8.42	NITRATE	4.541	0.869	14.85	3.959	1.
9	12.05	PHOSPHATE	2.234	0.275	4.71	3.616	1.
Total:			43.740	5.789	98.94	60.113	

21 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-200mA-26Mm**	*Bandwidth:*	**n.a.**
Quantif. Method:	032119	*Dilution Factor:*	**1.**
Recording Time:	**4/5/2019 16:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**13.60**	*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	

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Houston, TX 77099
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F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS19031026

LHAAP-58

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

11-Apr-2019

RIGHT SOLUTIONS | RIGHT PARTNER

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

April 11, 2019

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

Work Order: **HS19031026**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 7 sample(s) on Mar 20, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19031026

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19031026-01	35AWW11_031919	Groundwater		19-Mar-2019 08:15	20-Mar-2019 09:45	☐
HS19031026-02	35AWW24_031919	Groundwater		19-Mar-2019 09:15	20-Mar-2019 09:45	☐
HS19031026-03	35AWW19_031919	Groundwater		19-Mar-2019 10:10	20-Mar-2019 09:45	☐
HS19031026-04	LHSMW07_031919	Groundwater		19-Mar-2019 11:05	20-Mar-2019 09:45	☐
HS19031026-05	35AWW06_031919	Groundwater		19-Mar-2019 12:05	20-Mar-2019 09:45	☐
HS19031026-06	35AWW06_031919_a	Groundwater		19-Mar-2019 12:05	20-Mar-2019 09:45	☐
HS19031026-07	35AWW20_031919	Groundwater		19-Mar-2019 13:15	20-Mar-2019 09:45	☐

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19031026

CASE NARRATIVE

Work Order Comments

- The analysis for VFA were subcontracted to ALS Environmental in Rochester, NY. Final report attached.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_031919
Collection Date: 19-Mar-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_031919
Collection Date: 19-Mar-2019 09:15

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_031919
Collection Date: 19-Mar-2019 10:10

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_031919
Collection Date: 19-Mar-2019 11:05

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_031919
Collection Date: 19-Mar-2019 12:05

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_031919_a
Collection Date: 19-Mar-2019 12:05

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_031919
Collection Date: 19-Mar-2019 13:15

ANALYTICAL REPORT
WorkOrder:HS19031026
Lab ID:HS19031026-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	11-Apr-2019 09:23

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

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19031026

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R336371	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS			**Matrix:** Groundwater		
HS19031026-01	35AWW11_031919	19 Mar 2019 08:15			11 Apr 2019 09:23	1
HS19031026-02	35AWW24_031919	19 Mar 2019 09:15			11 Apr 2019 09:23	1
HS19031026-03	35AWW19_031919	19 Mar 2019 10:10			11 Apr 2019 09:23	1
HS19031026-04	LHSMW07_031919	19 Mar 2019 11:05			11 Apr 2019 09:23	1
HS19031026-05	35AWW06_031919	19 Mar 2019 12:05			11 Apr 2019 09:23	1
HS19031026-06	35AWW06_031919_a	19 Mar 2019 12:05			11 Apr 2019 09:23	1
HS19031026-07	35AWW20_031919	19 Mar 2019 13:15			11 Apr 2019 09:23	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19031026**

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
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	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020

ALS Houston, US Date: 11-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19031026

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19031026-01	35AWW11_031919	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-01	35AWW11_031919	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-01	35AWW11_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-01	35AWW11_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-01	35AWW11_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-02	35AWW24_031919	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-02	35AWW24_031919	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-02	35AWW24_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-02	35AWW24_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-02	35AWW24_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-03	35AWW19_031919	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-03	35AWW19_031919	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-03	35AWW19_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-03	35AWW19_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-03	35AWW19_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-04	LHSMW07_031919	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-04	LHSMW07_031919	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-04	LHSMW07_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-04	LHSMW07_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-04	LHSMW07_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-05	35AWW06_031919	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-05	35AWW06_031919	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-05	35AWW06_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-05	35AWW06_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-05	35AWW06_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-06	35AWW06_031919_a	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-06	35AWW06_031919_a	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-06	35AWW06_031919_a	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-06	35AWW06_031919_a	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-06	35AWW06_031919_a	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-07	35AWW20_031919	Login	3/20/2019 7:04:21 PM	CGG	WET213
HS19031026-07	35AWW20_031919	Login	3/20/2019 7:04:21 PM	CGG	VOA085
HS19031026-07	35AWW20_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-07	35AWW20_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub
HS19031026-07	35AWW20_031919	Login	3/20/2019 7:04:21 PM	CGG	Sub

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ALS Houston, US Date: 11-Apr-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19031026
Date/Time Received: **20-Mar-2019 09:45**
Received by: **NDR**

Checklist completed by: *Raegen Giga* eSignature 20-Mar-2019 Date
Reviewed by: *Corey Grandits* eSignature 20-Mar-2019 Date

Matrices: **GW**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.8c uc/c	IR 11
Cooler(s)/Kit(s):	44697	
Date/Time sample(s) sent to storage:	03/20/2019 16:33	

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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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

1608 13th Avenue South, Suite 300
Binningham 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 / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERP MS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	Volatile Fatty Acids										Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW11_031919		19 MAR 2019	0815		N		WG	1	X													
35AWW24_031919		19 MAR 2019	0915		N		WG	1	X													
35AWW19_031919		19 MAR 2019	1010		N		WG	1	X													
LH.SMW07_031919		19 MAR 2019	1105		N		WG	1	X													
35AWW06_031919		19 MAR 2019	1205		N		WG	1	X													
35AWW06_031919_G		19 MAR 2019	1205		FD		WG	1	X													
35AWW20_031919		19 MAR 2019	1315		N		WG	1	X													
35AWW20_031919_MS		19 MAR 2019	1315		MS		WG		X													
35AWW20_031919_MSD		19 MAR 2019	1315		MSD		WG		X													

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
1.	3/19/19	1430	1.	3-2019	09.45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No: _____

Method of Shipment: _____

Fed _____ Ex _____ Airbill Number: _____

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

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

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipn

R1902402 5

ALS Laboratory Group
LHAAP / Site 58

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00948865

April 11, 2019 Service Request No:R1902402

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

La orator Results for S L AAP Site

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 20, 2019
For your reference, these analyses have been assigned our service request number **R**

All analyses were performed according to our laboratory s quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as C failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

ALS Group SA Corp d a ALS En iron ental

Janice Jaeger
Project Manager

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
P O E 1 585 288 5380 FAX 1 585 288 8475
ALS Group SA Corp
dba ALS Environmental

ALS Environmental
ALS Group USA, Corp
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Rochester, NY 14623
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Narrative Documents

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58
Sample Matrix: Water

Service Request: R1902402
Date Received: 03/20/2019

CASE NARRATIVE

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

Sample Receipt:

Seven water samples were received for analysis at ALS laboratory on 03/20/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. Unless otherwise noted, samples were stored in a refrigerator at 4° C upon receipt at the laboratory.

Semivoa GC:

Method Organic Acids, 03/25 + 29/2019: The lower control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken.

Method Organic Acids, 03/25/2019: The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken.

Approved by _____ Date 04/11/2019

SAMPLE DETECTIO S MMAR

CLIE T ID A			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	180		2.8	20	mg/L	Organic Acids
Propionic Acid	620		0.94	10	mg/L	Organic Acids

CLIE T ID A			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	250		1.4	10	mg/L	Organic Acids
Butanoic Acid (Butyric Acid)	61		0.78	5.0	mg/L	Organic Acids
Propionic Acid	320		0.47	5.0	mg/L	Organic Acids

CLIE T ID A a			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	230		1.4	10	mg/L	Organic Acids
Butanoic Acid (Butyric Acid)	56		0.78	5.0	mg/L	Organic Acids
Propionic Acid	310		0.47	5.0	mg/L	Organic Acids

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Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client ALS Environmental - US **Ser ice Re uest** R1902402
Pro ect HS19031026 LHAAP / Site 58

SAMPLE CROSS-REFERE CE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R1902402-001	35AWW11 031919	3/19/2019	0815
R1902402-002	35AWW24 031919	3/19/2019	0915
R1902402-003	35AWW19 031919	3/19/2019	1010
R1902402-004	LHSMW07 031919	3/19/2019	1105
R1902402-005	35AWW06 031919	3/19/2019	1205
R1902402-006	35AWW06 031919 a	3/19/2019	1205
R1902402-007	35AWW20 031919	3/19/2019	1315

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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

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

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

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	Volatile Fatty Acids										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)			
35AWW11-031919	19	19 MAR2019	0815	-	N		WG	1	X													
35AWW24-031919		19 MAR2019	0915	-	N		WG	1	X													
35AWW19-031919	19	19 MAR2019	1010	-	N		WG	1	X													
LH.SMW07-031919		19 MAR2019	1105		N		WG	1	X													
35AWW06-031919	19	19 MAR2019	1205		N		WG	1	X													
35AWW06-031919-a		19 MAR2019	1205	-	FD		WG	1	X													
35AWW20-031919		19 MAR2019	1315	-	N		WG	1	X													
35AWW20-031919-MS		19 MAR2019	1315	-	MS		WG		X													
35AWW20-031919-MSD		19 MAR2019	1315	-	MSD		WG		X													
				-																		
				-																		

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
1. Scott Beesinger	3/19/19	1430	1.	3-20-19	09:45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

____ Fed ____ Ex ____ Airbill Number:

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

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

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

: 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

e Analysis Requested: Analytical method requested and number of containers provided for each.

y 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 Equipn

R1902402
ALS Laboratory Group
LHAAP / Site 58

5

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00948876

R1902402 5
ALS Laboratory Group
LHAAP / Site 68

Cooler Receipt and Preservation Check Form

Project/Client Bhate Folder Number .

Cooler received on 3-20-19 by: HE

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	Y (N)**	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 3-20-19 Time: 10:14 ID: IR#7 (IR#10) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	2.8						
Correction Factor (°C)	0						
Corrected Temp (°C)	2.8						
Temp from:Type of bottle	—						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by HE on 3-20-19 at 10:16
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: 3/21/19 Time: 1026 by: @

9.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	(YES)	NO
10.	Did all bottle labels and tags agree with custody papers?	(YES)	NO
11.	Were correct containers used for the tests indicated?	(YES)	NO
12.	Were 5035 vials acceptable (no extra labels, not leaking)?	YES	NO (N/A)
13.	Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized		Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: client coverd

Explain all Discrepancies/ Other Comments:

* 35AWW2D-031919 had a cracked cap. Sample is still intact, so the cap was replaced with a new one.

HE 3-20-19

CLRES	BULK
DO	FLDT
HPROD	HGFB
HTR	LL3541
PH	SUB
SO3	MARRS
ALS	REV

Labels secondary reviewed by: @

Secondary Review: [illegible] 3/21/19 *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

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ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: ALS Laboratory Group **Service Request:** R1902402
Project: HS19031026 LHAAP / Site 58

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
R1902402-001.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1058	In Lab / BALLGEIER	
		3/25/2019	1146	R-002 / BALLGEIER	
R1902402-002.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1058	In Lab / BALLGEIER	
		3/25/2019	1146	R-002 / BALLGEIER	
R1902402-003.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1059	In Lab / BALLGEIER	
		3/25/2019	1146	R-002 / BALLGEIER	
R1902402-004.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1059	In Lab / BALLGEIER	
		3/25/2019	1146	R-002 / BALLGEIER	
R1902402-005.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1058	In Lab / BALLGEIER	
		3/25/2019	1146	R-002 / BALLGEIER	
R1902402-006.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1058	In Lab / BALLGEIER	
		3/25/2019	1146	R-002 / BALLGEIER	
R1902402-007.01					
	Organic Acids				
		3/21/2019	1028	SMO / GLAFORCE	
		3/21/2019	1028	R-002 / GLAFORCE	
		3/25/2019	1058	In Lab / BALLGEIER	

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ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: ALS Laboratory Group **Service Request:** R1902402
Project: HS19031026 LHAAP / Site 58

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
	Organic Acids				
		3/25/2019	1146	R-002 / BALLGEIER	

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Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

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Acronyms

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

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ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58/

Service Request: R1902402

Sample Name: 35AWW11_031919
Lab Code: R1902402-001
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW24_031919
Lab Code: R1902402-002
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW19_031919
Lab Code: R1902402-003
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: LHSMW07_031919
Lab Code: R1902402-004
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW06_031919
Lab Code: R1902402-005
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

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ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58/

Service Request: R1902402

Sample Name: 35AWW06_031919_a
Lab Code: R1902402-006
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW20_031919
Lab Code: R1902402-007
Sample Matrix: Water

Date Collected: 03/19/19
Date Received: 03/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

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INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

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Sample Results

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Semivolatile Organic Compounds by GC

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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 08:15
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW11_031919	**Units:**	mg/L
Lab Code:	R1902402-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	1.0	0.50	0.077	5	03/29/19 19:46	
Acetic Acid	**180**		20	10	2.8	5	03/29/19 19:46	
Butanoic Acid (Butyric Acid)	ND	U	10	5.0	1.6	5	03/29/19 19:46	
Lactic Acid	ND	U	10	5.0	0.67	5	03/29/19 19:46	
Propionic Acid	**620**		10	5.0	0.94	5	03/29/19 19:46	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 09:15
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW24_031919	**Units:**	mg/L
Lab Code:	R1902402-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 17:25	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 17:25	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 17:25	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 17:25	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 17:25	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 10:10
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW19_031919	**Units:**	mg/L
Lab Code:	R1902402-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 18:02	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 18:02	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 18:02	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 18:02	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 18:02	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 11:05
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	LHSMW07_031919	**Units:**	mg/L
Lab Code:	R1902402-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 18:39	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 18:39	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 18:39	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 18:39	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 18:39	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 12:05
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW06_031919	**Units:**	mg/L
Lab Code:	R1902402-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.50	0.25	0.039	2.5	03/29/19 20:23	
Acetic Acid	**250**		10	5.0	1.4	2.5	03/29/19 20:23	
Butanoic Acid (Butyric Acid)	**61**		5.0	2.5	0.78	2.5	03/29/19 20:23	
Lactic Acid	ND	U	5.0	2.5	0.34	2.5	03/29/19 20:23	
Propionic Acid	**320**		5.0	2.5	0.47	2.5	03/29/19 20:23	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 12:05
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW06_031919_a	**Units:**	mg/L
Lab Code:	R1902402-006	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.50	0.25	0.039	2.5	03/29/19 21:00	
Acetic Acid	**230**		10	5.0	1.4	2.5	03/29/19 21:00	
Butanoic Acid (Butyric Acid)	**56**		5.0	2.5	0.78	2.5	03/29/19 21:00	
Lactic Acid	ND	U	5.0	2.5	0.34	2.5	03/29/19 21:00	
Propionic Acid	**310**		5.0	2.5	0.47	2.5	03/29/19 21:00	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 13:15
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW20_031919	**Units:**	mg/L
Lab Code:	R1902402-007	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 20:30	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 20:30	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 20:30	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 20:30	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 20:30	

QC Summary Forms

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Semivolatile Organic Compounds by GC

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19
Sample Matrix:	Water	**Date Received:**	03/20/19
		Date Analyzed:	03/25/19

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	35AWW20_031919	**Units:**	mg/L
Lab Code:	R1902402-007	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ1902678-11			Duplicate Matrix Spike RQ1902678-12					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	ND U	1.62	2.03	80	1.61	2.03	79	73-122	<1	30
Acetic Acid	ND U	18.7	19.9	94	18.7	19.9	94	80-130	<1	30
Butanoic Acid (Butyric Acid)	ND U	19.9	20.5	97	18.5	20.5	90	86-128	7	30
Lactic Acid	ND U	16.8	20.6	82	16.7	20.6	81	81-114	<1	30
Propionic Acid	ND U	25.1	20.1	125	25.6	20.1	127	63-153	2	30

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

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

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

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QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58
Sample Matrix: Water

Service Request: R1902402
Date Analyzed: 03/29/19 17:55

Method Blank Summary

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Method Blank
Lab Code: RQ1902678-06

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\032819\A0002923.D\

Analysis Method: Organic Acids

Analysis Lot:630216

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ1902678-02	I:\ACQUDATA\hplc05\data\032519\A0002908.D\	03/25/19 15:34
Duplicate Lab Control Sample	RQ1902678-03	I:\ACQUDATA\hplc05\data\032519\A0002909.D\	03/25/19 16:11
35AWW24_031919	R1902402-002	I:\ACQUDATA\hplc05\data\032519\A0002911.D\	03/25/19 17:25
35AWW19_031919	R1902402-003	I:\ACQUDATA\hplc05\data\032519\A0002912.D\	03/25/19 18:02
LHSMW07_031919	R1902402-004	I:\ACQUDATA\hplc05\data\032519\A0002913.D\	03/25/19 18:39
35AWW20_031919	R1902402-007	I:\ACQUDATA\hplc05\data\032519\A0002916.D\	03/25/19 20:30
35AWW20_031919MS	RQ1902678-11	I:\ACQUDATA\hplc05\data\032519\A0002918.D\	03/25/19 21:44
35AWW20_031919DMS	RQ1902678-12	I:\ACQUDATA\hplc05\data\032519\A0002919.D\	03/25/19 22:21
Lab Control Sample	RQ1902678-07	I:\ACQUDATA\hplc05\data\032819\A0002924.D\	03/29/19 18:32
Duplicate Lab Control Sample	RQ1902678-08	I:\ACQUDATA\hplc05\data\032819\A0002925.D\	03/29/19 19:09
35AWW11_031919	R1902402-001	I:\ACQUDATA\hplc05\data\032819\A0002926.D\	03/29/19 19:46
35AWW06_031919	R1902402-005	I:\ACQUDATA\hplc05\data\032819\A0002927.D\	03/29/19 20:23
35AWW06_031919_a	R1902402-006	I:\ACQUDATA\hplc05\data\032819\A0002928.D\	03/29/19 21:00

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1902678-01	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 14:57	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 14:57	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 14:57	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 14:57	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 14:57	

ALS Group USA, Corp.
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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1902678-06	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/29/19 17:55	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/29/19 17:55	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/29/19 17:55	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/29/19 17:55	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/29/19 17:55	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58
Sample Matrix: Water

Service Request: R1902402
Date Analyzed: 03/29/19 18:32

Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Lab Control Sample
Lab Code: RQ1902678-07

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\032819\A0002924.D\

Analysis Method: Organic Acids

Analysis Lot:630216

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	RQ1902678-01	I:\ACQUDATA\hplc05\data\032519\A0002907.D\	03/25/19 14:57
Duplicate Lab Control Sample	RQ1902678-03	I:\ACQUDATA\hplc05\data\032519\A0002909.D\	03/25/19 16:11
35AWW24_031919	R1902402-002	I:\ACQUDATA\hplc05\data\032519\A0002911.D\	03/25/19 17:25
35AWW19_031919	R1902402-003	I:\ACQUDATA\hplc05\data\032519\A0002912.D\	03/25/19 18:02
LHSMW07_031919	R1902402-004	I:\ACQUDATA\hplc05\data\032519\A0002913.D\	03/25/19 18:39
35AWW20_031919	R1902402-007	I:\ACQUDATA\hplc05\data\032519\A0002916.D\	03/25/19 20:30
35AWW20_031919MS	RQ1902678-11	I:\ACQUDATA\hplc05\data\032519\A0002918.D\	03/25/19 21:44
35AWW20_031919DMS	RQ1902678-12	I:\ACQUDATA\hplc05\data\032519\A0002919.D\	03/25/19 22:21
Method Blank	RQ1902678-06	I:\ACQUDATA\hplc05\data\032819\A0002923.D\	03/29/19 17:55
Duplicate Lab Control Sample	RQ1902678-08	I:\ACQUDATA\hplc05\data\032819\A0002925.D\	03/29/19 19:09
35AWW11_031919	R1902402-001	I:\ACQUDATA\hplc05\data\032819\A0002926.D\	03/29/19 19:46
35AWW06_031919	R1902402-005	I:\ACQUDATA\hplc05\data\032819\A0002927.D\	03/29/19 20:23
35AWW06_031919_a	R1902402-006	I:\ACQUDATA\hplc05\data\032819\A0002928.D\	03/29/19 21:00

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58
Sample Matrix: Water

Service Request: R1902402
Date Analyzed: 03/25/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample RQ1902678-02			Duplicate Lab Control Sample RQ1902678-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.79	2.03	88	1.80	2.03	89	73-122	<1	30
Acetic Acid	Organic Acids	19.7	19.9	99	19.8	19.9	100	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	20.5	20.5	100	20.4	20.5	99	86-128	<1	30
Lactic Acid	Organic Acids	18.5	20.6	89	18.4	20.6	89	81-114	<1	30
Propionic Acid	Organic Acids	28.2	20.1	140	28.2	20.1	140	63-153	<1	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58
Sample Matrix: Water

Service Request: R1902402
Date Analyzed: 03/29/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1902678-07			RQ1902678-08					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.79	2.03	88	1.80	2.03	89	73-122	<1	30
Acetic Acid	Organic Acids	19.6	19.9	99	19.7	19.9	99	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	20.1	20.5	98	20.5	20.5	100	86-128	2	30
Lactic Acid	Organic Acids	18.4	20.6	89	18.5	20.6	90	81-114	<1	30
Propionic Acid	Organic Acids	28.5	20.1	141	28.7	20.1	143	63-153	<1	30

Raw Data

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 08:15
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW11_031919	**Units:**	mg/L
Lab Code:	R1902402-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	1.0	0.50	0.077	5	03/29/19 19:46	
Acetic Acid	**180**		20	10	2.8	5	03/29/19 19:46	
Butanoic Acid (Butyric Acid)	ND	U	10	5.0	1.6	5	03/29/19 19:46	
Lactic Acid	ND	U	10	5.0	0.67	5	03/29/19 19:46	
Propionic Acid	**620**		10	5.0	0.94	5	03/29/19 19:46	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 09:15
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW24_031919	**Units:**	mg/L
Lab Code:	R1902402-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 17:25	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 17:25	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 17:25	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 17:25	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 17:25	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 10:10
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW19_031919	**Units:**	mg/L
Lab Code:	R1902402-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 18:02	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 18:02	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 18:02	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 18:02	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 18:02	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 11:05
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	LHSMW07_031919	**Units:**	mg/L
Lab Code:	R1902402-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 18:39	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 18:39	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 18:39	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 18:39	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 18:39	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 12:05
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW06_031919	**Units:**	mg/L
Lab Code:	R1902402-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.50	0.25	0.039	2.5	03/29/19 20:23	
Acetic Acid	**250**		10	5.0	1.4	2.5	03/29/19 20:23	
Butanoic Acid (Butyric Acid)	**61**		5.0	2.5	0.78	2.5	03/29/19 20:23	
Lactic Acid	ND	U	5.0	2.5	0.34	2.5	03/29/19 20:23	
Propionic Acid	**320**		5.0	2.5	0.47	2.5	03/29/19 20:23	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 12:05
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW06_031919_a	**Units:**	mg/L
Lab Code:	R1902402-006	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.50	0.25	0.039	2.5	03/29/19 21:00	
Acetic Acid	**230**		10	5.0	1.4	2.5	03/29/19 21:00	
Butanoic Acid (Butyric Acid)	**56**		5.0	2.5	0.78	2.5	03/29/19 21:00	
Lactic Acid	ND	U	5.0	2.5	0.34	2.5	03/29/19 21:00	
Propionic Acid	**310**		5.0	2.5	0.47	2.5	03/29/19 21:00	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Collected:**	03/19/19 13:15
Sample Matrix:	Water	**Date Received:**	03/20/19 09:45
Sample Name:	35AWW20_031919	**Units:**	mg/L
Lab Code:	R1902402-007	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

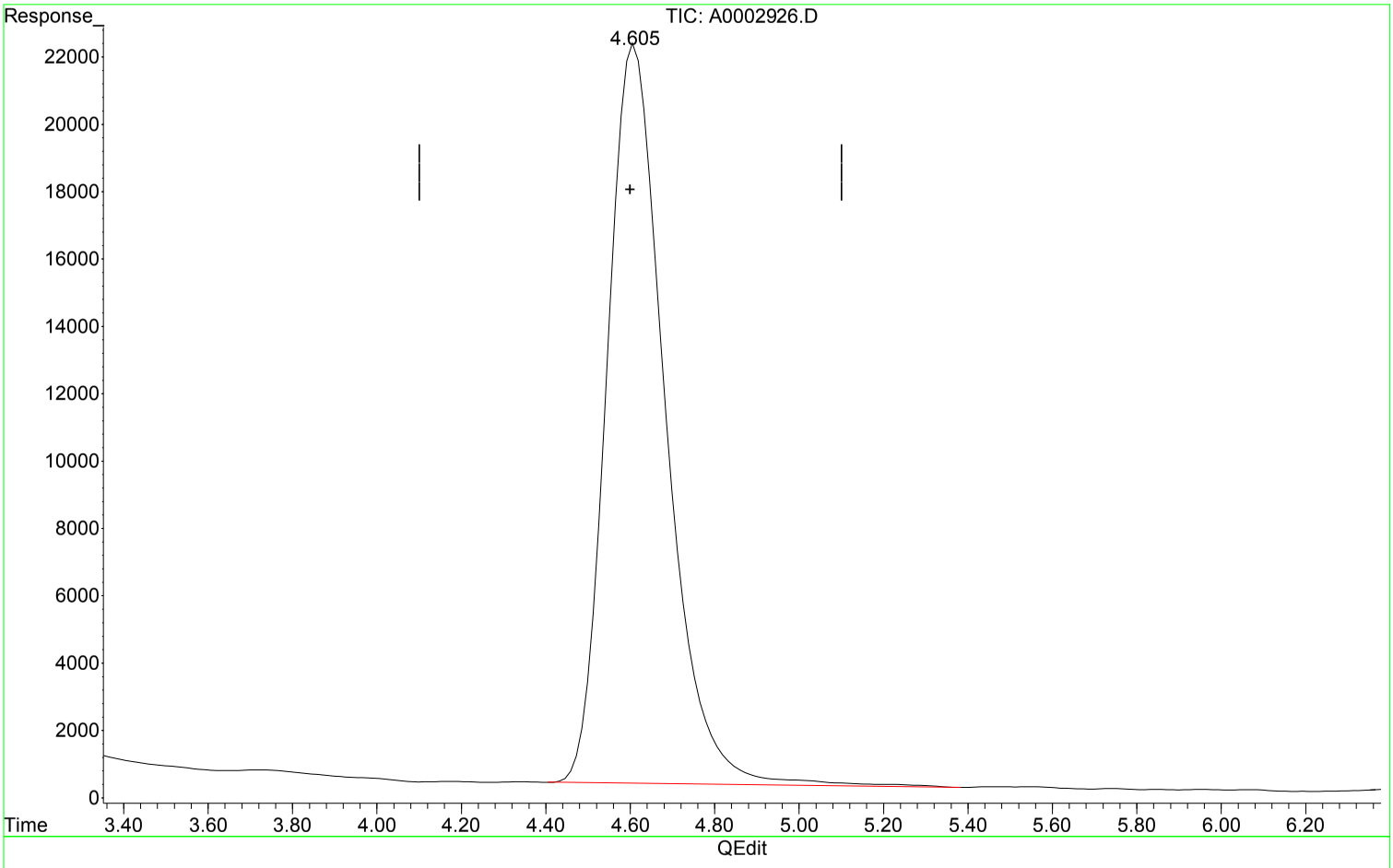
Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/25/19 20:30	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/25/19 20:30	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/25/19 20:30	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/25/19 20:30	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/25/19 20:30	

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002926.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:27
Operator : b.allgeier
Sample : r1902402-001|5
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:22 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.605min 36.281 ppm m

response 2117671

Manual Integration:

After

Poor integration.

04/01/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

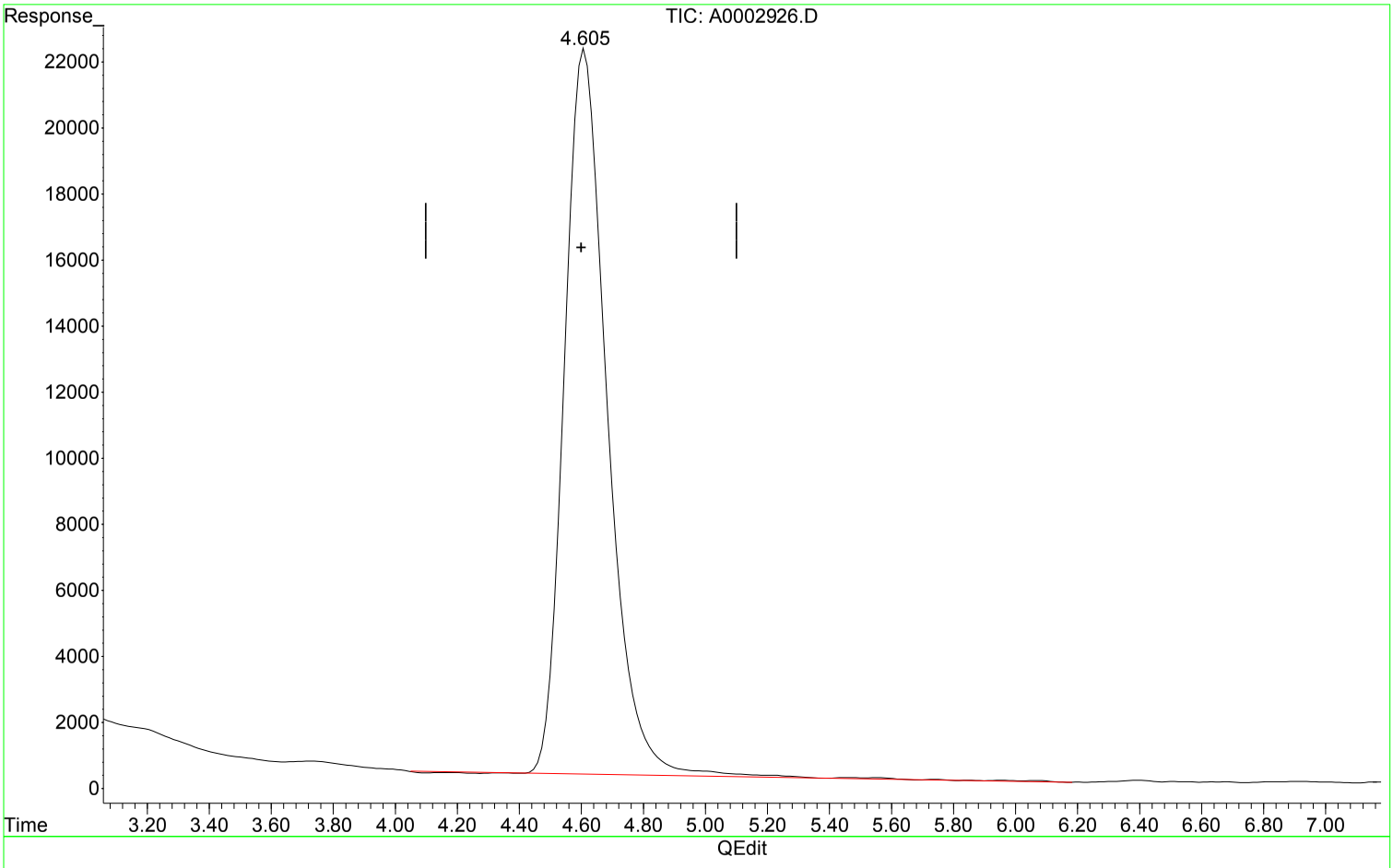
00948912

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002926.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:27
Operator : b.allgeier
Sample : r1902402-001|5
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:22 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.612min 36.301 ppm

response 2118853

Manual Integration:

Before

04/01/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

00948913

1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002926.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:48:27~~ 29-Mar-2019, 19:46:00
Operator : b.allgeier
Sample : r1902402-001|5
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:22 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	4.605	2117671	36.281	ppm	m
5) T	Propionic Acid	9.786	7108813	123.351	ppm	
6) T	Butyric Acid	0.000	0	N.D.	ppm	d

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948914

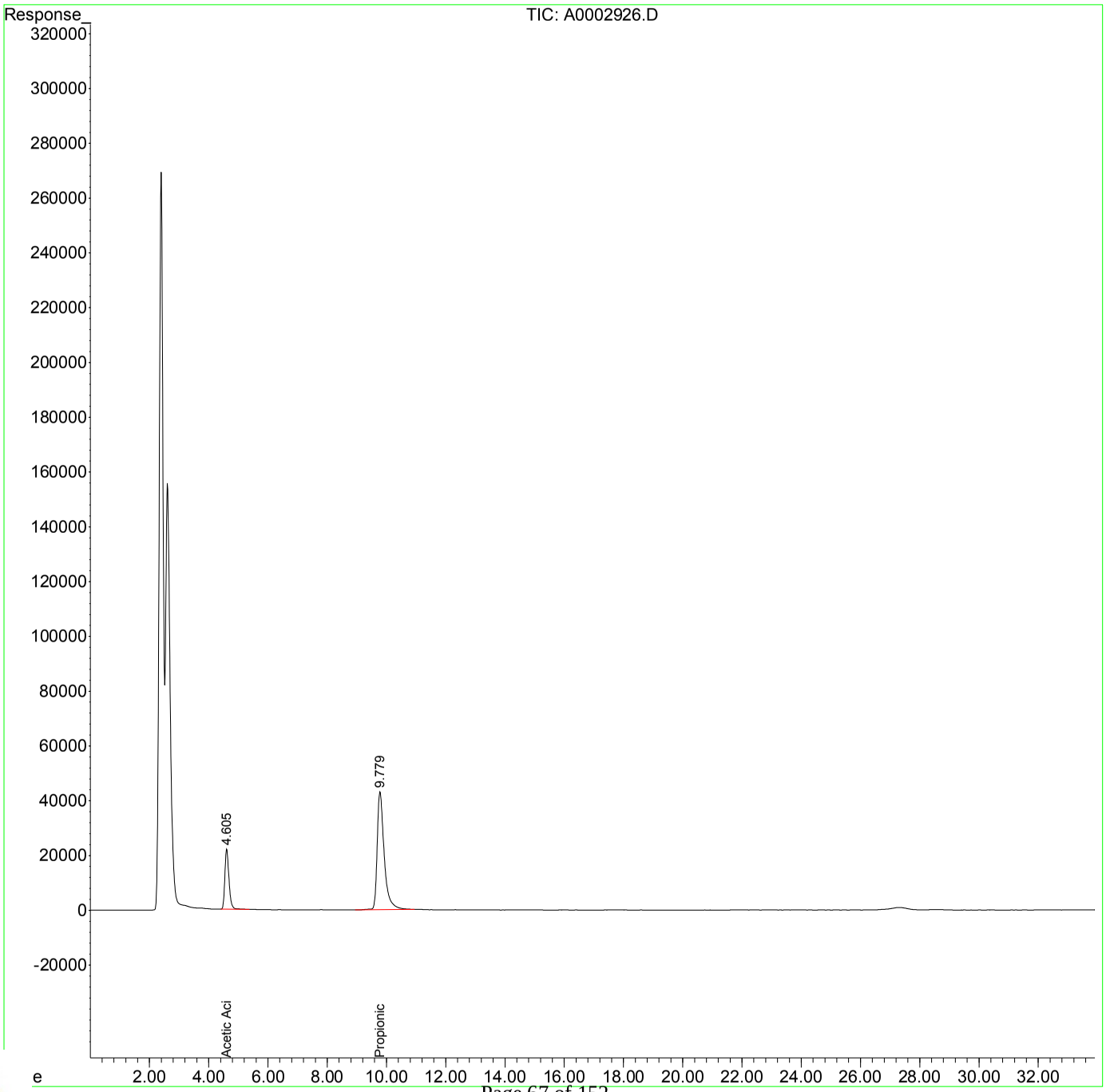
1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002926.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:27
Operator : b.allgeier
Sample : r1902402-001|5
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:22 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948915

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002911.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 17:25:08
Operator : b.allgeier
Sample : r1902402-002
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:29 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	d
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

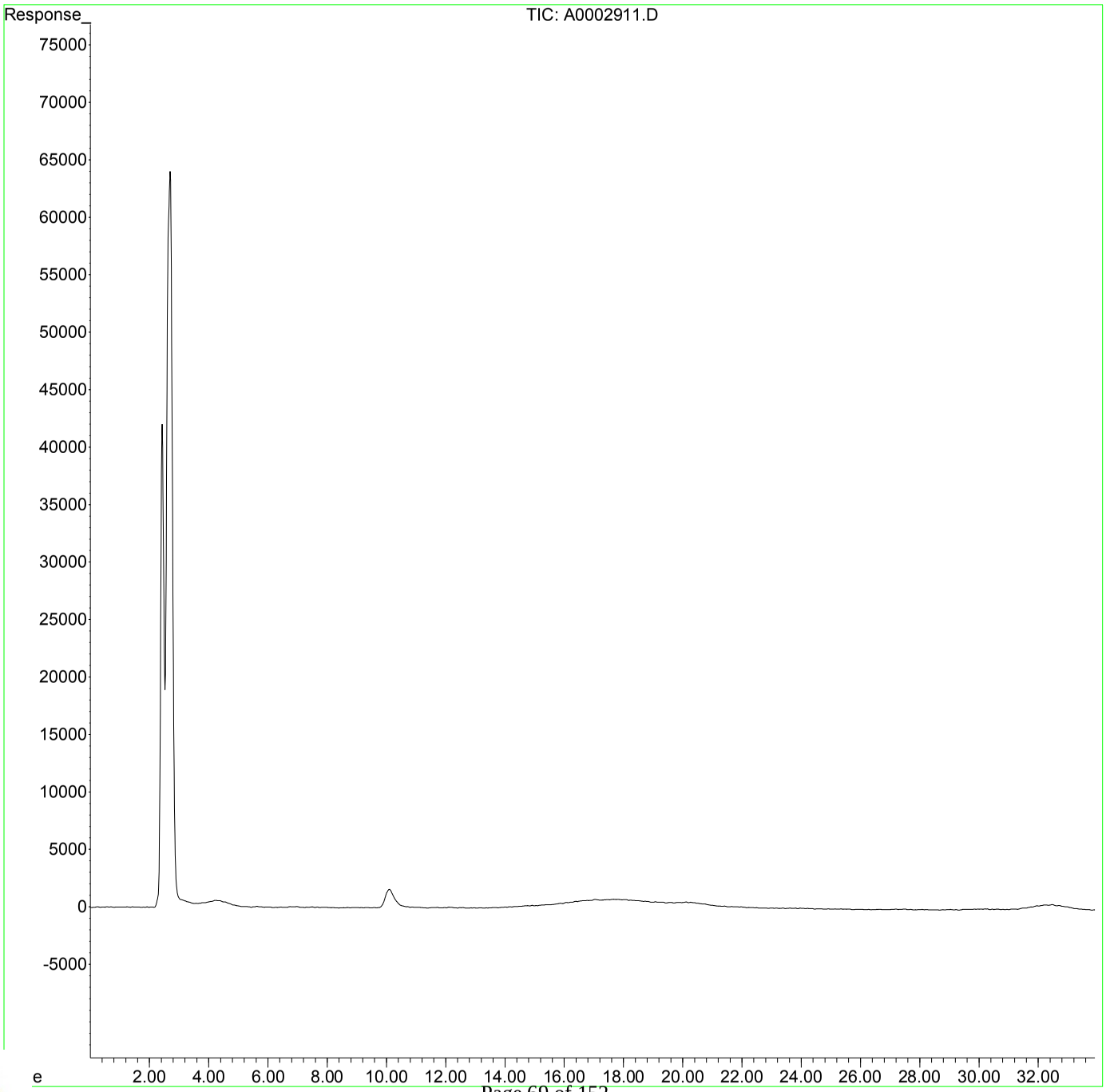
00948916

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002911.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 17:25:08
Operator : b.allgeier
Sample : r1902402-002
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:29 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948917

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002912.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 18:02:07
Operator : b.allgeier
Sample : r1902402-003
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:31 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

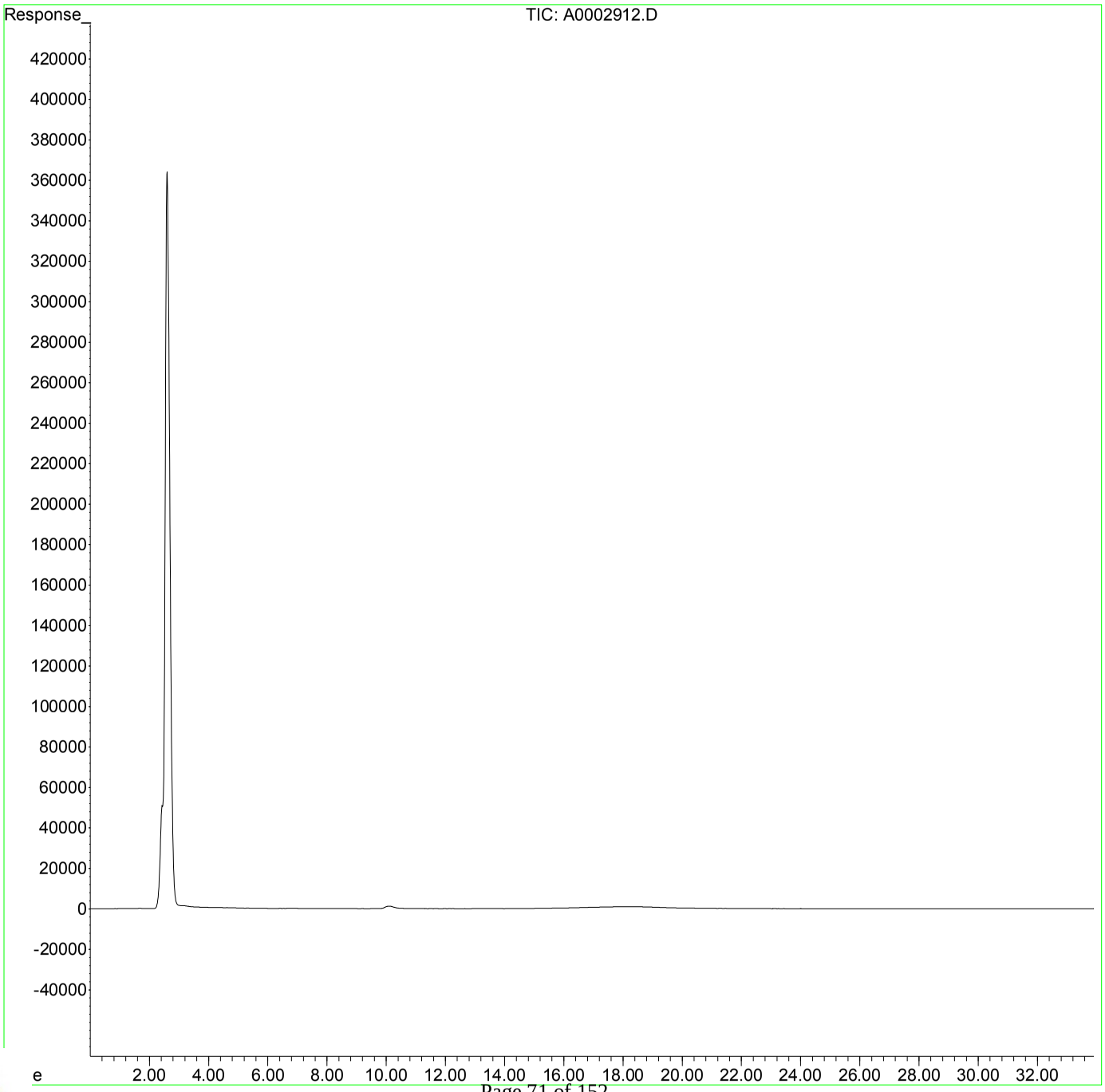
00948918

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002912.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 18:02:07
Operator : b.allgeier
Sample : r1902402-003
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:31 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948919

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002913.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:48:41~~ 25-Mar-2019, 18:39:00
Operator : b.allgeier
Sample : r1902402-004
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:33 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	d
3) T	Lactic Acid	0.000	0	N.D.	ppm	d
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948920

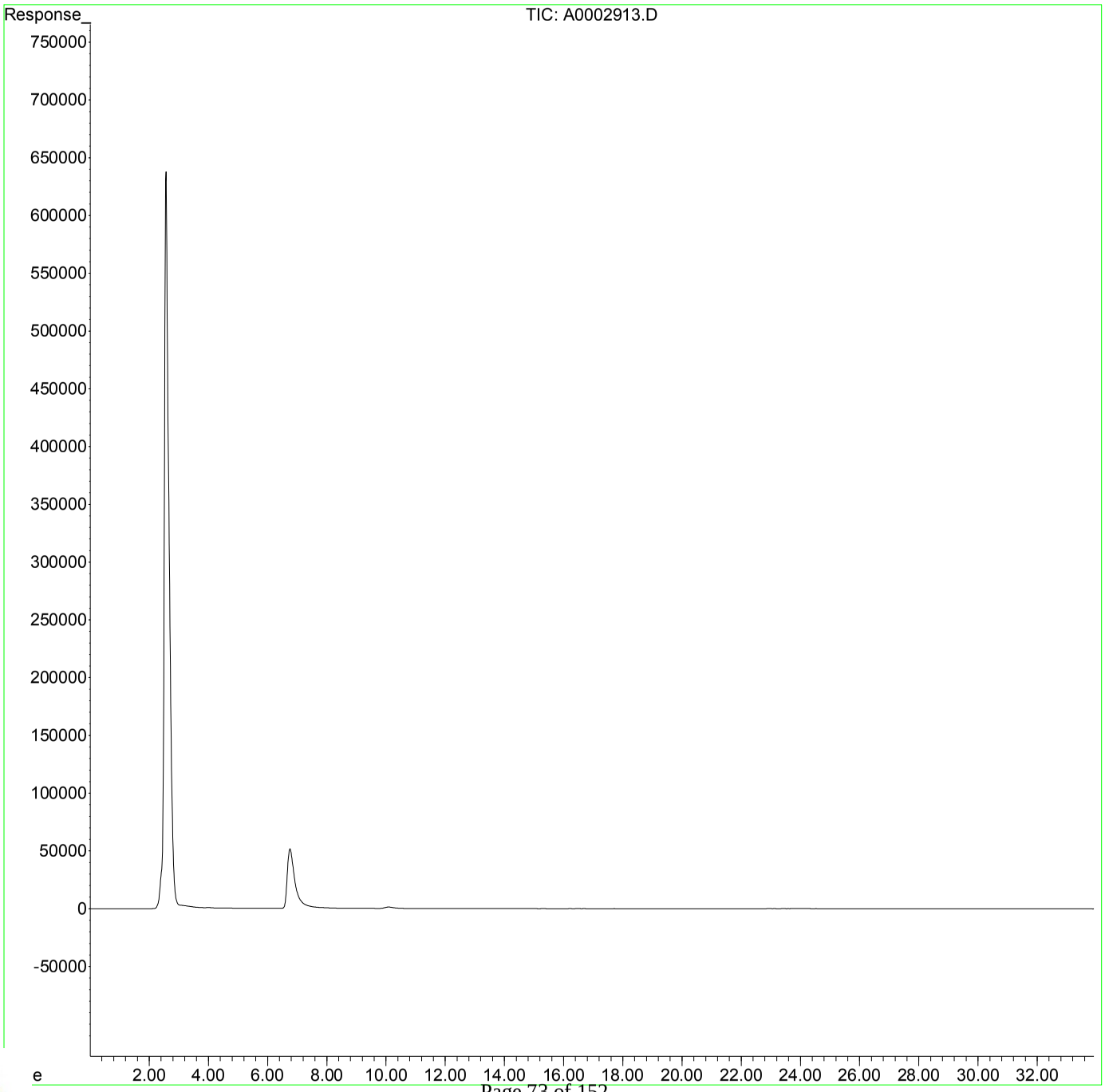
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002913.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:41
Operator : b.allgeier
Sample : r1902402-004
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:33 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948921

1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002927.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 20:23:38
Operator : b.allgeier
Sample : r1902402-006|2.5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:24 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	4.606	5842331	100.094	ppm
5) T	Propionic Acid	9.785	7321773	127.046	ppm
6) T	Butyric Acid	26.828	1322640	24.445	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948922

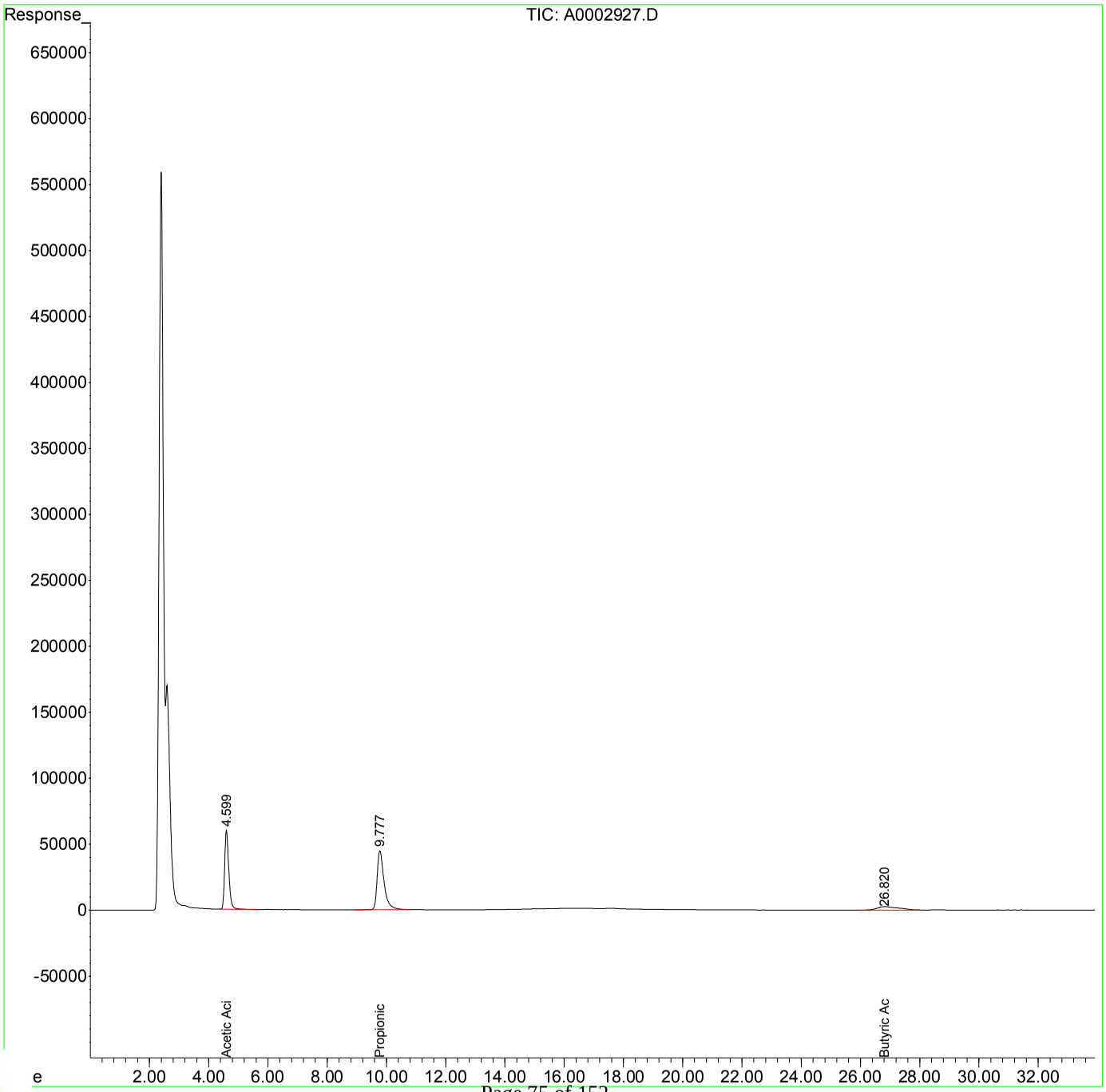
1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002927.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 20:23:38
Operator : b.allgeier
Sample : r1902402-006|2.5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:24 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948923

1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002928.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 21:00:34
Operator : b.allgeier
Sample : r1902402-007|2.5
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:26 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	4.609	5479796	93.883	ppm
5) T	Propionic Acid	9.789	7121930	123.578	ppm
6) T	Butyric Acid	26.834	1216663	22.486	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

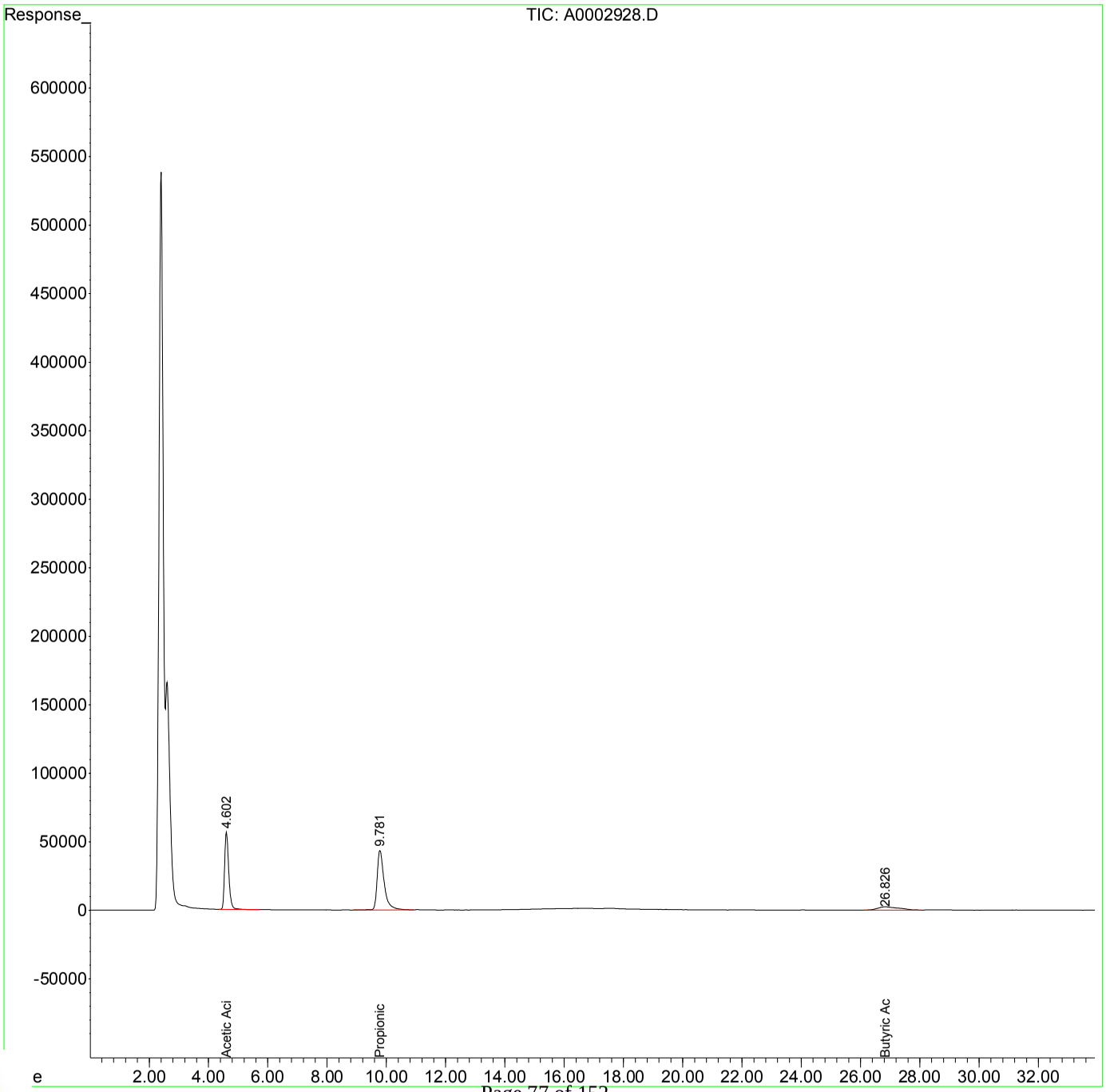
00948924

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002928.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 21:00:34
Operator : b.allgeier
Sample : r1902402-007|2.5
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:26 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948925

1st BA 04/01/19
2nd DM 04/04/19

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002916.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 20:30:15
Operator : b.allgeier
Sample : r1902402-007
Misc :
ALS Vial : 11 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:39 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	d
3) T	Lactic Acid	0.000	0	N.D.	ppm	d
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948926

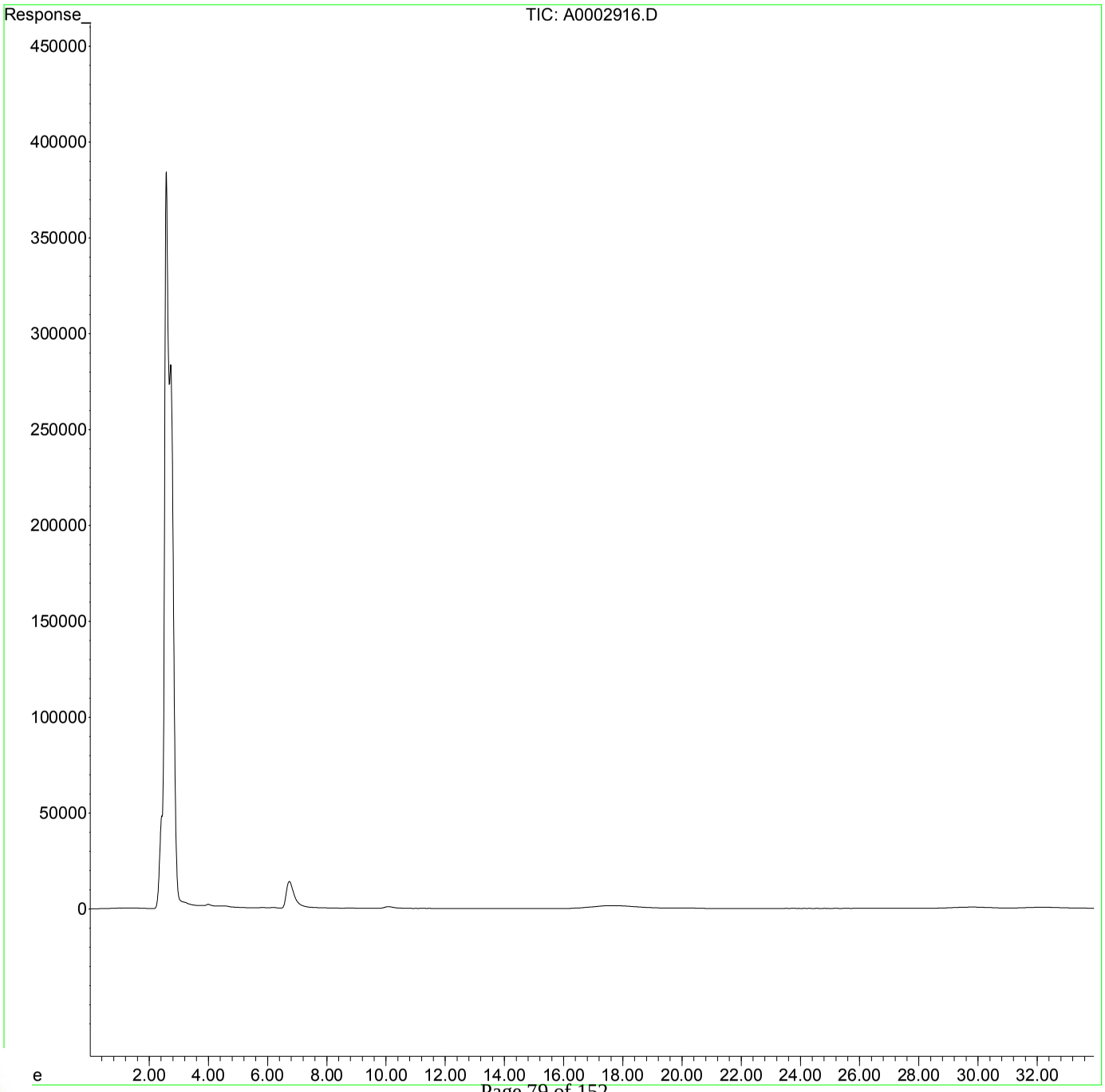
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002916.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 20:30:15
Operator : b.allgeier
Sample : r1902402-007
Misc :
ALS Vial : 11 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:39 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948927

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002907.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:47:52~~ 25-Mar-2019, 14:57:00
Operator : b.allgeier
Sample : met blk
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:21 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

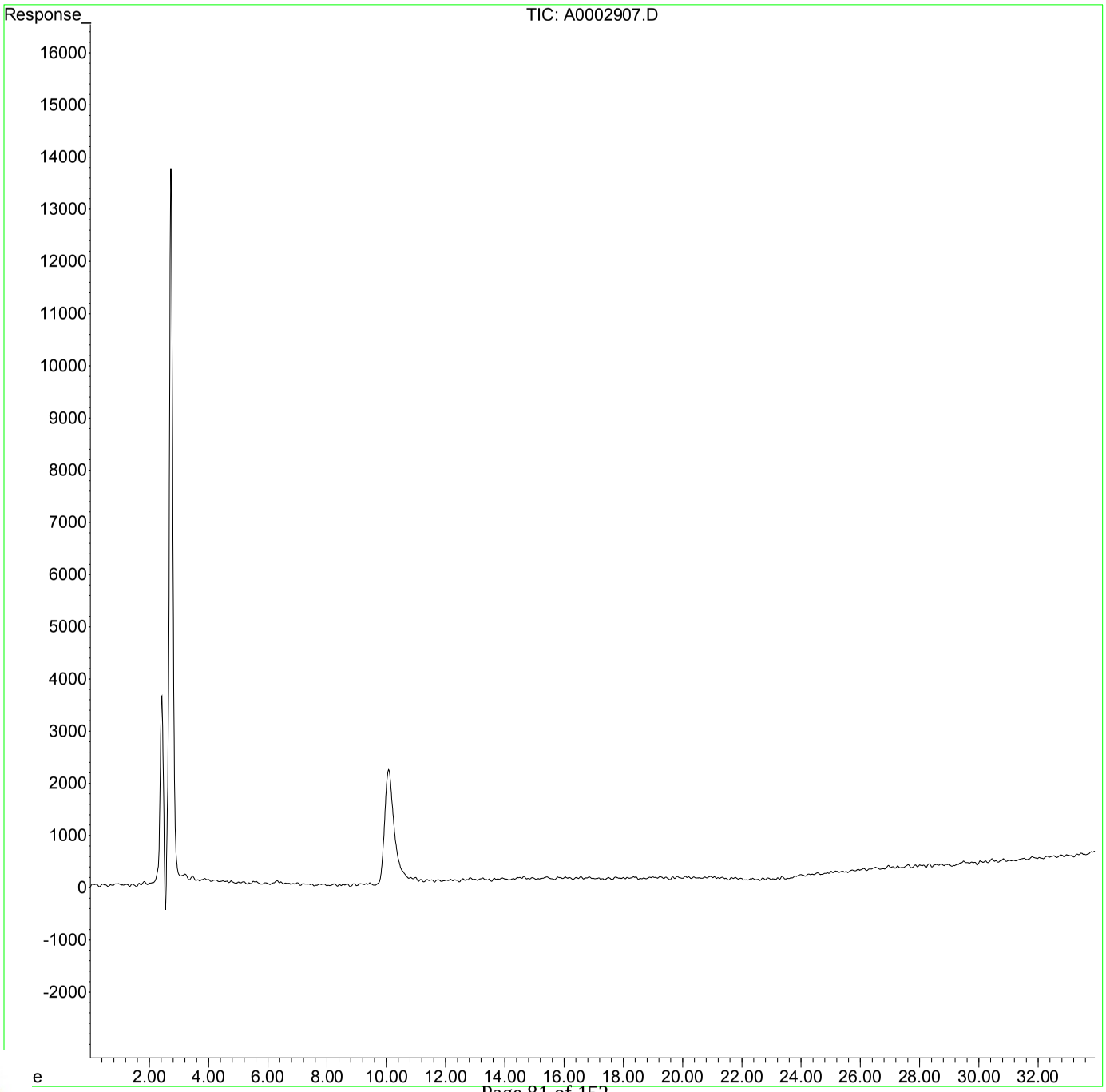
00948928

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002907.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:47:52
Operator : b.allgeier
Sample : met blk
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:21 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948929

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002923.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 09:48:28~~ 29-Mar-2019, 17:55:00
Operator : b.allgeier
Sample : met blk
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:16 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Compound	R.T.	Response	Conc	Units	
Target Compounds					
1) t Formic acid	0.000	0	N.D.	ppm	
2) T Pyruvic acid	0.000	0	N.D.	ppm	
3) T Lactic Acid	0.000	0	N.D.	ppm	
4) T Acetic Acid	0.000	0	N.D.	ppm	
5) T Propionic Acid	0.000	0	N.D.	ppm	d
6) T Butyric Acid	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

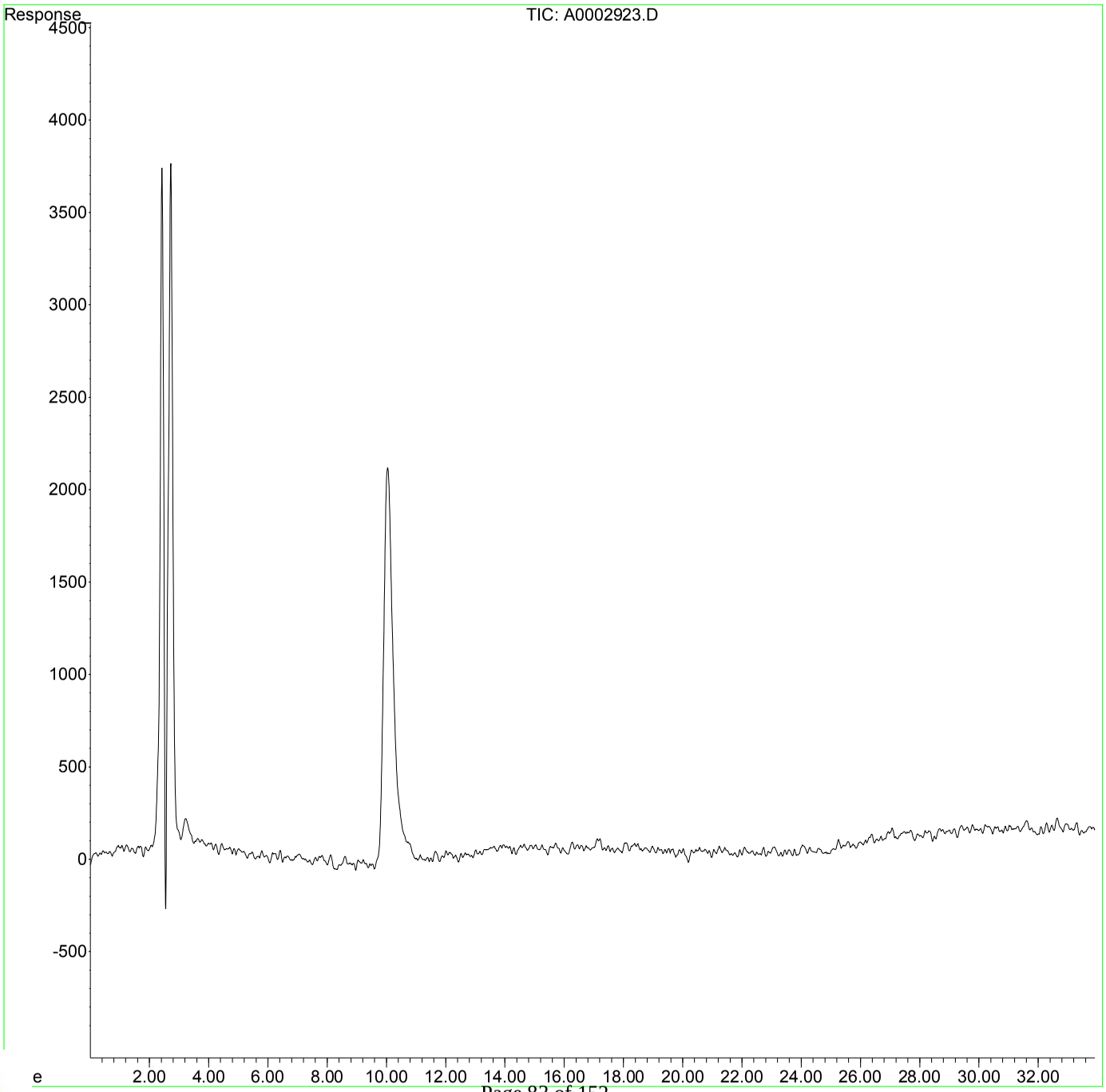
00948930

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002923.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 09:48:28
Operator : b.allgeier
Sample : met blk
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:16 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948931

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002908.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 15:34:21
Operator : b.allgeier
Sample : lcs
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:23 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.230	1867257	19.975 ppm
2) T	Pyruvic acid	3.806	1287952	1.791 ppm
3) T	Lactic Acid	4.256	1077319	18.460 ppm
4) T	Acetic Acid	4.626	1149378	19.692 ppm
5) T	Propionic Acid	9.925	1627613	28.242 ppm
6) T	Butyric Acid	27.148	1109005	20.497 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

00948932

RIGHT SOLUTIONS | RIGHT PARTNER

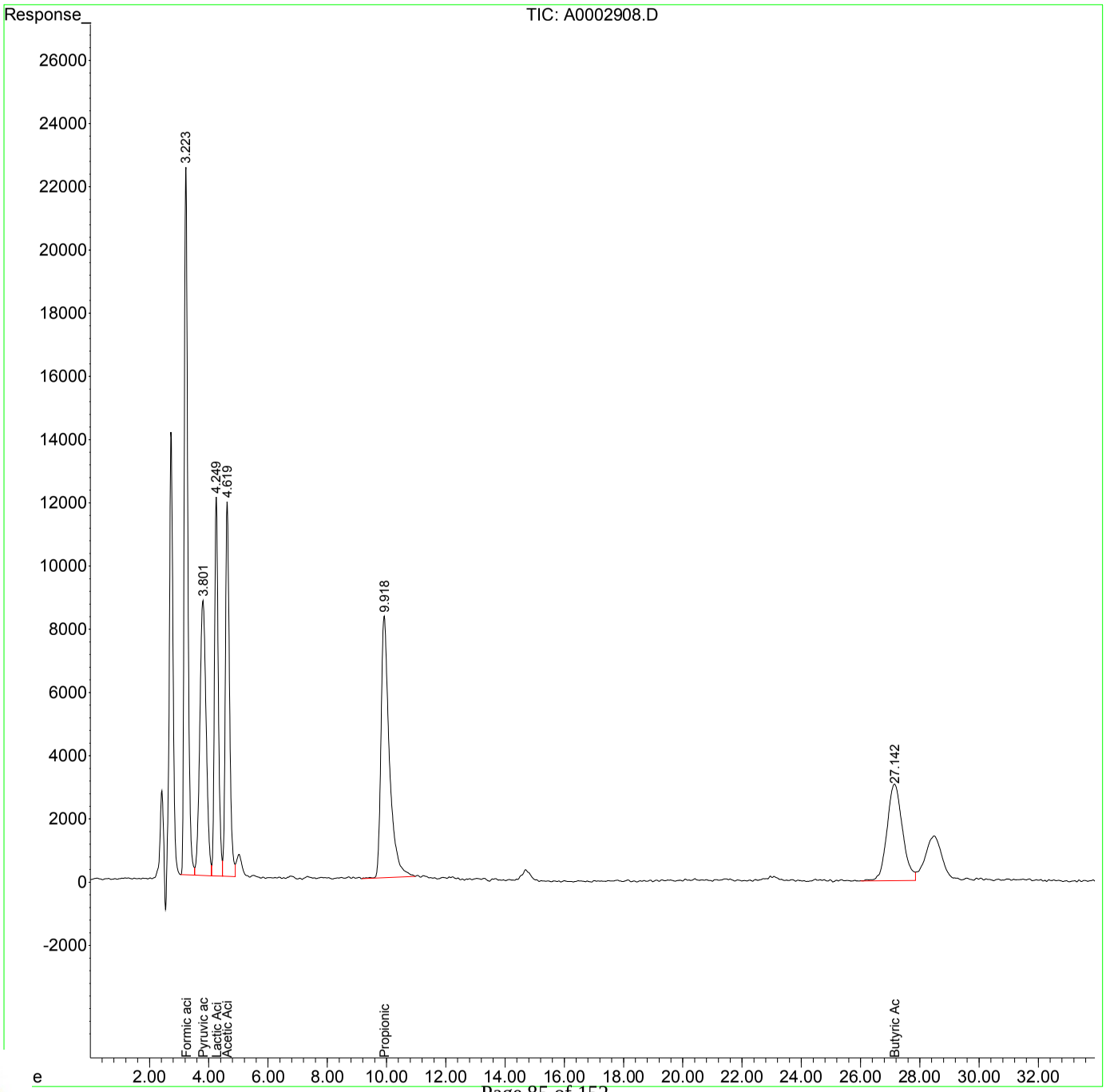
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002908.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 15:34:21
Operator : b.allgeier
Sample : lcs
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:23 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948933

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002924.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 18:32:46
Operator : b.allgeier
Sample : lcs
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.228	1867192	19.974 ppm
2) T	Pyruvic acid	3.796	1284907	1.787 ppm
3) T	Lactic Acid	4.242	1075683	18.432 ppm
4) T	Acetic Acid	4.611	1144691	19.611 ppm
5) T	Propionic Acid	9.842	1640957	28.474 ppm
6) T	Butyric Acid	26.795	1085735	20.067 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948934

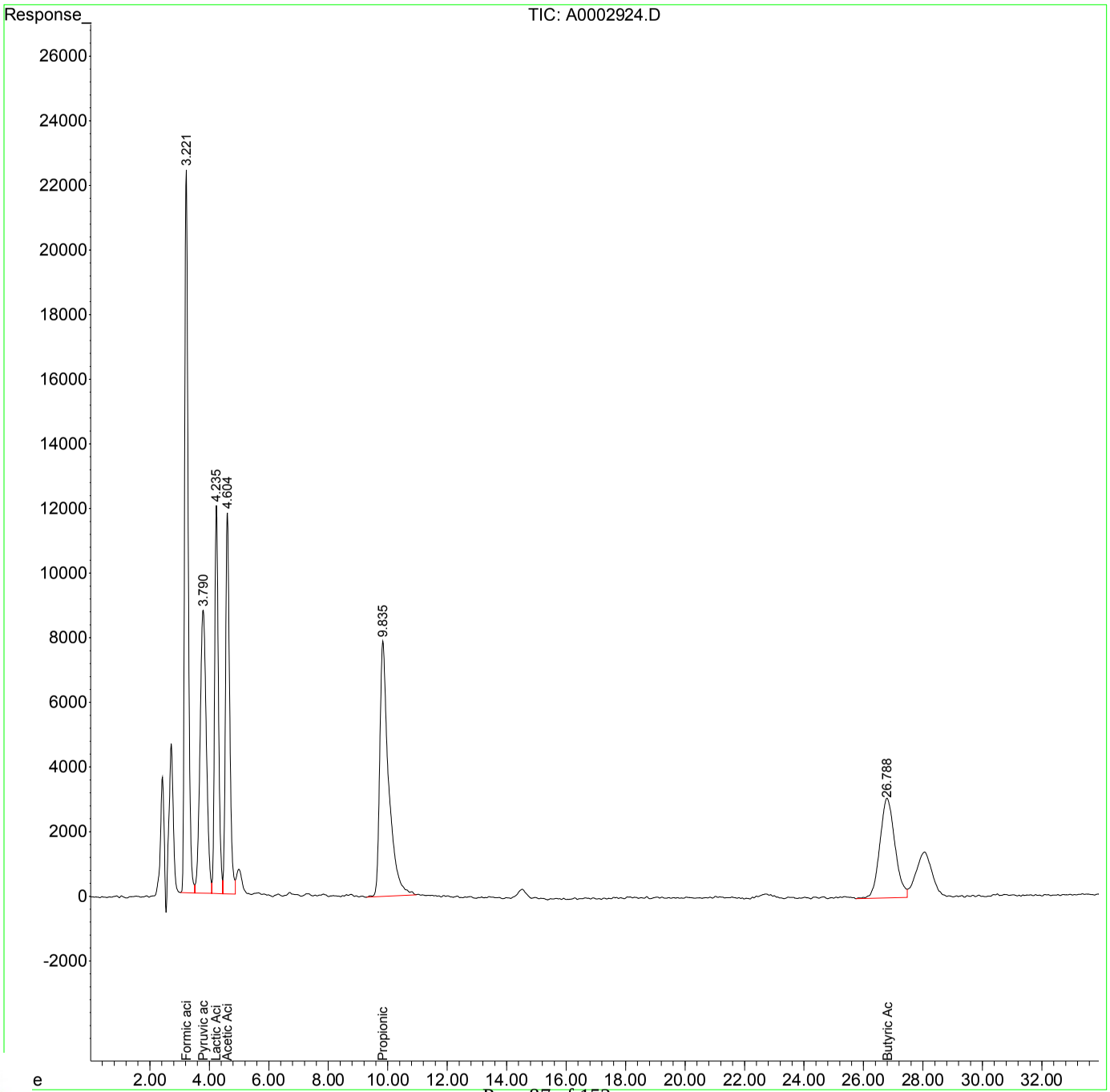
1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002924.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 18:32:46
Operator : b.allgeier
Sample : lcs
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948935

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002909.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 16:11:22
Operator : b.allgeier
Sample : dlcs
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:25 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.230	1864903	19.949 ppm
2) T	Pyruvic acid	3.806	1293223	1.798 ppm
3) T	Lactic Acid	4.257	1075279	18.425 ppm
4) T	Acetic Acid	4.629	1154311	19.776 ppm
5) T	Propionic Acid	9.936	1626551	28.224 ppm
6) T	Butyric Acid	27.159	1102382	20.374 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948936

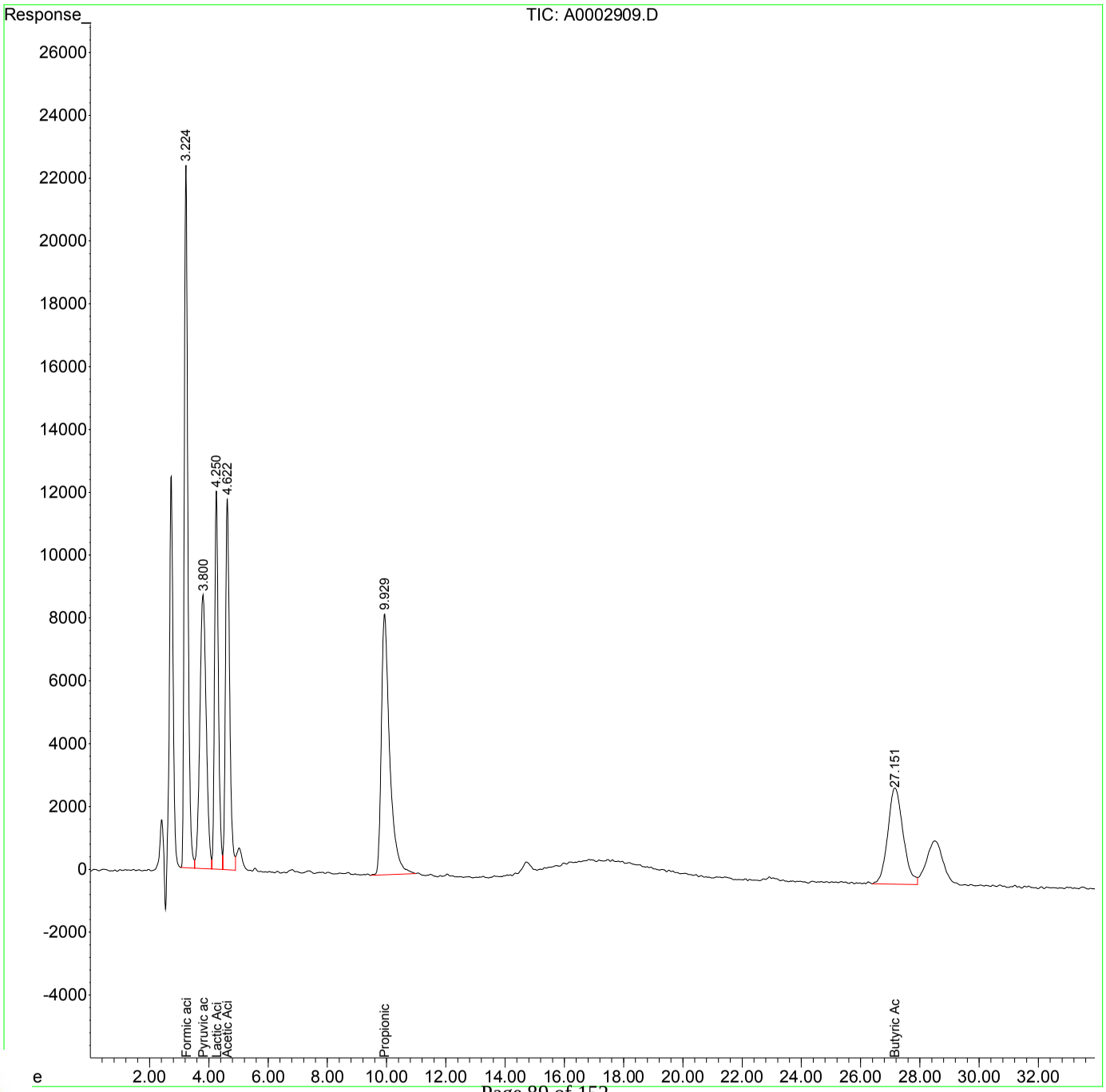
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002909.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 16:11:22
Operator : b.allgeier
Sample : dlcs
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:25 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948937

1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002925.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 19:09:49
Operator : b.allgeier
Sample : dlcs
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:20 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.229	1861954	19.918 ppm
2) T	Pyruvic acid	3.798	1291532	1.796 ppm
3) T	Lactic Acid	4.243	1080264	18.511 ppm
4) T	Acetic Acid	4.611	1150083	19.704 ppm
5) T	Propionic Acid	9.839	1655608	28.728 ppm
6) T	Butyric Acid	26.796	1108039	20.479 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948938

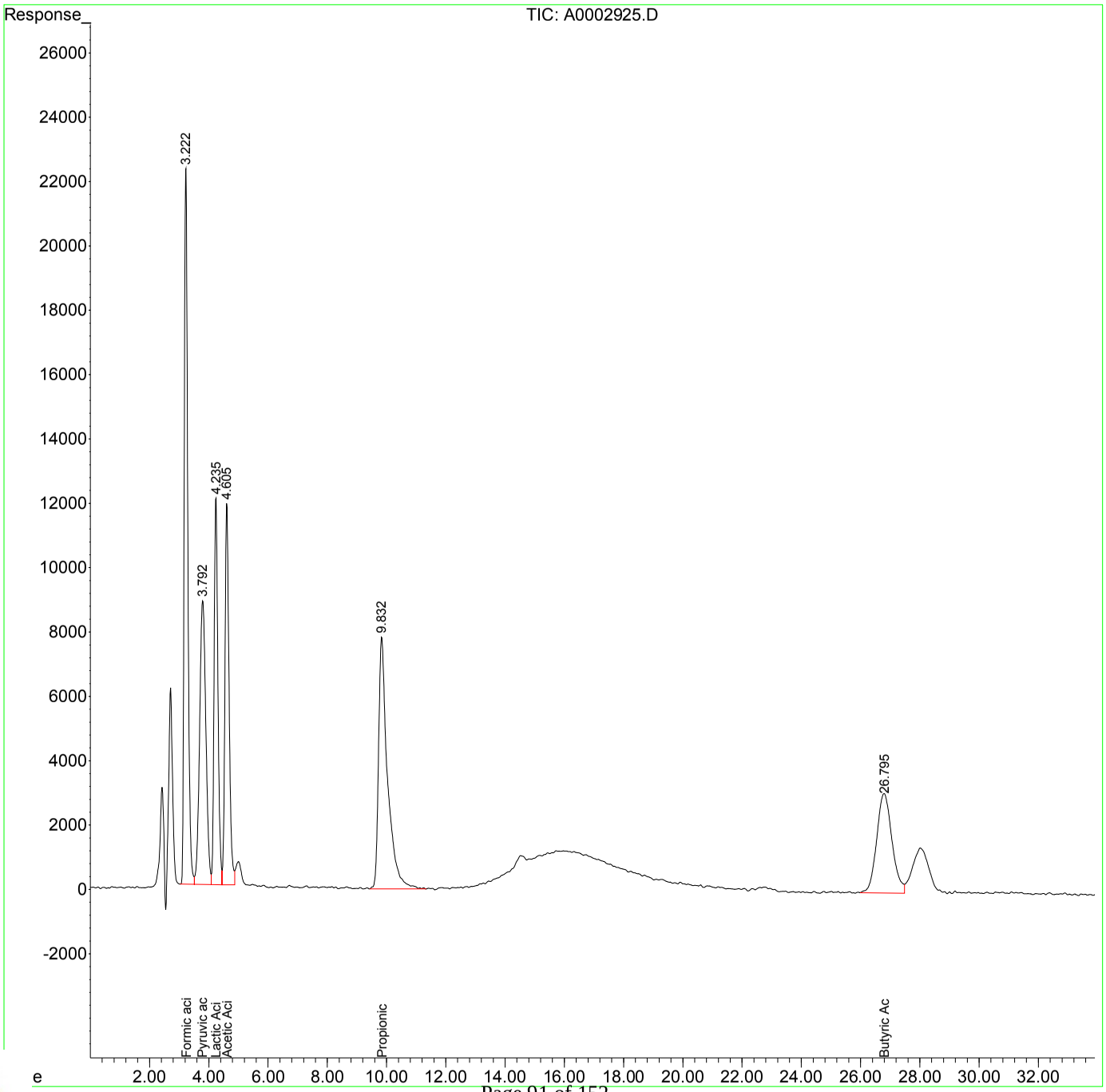
1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002925.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 19:09:49
Operator : b.allgeier
Sample : dlcs
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:20 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

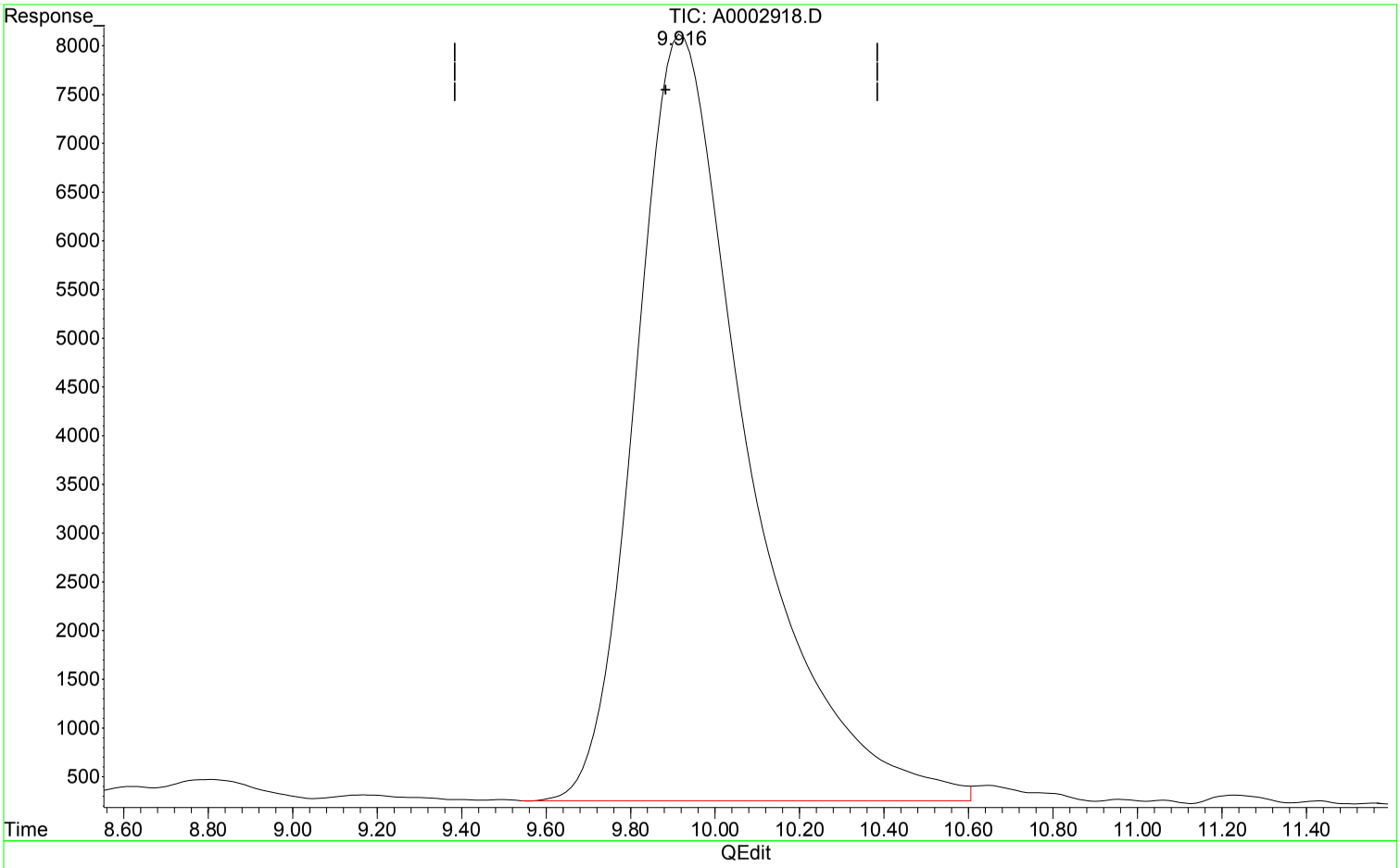
00948939

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002918.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:44:06
Operator : b.allgeier
Sample : r1902402-007 ms
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:43 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

9.916min 25.147 ppm m

response 1449259

Manual Integration:

After

Poor integration.

03/29/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

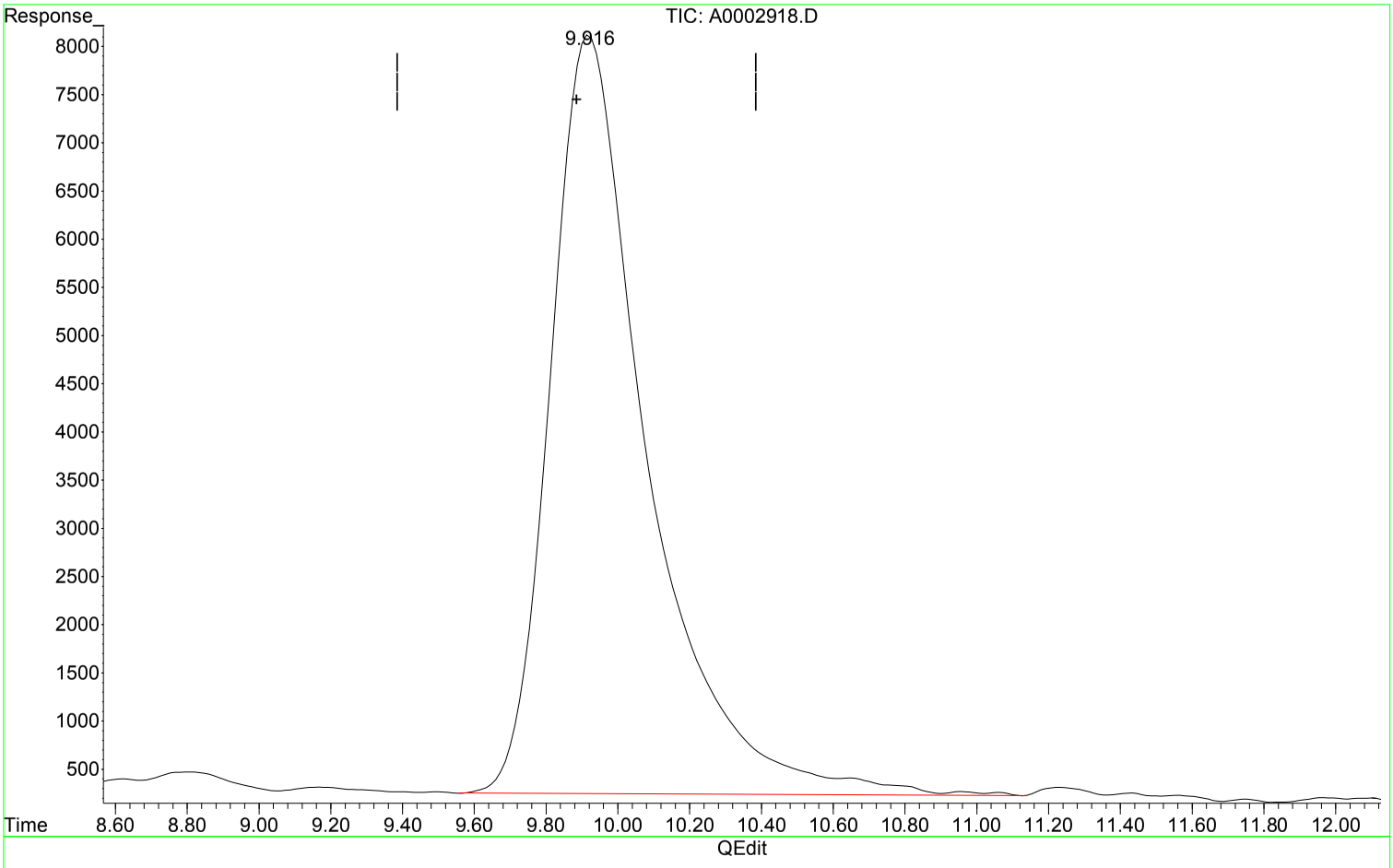
00948940

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002918.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:44:06
Operator : b.allgeier
Sample : r1902402-007 ms
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:43 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

9.922min 25.651 ppm

response 1478290

Manual Integration:

Before

03/29/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

00948941

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002918.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:44:06
Operator : b.allgeier
Sample : r1902402-007 ms
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:43 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.229	1742427	18.639	ppm	
2) T	Pyruvic acid	3.796	1165649	1.621	ppm	
3) T	Lactic Acid	4.255	982325	16.832	ppm	
4) T	Acetic Acid	4.627	1093515	18.735	ppm	
5) T	Propionic Acid	9.916	1449259	25.147	ppm	m
6) T	Butyric Acid	27.157	1075767	19.882	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948942

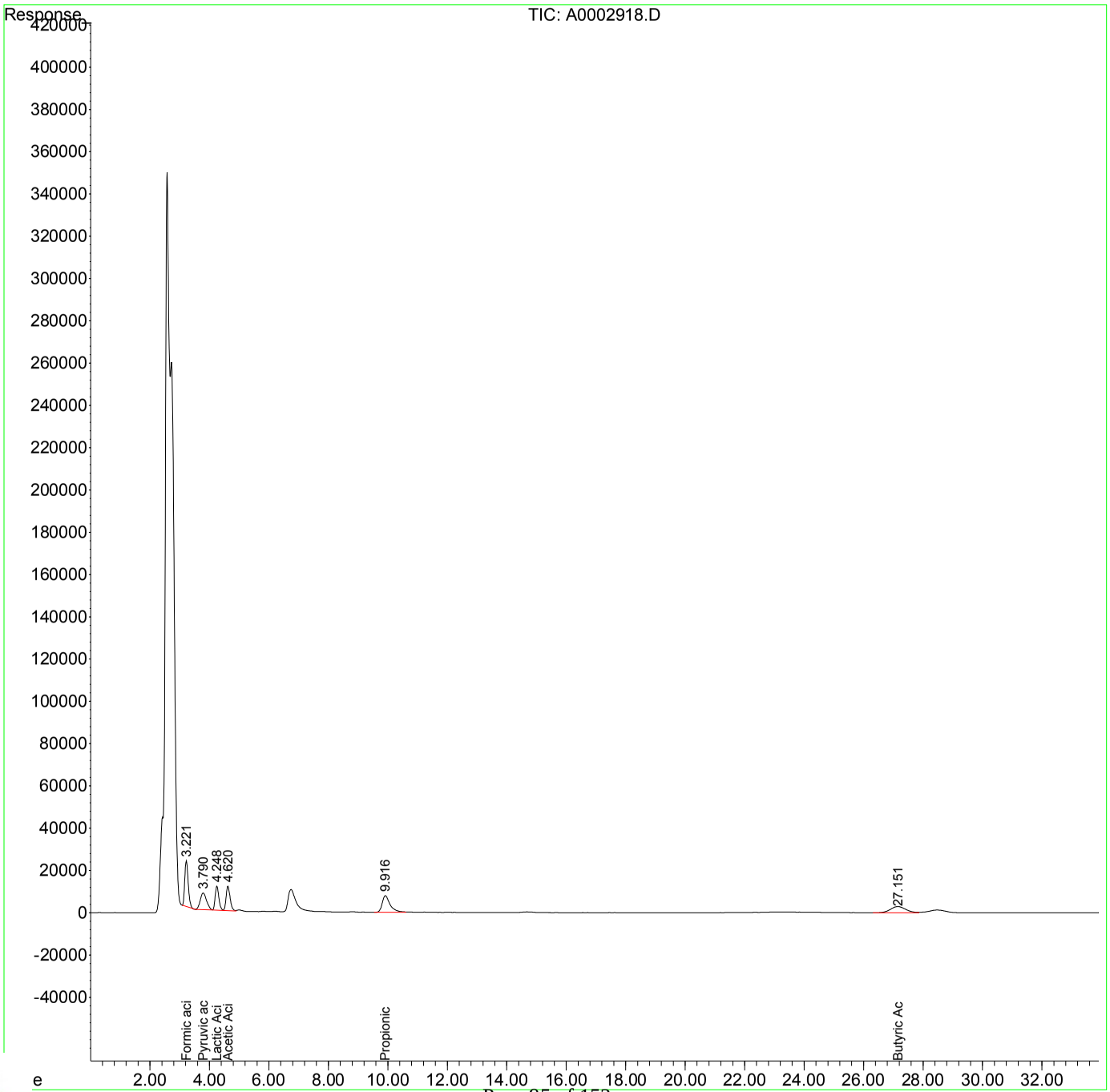
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002918.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:44:06
Operator : b.allgeier
Sample : r1902402-007 ms
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:43 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948943

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002919.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 01:28:30~~ 25-Mar-2019, 22:21:00
Operator : b.allgeier
Sample : r1902402-007 msd
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:45 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.227	1714408	18.340 ppm
2) T	Pyruvic acid	3.794	1154343	1.605 ppm
3) T	Lactic Acid	4.254	973009	16.673 ppm
4) T	Acetic Acid	4.626	1088976	18.657 ppm
5) T	Propionic Acid	9.921	1474770	25.590 ppm
6) T	Butyric Acid	27.155	1000486	18.491 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948944

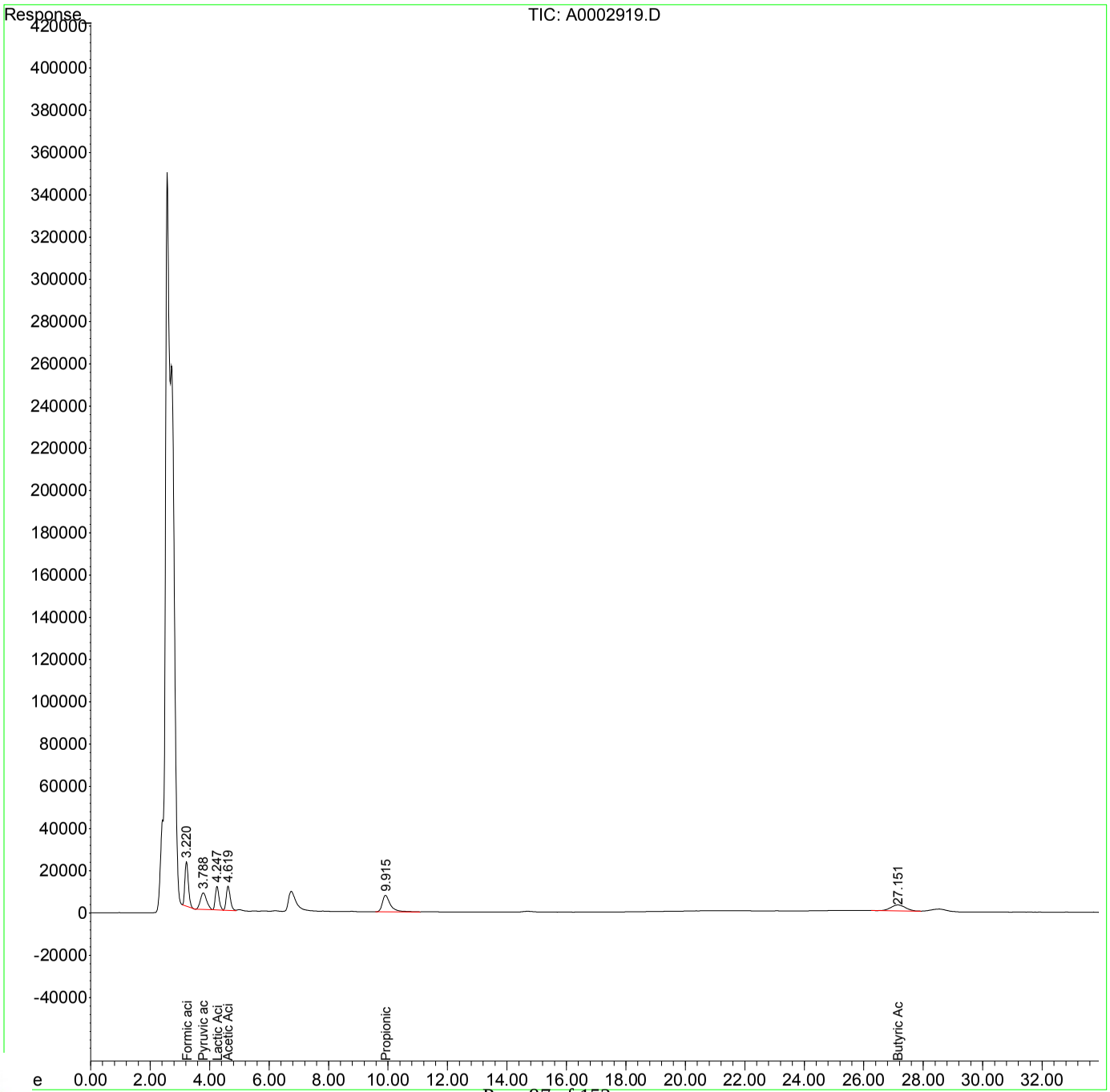
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002919.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 01:28:30
Operator : b.allgeier
Sample : r1902402-007 msd
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:45 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

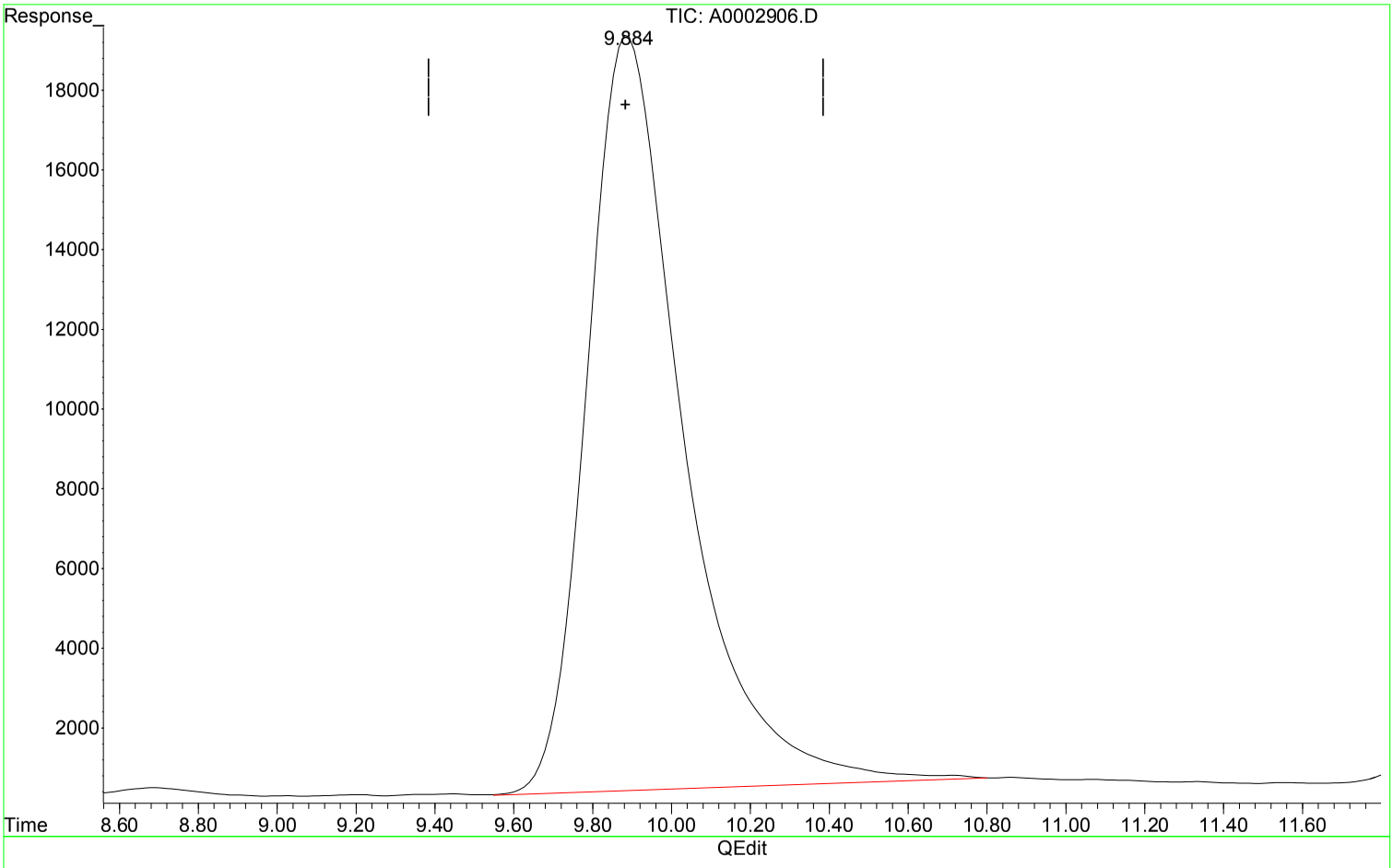
00948945

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002906.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

9.884min 55.609 ppm m

response 3204779

Manual Integration:

After

Poor integration.

03/29/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

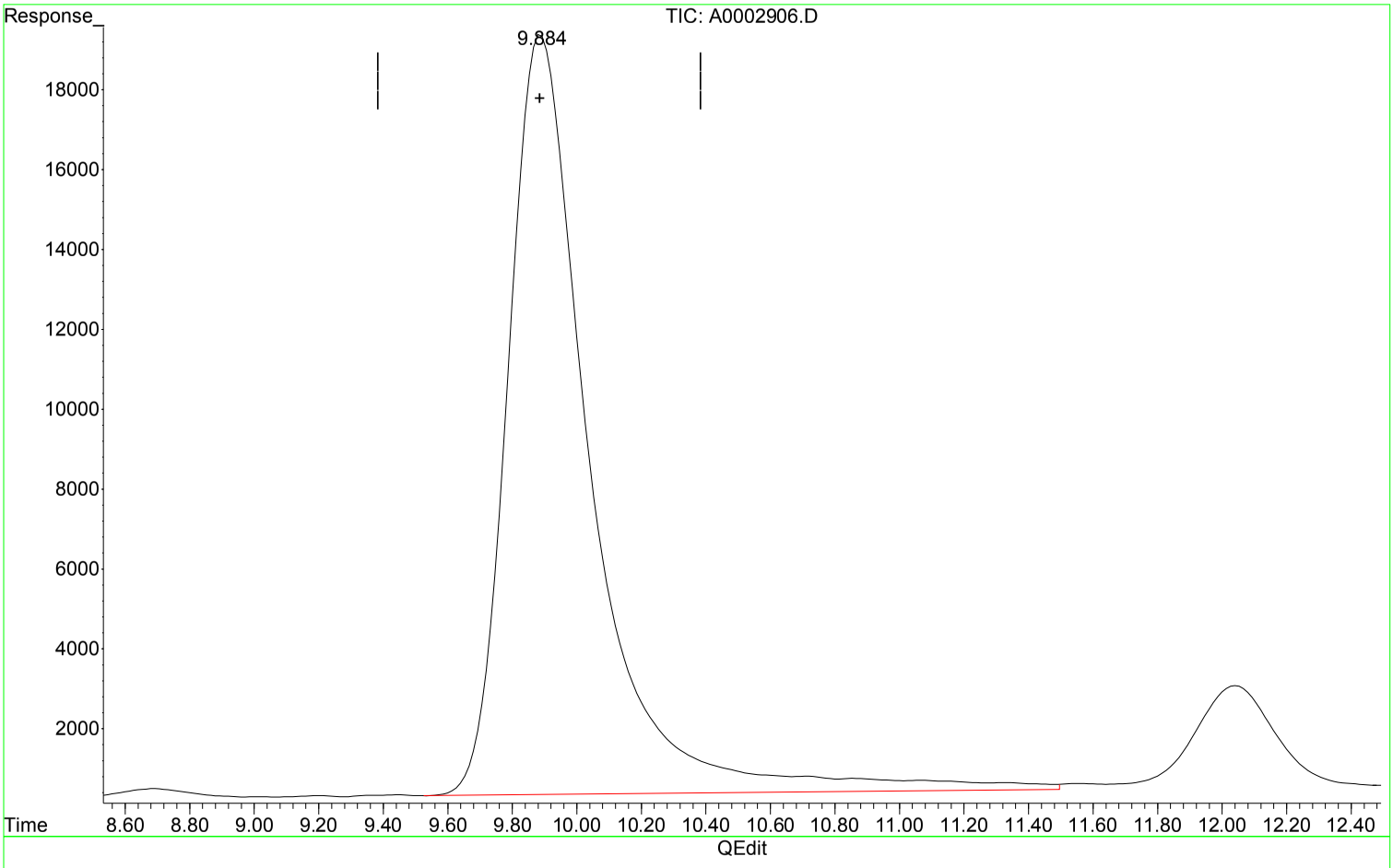
00948946

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002906.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

9.891min 59.306 ppm

response 3417871

Manual Integration:

Before

03/29/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

00948947

1st BA 04/01/19
2nd DM 04/04/19

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002906.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:47:58~~ 25-Mar-2019, 14:20:00
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.481	96.052 E3	-2.8	102	0.00
2 T	Pyruvic acid	719.144	585.282 E3	18.6	82	0.01
3 T	Lactic Acid	58.359	51.865 E3	11.1	87	0.02
4 T	Acetic Acid	58.368	58.805 E3	-0.7	99	0.02
5 T	Propionic Acid	57.631	64.096 E3	-11.2	114	0.09
6 T	Butyric Acid	54.107	55.293 E3	-2.2	102	0.41

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

00948948

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002906.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:47:58~~ 25-Mar-2019, 14:20:00
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.229	4802608	51.375	ppm	
2) T	Pyruvic acid	3.804	2926411	4.069	ppm	
3) T	Lactic Acid	4.253	2593267	44.437	ppm	
4) T	Acetic Acid	4.621	2940275	50.374	ppm	
5) T	Propionic Acid	9.884	3204779	55.609	ppm	m
6) T	Butyric Acid	27.058	2764628	51.096	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948949

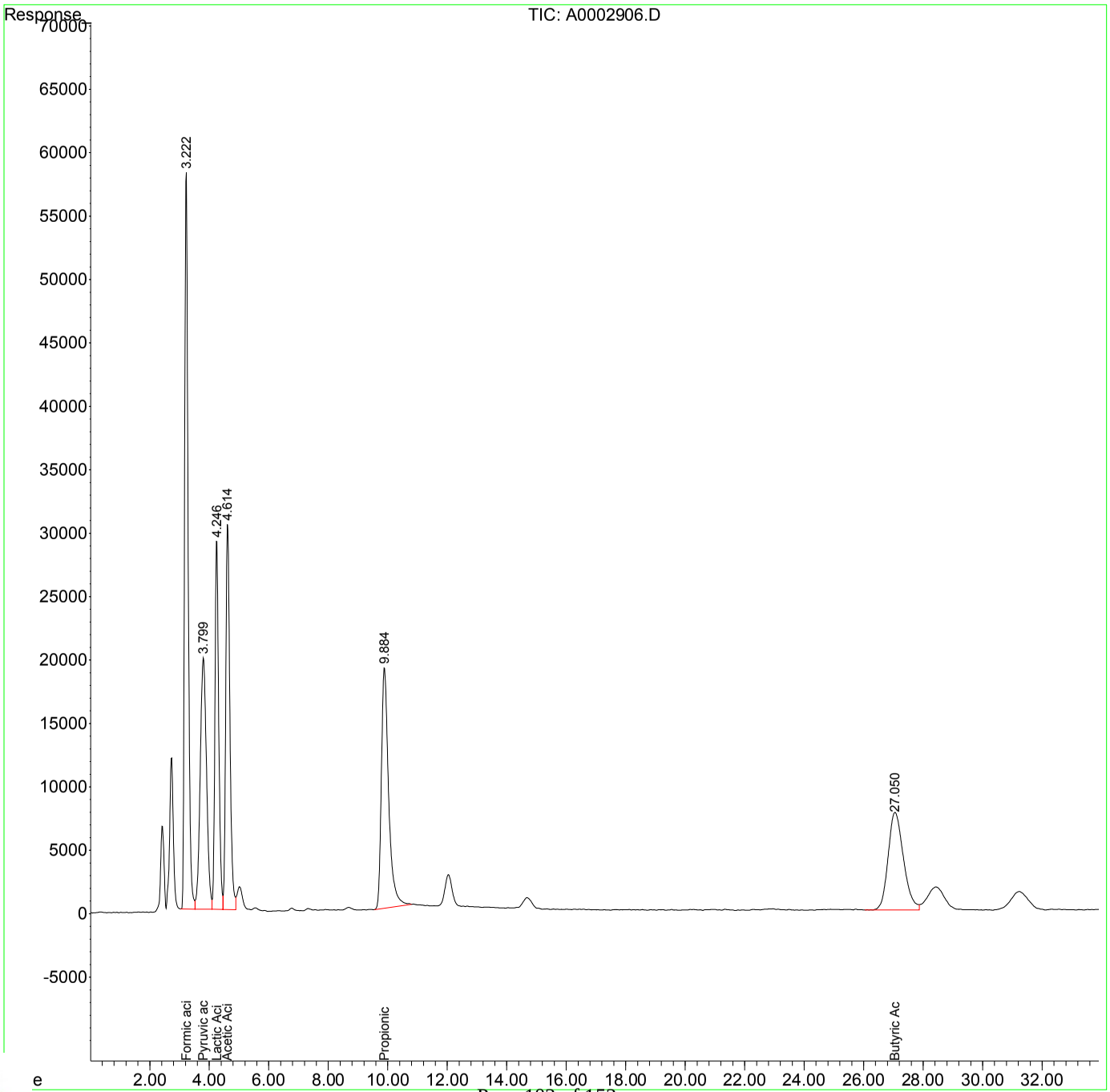
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002906.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:18 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948950

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002917.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:07:14
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:26:55 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.481	95.891 E3	-2.6	102	0.00
2 T	Pyruvic acid	719.144	628.324 E3	12.6	89	0.01
3 T	Lactic Acid	58.359	54.952 E3	5.8	92	0.02
4 T	Acetic Acid	58.368	60.457 E3	-3.6	102	0.02
5 T	Propionic Acid	57.631	65.210 E3	-13.2	116	0.09
6 T	Butyric Acid	54.107	54.065 E3	0.1	99	0.35

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

00948951

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002917.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:07:14
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:26:55 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.228	4794567	51.289 ppm
2) T	Pyruvic acid	3.804	3141618	4.369 ppm
3) T	Lactic Acid	4.251	2747597	47.081 ppm
4) T	Acetic Acid	4.620	3022874	51.790 ppm
5) T	Propionic Acid	9.883	3260475	56.575 ppm
6) T	Butyric Acid	26.994	2703236	49.961 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

00948952

RIGHT SOLUTIONS | RIGHT PARTNER

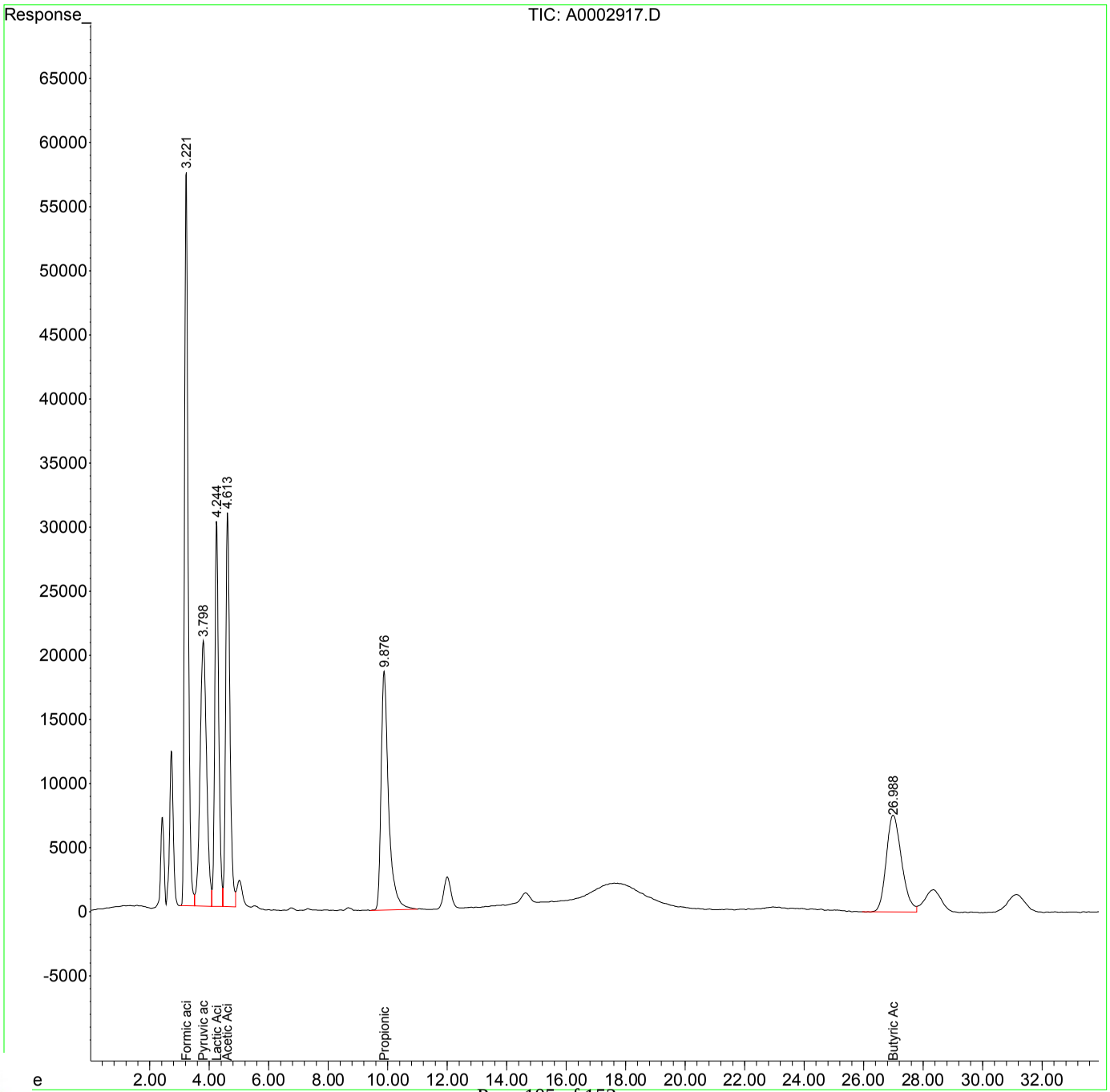
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002917.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 21:07:14
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:26:55 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948953

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002922.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 17:18:51
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:14 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.481	96.630 E3	-3.4	103	0.00
2 T	Pyruvic acid	719.144	585.904 E3	18.5	83	0.00
3 T	Lactic Acid	58.359	52.367 E3	10.3	88	0.00
4 T	Acetic Acid	58.368	59.274 E3	-1.6	100	0.00
5 T	Propionic Acid	57.631	65.819 E3	-14.2	117	0.00
6 T	Butyric Acid	54.107	55.562 E3	-2.7	102	0.00

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

00948954

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002922.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 17:18:51
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:14 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.224	4831518	51.684 ppm
2) T	Pyruvic acid	3.792	2929519	4.074 ppm
3) T	Lactic Acid	4.235	2618360	44.867 ppm
4) T	Acetic Acid	4.600	2963684	50.775 ppm
5) T	Propionic Acid	9.792	3290955	57.104 ppm
6) T	Butyric Acid	26.648	2778083	51.344 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948955

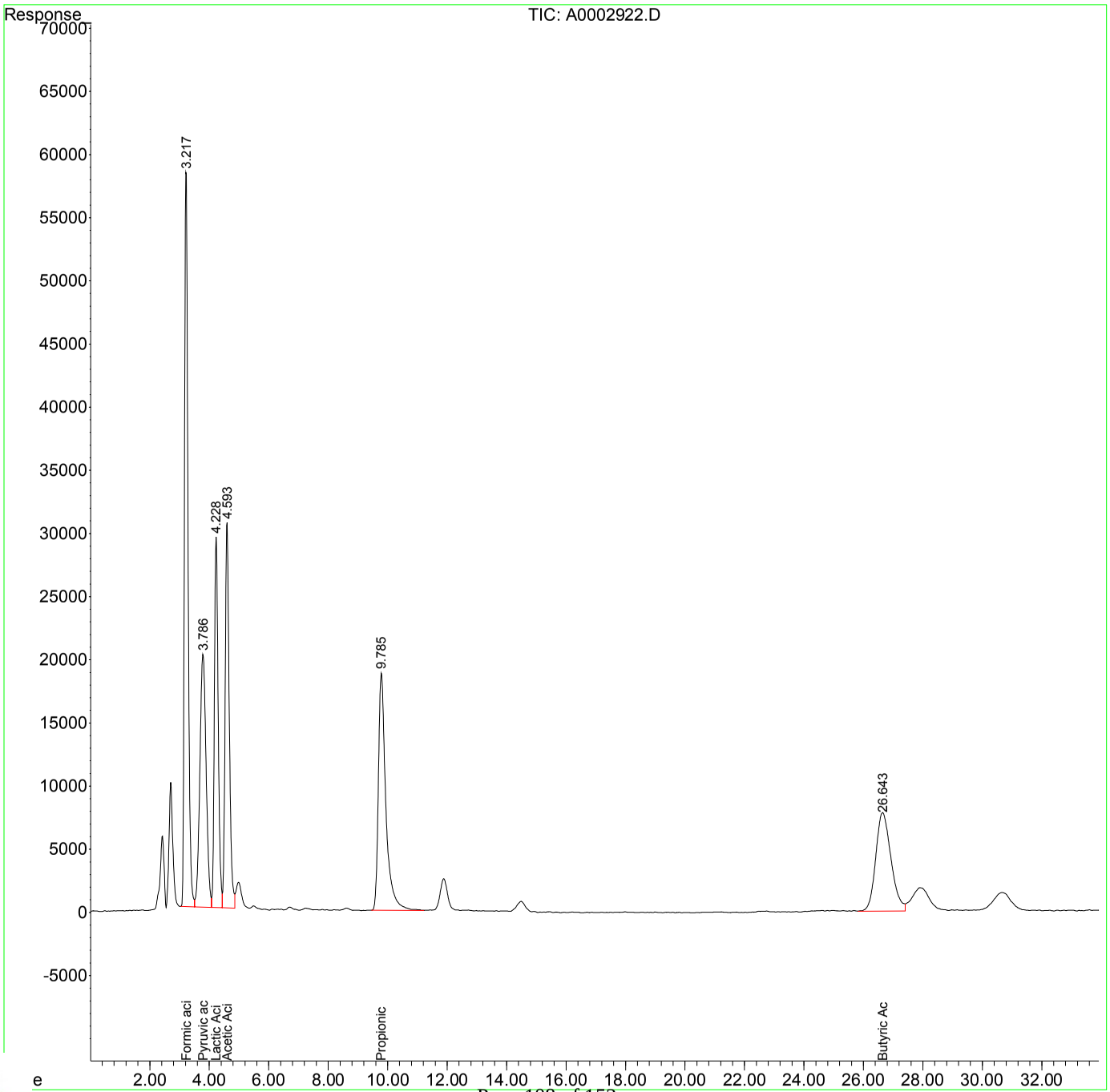
1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002922.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 17:18:51
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:14 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948956

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002929.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 21:37:35
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:28 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.481	95.809 E3	-2.5	102	0.00
2 T	Pyruvic acid	719.144	589.394 E3	18.0	83	0.00
3 T	Lactic Acid	58.359	52.470 E3	10.1	88	0.00
4 T	Acetic Acid	58.368	58.923 E3	-1.0	99	0.00
5 T	Propionic Acid	57.631	64.491 E3	-11.9	115	0.03
6 T	Butyric Acid	54.107	54.980 E3	-1.6	101	0.07

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER
00948957

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002929.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 21:37:35
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:28 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.227	4790468	51.245 ppm
2) T	Pyruvic acid	3.795	2946972	4.098 ppm
3) T	Lactic Acid	4.240	2623516	44.955 ppm
4) T	Acetic Acid	4.609	2946130	50.475 ppm
5) T	Propionic Acid	9.822	3224544	55.952 ppm
6) T	Butyric Acid	26.716	2749004	50.807 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948958

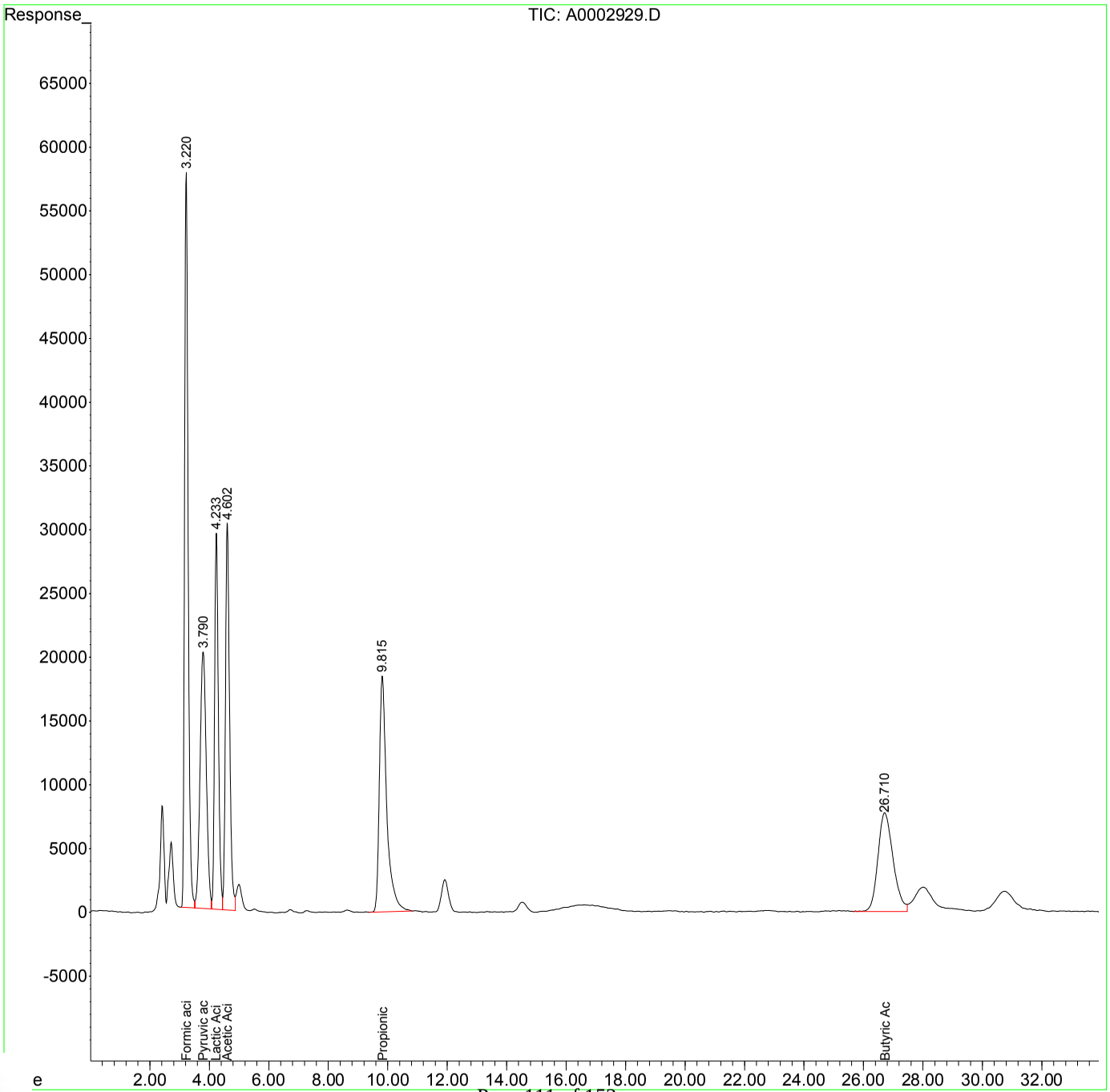
1st BA 04/03/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032819\
Data File : A0002929.D
Signal(s) : dad1A.ch
Acq On : 29-Mar-2019, 21:37:35
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 01 09:31:28 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Mon Apr 01 09:25:48 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948959

1st BA 04/01/19
2nd DM 04/04/19

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002920.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 22:57:56
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:47 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.481	94.958 E3	-1.6	101	0.00
2 T	Pyruvic acid	719.144	594.517 E3	17.3	84	0.01
3 T	Lactic Acid	58.359	52.862 E3	9.4	89	0.02
4 T	Acetic Acid	58.368	59.220 E3	-1.5	100	0.03
5 T	Propionic Acid	57.631	66.913 E3	-16.1	119	0.12
6 T	Butyric Acid	54.107	54.219 E3	-0.2	100	0.46

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

00948960

1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002920.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 22:57:56
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:47 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.227	4747921	50.790 ppm
2) T	Pyruvic acid	3.802	2972586	4.134 ppm
3) T	Lactic Acid	4.253	2643083	45.290 ppm
4) T	Acetic Acid	4.625	2961006	50.730 ppm
5) T	Propionic Acid	9.916	3345639	58.053 ppm
6) T	Butyric Acid	27.107	2710968	50.104 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948961

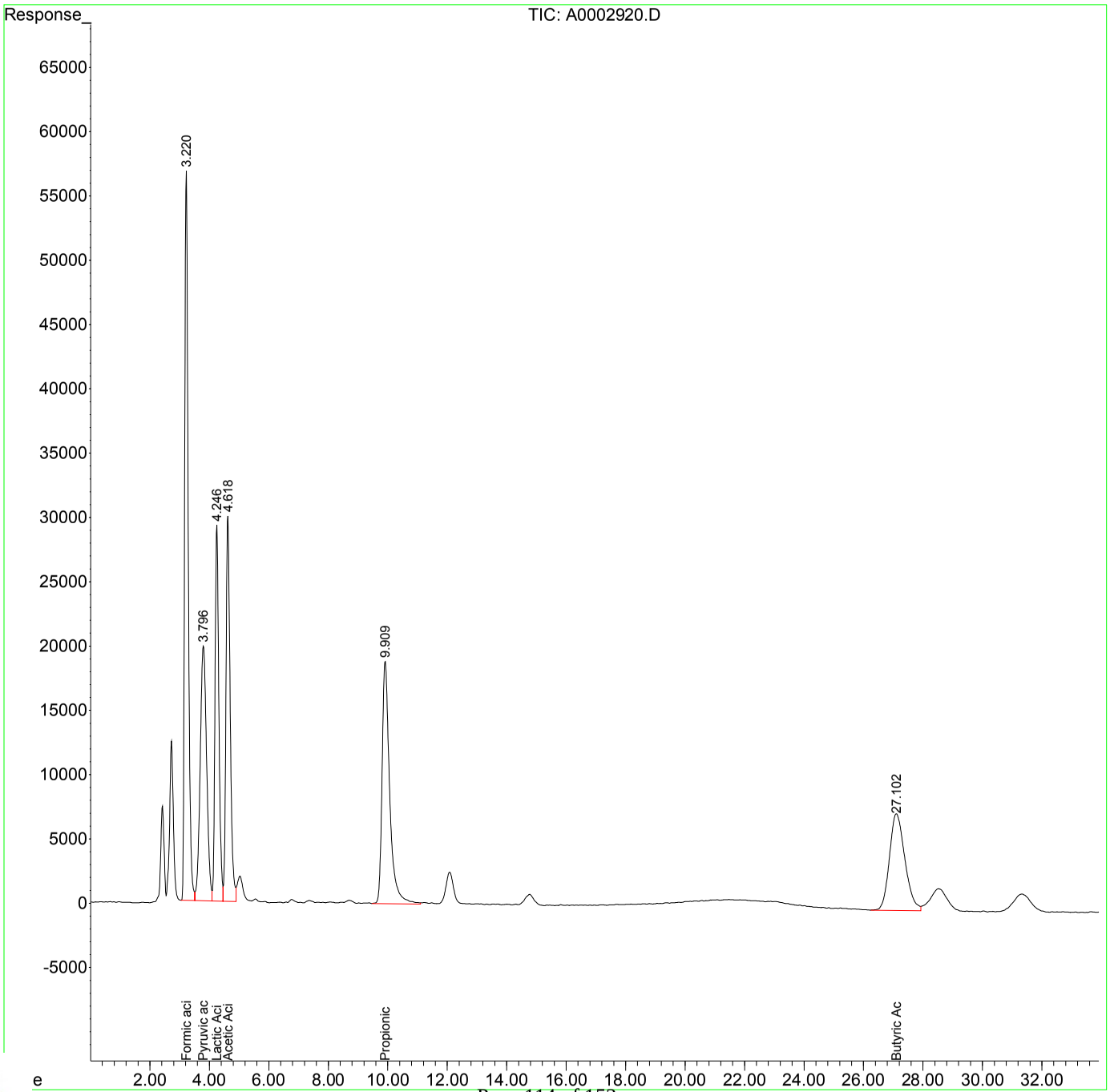
1st BA 04/01/19
2nd DM 04/04/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\032519\
Data File : A0002920.D
Signal(s) : dad1A.ch
Acq On : 25-Mar-2019, 22:57:56
Operator : b.allgeier
Sample : ccv
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 29 16:19:47 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Fri Mar 29 16:18:59 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948962

1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002707.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 02:48:39~~ 31-Dec-2018, 14:50:00
Operator : b.allgeier
Sample : inst blk
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 09:12:20 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 09:10:23 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948963

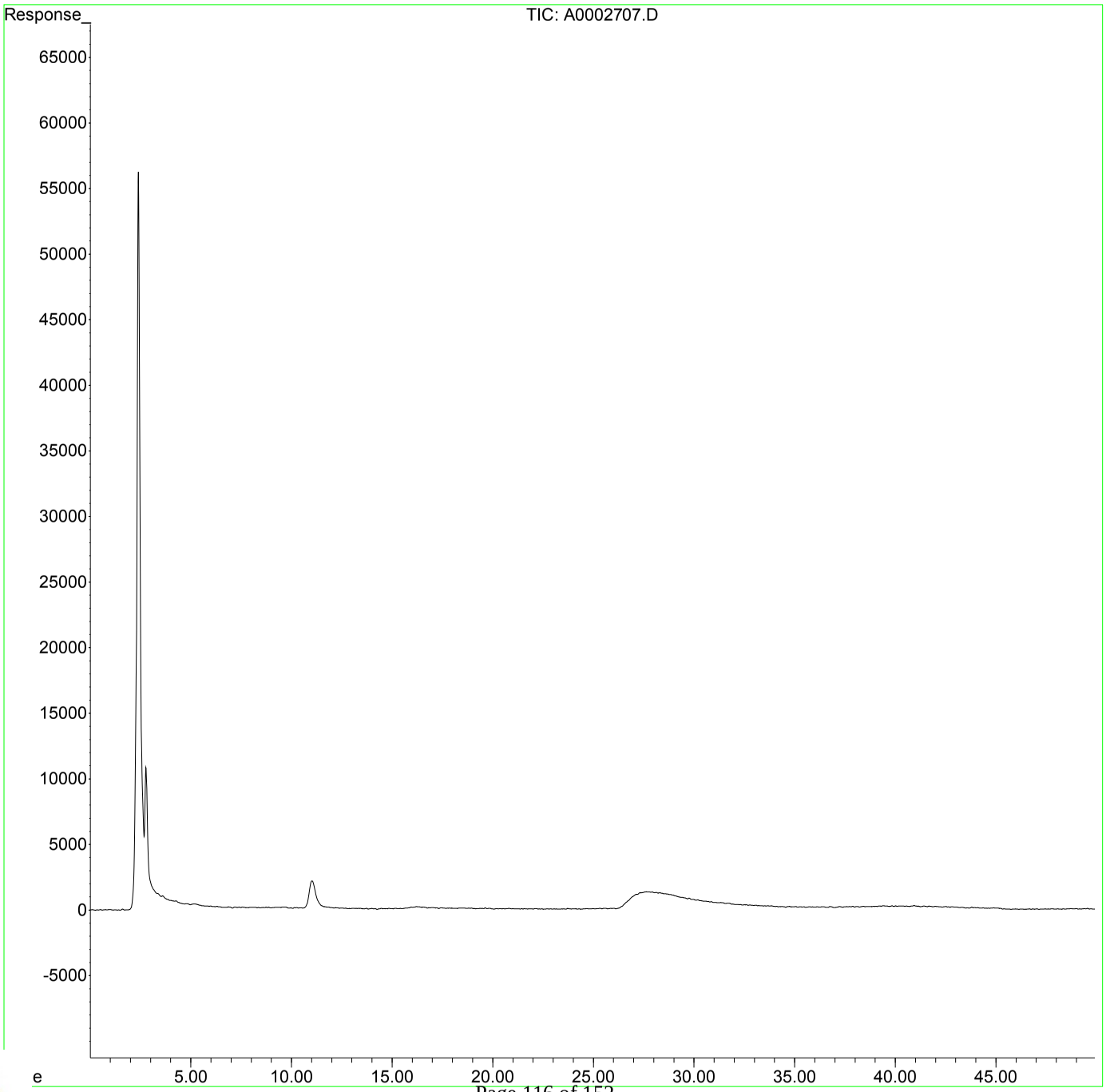
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002707.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 02:48:39
Operator : b.allgeier
Sample : inst blk
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 09:12:20 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 09:10:23 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948964

1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002716.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:48:15~~ 31-Dec-2018, 22:30:00
Operator : b.allgeier
Sample : icv
Misc :
ALS Vial : 10 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 11:02:59 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:59:24 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.398	1934896	20.698 ppm
2) T	Pyruvic acid	4.226	1365951	1.899 ppm
3) T	Lactic Acid	4.838	1167049	19.998 ppm
4) T	Acetic Acid	5.279	1158243	19.844 ppm
5) T	Propionic Acid	12.888	1107020	19.209 ppm
6) T	Butyric Acid	39.358f	1091009	20.164 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

00948965

RIGHT SOLUTIONS | RIGHT PARTNER

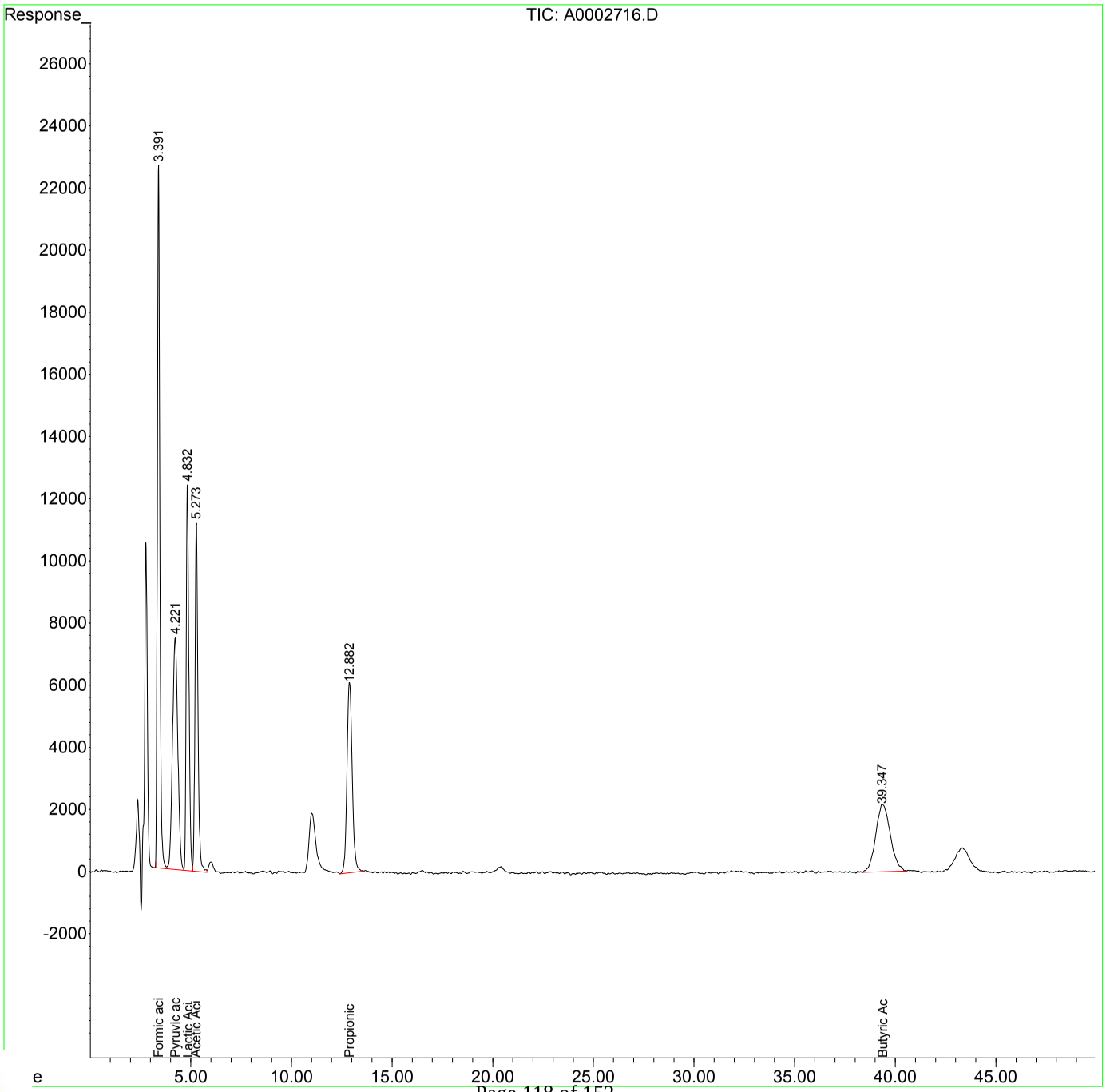
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002716.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:15
Operator : b.allgeier
Sample : icv
Misc :
ALS Vial : 10 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 11:02:59 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:59:24 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948966

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002716.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:48:15~~ 31-Dec-2018, 22:10:00
Operator : b.allgeier
Sample : icv
Misc :
ALS Vial : 10 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 11:02:59 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:59:24 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.481	96.745 E3	-3.5	108	0.00
2 T	Pyruvic acid	719.144	682.975 E3	5.0	78	-0.01
3 T	Lactic Acid	58.359	58.352 E3	0.0	102	-0.02
4 T	Acetic Acid	58.368	57.912 E3	0.8	103	-0.02
5 T	Propionic Acid	57.631	55.351 E3	4.0	102	-0.10
6 T	Butyric Acid	54.107	54.550 E3	-0.8	104	-0.48

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

00948967

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002715.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 21:32:35
Operator : b.allgeier
Sample : 20.0-200.0ppm
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:12 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.397	18542283	192.461	ppm	
2) T	Pyruvic acid	4.224	13995370	30.899	ppm	
3) T	Lactic Acid	4.837	11731048	218.192	ppm	
4) T	Acetic Acid	5.276	11652587	196.936	ppm	
5) T	Propionic Acid	12.832	11159008	187.258	ppm	
6) T	Butyric Acid	39.047f	10770236	171.235	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948968

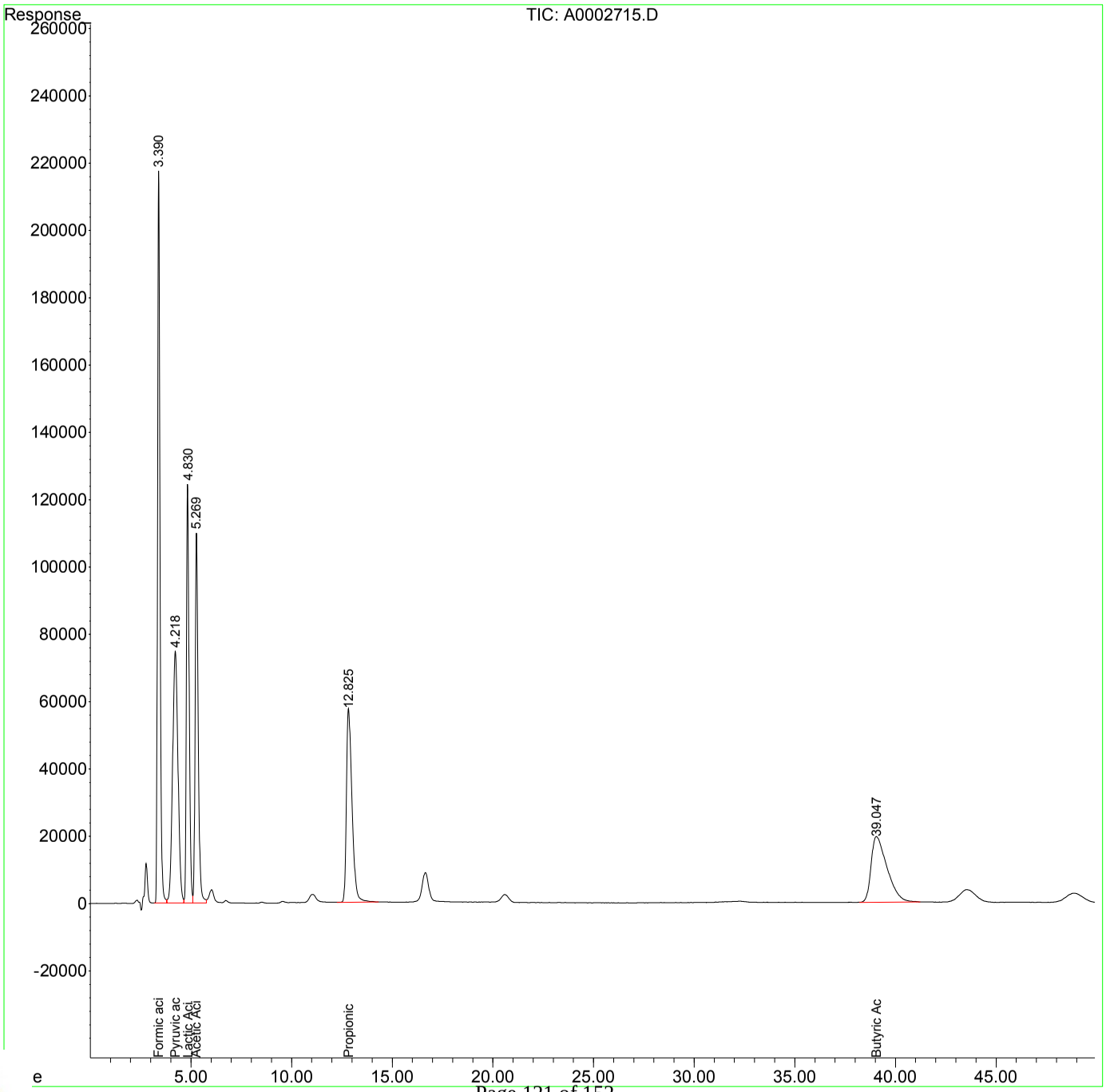
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002715.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 21:32:35
Operator : b.allgeier
Sample : 20.0-200.0ppm
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:12 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

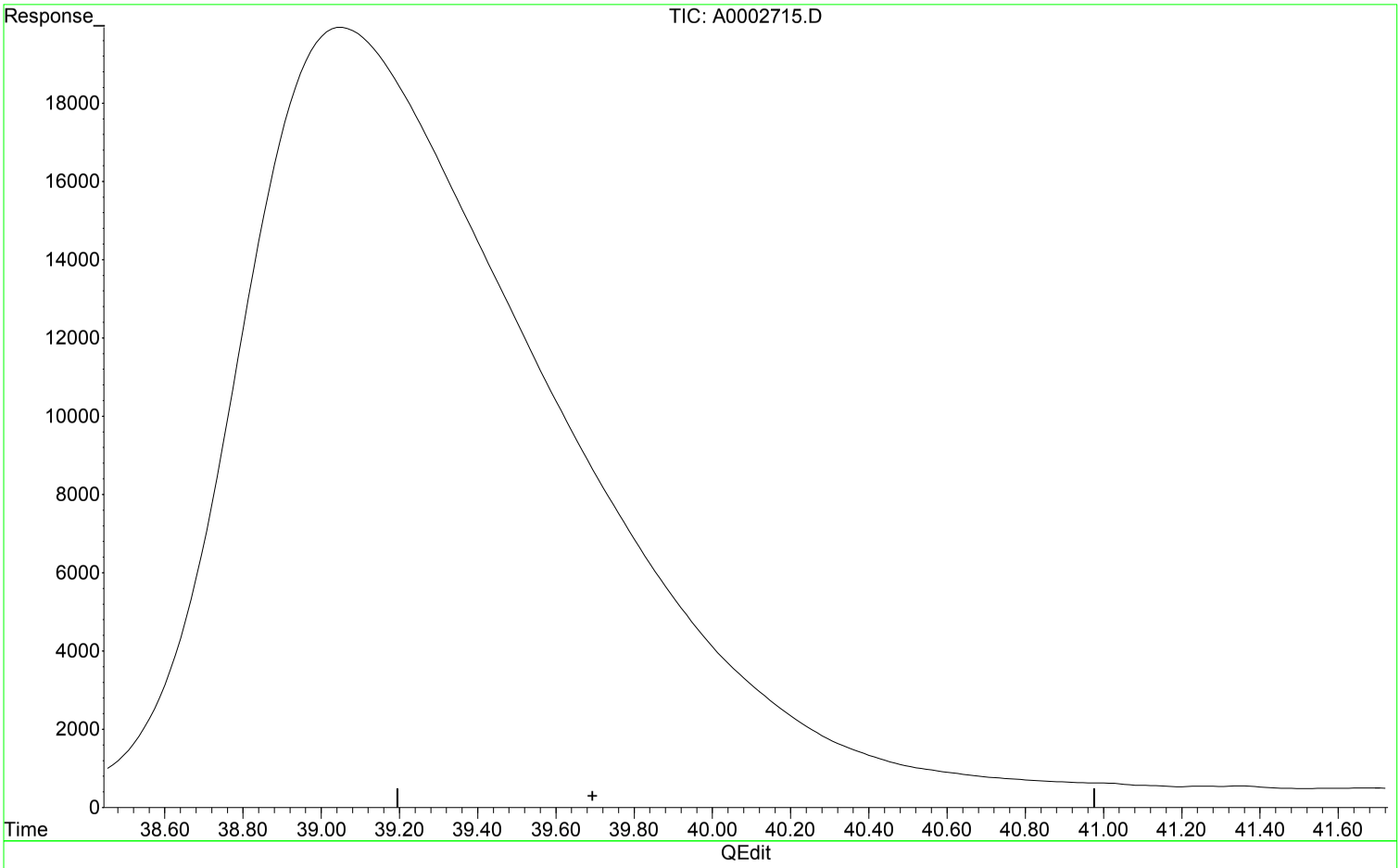
00948969

1st BA 01/02/19
2nd DM 01/03/19

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002715.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 21:32:35
Operator : b.allgeier
Sample : 20.0-200.0ppm
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:12 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

39.694min 0.000 ppm

response 0

Manual Integration:

Before

01/02/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

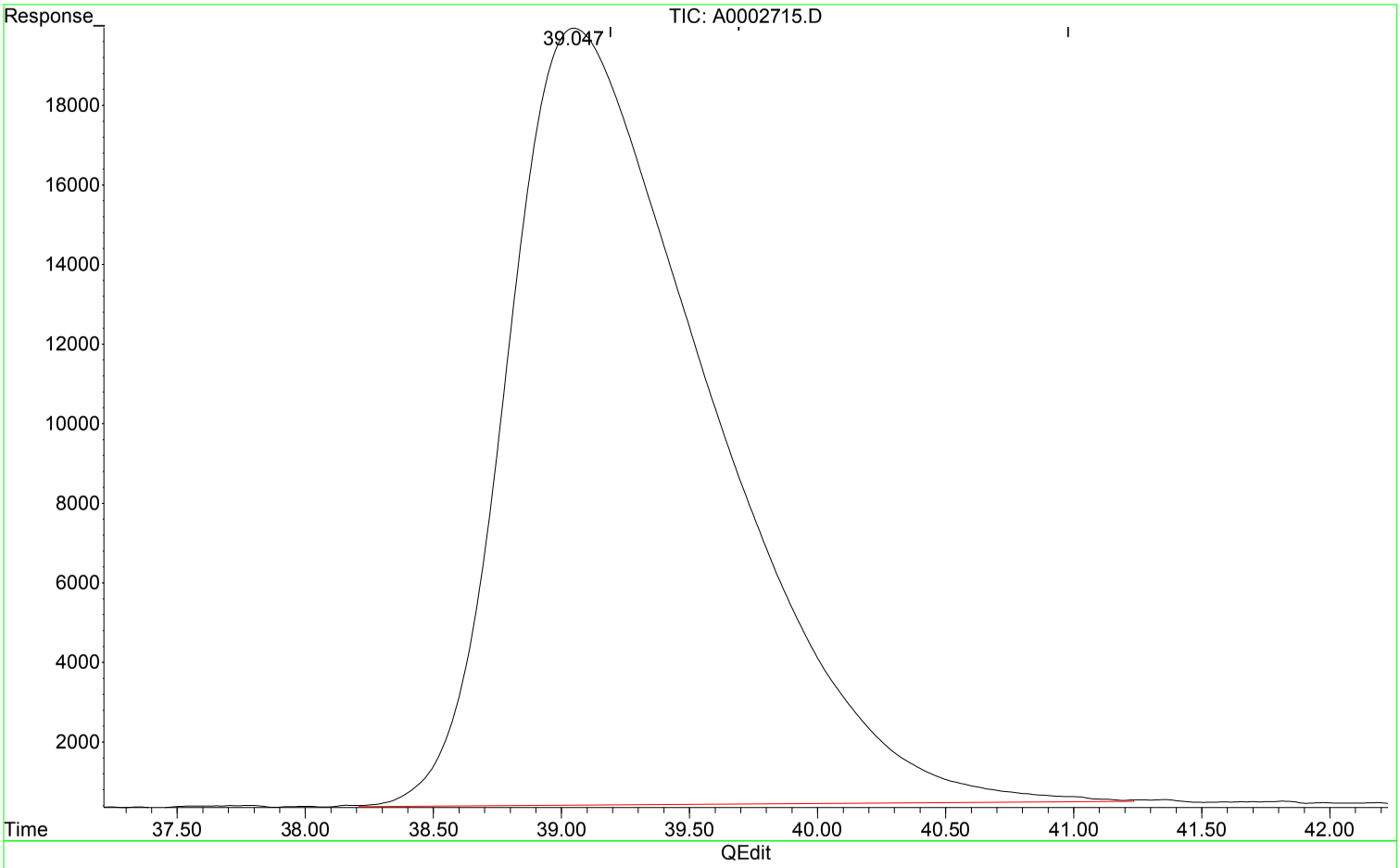
00948970

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002715.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 21:32:35
Operator : b.allgeier
Sample : 20.0-200.0ppm
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:12 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

39.047min 171.235 ppm m

response 10770236

Manual Integration:

After

Poor integration.

01/02/19

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

00948971

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002714.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 20:39:38
Operator : b.allgeier
Sample : 10.0-100ppm
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:10 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.400	8940114	92.795 ppm
2) T	Pyruvic acid	4.229	6716680	14.829 ppm
3) T	Lactic Acid	4.846	5637916	104.862 ppm
4) T	Acetic Acid	5.288	5609234	94.799 ppm
5) T	Propionic Acid	12.910	5441721	91.317 ppm
6) T	Butyric Acid	39.406	5077730	80.730 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

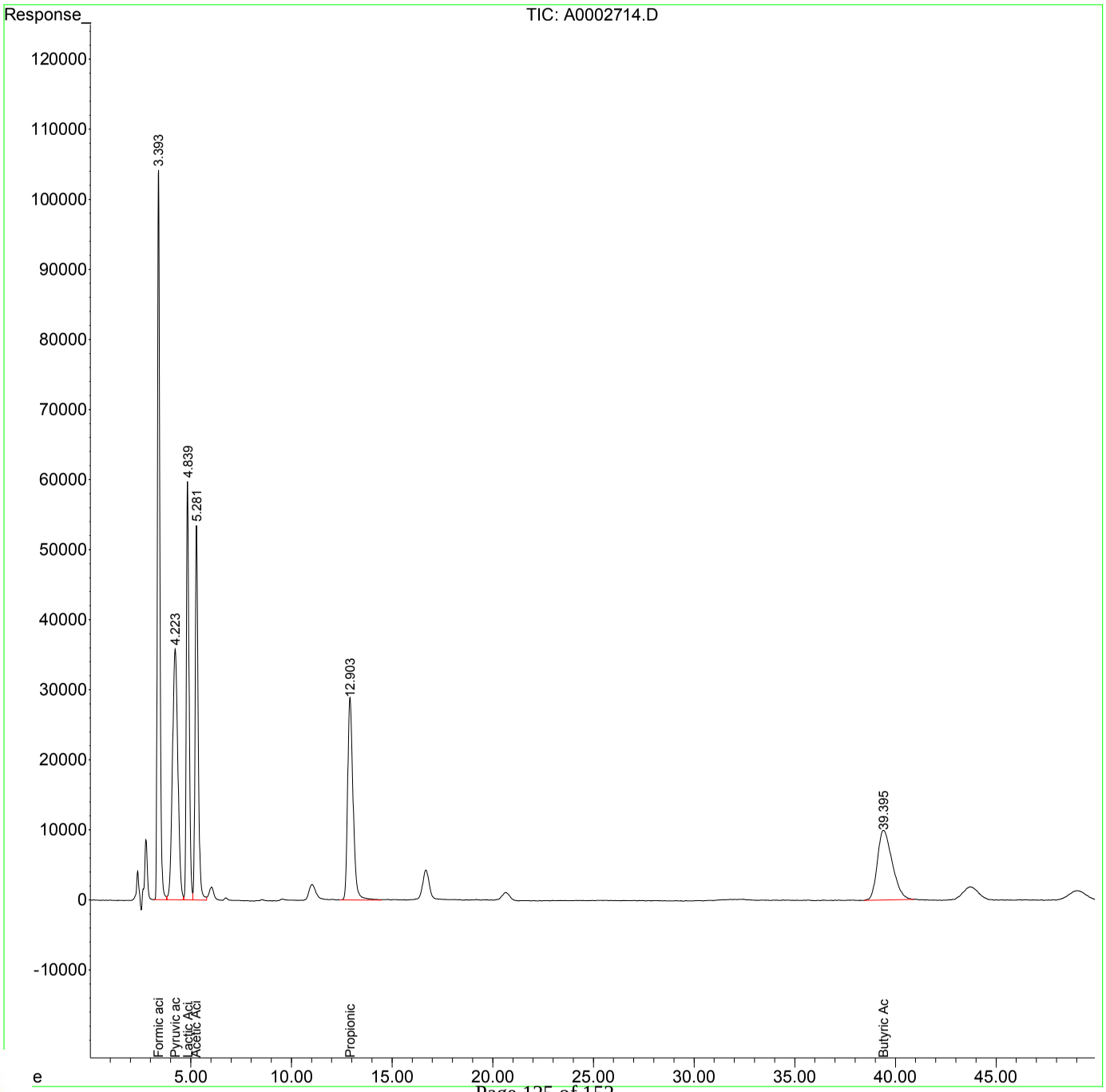
00948972

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002714.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 20:39:38
Operator : b.allgeier
Sample : 10.0-100ppm
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:10 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948973

1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002713.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:48:15~~ 31-Dec-2018, 20:00:00
Operator : b.allgeier
Sample : 5.0-50.0ppm
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:08 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.402	4710470	48.893 ppm
2) T	Pyruvic acid	4.230	3547994	7.833 ppm
3) T	Lactic Acid	4.850	2977824	55.386 ppm
4) T	Acetic Acid	5.294	2962034	50.060 ppm
5) T	Propionic Acid	12.948	2812242	47.192 ppm
6) T	Butyric Acid	39.582	2721731	43.273 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

00948974

RIGHT SOLUTIONS | RIGHT PARTNER

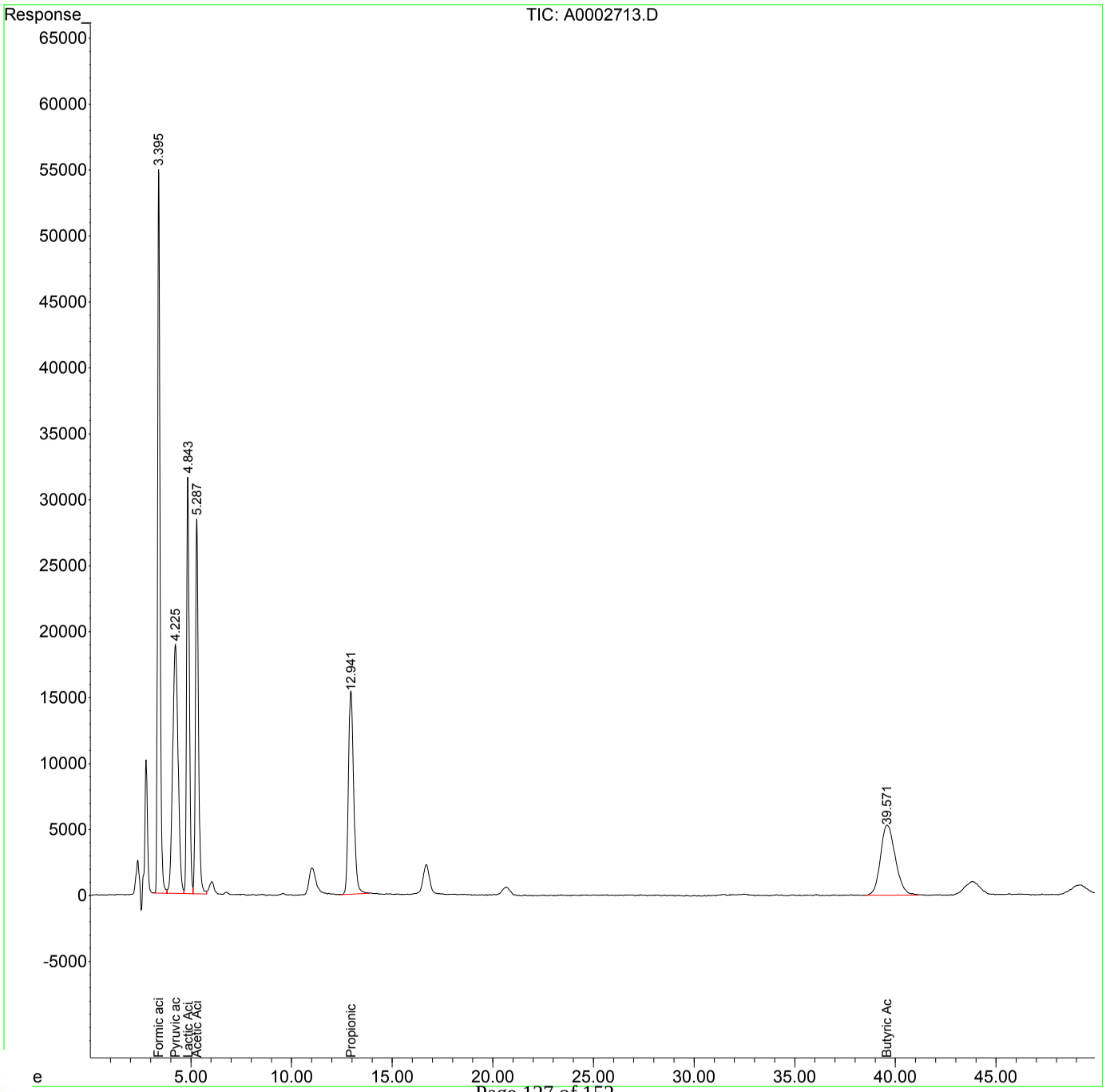
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002713.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:15
Operator : b.allgeier
Sample : 5.0-50.0ppm
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:08 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948975

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002712.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 18:53:38
Operator : b.allgeier
Sample : 2.0-20.0ppm
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:06 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.403	1786523	18.543 ppm
2) T	Pyruvic acid	4.232	1755185	3.875 ppm
3) T	Lactic Acid	4.853	1144308	21.284 ppm
4) T	Acetic Acid	5.297	1127857	19.061 ppm
5) T	Propionic Acid	12.969	1086476	18.232 ppm
6) T	Butyric Acid	39.708	1045002	16.614 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948976

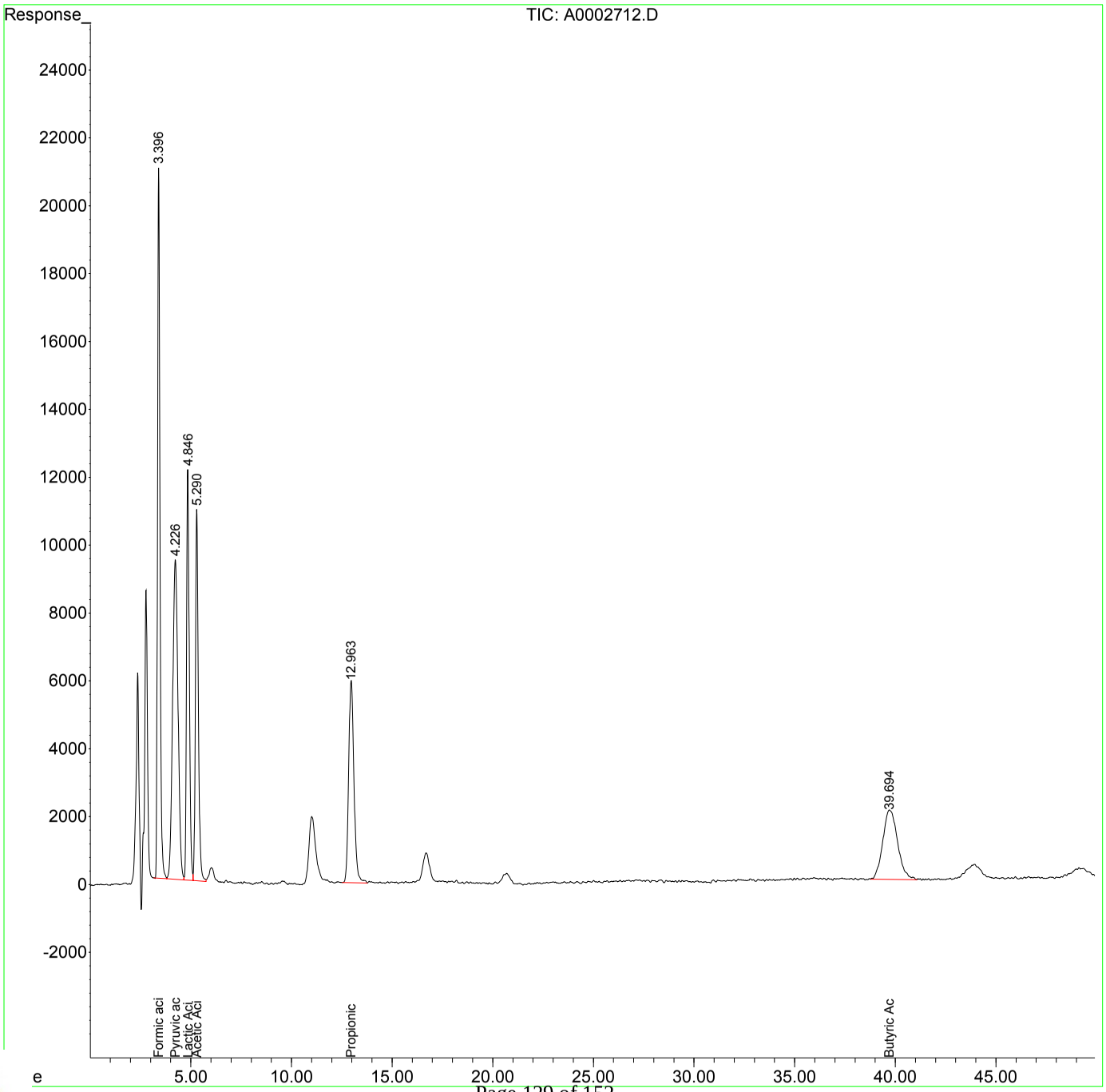
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002712.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 18:53:38
Operator : b.allgeier
Sample : 2.0-20.0ppm
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:06 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948977

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002711.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 18:01:45
Operator : b.allgeier
Sample : 1.0-10.0ppm
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:04 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.403	911662	9.463 ppm
2) T	Pyruvic acid	4.232	665864	1.470 ppm
3) T	Lactic Acid	4.853	576118	10.716 ppm
4) T	Acetic Acid	5.297	564203	9.535 ppm
5) T	Propionic Acid	12.976	563301	9.453 ppm
6) T	Butyric Acid	39.812	552348	8.782 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948978

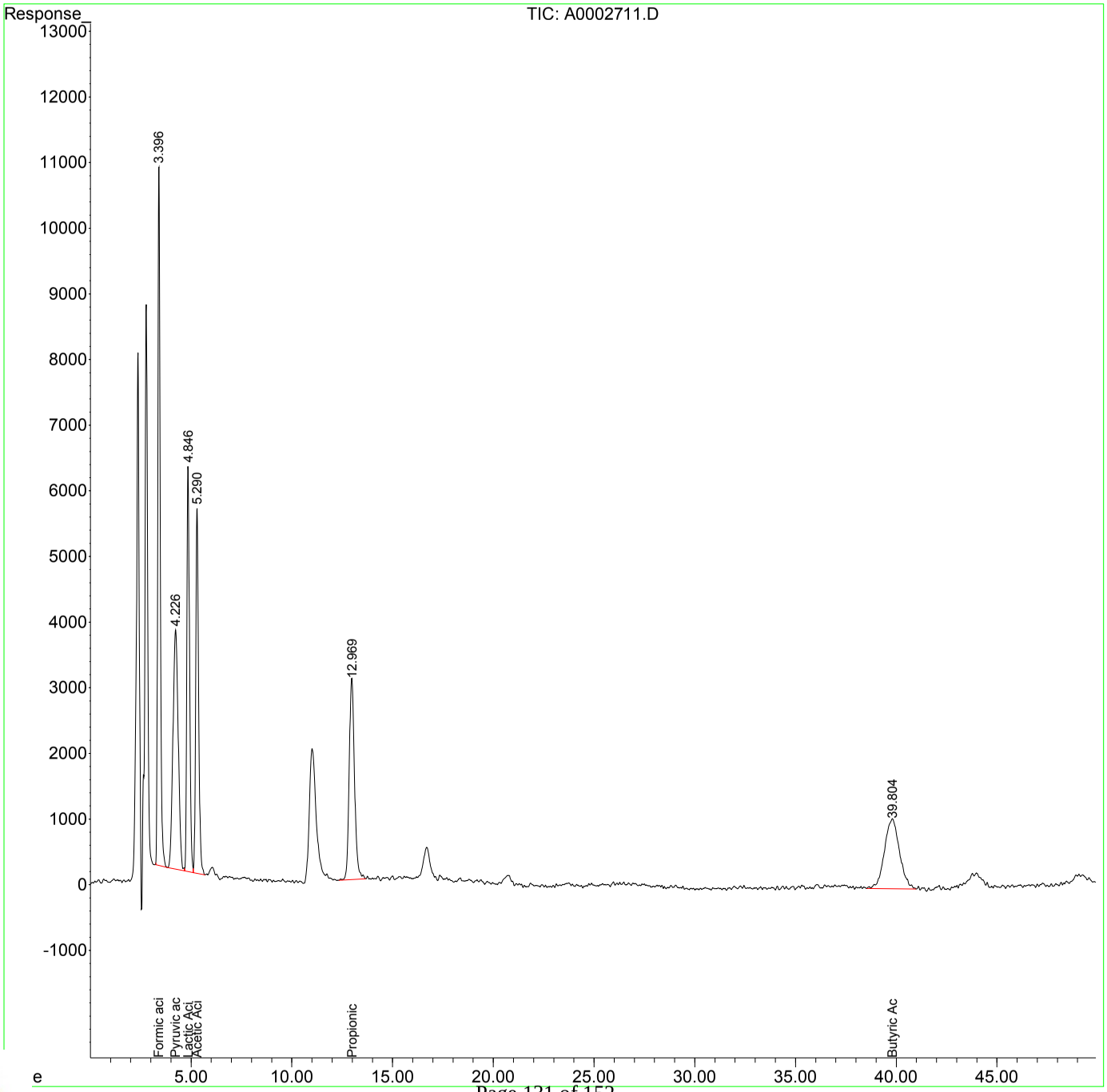
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002711.D
Signal(s) : dad1A.ch
Acq On : 31-Dec-2018, 18:01:45
Operator : b.allgeier
Sample : 1.0-10.0ppm
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:04 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948979

1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002710.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 00:06:30~~ 31-Dec-2018, 17:10:00
Operator : b.allgeier
Sample : 0.5-5.0ppm
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:02 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.404	461804	4.793 ppm
2) T	Pyruvic acid	4.234	335836	0.741 ppm
3) T	Lactic Acid	4.857	286723	5.333 ppm
4) T	Acetic Acid	5.302	284110	4.802 ppm
5) T	Propionic Acid	12.995	269655	4.525 ppm
6) T	Butyric Acid	39.832	255636	4.064 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

00948980

RIGHT SOLUTIONS | RIGHT PARTNER

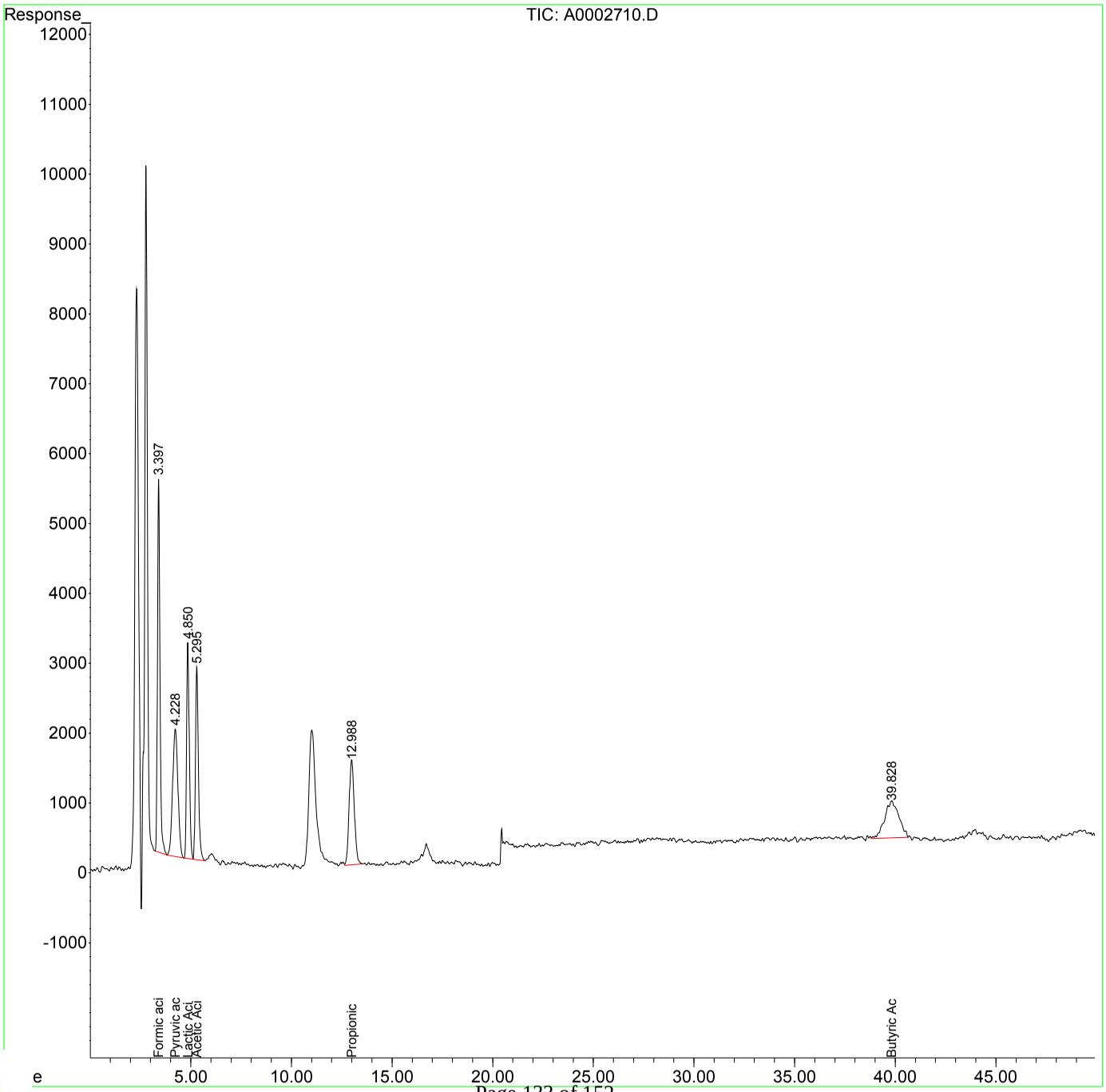
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002710.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 00:06:30
Operator : b.allgeier
Sample : 0.5-5.0ppm
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:47:02 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948981

1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002709.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 17:48:30~~ 31-Dec-2018, 16:20:00
Operator : b.allgeier
Sample : 0.2-2.0ppm
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 10:50:03 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:49:45 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.404	199692	2.136	ppm	
2) T	Pyruvic acid	4.237	147123	0.205	ppm	
3) T	Lactic Acid	4.856	117928	2.021	ppm	
4) T	Acetic Acid	5.300	123166	2.110	ppm	
5) T	Propionic Acid	12.984	126937	2.203	ppm	m
6) T	Butyric Acid	39.838f	122144	2.259	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

RIGHT SOLUTIONS | RIGHT PARTNER

00948982

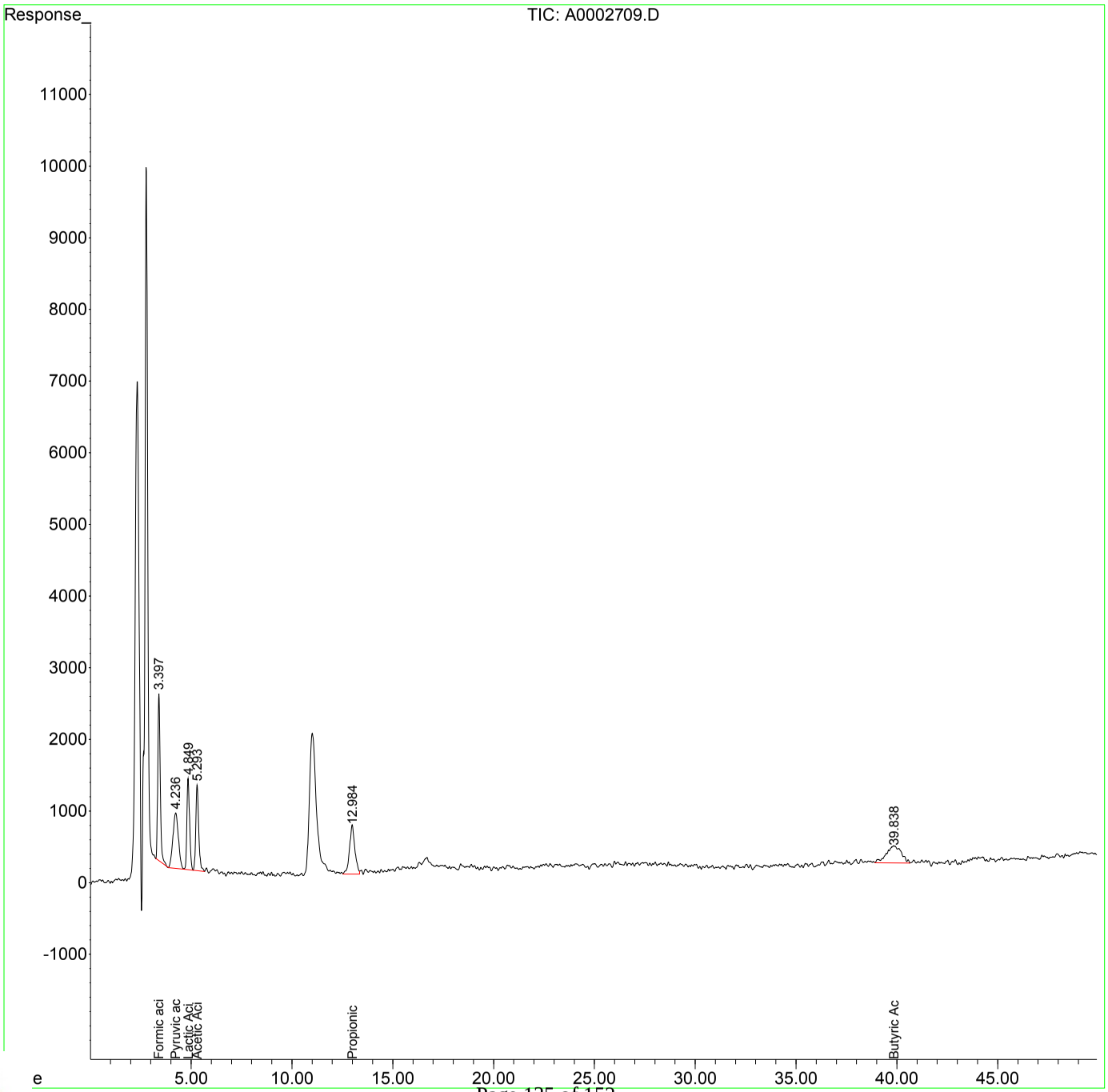
1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002709.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:30
Operator : b.allgeier
Sample : 0.2-2.0ppm
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 10:50:03 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:49:45 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

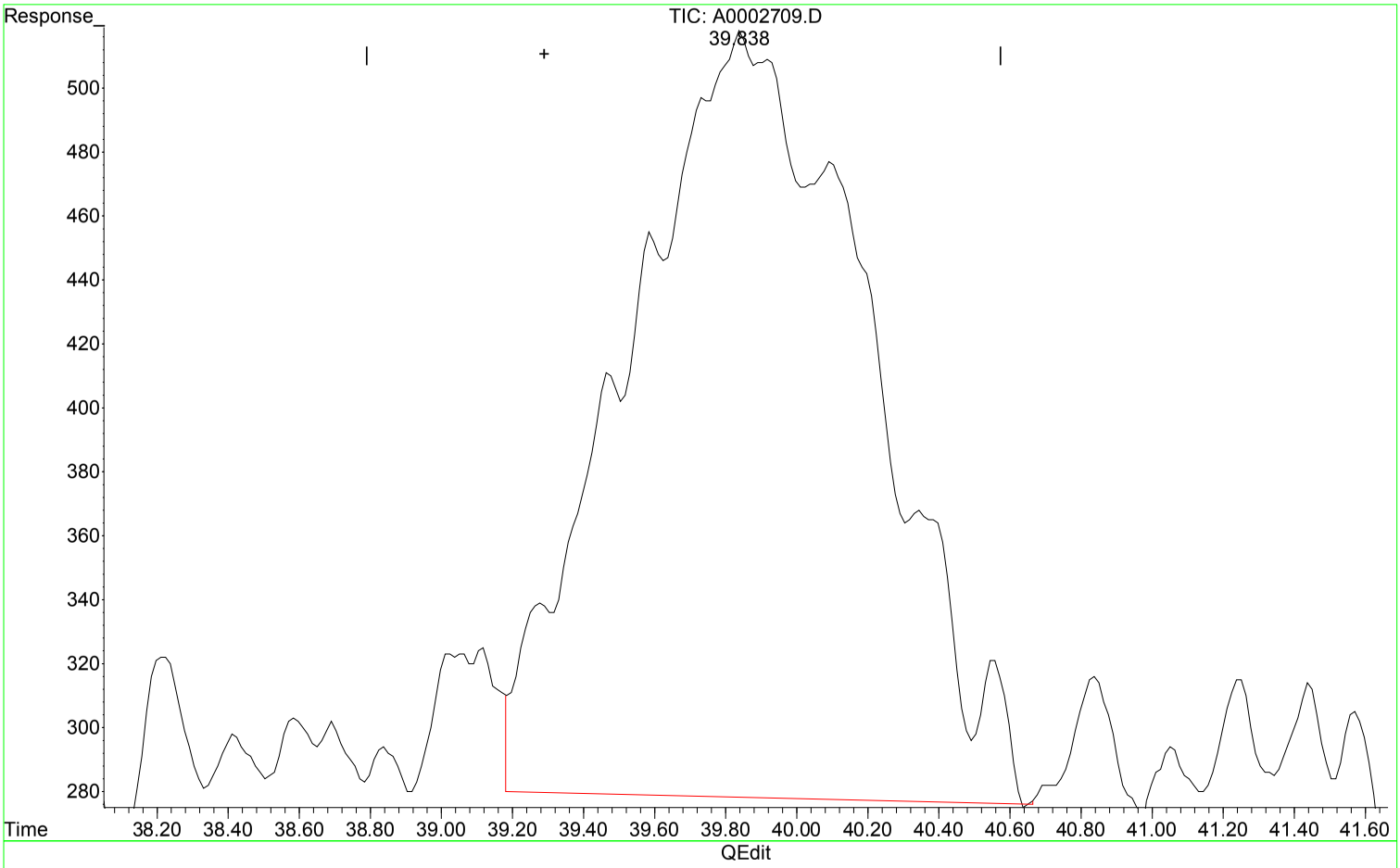
00948983

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002709.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:30
Operator : b.allgeier
Sample : 0.2-2.0ppm
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 10:50:03 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:49:45 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

39.845min 2.129 ppm

response 115110

Manual Integration:

Before

01/02/19

Expected Retention Time

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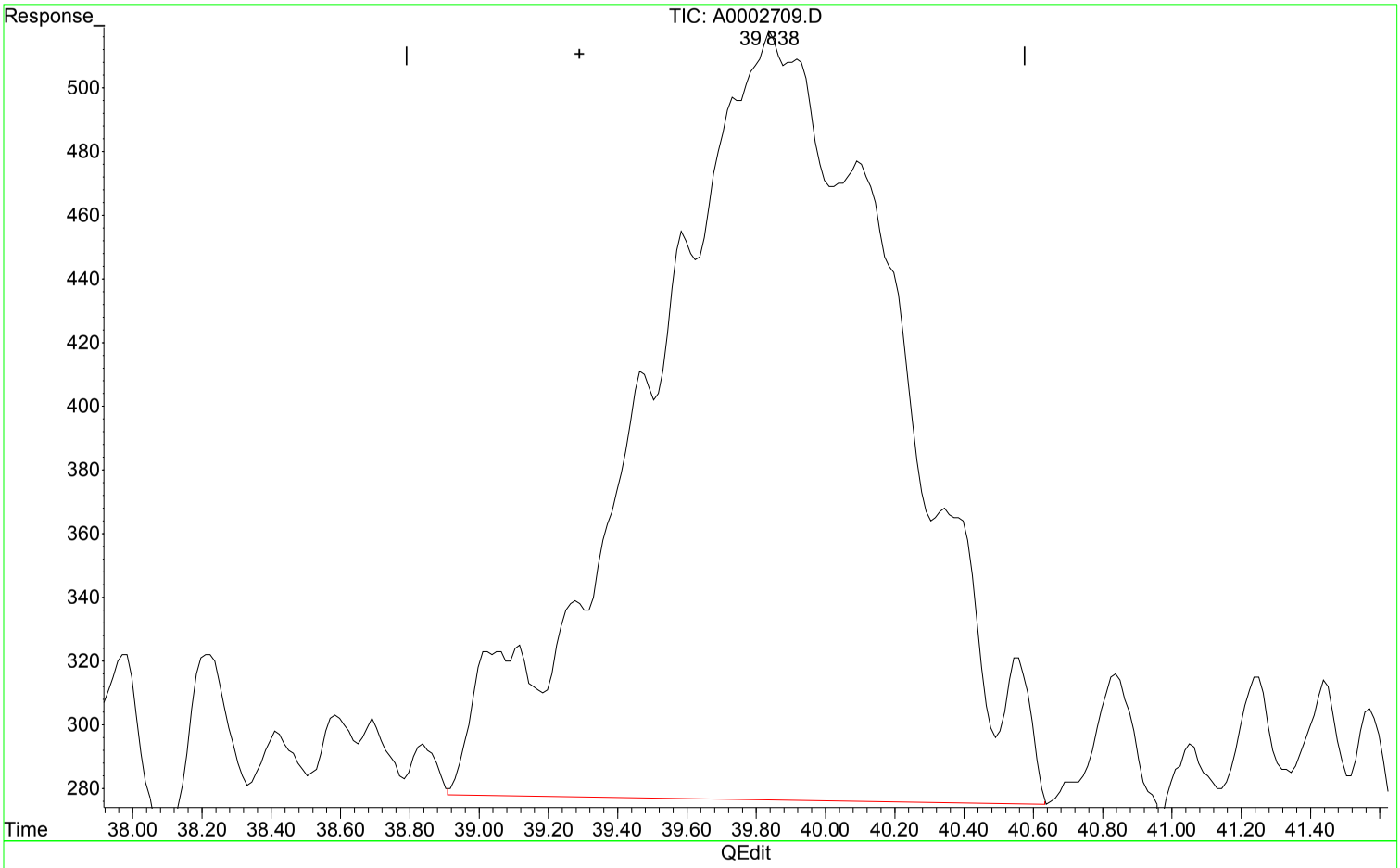
00948984

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002709.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:30
Operator : b.allgeier
Sample : 0.2-2.0ppm
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 10:50:03 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:49:45 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

39.838min 2.259 ppm m

response 122144

Manual Integration:

After

Poor integration.

01/02/19

Expected Retention Time

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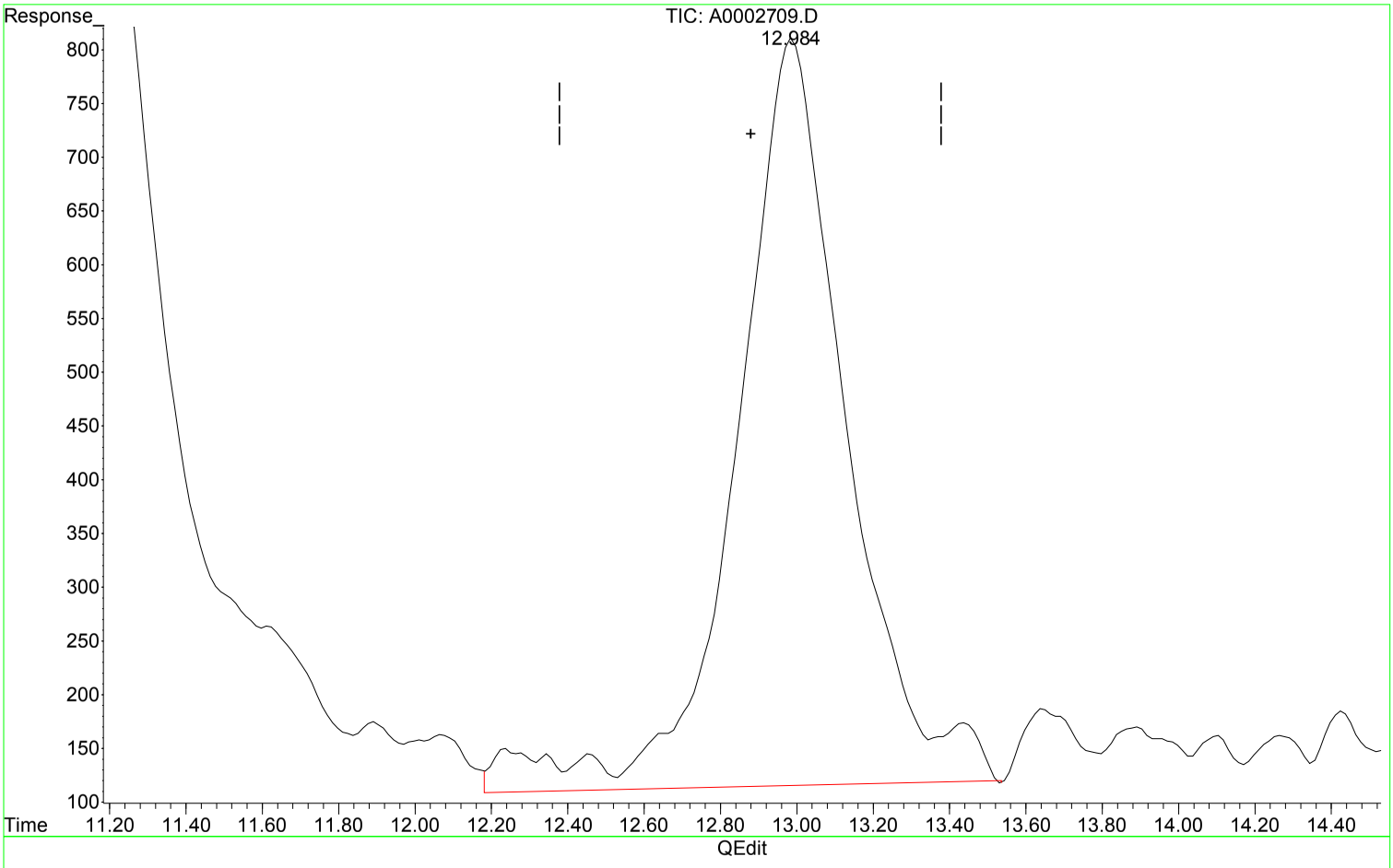
00948985

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002709.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:30
Operator : b.allgeier
Sample : 0.2-2.0ppm
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 10:50:03 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:49:45 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.989min 2.415 ppm

response 139170

Manual Integration:

Before

01/02/19

Expected Retention Time

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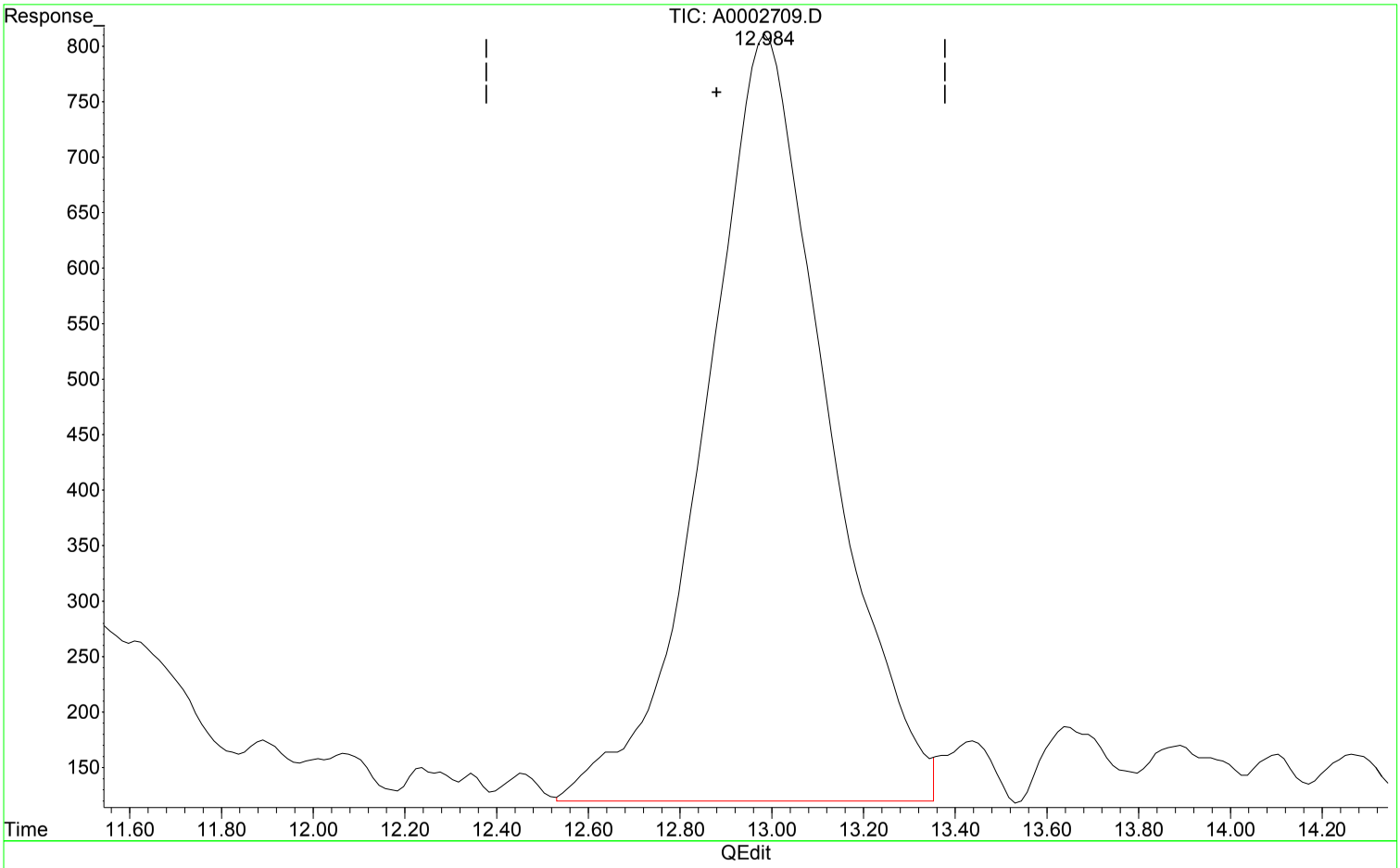
00948986

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002709.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 17:48:30
Operator : b.allgeier
Sample : 0.2-2.0ppm
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 10:50:03 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 10:49:45 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.984min 2.203 ppm m

response 126937

Manual Integration:

After

Poor integration.

01/02/19

Expected Retention Time

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00948987

1st BA 01/02/19
2nd DM 01/03/19

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002708.D
Signal(s) : dad1A.ch
Acq On : ~~30-Dec-2000, 00:48:34~~ 31-Dec-2018, 15:30:00
Operator : b.allgeier
Sample : 0.1-1.0ppm
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:46:58 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.402	98829	1.026 ppm
2) T	Pyruvic acid	4.249	72137	0.159 ppm
3) T	Lactic Acid	4.853	61144	1.137 ppm
4) T	Acetic Acid	5.300	62133	1.050 ppm
5) T	Propionic Acid	13.007	66537	1.117 ppm
6) T	Butyric Acid	0.000	0	N.D. ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

00948988

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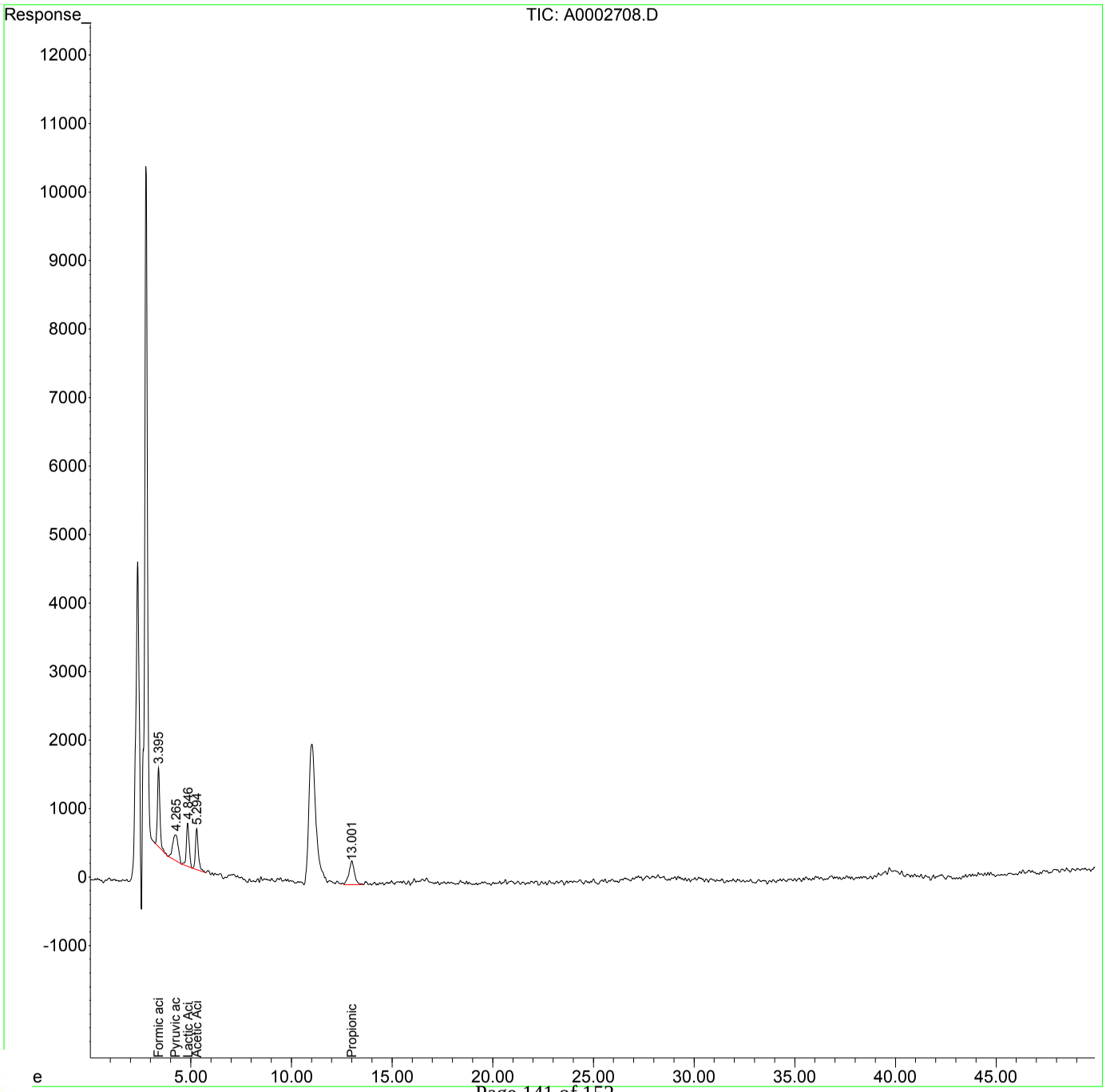
Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\123118\
Data File : A0002708.D
Signal(s) : dad1A.ch
Acq On : 30-Dec-2000, 00:48:34
Operator : b.allgeier
Sample : 0.1-1.0ppm
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jan 02 08:46:58 2019
Quant Method : I:\ACQUDATA\hplc05\Methods\MA123118.M
Quant Title : organic acids
QLast Update : Wed Jan 02 08:46:20 2019
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

00948989

ALS Group SA Corp
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A/ C Report

Client ALS Environmental - US **Ser ice Re uest** R1902402
Pro ect HS19031026 LHAAP / Site 58 **Cali ration Date** 12/31/2018

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Cali ration ID RC1900001 **Signal ID** synergi hydro rp
Instru ent ID R-HPLC-05

#	Lab Code	Sample Name	File Location	Acquisition Date
01	RC1900001-01	0.1-1.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002708.D	12/31/2018 15:30
02	RC1900001-02	0.2-2.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002709.D	12/31/2018 16:20
03	RC1900001-03	0.5-5.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002710.D	12/31/2018 17:10
04	RC1900001-04	1.0-10.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002711.D	12/31/2018 18:01
05	RC1900001-05	2.0-20.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002712.D	12/31/2018 18:53
06	RC1900001-06	5.0-50.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002713.D	12/31/2018 20:00
07	RC1900001-07	10.0-100ppm	I:\ACQUDATA\hplc05\data\123118\A0002714.D	12/31/2018 20:39
08	RC1900001-08	20.0-200.0ppm	I:\ACQUDATA\hplc05\data\123118\A0002715.D	12/31/2018 21:32

Analyte

Acetic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	6.213E4	02	2.000	6.158E4	03	5.000	5.682E4	04	10.000	5.642E4
05	20.000	5.639E4	06	50.000	5.924E4	07	100.000	5.609E4	08	200.000	5.826E4

Butanoic Acid (Butyric Acid)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	2.000	6.107E4	03	5.000	5.113E4	04	10.000	5.523E4	05	20.000	5.225E4
06	50.000	5.443E4	07	100.000	5.078E4	08	200.000	5.385E4			

Lactic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	6.114E4	02	2.000	5.896E4	03	5.000	5.734E4	04	10.000	5.761E4
05	20.000	5.722E4	06	50.000	5.956E4	07	100.000	5.638E4	08	200.000	5.866E4

Propionic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.000	6.654E4	02	2.000	6.347E4	03	5.000	5.393E4	04	10.000	5.633E4
05	20.000	5.432E4	06	50.000	5.624E4	07	100.000	5.442E4	08	200.000	5.58E4

Pyruvic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.100	7.214E5	02	0.200	7.356E5	03	0.500	6.717E5	04	1.000	6.659E5
05	2.000	8.776E5	06	5.000	7.096E5	07	10.000	6.717E5	08	20.000	6.998E5

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ALS Group SA Corp
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A/ C Report

Client ALS Environmental - US
Pro ect HS19031026 LHAAP / Site 58

Ser ice Re uest R1902402
Cali ration Date 12/31/2018

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Cali ration ID RC1900001
Instru ent ID R-HPLC-05

Signal ID synergi hydro rp

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Acetic Acid	TRG	Average RF	% RSD	4.1	≤	5.837E4	
Butanoic Acid (Butyric Acid)	TRG	Average RF	% RSD	6.5	≤	5.411E4	
Lactic Acid	TRG	Average RF	% RSD	2.6	≤	5.836E4	
Propionic Acid	TRG	Average RF	% RSD	8.2	≤	5.763E4	
Pyruvic Acid	TRG	Average RF	% RSD	9.6	≤	7.191E5	

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58

Service Request: R1902402
Calibration Date: 12/31/2018

Initial Calibration Verification Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC1900001
Instrument ID: R-HPLC-05

Signal ID: synergi hydro rp

#	Lab Code	Sample Name	File Location	Acquisition Date
09	RC1900001-09	icv	I:\ACQUDATA\hplc05\data\123118\A0002716.D	12/31/2018 22:10

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
Pyruvic Acid	2.00	1.90	7.191E5	6.83E5	95.0	85-115	Average RF
Acetic Acid	20.0	19.8	5.837E4	5.791E4	99.0	85-115	Average RF
Butanoic Acid (Butyric Acid)	20.0	20.2	5.411E4	5.455E4	101	85-115	Average RF
Lactic Acid	20.0	20.0	5.836E4	5.835E4	100	85-115	Average RF
Propionic Acid	20.0	19.2	5.763E4	5.535E4	96.0	85-115	Average RF

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58

Service Request: R1902402
Date Analyzed: 03/25/19 14:20

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\032519\A0002906.D\
Signal ID: synergi hydro rp

Calibration Date: 12/31/2018
Calibration ID: RC1900001
Analysis Lot: 630216
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	4.95	4.07	7.191E5	5.908E5	-17.8*	NA	±15	Average RF
Acetic Acid	50.8	50.4	5.837E4	5.793E4	-0.8	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.8	51.1	5.411E4	5.448E4	0.7	NA	±15	Average RF
Lactic Acid	49.2	44.4	5.836E4	5.272E4	-9.7	NA	±15	Average RF
Propionic Acid	49.6	55.6	5.763E4	6.459E4	12.1	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58

Service Request: R1902402
Date Analyzed: 03/25/19 21:07

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\032519\A0002917.D\
Signal ID: synergi hydro rp

Calibration Date: 12/31/2018
Calibration ID: RC1900001
Analysis Lot: 630216
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	4.95	4.37	7.191E5	6.343E5	-11.8	NA	±15	Average RF
Acetic Acid	50.8	51.8	5.837E4	5.955E4	2.0	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.8	50.0	5.411E4	5.327E4	-1.6	NA	±15	Average RF
Lactic Acid	49.2	47.1	5.836E4	5.586E4	-4.3	NA	±15	Average RF
Propionic Acid	49.6	56.6	5.763E4	6.571E4	14.0	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Analyzed:**	03/29/19 17:18

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method:	Organic Acids	**Calibration Date:**	12/31/2018
File ID:	I:\ACQUDATA\hplc05\data\032819\A0002922.D\	**Calibration ID:**	RC1900001
Signal ID:	synergi hydro rp	**Analysis Lot:**	630216
		Units:	mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	4.95	4.07	7.191E5	5.915E5	-17.8*	NA	±15	Average RF
Acetic Acid	50.8	50.8	5.837E4	5.839E4	0.0	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.8	51.3	5.411E4	5.474E4	1.2	NA	±15	Average RF
Lactic Acid	49.2	44.9	5.836E4	5.323E4	-8.8	NA	±15	Average RF
Propionic Acid	49.6	57.1	5.763E4	6.632E4	15.1	NA	±15	Average RF

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QA/QC Report

Client: ALS Environmental - US
Project: HS19031026 LHAAP / Site 58

Service Request: R1902402
Date Analyzed: 03/29/19 21:37

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\032819\A0002929.D\
Signal ID: synergi hydro rp

Calibration Date: 12/31/2018
Calibration ID: RC1900001
Analysis Lot: 630216
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	4.95	4.10	7.191E5	5.95E5	-17.3*	NA	±15	Average RF
Acetic Acid	50.8	50.5	5.837E4	5.804E4	-0.6	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.8	50.8	5.411E4	5.417E4	0.1	NA	±15	Average RF
Lactic Acid	49.2	45.0	5.836E4	5.333E4	-8.6	NA	±15	Average RF
Propionic Acid	49.6	56.0	5.763E4	6.498E4	12.8	NA	±15	Average RF

ALS Group USA, Corp.
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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R1902402
Project:	HS19031026 LHAAP / Site 58	**Date Analyzed:**	03/25/19 22:57

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method:	Organic Acids	**Calibration Date:**	12/31/2018
File ID:	I:\ACQUDATA\hplc05\data\032519\A0002920.D\	**Calibration ID:**	RC1900001
Signal ID:	synergi hydro rp	**Analysis Lot:**	630216
		Units:	mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	4.95	4.13	7.191E5	6.002E5	-16.5*	NA	±15	Average RF
Acetic Acid	50.8	50.7	5.837E4	5.833E4	-0.1	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.8	50.1	5.411E4	5.342E4	-1.3	NA	±15	Average RF
Lactic Acid	49.2	45.3	5.836E4	5.373E4	-7.9	NA	±15	Average RF
Propionic Acid	49.6	58.1	5.763E4	6.743E4	17.0*	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**R1902402
Project: HS19031026 LHAAP / Site 58

Analysis Run Log

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**630216
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\032519 \A0002919.D\	35AWW20_031919 DMS	RQ1902678-12	12/30/2000	01:28:30	
I:\ACQUDATA\hplc05\data\032819 \A0002923.D\	Method Blank	RQ1902678-06	12/30/2000	09:48:28	
I:\ACQUDATA\hplc05\data\032519 \A0002907.D\	Method Blank	RQ1902678-01	12/30/2000	17:47:52	
I:\ACQUDATA\hplc05\data\032519 \A0002906.D\	Continuing Calibration Verification	RQ1902678-04	12/30/2000	17:47:58	
I:\ACQUDATA\hplc05\data\032819 \A0002926.D\	35AWW11_031919	R1902402-001	12/30/2000	17:48:27	
I:\ACQUDATA\hplc05\data\032519 \A0002913.D\	LHSMW07_031919	R1902402-004	12/30/2000	17:48:41	
I:\ACQUDATA\hplc05\data\032519 \A0002906.D\	Continuing Calibration Verification	RQ1902678-04	3/25/2019	14:20:00	
I:\ACQUDATA\hplc05\data\032519 \A0002907.D\	Method Blank	RQ1902678-01	3/25/2019	14:57:00	
I:\ACQUDATA\hplc05\data\032519 \A0002908.D\	Lab Control Sample	RQ1902678-02	3/25/2019	15:34:21	
I:\ACQUDATA\hplc05\data\032519 \A0002909.D\	Duplicate Lab Control Sample	RQ1902678-03	3/25/2019	16:11:22	
I:\ACQUDATA\hplc05\data\032519 \A0002911.D\	35AWW24_031919	R1902402-002	3/25/2019	17:25:08	
I:\ACQUDATA\hplc05\data\032519 \A0002912.D\	35AWW19_031919	R1902402-003	3/25/2019	18:02:07	
I:\ACQUDATA\hplc05\data\032519 \A0002913.D\	LHSMW07_031919	R1902402-004	3/25/2019	18:39:00	
I:\ACQUDATA\hplc05\data\032519 \A0002916.D\	35AWW20_031919	R1902402-007	3/25/2019	20:30:15	
I:\ACQUDATA\hplc05\data\032519 \A0002917.D\	Continuing Calibration Verification	RQ1902678-05	3/25/2019	21:07:14	
I:\ACQUDATA\hplc05\data\032519 \A0002918.D\	35AWW20_031919 MS	RQ1902678-11	3/25/2019	21:44:06	
I:\ACQUDATA\hplc05\data\032519 \A0002919.D\	35AWW20_031919 DMS	RQ1902678-12	3/25/2019	22:21:00	
I:\ACQUDATA\hplc05\data\032519 \A0002920.D\	Continuing Calibration Verification	RQ1902678-13	3/25/2019	22:57:56	
I:\ACQUDATA\hplc05\data\032819 \A0002922.D\	Continuing Calibration Verification	RQ1902678-09	3/29/2019	17:18:51	
I:\ACQUDATA\hplc05\data\032819 \A0002923.D\	Method Blank	RQ1902678-06	3/29/2019	17:55:00	
I:\ACQUDATA\hplc05\data\032819 \A0002924.D\	Lab Control Sample	RQ1902678-07	3/29/2019	18:32:46	
I:\ACQUDATA\hplc05\data\032819 \A0002925.D\	Duplicate Lab Control Sample	RQ1902678-08	3/29/2019	19:09:49	
I:\ACQUDATA\hplc05\data\032819 \A0002926.D\	35AWW11_031919	R1902402-001	3/29/2019	19:46:00	

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**R1902402
Project: HS19031026 LHAAP / Site 58

Analysis Run Log

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**630216
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\032819\A0002927.D\	35AWW06_031919	R1902402-005	3/29/2019	20:23:38	
I:\ACQUDATA\hplc05\data\032819\A0002928.D\	35AWW06_031919_a	R1902402-006	3/29/2019	21:00:34	
I:\ACQUDATA\hplc05\data\032819\A0002929.D\	Continuing Calibration Verification	RQ1902678-10	3/29/2019	21:37:35	

Analysis: 3/25/19 Analyst: BA Run Method: NEWMETA
Date: Organic Acids Instr. HPLC-05 Quant Method: MA123118
LIMS Run#: 630216
Setup: Column: Synergi Hydro RP150x4.6 Col.Temp: 35 Flow: 0.6 ml/min
Mobile Phase: 0.02KHz prep 0.1PO4 ul Inj.: 50

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
	BLK			A0002905	—	
	CCV	1000/1ml	197841	06	YC	
	MET BLK			07	Y	
	LCS	1000/1ml	197842	08	Y	
	DLCS	↓	↓	09	Y	
	R1902402-001			10	Y	RPT 1/5
	-002			11	Y	
	-003			12	Y	
	-004			13	Y	
	-005			14	Y	RPT 1/2.5
	-006			15	Y	RPT 1/2.5
	-007			16	Y	
	CCV	1000/1ml	197841	17	YC	
	-007MS	1000/1ml	197842	18	Y	
	-007MSD	↓	↓	19	Y	
	CCV	1000/1ml	197841	20	YC	

BA 3/25/19

All samples = _____mL + _____uL Combined IS/Surr.;
Primary : 197841 exp: 9/15/19 Secondary : 197842 exp: 9/15/19
Primary: _____ exp: Secondary : _____ exp:

Runlog HPLC05r1
1/10/13

O-979 Page 110

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Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS19041170

LHAAP-58

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

22-Apr-2019

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

April 22, 2019

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

Work Order: **HS19041170**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 6 sample(s) on Mar 20, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19041170

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19041170-01	35AWW11_031919	Groundwater		19-Mar-2019 08:15	20-Mar-2019 10:20	☐
HS19041170-02	35AWW24_031919	Groundwater		19-Mar-2019 09:15	20-Mar-2019 10:20	☐
HS19041170-03	35AWW19_031919	Groundwater		19-Mar-2019 10:10	20-Mar-2019 10:20	☐
HS19041170-04	LHSMW07_031919	Groundwater		19-Mar-2019 11:05	20-Mar-2019 10:20	☐
HS19041170-05	35AWW06_031919	Groundwater		19-Mar-2019 12:05	20-Mar-2019 10:20	☐
HS19041170-06	35AWW20_031919	Groundwater		19-Mar-2019 13:15	20-Mar-2019 10:20	☐

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19041170

CASE NARRATIVE

Work Order Comments

• The analysis for DHC and DHBI were subcontracted to Microbial insights in Knoxville, TN. Final report attached.

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_031919
Collection Date: 19-Mar-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19041170
Lab ID:HS19041170-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2019 17:18

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

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_031919
Collection Date: 19-Mar-2019 09:15

ANALYTICAL REPORT
WorkOrder:HS19041170
Lab ID:HS19041170-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2019 17:18

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

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_031919
Collection Date: 19-Mar-2019 10:10

ANALYTICAL REPORT
WorkOrder:HS19041170
Lab ID:HS19041170-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2019 17:18

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

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_031919
Collection Date: 19-Mar-2019 11:05

ANALYTICAL REPORT
WorkOrder:HS19041170
Lab ID:HS19041170-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2019 17:18

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

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_031919
Collection Date: 19-Mar-2019 12:05

ANALYTICAL REPORT
WorkOrder:HS19041170
Lab ID:HS19041170-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2019 17:18

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

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_031919
Collection Date: 19-Mar-2019 13:15

ANALYTICAL REPORT
WorkOrder:HS19041170
Lab ID:HS19041170-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	19-Apr-2019 17:18

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

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19041170

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R336966	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB			**Matrix:** Groundwater		
HS19041170-01	35AWW11_031919	19 Mar 2019 08:15			19 Apr 2019 17:18	1
HS19041170-02	35AWW24_031919	19 Mar 2019 09:15			19 Apr 2019 17:18	1
HS19041170-03	35AWW19_031919	19 Mar 2019 10:10			19 Apr 2019 17:18	1
HS19041170-04	LHSMW07_031919	19 Mar 2019 11:05			19 Apr 2019 17:18	1
HS19041170-05	35AWW06_031919	19 Mar 2019 12:05			19 Apr 2019 17:18	1
HS19041170-06	35AWW20_031919	19 Mar 2019 13:15			19 Apr 2019 17:18	1

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ALS Houston, US Date: 22-Apr-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19041170**

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
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	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020

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REPORT TO:
Name: MARCIA OLIVE
Company: BHATE ENVIRONMENTAL
Address:
email: molive@bhate.com
Phone:
Fax:

Project Manager: Kim Nemmers
Project Name: LHAAP
Project No.: NWD1312.0150

INVOICE TO: (For invoices paid by a third party it is imperative that all information be provided)
Name:
Company:
Address:
email:
Phone:
Fax:

Purchase Order No.
Subcontract No.
MI Quote No.

microbialinsights
10515 Research Dr
Knoxville, TN 37932
865-573-8188
www.microbe.com

Please Check One:
☐ More samples to follow
☐ No Additional Samples

Report Type: ☐ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																								
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+SID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvcA, tdA, vcr)	DHB (Dehalobacter)	DSM (Desulfuromonas)	DSS (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
052Qc 1	35AWW11-031919	3/19/19	0815							X		X																						
2	35AWW24-031919	3/19/19	0915							X		X																						
3	35AWW19-031919	3/19/19	1010							X		X																						
4	LHSMW07-031919	3/19/19	1105							X		X																						
5	35AWW06-031919	3/19/19	1205							X		X																						
6	35AWW20-031919	3/19/19	1315							X		X																						

Relinquished by	Date	Time	Received by:	Date	Time
[signature]	3/19/19	1430	[signature]	3/20/19	1020

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: RJ Modashia
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77040

Phone: 281-575-2279

Fax:

Identifier: 052QC **Date Rec:** 03/20/2019 **Report Date:** 03/25/2019

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

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How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

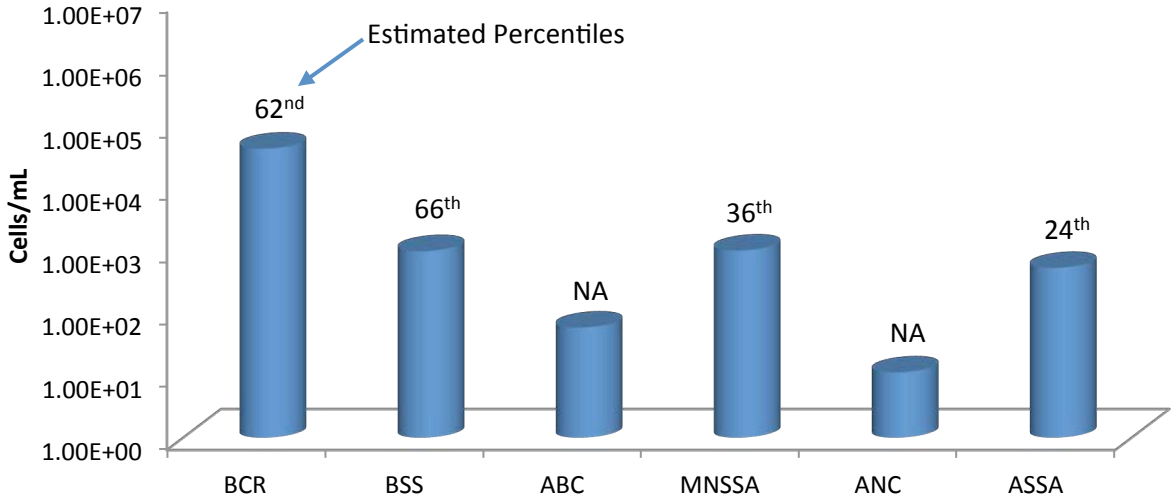
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



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Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66th percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36th.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

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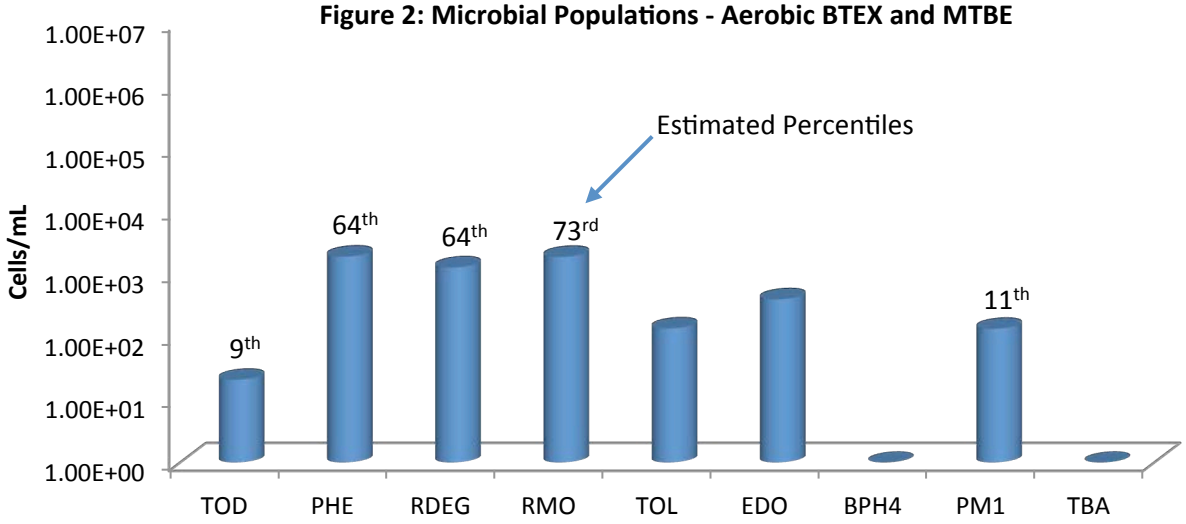
Figure 2: Microbial Populations - Aerobic BTEX and MTBE



Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

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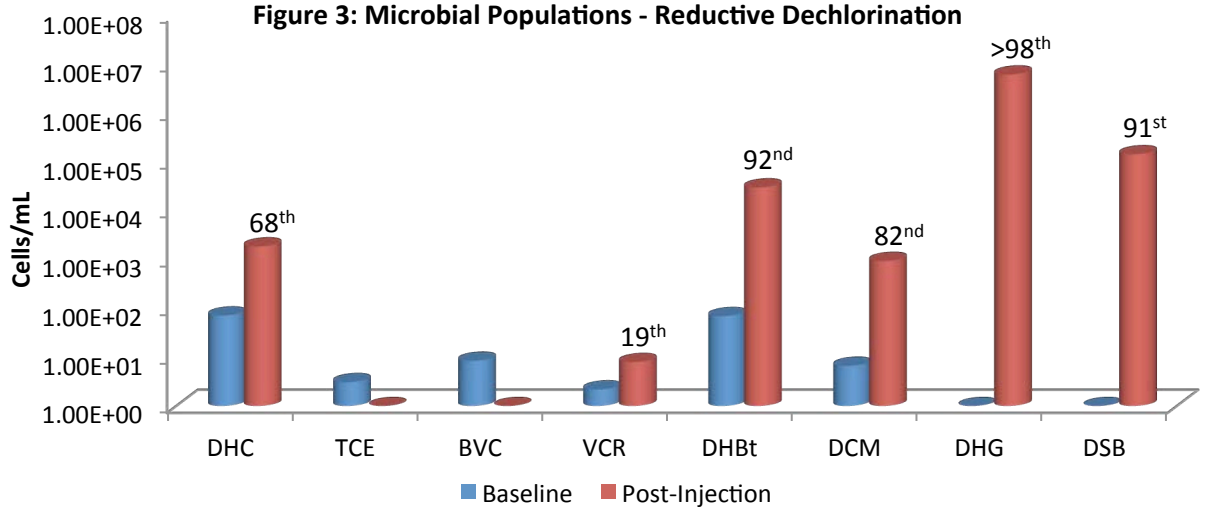
Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92nd percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68th percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19th percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

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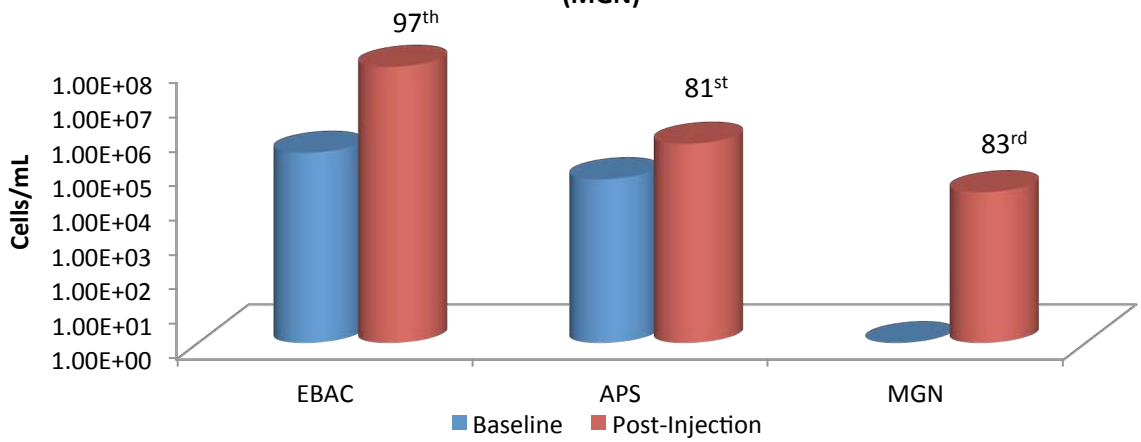
- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

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How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

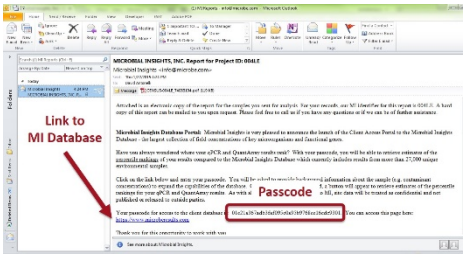
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

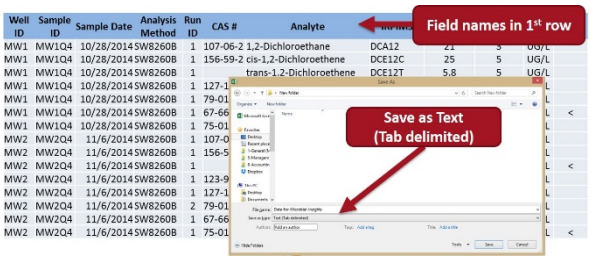
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





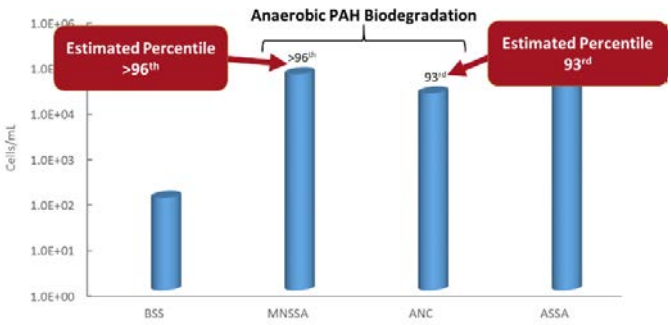
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



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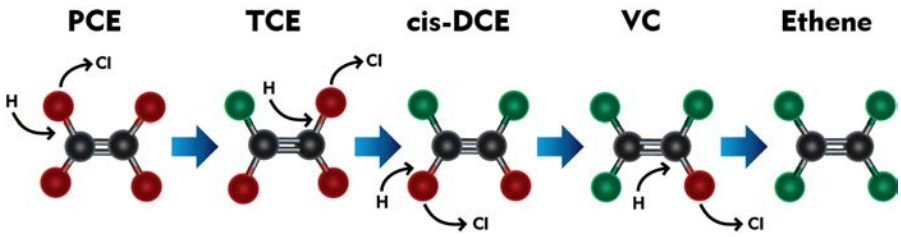
DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

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CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

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CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **052QC**
Date Received: 03/20/2019

Sample Information

Client Sample ID:		**35AWW11_031919**	**35AWW24_031919**	**35AWW19_031919**	**LHSMW07_031919**	**35AWW06_031919**
Sample Date:		03/19/2019	03/19/2019	03/19/2019	03/19/2019	03/19/2019
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		JS	JS	JS	JS	JS
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**2.31E+02**	<8.00E-01	<5.00E-01	**1.00E+04**	**1.23E+01**
tceA Reductase	TCE	<9.00E-01	<8.00E-01	<5.00E-01	<1.40E+00	<8.00E-01
BAV1 Vinyl Chloride Reductase	BVC	<9.00E-01	<8.00E-01	<5.00E-01	**2.50E+00**	<8.00E-01
Vinyl Chloride Reductase	VCR	**4.22E+01**	<8.00E-01	<5.00E-01	**4.84E+03**	**2.00E-01 (J)**
Dehalobacter spp.	*DHBt*	**8.18E+05**	<8.30E+00	**9.15E+01**	**6.14E+04**	**2.12E+04**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

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CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **052QC**
Date Received: 03/20/2019

Sample Information

Client Sample ID:	**35AWW20_031919**
Sample Date:	03/19/2019
Units:	cells/mL
Analyst/Reviewer:	JS

Dechlorinating Bacteria

Dehalococcoides	*DHC*	<1.50E+00
tceA Reductase	TCE	<1.50E+00
BAV1 Vinyl Chloride Reductase	BVC	<1.50E+00
Vinyl Chloride Reductase	VCR	<1.50E+00
Dehalobacter spp.	*DHBt*	**1.40E+04**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

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Quality Assurance/Quality Control Data

Samples Received **3/20/2019**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	03/20/2019	03/25/2019	1 °C	114%	non-detect	non-detect
TCE	03/20/2019	03/25/2019	1 °C	113%	non-detect	non-detect
VCR	03/20/2019	03/25/2019	1 °C	98%	non-detect	non-detect
DHBt	03/20/2019	03/25/2019	1 °C	113%	non-detect	non-detect
DHC	03/20/2019	03/25/2019	1 °C	118%	non-detect	non-detect

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REPORT TO:
Name: MARCIA OLIVE
Company: BHATE ENVIRONMENTAL
Address:
email: molive@bhate.com
Phone:
Fax:

INVOICE TO: (For Invoices paid by a third party it is imperative that all information be provided)
Name:
Company:
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Project Manager: Kim Nemmers
Project Name: LHAAP
Project No.: NWD1312.0150

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☐ More samples to follow
☐ No Additional Samples

Report Type: ☐ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																							
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBI (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
052QC 1	35AWW11-031919	3/19/19	0815							X		X																					
2	35AWW24-031919	3/19/19	0915							X		X																					
3	35AWW19-031919	3/19/19	1010							X		X																					
4	LHSMW07-031919	3/19/19	1105							X		X																					
5	35AWW06-031919	3/19/19	1205							X		X																					
6	35AWW20-031919	3/19/19	1315							X		X																					

Relinquished by: [signature] 3/19/19 1430 Received by: [signature] Date 3/20/19 1020

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

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QUARTERLY CONTROL SUMMARY REPORT
LHAAP-58 JUNE 2019
SEMI-ANNUAL SAMPLING EVENT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

July 2019

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Prepared By:

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1 INTRODUCTION

Bhate reviewed four data packages from ALS Environmental, Houston, Texas with the analyses for volatile fatty acids subcontracted to ALS Rochester, NY; total organic carbon subcontracted to ALS Kelso, WA; and the analyses of dissolved gases to ALS Simi Valley, CA. The dechlorinating bacteria analysis was subcontracted to Microbial Insights in Knoxville, TN. Groundwater samples were collected on June 3-10, 2019, from Site LHAAP-58 at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. Data were reviewed for conformance to the requirements of the following guidance documents: [United States Environmental Protection Agency] *USEPA Contract Laboratory Program* [CLP] *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, January 2017); *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, January 2017); and the *Final Basewide Uniform Federal Policy (UFP) – Quality Assurance Project Plan (QAPP) Longhorn Army Ammunition Plant* (Bhate, May 2018).

1.1 Intended Use of Data

The objective of sampling at LHAAP-58 in June 2019 was to complete a semi-annual sampling event.

Analyses performed include:

- RSK-175 – Dissolved Gases
- E415.1/SM5310C – Total Organic Carbon
- SW8260C – Volatile Organic Compounds (VOCs)
- SW9056A – Anions (chloride, nitrate, and sulfate)
- High Performance Liquid Chromatography (HPLC)-METACIDS – Volatile Fatty Acids (VFAs)
- CENSUS – Dechlorinating Bacteria (dehalococcoides [DHC]/dehalobacter [DHB])SW6020A - Arsenic

Table 1 lists the sample (ID) identification numbers and their associated laboratory package.

Table 2 lists qualified results with the qualification flag and reason code.

The following narrative is a brief synopsis of data that required qualification due to quality control discrepancies.

1.2 Preservation and Holding Times

Sample identification data were evaluated for agreement with the chain-of-custody (COC). All samples were received in appropriate containers, within the proper temperature range, in good condition, and within the required hold time.

1.3 Calibrations

All analytes reported must be present in the initial and continuing calibration. The calibrations must meet the acceptance criteria specified in Worksheet 24 (Analytical Instrument Calibration) of the QAPP. All results reported must be within the calibration range. Samples were diluted, if necessary, to bring analyte responses within the calibration range.

1.3.1 Continuing Calibration Verifications

The calibrations must meet the following criteria otherwise the compound is qualified J or UJ: The continuing calibration verification (CCV) criteria are 20 percent difference (%D) for VOCs and 50% for closing CCVs. Metals and general chemistry - 10%D; VFAs, dissolved gases, and TOC - 15%D.

All CCV recoveries were within control limits.

1.4 Blanks

If the analyte result for an associated sample was less than 5x (10x for common laboratory contaminants) the analyte concentration in the blank, that result was qualified "UB" and considered an artifact of blank contamination. Where the sample result for the affected analyte was non-detect or greater than 5x (10x) the amount in the blank, no qualifier was applied.

1.4.1 SW8260

Acetone and 2-butanone were detected in the trip blank associated with package HS19060185. Only samples 35AWW08_060419 and 35AWW10_060419_a reported detections of acetone < 10x the blank concentration. These were considered artifacts of blank contamination and flagged "UB".

1.5 Surrogates

Surrogates were evaluated using limits defined by each method in the project-specific QAPP Worksheet 28.

No surrogates were reported outside control limits.

1.6 Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

LCS/LCSD recoveries were evaluated using limits defined in the project-specific QAPP Worksheet 15.

1.6.1 SW8260

The LCS/LCSD recoveries for butyric acid were above control limits (140%/142%) in packages HS19060123 and HS19060185. Only samples 35AWW06_060419, 35AWW11_060319, and 35AWW23_060319 reported detections and were qualified as estimated, "J".

1.7 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD)

MS/MSD recoveries were evaluated using limits defined in Worksheet 15 of the project-specific QAPP. When sample results were greater than 4x the spike amount, control limits were not applicable and require no qualification. Furthermore, if a MS/MSD analyses was performed on a batched (unrelated) sample no qualification was made to the sample data.

1.7.1 SW8260

The MS and/or MSD recoveries between multiple compounds in spike sample 35AWW01_061019 were outside control limits. Due to matrix effect, these compounds were flagged "J/UJ" (see Table 2). Also, spiked sample 35AWW19_060319 reported the MS recovery of carbon disulfide (62.4%) below control limits. This compound was flagged as estimated non-detect, "UJ".

1.8 Internal Standards

If the percent recovery (%R) for an internal standard in a sample is not within the limit, the associated sample is qualified for those analytes associated with the internal standard(s) outside of the limit.

Internal standards were within acceptance criteria for the associated compounds.

1.9 Field Precision

Precision is the measure of variability of individual sample measurements. Evaluation of field duplicates for precision was done using the relative percent difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD limits were set at <30% for groundwater matrices and all compounds were within control limits.

1.9.1 Lab Precision

The laboratory RPD of sample 35AWW24_060319 was exceeded for total organic carbon. This compound was qualified as estimated, "J".

2.0 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project (see Table 3). The data quality objectives have been met for the project.

Table 1: Field Sample Identification and Laboratory Packages

Client Sample ID	Lab Package/ID	SM2320B	E365.3	E415.1/ SM5310C	SW6020A	SW8260C	HPLC-METACIDS	SW9056A	RSK-175	SM3500Fe	E376.1	CENSUS	Arsenic 6020A
03WW01_060419	HS19060185			X		X		X	X			X	X
35AWW01_061019	HS19060573					X							
35AWW05_061019	HS19060573					X							
35AWW06 _060419	HS19060185			X		X	X	X	X			X	
35AWW08 _060419	HS19060185			X		X	X	X	X			X	X
35AWW09 _060319	HS19060123			X		X	X	X	X			X	X
35AWW10 _060419	HS19060185			X		X	X	X	X			X	
35AWW10 _060419_a	HS19060185			X		X	X	X	X			X	
35AWW11_060319	HS19060123			X		X	X	X	X			X	
35AWW12_061019	HS19060573					X							
35AWW12_061019a	HS19060573					X							
35AWW13_060719	HS19060461					X							
35AWW14_060719	HS19060461					X							
35AWW15_060719	HS19060461					X							
35AWW16 _061019	HS19060573					X							
35AWW17 _061019	HS19060573					X							
35AWW18_060419	HS19060185					X							
35AWW19_060319	HS19060123			X		X	X	X	X			X	
35AWW20_060419	HS19060185			X		X	X	X	X			X	X
35AWW21_061019	HS19060573					X							
35AWW21_061019_a	HS19060573					X							
35AWW22_061019	HS19060573					X							
LHSMW06_060719	HS19060461					X							X
LHSMW07_060319	HS19060123			X		X	X	X	X			X	
35ASW03_060719	HS19060461					X							
35AWW23_060319	HS19060123			X		X	X	X	X			X	
35AWW24_060319	HS19060123			X		X	X	X	X			X	

Notes:
MW – Monitoring Well
SM – Standard Method
SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.
E – USEPA Method
HS - Houston

Table 2: Qualified Analytical Data

Client Sample ID Laboratory	Laboratory Package	Analyte Name	Result and Qualifier (µg/L)	Reason for Qualification
35AWW01_061019	HS19060573	1,1,2,2-Tetrachloroethane	< 0.50 UJ	MS <
		1,1-Dichloroethane	< 0.50 UJ	MS/MSD <
		1,1-Dichloroethene	< 0.50 UJ	MS/MSD <
		1,2,3-Trichloropropane	< 0.50 UJ	MS/MSD <
		1,2-Dichloropropane	< 0.50 UJ	MS/MSD <
		2-Butanone	< 1.0 UJ	MS <
		4-Methyl-2-pentanone	< 1.0 UJ	MS <
		Benzene	< 0.50 UJ	MS/MSD <
		Bromochloromethane	< 0.50 UJ	MS <
		Chloroethane	< 0.50 UJ	MS/MSD <
		Chloroform	< 0.50 UJ	MS/MSD <
		Chloromethane	< 0.50 UJ	MS/MSD <
		cis-1,2-Dichloroethene	< 0.50 UJ	MS/MSD <
		Methylene chloride	< 1.0 UJ	MS/MSD <
		trans-1,2-Dichloroethene	< 0.5 UJ	MS/MSD <
		Vinyl chloride	< 0.5 UJ	MS/MSD <
35AWW06_060419	HS19060185	Butyric acid	7.7 J mg/L	LCS/LCSD >

Client Sample ID Laboratory	Laboratory Package	Analyte Name	Result and Qualifier (µg/L)	Reason for Qualification
35AWW08_060419	HS19060185	Acetone	13 UB	TB
35AWW10_060410_a	HS19060185	Acetone	2.7 UB	TB
35AWW11_060319	HS19060123	Butyric acid	3.1 J mg/L	LCS/LCSD >
35AWW23_060319	HS19060123	Butyric acid	370 J mg/L	LCS/LCSD >
35AWW19_060319	HS19060123	Carbon Disulfide	< 1.0 UJ	MS <
35AWW24_060319	HS19060123	Total Organic Carbon	1.55 J mg/L	Lab dup RPD

Notes:
µg/L – micrograms per liter, mg/L – milligrams per liter
J – Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
UJ – The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
UB – considered an artifact of blank contamination
Lab dup RPD – the relative percent difference between sample and laboratory duplicate was outside control limits
MS/MSD < – Matrix spike/duplicate recoveries were below control limits
LCS/LCSD > – laboratory control sample/duplicate recoveries were above control limits
TB – trip blank contamination

Table 3: Completeness by Method

Method	No. of Rejected Results	% Completeness
E415.1/SM5310C	0	100
SW8260C	0	100
HPLC-METACIDS	0	100
SW9056A	0	100
RSK-175	0	100
CENSUS	0	100
SW6020A	0	100

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June 26, 2019

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

Work Order: **HS19060123**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 7 sample(s) on Jun 04, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 26-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060123

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19060123-01	35AWW19_060319	Groundwater		03-Jun-2019 08:05	04-Jun-2019 09:50	☐
HS19060123-02	LHSMW07_060319	Groundwater		03-Jun-2019 09:00	04-Jun-2019 09:50	☐
HS19060123-03	35AWW23_060319	Groundwater		03-Jun-2019 10:00	04-Jun-2019 09:50	☐
HS19060123-04	35AWW24_060319	Groundwater		03-Jun-2019 10:55	04-Jun-2019 09:50	☐
HS19060123-05	35AWW11_060319	Groundwater		03-Jun-2019 11:50	04-Jun-2019 09:50	☐
HS19060123-06	35AWW09_060319	Groundwater		03-Jun-2019 12:50	04-Jun-2019 09:50	☐
HS19060123-07	Trip Blank	Water	C&G-050119-168	03-Jun-2019 00:00	04-Jun-2019 09:50	☐

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS19060123

Work Order Comments

- The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.
- The analysis for VFA was subcontracted to ALS Environmental in Rochester, NY. Final report attached.
- The analyses for MEE and CO2 were subcontracted to ALS Environmental in Simi Valley , CA. Final report attached.
- The analysis for DHC/DHB were subcontracted to Microbial Insights in Knoxville TN. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R339998

Sample ID: 35AWW19_060319(HS19061223-01MS)

- MS recovered outside the control limit for Carbon Disulfide.

Metals by Method SW6020

Batch ID: 141628

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

WetChemistry by Method SW9056

Batch ID: R339872

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_060319
Collection Date: 03-Jun-2019 08:05

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,1-Dichloroethane	**0.65**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 14:57
1,1-Dichloroethene	**2.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 14:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,2-Dichloroethane	**1.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 14:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 14:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 14:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 14:57
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 14:57
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 14:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_060319
Collection Date: 03-Jun-2019 08:05

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 14:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 14:57
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 14:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:57
Surr: 1,2-Dichloroethane-d4	*92.8*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 14:57*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 14:57*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 14:57*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 14:57*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,080**		**10.0**	**25.0**	**25.0**	**mg/L**	50	04-Jun-2019 15:16
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	04-Jun-2019 15:01
Sulfate	**966**		**10.0**	**25.0**	**25.0**	**mg/L**	50	04-Jun-2019 15:16
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	18-Jun-2019 12:52

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_060319
Collection Date: 03-Jun-2019 08:05

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 09:25
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_060319
Collection Date: 03-Jun-2019 09:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,1-Dichloroethane	**9.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:22
1,1-Dichloroethene	**16**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:22
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,2-Dichloroethane	**0.62**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:22
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 15:22
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 15:22
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 15:22
Acetone	**3.4**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 15:22
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 15:22
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_060319
Collection Date: 03-Jun-2019 09:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
cis-1,2-Dichloroethene	**0.70**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 15:22
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 15:22
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 15:22
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:22
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:22
Surr: 1,2-Dichloroethane-d4	*95.5*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 15:22*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 15:22*
Surr: Dibromofluoromethane	*96.4*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 15:22*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 15:22*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,780**		**10.0**	**25.0**	**25.0**	**mg/L**	50	04-Jun-2019 16:29
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	04-Jun-2019 16:15
Sulfate	**2,470**		**10.0**	**25.0**	**25.0**	**mg/L**	50	04-Jun-2019 16:29
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	18-Jun-2019 12:52

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_060319
Collection Date: 03-Jun-2019 09:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 09:25
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_060319
Collection Date: 03-Jun-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
2-Butanone	**220**		**0.50**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 15:46
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 15:46
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 15:46
Acetone	**210**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 15:46
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 15:46
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_060319
Collection Date: 03-Jun-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
cis-1,2-Dichloroethene	**4.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:46
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 15:46
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 15:46
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 15:46
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 15:46
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 15:46
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 15:46
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 15:46*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 15:46*
Surr: Dibromofluoromethane	*96.0*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 15:46*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 15:46*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**732**		**10.0**	**25.0**	**25.0**	**mg/L**	50	04-Jun-2019 16:59
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	04-Jun-2019 16:44
Sulfate	**14.1**		**1.00**	**2.50**	**2.50**	**mg/L**	5	04-Jun-2019 16:44
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	18-Jun-2019 12:52

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_060319
Collection Date: 03-Jun-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 09:25
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_060319
Collection Date: 03-Jun-2019 10:55

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 16:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 16:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 16:10
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 16:10
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 16:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_060319
Collection Date: 03-Jun-2019 10:55

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 16:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 16:10
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 16:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:10
Surr: 1,2-Dichloroethane-d4	*92.4*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 16:10*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 16:10*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 16:10*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 16:10*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**106**		**1.00**	**2.50**	**2.50**	**mg/L**	5	04-Jun-2019 17:28
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	04-Jun-2019 17:13
Sulfate	**74.9**		**0.200**	**0.500**	**0.500**	**mg/L**	1	04-Jun-2019 17:13
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	18-Jun-2019 12:52

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_060319
Collection Date: 03-Jun-2019 10:55

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 09:25
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_060319
Collection Date: 03-Jun-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
2-Butanone	**70**		**0.50**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 16:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 16:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 16:34
Acetone	**77**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 16:34
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 16:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_060319
Collection Date: 03-Jun-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 16:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 16:34
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 16:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:34
Surr: 1,2-Dichloroethane-d4	*95.6*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 16:34*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 16:34*
Surr: Dibromofluoromethane	*97.1*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 16:34*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 16:34*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,920**		**10.0**	**25.0**	**25.0**	**mg/L**	50	04-Jun-2019 17:57
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	04-Jun-2019 17:42
Sulfate	**210**		**1.00**	**2.50**	**2.50**	**mg/L**	5	04-Jun-2019 17:42
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	18-Jun-2019 12:52

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_060319
Collection Date: 03-Jun-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 09:25
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_060319
Collection Date: 03-Jun-2019 12:50

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 16:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 16:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 16:58
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 16:58
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 16:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_060319
Collection Date: 03-Jun-2019 12:50

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 16:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 16:58
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 16:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 16:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Tetrachloroethene	**130**		**0.30**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 16:58
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Trichloroethene	**38**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 16:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 16:58
Surr: 1,2-Dichloroethane-d4	*93.3*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 16:58*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 16:58*
Surr: Dibromofluoromethane	*95.7*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 16:58*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 16:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 05-Jun-2019		Analyst: JHD
Arsenic	**0.00308**		**0.000400**	**0.000500**	**0.00200**	**mg/L**	1	05-Jun-2019 22:24
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,340**		**10.0**	**25.0**	**25.0**	**mg/L**	50	05-Jun-2019 12:55
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	04-Jun-2019 18:46
Sulfate	**908**		**10.0**	**25.0**	**25.0**	**mg/L**	50	05-Jun-2019 12:55
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	18-Jun-2019 12:52

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_060319
Collection Date: 03-Jun-2019 12:50

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 09:25
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 03-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 13:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 13:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 13:21
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 13:21
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 13:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21

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

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 03-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060123
Lab ID:HS19060123-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 13:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 13:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 13:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 13:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 13:21
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 13:21*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 13:21*
Surr: Dibromofluoromethane	*94.2*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 13:21*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 13:21*

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

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

Batch ID: 141628 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19060123-06	1	10	10 (mL)	1

ALS Houston, US Date: 26-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 141628	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50		05 Jun 2019 14:21	05 Jun 2019 22:24	1
Batch ID R339872	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			04 Jun 2019 15:16	50
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			04 Jun 2019 15:01	5
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			04 Jun 2019 16:29	50
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			04 Jun 2019 16:15	5
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			04 Jun 2019 16:59	50
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			04 Jun 2019 16:44	5
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			04 Jun 2019 17:28	5
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			04 Jun 2019 17:13	1
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			04 Jun 2019 17:57	50
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			04 Jun 2019 17:42	5
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			05 Jun 2019 12:55	50
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			04 Jun 2019 18:46	5
Batch ID R339998	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19060123-07	Trip Blank	03 Jun 2019 00:00			06 Jun 2019 13:21	1
Batch ID R339998	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			06 Jun 2019 14:57	1
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			06 Jun 2019 15:22	1
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			06 Jun 2019 15:46	1
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			06 Jun 2019 16:10	1
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			06 Jun 2019 16:34	1
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			06 Jun 2019 16:58	1
Batch ID R340363	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB			**Matrix:** Groundwater		
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			12 Jun 2019 16:54	1
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			12 Jun 2019 16:54	1
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			12 Jun 2019 16:54	1
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			12 Jun 2019 16:54	1
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			12 Jun 2019 16:54	1
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			12 Jun 2019 16:54	1
Batch ID R340701	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			18 Jun 2019 12:52	1
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			18 Jun 2019 12:52	1
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			18 Jun 2019 12:52	1
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			18 Jun 2019 12:52	1
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			18 Jun 2019 12:52	1
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			18 Jun 2019 12:52	1

ALS Houston, US Date: 26-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R340872	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			20 Jun 2019 10:19	1
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			20 Jun 2019 10:19	1
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			20 Jun 2019 10:19	1
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			20 Jun 2019 10:19	1
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			20 Jun 2019 10:19	1
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			20 Jun 2019 10:19	1
Batch ID R341252	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19060123-01	35AWW19_060319	03 Jun 2019 08:05			20 Jun 2019 09:25	1
HS19060123-02	LHSMW07_060319	03 Jun 2019 09:00			20 Jun 2019 09:25	1
HS19060123-03	35AWW23_060319	03 Jun 2019 10:00			20 Jun 2019 09:25	1
HS19060123-04	35AWW24_060319	03 Jun 2019 10:55			20 Jun 2019 09:25	1
HS19060123-05	35AWW11_060319	03 Jun 2019 11:50			20 Jun 2019 09:25	1
HS19060123-06	35AWW09_060319	03 Jun 2019 12:50			20 Jun 2019 09:25	1

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: 141628 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-141628** Units: **mg/L** Analysis Date: **05-Jun-2019 22:04**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108740** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00200								U

LCS Sample ID: **LCS-141628** Units: **mg/L** Analysis Date: **05-Jun-2019 22:05**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108741** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05387	0.00200	0.05	0	108	80 - 120				

LCSD Sample ID: **LCSD-141628** Units: **mg/L** Analysis Date: **05-Jun-2019 22:07**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108742** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05339	0.00200	0.05	0	107	80 - 120	0.05387	0.902	20	

MS Sample ID: **HS19060168-01MS** Units: **mg/L** Analysis Date: **05-Jun-2019 22:13**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108745** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05451	0.00200	0.05	0.000923	107	80 - 120				

MSD Sample ID: **HS19060168-01MSD** Units: **mg/L** Analysis Date: **05-Jun-2019 22:14**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108746** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05604	0.00200	0.05	0.000923	110	80 - 120	0.05451	2.76	20	

PDS Sample ID: **HS19060168-01PDS** Units: **mg/L** Analysis Date: **05-Jun-2019 22:16**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108747** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1042	0.00200	0.1	0.000923	103	75 - 125				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: 141628 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS19060168-01SD** Units: **mg/L** Analysis Date: **05-Jun-2019 22:11**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108744** PrepDate: **05-Jun-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002267	0.0100					0.000923	0	10	J

The following samples were analyzed in this batch: HS19060123-06

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:57**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110994** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:57**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110994** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.27*	*1.0*	*50*	*0*	*90.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.82*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*46.66*	*1.0*	*50*	*0*	*93.3*	*80 - 119*				
Surr: Toluene-d8	*53.19*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:09**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110993** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.6	1.0	20	0	98.0	78 - 124				
1,1,1-Trichloroethane	20.25	1.0	20	0	101	74 - 131				
1,1,2,2-Tetrachloroethane	18.44	1.0	20	0	92.2	71 - 121				
1,1,2-Trichloroethane	20.4	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	19.43	1.0	20	0	97.2	77 - 125				
1,1-Dichloroethene	19.42	1.0	20	0	97.1	71 - 131				
1,1-Dichloropropene	19.63	1.0	20	0	98.1	78 - 125				
1,2,3-Trichlorobenzene	17.18	1.0	20	0	85.9	69 - 129				
1,2,3-Trichloropropane	17.93	1.0	20	0	89.6	73 - 122				
1,2,4-Trichlorobenzene	18.84	1.0	20	0	94.2	69 - 130				
1,2,4-Trimethylbenzene	19.91	1.0	20	0	99.6	76 - 124				
1,2-Dibromo-3-chloropropane	17.46	1.0	20	0	87.3	62 - 128				
1,2-Dibromoethane	19.86	1.0	20	0	99.3	77 - 121				
1,2-Dichlorobenzene	19.41	1.0	20	0	97.0	80 - 119				
1,2-Dichloroethane	20.31	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	21.15	1.0	20	0	106	78 - 122				
1,3,5-Trimethylbenzene	19.82	1.0	20	0	99.1	75 - 124				
1,3-Dichlorobenzene	19.66	1.0	20	0	98.3	80 - 119				
1,3-Dichloropropane	21.39	1.0	20	0	107	80 - 119				
1,4-Dichlorobenzene	19.4	1.0	20	0	97.0	79 - 118				
2,2-Dichloropropane	19.78	1.0	20	0	98.9	60 - 139				
2-Butanone	42.76	2.0	40	0	107	56 - 143				
2-Chlorotoluene	19.33	1.0	20	0	96.6	79 - 122				
2-Hexanone	41.93	2.0	40	0	105	57 - 139				
4-Chlorotoluene	19.88	1.0	20	0	99.4	78 - 122				
4-Isopropyltoluene	20.23	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	40	2.0	40	0	100.0	67 - 130				
Acetone	45.22	2.0	40	0	113	39 - 160				
Benzene	20.3	1.0	20	0	102	79 - 120				
Bromobenzene	18.84	1.0	20	0	94.2	80 - 120				
Bromochloromethane	20.35	1.0	20	0	102	78 - 123				
Bromodichloromethane	19.68	1.0	20	0	98.4	79 - 125				
Bromoform	18.77	1.0	20	0	93.8	66 - 130				
Bromomethane	22.57	1.0	20	0	113	53 - 141				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:09**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110993** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	46.05	2.0	40	0	115	64 - 133				
Carbon tetrachloride	19.1	1.0	20	0	95.5	72 - 136				
Chlorobenzene	19.54	1.0	20	0	97.7	82 - 118				
Chloroethane	19.4	1.0	20	0	97.0	60 - 138				
Chloroform	20.61	1.0	20	0	103	79 - 124				
Chloromethane	17.27	1.0	20	0	86.3	50 - 139				
cis-1,2-Dichloroethene	19.72	1.0	20	0	98.6	78 - 123				
cis-1,3-Dichloropropene	20.52	1.0	20	0	103	75 - 124				
Dibromochloromethane	19.92	1.0	20	0	99.6	74 - 126				
Dibromomethane	19.98	1.0	20	0	99.9	79 - 123				
Dichlorodifluoromethane	18.99	1.0	20	0	95.0	32 - 152				
Ethylbenzene	19.69	1.0	20	0	98.5	79 - 121				
Hexachlorobutadiene	21.04	1.0	20	0	105	66 - 134				
Isopropylbenzene	20.27	1.0	20	0	101	72 - 131				
m,p-Xylene	39.34	2.0	40	0	98.4	80 - 121				
Methylene chloride	20.93	2.0	20	0	105	74 - 124				
Naphthalene	16.9	1.0	20	0	84.5	61 - 128				
n-Butylbenzene	20.45	1.0	20	0	102	75 - 128				
n-Propylbenzene	19.65	1.0	20	0	98.2	76 - 126				
o-Xylene	19.83	1.0	20	0	99.2	78 - 122				
sec-Butylbenzene	20.1	1.0	20	0	101	77 - 126				
Styrene	20.15	1.0	20	0	101	78 - 123				
tert-Butylbenzene	19.68	1.0	20	0	98.4	78 - 124				
Tetrachloroethene	19.96	1.0	20	0	99.8	74 - 129				
Toluene	20.51	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	19.57	1.0	20	0	97.9	75 - 124				
trans-1,3-Dichloropropene	20.06	1.0	20	0	100	73 - 127				
Trichloroethene	19.8	1.0	20	0	99.0	79 - 123				
Trichlorofluoromethane	19.03	1.0	20	0	95.2	65 - 141				
Vinyl chloride	17.4	1.0	20	0	87.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.35*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.64*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*52.92*	*1.0*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*50.05*	*1.0*	*50*	*0*	*100*	*89 - 112*				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19060123-01MS** Units: **UG/L** Analysis Date: **06-Jun-2019 17:22**
Client ID: **35AWW19_060319** Run ID: **VOA6_339998** SeqNo: **5111005** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.23	1.0	20	0	96.2	78 - 124				
1,1,1-Trichloroethane	18.32	1.0	20	0	91.6	74 - 131				
1,1,2,2-Tetrachloroethane	20.07	1.0	20	0	100	71 - 121				
1,1,2-Trichloroethane	19.28	1.0	20	0	96.4	80 - 119				
1,1-Dichloroethane	18.26	1.0	20	0.6532	88.0	77 - 125				
1,1-Dichloroethene	20.79	1.0	20	2.626	90.8	71 - 131				
1,1-Dichloropropene	18.92	1.0	20	0	94.6	78 - 125				
1,2,3-Trichlorobenzene	19.87	1.0	20	0	99.3	69 - 129				
1,2,3-Trichloropropane	19.78	1.0	20	0	98.9	73 - 122				
1,2,4-Trichlorobenzene	20.91	1.0	20	0	105	69 - 130				
1,2,4-Trimethylbenzene	21.06	1.0	20	0	105	76 - 124				
1,2-Dibromo-3-chloropropane	18.9	1.0	20	0	94.5	62 - 128				
1,2-Dibromoethane	19	1.0	20	0	95.0	77 - 121				
1,2-Dichlorobenzene	19.7	1.0	20	0	98.5	80 - 119				
1,2-Dichloroethane	18.95	1.0	20	1.07	89.4	73 - 128				
1,2-Dichloropropane	19.37	1.0	20	0	96.9	78 - 122				
1,3,5-Trimethylbenzene	21.09	1.0	20	0	105	75 - 124				
1,3-Dichlorobenzene	20.09	1.0	20	0	100	80 - 119				
1,3-Dichloropropane	20.01	1.0	20	0	100	80 - 119				
1,4-Dichlorobenzene	19.95	1.0	20	0	99.7	79 - 118				
2,2-Dichloropropane	18.73	1.0	20	0	93.6	60 - 139				
2-Butanone	23.81	2.0	40	0	59.5	56 - 143				
2-Chlorotoluene	20.36	1.0	20	0	102	79 - 122				
2-Hexanone	28.12	2.0	40	0	70.3	57 - 139				
4-Chlorotoluene	20.2	1.0	20	0	101	78 - 122				
4-Isopropyltoluene	21.86	1.0	20	0	109	77 - 127				
4-Methyl-2-pentanone	27.78	2.0	40	0	69.4	67 - 130				
Acetone	23.63	2.0	40	0	59.1	39 - 160				
Benzene	18.3	1.0	20	0	91.5	79 - 120				
Bromobenzene	19.74	1.0	20	0	98.7	80 - 120				
Bromochloromethane	17.4	1.0	20	0	87.0	78 - 123				
Bromodichloromethane	17.55	1.0	20	0	87.7	79 - 125				
Bromoform	18.81	1.0	20	0	94.0	66 - 130				
Bromomethane	13.86	1.0	20	0	69.3	53 - 141				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19060123-01MS** Units: **UG/L** Analysis Date: **06-Jun-2019 17:22**
Client ID: **35AWW19_060319** Run ID: **VOA6_339998** SeqNo: **5111005** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	24.97	2.0	40	0	62.4	64 - 133				S
Carbon tetrachloride	18.6	1.0	20	0	93.0	72 - 136				
Chlorobenzene	19.12	1.0	20	0	95.6	82 - 118				
Chloroethane	18.53	1.0	20	0	92.7	60 - 138				
Chloroform	17.48	1.0	20	0	87.4	79 - 124				
Chloromethane	15.15	1.0	20	0	75.8	50 - 139				
cis-1,2-Dichloroethene	17.54	1.0	20	0	87.7	78 - 123				
cis-1,3-Dichloropropene	18.2	1.0	20	0	91.0	75 - 124				
Dibromochloromethane	19.19	1.0	20	0	95.9	74 - 126				
Dibromomethane	18.09	1.0	20	0	90.4	79 - 123				
Dichlorodifluoromethane	16.95	1.0	20	0	84.8	32 - 152				
Ethylbenzene	19.96	1.0	20	0	99.8	79 - 121				
Hexachlorobutadiene	22.14	1.0	20	0	111	66 - 134				
Isopropylbenzene	21.05	1.0	20	0	105	72 - 131				
m,p-Xylene	39.46	2.0	40	0	98.7	80 - 121				
Methylene chloride	17.85	2.0	20	0	89.3	74 - 124				
Naphthalene	19.51	1.0	20	0	97.5	61 - 128				
n-Butylbenzene	21.99	1.0	20	0	110	75 - 128				
n-Propylbenzene	21.93	1.0	20	0	110	76 - 126				
o-Xylene	19.69	1.0	20	0	98.4	78 - 122				
sec-Butylbenzene	21.68	1.0	20	0	108	77 - 126				
Styrene	19.76	1.0	20	0	98.8	78 - 123				
tert-Butylbenzene	21.36	1.0	20	0	107	78 - 124				
Tetrachloroethene	21.49	1.0	20	0	107	74 - 129				
Toluene	19.87	1.0	20	0	99.4	80 - 121				
trans-1,2-Dichloroethene	17.94	1.0	20	0	89.7	75 - 124				
trans-1,3-Dichloropropene	17.84	1.0	20	0	89.2	73 - 127				
Trichloroethene	18.93	1.0	20	0	94.6	79 - 123				
Trichlorofluoromethane	18.45	1.0	20	0	92.2	65 - 141				
Vinyl chloride	16.29	1.0	20	0	81.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.56*	*1.0*	*50*	*0*	*93.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.01*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*48.12*	*1.0*	*50*	*0*	*96.2*	*80 - 119*				
Surr: Toluene-d8	*52.79*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19060123-01MSD** Units: **UG/L** Analysis Date: **06-Jun-2019 17:46**
Client ID: **35AWW19_060319** Run ID: **VOA6_339998** SeqNo: **5111006** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.18	1.0	20	0	95.9	78 - 124	19.23	0.269	20	
1,1,1-Trichloroethane	17.98	1.0	20	0	89.9	74 - 131	18.32	1.89	20	
1,1,2,2-Tetrachloroethane	19.55	1.0	20	0	97.8	71 - 121	20.07	2.61	20	
1,1,2-Trichloroethane	19.48	1.0	20	0	97.4	80 - 119	19.28	1.07	20	
1,1-Dichloroethane	18.13	1.0	20	0.6532	87.4	77 - 125	18.26	0.715	20	
1,1-Dichloroethene	20.63	1.0	20	2.626	90.0	71 - 131	20.79	0.774	20	
1,1-Dichloropropene	18.82	1.0	20	0	94.1	78 - 125	18.92	0.492	20	
1,2,3-Trichlorobenzene	20.45	1.0	20	0	102	69 - 129	19.87	2.89	20	
1,2,3-Trichloropropane	18.73	1.0	20	0	93.7	73 - 122	19.78	5.48	20	
1,2,4-Trichlorobenzene	21.43	1.0	20	0	107	69 - 130	20.91	2.47	20	
1,2,4-Trimethylbenzene	20.23	1.0	20	0	101	76 - 124	21.06	4.02	20	
1,2-Dibromo-3-chloropropane	18.98	1.0	20	0	94.9	62 - 128	18.9	0.434	20	
1,2-Dibromoethane	19.16	1.0	20	0	95.8	77 - 121	19	0.856	20	
1,2-Dichlorobenzene	20.04	1.0	20	0	100	80 - 119	19.7	1.7	20	
1,2-Dichloroethane	19.18	1.0	20	1.07	90.5	73 - 128	18.95	1.22	20	
1,2-Dichloropropane	19.21	1.0	20	0	96.1	78 - 122	19.37	0.843	20	
1,3,5-Trimethylbenzene	20.82	1.0	20	0	104	75 - 124	21.09	1.28	20	
1,3-Dichlorobenzene	19.85	1.0	20	0	99.3	80 - 119	20.09	1.17	20	
1,3-Dichloropropane	19.84	1.0	20	0	99.2	80 - 119	20.01	0.838	20	
1,4-Dichlorobenzene	19.38	1.0	20	0	96.9	79 - 118	19.95	2.92	20	
2,2-Dichloropropane	17.93	1.0	20	0	89.6	60 - 139	18.73	4.38	20	
2-Butanone	23.77	2.0	40	0	59.4	56 - 143	23.81	0.164	20	
2-Chlorotoluene	19.2	1.0	20	0	96.0	79 - 122	20.36	5.91	20	
2-Hexanone	27.85	2.0	40	0	69.6	57 - 139	28.12	0.961	20	
4-Chlorotoluene	20.09	1.0	20	0	100	78 - 122	20.2	0.521	20	
4-Isopropyltoluene	21.3	1.0	20	0	106	77 - 127	21.86	2.64	20	
4-Methyl-2-pentanone	27.75	2.0	40	0	69.4	67 - 130	27.78	0.097	20	
Acetone	26.08	2.0	40	0	65.2	39 - 160	23.63	9.87	20	
Benzene	18.4	1.0	20	0	92.0	79 - 120	18.3	0.55	20	
Bromobenzene	19.31	1.0	20	0	96.6	80 - 120	19.74	2.21	20	
Bromochloromethane	17.07	1.0	20	0	85.3	78 - 123	17.4	1.95	20	
Bromodichloromethane	18.04	1.0	20	0	90.2	79 - 125	17.55	2.74	20	
Bromoform	18.98	1.0	20	0	94.9	66 - 130	18.81	0.91	20	
Bromomethane	14.73	1.0	20	0	73.7	53 - 141	13.86	6.06	20	

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19060123-01MSD** Units: **UG/L** Analysis Date: **06-Jun-2019 17:46**
Client ID: **35AWW19_060319** Run ID: **VOA6_339998** SeqNo: **5111006** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	26.56	2.0	40	0	66.4	64 - 133	24.97	6.14	20	
Carbon tetrachloride	18.54	1.0	20	0	92.7	72 - 136	18.6	0.321	20	
Chlorobenzene	19.02	1.0	20	0	95.1	82 - 118	19.12	0.541	20	
Chloroethane	15.64	1.0	20	0	78.2	60 - 138	18.53	16.9	20	
Chloroform	17.45	1.0	20	0	87.2	79 - 124	17.48	0.195	20	
Chloromethane	14.56	1.0	20	0	72.8	50 - 139	15.15	4.02	20	
cis-1,2-Dichloroethene	17.39	1.0	20	0	87.0	78 - 123	17.54	0.879	20	
cis-1,3-Dichloropropene	18.41	1.0	20	0	92.0	75 - 124	18.2	1.14	20	
Dibromochloromethane	19.11	1.0	20	0	95.6	74 - 126	19.19	0.387	20	
Dibromomethane	18.02	1.0	20	0	90.1	79 - 123	18.09	0.394	20	
Dichlorodifluoromethane	16.45	1.0	20	0	82.2	32 - 152	16.95	3.02	20	
Ethylbenzene	19.33	1.0	20	0	96.6	79 - 121	19.96	3.23	20	
Hexachlorobutadiene	22.88	1.0	20	0	114	66 - 134	22.14	3.31	20	
Isopropylbenzene	21.25	1.0	20	0	106	72 - 131	21.05	0.955	20	
m,p-Xylene	38.53	2.0	40	0	96.3	80 - 121	39.46	2.39	20	
Methylene chloride	17.48	2.0	20	0	87.4	74 - 124	17.85	2.11	20	
Naphthalene	20.11	1.0	20	0	101	61 - 128	19.51	3.06	20	
n-Butylbenzene	22.68	1.0	20	0	113	75 - 128	21.99	3.11	20	
n-Propylbenzene	20.87	1.0	20	0	104	76 - 126	21.93	4.97	20	
o-Xylene	20.2	1.0	20	0	101	78 - 122	19.69	2.56	20	
sec-Butylbenzene	21.08	1.0	20	0	105	77 - 126	21.68	2.77	20	
Styrene	20.2	1.0	20	0	101	78 - 123	19.76	2.22	20	
tert-Butylbenzene	21.09	1.0	20	0	105	78 - 124	21.36	1.3	20	
Tetrachloroethene	20.81	1.0	20	0	104	74 - 129	21.49	3.2	20	
Toluene	19.76	1.0	20	0	98.8	80 - 121	19.87	0.565	20	
trans-1,2-Dichloroethene	17.51	1.0	20	0	87.5	75 - 124	17.94	2.45	20	
trans-1,3-Dichloropropene	18.41	1.0	20	0	92.1	73 - 127	17.84	3.14	20	
Trichloroethene	18.87	1.0	20	0	94.3	79 - 123	18.93	0.321	20	
Trichlorofluoromethane	18.14	1.0	20	0	90.7	65 - 141	18.45	1.7	20	
Vinyl chloride	15.81	1.0	20	0	79.0	58 - 137	16.29	3.03	20	
Surr: 1,2-Dichloroethane-d4	*46.22*	*1.0*	*50*	*0*	*92.4*	*81 - 118*	*46.56*	*0.735*	*20*	
Surr: 4-Bromofluorobenzene	*53.76*	*1.0*	*50*	*0*	*108*	*85 - 114*	*53.01*	*1.41*	*20*	
Surr: Dibromofluoromethane	*48.02*	*1.0*	*50*	*0*	*96.0*	*80 - 119*	*48.12*	*0.217*	*20*	
Surr: Toluene-d8	*52.32*	*1.0*	*50*	*0*	*105*	*89 - 112*	*52.79*	*0.907*	*20*	

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339998 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS19060123-01	HS19060123-02	HS19060123-03	HS19060123-04
HS19060123-05	HS19060123-06	HS19060123-07	

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339872 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-060419** Units: **mg/L** Analysis Date: **04-Jun-2019 13:14**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108235** 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
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-060419** Units: **mg/L** Analysis Date: **04-Jun-2019 13:31**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108236** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.44	0.500	20	0	97.2	80 - 120				
Nitrogen, Nitrate (As N)	3.796	0.100	4	0	94.9	80 - 120				
Sulfate	19.22	0.500	20	0	96.1	80 - 120				

LCSD Sample ID: **WLCSDW1-060419** Units: **mg/L** Analysis Date: **04-Jun-2019 13:45**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108237** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.07	0.500	20	0	95.4	80 - 120	19.44	1.91	20	
Nitrogen, Nitrate (As N)	3.72	0.100	4	0	93.0	80 - 120	3.796	2.02	20	
Sulfate	18.9	0.500	20	0	94.5	80 - 120	19.22	1.63	20	

MS Sample ID: **HS19060102-02MS** Units: **mg/L** Analysis Date: **04-Jun-2019 21:38**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108263** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	30.4	0.500	10	20.73	96.7	80 - 120				
Nitrogen, Nitrate (As N)	2.158	0.100	2	0.38	88.9	80 - 120				
Sulfate	29.94	0.500	10	20.18	97.6	80 - 120				

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060123

QC BATCH REPORT

Batch ID: R339872 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MS Sample ID: **HS19060098-01MS** Units: **mg/L** Analysis Date: **04-Jun-2019 19:56**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108256** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	35.21	0.500	10	25.63	95.7	80 - 120				
Nitrogen, Nitrate (As N)	2.127	0.100	2	0.318	90.4	80 - 120				
Sulfate	33.44	0.500	10	23.9	95.4	80 - 120				

MSD Sample ID: **HS19060102-02MSD** Units: **mg/L** Analysis Date: **04-Jun-2019 21:53**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108264** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	30.14	0.500	10	20.73	94.1	80 - 120	30.4	0.836	20	
Nitrogen, Nitrate (As N)	2.148	0.100	2	0.38	88.4	80 - 120	2.158	0.464	20	
Sulfate	29.82	0.500	10	20.18	96.4	80 - 120	29.94	0.415	20	

MSD Sample ID: **HS19060098-01MSD** Units: **mg/L** Analysis Date: **04-Jun-2019 20:11**
Client ID: Run ID: **ICS2100_339872** SeqNo: **5108257** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	35.09	0.500	10	25.63	94.6	80 - 120	35.21	0.327	20	
Nitrogen, Nitrate (As N)	2.126	0.100	2	0.318	90.4	80 - 120	2.127	0.047	20	
Sulfate	33.4	0.500	10	23.9	95.0	80 - 120	33.44	0.126	20	

The following samples were analyzed in this batch: HS19060123-01 HS19060123-02 HS19060123-03 HS19060123-04 HS19060123-05 HS19060123-06

ALS Houston, US Date: 26-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19060123**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Illinois	004438	29-Jun-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Louisiana	03087	30-Jun-2019
Maryland	343, 2018-2019	30-Jun-2019
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 26-Jun-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19060123
Date/Time Received: **04-Jun-2019 09:50**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature 4-Jun-2019 Date
Reviewed by: *RJ Modashia* eSignature 4-Jun-2019 Date

Matrices: **Groundwater/Water**
Carrier name: **UPS**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2c U/C	IR11
Cooler(s)/Kit(s):	7183	
Date/Time sample(s) sent to storage:	6/4/19 12:30	

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:

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 / Site 58

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	MEE	TOC	Carbon Dioxide	Anions	ARSENIC				Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35Aww19_060319		03 Jun 2019	0805	-	N		WG	10	X	X	X	X	X								
LHSmw07_060319		03 Jun 2019	0900	-	N		WG	10	X	X	X	X	X								
35Aww23_060319		03 Jun 2019	1000	-	N		WG	10	X	X	X	X	X								
35Aww24_060319		03 Jun 2019	1055		N		WG	10	X	X	X	X	X								
35Aww11_060319		03 Jun 2019	1150		N		WG	10	X	X	X	X	X								
35Aww09_060319		03 Jun 2019	1250	-	N		WG	11	X	X	X	X	X	X							
Trip Blank		03 Jun 2019		-	TB		WG	2	X												
				-																	
				-																	
				-																	
				-																	

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

HS19060123

Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/3/19	1500	1. NM	6.4.19	0945
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: 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

Total - 11 1.2
11 x 11
CHK

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

7183

CUSTODY SEAL

Date: 6/3/19 Time: 1500
Name: Scott Bassingham
Company: BHATE

Seal Broken By:
Date: 06/04/19

7183 JUN 04 2019

UPS Next Day Air®
UPS Worldwide Express®
Shipping Document

WEIGHT	LTR	PAK	WEIGHT	DIMENSIONAL WEIGHT If Applicable	LARGE PACKAGE	SHIPPER RELEASE
	☐	☐			☐	☐

1
1

☐ EXPRESS (INT'L)
☐ DOCUMENTS ONLY

SATURDAY DELIVERY ☐

J462 791 962 4

EXPRESS

SHIPMENT FROM

UPS ACCOUNT NO.

REFERENCE NUMBER

TELEPHONE

J462 791 962 4

DELIVERY TO

TELEPHONE

Required ☐

UPS Next Day Air® 1

J462 791 962 4

DELIVERY

J462 791 962 4

TRACKING NUMBER

DATE OF SHIPMENT
/ /

010191120 8/14 RRD United Parcel Service, Louisville, KY

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T 1 360 577 7222
F 1 360 636 1068
alsglo al co

June 19, 2019 **Anal tical Report for Ser ice Re uest o** K1905198

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

RE S

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 05, 2019
For your reference, these analyses have been assigned our service request number **K**

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

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

Respectfully submitted,

ALS Group SA Corp d a ALS En iron ental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS RIGHT PARTNER

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T 1 360 577 7222
F 1 360 636 1068
alsglo al co

Table of Contents

Acronyms
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State Certifications, Accreditations, And Licenses
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    General Chemistry

Acronyms

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

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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

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

Case Narrative

ALS Environmental—Kelso Laboratory
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ALS Environmental

Client: ALS Environmental - US
Project: HS19060123
Sample Matrix: Ground Water

Service Request: K1905198
Date Received: 06/05/2019

CASE NARRATIVE

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

Sample Receipt:

Six ground water samples were received for analysis at ALS Environmental on 06/05/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

Method SM 5310 C, 06/10/2019: The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in sample 35AWW24_060319 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by Kelley Lovejoy Date 06/19/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
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10450 Stancliff Rd, Ste 210
Houston, TX 77099
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K1905198

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11513**

SUBCONTRACT TO:

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

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

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

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19060123
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19060123-01**	**35AWW19_060319**	**Groundwater**	**03 Jun 2019 08:05**
	TOC Analysis for DOD Level IV/Excel EDD			18 Jun 2019
2.	**HS19060123-02**	**LHSMW07_060319**	**Groundwater**	**03 Jun 2019 09:00**
	TOC Analysis for DOD Level IV/Excel EDD			18 Jun 2019
3.	**HS19060123-03**	**35AWW23_060319**	**Groundwater**	**03 Jun 2019 10:00**
	TOC Analysis for DOD Level IV/Excel EDD			18 Jun 2019
4.	**HS19060123-04**	**35AWW24_060319**	**Groundwater**	**03 Jun 2019 10:55**
	TOC Analysis for DOD Level IV/Excel EDD			18 Jun 2019
5.	**HS19060123-05**	**35AWW11_060319**	**Groundwater**	**03 Jun 2019 11:50**
	TOC Analysis for DOD Level IV/Excel EDD			18 Jun 2019
6.	**HS19060123-06**	**35AWW09_060319**	**Groundwater**	**03 Jun 2019 12:50**
	TOC Analysis for DOD Level IV/Excel EDD			18 Jun 2019

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

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **11513**

Relinquished By: _____ Date/Time: 6/4/19 1800.

Received By: B Morrow ALS Kelso Date/Time: 6/5/19 0955

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

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request K19 05198

Received: 6/5/19 Opened: 6/5/19 By: [illegible] Unloaded: 6/5/19 By: K

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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.7	1.7	1.6	1.6	0	381	11513	4809 7834 7196	

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project:	HS19060123	**Date Collected:**	06/3/19
Sample Matrix:	Ground Water	**Date Received:**	06/5/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35AWW19_060319	K1905198-001	**1.88**	0.50	0.20	0.07	1	06/08/19 02:24	
LHSMW07_060319	K1905198-002	**4.13**	0.50	0.20	0.07	1	06/08/19 02:52	
35AWW23_060319	K1905198-003	**1360**	50	20	7	100	06/15/19 02:11	
35AWW24_060319	K1905198-004	**1.55**	0.50	0.20	0.07	1	06/10/19 23:13	
35AWW11_060319	K1905198-005	**94.6**	1.0	0.4	0.2	2	06/10/19 23:41	
35AWW09_060319	K1905198-006	**3.96**	0.50	0.20	0.07	1	06/15/19 03:07	
Method Blank	K1905198-MB1	ND U	0.50	0.20	0.07	1	06/08/19 00:59	
Method Blank	K1905198-MB2	ND U	0.50	0.20	0.07	1	06/11/19 04:24	
Method Blank	K1905198-MB3	ND U	0.50	0.20	0.07	1	06/14/19 18:41	
Method Blank	K1905198-MB4	ND U	0.50	0.20	0.07	1	06/15/19 07:21	

ALS Group USA, Corp.
d a ALS En iron ental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project	HS19060123	**Date Collected:**	06/03/19
Sample Matrix:	Ground Water	**Date Received:**	06/05/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35AWW19_060319	K1905198-001DUP	0.50	0.20	0.07	1.88	1.80	1.84	4	10	06/08/19
LHSMW07_060319	K1905198-002DUP	0.50	0.20	0.07	4.13	3.89	4.01	6	10	06/08/19
35AWW23_060319	K1905198-003DUP	50	20	7	1360	1360	1360	<1	10	06/15/19
35AWW24_060319	K1905198-004DUP	0.50	0.20	0.07	1.55	1.28	1.41	19 *	10	06/10/19
35AWW11_060319	K1905198-005DUP	1.0	0.4	0.2	94.6	94.2	94.4	<1	10	06/10/19
35AWW09_060319	K1905198-006DUP	0.50	0.20	0.07	3.96	3.83	3.90	3	10	06/15/19

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

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

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

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project:	HS19060123	**Date Collected:**	06/03/19
Sample Matrix:	Ground Water	**Date Received:**	06/05/19
		Date Analyzed:	06/16/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	35AWW09_060319	**Units:**	mg/L
Lab Code:	K1905198-006	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1905198-006MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	3.96	25.6	25.0	86	83-117

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

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

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

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project:	HS19060123	**Date Analyzed:**	06/08/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	638450

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1905198-LCS1	25.1	25.0	100	83-117

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project:	HS19060123	**Date Analyzed:**	06/11/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	638810

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1905198-LCS2	25.4	25.0	101	83-117

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project:	HS19060123	**Date Analyzed:**	06/14/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	639522

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1905198-LCS3	25.4	25.0	102	83-117

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905198
Project:	HS19060123	**Date Analyzed:**	06/15/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	639523

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1905198-LCS4	25.4	25.0	102	83-117

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QA/QC Report

Client: ALS Environmental - US **Service Request:** K1905198
Project: HS19060123

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

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

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	638450	KQ1907859-02	06/07/19 19:18	25.0	24.1	96	90-110
CCV2	638450	KQ1907859-03	06/08/19 00:29	25.0	23.8	95	90-110
CCV3	638450	KQ1907859-04	06/08/19 05:13	25.0	24.6	98	90-110
CCV4	638450	KQ1907859-05	06/08/19 10:23	25.0	24.3	97	90-110
CCV5	638810	KQ1908062-01	06/10/19 14:47	25.0	25.2	101	90-110
CCV6	638810	KQ1908062-02	06/10/19 22:43	25.0	27.5	110	90-110
CCV7	638810	KQ1908062-03	06/11/19 03:54	25.0	24.9	100	90-110
CCV8	638810	KQ1908062-04	06/11/19 08:37	25.0	24.9	99	90-110
CCV9	638810	KQ1908062-05	06/11/19 13:35	25.0	24.6	98	90-110
CCV10	639522	KQ1908379-01	06/14/19 18:11	25.0	24.9	100	90-110
CCV11	639522	KQ1908379-02	06/15/19 01:13	25.0	24.6	98	90-110
CCV12	639522	KQ1908379-03	06/15/19 06:51	25.0	25.5	102	90-110
CCV13	639522	KQ1908379-04	06/15/19 12:03	25.0	25.0	100	90-110
CCV14	639522	KQ1908379-05	06/15/19 17:01	25.0	24.9	100	90-110
CCV15	639523	KQ1908380-02	06/15/19 01:41	25.0	24.6	98	90-110
CCV16	639523	KQ1908380-03	06/15/19 06:51	25.0	25.5	102	90-110
CCV17	639523	KQ1908380-04	06/15/19 12:03	25.0	25.0	100	90-110
CCV18	639523	KQ1908380-05	06/15/19 17:01	25.0	24.9	100	90-110
CCV19	639523	KQ1908380-34	06/15/19 21:44	25.0	24.5	98	90-110
CCV20	639523	KQ1908380-35	06/16/19 02:55	25.0	24.5	98	90-110
CCV21	639523	KQ1908380-36	06/16/19 07:11	25.0	24.1	96	90-110
CCV22	639523	KQ1908380-37	06/16/19 11:00	25.0	25.1	100	90-110

ALS Group USA, Corp.
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QA/QC Report

Client: ALS Environmental - US **Service Request:**K1905198
Project: HS19060123

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

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

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	638450	KQ1907859-06	06/07/19 19:33	0.50	0.20	0.07	ND	U
CCB2	638450	KQ1907859-07	06/08/19 00:44	0.50	0.20	0.07	ND	U
CCB3	638450	KQ1907859-08	06/08/19 05:28	0.50	0.20	0.07	ND	U
CCB4	638450	KQ1907859-09	06/08/19 10:38	0.50	0.20	0.07	ND	U
CCB5	638810	KQ1908062-06	06/10/19 15:02	0.50	0.20	0.07	ND	U
CCB6	638810	KQ1908062-07	06/10/19 22:58	0.50	0.20	0.07	0.19	J
CCB7	638810	KQ1908062-08	06/11/19 04:09	0.50	0.20	0.07	ND	U
CCB8	638810	KQ1908062-09	06/11/19 08:52	0.50	0.20	0.07	ND	U
CCB9	638810	KQ1908062-10	06/11/19 13:50	0.50	0.20	0.07	ND	U
CCB10	639522	KQ1908379-06	06/14/19 18:26	0.50	0.20	0.07	ND	U
CCB11	639522	KQ1908379-07	06/15/19 01:56	0.50	0.20	0.07	ND	U
CCB12	639522	KQ1908379-08	06/15/19 07:06	0.50	0.20	0.07	ND	U
CCB13	639522	KQ1908379-09	06/15/19 12:18	0.50	0.20	0.07	ND	U
CCB14	639522	KQ1908379-10	06/15/19 17:15	0.50	0.20	0.07	ND	U
CCB15	639523	KQ1908380-06	06/15/19 01:56	0.50	0.20	0.07	ND	U
CCB16	639523	KQ1908380-07	06/15/19 07:06	0.50	0.20	0.07	ND	U
CCB17	639523	KQ1908380-08	06/15/19 12:18	0.50	0.20	0.07	ND	U
CCB18	639523	KQ1908380-09	06/15/19 17:15	0.50	0.20	0.07	ND	U
CCB19	639523	KQ1908380-32	06/15/19 21:59	0.50	0.20	0.07	ND	U
CCB20	639523	KQ1908380-33	06/16/19 03:09	0.50	0.20	0.07	ND	U
CCB21	639523	KQ1908380-38	06/16/19 07:26	0.50	0.20	0.07	ND	U
CCB22	639523	KQ1908380-39	06/16/19 11:14	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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Work Request # Original ( ) KP905113, 5116, 5184, 5185, 5124, 5173, 5198, 5217, 5084, 5114, 5128, 5215, 5217

Tier: IV IV IV IV IV I IV II II IV III I II

Date Analyzed: 6/6/19

Analyst: BCD/HL

Analysis: TOC

TOC: 638448, 638449, 638450, 638451

Run #

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: KP905198-3/5 Sent for RA due to being above calibration
KP905114-6 sent for RA due to being over-diluted.
KP905194-4/6 Sent for RA due to carry over from last sample.
KP905116-3 reports a high % RSD, however this sample is less than 5x the MRL.

Final Approved by: [signature] Date: 06/13/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638448 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905113-003	Carbon, Total Organic	N/A		Ground Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50			6/6/19 18:39:00	N	IV
K1905113-004	Carbon, Total Organic	N/A		Ground Water	0.55 mg/L	10 mL	0.55 mg/L	1	0.07	0.50			6/6/19 19:35:00	N	IV
K1905113-005	Carbon, Total Organic	N/A		Ground Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50			6/6/19 20:30:00	N	IV
K1905113-006	Carbon, Total Organic	N/A		Ground Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50			6/6/19 21:26:00	N	IV
K1905113-007	Carbon, Total Organic	N/A		Ground Water	10.68 mg/L	10 mL	10.7 mg/L	1	0.07	0.50			6/6/19 22:22:00	N	IV
K1905113-008	Carbon, Total Organic	N/A		Ground Water	0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 23:17:00	N	IV
K1905116-003	Carbon, Total Organic	N/A		Ground Water	0.25 mg/L	10 mL	0.25 mg/L J	1	0.07	0.50			6/7/19 00:13:00	N	IV
K1905116-004	Carbon, Total Organic	N/A		Ground Water	0.13 mg/L	10 mL	0.13 mg/L J	1	0.07	0.50			6/7/19 01:38:00	N	IV
K1905116-005	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 02:34:00	N	IV
K1905116-006	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 03:30:00	N	IV
K1905116-007	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 04:25:00	N	IV
K1905116-008	Carbon, Total Organic	N/A		Ground Water	0.99 mg/L	10 mL	0.99 mg/L	1	0.07	0.50			6/7/19 05:21:00	N	IV
K1905184-001	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 06:17:00	Y	IV
K1905184-003	Carbon, Total Organic	N/A		Ground Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 08:22:00	N	IV
K1905184-004	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 09:18:00	N	IV
KQ1907856-01	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 16:18:00	N	IV
KQ1907856-02	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 01:23:00	N	IV
KQ1907856-03	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 10:28:00	N	IV
KQ1907856-04	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 19:33:00	N	IV
KQ1907856-05	Carbon, Total Organic	CCV		Ground Water	24.88 mg/L	10 mL	24.9 mg/L	1					6/6/19 16:03:00	N	IV
KQ1907856-06	Carbon, Total Organic	CCV		Ground Water	24.49 mg/L	10 mL	24.5 mg/L	1					6/7/19 01:08:00	N	IV
KQ1907856-07	Carbon, Total Organic	CCV		Ground Water	24.31 mg/L	10 mL	24.3 mg/L	1					6/7/19 10:14:00	N	IV
KQ1907856-08	Carbon, Total Organic	CCV		Ground Water	24.06 mg/L	10 mL	24.1 mg/L	1					6/7/19 19:18:00	N	IV

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

06/13/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638448 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907856-09	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 16:33:00	N	IV
KQ1907856-10	Carbon, Total Organic	LCS		Ground Water	25.52 mg/L	10 mL	25.5 mg/L	1	0.07	0.50	102		6/6/19 17:29:00	N	IV
KQ1907856-11	Carbon, Total Organic	MS	K1905184-001	Ground Water	26.39 mg/L	10 mL	26.4 mg/L	1	0.07	0.50	106		6/7/19 07:12:00	N	IV
KQ1907856-12	Carbon, Total Organic	MS	K1905184-001	Ground Water	26.38 mg/L	10 mL	26.4 mg/L	1	0.07	0.50	106		6/7/19 07:12:00	N	IV
KQ1907856-13	Carbon, Total Organic	MS	K1905184-001	Ground Water	26.46 mg/L	10 mL	26.5 mg/L	1	0.07	0.50	106		6/7/19 07:12:00	N	IV
KQ1907856-14	Carbon, Total Organic	MS	K1905184-001	Ground Water	26.15 mg/L	10 mL	26.1 mg/L	1	0.07	0.50	105		6/7/19 07:12:00	N	IV
KQ1907856-15	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 16:33:00	N	IV
KQ1907856-16	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 16:33:00	N	IV
KQ1907856-17	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/6/19 16:33:00	N	IV
KQ1907856-18	Carbon, Total Organic	LCS		Ground Water	25.21 mg/L	10 mL	25.2 mg/L	1	0.07	0.50	101		6/6/19 17:29:00	N	IV
KQ1907856-19	Carbon, Total Organic	LCS		Ground Water	25.49 mg/L	10 mL	25.5 mg/L	1	0.07	0.50	102		6/6/19 17:29:00	N	IV
KQ1907856-20	Carbon, Total Organic	LCS		Ground Water	25.43 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/6/19 17:29:00	N	IV
KQ1907856-21	Carbon, Total Organic	DUP	K1905113-003	Ground Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50		10	6/6/19 18:39:00	N	IV
KQ1907856-22	Carbon, Total Organic	TRP	K1905113-003	Ground Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50		6	6/6/19 18:39:00	N	IV
KQ1907856-23	Carbon, Total Organic	QUAD	K1905113-003	Ground Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50		5	6/6/19 18:39:00	N	IV
KQ1907856-24	Carbon, Total Organic	DUP	K1905113-004	Ground Water	0.55 mg/L	10 mL	0.55 mg/L	1	0.07	0.50		<1	6/6/19 19:35:00	N	IV
KQ1907856-25	Carbon, Total Organic	TRP	K1905113-004	Ground Water	0.54 mg/L	10 mL	0.54 mg/L	1	0.07	0.50		2	6/6/19 19:35:00	N	IV
KQ1907856-26	Carbon, Total Organic	QUAD	K1905113-004	Ground Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		3	6/6/19 19:35:00	N	IV
KQ1907856-27	Carbon, Total Organic	DUP	K1905113-005	Ground Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50		3	6/6/19 20:30:00	N	IV
KQ1907856-28	Carbon, Total Organic	TRP	K1905113-005	Ground Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50		2	6/6/19 20:30:00	N	IV
KQ1907856-29	Carbon, Total Organic	QUAD	K1905113-005	Ground Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		4	6/6/19 20:30:00	N	IV
KQ1907856-30	Carbon, Total Organic	DUP	K1905113-006	Ground Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50		2	6/6/19 21:26:00	N	IV
KQ1907856-31	Carbon, Total Organic	TRP	K1905113-006	Ground Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50		2	6/6/19 21:26:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638448 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907856-32	Carbon, Total Organic	QUAD	K1905113-006	Ground Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50		4	6/6/19 21:26:00	N	IV
KQ1907856-33	Carbon, Total Organic	DUP	K1905113-007	Ground Water	10.63 mg/L	10 mL	10.6 mg/L	1	0.07	0.50		<1	6/6/19 22:22:00	N	IV
KQ1907856-34	Carbon, Total Organic	TRP	K1905113-007	Ground Water	10.68 mg/L	10 mL	10.7 mg/L	1	0.07	0.50		<1	6/6/19 22:22:00	N	IV
KQ1907856-35	Carbon, Total Organic	QUAD	K1905113-007	Ground Water	10.81 mg/L	10 mL	10.8 mg/L	1	0.07	0.50		<1	6/6/19 22:22:00	N	IV
KQ1907856-36	Carbon, Total Organic	DUP	K1905113-008	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/6/19 23:17:00	N	IV
KQ1907856-37	Carbon, Total Organic	TRP	K1905113-008	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/6/19 23:17:00	N	IV
KQ1907856-38	Carbon, Total Organic	QUAD	K1905113-008	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/6/19 23:17:00	N	IV
KQ1907856-39	Carbon, Total Organic	DUP	K1905116-003	Ground Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50		23*	6/7/19 00:13:00	N	IV
KQ1907856-40	Carbon, Total Organic	TRP	K1905116-003	Ground Water	0.34 mg/L	10 mL	0.34 mg/L J	1	0.07	0.50		15	6/7/19 00:13:00	N	IV
KQ1907856-41	Carbon, Total Organic	QUAD	K1905116-003	Ground Water	0.28 mg/L	10 mL	0.28 mg/L J	1	0.07	0.50		13	6/7/19 00:13:00	N	IV
KQ1907856-42	Carbon, Total Organic	DUP	K1905116-004	Ground Water	0.14 mg/L	10 mL	0.14 mg/L J	1	0.07	0.50		<1	6/7/19 01:38:00	N	IV
KQ1907856-43	Carbon, Total Organic	TRP	K1905116-004	Ground Water	0.10 mg/L	10 mL	0.1 mg/L J	1	0.07	0.50		18	6/7/19 01:38:00	N	IV
KQ1907856-44	Carbon, Total Organic	QUAD	K1905116-004	Ground Water	0.10 mg/L	10 mL	0.10 mg/L J	1	0.07	0.50		18	6/7/19 01:38:00	N	IV
KQ1907856-45	Carbon, Total Organic	DUP	K1905116-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 02:34:00	N	IV
KQ1907856-46	Carbon, Total Organic	TRP	K1905116-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 02:34:00	N	IV
KQ1907856-47	Carbon, Total Organic	QUAD	K1905116-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 02:34:00	N	IV
KQ1907856-48	Carbon, Total Organic	DUP	K1905116-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 03:30:00	N	IV
KQ1907856-49	Carbon, Total Organic	TRP	K1905116-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 03:30:00	N	IV
KQ1907856-50	Carbon, Total Organic	QUAD	K1905116-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 03:30:00	N	IV
KQ1907856-51	Carbon, Total Organic	DUP	K1905116-007	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 04:25:00	N	IV
KQ1907856-52	Carbon, Total Organic	TRP	K1905116-007	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 04:25:00	N	IV
KQ1907856-53	Carbon, Total Organic	QUAD	K1905116-007	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 04:25:00	N	IV
KQ1907856-54	Carbon, Total Organic	DUP	K1905116-008	Ground Water	1.02 mg/L	10 mL	1.02 mg/L	1	0.07	0.50		3	6/7/19 05:21:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638448 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907856-55	Carbon, Total Organic	TRP	K1905116-008	Ground Water	1.02 mg/L	10 mL	1.02 mg/L	1	0.07	0.50		2	6/7/19 05:21:00	N	IV
KQ1907856-56	Carbon, Total Organic	QUAD	K1905116-008	Ground Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.07	0.50		2	6/7/19 05:21:00	N	IV
KQ1907856-57	Carbon, Total Organic	DUP	K1905184-001	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 06:17:00	N	IV
KQ1907856-58	Carbon, Total Organic	TRP	K1905184-001	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 06:17:00	N	IV
KQ1907856-59	Carbon, Total Organic	QUAD	K1905184-001	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 06:17:00	N	IV
KQ1907856-60	Carbon, Total Organic	DUP	K1905184-003	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 08:22:00	N	IV
KQ1907856-61	Carbon, Total Organic	TRP	K1905184-003	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 08:22:00	N	IV
KQ1907856-62	Carbon, Total Organic	QUAD	K1905184-003	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 08:22:00	N	IV
KQ1907856-63	Carbon, Total Organic	DUP	K1905184-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 09:18:00	N	IV
KQ1907856-64	Carbon, Total Organic	TRP	K1905184-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 09:18:00	N	IV
KQ1907856-65	Carbon, Total Organic	QUAD	K1905184-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 09:18:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638449 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905184-005	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 12:34:00	N	IV
K1905184-006	Carbon, Total Organic	N/A		Ground Water	12.66 mg/L	10 mL	12.7 mg/L	1	0.07	0.50			6/7/19 13:30:00	N	IV
K1905185-001	Carbon, Total Organic	N/A		Ground Water	2.29 mg/L	10 mL	2.29 mg/L	1	0.07	0.50			6/7/19 14:26:00	Y	IV
K1905185-003	Carbon, Total Organic	N/A		Ground Water	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50			6/7/19 16:31:00	N	IV
K1905185-004	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 17:27:00	N	IV
K1905185-005	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 18:23:00	N	IV
K1905185-006	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 19:48:00	N	IV
KQ1907858-01	Carbon, Total Organic	MS	K1905185-001	Ground Water	28.16 mg/L	10 mL	28.2 mg/L	1	0.07	0.50	103		6/7/19 15:21:00	N	IV
KQ1907858-02	Carbon, Total Organic	MS	K1905185-001	Ground Water	28.17 mg/L	10 mL	28.2 mg/L	1	0.07	0.50	104		6/7/19 15:21:00	N	IV
KQ1907858-03	Carbon, Total Organic	MS	K1905185-001	Ground Water	28.28 mg/L	10 mL	28.3 mg/L	1	0.07	0.50	104		6/7/19 15:21:00	N	IV
KQ1907858-04	Carbon, Total Organic	MS	K1905185-001	Ground Water	28.33 mg/L	10 mL	28.3 mg/L	1	0.07	0.50	104		6/7/19 15:21:00	N	IV
KQ1907858-05	Carbon, Total Organic	DUP	K1905184-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 12:34:00	N	IV
KQ1907858-06	Carbon, Total Organic	TRP	K1905184-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 12:34:00	N	IV
KQ1907858-07	Carbon, Total Organic	QUAD	K1905184-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 12:34:00	N	IV
KQ1907858-08	Carbon, Total Organic	DUP	K1905184-006	Ground Water	12.88 mg/L	10 mL	12.9 mg/L	1	0.07	0.50		2	6/7/19 13:30:00	N	IV
KQ1907858-09	Carbon, Total Organic	TRP	K1905184-006	Ground Water	12.97 mg/L	10 mL	13.0 mg/L	1	0.07	0.50		1	6/7/19 13:30:00	N	IV
KQ1907858-10	Carbon, Total Organic	QUAD	K1905184-006	Ground Water	13.03 mg/L	10 mL	13.0 mg/L	1	0.07	0.50		1	6/7/19 13:30:00	N	IV
KQ1907858-11	Carbon, Total Organic	DUP	K1905185-001	Ground Water	2.16 mg/L	10 mL	2.16 mg/L	1	0.07	0.50		6	6/7/19 14:26:00	N	IV
KQ1907858-12	Carbon, Total Organic	TRP	K1905185-001	Ground Water	2.12 mg/L	10 mL	2.12 mg/L	1	0.07	0.50		4	6/7/19 14:26:00	N	IV
KQ1907858-13	Carbon, Total Organic	QUAD	K1905185-001	Ground Water	2.12 mg/L	10 mL	2.12 mg/L	1	0.07	0.50		4	6/7/19 14:26:00	N	IV
KQ1907858-14	Carbon, Total Organic	DUP	K1905185-003	Ground Water	0.10 mg/L	10 mL	0.1 mg/L J	1	0.07	0.50		9	6/7/19 16:31:00	N	IV
KQ1907858-15	Carbon, Total Organic	TRP	K1905185-003	Ground Water	0.08 mg/L	10 mL	0.08 mg/L J	1	0.07	0.50		13	6/7/19 16:31:00	N	IV
KQ1907858-16	Carbon, Total Organic	QUAD	K1905185-003	Ground Water	0.10 mg/L	10 mL	0.1 mg/L J	1	0.07	0.50		10	6/7/19 16:31:00	N	IV

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

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Results Summary

06/13/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638449 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907858-17	Carbon, Total Organic	DUP	K1905185-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 17:27:00	N	IV
KQ1907858-18	Carbon, Total Organic	TRP	K1905185-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 17:27:00	N	IV
KQ1907858-19	Carbon, Total Organic	QUAD	K1905185-004	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 17:27:00	N	IV
KQ1907858-20	Carbon, Total Organic	DUP	K1905185-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 18:23:00	N	IV
KQ1907858-21	Carbon, Total Organic	TRP	K1905185-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 18:23:00	N	IV
KQ1907858-22	Carbon, Total Organic	QUAD	K1905185-005	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 18:23:00	N	IV
KQ1907858-23	Carbon, Total Organic	DUP	K1905185-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 19:48:00	N	IV
KQ1907858-24	Carbon, Total Organic	TRP	K1905185-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 19:48:00	N	IV
KQ1907858-25	Carbon, Total Organic	QUAD	K1905185-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/7/19 19:48:00	N	IV
KQ1907858-26	Carbon, Total Organic	CCV		Ground Water	24.31 mg/L	10 mL	24.3 mg/L	1					6/7/19 10:14:00	N	IV
KQ1907858-27	Carbon, Total Organic	CCV		Ground Water	24.06 mg/L	10 mL	24.1 mg/L	1					6/7/19 19:18:00	N	IV
KQ1907858-28	Carbon, Total Organic	CCV		Ground Water	23.82 mg/L	10 mL	23.8 mg/L	1					6/8/19 00:29:00	N	IV
KQ1907858-29	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 10:28:00	N	IV
KQ1907858-30	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 19:33:00	N	IV
KQ1907858-31	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 00:44:00	N	IV
KQ1907858-32	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 10:43:00	N	IV
KQ1907858-33	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 10:43:00	N	IV
KQ1907858-34	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 10:43:00	N	IV
KQ1907858-35	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 10:43:00	N	IV
KQ1907858-36	Carbon, Total Organic	LCS		Ground Water	25.18 mg/L	10 mL	25.2 mg/L	1	0.07	0.50	101		6/7/19 11:39:00	N	IV
KQ1907858-37	Carbon, Total Organic	LCS		Ground Water	25.18 mg/L	10 mL	25.2 mg/L	1	0.07	0.50	101		6/7/19 11:39:00	N	IV
KQ1907858-38	Carbon, Total Organic	LCS		Ground Water	25.03 mg/L	10 mL	25.0 mg/L	1	0.07	0.50	100		6/7/19 11:39:00	N	IV
KQ1907858-39	Carbon, Total Organic	LCS		Ground Water	25.10 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/7/19 11:39:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638450 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905124-001	Carbon, Total Organic	N/A		Surface Water	1.01 mg/L	10 mL	1.01 mg/L	1	0.07	0.50			6/7/19 23:32:00	Y	IV
K1905124-002	Carbon, Total Organic	N/A		Surface Water	1.20 mg/L	10 mL	1.20 mg/L	1	0.07	0.50			6/8/19 01:28:00	N	IV
K1905124-003	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 01:56:00	N	IV
K1905173-001	Carbon, Total Organic	N/A		Water	0.12 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 20:43:00	N	I
K1905173-002	Carbon, Total Organic	N/A		Water	0.16 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 21:11:00	N	I
K1905173-003	Carbon, Total Organic	N/A		Water	0.10 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 21:39:00	N	I
K1905173-004	Carbon, Total Organic	N/A		Water	3.12 mg/L	10 mL	3.12 mg/L	1	0.07	0.50			6/7/19 22:07:00	N	I
K1905173-005	Carbon, Total Organic	N/A		Water	11.08 mg/L	10 mL	111 mg/L	10	0.7	5.0			6/7/19 22:35:00	N	I
K1905198-001	Carbon, Total Organic	N/A		Ground Water	1.88 mg/L	10 mL	1.88 mg/L	1	0.07	0.50			6/8/19 02:24:00	N	IV
K1905198-002	Carbon, Total Organic	N/A		Ground Water	4.13 mg/L	10 mL	4.13 mg/L	1	0.07	0.50			6/8/19 02:52:00	N	IV
K1905198-003	Carbon, Total Organic	N/A		Ground Water	113.10 mg/L	10 mL	113 mg/L	1	0.07	0.50			6/8/19 03:21:00	N	IV
K1905198-004	Carbon, Total Organic	N/A		Ground Water	12.56 mg/L	10 mL	12.6 mg/L	1	0.07	0.50			6/8/19 03:49:00	N	IV
K1905198-005	Carbon, Total Organic	N/A		Ground Water	61.20 mg/L	10 mL	61.2 mg/L	1	0.07	0.50			6/8/19 04:17:00	N	IV
K1905198-006	Carbon, Total Organic	N/A		Ground Water	5.41 mg/L	10 mL	5.41 mg/L	1	0.07	0.50			6/8/19 04:45:00	N	IV
K1905217-001	Carbon, Total Organic	N/A		Water	2.42 mg/L	10 mL	2.42 mg/L	1	0.07	0.50			6/8/19 05:42:00	N	II
K1905217-002	Carbon, Total Organic	N/A		Water	1.34 mg/L	10 mL	1.34 mg/L	1	0.07	0.50			6/8/19 06:10:00	N	II
K1905217-003	Carbon, Total Organic	N/A		Water	1.89 mg/L	10 mL	1.89 mg/L	1	0.07	0.50			6/8/19 06:39:00	N	II
K1905217-004	Carbon, Total Organic	N/A		Water	1.51 mg/L	10 mL	1.51 mg/L	1	0.07	0.50			6/8/19 07:07:00	N	II
K1905217-005	Carbon, Total Organic	N/A		Water	1.50 mg/L	10 mL	1.50 mg/L	1	0.07	0.50			6/8/19 07:35:00	N	II
K1905217-006	Carbon, Total Organic	N/A		Water	1.42 mg/L	10 mL	1.42 mg/L	1	0.07	0.50			6/8/19 08:03:00	N	II
KQ1907859-01	Carbon, Total Organic	N/A		Water	1.01 mg/L	10 mL	1.01 mg/L	1	0.07	0.50			6/7/19 23:32:00	N	II
KQ1907859-02	Carbon, Total Organic	CCV		Water	24.06 mg/L	10 mL	24.1 mg/L	1					6/7/19 19:18:00	N	I
KQ1907859-02	Carbon, Total Organic	CCV		Water	24.06 mg/L	10 mL	24.1 mg/L	1					6/7/19 19:18:00	N	I
KQ1907859-03	Carbon, Total Organic	CCV		Water	23.82 mg/L	10 mL	23.8 mg/L	1					6/8/19 00:29:00	N	I
KQ1907859-03	Carbon, Total Organic	CCV		Water	23.82 mg/L	10 mL	23.8 mg/L	1					6/8/19 00:29:00	N	I
KQ1907859-04	Carbon, Total Organic	CCV		Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/8/19 05:13:00	N	I
KQ1907859-04	Carbon, Total Organic	CCV		Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/8/19 05:13:00	N	I
KQ1907859-05	Carbon, Total Organic	CCV		Water	24.26 mg/L	10 mL	24.3 mg/L	1					6/8/19 10:23:00	N	I
KQ1907859-05	Carbon, Total Organic	CCV		Water	24.26 mg/L	10 mL	24.3 mg/L	1					6/8/19 10:23:00	N	I
KQ1907859-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 19:33:00	N	I
KQ1907859-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/7/19 19:33:00	N	I

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

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Results Summary

06/13/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638450 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907859-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 00:44:00	N	I
KQ1907859-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 00:44:00	N	I
KQ1907859-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 05:28:00	N	I
KQ1907859-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 05:28:00	N	I
KQ1907859-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 10:38:00	N	I
KQ1907859-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 10:38:00	N	I
KQ1907859-13	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 00:59:00	N	I
KQ1907859-13	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 00:59:00	N	I
KQ1907859-14	Carbon, Total Organic	LCS		Water	25.09 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/8/19 01:13:00	N	I
KQ1907859-14	Carbon, Total Organic	LCS		Water	25.09 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/8/19 01:13:00	N	I
KQ1907859-18	Carbon, Total Organic	MS	K1905124-001	Surface Water	26.64 mg/L	10 mL	26.6 mg/L	1	0.07	0.50	102		6/8/19 00:00:00	N	IV
KQ1907859-19	Carbon, Total Organic	DUP	K1905173-001	Water	0.17 mg/L	10 mL	0.17 mg/L J	1	0.07	0.50		NC	6/7/19 20:43:00	N	I
KQ1907859-20	Carbon, Total Organic	DUP	K1905173-002	Water	0.21 mg/L	10 mL	0.21 mg/L J	1	0.07	0.50		NC	6/7/19 21:11:00	N	I
KQ1907859-21	Carbon, Total Organic	DUP	K1905173-003	Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		NC	6/7/19 21:39:00	N	I
KQ1907859-22	Carbon, Total Organic	DUP	K1905173-004	Water	3.14 mg/L	10 mL	3.14 mg/L	1	0.07	0.50		<1	6/7/19 22:07:00	N	I
KQ1907859-23	Carbon, Total Organic	DUP	K1905173-005	Water	11.07 mg/L	10 mL	111 mg/L	10	0.7	5.0		<1	6/7/19 22:35:00	N	I
KQ1907859-24	Carbon, Total Organic	DUP	K1905124-001	Surface Water	1.03 mg/L	10 mL	1.03 mg/L	1	0.07	0.50		1	6/7/19 23:32:00	N	IV
KQ1907859-25	Carbon, Total Organic	DUP	K1905124-002	Surface Water	1.11 mg/L	10 mL	1.11 mg/L	1	0.07	0.50		8	6/8/19 01:28:00	N	IV
KQ1907859-26	Carbon, Total Organic	DUP	K1905124-003	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/8/19 01:56:00	N	IV
KQ1907859-27	Carbon, Total Organic	DUP	K1905198-001	Ground Water	1.80 mg/L	10 mL	1.80 mg/L	1	0.07	0.50		4	6/8/19 02:24:00	N	IV
KQ1907859-28	Carbon, Total Organic	DUP	K1905198-002	Ground Water	3.89 mg/L	10 mL	3.89 mg/L	1	0.07	0.50		6	6/8/19 02:52:00	N	IV
KQ1907859-29	Carbon, Total Organic	DUP	K1905198-003	Ground Water	107.79 mg/L	10 mL	108 mg/L	1	0.07	0.50		5	6/8/19 03:21:00	N	IV
KQ1907859-30	Carbon, Total Organic	DUP	K1905198-004	Ground Water	3.37 mg/L	10 mL	3.37 mg/L	1	0.07	0.50		115*	6/8/19 03:49:00	N	IV
KQ1907859-31	Carbon, Total Organic	DUP	K1905198-005	Ground Water	58.05 mg/L	10 mL	58.1 mg/L	1	0.07	0.50		5	6/8/19 04:17:00	N	IV
KQ1907859-32	Carbon, Total Organic	DUP	K1905198-006	Ground Water	4.69 mg/L	10 mL	4.69 mg/L	1	0.07	0.50		14*	6/8/19 04:45:00	N	IV
KQ1907859-33	Carbon, Total Organic	DUP	K1905217-001	Water	2.42 mg/L	10 mL	2.42 mg/L	1	0.07	0.50		<1	6/8/19 05:42:00	N	II
KQ1907859-34	Carbon, Total Organic	DUP	K1905217-002	Water	1.24 mg/L	10 mL	1.24 mg/L	1	0.07	0.50		7	6/8/19 06:10:00	N	II
KQ1907859-35	Carbon, Total Organic	DUP	K1905217-003	Water	1.88 mg/L	10 mL	1.88 mg/L	1	0.07	0.50		<1	6/8/19 06:39:00	N	II
KQ1907859-36	Carbon, Total Organic	DUP	K1905217-004	Water	1.50 mg/L	10 mL	1.50 mg/L	1	0.07	0.50		<1	6/8/19 07:07:00	N	II
KQ1907859-37	Carbon, Total Organic	DUP	K1905217-005	Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50		1	6/8/19 07:35:00	N	II
KQ1907859-38	Carbon, Total Organic	DUP	K1905217-006	Water	1.39 mg/L	10 mL	1.39 mg/L	1	0.07	0.50		2	6/8/19 08:03:00	N	II

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638450 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907859-39	Carbon, Total Organic	DUP	KQ1907859-01	Water	1.03 mg/L	10 mL	1.03 mg/L	1	0.07	0.50		1	6/7/19 23:32:00	N	II
KQ1907859-40	Carbon, Total Organic	MS	KQ1907859-01	Water	26.34 mg/L	10 mL	26.3 mg/L	1	0.07	0.50	101		6/8/19 00:00:00	N	II

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638451 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905084-002	Carbon, Total Organic	N/A		Water	7.69 mg/L	10 mL	769 mg/L	100	7	50			6/8/19 09:27:00	N	II
K1905084-003	Carbon, Total Organic	N/A		Water	8.06 mg/L	10 mL	806 mg/L	100	7	50			6/8/19 09:55:00	N	II
K1905114-001	Carbon, Total Organic	N/A		Ground Water	28.61 mg/L	10 mL	28.6 mg/L	1	0.07	0.50			6/8/19 11:22:00	N	IV
K1905114-002	Carbon, Total Organic	N/A		Ground Water	22.42 mg/L	10 mL	22.4 mg/L	1	0.07	0.50			6/8/19 11:50:00	N	IV
K1905114-003	Carbon, Total Organic	N/A		Ground Water	6.15 mg/L	10 mL	615 mg/L	100	7	50			6/8/19 12:18:00	N	IV
K1905114-004	Carbon, Total Organic	N/A		Ground Water	22.43 mg/L	10 mL	22.4 mg/L	1	0.07	0.50			6/8/19 12:46:00	N	IV
K1905114-005	Carbon, Total Organic	N/A		Ground Water	20.61 mg/L	10 mL	20.6 mg/L	1	0.07	0.50			6/8/19 13:42:00	N	IV
K1905114-006	Carbon, Total Organic	N/A		Ground Water	0.26 mg/L	10 mL	26 mg/L J	100	7	50			6/8/19 14:11:00	N	IV
K1905128-001	Carbon, Total Organic	N/A		Surface Water	1.14 mg/L	10 mL	1.14 mg/L	1	0.07	0.50			6/8/19 14:39:00	N	III
K1905128-002	Carbon, Total Organic	N/A		Surface Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.07	0.50			6/8/19 15:37:00	Y	III
K1905128-003	Carbon, Total Organic	N/A		Surface Water	1.15 mg/L	10 mL	1.15 mg/L	1	0.07	0.50			6/8/19 16:34:00	N	III
K1905128-004	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 17:02:00	N	III
K1905215-001	Carbon, Total Organic	N/A		Drinking Water	0.87 mg/L	10 mL	0.87 mg/L	1	0.07	0.50			6/8/19 17:30:00	N	I
K1905215-003	Carbon, Total Organic	N/A		Drinking Water	1.56 mg/L	10 mL	1.56 mg/L	1	0.07	0.50			6/8/19 17:58:00	N	I
K1905217-007	Carbon, Total Organic	N/A		Water	2.11 mg/L	10 mL	2.11 mg/L	1	0.07	0.50			6/8/19 08:31:00	N	II
K1905217-008	Carbon, Total Organic	N/A		Water	2.21 mg/L	10 mL	2.21 mg/L	1	0.07	0.50			6/8/19 08:59:00	N	II
KQ1907861-01	Carbon, Total Organic	CCV		Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/8/19 05:13:00	N	II
KQ1907861-02	Carbon, Total Organic	CCV		Water	24.26 mg/L	10 mL	24.3 mg/L	1					6/8/19 10:23:00	N	II
KQ1907861-03	Carbon, Total Organic	CCV		Water	24.57 mg/L	10 mL	24.6 mg/L	1					6/8/19 15:07:00	N	II
KQ1907861-04	Carbon, Total Organic	CCV		Water	24.22 mg/L	10 mL	24.2 mg/L	1					6/8/19 18:26:00	N	II
KQ1907861-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 05:28:00	N	II
KQ1907861-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 10:38:00	N	II
KQ1907861-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 15:22:00	N	II
KQ1907861-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 18:41:00	N	II
KQ1907861-09	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/8/19 10:52:00	N	II
KQ1907861-10	Carbon, Total Organic	LCS		Water	25.19 mg/L	10 mL	25.2 mg/L	1	0.07	0.50	101		6/8/19 11:07:00	N	II
KQ1907861-11	Carbon, Total Organic	MS	K1905128-002	Surface Water	26.91 mg/L	10 mL	26.9 mg/L	1	0.07	0.50	103		6/8/19 16:05:00	N	III
KQ1907861-12	Carbon, Total Organic	DUP	K1905217-007	Water	2.12 mg/L	10 mL	2.12 mg/L	1	0.07	0.50		<1	6/8/19 08:31:00	N	II
KQ1907861-13	Carbon, Total Organic	DUP	K1905217-008	Water	2.18 mg/L	10 mL	2.18 mg/L	1	0.07	0.50		2	6/8/19 08:59:00	N	II
KQ1907861-14	Carbon, Total Organic	DUP	K1905084-002	Water	7.76 mg/L	10 mL	776 mg/L	100	7	50		<1	6/8/19 09:27:00	N	II

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

Printed 6/12/19 14:13

Results Summary

06/13/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638451 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1907861-15	Carbon, Total Organic	DUP	K1905084-003	Water	8.01 mg/L	10 mL	801 mg/L	100	7	50		<1	6/8/19 09:55:00	N	II
KQ1907861-16	Carbon, Total Organic	DUP	K1905114-001	Ground Water	28.83 mg/L	10 mL	28.8 mg/L	1	0.07	0.50		<1	6/8/19 11:22:00	N	IV
KQ1907861-17	Carbon, Total Organic	DUP	K1905114-002	Ground Water	22.66 mg/L	10 mL	22.7 mg/L	1	0.07	0.50		1	6/8/19 11:50:00	N	IV
KQ1907861-18	Carbon, Total Organic	DUP	K1905114-003	Ground Water	5.93 mg/L	10 mL	593 mg/L	100	7	50		4	6/8/19 12:18:00	N	IV
KQ1907861-19	Carbon, Total Organic	DUP	K1905114-004	Ground Water	22.81 mg/L	10 mL	22.8 mg/L	1	0.07	0.50		2	6/8/19 12:46:00	N	IV
KQ1907861-20	Carbon, Total Organic	DUP	K1905114-005	Ground Water	20.35 mg/L	10 mL	20.3 mg/L	1	0.07	0.50		1	6/8/19 13:42:00	N	IV
KQ1907861-21	Carbon, Total Organic	DUP	K1905114-006	Ground Water	0.05 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/8/19 14:11:00	N	IV
KQ1907861-22	Carbon, Total Organic	DUP	K1905128-001	Surface Water	1.10 mg/L	10 mL	1.10 mg/L	1	0.07	0.50		4	6/8/19 14:39:00	N	III
KQ1907861-23	Carbon, Total Organic	DUP	K1905128-002	Surface Water	1.03 mg/L	10 mL	1.03 mg/L	1	0.07	0.50		1	6/8/19 15:37:00	N	III
KQ1907861-24	Carbon, Total Organic	DUP	K1905128-003	Surface Water	1.11 mg/L	10 mL	1.11 mg/L	1	0.07	0.50		3	6/8/19 16:34:00	N	III
KQ1907861-25	Carbon, Total Organic	DUP	K1905128-004	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/8/19 17:02:00	N	III
KQ1907861-26	Carbon, Total Organic	DUP	K1905215-001	Drinking Water	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50		8	6/8/19 17:30:00	N	I
KQ1907861-27	Carbon, Total Organic	DUP	K1905215-003	Drinking Water	1.61 mg/L	10 mL	1.61 mg/L	1	0.07	0.50		3	6/8/19 17:58:00	N	I

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

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.885	0.0000	24.8845	24.8845	24.9	6/6/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
4	MB1	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
5	MB1d	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
6	MB1t	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
7	MB1q	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
8	[TOC] LCS [24ppm]	1	25.521	0.0000	25.5209	25.5209	26	6/6/2019
9	[TOC] LCS [24ppm]d	1	25.213	0.0000	25.2132	25.2132	25.21	6/6/2019
10	[TOC] LCS [24ppm]t	1	25.485	0.0000	25.4853	25.4853	25.49	6/6/2019
11	[TOC] LCS [24ppm]q	1	25.429	0.0000	25.4286	25.4286	25.4	6/6/2019
12	K1905113-003	1	0.623	0.0000	0.6233	0.6233	0.62	6/6/2019
13	K1905113-003d	1	0.561	0.0000	0.5614	0.5614	0.56	6/6/2019
14	K1905113-003t	1	0.570	0.0000	0.5698	0.5698	0.57	6/6/2019
15	K1905113-003q	1	0.611	0.0000	0.6109	0.6109	0.6	6/6/2019
16	K1905113-004	1	0.551	0.0000	0.5511	0.5511	0.6	6/6/2019
17	K1905113-004d	1	0.555	0.0000	0.5549	0.5549	0.55	6/6/2019
18	K1905113-004t	1	0.535	0.0000	0.5351	0.5351	0.5	6/6/2019
19	K1905113-004q	1	0.525	0.0000	0.5252	0.5252	0.5	6/6/2019
20	K1905113-005	1	0.586	0.0000	0.5860	0.586	0.59	6/6/2019
21	K1905113-005d	1	0.567	0.0000	0.5673	0.5673	0.57	6/6/2019
22	K1905113-005t	1	0.574	0.0000	0.5741	0.5741	0.6	6/6/2019
23	K1905113-005q	1	0.528	0.0000	0.5275	0.5275	0.5	6/6/2019
24	K1905113-006	1	0.584	0.0000	0.5835	0.5835	0.58	6/6/2019
25	K1905113-006d	1	0.572	0.0000	0.5719	0.5719	0.57	6/6/2019

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

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

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

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

		date time
Analyzed By: KD	Date Analyzed 6/6/19	
Reviewed By:	Date Reviewed 06/12/19	

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905113-006t	1	0.592	0.0000	0.5919	0.5919	0.59	6/6/2019
27	K1905113-006q	1	0.627	0.0000	0.6271	0.6271	0.63	6/6/2019
28	K1905113-007	1	10.678	0.0000	10.6780	10.678	10.7	6/6/2019
29	K1905113-007d	1	10.626	0.0000	10.6259	10.6259	10.6	6/6/2019
30	K1905113-007t	1	10.685	0.0000	10.6847	10.6847	10.7	6/6/2019
31	K1905113-007q	1	10.815	0.0000	10.8148	10.8148	10.8	6/6/2019
32	K1905113-008	1	0.028	0.0000	0.0275	0.0275	<0.5	6/6/2019
33	K1905113-008d	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
34	K1905113-008t	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
35	K1905113-008q	1	0.000	0.0000	0.0000	0	<0.5	6/6/2019
36	K1905116-003	1	0.253	0.0000	0.2532	0.2532	<0.5	6/7/2019
37	K1905116-003d	1	0.319	0.0000	0.3188	0.3188	<0.5	6/7/2019
38	K1905116-003t	1	0.338	0.0000	0.3381	0.3381	<0.5	6/7/2019
39	K1905116-003q	1	0.281	0.0000	0.2811	0.2811	<0.5	6/7/2019
40	C] CCV 25 ppm [25 p	1	24.486	0.0000	24.4860	24.486	24.5	6/7/2019
41	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
42	K1905116-004	1	0.135	0.0000	0.1346	0.1346	<0.5	6/7/2019
43	K1905116-004d	1	0.136	0.0000	0.1358	0.1358	<0.5	6/7/2019
44	K1905116-004t	1	0.097	0.0000	0.0966	0.0966	<0.5	6/7/2019
45	K1905116-004q	1	0.102	0.0000	0.1022	0.1022	<0.5	6/7/2019
46	K1905116-005	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
47	K1905116-005d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
48	K1905116-005t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
49	K1905116-005q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
50	K1905116-006	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019

Analyzed By: RR	Date Analyzed 6/6/19
Reviewed By: [signature]	Date Reviewed 06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905116-006d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
52	K1905116-006t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
53	K1905116-006q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
54	K1905116-007	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
55	K1905116-007d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
56	K1905116-007t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
57	K1905116-007q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
58	K1905116-008	1	0.991	0.0000	0.9912	0.9912	1.0	6/7/2019
59	K1905116-008d	1	1.025	0.0000	1.0248	1.0248	1.0	6/7/2019
60	K1905116-008t	1	1.023	0.0000	1.0231	1.0231	1.0	6/7/2019
61	K1905116-008q	1	1.041	0.0000	1.0410	1.041	1.0	6/7/2019
62	K1905184-001	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
63	K1905184-001d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
64	K1905184-001t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
65	K1905184-001q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
66	K1905184-001ms	1	26.150	0.0000	26.1499	26.1499	26.1	6/7/2019
67	K1905184-001msd	1	26.463	0.0000	26.4634	26.4634	26.5	6/7/2019
68	K1905184-001	1	26.383	0.0000	26.3825	26.3825	26.4	6/7/2019
69	K1905184-001	1	26.388	0.0000	26.3878	26.3878	26.4	6/7/2019
70	K1905184-003	1	0.006	0.0000	0.0059	0.0059	<0.5	6/7/2019
71	K1905184-003d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
72	K1905184-003t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
73	K1905184-003q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
74	K1905184-004	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
75	K1905184-004d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019

Analyzed By: [illegible]	Date Analyzed 6/6/19
Reviewed By: [illegible]	Date Reviewed 06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
76	K1905184-004t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
77	K1905184-004q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
78	C] CCV 25 ppm [25 p	1	24.314	0.0000	24.3136	24.3136	24.3	6/7/2019
79	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
80		1		0.0000	0.0000	0	<0.5	
81		1		0.0000	0.0000	0	<0.5	
82		1		0.0000	0.0000	0	<0.5	
83		1		0.0000	0.0000	0	<0.5	
84		1		0.0000	0.0000	0	<0.5	
85		1		0.0000	0.0000	0	<0.5	
86		1		0.0000	0.0000	0	<0.5	
87		1		0.0000	0.0000	0	<0.5	
88		1		0.0000	0.0000	0	<0.5	
89		1		0.0000	0.0000	0	<0.5	
90		1		0.0000	0.0000	0	<0.5	
91		1		0.0000	0.0000	0	<0.5	
92		1		0.0000	0.0000	0	<0.5	
93		1		0.0000	0.0000	0	<0.5	
94		1		0.0000	0.0000	0	<0.5	
95		1		0.0000	0.0000	0	<0.5	
96		1		0.0000	0.0000	0	<0.5	
97		1		0.0000	0.0000	0	<0.5	
98		1		0.0000	0.0000	0	<0.5	
99		1		0.0000	0.0000	0	<0.5	
100		1		0.0000	0.0000	0	<0.5	

Analyzed By: BCP	Date Analyzed 6/6/19
Reviewed By: [signature]	Date Reviewed 06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.314	0.0000	24.3136	24.3136	24.3	6/7/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
4	MB2	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
5	MB2d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
6	MB2t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
7	MB2q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
8	[TOC] LCS [24ppm]	1	25.181	0.0000	25.1813	25.1813	25	6/7/2019
9	[TOC] LCS [24ppm]d	1	25.183	0.0000	25.1831	25.1831	25.18	6/7/2019
10	[TOC] LCS [24ppm]t	1	25.030	0.0000	25.0303	25.0303	25.03	6/7/2019
11	[TOC] LCS [24ppm]q	1	25.101	0.0000	25.1014	25.1014	25.1	6/7/2019
12	K1905184-005	1	0.004	0.0000	0.0043	0.0043	<0.5	6/7/2019
13	K1905184-005d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
14	K1905184-005t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
15	K1905184-005q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
16	K1905184-006	1	12.656	0.0000	12.6563	12.6563	12.7	6/7/2019
17	K1905184-006d	1	12.877	0.0000	12.8765	12.8765	12.88	6/7/2019
18	K1905184-006t	1	12.966	0.0000	12.9658	12.9658	13.0	6/7/2019
19	K1905184-006q	1	13.031	0.0000	13.0305	13.0305	13.0	6/7/2019
20	K1905185-001	1	2.292	0.0000	2.2916	2.2916	2.29	6/7/2019
21	K1905185-001d	1	2.165	0.0000	2.1646	2.1646	2.16	6/7/2019
22	K1905185-001t	1	2.118	0.0000	2.1180	2.118	2.1	6/7/2019
23	K1905185-001q	1	2.123	0.0000	2.1233	2.1233	2.1	6/7/2019
24	K1905185-001ms	1	28.333	0.0000	28.3329	28.3329	28.33	6/7/2019
25	K1905185-001msd	1	28.279	0.0000	28.2793	28.2793	28.28	6/7/2019

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

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

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

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

		date time
Analyzed By: BCD	Date Analyzed	6/6/19
Reviewed By:	Date Reviewed	06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905185-001	1	28.170	0.0000	28.1704	28.1704	28.17	6/7/2019
27	K1905185-001	1	28.162	0.0000	28.1616	28.1616	28.16	6/7/2019
28	K1905185-003	1	0.108	0.0000	0.1083	0.1083	<0.5	6/7/2019
29	K1905185-003d	1	0.099	0.0000	0.0993	0.0993	<0.5	6/7/2019
30	K1905185-003t	1	0.084	0.0000	0.0837	0.0837	<0.5	6/7/2019
31	K1905185-003q	1	0.096	0.0000	0.0963	0.0963	<0.5	6/7/2019
32	K1905185-004	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
33	K1905185-004d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
34	K1905185-004t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
35	K1905185-004q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
36	K1905185-005	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
37	K1905185-005d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
38	K1905185-005t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
39	K1905185-005q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
40	C] CCV 25 ppm [25 p	1	24.064	0.0000	24.0635	24.0635	24.1	6/7/2019
41	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
42	K1905185-006	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
43	K1905185-006d	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
44	K1905185-006t	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
45	K1905185-006q	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
46	C] CCV 25 ppm [25 p	1	23.819	0.0000	23.8186	23.8186	23.8	6/8/2019
47	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: RP	Date Analyzed 6/8/19
Reviewed By:	Date Reviewed 06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.064	0.0000	24.0635	24.0635	24.1	6/7/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/7/2019
4	K1905173-001	1	0.124	0.0000	0.1243	0.1243	<0.5	6/7/2019
5	K1905173-001d	1	0.173	0.0000	0.1727	0.1727	<0.5	6/7/2019
6	K1905173-002	1	0.162	0.0000	0.1616	0.1616	<0.5	6/7/2019
7	K1905173-002d	1	0.206	0.0000	0.2061	0.2061	<0.5	6/7/2019
8	K1905173-003	1	0.104	0.0000	0.1044	0.1044	<0.5	6/7/2019
9	K1905173-003d	1	0.163	0.0000	0.1625	0.1625	<0.5	6/7/2019
10	K1905173-004	1	3.125	0.0000	3.1247	3.1247	3.12	6/7/2019
11	K1905173-004d	1	3.144	0.0000	3.1442	3.1442	3.1	6/7/2019
12	K1905173-005	10	11.078	0.0000	11.0782	110.782	110.78	6/7/2019
13	K1905173-005d	10	11.068	0.0000	11.0680	110.68	110.68	6/7/2019
14	K1905124-001	1	1.013	0.0000	1.0130	1.013	1.01	6/7/2019
15	K1905124-001d	1	1.028	0.0000	1.0278	1.0278	1.0	6/7/2019
16	K1905124-001ms	1	26.636	0.0000	26.6355	26.6355	26.6	6/8/2019
17	C] CCV 25 ppm [25 p	1	23.819	0.0000	23.8186	23.8186	23.82	6/8/2019
18	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
19	MB3	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
20	[TOC] LCS [25ppm]	1	25.088	0.0000	25.0878	25.0878	25.09	6/8/2019
21	K1905124-002	1	1.199	0.0000	1.1987	1.1987	1.20	6/8/2019
22	K1905124-002d	1	1.108	0.0000	1.1078	1.1078	1.1	6/8/2019
23	K1905124-003	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
24	K1905124-003d	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
25	K1905198-001	1	1.876	0.0000	1.8755	1.8755	1.88	6/8/2019

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

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

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

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

		date time
Analyzed By:		Date Analyzed 6/6/19
Reviewed By:		Date Reviewed 06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905198-001d	1	1.801	0.0000	1.8014	1.8014	1.80	6/8/2019
27	K1905198-002	1	4.132	0.0000	4.1320	4.132	4.13	6/8/2019
28	K1905198-002d	1	3.890	0.0000	3.8903	3.8903	3.9	6/8/2019
29	K1905198-003	1	113.099	0.0000	113.0994	113.0994	113.1	6/8/2019
30	K1905198-003d	1	107.785	0.0000	107.7853	107.7853	107.8	6/8/2019
31	K1905198-004	1	12.558	0.0000	12.5577	12.5577	12.6	6/8/2019
32	K1905198-004d	1	3.371	0.0000	3.3714	3.3714	3.4	6/8/2019
33	K1905198-005	1	61.202	0.0000	61.2015	61.2015	61.2	6/8/2019
34	K1905198-005d	1	58.054	0.0000	58.0543	58.0543	58.1	6/8/2019
35	K1905198-006	1	5.412	0.0000	5.4119	5.4119	5.4	6/8/2019
36	K1905198-006d	1	4.693	0.0000	4.6927	4.6927	4.7	6/8/2019
37	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	24.6	6/8/2019
38	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
39	K1905217-001	1	2.419	0.0000	2.4194	2.4194	2.4	6/8/2019
40	K1905217-001d	1	2.419	0.0000	2.4194	2.4194	2.4	6/8/2019
41	K1905217-002	1	1.336	0.0000	1.3362	1.3362	1.3	6/8/2019
42	K1905217-002d	1	1.244	0.0000	1.2437	1.2437	1.2	6/8/2019
43	K1905217-003	1	1.893	0.0000	1.8934	1.8934	1.9	6/8/2019
44	K1905217-003d	1	1.881	0.0000	1.8811	1.8811	1.9	6/8/2019
45	K1905217-004	1	1.506	0.0000	1.5062	1.5062	1.5	6/8/2019
46	K1905217-004d	1	1.498	0.0000	1.4981	1.4981	1.5	6/8/2019
47	K1905217-005	1	1.504	0.0000	1.5041	1.5041	1.5	6/8/2019
48	K1905217-005d	1	1.485	0.0000	1.4845	1.4845	1.5	6/8/2019
49	K1905217-006	1	1.416	0.0000	1.4156	1.4156	1.4	6/8/2019
50	K1905217-006d	1	1.393	0.0000	1.3929	1.3929	1.4	6/8/2019

Analyzed By:	BCP	Date Analyzed	6/6/19
Reviewed By:	[signature]	Date Reviewed	06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	C] CCV 25 ppm [25 p	1	24.262	0.0000	24.2624	24.2624	24.26	6/8/2019
52	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BN	Date Analyzed 6/6/19
Reviewed By: [signature]	Date Reviewed 06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	24.6	6/8/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
4	K1905217-007	1	2.110	0.0000	2.1095	2.1095	2.1	6/8/2019
5	K1905217-007d	1	2.119	0.0000	2.1186	2.1186	2.1	6/8/2019
6	K1905217-008	1	2.214	0.0000	2.2135	2.2135	2.21	6/8/2019
7	K1905217-008d	1	2.176	0.0000	2.1758	2.1758	2.2	6/8/2019
8	K1905084-002	100	7.689	0.0000	7.6889	768.89	769	6/8/2019
9	K1905084-002d	100	7.763	0.0000	7.7632	776.32	776.32	6/8/2019
10	K1905084-003	100	8.055	0.0000	8.0550	805.5	805.50	6/8/2019
11	K1905084-003d	100	8.007	0.0000	8.0068	800.68	800.7	6/8/2019
12	C] CCV 25 ppm [25 p	1	24.262	0.0000	24.2624	24.2624	24.26	6/8/2019
13	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
14	MB4	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
15	[TOC] LCS [25ppm]	1	25.191	0.0000	25.1909	25.1909	25.2	6/8/2019
16	K1905114-001	1	28.615	0.0000	28.6149	28.6149	28.6	6/8/2019
17	K1905114-001d	1	28.828	0.0000	28.8277	28.8277	28.83	6/8/2019
18	K1905114-002	1	22.422	0.0000	22.4217	22.4217	22.4	6/8/2019
19	K1905114-002d	1	22.657	0.0000	22.6569	22.6569	22.7	6/8/2019
20	K1905114-003	100	6.149	0.0000	6.1488	614.88	614.88	6/8/2019
21	K1905114-003d	100	5.929	0.0000	5.9293	592.93	592.93	6/8/2019
22	K1905114-004	1	22.431	0.0000	22.4310	22.431	22.4	6/8/2019
23	K1905114-004d	1	22.814	0.0000	22.8143	22.8143	22.8	6/8/2019
24	K1905114-005	1	20.610	0.0000	20.6101	20.6101	20.61	6/8/2019
25	K1905114-005d	1	20.346	0.0000	20.3462	20.3462	20.35	6/8/2019

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

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

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

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

		date	time
Analyzed By:		Date Analyzed	6/6/19
Reviewed By:		Date Reviewed	06/13/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905114-006	100	0.263	0.0000	0.2634	26.34	26.34	6/8/2019
27	K1905114-006d	100	0.046	0.0000	0.0458	4.58	4.58	6/8/2019
28	K1905128-001	1	1.139	0.0000	1.1392	1.1392	1.1	6/8/2019
29	K1905128-001d	1	1.096	0.0000	1.0964	1.0964	1.1	6/8/2019
30	C] CCV 25 ppm [25 p	1	24.569	0.0000	24.5691	24.5691	24.6	6/8/2019
31	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
32	K1905128-002	1	1.039	0.0000	1.0389	1.0389	1.0	6/8/2019
33	K1905128-002d	1	1.027	0.0000	1.0268	1.0268	1.0	6/8/2019
34	K1905128-002ms	1	26.910	0.0000	26.9096	26.9096	26.9	6/8/2019
35	K1905128-003	1	1.153	0.0000	1.1526	1.1526	1.2	6/8/2019
36	K1905128-003d	1	1.113	0.0000	1.1131	1.1131	1.1	6/8/2019
37	K1905128-004	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
38	K1905128-004d	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
39	K1905215-001	1	0.874	0.0000	0.8737	0.8737	0.9	6/8/2019
40	K1905215-001d	1	0.949	0.0000	0.9489	0.9489	0.9	6/8/2019
41	K1905215-003	1	1.564	0.0000	1.5635	1.5635	1.6	6/8/2019
42	K1905215-003d	1	1.605	0.0000	1.6053	1.6053	1.6	6/8/2019
43	C] CCV 25 ppm [25 p	1	24.217	0.0000	24.2167	24.2167	24.2	6/8/2019
44	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/8/2019
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: KLP	Date Analyzed 6/8/19
Reviewed By: [signature]	Date Reviewed 06/13/19

TOC: 638448, 638449, 638450, 638451

Schedule: 06062019

Version: 7
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/06/06 17:04 - Thursday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1905113-003.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1905113-004.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	K1905113-005.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
6	Sample	K1905113-006.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	K1905113-007.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
8	Sample	K1905113-008.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
9	Sample	K1905116-003.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1905116-004.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
11	Sample	K1905116-005.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
12	Sample	K1905116-006.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
13	Sample	K1905116-007.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
14	Sample	K1905116-008.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
15	Sample	K1905184-001.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
16	Sample	K1905184-001.08 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
17	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
18	Sample	K1905184-003.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
19	Sample	K1905184-004.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
21	Sample	K1905184-005.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
22	Sample	K1905184-006.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
23	Sample	K1905185-001.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
24	Sample	K1905185-001.08 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
25	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
26	Sample	K1905185-003.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
27	Sample	K1905185-004.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
28	Sample	K1905185-005.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1905185-006.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
30	Sample	K1905173-001.09	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1905173-002.09	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1905173-003.09	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1905173-004.09	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1905173-005.09 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1905124-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1905124-001.08 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
38	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

6/13/19

Schedule: 06062019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1905124-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1905124-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1905198-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1905198-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1905198-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1905198-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1905198-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1905198-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1905217-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1905217-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1905217-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1905217-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1905217-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1905217-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1905217-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1905217-008.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1905084-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1905084-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1905114-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1905114-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1905114-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1905114-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	K1905114-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1905114-006.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1905128-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1905128-002.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1905128-002.11 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
69	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
70	Sample	K1905128-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1905128-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	K1905215-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample	K1905215-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 06062019
Thursday, June 06, 2019 12:56 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/06/10 09:28 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	06062019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)		
Comment:			

06/13/19

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/06 12:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.50	16.84	3.35	49.93	08:00
2	TC Clean	6.60	9.90	3.30	49.76	07:16
3	TC Clean	2.11	5.35	3.24	49.76	07:03
4	TC Clean	1.59	4.71	3.12	49.74	07:03

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/06 13:30

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.06	4.06	3.01	49.90	08:00
2	TC Clean	4.22	7.44	3.21	49.71	07:18

3	TC Clean	2.04	5.00	2.96	49.72	07:03
4	TC Clean	1.65	4.60	2.96	49.71	06:59

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/06 14:06

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.21	12.28	3.07	49.88	07:58
2	TC Clean	4.92	8.07	3.16	49.70	07:17
3	TC Clean	1.95	5.08	3.13	49.66	07:01
4	TC Clean	1.60	4.53	2.93	49.64	07:02

Sample Type: Blank (Creating v1264) — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/06/06 14:41

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.38	14.37	2.98	49.79	07:58
2	TC Clean	3.94	6.95	3.01	49.63	07:18
3	TC Clean	1.80	4.87	3.07	49.61	07:02
4	TC Clean	1.06	4.12	3.06	49.58	07:01
5	Reagent Blank	4.20	7.17	2.97	49.61	08:14
6	Acid Blank	1.21	4.29	3.08	49.71	08:02

Sample Type: Sample — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/06 15:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.54	11.45	2.91	49.74	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8845 ppm (PASS)	0.0000 ppm	0%	2019/06/06 16:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8845	248.8450	178.38	181.55	3.17	49.74	10:30

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

Sample Type: Check Standard --> CCB — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/06 16:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.94	10.08	3.15	49.76	10:31

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

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/06 16:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.99	9.11	3.12	49.75	10:26
2	TOC	0.0000	0.0000	5.86	9.05	3.20	49.79	10:26
3	TOC	0.0000	0.0000	5.74	8.70	2.96	49.72	10:26
4	TOC	0.0000	0.0000	5.94	8.84	2.90	49.73	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4120 ppm (PASS)	0.1379 ppm	0.54%	2019/06/06 17:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.5209	255.2092	182.70	185.65	2.96	49.73	10:26
C	TOC	25.0 ppm	2	25.2132	252.1317	180.61	183.59	2.98	49.71	10:27
C	TOC	25.0 ppm	3	25.4853	254.8527	182.46	185.49	3.03	49.69	10:24
C	TOC	25.0 ppm	4	25.4286	254.2855	182.07	185.17	3.10	49.72	10:25

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.1722 ppm	0.0000 ppm	0.0000%	2019/06/06 18:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1722	1.7221	9.96	13.01	3.05	49.71	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1905113-003.08	0.5914 ppm	0.0303 ppm	5.1300%	2019/06/06 18:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6233	6.2331	13.03	16.12	3.09	49.73	10:29
2	TOC	0.5614	5.6143	12.61	15.56	2.95	49.73	10:28
3	TOC	0.5698	5.6983	12.66	15.69	3.03	49.75	10:30
4	TOC	0.6109	6.1093	12.94	15.91	2.97	49.76	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1905113-004.08	0.5416 ppm	0.0139 ppm	2.5700%	2019/06/06 19:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5511	5.5112	12.54	15.79	3.25	49.78	10:26
2	TOC	0.5549	5.5495	12.56	15.69	3.12	49.81	10:31
3	TOC	0.5351	5.3506	12.43	15.58	3.15	49.84	10:27
4	TOC	0.5252	5.2519	12.36	15.53	3.17	49.84	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1905113-005.08	0.5638 ppm	0.0253 ppm	4.5000%	2019/06/06 20:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5860	5.8603	12.77	15.76	2.99	49.89	10:26
2	TOC	0.5673	5.6732	12.65	15.75	3.10	49.91	10:23
3	TOC	0.5741	5.7410	12.69	15.83	3.14	49.94	10:27
4	TOC	0.5275	5.2755	12.38	15.61	3.23	49.96	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1905113-006.08	0.5936 ppm	0.0238 ppm	4.0100%	2019/06/06 21:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5835	5.8353	12.76	15.80	3.04	49.96	10:31
2	TOC	0.5719	5.7189	12.68	15.79	3.12	49.98	10:27
3	TOC	0.5919	5.9193	12.81	15.84	3.03	49.99	10:28
4	TOC	0.6271	6.2714	13.05	16.09	3.04	50.00	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1905113-007.08	10.7008 ppm	0.0804 ppm	0.7500%	2019/06/06 22:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.6780	106.7805	81.28	84.28	3.01	50.02	10:29
2	TOC	10.6259	106.2590	80.92	83.98	3.06	50.06	10:26
3	TOC	10.6847	106.8468	81.32	84.20	2.88	50.09	10:30
4	TOC	10.8148	108.1476	82.21	85.24	3.04	50.11	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1905113-008.08	0.0069 ppm	0.0138 ppm	200.0000%	2019/06/06 23:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0275	0.2754	8.98	12.13	3.15	50.11	10:27
2	TOC	0.0000	0.0000	8.61	11.75	3.13	50.12	10:24

3	TOC	0.0000	0.0000	8.58	11.75	3.17	50.14	10:25
4	TOC	0.0000	0.0000	8.13	11.29	3.15	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1905116-003.08	0.2978 ppm	0.0380 ppm	12.7600%	2019/06/07 00:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2532	2.5324	10.52	13.69	3.17	50.14	10:27
2	TOC	0.3188	3.1879	10.96	13.93	2.97	50.17	10:24
3	TOC	0.3381	3.3809	11.09	14.16	3.07	50.12	10:28
4	TOC	0.2811	2.8108	10.70	13.86	3.16	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4860 ppm (PASS)	0.0000 ppm	0%	2019/06/07 01:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4860	244.8600	175.67	178.84	3.16	50.09	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/07 01:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.37	9.57	3.20	50.15	10:31

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1905116-004.08	0.1173 ppm	0.0208 ppm	17.7300%	2019/06/07 01:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1346	1.3464	9.71	12.93	3.22	50.12	10:29
2	TOC	0.1358	1.3582	9.72	12.77	3.06	50.15	10:28
3	TOC	0.0966	0.9664	9.45	12.69	3.24	50.11	10:29
4	TOC	0.1022	1.0223	9.49	12.76	3.27	50.10	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1905116-005.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 02:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.46	11.61	3.15	50.17	10:30
2	TOC	0.0000	0.0000	8.38	11.63	3.24	50.11	10:28
3	TOC	0.0000	0.0000	8.57	11.78	3.21	50.14	10:28
4	TOC	0.0000	0.0000	8.58	11.75	3.16	50.13	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1905116-006.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 03:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.34	11.37	3.03	50.15	10:27
2	TOC	0.0000	0.0000	8.28	11.49	3.20	50.11	10:28
3	TOC	0.0000	0.0000	8.54	11.61	3.07	50.14	10:30
4	TOC	0.0000	0.0000	8.43	11.58	3.16	50.12	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1905116-007.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 04:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.42	11.69	3.27	50.11	10:26
2	TOC	0.0000	0.0000	8.63	11.79	3.15	50.11	10:29
3	TOC	0.0000	0.0000	8.38	11.60	3.22	50.11	10:30
4	TOC	0.0000	0.0000	8.45	11.56	3.11	50.13	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1905116-008.08	1.0200 ppm	0.0208 ppm	2.0400%	2019/06/07 05:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9912	9.9116	15.52	18.69	3.16	50.16	10:29
2	TOC	1.0248	10.2475	15.75	18.87	3.12	50.10	10:25
3	TOC	1.0231	10.2313	15.74	18.79	3.05	50.11	10:27
4	TOC	1.0410	10.4096	15.86	18.96	3.09	50.14	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1905184-001.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 06:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.02	11.14	3.12	50.03	10:28
2	TOC	0.0000	0.0000	8.06	11.08	3.01	50.00	10:23
3	TOC	0.0000	0.0000	8.22	11.24	3.02	49.94	10:31
4	TOC	0.0000	0.0000	8.28	11.13	2.85	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1905184-001.08 ms	26.3459 ppm	0.1358 ppm	0.5200%	2019/06/07 07:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.1499	261.4990	186.30	189.47	3.17	49.86	10:30
2	TOC	26.4634	264.6340	188.43	191.47	3.04	49.85	10:27
3	TOC	26.3825	263.8252	187.88	190.77	2.89	49.82	10:25
4	TOC	26.3878	263.8782	187.92	190.96	3.05	49.80	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 08:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.83	9.76	2.92	49.78	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1905184-003.08	0.0015 ppm	0.0029 ppm	200.0000%	2019/06/07 08:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0059	0.0589	8.84	11.82	2.98	49.87	10:27
2	TOC	0.0000	0.0000	8.74	11.66	2.92	49.85	10:27
3	TOC	0.0000	0.0000	8.52	11.35	2.84	49.86	10:24
4	TOC	0.0000	0.0000	8.22	11.22	3.00	50.16	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1905184-004.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 09:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.25	11.10	2.86	50.70	10:26
2	TOC	0.0000	0.0000	8.30	11.30	3.01	50.88	10:29
3	TOC	0.0000	0.0000	8.02	11.16	3.14	50.70	10:24
4	TOC	0.0000	0.0000	7.95	11.00	3.05	50.48	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3136 ppm (PASS)	0.0000 ppm	0%	2019/06/07 10:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3136	243.1363	174.50	177.69	3.19	50.23	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0	0 / infinity	0.0000	0.0000	0%	2019/06/07 10:28

					ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.85	9.11	3.26	49.89	10:34

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 10:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.06	8.27	3.21	49.89	10:26
2	TOC	0.0000	0.0000	5.24	8.38	3.14	49.94	10:27
3	TOC	0.0000	0.0000	5.06	8.15	3.10	49.94	10:27
4	TOC	0.0000	0.0000	5.19	8.18	2.99	49.95	10:27

Dilution: 1:10
Blank Contribution: (TC) 8.7960 (IC) (v1264)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.1240 ppm (PASS)	0.0732 ppm	0.29%	2019/06/07 11:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1813	251.8135	180.39	183.52	3.12	49.96	10:30
C	TOC	25.0 ppm	2	25.1831	251.8312	180.40	183.56	3.15	49.94	10:24
C	TOC	25.0 ppm	3	25.0303	250.3035	179.37	182.38	3.02	49.96	10:27
C	TOC	25.0 ppm	4	25.1014	251.0136	179.85	182.92	3.07	49.96	10:29

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1905184-005.08	0.0011 ppm	0.0021 ppm	200.0000%	2019/06/07 12:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0043	0.0427	8.82	11.80	2.97	49.97	10:29
2	TOC	0.0000	0.0000	8.11	11.02	2.91	49.93	10:27
3	TOC	0.0000	0.0000	7.84	10.89	3.05	49.96	10:24
4	TOC	0.0000	0.0000	8.00	11.07	3.07	49.94	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1905184-006.08	12.8823 ppm	0.1633 ppm	1.2700%	2019/06/07 13:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.6563	126.5626	94.71	97.79	3.09	49.96	10:26
2	TOC	12.8765	128.7651	96.20	99.27	3.07	49.93	10:25
3	TOC	12.9658	129.6578	96.81	99.93	3.12	49.86	10:26
4	TOC	13.0305	130.3046	97.25	100.36	3.12	49.99	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1905185-001.08	2.1744 ppm	0.0809 ppm	3.7200%	2019/06/07 14:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2916	22.9156	24.35	27.56	3.21	49.91	10:29
2	TOC	2.1646	21.6457	23.49	26.60	3.11	49.93	10:25
3	TOC	2.1180	21.1801	23.17	26.27	3.09	49.92	10:29
4	TOC	2.1233	21.2332	23.21	26.25	3.04	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1905185-001.08 ms	28.2360 ppm	0.0839 ppm	0.3000%	2019/06/07 15:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.3329	283.3289	201.12	204.28	3.17	49.96	10:26
2	TOC	28.2793	282.7926	200.75	203.86	3.11	49.97	10:29
3	TOC	28.1704	281.7039	200.02	203.28	3.27	49.96	10:23
4	TOC	28.1616	281.6155	199.96	203.23	3.28	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

		Type			(ppmC)		
◈	25	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 16:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.58	9.88	3.31	49.94	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1905185-003.08	0.0969 ppm	0.0102 ppm	10.5000%	2019/06/07 16:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1083	1.0827	9.53	12.69	3.16	49.97	10:26
2	TOC	0.0993	0.9929	9.47	12.66	3.19	49.98	10:26
3	TOC	0.0837	0.8367	9.36	12.51	3.14	50.01	10:28
4	TOC	0.0963	0.9634	9.45	12.55	3.10	50.03	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1905185-004.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 17:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.20	10.37	3.17	50.05	10:27
2	TOC	0.0000	0.0000	7.72	10.75	3.03	50.06	10:28
3	TOC	0.0000	0.0000	7.58	10.48	2.91	50.08	10:28
4	TOC	0.0000	0.0000	7.59	10.52	2.93	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1905185-005.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 18:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.51	10.62	3.11	50.08	10:26
2	TOC	0.0000	0.0000	7.76	10.73	2.97	50.07	10:29
3	TOC	0.0000	0.0000	7.98	11.11	3.13	50.10	10:25
4	TOC	0.0000	0.0000	7.72	10.78	3.06	50.07	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.0635 ppm (PASS)	0.0000 ppm	0%	2019/06/07 19:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.0635	240.6349	172.80	175.89	3.09	50.12	10:32

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

Sample Type: Check Standard --> CCB

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/07 19:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.72	8.76	3.04	50.14	10:30

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1905185-006.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 19:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.60	9.72	3.12	50.15	10:29
2	TOC	0.0000	0.0000	6.72	9.71	2.99	50.16	10:28
3	TOC	0.0000	0.0000	6.70	9.87	3.17	50.18	10:27
4	TOC	0.0000	0.0000	6.56	9.60	3.03	50.14	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1905173-001.09	0.1485 ppm	0.0342 ppm	23.0100%	2019/06/07 20:43

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

1	TOC	0.1243	1.2433	9.64	12.67	3.03	50.20	10:27
2	TOC	0.1727	1.7265	9.97	13.00	3.03	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1905173-002.09	0.1838 ppm	0.0315 ppm	17.1100%	2019/06/07 21:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1616	1.6160	9.89	12.93	3.04	50.15	10:26
2	TOC	0.2061	2.0609	10.20	13.24	3.04	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1905173-003.09	0.1335 ppm	0.0410 ppm	30.7500%	2019/06/07 21:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1044	1.0444	9.51	12.58	3.07	50.13	10:28
2	TOC	0.1625	1.6249	9.90	12.83	2.93	50.18	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1905173-004.09	3.1344 ppm	0.0139 ppm	0.4400%	2019/06/07 22:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1247	31.2465	30.01	33.17	3.17	50.15	10:27
2	TOC	3.1442	31.4425	30.14	33.22	3.08	50.19	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1905173-005.09 10x	11.0731 ppm	0.0072 ppm	0.0600%	2019/06/07 22:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.0782	110.7817	83.99	87.11	3.11	50.16	10:27
2	TOC	11.0680	110.6800	83.92	86.89	2.97	50.15	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/07 23:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.69	8.77	3.08	50.15	10:27
2	TOC	0.0000	0.0000	5.46	8.64	3.18	50.15	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1905124-001.08	1.0204 ppm	0.0105 ppm	1.0300%	2019/06/07 23:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0130	10.1297	15.67	18.83	3.16	50.21	10:30
2	TOC	1.0278	10.2785	15.77	18.93	3.16	50.15	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1905124-001.08 ms	26.6355 ppm	0.0000 ppm	0.0000%	2019/06/08 00:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.6355	266.3547	189.60	192.74	3.15	50.18	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 00:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.88	9.03	3.15	50.16	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8186 ppm (PASS)	0.0000 ppm	0%	2019/06/08 00:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8186	238.1864	171.14	174.29	3.15	50.18	10:32

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/08 00:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.52	8.75	3.23	50.19	10:33

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 00:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.57	7.86	3.30	50.15	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0878 ppm (PASS)	0.0000 ppm	0%	2019/06/08 01:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0878	250.8780	179.76	182.86	3.10	50.17	10:32

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1905124-002.01	1.1533 ppm	0.0643 ppm	5.5700%	2019/06/08 01:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1987	11.9874	16.93	20.18	3.25	50.16	10:27
2	TOC	1.1078	11.0784	16.32	19.49	3.17	50.16	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1905124-003.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 01:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.73	8.71	2.97	50.21	10:26
2	TOC	0.0000	0.0000	5.97	8.88	2.91	50.21	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1905198-001.01	1.8385 ppm	0.0524 ppm	2.8500%	2019/06/08 02:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8755	18.7553	21.53	24.60	3.07	50.22	10:27
2	TOC	1.8014	18.0142	21.02	24.18	3.15	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1905198-002.01	4.0112 ppm	0.1709 ppm	4.2600%	2019/06/08 02:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1320	41.3203	36.84	39.95	3.10	50.19	10:30
2	TOC	3.8903	38.9028	35.20	38.26	3.06	50.19	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1905198-003.01	110.4423 ppm	3.7577 ppm	3.4000%	2019/06/08 03:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	113.0994	1130.9939	776.51	779.48	2.98	50.18	10:30
2	TOC	107.7853	1077.8526	740.44	745.02	4.59	50.19	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1905198-004.01	7.9646 ppm	6.4957 ppm	81.5600%	2019/06/08 03:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.5577	125.5771	94.04	98.18	4.14	50.23	10:29
2	TOC	3.3714	33.7141	31.68	34.88	3.20	50.17	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1905198-005.01	59.6279 ppm	2.2254 ppm	3.7300%	2019/06/08 04:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	61.2015	612.0147	424.23	427.38	3.15	50.17	10:25
2	TOC	58.0543	580.5427	402.86	406.49	3.62	50.19	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1905198-006.01	5.0523 ppm	0.5086 ppm	10.0700%	2019/06/08 04:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.4119	54.1194	45.53	48.95	3.42	50.23	10:27
2	TOC	4.6927	46.9273	40.65	43.75	3.10	50.20	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5900 ppm (PASS)	0.0000 ppm	0%	2019/06/08 05:13

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

	Type		#							Time
B	TOC	25 ppm	1	24.5900	245.9001	176.38	179.64	3.26	50.15	10:28

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/08 05:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.80	11.01	3.21	50.19	10:29

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K1905217-001.01	2.4194 ppm	0.0000 ppm	0.0000%	2019/06/08 05:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4194	24.1943	25.22	28.33	3.11	50.22	10:30
2	TOC	2.4194	24.1943	25.22	28.38	3.16	50.21	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K1905217-002.01	1.2899 ppm	0.0654 ppm	5.0700%	2019/06/08 06:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3362	13.3619	17.87	20.90	3.03	50.15	10:27
2	TOC	1.2437	12.4367	17.24	20.54	3.31	50.21	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	K1905217-003.01	1.8872 ppm	0.0086 ppm	0.4600%	2019/06/08 06:39

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	1.8934	18.9335	21.65	24.84	3.19	50.20	10:28
2	TOC	1.8811	18.8112	21.56	24.71	3.15	50.21	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1905217-004.01	1.5021 ppm	0.0057 ppm	0.3800%	2019/06/08 07:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5062	15.0619	19.02	22.05	3.03	50.15	10:28
2	TOC	1.4981	14.9809	18.96	22.14	3.17	50.15	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1905217-005.01	1.4943 ppm	0.0139 ppm	0.9300%	2019/06/08 07:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5041	15.0413	19.01	22.17	3.16	50.15	10:30
2	TOC	1.4845	14.8454	18.87	21.95	3.08	50.17	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1905217-006.01	1.4042 ppm	0.0160 ppm	1.1400%	2019/06/08 08:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4156	14.1559	18.40	21.57	3.16	50.12	10:26
2	TOC	1.3929	13.9291	18.25	21.41	3.16	50.15	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1905217-007.01	2.1140 ppm	0.0065 ppm	0.3100%	2019/06/08 08:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1095	21.0947	23.12	26.15	3.03	50.17	10:28
2	TOC	2.1186	21.1860	23.18	26.30	3.12	50.14	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2135	22.1348	23.82	27.11	3.29	50.07	10:31
2	TOC	2.1758	21.7576	23.56	26.67	3.10	50.11	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1905084-002.01 100x	7.7260 ppm	0.0525 ppm	0.6800%	2019/06/08 09:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.6889	76.8892	60.99	64.10	3.11	50.10	10:30
2	TOC	7.7632	77.6317	61.49	64.63	3.14	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1905084-003.01 100x	8.0309 ppm	0.0341 ppm	0.4200%	2019/06/08 09:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0550	80.5501	63.47	66.68	3.20	50.14	10:26
2	TOC	8.0068	80.0684	63.15	66.30	3.15	50.08	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2624 ppm (PASS)	0.0000 ppm	0%	2019/06/08 10:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2624	242.6237	174.15	177.26	3.11	50.09	10:31

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

Sample Type: Check Standard --> CCB

From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/08 10:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.80	8.96	3.16	50.02	10:28

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 10:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.88	8.29	3.40	50.06	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1909 ppm (PASS)	0.0000 ppm	0%	2019/06/08 11:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1909	251.9093	180.46	183.48	3.02	50.01	10:28

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1905114-001.01	28.7213 ppm	0.1505 ppm	0.5200%	2019/06/08 11:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.6149	286.1486	203.03	205.92	2.89	49.97	10:29

2	TOC	28.8277	288.2774	204.48	207.54	3.06	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1905114-002.01	22.5393 ppm	0.1664 ppm	0.7400%	2019/06/08 11:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.4217	224.2167	160.99	164.06	3.06	50.07	10:30
2	TOC	22.6569	226.5694	162.59	165.67	3.08	49.98	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1905114-003.01 100x	6.0391 ppm	0.1552 ppm	2.5700%	2019/06/08 12:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.1488	61.4884	50.53	53.71	3.18	49.96	10:28
2	TOC	5.9293	59.2933	49.04	52.09	3.05	49.93	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 12:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.34	10.42	3.08	49.91	10:28
2	TOC	0.0000	0.0000	5.89	9.05	3.16	49.89	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1905114-004.01	22.6226 ppm	0.2711 ppm	1.2000%	2019/06/08 13:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.4310	224.3095	161.06	163.94	2.89	49.91	10:25
2	TOC	22.8143	228.1428	163.66	166.69	3.03	49.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈	64	TOC	K1905114-005.01	20.4781 ppm	0.1866 ppm	0.9100%	2019/06/08 13:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.6101	206.1007	148.70	151.67	2.98	49.86	10:26
2	TOC	20.3462	203.4622	146.90	149.91	3.00	49.83	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1905114-006.01 100x	0.1546 ppm	0.1539 ppm	99.5200%	2019/06/08 14:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2634	2.6340	10.58	13.78	3.19	49.77	10:28
2	TOC	0.0458	0.4581	9.11	12.15	3.05	49.92	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1905128-001.03	1.1178 ppm	0.0303 ppm	2.7100%	2019/06/08 14:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1392	11.3922	16.53	19.75	3.22	49.86	10:27
2	TOC	1.0964	10.9635	16.24	19.33	3.09	49.87	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5691 ppm (PASS)	0.0000 ppm	0%	2019/06/08 15:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5691	245.6909	176.24	179.32	3.08	49.91	10:29

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/08 15:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.51	8.70	3.19	49.89	10:32

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

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1905128-002.11	1.0329 ppm	0.0085 ppm	0.8300%	2019/06/08 15:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0389	10.3890	15.85	19.06	3.21	49.96	10:28
2	TOC	1.0268	10.2682	15.77	18.91	3.14	49.88	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1905128-002.11 ms	26.9096 ppm	0.0000 ppm	0.0000%	2019/06/08 16:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.9096	269.0963	191.46	194.63	3.17	49.93	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 16:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.10	9.20	3.09	49.83	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1905128-003.03	1.1329 ppm	0.0279 ppm	2.4600%	2019/06/08 16:34

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

1	TOC	1.1526	11.5263	16.62	19.51	2.89	49.87	10:28
2	TOC	1.1131	11.1314	16.35	19.36	3.01	49.82	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1905128-004.03	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/08 17:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.75	8.71	2.97	49.84	10:30
2	TOC	0.0000	0.0000	5.92	8.95	3.03	49.95	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1905215-001.02	0.9113 ppm	0.0531 ppm	5.8300%	2019/06/08 17:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8737	8.7375	14.73	17.86	3.13	49.85	10:27
2	TOC	0.9489	9.4888	15.24	18.23	2.99	49.96	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1905215-003.02	1.5844 ppm	0.0296 ppm	1.8700%	2019/06/08 17:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5635	15.6350	19.41	22.42	3.01	49.87	10:25
2	TOC	1.6053	16.0534	19.69	22.69	3.00	49.78	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7960 (IC) (v1264)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2167 ppm (PASS)	0.0000 ppm	0%	2019/06/08 18:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2167	242.1670	173.84	176.81	2.97	49.84	10:29

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

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/08 18:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.44	8.54	3.11	49.81	10:32

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1263	1.2990	1.2790	0.0000	0.0000	0.0000	2019/06/04 12:44	Fusion1 (Fusion1)
v1264	1.3990	1.2110	0.0000	0.0000	0.0000	2019/06/06 15:32	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44

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5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)

Ver Creation: 2019/02/21 17:57

Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

00949158

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/06/08 18:59

ALS Environmental

StarLIMS Run: 638448, 638449, 638450, 638451

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78E

21 % H3PO4: 11-GEN-05-78D

Equipment ID: K-TOC-03

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

FILTER ID: FE1165 5/31/19

Analyzed By: BCD	Date Analyzed: 6/6/19
Reviewed By:	Date Reviewed: 06/13/19

5361, 5369
III I

Work Request # Original ( ) KP05246, 5084, 5126, 5198, 5258, 5259, 5298, 5338, 5126, 5262, 5277, 5278, 5279, 5305, 5360

Tier: IV II III IV IV IV I II III IV IV III III II IV

Date Analyzed: 6/10/19

Analyst: BCD

Analysis: TOC

TOC: 638808, 638810, 638815, 638817

Run #

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: KP05258-6, 5198-3 Sent for RA (Needs dilution)
KP05259-1 sent for RA due to high RSD% from sample carry over.
KP05126-2, 5198-4, 5277-2, 5279-1 Report a high % RSD. However, these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 06/14/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638808 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905246-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 17:23:00	N	IV
K1905246-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 18:18:00	N	IV
K1905246-004	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 19:14:00	N	IV
K1905246-005	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 21:20:00	N	IV
KQ1908058-01	Carbon, Total Organic	CCV		Ground Water	25.15 mg/L	10 mL	25.2 mg/L	1			101		6/10/19 14:47:00	N	IV
KQ1908058-02	Carbon, Total Organic	CCV		Ground Water	27.51 mg/L	10 mL	27.5 mg/L	1			110		6/10/19 22:43:00	N	IV
KQ1908058-03	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:02:00	N	IV
KQ1908058-04	Carbon, Total Organic	CCB		Ground Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			6/10/19 22:58:00	N	IV
KQ1908058-05	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-06	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-07	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-08	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-09	Carbon, Total Organic	LCS		Ground Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		6/10/19 16:12:00	N	IV
KQ1908058-10	Carbon, Total Organic	LCS		Ground Water	24.74 mg/L	10 mL	24.7 mg/L	1	0.07	0.50	99		6/10/19 16:12:00	N	IV
KQ1908058-11	Carbon, Total Organic	LCS		Ground Water	25.10 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/10/19 16:12:00	N	IV
KQ1908058-12	Carbon, Total Organic	LCS		Ground Water	24.96 mg/L	10 mL	25.0 mg/L	1	0.07	0.50	100		6/10/19 16:12:00	N	IV
KQ1908058-13	Carbon, Total Organic	DUP	K1905246-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 17:23:00	N	IV
KQ1908058-14	Carbon, Total Organic	TRP	K1905246-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 17:23:00	N	IV
KQ1908058-15	Carbon, Total Organic	QUAD	K1905246-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 17:23:00	N	IV
KQ1908058-16	Carbon, Total Organic	DUP	K1905246-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 18:18:00	N	IV
KQ1908058-17	Carbon, Total Organic	TRP	K1905246-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 18:18:00	N	IV
KQ1908058-18	Carbon, Total Organic	QUAD	K1905246-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 18:18:00	N	IV
KQ1908058-19	Carbon, Total Organic	DUP	K1905246-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 19:14:00	N	IV

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

06/14/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638808 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908058-20	Carbon, Total Organic	TRP	K1905246-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 19:14:00	N	IV
KQ1908058-21	Carbon, Total Organic	QUAD	K1905246-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 19:14:00	N	IV
KQ1908058-22	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.43 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/10/19 20:10:00	N	IV
KQ1908058-23	Carbon, Total Organic	DUP	K1905246-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 21:20:00	N	IV
KQ1908058-24	Carbon, Total Organic	TRP	K1905246-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 21:20:00	N	IV
KQ1908058-25	Carbon, Total Organic	QUAD	K1905246-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 21:20:00	N	IV
KQ1908058-26	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.58 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	102		6/10/19 20:10:00	N	IV
KQ1908058-27	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.72 mg/L	10 mL	25.7 mg/L	1	0.07	0.50	103		6/10/19 20:10:00	N	IV
KQ1908058-28	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.75 mg/L	10 mL	25.8 mg/L	1	0.07	0.50	103		6/10/19 20:10:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638810 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905084-004	Carbon, Total Organic	N/A		Water	7.86 mg/L	10 mL	786 mg/L	100	7	50			6/11/19 06:17:00	N	II
K1905084-005	Carbon, Total Organic	N/A		Water	6.52 mg/L	10 mL	652 mg/L	100	7	50			6/11/19 06:45:00	N	II
K1905126-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 07:41:00	N	III
K1905126-002	Carbon, Total Organic	N/A		Ground Water	0.13 mg/L	10 mL	0.13 mg/L J	1	0.07	0.50			6/11/19 08:09:00	Y	III
K1905126-003	Carbon, Total Organic	N/A		Ground Water	0.27 mg/L	10 mL	0.27 mg/L J	1	0.07	0.50			6/11/19 09:36:00	N	III
K1905126-004	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 10:04:00	N	III
K1905198-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	2.0 mg/L U	4	0.3	2.0			6/10/19 22:15:00	N	IV
K1905198-004	Carbon, Total Organic	N/A		Ground Water	1.55 mg/L	10 mL	1.55 mg/L	1	0.07	0.50			6/10/19 23:13:00	N	IV
K1905198-005	Carbon, Total Organic	N/A		Ground Water	47.30 mg/L	10 mL	94.6 mg/L	2	0.2	1.0			6/10/19 23:41:00	N	IV
K1905258-001	Carbon, Total Organic	N/A		Water	6.61 mg/L	10 mL	66.1 mg/L	10	0.7	5.0			6/11/19 00:37:00	N	IV
K1905258-002	Carbon, Total Organic	N/A		Water	30.64 mg/L	10 mL	306 mg/L	10	0.7	5.0			6/11/19 01:33:00	N	IV
K1905258-003	Carbon, Total Organic	N/A		Water	12.86 mg/L	10 mL	12.9 mg/L	1	0.07	0.50			6/11/19 02:30:00	N	IV
K1905258-004	Carbon, Total Organic	N/A		Water	4.69 mg/L	10 mL	4.69 mg/L	1	0.07	0.50			6/11/19 02:58:00	N	IV
K1905258-005	Carbon, Total Organic	N/A		Water	4.11 mg/L	10 mL	4.11 mg/L	1	0.07	0.50			6/11/19 03:26:00	N	IV
K1905258-006	Carbon, Total Organic	N/A		Water	63.63 mg/L	10 mL	318 mg/L	5	0.4	2.5			6/11/19 04:53:00	N	IV
K1905259-001	Carbon, Total Organic	N/A		Water	2.92 mg/L	10 mL	2.92 mg/L	1	0.07	0.50			6/11/19 05:21:00	N	IV
K1905298-001	Carbon, Total Organic	N/A		Drinking Water	0.12 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 07:13:00	N	I
K1905338-001	Carbon, Total Organic	N/A		Water	1.66 mg/L	10 mL	1.66 mg/L	1	0.07	0.50			6/11/19 05:49:00	N	II
KQ1908062-01	Carbon, Total Organic	CCV		Water	25.15 mg/L	10 mL	25.2 mg/L	1			101		6/10/19 14:47:00	N	IV
KQ1908062-02	Carbon, Total Organic	CCV		Water	27.51 mg/L	10 mL	27.5 mg/L	1			110		6/10/19 22:43:00	N	IV
KQ1908062-03	Carbon, Total Organic	CCV		Water	24.91 mg/L	10 mL	24.9 mg/L	1			100		6/11/19 03:54:00	N	IV
KQ1908062-04	Carbon, Total Organic	CCV		Water	24.86 mg/L	10 mL	24.9 mg/L	1			100		6/11/19 08:37:00	N	IV
KQ1908062-05	Carbon, Total Organic	CCV		Water	24.61 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 13:35:00	N	IV
KQ1908062-06	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:02:00	N	IV
KQ1908062-07	Carbon, Total Organic	CCB		Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			6/10/19 22:58:00	N	IV
KQ1908062-08	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 04:09:00	N	IV
KQ1908062-09	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 08:52:00	N	IV
KQ1908062-10	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:50:00	N	IV
KQ1908062-11	Carbon, Total Organic	MB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 04:24:00	N	IV
KQ1908062-12	Carbon, Total Organic	LCS		Water	25.36 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	101		6/11/19 04:38:00	N	IV
KQ1908062-13	Carbon, Total Organic	DUP	K1905258-001	Water	6.52 mg/L	10 mL	65.2 mg/L	10	0.7	5.0		1	6/11/19 00:37:00	N	IV
KQ1908062-14	Carbon, Total Organic	DUP	K1905258-002	Water	30.25 mg/L	10 mL	302 mg/L	10	0.7	5.0		1	6/11/19 01:33:00	N	IV

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

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Results Summary

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638810 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908062-15	Carbon, Total Organic	DUP	K1905258-003	Water	12.98 mg/L	10 mL	13.0 mg/L	1	0.07	0.50		<1	6/11/19 02:30:00	N	IV
KQ1908062-16	Carbon, Total Organic	DUP	K1905258-004	Water	4.50 mg/L	10 mL	4.50 mg/L	1	0.07	0.50		4	6/11/19 02:58:00	N	IV
KQ1908062-17	Carbon, Total Organic	DUP	K1905258-005	Water	4.16 mg/L	10 mL	4.16 mg/L	1	0.07	0.50		1	6/11/19 03:26:00	N	IV
KQ1908062-18	Carbon, Total Organic	DUP	K1905258-006	Water	63.10 mg/L	10 mL	316 mg/L	5	0.4	2.5		<1	6/11/19 04:53:00	N	IV
KQ1908062-19	Carbon, Total Organic	DUP	K1905259-001	Water	2.60 mg/L	10 mL	2.60 mg/L	1	0.07	0.50		12*	6/11/19 05:21:00	N	IV
KQ1908062-20	Carbon, Total Organic	DUP	K1905338-001	Water	1.64 mg/L	10 mL	1.64 mg/L	1	0.07	0.50		1	6/11/19 05:49:00	N	II
KQ1908062-21	Carbon, Total Organic	DUP	K1905084-004	Water	7.95 mg/L	10 mL	795 mg/L	100	7	50		1	6/11/19 06:17:00	N	II
KQ1908062-22	Carbon, Total Organic	DUP	K1905084-005	Water	6.46 mg/L	10 mL	646 mg/L	100	7	50		<1	6/11/19 06:45:00	N	II
KQ1908062-23	Carbon, Total Organic	DUP	K1905298-001	Drinking Water	0.05 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 07:13:00	N	I
KQ1908062-24	Carbon, Total Organic	DUP	K1905126-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 07:41:00	N	III
KQ1908062-25	Carbon, Total Organic	DUP	K1905126-002	Ground Water	0.18 mg/L	10 mL	0.18 mg/L J	1	0.07	0.50		33*	6/11/19 08:09:00	N	III
KQ1908062-26	Carbon, Total Organic	DUP	K1905126-003	Ground Water	0.25 mg/L	10 mL	0.25 mg/L J	1	0.07	0.50		7	6/11/19 09:36:00	N	III
KQ1908062-27	Carbon, Total Organic	DUP	K1905126-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 10:04:00	N	III
KQ1908062-28	Carbon, Total Organic	MS	K1905126-002	Ground Water	25.89 mg/L	10 mL	25.9 mg/L	1	0.07	0.50	103		6/11/19 09:07:00	N	III
KQ1908062-29	Carbon, Total Organic	DUP	K1905198-003	Ground Water	-0.01 mg/L	10 mL	2.0 mg/L U	4	0.3	2.0		NC	6/10/19 22:15:00	N	IV
KQ1908062-30	Carbon, Total Organic	DUP	K1905198-004	Ground Water	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		19*	6/10/19 23:13:00	N	IV
KQ1908062-31	Carbon, Total Organic	DUP	K1905198-005	Ground Water	47.09 mg/L	10 mL	94.2 mg/L	2	0.2	1.0		<1	6/10/19 23:41:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638815 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905126-005	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 10:32:00	N	III
K1905126-006	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 11:00:00	N	III
K1905126-007	Carbon, Total Organic	N/A		Ground Water	0.07 mg/L	10 mL	0.07 mg/L J	1	0.07	0.50			6/11/19 11:28:00	N	III
K1905126-008	Carbon, Total Organic	N/A		Ground Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50			6/11/19 11:56:00	N	III
K1905126-009	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 12:24:00	N	III
K1905262-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 12:53:00	N	IV
K1905262-002	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 14:19:00	N	IV
K1905277-001	Carbon, Total Organic	N/A		Ground Water	0.33 mg/L	10 mL	0.33 mg/L J	1	0.07	0.50			6/11/19 14:48:00	Y	IV
K1905277-002	Carbon, Total Organic	N/A		Ground Water	0.36 mg/L	10 mL	0.36 mg/L J	1	0.07	0.50			6/11/19 15:45:00	N	IV
K1905277-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 16:13:00	N	IV
KQ1908063-01	Carbon, Total Organic	MS	K1905277-001	Ground Water	25.85 mg/L	10 mL	25.9 mg/L	1	0.07	0.50	102		6/11/19 15:16:00	N	IV
KQ1908063-02	Carbon, Total Organic	DUP	K1905277-001	Ground Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50		9	6/11/19 14:48:00	N	IV
KQ1908063-03	Carbon, Total Organic	CCV		Ground Water	24.86 mg/L	10 mL	24.9 mg/L	1			100		6/11/19 08:37:00	N	III
KQ1908063-04	Carbon, Total Organic	CCV		Ground Water	24.61 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 13:21:00	N	III
KQ1908063-05	Carbon, Total Organic	CCV		Ground Water	24.69 mg/L	10 mL	24.7 mg/L	1			99		6/11/19 17:24:00	N	III
KQ1908063-06	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 08:52:00	N	III
KQ1908063-07	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:35:00	N	III
KQ1908063-08	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 17:39:00	N	III
KQ1908063-09	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:50:00	N	III
KQ1908063-10	Carbon, Total Organic	LCS		Ground Water	25.06 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/11/19 14:05:00	N	III
KQ1908063-11	Carbon, Total Organic	DUP	K1905126-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 10:32:00	N	III
KQ1908063-12	Carbon, Total Organic	DUP	K1905126-006	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 11:00:00	N	III
KQ1908063-13	Carbon, Total Organic	DUP	K1905126-007	Ground Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 11:28:00	N	III

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

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Results Summary

06/14/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638815 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908063-14	Carbon, Total Organic	DUP	K1905126-008	Ground Water	0.33 mg/L	10 mL	0.33 mg/L J	1	0.07	0.50		8	6/11/19 11:56:00	N	III
KQ1908063-15	Carbon, Total Organic	DUP	K1905126-009	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 12:24:00	N	III
KQ1908063-16	Carbon, Total Organic	DUP	K1905262-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 12:53:00	N	IV
KQ1908063-17	Carbon, Total Organic	DUP	K1905262-002	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 14:19:00	N	IV
KQ1908063-18	Carbon, Total Organic	DUP	K1905277-002	Ground Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50		12*	6/11/19 15:45:00	N	IV
KQ1908063-19	Carbon, Total Organic	DUP	K1905277-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 16:13:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638817 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905278-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 16:41:00	Y	III
K1905278-002	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 17:54:00	N	III
K1905278-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 18:22:00	N	III
K1905279-001	Carbon, Total Organic	N/A		Ground Water	0.49 mg/L	10 mL	0.49 mg/L J	1	0.07	0.50			6/11/19 18:50:00	N	III
K1905305-001	Carbon, Total Organic	N/A		Water	5.67 mg/L	10 mL	5.67 mg/L	1	0.07	0.50			6/11/19 19:18:00	N	II
K1905360-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 19:46:00	N	IV
K1905361-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 20:14:00	N	III
K1905369-001	Carbon, Total Organic	N/A		Water	5.21 mg/L	10 mL	10.4 mg/L	2	0.2	1.0			6/11/19 20:42:00	N	I
K1905369-002	Carbon, Total Organic	N/A		Water	13.49 mg/L	10 mL	13.5 mg/L	1	0.07	0.50			6/11/19 21:10:00	N	I
K1905369-003	Carbon, Total Organic	N/A		Water	1.77 mg/L	10 mL	1.77 mg/L	1	0.07	0.50			6/11/19 21:38:00	N	I
K1905369-004	Carbon, Total Organic	N/A		Water	9.26 mg/L	10 mL	18.5 mg/L	2	0.2	1.0			6/11/19 22:06:00	N	I
K1905369-005	Carbon, Total Organic	N/A		Water	10.02 mg/L	10 mL	10.0 mg/L	1	0.07	0.50			6/11/19 23:33:00	N	I
K1905369-006	Carbon, Total Organic	N/A		Water	13.53 mg/L	10 mL	27.1 mg/L	2	0.2	1.0			6/12/19 00:01:00	N	I
K1905369-007	Carbon, Total Organic	N/A		Water	27.08 mg/L	10 mL	54.2 mg/L	2	0.2	1.0			6/12/19 00:29:00	N	I
K1905369-008	Carbon, Total Organic	N/A		Water	9.58 mg/L	10 mL	19.2 mg/L	2	0.2	1.0			6/12/19 00:58:00	N	I
K1905369-009	Carbon, Total Organic	N/A		Water	27.74 mg/L	10 mL	27.7 mg/L	1	0.07	0.50			6/12/19 01:26:00	N	I
KQ1908064-01	Carbon, Total Organic	CCV		Ground Water	24.61 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 13:21:00	N	III
KQ1908064-02	Carbon, Total Organic	CCV		Ground Water	24.69 mg/L	10 mL	24.7 mg/L	1			99		6/11/19 17:24:00	N	III
KQ1908064-03	Carbon, Total Organic	CCV		Ground Water	24.59 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 22:34:00	N	III
KQ1908064-04	Carbon, Total Organic	CCV		Ground Water	25.23 mg/L	10 mL	25.2 mg/L	1			101		6/12/19 01:54:00	N	III
KQ1908064-05	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:35:00	N	III
KQ1908064-06	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 17:39:00	N	III
KQ1908064-07	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 22:49:00	N	III
KQ1908064-08	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/12/19 02:08:00	N	III
KQ1908064-09	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 23:04:00	N	III
KQ1908064-10	Carbon, Total Organic	LCS		Ground Water	25.08 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/11/19 23:18:00	N	III
KQ1908064-11	Carbon, Total Organic	DUP	K1905278-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 16:41:00	N	III

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

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Results Summary

06/14/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638817 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908064-12	Carbon, Total Organic	MS	K1905278-001	Ground Water	25.08 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/11/19 17:10:00	N	III
KQ1908064-13	Carbon, Total Organic	DUP	K1905278-002	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 17:54:00	N	III
KQ1908064-14	Carbon, Total Organic	DUP	K1905278-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 18:22:00	N	III
KQ1908064-15	Carbon, Total Organic	DUP	K1905279-001	Ground Water	0.55 mg/L	10 mL	0.55 mg/L	1	0.07	0.50		11*	6/11/19 18:50:00	N	III
KQ1908064-16	Carbon, Total Organic	DUP	K1905305-001	Water	5.61 mg/L	10 mL	5.61 mg/L	1	0.07	0.50		1	6/11/19 19:18:00	N	II
KQ1908064-17	Carbon, Total Organic	DUP	K1905360-001	Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 19:46:00	N	III
KQ1908064-18	Carbon, Total Organic	DUP	K1905361-001	Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 20:14:00	N	III
KQ1908064-19	Carbon, Total Organic	DUP	K1905369-001	Water	5.20 mg/L	10 mL	10.4 mg/L	2	0.2	1.0		<1	6/11/19 20:42:00	N	I
KQ1908064-20	Carbon, Total Organic	DUP	K1905369-002	Water	13.23 mg/L	10 mL	13.2 mg/L	1	0.07	0.50		2	6/11/19 21:10:00	N	I
KQ1908064-21	Carbon, Total Organic	DUP	K1905369-003	Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50		1	6/11/19 21:38:00	N	I
KQ1908064-22	Carbon, Total Organic	DUP	K1905369-004	Water	9.13 mg/L	10 mL	18.3 mg/L	2	0.2	1.0		1	6/11/19 22:06:00	N	I
KQ1908064-23	Carbon, Total Organic	DUP	K1905369-005	Water	9.62 mg/L	10 mL	9.62 mg/L	1	0.07	0.50		4	6/11/19 23:33:00	N	I
KQ1908064-24	Carbon, Total Organic	DUP	K1905369-006	Water	13.51 mg/L	10 mL	27.0 mg/L	2	0.2	1.0		<1	6/12/19 00:01:00	N	I
KQ1908064-25	Carbon, Total Organic	DUP	K1905369-007	Water	26.81 mg/L	10 mL	53.6 mg/L	2	0.2	1.0		<1	6/12/19 00:29:00	N	I
KQ1908064-26	Carbon, Total Organic	DUP	K1905369-008	Water	9.35 mg/L	10 mL	18.7 mg/L	2	0.2	1.0		2	6/12/19 00:58:00	N	I
KQ1908064-27	Carbon, Total Organic	DUP	K1905369-009	Water	27.62 mg/L	10 mL	27.6 mg/L	1	0.07	0.50		<1	6/12/19 01:26:00	N	I

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

0.207	OBSERVATIONS 15	ABOVE
0.000	STD Deviation 0.05347	0
0.000	AVERAGE 0.01381	0
0.000	UCL 0.06728	0
0.000	LCL -0.03967	0
0.000		0
0.000		0
0.000	OBSERVATIONS 0	0
0.000	STD Deviation 0.00000	0
0.000	AVERAGE #DIV/0!	0
0.000	UCL #DIV/0!	0
0.000	LCL #DIV/0!	0
0.000		0
0.000		0
0.000	OBSERVATIONS 0	0
	STD Deviation 0.00000	0
	AVERAGE #DIV/0!	0
	UCL #DIV/0!	0
	LCL #DIV/0!	0
		0
		0
	OBSERVATIONS 0	0
	STD Deviation #DIV/0!	0
	AVERAGE #DIV/0!	0
		0
		0
		0
		0
		0

06/14/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	25.166	0.0138	25.1522	25.15219	25.2	6/10/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
4	MB1	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
5	MB1d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
6	MB1t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
7	MB1q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
8	[TOC] LCS [24ppm]	1	24.636	0.0138	24.6226	24.62259	25	6/10/2019
9	[TOC] LCS [24ppm]d	1	24.757	0.0138	24.7428	24.74279	24.74	6/10/2019
10	[TOC] LCS [24ppm]t	1	25.110	0.0138	25.0962	25.09619	25.10	6/10/2019
11	[TOC] LCS [24ppm]q	1	24.975	0.0138	24.9613	24.96129	25.0	6/10/2019
12	K1905246-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
13	K1905246-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
14	K1905246-001t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
15	K1905246-001q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
16	K1905246-003	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
17	K1905246-003d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
18	K1905246-003t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
19	K1905246-003q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
20	K1905246-004	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
21	K1905246-004d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
22	K1905246-004t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
23	K1905246-004q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
24	K1905246-004ms	1	25.447	0.0138	25.4335	25.43349	25.43	6/10/2019
25	K1905246-004msd	1	25.594	0.0138	25.5797	25.57969	25.58	6/10/2019

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

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

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

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

	date	time
Analyzed By: KCP	Date Analyzed 6/10/19	
Reviewed By: [signature]	Date Reviewed 06/19/19	

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905246-004	1	25.734	0.0138	25.7198	25.71979	25.72	6/10/2019
27	K1905246-004	1	25.764	0.0138	25.7504	25.75039	25.75	6/10/2019
28	K1905246-005	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
29	K1905246-005d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
30	K1905246-005t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
31	K1905246-005q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
32	C] CCV 25 ppm [25 p	1	27.519	0.0138	27.5054	27.50539	27.5	6/10/2019
33	[TOC] CCB [0 ppm]	1	0.207	0.0138	0.1933	0.19329	<0.5	6/10/2019
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: BLP	Date Analyzed 6/10/19
Reviewed By:	Date Reviewed 06/14/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	25.166	0.0138	25.1522	25.15219	25.2	6/10/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
4	K1905198-003	4	0.000	0.0138	-0.0138	-0.05524	<0.5	6/10/2019
5	K1905198-003d	4	0.000	0.0138	-0.0138	-0.05524	<0.5	6/10/2019
6	C] CCV 25 ppm [25 p	1	27.519	0.0138	27.5054	27.50539	27.51	6/10/2019
7	[TOC] CCB [0 ppm]	1	0.207	0.0138	0.1933	0.19329	<0.5	6/10/2019
8	K1905198-004	1	1.560	0.0138	1.5457	1.54569	2	6/10/2019
9	K1905198-004d	1	1.296	0.0138	1.2820	1.28199	1.28	6/10/2019
10	K1905198-005	2	47.316	0.0138	47.3022	94.60438	94.60	6/10/2019
11	K1905198-005d	2	47.104	0.0138	47.0906	94.18118	94.2	6/10/2019
12	K1905258-001	10	6.622	0.0138	6.6084	66.0839	66.08	6/11/2019
13	K1905258-001d	10	6.531	0.0138	6.5170	65.1699	65.17	6/11/2019
14	K1905258-002	10	30.649	0.0138	30.6355	306.3549	306.35	6/11/2019
15	K1905258-002d	10	30.260	0.0138	30.2457	302.4569	302.5	6/11/2019
16	K1905258-003	1	12.874	0.0138	12.8601	12.86009	12.9	6/11/2019
17	K1905258-003d	1	12.994	0.0138	12.9801	12.98009	12.98	6/11/2019
18	K1905258-004	1	4.703	0.0138	4.6889	4.68889	4.7	6/11/2019
19	K1905258-004d	1	4.518	0.0138	4.5042	4.50419	4.5	6/11/2019
20	K1905258-005	1	4.124	0.0138	4.1104	4.11039	4.11	6/11/2019
21	K1905258-005d	1	4.170	0.0138	4.1565	4.15649	4.16	6/11/2019
22	C] CCV 25 ppm [25 p	1	24.924	0.0138	24.9103	24.91029	24.9	6/11/2019
23	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
24	MB2	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
25	[TOC] LCS [24ppm]	1	25.379	0.0138	25.3648	25.36479	25.36	6/11/2019

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

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

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

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

	date	time
Analyzed By: BP	Date Analyzed 6/10/19	
Reviewed By:	Date Reviewed 06/14/19	

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ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905258-006	5	63.641	0.0138	63.6273	318.13645	318.14	6/11/2019
27	K1905258-006d	5	63.117	0.0138	63.1030	315.51495	315.51	6/11/2019
28	K1905259-001	1	2.937	0.0138	2.9230	2.92299	2.9	6/11/2019
29	K1905259-001d	1	2.615	0.0138	2.6010	2.60099	2.6	6/11/2019
30	K1905338-001	1	1.671	0.0138	1.6567	1.65669	1.7	6/11/2019
31	K1905338-001d	1	1.650	0.0138	1.6360	1.63599	1.6	6/11/2019
32	K1905084-004	100	7.870	0.0138	7.8565	785.649	785.6	6/11/2019
33	K1905084-004d	100	7.963	0.0138	7.9490	794.899	794.9	6/11/2019
34	K1905084-005	100	6.537	0.0138	6.5231	652.309	652.3	6/11/2019
35	K1905084-005d	100	6.472	0.0138	6.4586	645.859	645.9	6/11/2019
36	K1905298-001	1	0.135	0.0138	0.1211	0.12109	<0.5	6/11/2019
37	K1905298-001d	1	0.067	0.0138	0.0532	0.05319	<0.5	6/11/2019
38	K1905126-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
39	K1905126-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
40	K1905126-002	1	0.140	0.0138	0.1264	0.12639	<0.5	6/11/2019
41	K1905126-002d	1	0.190	0.0138	0.1762	0.17619	<0.5	6/11/2019
42	C] CCV 25 ppm [25 p	1	24.876	0.0138	24.8620	24.86199	24.9	6/11/2019
43	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
44	K1905126-002ms	1	25.907	0.0138	25.8933	25.89329	25.9	6/11/2019
45	K1905126-003	1	0.280	0.0138	0.2660	0.26599	<0.5	6/11/2019
46	K1905126-003d	1	0.262	0.0138	0.2481	0.24809	<0.5	6/11/2019
47	K1905126-004	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
48	K1905126-004d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
49	C] CCV 25 ppm [25 p	1	24.628	0.0138	24.6141	24.61409	24.6	6/11/2019
50	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019

Analyzed By: BCD	Date Analyzed 6/19/19
Reviewed By:	Date Reviewed 06/18 14/19 TH

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.876	0.0138	24.8620	24.86199	24.9	6/11/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
4	K1905126-005	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
5	K1905126-005d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
6	K1905126-006	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
7	K1905126-006d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
8	K1905126-007	1	0.085	0.0138	0.0711	0.07109	<0.5	6/11/2019
9	K1905126-007d	1	0.023	0.0138	0.0095	0.00949	<0.5	6/11/2019
10	K1905126-008	1	0.314	0.0138	0.3000	0.29999	<0.5	6/11/2019
11	K1905126-008d	1	0.339	0.0138	0.3252	0.32519	<0.5	6/11/2019
12	K1905126-009	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
13	K1905126-009d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
14	K1905262-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
15	K1905262-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
16	C] CCV 25 ppm [25 p	1	24.628	0.0138	24.6141	24.61409	24.6	6/11/2019
17	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
18	MB3	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
19	[TOC] LCS [25ppm]	1	25.069	0.0138	25.0556	25.05559	25.1	6/11/2019
20	K1905262-002	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
21	K1905262-002d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
22	K1905277-001	1	0.344	0.0138	0.3302	0.33019	<0.5	6/11/2019
23	K1905277-001d	1	0.315	0.0138	0.3010	0.30099	<0.5	6/11/2019
24	K1905277-001ms	1	25.866	0.0138	25.8518	25.85179	25.85	6/11/2019
25	K1905277-002	1	0.375	0.0138	0.3611	0.36109	<0.5	6/11/2019

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

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

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

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

		date	time
Analyzed By: BLD		Date Analyzed 6/10/19	
Reviewed By:		Date Reviewed 06/14/19	

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905277-002d	1	0.333	0.0138	0.3193	0.31929	<0.5	6/11/2019
27	K1905277-003	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
28	K1905277-003d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
29	C] CCV 25 ppm [25 p	1	24.708	0.0138	24.6941	24.69409	24.7	6/11/2019
30	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BD	Date Analyzed	6/10/19
Reviewed By:		Date Reviewed	6/14/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.628	0.0138	24.6141	24.61409	24.6	6/11/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
4	K1905278-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
5	K1905278-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
6	K1905278-001ms	1	25.097	0.0138	25.0836	25.08359	25.08	6/11/2019
7	C] CCV 25 ppm [25 p	1	24.708	0.0138	24.6941	24.69409	24.7	6/11/2019
8	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
9	K1905278-002	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
10	K1905278-002d	1	0.009	0.0138	-0.0050	-0.00501	<0.5	6/11/2019
11	K1905278-003	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
12	K1905278-003d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
13	K1905279-001	1	0.506	0.0138	0.4918	0.49179	<0.5	6/11/2019
14	K1905279-001d	1	0.561	0.0138	0.5475	0.54749	0.55	6/11/2019
15	K1905305-001	1	5.683	0.0138	5.6692	5.66919	5.7	6/11/2019
16	K1905305-001d	1	5.625	0.0138	5.6109	5.61089	5.6	6/11/2019
17	K1905360-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
18	K1905360-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
19	K1905361-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
20	K1905361-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
21	K1905369-001	2	5.225	0.0138	5.2116	10.42318	10.42	6/11/2019
22	K1905369-001d	2	5.217	0.0138	5.2032	10.40638	10.4	6/11/2019
23	K1905369-002	1	13.506	0.0138	13.4921	13.49209	13.5	6/11/2019
24	K1905369-002d	1	13.245	0.0138	13.2307	13.23069	13.23	6/11/2019
25	K1905369-003	1	1.788	0.0138	1.7744	1.77439	1.77	6/11/2019

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

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

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

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

		date	time
Analyzed By: BCB	Date Analyzed	6/10/19	
Reviewed By: [signature]	Date Reviewed	06/14/19	

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905369-003d	1	1.767	0.0138	1.7527	1.75269	1.75	6/11/2019
27	K1905369-004	2	9.272	0.0138	9.2581	18.51618	18.52	6/11/2019
28	K1905369-004d	2	9.143	0.0138	9.1287	18.25738	18.3	6/11/2019
29	C] CCV 25 ppm [25 p	1	24.605	0.0138	24.5909	24.59089	24.6	6/11/2019
30	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
31	MB4	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
32	[TOC] LCS [25ppm]	1	25.095	0.0138	25.0808	25.08079	25.1	6/11/2019
33	K1905369-005	1	10.033	0.0138	10.0194	10.01939	10.0	6/11/2019
34	K1905369-005d	1	9.637	0.0138	9.6227	9.62269	9.6	6/11/2019
35	K1905369-006	2	13.541	0.0138	13.5276	27.05518	27.1	6/12/2019
36	K1905369-006d	2	13.525	0.0138	13.5114	27.02278	27.0	6/12/2019
37	K1905369-007	2	27.089	0.0138	27.0756	54.15118	54.2	6/12/2019
38	K1905369-007d	2	26.827	0.0138	26.8130	53.62598	53.6	6/12/2019
39	K1905369-008	2	9.595	0.0138	9.5814	19.16278	19.2	6/12/2019
40	K1905369-008d	2	9.361	0.0138	9.3469	18.69378	18.7	6/12/2019
41	K1905369-009	1	27.755	0.0138	27.7409	27.74089	27.7	6/12/2019
42	K1905369-009d	1	27.636	0.0138	27.6218	27.62179	27.6	6/12/2019
43	C] CCV 25 ppm [25 p	1	25.243	0.0138	25.2287	25.22869	25.2	6/12/2019
44	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/12/2019
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCD	Date Analyzed	6/10/19
Reviewed By:		Date Reviewed	06/14/19

TOC: 638808, 638810, 638815, 638817

Schedule: 06102019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/06/10 14:58 - Monday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1905246-001.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1905246-003.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	K1905246-004.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
6	Sample	K1905246-004.08 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
8	Sample	K1905246-005.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
9	Sample	K1905198-003.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1905198-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1905198-005.01 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1905258-001.01 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1905258-001.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1905258-002.01 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1905258-002.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1905258-002.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1905258-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1905258-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1905258-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1905258-006.01 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1905259-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1905338-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1905084-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1905084-005.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1905298-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1905126-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1905126-002.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1905126-002.10 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	K1905126-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1905126-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1905126-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1905126-006.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1905126-007.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1905126-008.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1905126-009.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1905262-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

06/14/19

Schedule: 06102019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1905262-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1905277-001.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1905277-001.07 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
43	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
44	Sample	K1905277-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1905277-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1905278-001.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1905278-001.10 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1905278-002.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1905278-003.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1905279-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1905305-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1905360-001.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1905361-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1905369-001.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1905369-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1905369-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1905369-004.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1905369-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1905369-006.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1905369-007.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1905369-008.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1905369-009.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 06102019
Monday, June 10, 2019 11:35 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/06/12 09:06 - Wednesday

Report Summary Information

Company Location: Gen Chem Lab
Schedule Name: 06102019
Instrument Name: Fusion1
Report Version: 1 of 1
Report Creation by Operators (schedule version): Fusion1 (Fusion1) (v2), Fusion1 (Fusion1) (v3), Fusion1 (Fusion1) (v4), Fusion1 (Fusion1) (v5), Fusion1 (Fusion1) (v6), Fusion1 (Fusion1) (v7), Fusion1 (Fusion1) (v8)
Comment:

Engine Version: 1.1.5.1
Firmware Version: 1.2.0696
Connection: RS232 COM1

06/14/19

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/10 11:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.10	19.05	5.96	49.89	08:00
2	TC Clean	10.04	13.22	3.18	49.69	07:17
3	TC Clean	2.58	5.76	3.18	49.62	07:02
4	TC Clean	1.54	4.74	3.19	49.82	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/10 12:10

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.40	15.52	3.12	49.83	07:59

2	TC Clean	4.03	7.15	3.12	49.77	07:17
3	TC Clean	1.73	4.78	3.05	49.80	07:02
4	TC Clean	1.09	4.26	3.17	49.70	07:01

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/10 12:44

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.96	3.91	2.95	49.91	07:58
2	TC Clean	3.32	6.45	3.13	49.77	07:17
3	TC Clean	1.69	4.71	3.02	49.76	07:02
4	TC Clean	1.63	4.45	2.82	49.80	07:03

Sample Type: Blank (Creating v1265) — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/06/10 13:42

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.85	12.74	2.90	49.71	05:29
2	TC Clean	4.64	7.74	3.11	49.84	07:16
3	TC Clean	1.95	4.81	2.86	49.87	07:01
4	TC Clean	1.13	4.26	3.13	49.92	07:01
5	Reagent Blank	3.40	6.47	3.07	49.91	08:12
6	Acid Blank	1.23	4.37	3.15	49.64	05:26

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 14:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.17	11.31	3.15	50.09	10:33

Dilution **Blank Contribution** **Method** **Calibration**

1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1660 ppm (PASS)	0.0000 ppm	0%	2019/06/10 14:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1660	251.6603	180.29	183.46	3.17	50.15	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/10 15:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.10	9.37	3.28	50.13	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 15:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.40	8.57	3.16	50.26	10:29
2	TOC	0.0000	0.0000	5.08	8.36	3.28	50.19	10:25
3	TOC	0.0000	0.0000	5.33	8.40	3.07	50.22	10:30
4	TOC	0.0000	0.0000	5.16	8.35	3.19	50.30	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.8695 ppm (PASS)	0.2130 ppm	0.86%	2019/06/10 16:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6364	246.3641	176.69	179.76	3.07	50.27	10:25
C	TOC	25.0 ppm	2	24.7566	247.5663	177.51	180.80	3.29	50.27	10:26
C	TOC	25.0 ppm	3	25.1100	251.1005	179.91	183.15	3.25	50.32	10:32
C	TOC	25.0 ppm	4	24.9751	249.7510	178.99	182.08	3.09	50.33	10:26

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

STD Conc - Pos C: 25 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 17:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.78	10.84	3.05	50.31	10:29

Dilution: 1:10

Blank Contribution: (TC) 8.7430 (IC) (v1265)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1905246-001.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 17:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.88	9.87	2.99	50.34	10:30
2	TOC	0.0000	0.0000	6.85	9.83	2.98	50.34	10:24
3	TOC	0.0000	0.0000	7.00	9.95	2.96	50.22	10:31
4	TOC	0.0000	0.0000	6.68	9.85	3.17	50.20	10:26

Dilution: 1:10

Blank Contribution: (TC) 8.7430 (IC) (v1265)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1905246-003.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 18:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.81	10.84	3.03	50.19	10:25
2	TOC	0.0000	0.0000	7.77	11.00	3.23	50.18	10:30

3	TOC	0.0000	0.0000	7.38	10.64	3.26	50.24	10:27
4	TOC	0.0000	0.0000	7.53	10.65	3.12	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1905246-004.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 19:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.37	9.43	3.07	50.18	10:27
2	TOC	0.0000	0.0000	6.56	9.77	3.21	50.20	10:26
3	TOC	0.0000	0.0000	5.94	9.20	3.25	50.20	10:27
4	TOC	0.0000	0.0000	6.33	9.39	3.06	50.18	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1905246-004.08 ms	25.6346 ppm	0.1453 ppm	0.5700%	2019/06/10 20:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.4473	254.4733	181.48	184.54	3.06	50.12	10:27
2	TOC	25.5935	255.9347	182.47	185.60	3.13	50.10	10:29
3	TOC	25.7336	257.3357	183.42	186.56	3.14	50.14	10:27
4	TOC	25.7642	257.6421	183.63	186.71	3.08	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 21:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.17	9.16	2.99	50.09	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1905246-005.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 21:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.16	10.27	3.10	50.11	10:27
2	TOC	0.0000	0.0000	7.54	10.56	3.02	50.18	10:30
3	TOC	0.0000	0.0000	7.57	10.61	3.04	50.11	10:29

4	TOC	0.0000	0.0000	7.27	10.27	3.00	50.07	10:26

Dilution 1:10 | **Blank Contribution** (TC) 8.7430 (IC) (v1265) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1905198-003.01 4x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 22:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	-42248.80	-42245.72	3.08	50.08	10:28
2	TOC	0.0000	0.0000	-15736.81	-15732.85	3.96	50.00	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.7430 (IC) (v1265) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	27.5192 ppm (PASS)	0.0000 ppm	0%	2019/06/10 22:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	27.5192	275.1917	196.26	200.18	3.92	50.00	10:33

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2071 ppm (PASS)	0.0000 ppm	0%	2019/06/10 22:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2071	2.0706	10.87	14.15	3.28	50.01	10:33

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

Sample Type: Sample — From Schedule Version 8

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	10	TOC	K1905198-004.01	1.4277 ppm	0.1865 ppm	13.0600%	2019/06/10 23:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5595	15.5952	19.33	22.57	3.24	50.12	10:29
2	TOC	1.2958	12.9582	17.54	20.47	2.93	50.01	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1905198-005.01 2x	47.2102 ppm	0.1496 ppm	0.3200%	2019/06/10 23:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	47.3160	473.1596	329.92	333.00	3.08	50.05	10:27
2	TOC	47.1044	471.0441	328.48	331.58	3.10	50.15	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1905258-001.01 5x	13.9756 ppm	0.3591 ppm	2.5700%	2019/06/11 00:09

NR, using other dilution BEP 6/14/19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.2295	142.2949	105.33	108.53	3.20	50.02	10:28
2	TOC	13.7217	137.2168	101.88	105.03	3.15	50.09	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1905258-001.01 10x	6.5765 ppm	0.0646 ppm	0.9800%	2019/06/11 00:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.6222	66.2218	53.69	57.01	3.31	50.05	10:30
2	TOC	6.5308	65.3084	53.07	56.35	3.28	50.06	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1905258-002.01 5x	52.5986 ppm	0.3332 ppm	0.6300%	2019/06/11 01:05

NR: using other dilution BEP 6/14/19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	52.3630	523.6300	364.18	367.44	3.26	50.11	10:29
2	TOC	52.8343	528.3428	367.38	370.92	3.54	50.05	10:27

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1905258-002.01 10x	30.4544 ppm	0.2756 ppm	0.9100%	2019/06/11 01:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.6493	306.4935	216.79	220.32	3.53	50.12	10:28
2	TOC	30.2595	302.5954	214.14	217.47	3.33	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1905258-002.01 20x	15.5532 ppm	0.1910 ppm	1.2300%	2019/06/11 02:02

NR using other dilution

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.6883	156.8826	115.23	118.48	3.25	49.98	10:32
2	TOC	15.4181	154.1807	113.40	116.42	3.02	50.07	10:30

BCD 6/13/19

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1905258-003.01	12.9339 ppm	0.0849 ppm	0.6600%	2019/06/11 02:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.8739	128.7385	96.13	99.19	3.06	49.97	10:32
2	TOC	12.9939	129.9392	96.94	100.08	3.13	49.93	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1905258-004.01	4.6104 ppm	0.1306 ppm	2.8300%	2019/06/11 02:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.7027	47.0275	40.66	43.80	3.13	49.99	10:32
2	TOC	4.5180	45.1801	39.41	42.59	3.17	49.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1905258-005.01	4.1473 ppm	0.0326 ppm	0.7900%	2019/06/11 03:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1242	41.2422	36.74	39.97	3.24	49.96	10:27
2	TOC	4.1703	41.7033	37.05	40.04	2.99	49.88	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9241 ppm (PASS)	0.0000 ppm	0%	2019/06/11 03:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9241	249.2413	178.65	181.87	3.23	49.88	10:28

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 04:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.93	10.05	3.12	49.87	10:33

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 04:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.44	8.60	3.16	49.87	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC)	CAS_salt_010711	CAS_salt_010711

(v1265) (v4) (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.3786 ppm (PASS)	0.0000 ppm	0%	2019/06/11 04:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.3786	253.7861	181.73	185.02	3.29	49.87	10:33

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1905258-006.01 5x	63.3789 ppm	0.3707 ppm	0.5800%	2019/06/11 04:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	63.6411	636.4109	440.73	443.84	3.10	49.87	10:29
2	TOC	63.1168	631.1678	437.18	440.33	3.16	49.86	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1905259-001.01	2.7758 ppm	0.2277 ppm	8.2000%	2019/06/11 05:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9368	29.3682	28.68	31.83	3.15	49.89	10:28
2	TOC	2.6148	26.1478	26.49	29.47	2.97	49.91	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1905338-001.02	1.6601 ppm	0.0146 ppm	0.8800%	2019/06/11 05:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6705	16.7046	20.08	23.26	3.17	49.90	10:29
2	TOC	1.6498	16.4983	19.94	23.11	3.17	49.90	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1905084-004.01 100x	7.9165 ppm	0.0654 ppm	0.8300%	2019/06/11 06:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8703	78.7027	62.17	65.29	3.13	49.92	10:26
2	TOC	7.9628	79.6279	62.79	65.86	3.06	49.90	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1905084-005.01 100x	6.5046 ppm	0.0456 ppm	0.7000%	2019/06/11 06:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5369	65.3688	53.12	56.34	3.23	49.91	10:29
2	TOC	6.4724	64.7235	52.68	55.85	3.17	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1905298-001.01	0.1010 ppm	0.0480 ppm	47.5600%	2019/06/11 07:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1349	1.3494	9.66	12.79	3.13	49.88	10:29
2	TOC	0.0670	0.6702	9.20	12.36	3.16	49.86	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1905126-001.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.52	10.68	3.17	49.88	10:26
2	TOC	0.0000	0.0000	7.37	10.62	3.25	49.79	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1905126-002.10	0.1651 ppm	0.0352 ppm	21.3200%	2019/06/11 08:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1402	1.4024	9.70	12.66	2.97	49.76	10:25
2	TOC	0.1900	1.9004	10.03	13.12	3.09	49.72	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8758 ppm (PASS)	0.0000 ppm	0%	2019/06/11 08:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8758	248.7581	178.32	181.28	2.96	49.78	10:29

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 08:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.34	8.50	3.16	49.80	10:31

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1905126-002.10 ms	25.9071 ppm	0.0000 ppm	0.0000%	2019/06/11 09:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.9071	259.0711	184.60	187.66	3.06	49.82	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC)	CAS_salt_010711	CAS_salt_010711

(v1265) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	30	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 09:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.60	8.68	3.08	49.73	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	31	TOC	K1905126-003.02	0.2708 ppm	0.0126 ppm	4.6500%	2019/06/11 09:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2798	2.7975	10.64	13.76	3.11	49.80	10:25
2	TOC	0.2619	2.6193	10.52	13.75	3.23	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	32	TOC	K1905126-004.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 10:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.77	9.83	3.06	50.02	10:27
2	TOC	0.0000	0.0000	6.91	10.04	3.13	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	33	TOC	K1905126-005.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 10:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.11	10.12	3.01	50.09	10:28
2	TOC	0.0000	0.0000	7.04	10.12	3.08	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	34	TOC	K1905126-006.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 11:00

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

1	TOC	0.0000	0.0000	6.72	9.66	2.95	50.15	10:28
2	TOC	0.0000	0.0000	6.57	9.54	2.97	50.15	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1905126-007.02	0.0541 ppm	0.0435 ppm	80.5500%	2019/06/11 11:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0849	0.8485	9.32	12.30	2.99	50.12	10:26
2	TOC	0.0233	0.2327	8.90	11.94	3.04	50.12	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1905126-008.02	0.3264 ppm	0.0178 ppm	5.4600%	2019/06/11 11:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3138	3.1379	10.87	13.83	2.96	50.14	10:27
2	TOC	0.3390	3.3898	11.04	13.97	2.93	50.14	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1905126-009.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 12:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.58	9.74	3.16	50.11	10:29
2	TOC	0.0000	0.0000	7.04	9.97	2.93	50.09	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1905262-001.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 12:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.96	9.96	3.00	50.07	10:28
2	TOC	0.0000	0.0000	7.17	10.25	3.08	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6279 ppm (PASS)	0.0000 ppm	0%	2019/06/11 13:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6279	246.2787	176.64	179.77	3.13	50.13	10:34

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 13:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.08	8.29	3.21	50.13	10:33

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 13:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.60	7.58	2.97	50.20	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0694 ppm (PASS)	0.0000 ppm	0%	2019/06/11 14:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0694	250.6939	179.63	182.89	3.25	50.13	10:28

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

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1905262-002.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 14:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.44	10.67	3.23	50.15	10:28
2	TOC	0.0000	0.0000	6.64	9.86	3.22	50.26	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1905277-001.07	0.3294 ppm	0.0206 ppm	6.2600%	2019/06/11 14:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3440	3.4399	11.08	14.27	3.19	50.25	10:27
2	TOC	0.3148	3.1482	10.88	14.02	3.14	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1905277-001.07 ms	25.8656 ppm	0.0000 ppm	0.0000%	2019/06/11 15:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.8656	258.6557	184.32	187.54	3.22	50.18	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 15:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.11	8.29	3.18	50.20	10:34

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1905277-002.01	0.3540 ppm	0.0296 ppm	8.3600%	2019/06/11 15:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3749	3.7492	11.29	14.27	2.98	50.20	10:28
2	TOC	0.3331	3.3308	11.00	14.29	3.28	50.24	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1905277-003.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 16:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.55	8.75	3.20	50.22	10:28
2	TOC	0.0000	0.0000	5.35	8.66	3.30	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1905278-001.10	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 16:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.70	10.85	3.15	50.27	10:29
2	TOC	0.0000	0.0000	7.96	10.95	2.99	50.28	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1905278-001.10 ms	25.0974 ppm	0.0000 ppm	0.0000%	2019/06/11 17:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.0974	250.9744	179.10	182.07	2.97	50.26	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

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

◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7079 ppm (PASS)	0.0000 ppm	0%	2019/06/11 17:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7079	247.0786	177.18	180.31	3.13	50.26	10:32

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 17:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.96	8.18	3.22	50.27	10:31

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1905278-002.04	0.0044 ppm	0.0062 ppm	141.4200%	2019/06/11 17:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.50	11.63	3.13	50.27	10:29
2	TOC	0.0088	0.0883	8.80	11.88	3.08	50.29	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1905278-003.04	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.59	8.67	3.08	50.30	10:28
2	TOC	0.0000	0.0000	5.15	8.27	3.12	50.23	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1905279-001.02	0.5334 ppm	0.0394 ppm	7.3800%	2019/06/11 18:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5056	5.0560	12.18	15.23	3.05	50.16	10:26
2	TOC	0.5613	5.6128	12.55	15.66	3.11	50.22	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1905305-001.01	5.6538 ppm	0.0413 ppm	0.7300%	2019/06/11 19:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6830	56.8301	47.32	50.44	3.12	50.18	10:25
2	TOC	5.6247	56.2467	46.92	50.07	3.14	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1905360-001.04	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 19:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.84	10.08	3.23	50.17	10:27
2	TOC	0.0000	0.0000	7.02	10.14	3.12	50.21	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1905361-001.03	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 20:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.81	10.97	3.16	50.17	10:30
2	TOC	0.0000	0.0000	7.96	11.25	3.29	50.19	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1905369-001.02 2x	5.2212 ppm	0.0059 ppm	0.1100%	2019/06/11 20:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2254	52.2544	44.21	47.40	3.19	50.19	10:27

2	TOC	5.2170	52.1704	44.16	47.37	3.21	50.23	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1905369-002.02	13.3752 ppm	0.1848 ppm	1.3800%	2019/06/11 21:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5059	135.0586	100.42	103.57	3.15	50.19	10:26
2	TOC	13.2445	132.4451	98.65	101.86	3.22	50.16	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1905369-003.02	1.7773 ppm	0.0153 ppm	0.8600%	2019/06/11 21:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7882	17.8817	20.88	24.25	3.37	50.24	10:26
2	TOC	1.7665	17.6651	20.73	23.96	3.22	50.16	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1905369-004.02 2x	9.2072 ppm	0.0915 ppm	0.9900%	2019/06/11 22:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.2719	92.7188	71.68	74.77	3.09	50.16	10:29
2	TOC	9.1425	91.4253	70.80	73.97	3.17	50.12	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6047 ppm (PASS)	0.0000 ppm	0%	2019/06/11 22:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6047	246.0474	176.48	179.71	3.24	50.04	10:29

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 22:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.11	8.22	3.11	50.05	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 23:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.45	7.48	3.03	50.06	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0946 ppm (PASS)	0.0000 ppm	0%	2019/06/11 23:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0946	250.9458	179.80	182.94	3.14	49.93	10:28

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1905369-005.02	9.8349 ppm	0.2805 ppm	2.8500%	2019/06/11 23:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.0332	100.3323	76.85	79.77	2.92	49.96	10:28
2	TOC	9.6365	96.3650	74.16	77.34	3.19	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1905369-006.02 2x	13.5333 ppm	0.0115 ppm	0.0800%	2019/06/12 00:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5414	135.4136	100.66	103.97	3.31	49.94	10:29
2	TOC	13.5252	135.2516	100.55	103.66	3.11	49.86	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1905369-007.02 2x	26.9581 ppm	0.1856 ppm	0.6900%	2019/06/12 00:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.0894	270.8936	192.62	195.65	3.03	49.97	10:31
2	TOC	26.8268	268.2683	190.84	193.78	2.94	49.88	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1905369-008.02 2x	9.4780 ppm	0.1658 ppm	1.7500%	2019/06/12 00:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.5952	95.9525	73.88	76.92	3.05	49.80	10:29
2	TOC	9.3607	93.6071	72.28	75.31	3.02	49.79	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1905369-009.02	27.6951 ppm	0.0842 ppm	0.3000%	2019/06/12 01:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.7547	277.5466	197.14	200.30	3.16	49.74	10:29

2	TOC	27.6356	276.3562	196.33	199.36	3.02	49.76	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2425 ppm (PASS)	0.0000 ppm	0%	2019/06/12 01:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2425	252.4249	180.81	183.95	3.14	49.75	10:34

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/12 02:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.01	8.98	2.97	49.73	10:31

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1264	1.3990	1.2110	0.0000	0.0000	0.0000	2019/06/06 15:32	Fusion1 (Fusion1)
v1265	1.1340	1.2260	0.0000	0.0000	0.0000	2019/06/10 14:28	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

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

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off

SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/06/12 02:26

ALS Environmental

StarLIMS Run: 638808, 638810, 638815, 638817

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78F

21 % H3PO4: 11-GEN-05-78G

Equipment ID: K-TOC-03

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

FILTER ID: FE1165

Analyzed By:	BD	Date Analyzed:	6/10/19
Reviewed By:	[signature]	Date Reviewed:	06/14/19

Work Request # Original (_____) K1905114-6, 5198, 5258, 5420, 5440, 5449, 5451, 5478, 5589, 5198, 5409, 5449, 5422, 5482, 5558, 5581, 5589, 5595, 5625, 5259, 5597

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

Date Analyzed: 6/16/19

Analyst: BCD/HLM

Analysis: TOC/DOC

Run # TOC: 639522, 639523, 639524 DOC: 639525

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: K1905420-1/1d, K1905595-2/2d Sent for RA due to being overdiluted.
K1905597-1/1d, 5478-6 report a high %RSD, but these samples are less than 5x the MRL.
K1905114-6/6d reports a high %RSD due to non-homogenous, dirty sample.

Final Approved by: [signature] Date: 06/18/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639522 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905114-006	Carbon, Total Organic	N/A		Ground Water	5.41 mg/L	10 mL	54.1 mg/L	10	0.7	5.0			6/15/19 03:35:00	N	IV
K1905198-003	Carbon, Total Organic	N/A		Ground Water	13.60 mg/L	10 mL	1360 mg/L	100	7	50			6/15/19 02:11:00	N	IV
K1905258-006	Carbon, Total Organic	N/A		Water	3.31 mg/L	10 mL	331 mg/L	100	7	50			6/15/19 01:13:00	N	IV
K1905420-001	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	50 mg/L U	100	7	50			6/15/19 13:58:00	N	II
K1905440-001	Carbon, Total Organic	N/A		Water	21.35 mg/L	10 mL	21.3 mg/L	1	0.07	0.50			6/15/19 04:03:00	N	II
K1905440-002	Carbon, Total Organic	N/A		Water	21.51 mg/L	10 mL	21.5 mg/L	1	0.07	0.50			6/15/19 04:31:00	N	II
K1905440-003	Carbon, Total Organic	N/A		Water	20.63 mg/L	10 mL	20.6 mg/L	1	0.07	0.50			6/15/19 04:59:00	N	II
K1905440-004	Carbon, Total Organic	N/A		Water	20.85 mg/L	10 mL	20.8 mg/L	1	0.07	0.50			6/15/19 05:27:00	N	II
K1905449-001	Carbon, Total Organic	N/A		Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50			6/15/19 14:40:00	N	II
K1905451-001	Carbon, Total Organic	N/A		Water	6.46 mg/L	10 mL	646 mg/L	100	7	50			6/15/19 11:35:00	N	II
K1905451-002	Carbon, Total Organic	N/A		Water	5.83 mg/L	10 mL	583 mg/L	100	7	50			6/15/19 12:33:00	N	II
K1905478-001	Carbon, Total Organic	N/A		Ground Water	28.06 mg/L	10 mL	28.1 mg/L	1	0.07	0.50			6/15/19 05:55:00	N	II
K1905478-002	Carbon, Total Organic	N/A		Ground Water	9.82 mg/L	10 mL	9.82 mg/L	1	0.07	0.50			6/15/19 06:23:00	N	II
K1905478-003	Carbon, Total Organic	N/A		Ground Water	18.57 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			6/15/19 07:50:00	N	II
K1905478-004	Carbon, Total Organic	N/A		Ground Water	9.86 mg/L	10 mL	9.86 mg/L	1	0.07	0.50			6/15/19 08:18:00	Y	II
K1905478-005	Carbon, Total Organic	N/A		Ground Water	7.89 mg/L	10 mL	7.89 mg/L	1	0.07	0.50			6/15/19 09:29:00	N	II
K1905478-006	Carbon, Total Organic	N/A		Ground Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50			6/15/19 10:11:00	N	II
K1905478-007	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 10:59:00	N	II
K1905589-001	Carbon, Total Organic	N/A		Water	3.74 mg/L	10 mL	3.74 mg/L	1	0.07	0.50			6/15/19 13:01:00	N	II
K1905589-003	Carbon, Total Organic	N/A		Water	2.59 mg/L	10 mL	2.59 mg/L	1	0.07	0.50			6/15/19 13:30:00	N	II
KQ1908379-01	Carbon, Total Organic	CCV		Water	24.94 mg/L	10 mL	24.9 mg/L	1					6/14/19 18:11:00	N	IV
KQ1908379-02	Carbon, Total Organic	CCV		Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/15/19 01:13:00	N	IV
KQ1908379-03	Carbon, Total Organic	CCV		Water	25.46 mg/L	10 mL	25.5 mg/L	1					6/15/19 06:51:00	N	IV
KQ1908379-04	Carbon, Total Organic	CCV		Water	24.96 mg/L	10 mL	25.0 mg/L	1					6/15/19 12:03:00	N	IV
KQ1908379-05	Carbon, Total Organic	CCV		Water	24.89 mg/L	10 mL	24.9 mg/L	1					6/15/19 17:01:00	N	IV
KQ1908379-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/14/19 18:26:00	N	IV
KQ1908379-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 01:56:00	N	IV
KQ1908379-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:06:00	N	IV
KQ1908379-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 12:18:00	N	IV
KQ1908379-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:15:00	N	IV
KQ1908379-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/14/19 18:41:00	N	IV
KQ1908379-12	Carbon, Total Organic	LCS		Water	25.40 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/14/19 19:37:00	N	IV

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

06/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639522 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908379-13	Carbon, Total Organic	MS	K1905478-004	Ground Water	29.95 mg/L	10 mL	59.9 mg/L	2	0.2	1.0	100		6/15/19 08:46:00	N	II
KQ1908379-14	Carbon, Total Organic	DUP	K1905258-006	Water	3.33 mg/L	10 mL	333 mg/L	100	7	50		<1	6/15/19 01:13:00	N	IV
KQ1908379-15	Carbon, Total Organic	DUP	K1905198-003	Ground Water	13.59 mg/L	10 mL	1360 mg/L	100	7	50		<1	6/15/19 02:11:00	N	IV
KQ1908379-17	Carbon, Total Organic	DUP	K1905114-006	Ground Water	6.29 mg/L	10 mL	62.9 mg/L	10	0.7	5.0		15*	6/15/19 03:35:00	N	IV
KQ1908379-18	Carbon, Total Organic	DUP	K1905440-001	Water	21.00 mg/L	10 mL	21.0 mg/L	1	0.07	0.50		2	6/15/19 04:03:00	N	II
KQ1908379-19	Carbon, Total Organic	DUP	K1905440-002	Water	21.25 mg/L	10 mL	21.2 mg/L	1	0.07	0.50		1	6/15/19 04:31:00	N	II
KQ1908379-20	Carbon, Total Organic	DUP	K1905440-003	Water	20.93 mg/L	10 mL	20.9 mg/L	1	0.07	0.50		1	6/15/19 04:59:00	N	II
KQ1908379-21	Carbon, Total Organic	DUP	K1905440-004	Water	20.80 mg/L	10 mL	20.8 mg/L	1	0.07	0.50		<1	6/15/19 05:27:00	N	II
KQ1908379-22	Carbon, Total Organic	DUP	K1905478-001	Ground Water	28.39 mg/L	10 mL	28.4 mg/L	1	0.07	0.50		1	6/15/19 05:55:00	N	II
KQ1908379-23	Carbon, Total Organic	DUP	K1905478-002	Ground Water	9.35 mg/L	10 mL	9.35 mg/L	1	0.07	0.50		5	6/15/19 06:23:00	N	II
KQ1908379-24	Carbon, Total Organic	DUP	K1905478-003	Ground Water	18.70 mg/L	10 mL	18.7 mg/L	1	0.07	0.50		<1	6/15/19 07:50:00	N	II
KQ1908379-25	Carbon, Total Organic	DUP	K1905478-004	Ground Water	9.86 mg/L	10 mL	9.86 mg/L	1	0.07	0.50		<1	6/15/19 08:18:00	N	II
KQ1908379-26	Carbon, Total Organic	DUP	K1905478-005	Ground Water	7.97 mg/L	10 mL	7.97 mg/L	1	0.07	0.50		<1	6/15/19 09:29:00	N	II
KQ1908379-27	Carbon, Total Organic	DUP	K1905478-006	Ground Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50		12*	6/15/19 10:11:00	N	II
KQ1908379-28	Carbon, Total Organic	DUP	K1905478-007	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 10:59:00	N	II
KQ1908379-29	Carbon, Total Organic	DUP	K1905451-001	Water	6.46 mg/L	10 mL	646 mg/L	100	7	50		<1	6/15/19 11:35:00	N	II
KQ1908379-30	Carbon, Total Organic	DUP	K1905451-002	Water	5.90 mg/L	10 mL	590 mg/L	100	7	50		1	6/15/19 12:33:00	N	II
KQ1908379-31	Carbon, Total Organic	DUP	K1905589-001	Water	3.64 mg/L	10 mL	3.64 mg/L	1	0.07	0.50		3	6/15/19 13:01:00	N	II
KQ1908379-32	Carbon, Total Organic	DUP	K1905589-003	Water	2.58 mg/L	10 mL	2.58 mg/L	1	0.07	0.50		<1	6/15/19 13:30:00	N	II
KQ1908379-33	Carbon, Total Organic	DUP	K1905420-001	Water	0.39 mg/L	10 mL	39 mg/L J	100	7	50		NC	6/15/19 13:58:00	N	II
KQ1908379-34	Carbon, Total Organic	DUP	K1905449-001	Water	1.47 mg/L	10 mL	1.47 mg/L	1	0.07	0.50		5	6/15/19 14:40:00	N	II

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905198-006	Carbon, Total Organic	N/A		Ground Water	3.96 mg/L	10 mL	3.96 mg/L	1	0.07	0.50			6/15/19 03:07:00	N	IV
K1905409-001	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 20:48:00	N	I
K1905409-002	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:16:00	N	I
K1905449-002	Carbon, Total Organic	N/A		Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50			6/15/19 15:08:00	N	II
K1905477-001	Carbon, Total Organic	N/A		Water	1.72 mg/L	10 mL	1.72 mg/L	1	0.07	0.50			6/15/19 15:36:00	N	I
K1905477-002	Carbon, Total Organic	N/A		Water	19.94 mg/L	10 mL	19.9 mg/L	1	0.07	0.50			6/15/19 16:04:00	N	I
K1905477-003	Carbon, Total Organic	N/A		Water	2.68 mg/L	10 mL	2.68 mg/L	1	0.07	0.50			6/15/19 16:32:00	N	I
K1905477-004	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			6/15/19 17:59:00	N	I
K1905482-001	Carbon, Total Organic	N/A		Water	0.40 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 18:27:00	N	II
K1905482-002	Carbon, Total Organic	N/A		Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50			6/15/19 18:56:00	N	II
K1905482-003	Carbon, Total Organic	N/A		Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50			6/15/19 19:24:00	N	II
K1905482-004	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 mL	0.87 mg/L	1	0.07	0.50			6/15/19 19:52:00	N	II
K1905482-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 20:20:00	N	II
K1905558-001	Carbon, Total Organic	N/A		Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50			6/15/19 22:14:00	N	II
K1905558-002	Carbon, Total Organic	N/A		Water	1.64 mg/L	10 mL	1.64 mg/L	1	0.07	0.50			6/15/19 22:42:00	N	II
K1905558-003	Carbon, Total Organic	N/A		Water	1.07 mg/L	10 mL	1.07 mg/L	1	0.07	0.50			6/15/19 23:10:00	N	II
K1905558-004	Carbon, Total Organic	N/A		Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50			6/15/19 23:38:00	N	II
K1905558-005	Carbon, Total Organic	N/A		Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50			6/16/19 00:06:00	N	II
K1905586-001	Carbon, Total Organic	N/A		Water	0.69 mg/L	10 mL	0.69 mg/L	1	0.07	0.50			6/16/19 00:34:00	N	II
K1905586-002	Carbon, Total Organic	N/A		Water	0.19 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 01:02:00	N	II
KQ1908380-01	Carbon, Total Organic	MS	K1905198-006	Ground Water	25.56 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	86		6/16/19 10:45:00	N	IV
KQ1908380-02	Carbon, Total Organic	CCV		Ground Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/15/19 01:41:00	N	IV
KQ1908380-03	Carbon, Total Organic	CCV		Ground Water	25.46 mg/L	10 mL	25.5 mg/L	1					6/15/19 06:51:00	N	IV
KQ1908380-04	Carbon, Total Organic	CCV		Ground Water	24.96 mg/L	10 mL	25.0 mg/L	1					6/15/19 12:03:00	N	IV
KQ1908380-05	Carbon, Total Organic	CCV		Ground Water	24.89 mg/L	10 mL	24.9 mg/L	1					6/15/19 17:01:00	N	IV
KQ1908380-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 01:56:00	N	IV
KQ1908380-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:06:00	N	IV
KQ1908380-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 12:18:00	N	IV
KQ1908380-09	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:15:00	N	IV

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

06/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908380-10	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:21:00	N	IV
KQ1908380-11	Carbon, Total Organic	LCS		Ground Water	25.44 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/15/19 07:35:00	N	IV
KQ1908380-12	Carbon, Total Organic	DUP	K1905198-006	Ground Water	3.83 mg/L	10 mL	3.83 mg/L	1	0.07	0.50		3	6/15/19 03:07:00	N	IV
KQ1908380-13	Carbon, Total Organic	DUP	K1905449-002	Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		5	6/15/19 15:08:00	N	II
KQ1908380-14	Carbon, Total Organic	DUP	K1905477-001	Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50		2	6/15/19 15:36:00	N	I
KQ1908380-15	Carbon, Total Organic	DUP	K1905477-002	Water	19.70 mg/L	10 mL	19.7 mg/L	1	0.07	0.50		1	6/15/19 16:04:00	N	I
KQ1908380-16	Carbon, Total Organic	DUP	K1905477-003	Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50		5	6/15/19 16:32:00	N	I
KQ1908380-17	Carbon, Total Organic	DUP	K1905477-004	Water	1.13 mg/L	10 mL	1.13 mg/L	1	0.07	0.50		9	6/15/19 17:59:00	N	I
KQ1908380-18	Carbon, Total Organic	DUP	K1905482-001	Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50		NC	6/15/19 18:27:00	N	II
KQ1908380-19	Carbon, Total Organic	DUP	K1905482-002	Water	1.52 mg/L	10 mL	1.52 mg/L	1	0.07	0.50		<1	6/15/19 18:56:00	N	II
KQ1908380-20	Carbon, Total Organic	DUP	K1905482-003	Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50		2	6/15/19 19:24:00	N	II
KQ1908380-21	Carbon, Total Organic	DUP	K1905482-004	Water	0.82 mg/L	10 mL	0.82 mg/L	1	0.07	0.50		6	6/15/19 19:52:00	N	II
KQ1908380-22	Carbon, Total Organic	DUP	K1905482-005	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 20:20:00	N	II
KQ1908380-23	Carbon, Total Organic	DUP	K1905409-001	Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 20:48:00	N	I
KQ1908380-24	Carbon, Total Organic	DUP	K1905409-002	Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 21:16:00	N	I
KQ1908380-25	Carbon, Total Organic	DUP	K1905558-001	Water	1.41 mg/L	10 mL	1.41 mg/L	1	0.07	0.50		5	6/15/19 22:14:00	N	II
KQ1908380-26	Carbon, Total Organic	DUP	K1905558-002	Water	1.61 mg/L	10 mL	1.61 mg/L	1	0.07	0.50		2	6/15/19 22:42:00	N	II
KQ1908380-27	Carbon, Total Organic	DUP	K1905558-003	Water	1.06 mg/L	10 mL	1.06 mg/L	1	0.07	0.50		1	6/15/19 23:10:00	N	II
KQ1908380-28	Carbon, Total Organic	DUP	K1905558-004	Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50		3	6/15/19 23:38:00	N	II
KQ1908380-29	Carbon, Total Organic	DUP	K1905558-005	Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50		3	6/16/19 00:06:00	N	II
KQ1908380-30	Carbon, Total Organic	DUP	K1905586-001	Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50		4	6/16/19 00:34:00	N	II
KQ1908380-31	Carbon, Total Organic	DUP	K1905586-002	Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		NC	6/16/19 01:02:00	N	II
KQ1908380-32	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:59:00	N	IV
KQ1908380-33	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	IV
KQ1908380-34	Carbon, Total Organic	CCV		Ground Water	24.50 mg/L	10 mL	24.5 mg/L	1					6/15/19 21:44:00	N	IV
KQ1908380-35	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	IV
KQ1908380-36	Carbon, Total Organic	CCV		Ground Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	IV
KQ1908380-37	Carbon, Total Organic	CCV		Ground Water	25.11 mg/L	10 mL	25.1 mg/L	1					6/16/19 11:00:00	N	IV
KQ1908380-38	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908380-39	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 11:14:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639524 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905259-001	Carbon, Total Organic	N/A		Water	2.21 mg/L	10 mL	2.21 mg/L	1	0.07	0.50			6/16/19 06:15:00	N	IV
K1905597-001	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50			6/16/19 01:30:00	N	IV
K1905597-002	Carbon, Total Organic	N/A		Water	2.79 mg/L	10 mL	11.2 mg/L	4	0.3	2.0			6/16/19 01:58:00	N	IV
K1905597-003	Carbon, Total Organic	N/A		Water	2.72 mg/L	10 mL	10.9 mg/L	4	0.3	2.0			6/16/19 02:27:00	N	IV
K1905597-004	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:53:00	N	IV
K1905597-005	Carbon, Total Organic	N/A		Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50			6/16/19 04:22:00	N	IV
K1905597-006	Carbon, Total Organic	N/A		Water	2.34 mg/L	10 mL	2.34 mg/L	1	0.07	0.50			6/16/19 04:50:00	Y	IV
K1905597-007	Carbon, Total Organic	N/A		Water	1.43 mg/L	10 mL	1.43 mg/L	1	0.07	0.50			6/16/19 05:47:00	N	IV
KQ1908381-01	Carbon, Total Organic	CCV		Water	24.50 mg/L	10 mL	24.5 mg/L	1					6/15/19 21:44:00	N	IV
KQ1908381-02	Carbon, Total Organic	CCV		Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	IV
KQ1908381-03	Carbon, Total Organic	CCV		Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	IV
KQ1908381-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:59:00	N	IV
KQ1908381-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	IV
KQ1908381-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	IV
KQ1908381-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:30:00	N	IV
KQ1908381-08	Carbon, Total Organic	LCS		Water	25.11 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/15/19 17:45:00	N	IV
KQ1908381-09	Carbon, Total Organic	MS	K1905597-006	Water	26.78 mg/L	10 mL	53.6 mg/L	2	0.2	1.0	102		6/16/19 05:18:00	N	IV
KQ1908381-10	Carbon, Total Organic	DUP	K1905597-001	Water	0.50 mg/L	10 mL	0.50 mg/L J	1	0.07	0.50		20*	6/16/19 01:30:00	N	IV
KQ1908381-11	Carbon, Total Organic	DUP	K1905597-002	Water	2.79 mg/L	10 mL	11.2 mg/L	4	0.3	2.0		<1	6/16/19 01:58:00	N	IV
KQ1908381-12	Carbon, Total Organic	DUP	K1905597-003	Water	2.70 mg/L	10 mL	10.8 mg/L	4	0.3	2.0		<1	6/16/19 02:27:00	N	IV
KQ1908381-13	Carbon, Total Organic	DUP	K1905597-004	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/16/19 03:53:00	N	IV
KQ1908381-14	Carbon, Total Organic	DUP	K1905597-005	Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50		8	6/16/19 04:22:00	N	IV
KQ1908381-15	Carbon, Total Organic	DUP	K1905597-006	Water	2.37 mg/L	10 mL	2.37 mg/L	1	0.07	0.50		1	6/16/19 04:50:00	N	IV
KQ1908381-16	Carbon, Total Organic	DUP	K1905597-007	Water	1.41 mg/L	10 mL	1.41 mg/L	1	0.07	0.50		2	6/16/19 05:47:00	N	IV
KQ1908381-17	Carbon, Total Organic	DUP	K1905259-001	Water	2.25 mg/L	10 mL	2.25 mg/L	1	0.07	0.50		2	6/16/19 06:15:00	N	IV

06/18/19

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639525 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905589-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.12 mg/L	10 mL	3.12 mg/L	1	0.07	0.50			6/16/19 06:43:00	N	II
K1905589-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.29 mg/L	10 mL	2.29 mg/L	1	0.07	0.50			6/16/19 07:41:00	N	II
K1905595-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50			6/16/19 09:49:00	N	I
K1905595-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50			6/16/19 10:17:00	N	I
K1905625-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.22 mg/L	10 mL	1.22 mg/L	1	0.07	0.50			6/16/19 08:09:00	N	II
K1905625-002	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50			6/16/19 09:06:00	N	II
KQ1908382-01	Carbon, Dissolved Organic (DOC)	CCV		Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	II
KQ1908382-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	II
KQ1908382-03	Carbon, Dissolved Organic (DOC)	CCV		Water	25.11 mg/L	10 mL	25.1 mg/L	1					6/16/19 11:00:00	N	II
KQ1908382-04	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	II
KQ1908382-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	II
KQ1908382-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 11:14:00	N	II
KQ1908382-07	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:24:00	N	II
KQ1908382-08	Carbon, Dissolved Organic (DOC)	LCS		Water	25.10 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/16/19 03:39:00	N	II
KQ1908382-09	Carbon, Dissolved Organic (DOC)	MS	K1905625-001	Effluent	26.86 mg/L	10 mL	26.9 mg/L	1	0.07	0.50	103		6/16/19 08:37:00	N	II
KQ1908382-10	Carbon, Dissolved Organic (DOC)	DUP	K1905589-002	Water	3.13 mg/L	10 mL	3.13 mg/L	1	0.07	0.50		<1	6/16/19 06:43:00	N	II
KQ1908382-11	Carbon, Dissolved Organic (DOC)	DUP	K1905589-004	Water	2.30 mg/L	10 mL	2.30 mg/L	1	0.07	0.50		<1	6/16/19 07:41:00	N	II
KQ1908382-12	Carbon, Dissolved Organic (DOC)	DUP	K1905625-001	Effluent	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		5	6/16/19 08:09:00	N	II
KQ1908382-13	Carbon, Dissolved Organic (DOC)	DUP	K1905625-002	Effluent	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50		<1	6/16/19 09:06:00	N	II
KQ1908382-14	Carbon, Dissolved Organic (DOC)	DUP	K1905595-001	Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		2	6/16/19 09:49:00	N	I
KQ1908382-15	Carbon, Dissolved Organic (DOC)	DUP	K1905595-002	Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50		NC	6/16/19 10:17:00	N	I

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

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.937	0.0000	24.9374	24.9374	24.9	6/14/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/14/2019
4	MB1	1	0.000	0.0000	0.0000	0	<0.5	6/14/2019
5	[TOC] LCS [24ppm]	1	25.401	0.0000	25.4009	25.4009	25.4	6/14/2019
6	K1905258-006	100	3.314	0.0000	3.3140	331.4	331.40	6/15/2019
7	K1905258-006d	100	3.327	0.0000	3.3271	332.71	332.7	6/15/2019
8	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	25	6/15/2019
9	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
10	K1905198-003	100	13.598	0.0000	13.5984	1359.84	1359.84	6/15/2019
11	K1905198-003d	100	13.590	0.0000	13.5897	1358.97	1359.0	6/15/2019
12	K1905114-006	10	5.412	0.0000	5.4117	54.117	54.12	6/15/2019
13	K1905114-006d	10	6.290	0.0000	6.2895	62.895	62.90	6/15/2019
14	K1905440-001	1	21.348	0.0000	21.3480	21.348	21.35	6/15/2019
15	K1905440-001d	1	21.002	0.0000	21.0020	21.002	21.0	6/15/2019
16	K1905440-002	1	21.512	0.0000	21.5121	21.5121	21.5	6/15/2019
17	K1905440-002d	1	21.247	0.0000	21.2469	21.2469	21.25	6/15/2019
18	K1905440-003	1	20.626	0.0000	20.6264	20.6264	20.6	6/15/2019
19	K1905440-003d	1	20.933	0.0000	20.9333	20.9333	20.9	6/15/2019
20	K1905440-004	1	20.849	0.0000	20.8493	20.8493	20.85	6/15/2019
21	K1905440-004d	1	20.795	0.0000	20.7951	20.7951	20.80	6/15/2019
22	K1905478-001	1	28.056	0.0000	28.0558	28.0558	28.1	6/15/2019
23	K1905478-001d	1	28.385	0.0000	28.3853	28.3853	28.4	6/15/2019
24	K1905478-002	1	9.821	0.0000	9.8214	9.8214	9.82	6/15/2019
25	K1905478-002d	1	9.348	0.0000	9.3476	9.3476	9.35	6/15/2019

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

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

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

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

		date	time
Analyzed By:		Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	C] CCV 25 ppm [25 p	1	25.464	0.0000	25.4635	25.4635	25.46	6/15/2019
27	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
28	K1905478-003	1	18.571	0.0000	18.5707	18.5707	18.6	6/15/2019
29	K1905478-003d	1	18.705	0.0000	18.7046	18.7046	18.7	6/15/2019
30	K1905478-004	1	9.865	0.0000	9.8646	9.8646	9.9	6/15/2019
31	K1905478-004d	1	9.856	0.0000	9.8560	9.856	9.9	6/15/2019
32	K1905478-004ms	2	29.953	0.0000	29.9530	59.906	59.9	6/15/2019
33	K1905478-005	1	7.894	0.0000	7.8940	7.894	7.9	6/15/2019
34	K1905478-005d	1	7.970	0.0000	7.9703	7.9703	8.0	6/15/2019
35	K1905478-006	1	0.673	0.0000	0.6731	0.6731	0.7	6/15/2019
36	K1905478-006d	1	0.595	0.0000	0.5947	0.5947	0.6	6/15/2019
37	K1905478-007	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
38	K1905478-007d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
39	K1905451-001	100	6.462	0.0000	6.4621	646.21	646.2	6/15/2019
40	K1905451-001d	100	6.461	0.0000	6.4610	646.1	646.1	6/15/2019
41	C] CCV 25 ppm [25 p	1	24.963	0.0000	24.9627	24.9627	25.0	6/15/2019
42	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
43	K1905451-002	100	5.830	0.0000	5.8303	583.03	583.0	6/15/2019
44	K1905451-002d	100	5.902	0.0000	5.9022	590.22	590.2	6/15/2019
45	K1905589-001	1	3.741	0.0000	3.7412	3.7412	3.7	6/15/2019
46	K1905589-001d	1	3.637	0.0000	3.6370	3.637	3.6	6/15/2019
47	K1905589-003	1	2.586	0.0000	2.5861	2.5861	2.6	6/15/2019
48	K1905589-003d	1	2.583	0.0000	2.5834	2.5834	2.6	6/15/2019
49	K1905420-001	100	0.378	0.0000	0.3783	37.83	37.8	6/15/2019
50	K1905420-001d	100	0.387	0.0000	0.3867	38.67	38.7	6/15/2019

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905449-001	1	1.539	0.0000	1.5389	1.5389	1.54	6/15/2019
52	K1905449-001d	1	1.469	0.0000	1.4688	1.4688	1.5	6/15/2019
53	C] CCV 25 ppm [25 p	1	24.894	0.0000	24.8939	24.8939	24.9	6/15/2019
54	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BLD	Date Analyzed 6/16/19
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	24.6	6/15/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
4	K1905198-006	1	3.957	0.0000	3.9572	3.9572	4.0	6/15/2019
5	K1905198-006d	1	3.834	0.0000	3.8337	3.8337	3.8	6/15/2019
6	C] CCV 25 ppm [25 p	1	25.464	0.0000	25.4635	25.4635	25.46	6/15/2019
7	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
8	MB2	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
9	[TOC] LCS [24ppm]	1	25.436	0.0000	25.4355	25.4355	25.44	6/15/2019
10	C] CCV 25 ppm [25 p	1	24.963	0.0000	24.9627	24.9627	24.96	6/15/2019
11	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
12	K1905449-002	1	0.558	0.0000	0.5581	0.5581	0.56	6/15/2019
13	K1905449-002d	1	0.529	0.0000	0.5290	0.529	0.53	6/15/2019
14	K1905477-001	1	1.722	0.0000	1.7217	1.7217	1.72	6/15/2019
15	K1905477-001d	1	1.754	0.0000	1.7538	1.7538	1.8	6/15/2019
16	K1905477-002	1	19.942	0.0000	19.9421	19.9421	19.9	6/15/2019
17	K1905477-002d	1	19.696	0.0000	19.6957	19.6957	19.70	6/15/2019
18	K1905477-003	1	2.685	0.0000	2.6845	2.6845	2.7	6/15/2019
19	K1905477-003d	1	2.556	0.0000	2.5556	2.5556	2.6	6/15/2019
20	C] CCV 25 ppm [25 p	1	24.894	0.0000	24.8939	24.8939	24.89	6/15/2019
21	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
22	K1905477-004	1	1.231	0.0000	1.2310	1.231	1.2	6/15/2019
23	K1905477-004d	1	1.126	0.0000	1.1263	1.1263	1.1	6/15/2019
24	K1905482-001	1	0.404	0.0000	0.4040	0.404	<0.5	6/15/2019
25	K1905482-001d	1	0.464	0.0000	0.4636	0.4636	<0.5	6/15/2019

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

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

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

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

date time

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:	[signature]	Date Reviewed	06/18/19

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ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905482-002	1	1.537	0.0000	1.5366	1.5366	1.54	6/15/2019
27	K1905482-002d	1	1.522	0.0000	1.5215	1.5215	1.52	6/15/2019
28	K1905482-003	1	0.620	0.0000	0.6196	0.6196	0.6	6/15/2019
29	K1905482-003d	1	0.632	0.0000	0.6317	0.6317	0.6	6/15/2019
30	K1905482-004	1	0.870	0.0000	0.8701	0.8701	0.9	6/15/2019
31	K1905482-004d	1	0.818	0.0000	0.8181	0.8181	0.8	6/15/2019
32	K1905482-005	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
33	K1905482-005d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
34	K1905409-001	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
35	K1905409-001d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
36	K1905409-002	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
37	K1905409-002d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
38	C] CCV 25 ppm [25 p	1	24.499	0.0000	24.4988	24.4988	24.5	6/15/2019
39	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
40	K1905558-001	1	1.482	0.0000	1.4823	1.4823	1.5	6/15/2019
41	K1905558-001d	1	1.412	0.0000	1.4121	1.4121	1.4	6/15/2019
42	K1905558-002	1	1.642	0.0000	1.6423	1.6423	1.6	6/15/2019
43	K1905558-002d	1	1.608	0.0000	1.6080	1.608	1.6	6/15/2019
44	K1905558-003	1	1.073	0.0000	1.0728	1.0728	1.1	6/15/2019
45	K1905558-003d	1	1.061	0.0000	1.0610	1.061	1.1	6/15/2019
46	K1905558-004	1	1.588	0.0000	1.5881	1.5881	1.6	6/15/2019
47	K1905558-004d	1	1.543	0.0000	1.5426	1.5426	1.5	6/15/2019
48	K1905558-005	1	1.526	0.0000	1.5259	1.5259	1.5	6/16/2019
49	K1905558-005d	1	1.484	0.0000	1.4841	1.4841	1.5	6/16/2019
50	K1905586-001	1	0.693	0.0000	0.6929	0.6929	0.7	6/16/2019

Analyzed By: KCP	Date Analyzed 6/16/19
Reviewed By: [signature]	Date Reviewed 06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905586-001d	1	0.666	0.0000	0.6657	0.6657	0.67	6/16/2019
52	K1905586-002	1	0.189	0.0000	0.1892	0.1892	<0.5	6/16/2019
53	K1905586-002d	1	0.160	0.0000	0.1601	0.1601	<0.5	6/16/2019
54	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.5	6/16/2019
55	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
56	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24.1	6/16/2019
57	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
58	K1905198-006ms	1	25.561	0.0000	25.5611	25.5611	25.6	6/16/2019
59	C] CCV 25 ppm [25 p	1	25.111	0.0000	25.1105	25.1105	25.1	6/16/2019
60	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	MB3	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
3	[TOC] LCS [25ppm]	1	25.114	0.0000	25.1136	25.1136	25.1	6/15/2019
4	C] CCV 25 ppm [25 p	1	24.499	0.0000	24.4988	24.4988	24.5	6/15/2019
5	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
6	K1905597-001	1	0.607	0.0000	0.6073	0.6073	0.61	6/16/2019
7	K1905597-001d	1	0.496	0.0000	0.4957	0.4957	<0.5	6/16/2019
8	K1905597-002	4	2.794	0.0000	2.7938	11.1752	11	6/16/2019
9	K1905597-002d	4	2.791	0.0000	2.7914	11.1656	11.17	6/16/2019
10	K1905597-003	4	2.724	0.0000	2.7238	10.8952	10.90	6/16/2019
11	K1905597-003d	4	2.704	0.0000	2.7035	10.814	10.8	6/16/2019
12	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.52	6/16/2019
13	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
14	K1905597-004	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
15	K1905597-004d	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
16	K1905597-005	1	0.325	0.0000	0.3247	0.3247	<0.5	6/16/2019
17	K1905597-005d	1	0.301	0.0000	0.3007	0.3007	<0.5	6/16/2019
18	K1905597-006	1	2.345	0.0000	2.3445	2.3445	2.3	6/16/2019
19	K1905597-006d	1	2.369	0.0000	2.3694	2.3694	2.4	6/16/2019
20	K1905597-006ms	2	26.784	0.0000	26.7837	53.5674	53.57	6/16/2019
21	K1905597-007	1	1.434	0.0000	1.4339	1.4339	1.43	6/16/2019
22	K1905597-007d	1	1.412	0.0000	1.4118	1.4118	1.4	6/16/2019
23	K1905259-001	1	2.214	0.0000	2.2135	2.2135	2.2	6/16/2019
24	K1905259-001d	1	2.252	0.0000	2.2524	2.2524	2.25	6/16/2019
25	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24.12	6/16/2019

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

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

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

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

		date time
Analyzed By: BCP	Date Analyzed	6/16/19
Reviewed By:	Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
27		1		0.0000	0.0000	0	<0.5	
28		1		0.0000	0.0000	0	<0.5	
29		1		0.0000	0.0000	0	<0.5	
30		1		0.0000	0.0000	0	<0.5	
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: RP	Date Analyzed 6/16/19
Reviewed By: [signature]	Date Reviewed 06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.5	6/16/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
4	MB4	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
5	[TOC] LCS [25ppm]	1	25.100	0.0000	25.1000	25.1	25.1	6/16/2019
6	K1905589-002	1	3.123	0.0000	3.1233	3.1233	3.12	6/16/2019
7	K1905589-002d	1	3.128	0.0000	3.1282	3.1282	3.1	6/16/2019
8	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24	6/16/2019
9	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
10	K1905589-004	1	2.294	0.0000	2.2935	2.2935	2.29	6/16/2019
11	K1905589-004d	1	2.303	0.0000	2.3031	2.3031	2.3	6/16/2019
12	K1905625-001	1	1.221	0.0000	1.2211	1.2211	1.22	6/16/2019
13	K1905625-001d	1	1.285	0.0000	1.2848	1.2848	1.28	6/16/2019
14	K1905625-001ms	1	26.865	0.0000	26.8649	26.8649	26.86	6/16/2019
15	K1905625-002	1	1.214	0.0000	1.2136	1.2136	1.2	6/16/2019
16	K1905625-002d	1	1.207	0.0000	1.2073	1.2073	1.2	6/16/2019
17	K1905595-001	1	0.568	0.0000	0.5675	0.5675	0.57	6/16/2019
18	K1905595-001d	1	0.578	0.0000	0.5782	0.5782	0.6	6/16/2019
19	K1905595-002 100X	100	0.000	0.0000	0.0000	0	<0.5	6/16/2019
20	K1905595-002 100Xd	100	0.000	0.0000	0.0000	0	<0.5	6/16/2019
21	C] CCV 25 ppm [25 p	1	25.111	0.0000	25.1105	25.1105	25.11	6/16/2019
22	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

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

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

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

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

		date	time
Analyzed By: KP	Date Analyzed	6/16/19	
Reviewed By: [signature]	Date Reviewed	06/18/19	

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

TOC: 639522, 639523, 639524,
DOC: 639525

Schedule: 06142019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/06/15 16:20 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1905436-001.01	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1905436-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1905436-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	K1905436-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
8	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1905258-006.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1905198-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1905198-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1905114-006.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1905440-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1905440-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1905440-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1905440-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1905478-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1905478-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1905478-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1905478-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1905478-004.01 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
24	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1905478-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1905478-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1905478-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1905451-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1905451-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1905589-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1905589-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1905420-001.02 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
34	Sample	K1905449-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1905449-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1905477-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1905477-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1905477-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

NR
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06/18/19

Schedule: 06142019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1905477-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1905482-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1905482-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1905482-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1905482-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1905482-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1905409-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1905409-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1905558-001.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1905558-002.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1905558-003.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1905558-004.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1905558-005.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1905586-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1905586-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1905597-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1905597-002.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1905597-003.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1905597-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1905597-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1905597-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1905597-006.01 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
63	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
64	Sample	K1905597-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1905259-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1905589-002.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1905589-004.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1905625-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1905625-001.03 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
70	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
71	Sample	K1905625-002.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	FB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
73	Sample	K1905595-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1905595-002.03 100x doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample	K1905198-006.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

00949225

Fusion Report - 06142019
Friday, June 14, 2019 03:25 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/06/18 08:56 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	06142019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8)		
Comment:			

Report Results

06/18/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/14 15:25

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.34	18.06	4.72	49.88	07:58
2	TC Clean	14.48	17.60	3.12	49.67	07:18
3	TC Clean	3.52	6.54	3.02	49.90	07:04
4	TC Clean	2.44	5.68	3.24	49.76	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/14 16:04

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.04	15.23	3.18	49.96	07:59

2	TC Clean	5.88	9.04	3.16	49.75	07:16
3	TC Clean	2.16	5.37	3.21	49.79	07:02
4	TC Clean	1.43	4.65	3.22	49.90	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/14 16:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.06	4.16	3.09	49.78	05:26
2	TC Clean	4.34	7.40	3.05	49.94	07:19
3	TC Clean	2.36	5.45	3.10	49.86	07:02
4	TC Clean	1.88	4.87	2.98	49.79	07:00

Sample Type: Blank (Creating v1266) — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/06/14 17:10

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.16	4.21	3.05	49.68	05:25
2	TC Clean	4.58	7.72	3.15	49.84	07:16
3	TC Clean	2.49	5.59	3.10	49.83	07:00
4	TC Clean	1.81	4.95	3.14	49.94	07:01
5	Reagent Blank	6.66	9.83	3.17	49.86	08:11
6	Acid Blank	1.49	4.73	3.24	49.69	05:29

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.3200 ppm	0.0000 ppm	0.0000%	2019/06/14 17:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3200	3.1998	11.13	14.35	3.22	50.07	10:29

Dilution **Blank Contribution** **Method** **Calibration**

1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9374 ppm (PASS)	0.0000 ppm	0%	2019/06/14 18:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9374	249.3739	178.74	181.86	3.12	50.09	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/14 18:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.93	11.23	3.30	50.20	10:29

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

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 18:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.04	10.20	3.16	50.08	10:28
2	TOC	0.0000	0.0000	7.38	10.54	3.17	49.99	10:29
3	TOC	0.0000	0.0000	7.03	10.13	3.09	49.96	10:27
4	TOC	0.0000	0.0000	7.13	10.13	3.00	49.92	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

00949228

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4375 ppm (PASS)	0.1009 ppm	0.40%	2019/06/14 19:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.4009	254.0086	181.88	184.97	3.09	49.87	10:27
C	TOC	25.0 ppm	2	25.5837	255.8368	183.12	186.21	3.08	49.84	10:25
C	TOC	25.0 ppm	3	25.4128	254.1279	181.96	185.20	3.24	49.89	10:27
C	TOC	25.0 ppm	4	25.3525	253.5254	181.55	184.86	3.30	49.81	10:30

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

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.2434 ppm	0.0000 ppm	0.0000%	2019/06/14 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2434	2.4338	10.61	13.81	3.20	49.81	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

NR no room

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1905436-001.01	0.7283 ppm	0.0388 ppm	5.3200%	2019/06/14 20:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7857	7.8566	14.29	17.55	3.25	49.80	10:27
2	TOC	0.7089	7.0891	13.77	17.02	3.25	49.80	10:30
3	TOC	0.7017	7.0169	13.72	16.97	3.25	49.80	10:28
4	TOC	0.7169	7.1686	13.83	16.98	3.15	49.83	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

NR no room

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1905436-001.01 ms	27.4897 ppm	0.0961 ppm	0.3500%	2019/06/14 21:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.5876	275.8760	196.22	199.32	3.10	49.83	10:28
2	TOC	27.3697	273.6972	194.74	198.12	3.38	49.84	10:28

3	TOC	27.5424	275.4238	195.92	199.07	3.15	49.85	10:30
4	TOC	27.4591	274.5914	195.35	198.50	3.14	49.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 22:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.54	10.78	3.24	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1905436-002.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.04	11.07	3.02	49.89	10:31
2	TOC	0.0000	0.0000	7.57	10.75	3.19	49.89	10:27
3	TOC	0.0000	0.0000	7.71	10.95	3.24	49.91	10:27
4	TOC	0.0000	0.0000	7.76	10.87	3.11	49.94	10:27

Per 6/18/19 K1905436 NC

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1905436-003.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 23:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.52	10.65	3.13	49.96	10:24
2	TOC	0.0000	0.0000	7.59	10.61	3.02	49.96	10:24
3	TOC	0.0000	0.0000	7.36	10.42	3.05	49.95	10:31
4	TOC	0.0000	0.0000	7.66	10.79	3.12	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 00:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.48	9.62	3.14	49.96	10:29
2	TOC	0.0000	0.0000	6.84	9.91	3.07	49.98	10:25

00949230

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1905258-006.01 100x	3.3205 ppm	0.0093 ppm	0.2800%	2019/06/15 01:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3140	33.1397	31.46	34.50	3.05	49.99	10:28
2	TOC	3.3271	33.2708	31.54	34.86	3.31	50.00	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5900 ppm (PASS)	0.0000 ppm	0%	2019/06/15 01:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5900	245.9001	176.38	179.52	3.14	50.01	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 01:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.08	10.33	3.25	50.01	10:33

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

Sample Type: Sample — From Schedule Version 3

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

◈	10	TOC	K1905198-003.01 100x	13.5940 ppm	0.0061 ppm	0.0500%	2019/06/15 02:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5984	135.9838	101.26	104.50	3.24	49.97	10:27
2	TOC	13.5897	135.8969	101.21	104.44	3.23	49.98	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 02:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.99	10.12	3.13	49.99	10:30
2	TOC	0.0000	0.0000	6.59	9.86	3.27	50.00	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1905198-006.01	3.8954 ppm	0.0873 ppm	2.2400%	2019/06/15 03:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9572	39.5717	35.82	39.04	3.22	50.00	10:29
2	TOC	3.8337	38.3371	34.98	38.07	3.09	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1905114-006.01 10x	5.8506 ppm	0.6208 ppm	10.6100%	2019/06/15 03:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.4117	54.1166	45.69	49.02	3.32	50.01	10:31
2	TOC	6.2895	62.8954	51.65	54.78	3.12	50.01	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1905440-001.01	21.1750 ppm	0.2447 ppm	1.1600%	2019/06/15 04:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.3480	213.4801	153.87	157.12	3.25	50.03	10:28
2	TOC	21.0020	210.0196	151.52	154.86	3.34	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1905440-002.01	21.3795 ppm	0.1875 ppm	0.8800%	2019/06/15 04:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.5121	215.1212	154.98	158.24	3.25	50.02	10:26
2	TOC	21.2469	212.4695	153.18	156.37	3.19	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1905440-003.01	20.7799 ppm	0.2170 ppm	1.0400%	2019/06/15 04:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.6264	206.2644	148.97	152.17	3.19	50.04	10:26
2	TOC	20.9333	209.3330	151.05	154.23	3.17	50.04	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1905440-004.01	20.8222 ppm	0.0383 ppm	0.1800%	2019/06/15 05:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.8493	208.4933	150.48	153.72	3.23	50.03	10:28
2	TOC	20.7951	207.9512	150.12	153.41	3.29	50.04	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1905478-001.01	28.2206 ppm	0.2330 ppm	0.8300%	2019/06/15 05:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0558	280.5579	199.40	202.57	3.17	50.01	10:27
2	TOC	28.3853	283.8534	201.64	204.78	3.14	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1905478-002.01	9.5845 ppm	0.3350 ppm	3.5000%	2019/06/15 06:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8214	98.2139	75.63	78.90	3.28	50.03	10:31
2	TOC	9.3476	93.4761	72.41	75.52	3.11	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4635 ppm (PASS)	0.0000 ppm	0%	2019/06/15 06:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4635	254.6347	182.31	185.62	3.32	50.02	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 07:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.42	11.67	3.25	50.01	10:31

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

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 07:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.06	10.22	3.16	50.01	10:36

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4355 ppm (PASS)	0.0000 ppm	0%	2019/06/15 07:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.4355	254.3548	182.12	185.25	3.13	50.02	10:31

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

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1905478-003.01	18.6377 ppm	0.0947 ppm	0.5100%	2019/06/15 07:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.5707	185.7073	135.02	138.21	3.19	50.04	10:30
2	TOC	18.7046	187.0465	135.93	139.24	3.32	50.00	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1905478-004.01	9.8603 ppm	0.0060 ppm	0.0600%	2019/06/15 08:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8646	98.6456	75.92	79.15	3.23	50.00	10:27
2	TOC	9.8560	98.5601	75.86	79.06	3.19	49.99	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1905478-004.01 ms 2x	29.9530 ppm	0.0000 ppm	0.0000%	2019/06/15 08:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.9530	299.5298	212.28	215.36	3.08	50.01	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.77	11.03	3.26	49.99	10:28
2	TOC	0.0000	0.0000	6.82	10.06	3.24	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1905478-005.01	7.9322 ppm	0.0540 ppm	0.6800%	2019/06/15 09:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8940	78.9400	62.54	65.71	3.16	49.95	10:31
2	TOC	7.9703	79.7032	63.06	66.27	3.21	49.94	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1905478-006.01	0.6339 ppm	0.0554 ppm	8.7400%	2019/06/15 10:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6731	6.7311	13.53	16.69	3.16	49.87	10:27
2	TOC	0.5947	5.9474	13.00	16.22	3.22	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1905478-007.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 10:59

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

1	TOC	0.0000	0.0000	7.39	10.50	3.11	49.81	10:29
2	TOC	0.0000	0.0000	7.27	10.48	3.21	49.79	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1905451-001.01 100x	6.4615 ppm	0.0007 ppm	0.0100%	2019/06/15 11:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4621	64.6205	52.82	55.88	3.05	49.78	10:28
2	TOC	6.4610	64.6102	52.82	55.95	3.14	49.76	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9627 ppm (PASS)	0.0000 ppm	0%	2019/06/15 12:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9627	249.6273	178.91	182.18	3.27	49.76	10:33

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 12:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.39	10.62	3.23	49.80	10:30

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1905451-002.01 100x	5.8663 ppm	0.0508 ppm	0.8700%	2019/06/15 12:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8303	58.3034	48.54	51.75	3.21	49.80	10:30
2	TOC	5.9022	59.0224	49.02	52.16	3.13	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1905589-001.01	3.6891 ppm	0.0736 ppm	2.0000%	2019/06/15 13:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7412	37.4120	34.35	37.49	3.13	49.77	10:27
2	TOC	3.6370	36.3704	33.65	36.75	3.10	49.81	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1905589-003.01	2.5847 ppm	0.0019 ppm	0.0700%	2019/06/15 13:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5861	25.8606	26.51	29.58	3.06	49.93	10:26
2	TOC	2.5834	25.8341	26.50	29.65	3.15	49.88	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1905420-001.02 100x	0.3825 ppm	0.0059 ppm	1.5500%	2019/06/15 13:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3783	3.7832	11.53	14.74	3.21	49.85	10:31
2	TOC	0.3867	3.8672	11.58	14.76	3.18	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 14:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.91	9.10	3.19	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1905449-001.02	1.5038 ppm	0.0496 ppm	3.3000%	2019/06/15 14:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5389	15.3891	19.41	22.54	3.14	49.92	10:26
2	TOC	1.4688	14.6879	18.93	22.03	3.10	49.91	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1905449-002.02	0.5435 ppm	0.0205 ppm	3.7800%	2019/06/15 15:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5581	5.5805	12.75	15.85	3.10	49.96	10:28
2	TOC	0.5290	5.2903	12.55	15.63	3.08	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1905477-001.02	1.7378 ppm	0.0227 ppm	1.3100%	2019/06/15 15:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7217	17.2173	20.65	23.75	3.10	49.91	10:25
2	TOC	1.7538	17.5385	20.86	23.98	3.11	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1905477-002.02	19.8189 ppm	0.1743 ppm	0.8800%	2019/06/15 16:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	19.9421	199.4213	144.33	147.57	3.25	49.94	10:29
2	TOC	19.6957	196.9567	142.65	145.86	3.21	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1905477-003.02	2.6200 ppm	0.0911 ppm	3.4800%	2019/06/15 16:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6845	26.8447	27.18	30.31	3.13	49.99	10:30
2	TOC	2.5556	25.5557	26.31	29.38	3.08	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8939 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8939	248.9393	178.44	181.45	3.01	50.04	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.72	9.73	3.01	50.03	10:34

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 17:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.76	8.85	3.09	50.09	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1136 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1136	251.1358	179.93	183.18	3.24	50.06	10:30

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1905477-004.02	1.1786 ppm	0.0741 ppm	6.2800%	2019/06/15 17:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2310	12.3101	17.32	20.63	3.31	49.99	10:27
2	TOC	1.1263	11.2627	16.60	19.84	3.24	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1905482-001.02	0.4338 ppm	0.0422 ppm	9.7300%	2019/06/15 18:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4040	4.0396	11.70	15.00	3.30	50.06	10:28
2	TOC	0.4636	4.6362	12.11	15.22	3.11	49.96	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1905482-002.02	1.5290 ppm	0.0106 ppm	0.6900%	2019/06/15 18:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5366	15.3655	19.39	22.43	3.04	49.99	10:27
2	TOC	1.5215	15.2153	19.29	22.48	3.19	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1905482-003.02	0.6257 ppm	0.0085 ppm	1.3700%	2019/06/15 19:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6196	6.1963	13.17	16.27	3.10	49.95	10:29
2	TOC	0.6317	6.3171	13.25	16.32	3.07	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1905482-004.02	0.8441 ppm	0.0368 ppm	4.3600%	2019/06/15 19:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8701	8.7008	14.87	17.98	3.11	49.92	10:25
2	TOC	0.8181	8.1807	14.51	17.78	3.27	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1905482-005.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 20:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.83	9.01	3.18	49.83	10:31
2	TOC	0.0000	0.0000	6.27	9.49	3.21	49.80	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1905409-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 20:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.61	8.78	3.17	49.79	10:29
2	TOC	0.0000	0.0000	5.86	8.91	3.05	49.77	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1905409-002.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 21:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.33	8.57	3.25	49.78	10:30
2	TOC	0.0000	0.0000	5.75	9.02	3.27	49.77	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4988 ppm (PASS)	0.0000 ppm	0%	2019/06/15 21:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4988	244.9882	175.76	178.90	3.14	49.76	10:32

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

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 21:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.20	9.37	3.17	49.80	10:34

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

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1905558-001.14	1.4472 ppm	0.0497 ppm	3.4300%	2019/06/15 22:14

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4823	14.8234	19.02	22.22	3.20	49.82	10:28
2	TOC	1.4121	14.1207	18.54	21.65	3.11	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1905558-002.14	1.6252 ppm	0.0243 ppm	1.4900%	2019/06/15 22:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6423	16.4233	20.11	23.32	3.21	49.84	10:29
2	TOC	1.6080	16.0800	19.88	23.13	3.26	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1905558-003.14	1.0669 ppm	0.0083 ppm	0.7800%	2019/06/15 23:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0728	10.7279	16.24	19.41	3.17	49.88	10:27
2	TOC	1.0610	10.6100	16.16	19.31	3.15	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1905558-004.14	1.5654 ppm	0.0322 ppm	2.0600%	2019/06/15 23:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5881	15.8811	19.74	22.67	2.93	49.90	10:30
2	TOC	1.5426	15.4259	19.43	22.58	3.15	49.90	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1905558-005.14	1.5050 ppm	0.0296 ppm	1.9700%	2019/06/16 00:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5259	15.2595	19.32	22.36	3.05	49.93	10:29
2	TOC	1.4841	14.8411	19.03	22.23	3.20	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1905586-001.01	0.6793 ppm	0.0192 ppm	2.8200%	2019/06/16 00:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6929	6.9285	13.66	16.86	3.20	49.93	10:30
2	TOC	0.6657	6.6574	13.48	16.66	3.18	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1905586-002.01	0.1747 ppm	0.0205 ppm	11.7500%	2019/06/16 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1892	1.8916	10.24	13.54	3.30	49.89	10:28
2	TOC	0.1601	1.6014	10.05	13.18	3.13	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1905597-001.01	0.5515 ppm	0.0789 ppm	14.3000%	2019/06/16 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6073	6.0726	13.08	16.24	3.16	49.89	10:28
2	TOC	0.4957	4.9574	12.32	15.62	3.29	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1905597-002.01 4x	2.7926 ppm	0.0017 ppm	0.0600%	2019/06/16 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7938	27.9378	27.92	31.16	3.24	49.92	10:28
2	TOC	2.7914	27.9142	27.91	31.03	3.12	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1905597-003.01 4x	2.7136 ppm	0.0144 ppm	0.5300%	2019/06/16 02:27

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	2.7238	27.2380	27.45	30.52	3.08	49.91	10:29
2	TOC	2.7035	27.0347	27.31	30.44	3.13	49.91	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5184 ppm (PASS)	0.0000 ppm	0%	2019/06/16 02:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5184	245.1841	175.89	178.91	3.01	49.91	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 03:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.87	9.03	3.16	49.90	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.10	8.27	3.17	49.91	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 03:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1000	251.0003	179.84	182.99	3.15	49.93	10:34

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1905597-004.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 03:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.74	11.82	3.08	49.93	10:32
2	TOC	0.0000	0.0000	7.73	10.91	3.18	49.95	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1905597-005.01	0.3127 ppm	0.0170 ppm	5.4300%	2019/06/16 04:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3247	3.2470	11.16	14.33	3.17	49.96	10:27
2	TOC	0.3007	3.0068	11.00	14.19	3.18	49.96	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1905597-006.01	2.3569 ppm	0.0176 ppm	0.7500%	2019/06/16 04:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3445	23.4446	24.87	27.92	3.05	49.98	10:25
2	TOC	2.3694	23.6935	25.04	28.05	3.01	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1905597-006.01 ms 2x	26.7837 ppm	0.0000 ppm	0.0000%	2019/06/16 05:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7837	267.8368	190.77	193.77	3.00	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 05:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.96	9.15	3.19	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1905597-007.01	1.4228 ppm	0.0156 ppm	1.1000%	2019/06/16 05:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4339	14.3387	18.69	21.73	3.04	50.01	10:29
2	TOC	1.4118	14.1177	18.54	21.56	3.02	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1905259-001.02	2.2329 ppm	0.0275 ppm	1.2300%	2019/06/16 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2135	22.1349	23.99	27.17	3.18	50.02	10:28
2	TOC	2.2524	22.5238	24.25	27.32	3.08	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1905589-002.02 doc	3.1258 ppm	0.0034 ppm	0.1100%	2019/06/16 06:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1233	31.2334	30.16	33.36	3.20	50.06	10:28
2	TOC	3.1282	31.2820	30.19	33.30	3.10	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1171 ppm (PASS)	0.0000 ppm	0%	2019/06/16 07:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1171	241.1711	173.17	176.46	3.30	50.07	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 07:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.56	8.74	3.18	50.07	10:35

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1905589-004.02 doc	2.2983 ppm	0.0068 ppm	0.2900%	2019/06/16 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2935	22.9348	24.53	27.49	2.96	50.06	10:30
2	TOC	2.3031	23.0306	24.59	27.60	3.01	50.06	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈ 68	TOC	K1905625-001.03 doc	1.2530 ppm	0.0450 ppm	3.5900%	2019/06/16 08:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2211	12.2114	17.25	20.44	3.19	50.03	10:26
2	TOC	1.2848	12.8478	17.68	20.58	2.90	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1905625-001.03 ms doc	26.8649 ppm	0.0000 ppm	0.0000%	2019/06/16 08:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8649	268.6485	191.32	194.50	3.18	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 08:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.07	9.21	3.14	50.02	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1905625-002.03 doc	1.2105 ppm	0.0045 ppm	0.3700%	2019/06/16 09:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2136	12.1363	17.20	20.50	3.30	50.02	10:32
2	TOC	1.2073	12.0729	17.16	20.43	3.28	50.00	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	FB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.63	8.73	3.10	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1905595-001.03 doc	0.5729 ppm	0.0076 ppm	1.3300%	2019/06/16 09:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5675	5.6748	12.81	15.96	3.15	49.99	10:30
2	TOC	0.5782	5.7824	12.89	16.02	3.14	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1905595-002.03 100x doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 10:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.91	10.07	3.16	49.97	10:28
2	TOC	0.0000	0.0000	6.95	10.10	3.15	49.95	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	K1905198-006.01 ms	25.5611 ppm	0.0000 ppm	0.0000%	2019/06/16 10:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.5611	255.6107	182.47	185.58	3.12	49.91	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1105 ppm (PASS)	0.0000 ppm	0%	2019/06/16 11:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1105	251.1049	179.91	183.10	3.19	49.89	10:30

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

00949251

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

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.98	9.18	3.20	49.85	10:34

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1265	1.1340	1.2260	0.0000	0.0000	0.0000	2019/06/10 14:28	Fusion1 (Fusion1)
v1266	2.2187	1.4940	0.0000	0.0000	0.0000	2019/06/14 17:57	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

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

Methods

00949252

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

00949253

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/06/16 11:32

ALS Environmental

StarLIMS Run: 639522, 639523, 639524, 639525

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78I

21 % H3PO4: 11-GEN-05-78H

Equipment ID: K-TOC-03

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

FILTER ID: FE1165 6/15/19

Analyzed By:	BCD / HLM	Date Analyzed:	6/16/19
Reviewed By:		Date Reviewed:	06/18/19

Work Request # Original (_____) K1905114-6, 5198, 5258, 5420, 5440, 5449, 5451, 5478, 5589, 5198, 5409, 5449, 5477, 5482, 5558, 5589, 5595, 5625, 5259, 5597
Tier: IV IV IV II II II II II II IV I II I II II II II II IV

Date Analyzed: 6/16/19

Analyst: BCD/HLM

Analysis: TOC/DOC

Run # TOC: 639522, 639523, 639524 DOC: 639525

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: K1905420-1/1d, K1905595-2/2d sent for RA due to being overdiluted.
K1905597-1/1d, 5478-6 report a high %RSD, but these samples are less than 5x the MRL.
K1905114-6/6d reports a high %RSD due to non-homogenous, dirty sample.

Final Approved by: [signature] Date: 06/18/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639522 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905114-006	Carbon, Total Organic	N/A		Ground Water	5.41 mg/L	10 mL	54.1 mg/L	10	0.7	5.0			6/15/19 03:35:00	N	IV
K1905198-003	Carbon, Total Organic	N/A		Ground Water	13.60 mg/L	10 mL	1360 mg/L	100	7	50			6/15/19 02:11:00	N	IV
K1905258-006	Carbon, Total Organic	N/A		Water	3.31 mg/L	10 mL	331 mg/L	100	7	50			6/15/19 01:13:00	N	IV
K1905420-001	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	50 mg/L U	100	7	50			6/15/19 13:58:00	N	II
K1905440-001	Carbon, Total Organic	N/A		Water	21.35 mg/L	10 mL	21.3 mg/L	1	0.07	0.50			6/15/19 04:03:00	N	II
K1905440-002	Carbon, Total Organic	N/A		Water	21.51 mg/L	10 mL	21.5 mg/L	1	0.07	0.50			6/15/19 04:31:00	N	II
K1905440-003	Carbon, Total Organic	N/A		Water	20.63 mg/L	10 mL	20.6 mg/L	1	0.07	0.50			6/15/19 04:59:00	N	II
K1905440-004	Carbon, Total Organic	N/A		Water	20.85 mg/L	10 mL	20.8 mg/L	1	0.07	0.50			6/15/19 05:27:00	N	II
K1905449-001	Carbon, Total Organic	N/A		Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50			6/15/19 14:40:00	N	II
K1905451-001	Carbon, Total Organic	N/A		Water	6.46 mg/L	10 mL	646 mg/L	100	7	50			6/15/19 11:35:00	N	II
K1905451-002	Carbon, Total Organic	N/A		Water	5.83 mg/L	10 mL	583 mg/L	100	7	50			6/15/19 12:33:00	N	II
K1905478-001	Carbon, Total Organic	N/A		Ground Water	28.06 mg/L	10 mL	28.1 mg/L	1	0.07	0.50			6/15/19 05:55:00	N	II
K1905478-002	Carbon, Total Organic	N/A		Ground Water	9.82 mg/L	10 mL	9.82 mg/L	1	0.07	0.50			6/15/19 06:23:00	N	II
K1905478-003	Carbon, Total Organic	N/A		Ground Water	18.57 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			6/15/19 07:50:00	N	II
K1905478-004	Carbon, Total Organic	N/A		Ground Water	9.86 mg/L	10 mL	9.86 mg/L	1	0.07	0.50			6/15/19 08:18:00	Y	II
K1905478-005	Carbon, Total Organic	N/A		Ground Water	7.89 mg/L	10 mL	7.89 mg/L	1	0.07	0.50			6/15/19 09:29:00	N	II
K1905478-006	Carbon, Total Organic	N/A		Ground Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50			6/15/19 10:11:00	N	II
K1905478-007	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 10:59:00	N	II
K1905589-001	Carbon, Total Organic	N/A		Water	3.74 mg/L	10 mL	3.74 mg/L	1	0.07	0.50			6/15/19 13:01:00	N	II
K1905589-003	Carbon, Total Organic	N/A		Water	2.59 mg/L	10 mL	2.59 mg/L	1	0.07	0.50			6/15/19 13:30:00	N	II
KQ1908379-01	Carbon, Total Organic	CCV		Water	24.94 mg/L	10 mL	24.9 mg/L	1					6/14/19 18:11:00	N	IV
KQ1908379-02	Carbon, Total Organic	CCV		Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/15/19 01:13:00	N	IV
KQ1908379-03	Carbon, Total Organic	CCV		Water	25.46 mg/L	10 mL	25.5 mg/L	1					6/15/19 06:51:00	N	IV
KQ1908379-04	Carbon, Total Organic	CCV		Water	24.96 mg/L	10 mL	25.0 mg/L	1					6/15/19 12:03:00	N	IV
KQ1908379-05	Carbon, Total Organic	CCV		Water	24.89 mg/L	10 mL	24.9 mg/L	1					6/15/19 17:01:00	N	IV
KQ1908379-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/14/19 18:26:00	N	IV
KQ1908379-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 01:56:00	N	IV
KQ1908379-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:06:00	N	IV
KQ1908379-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 12:18:00	N	IV
KQ1908379-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:15:00	N	IV
KQ1908379-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/14/19 18:41:00	N	IV
KQ1908379-12	Carbon, Total Organic	LCS		Water	25.40 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/14/19 19:37:00	N	IV

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

06/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639522 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908379-13	Carbon, Total Organic	MS	K1905478-004	Ground Water	29.95 mg/L	10 mL	59.9 mg/L	2	0.2	1.0	100		6/15/19 08:46:00	N	II
KQ1908379-14	Carbon, Total Organic	DUP	K1905258-006	Water	3.33 mg/L	10 mL	333 mg/L	100	7	50		<1	6/15/19 01:13:00	N	IV
KQ1908379-15	Carbon, Total Organic	DUP	K1905198-003	Ground Water	13.59 mg/L	10 mL	1360 mg/L	100	7	50		<1	6/15/19 02:11:00	N	IV
KQ1908379-17	Carbon, Total Organic	DUP	K1905114-006	Ground Water	6.29 mg/L	10 mL	62.9 mg/L	10	0.7	5.0		15*	6/15/19 03:35:00	N	IV
KQ1908379-18	Carbon, Total Organic	DUP	K1905440-001	Water	21.00 mg/L	10 mL	21.0 mg/L	1	0.07	0.50		2	6/15/19 04:03:00	N	II
KQ1908379-19	Carbon, Total Organic	DUP	K1905440-002	Water	21.25 mg/L	10 mL	21.2 mg/L	1	0.07	0.50		1	6/15/19 04:31:00	N	II
KQ1908379-20	Carbon, Total Organic	DUP	K1905440-003	Water	20.93 mg/L	10 mL	20.9 mg/L	1	0.07	0.50		1	6/15/19 04:59:00	N	II
KQ1908379-21	Carbon, Total Organic	DUP	K1905440-004	Water	20.80 mg/L	10 mL	20.8 mg/L	1	0.07	0.50		<1	6/15/19 05:27:00	N	II
KQ1908379-22	Carbon, Total Organic	DUP	K1905478-001	Ground Water	28.39 mg/L	10 mL	28.4 mg/L	1	0.07	0.50		1	6/15/19 05:55:00	N	II
KQ1908379-23	Carbon, Total Organic	DUP	K1905478-002	Ground Water	9.35 mg/L	10 mL	9.35 mg/L	1	0.07	0.50		5	6/15/19 06:23:00	N	II
KQ1908379-24	Carbon, Total Organic	DUP	K1905478-003	Ground Water	18.70 mg/L	10 mL	18.7 mg/L	1	0.07	0.50		<1	6/15/19 07:50:00	N	II
KQ1908379-25	Carbon, Total Organic	DUP	K1905478-004	Ground Water	9.86 mg/L	10 mL	9.86 mg/L	1	0.07	0.50		<1	6/15/19 08:18:00	N	II
KQ1908379-26	Carbon, Total Organic	DUP	K1905478-005	Ground Water	7.97 mg/L	10 mL	7.97 mg/L	1	0.07	0.50		<1	6/15/19 09:29:00	N	II
KQ1908379-27	Carbon, Total Organic	DUP	K1905478-006	Ground Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50		12*	6/15/19 10:11:00	N	II
KQ1908379-28	Carbon, Total Organic	DUP	K1905478-007	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 10:59:00	N	II
KQ1908379-29	Carbon, Total Organic	DUP	K1905451-001	Water	6.46 mg/L	10 mL	646 mg/L	100	7	50		<1	6/15/19 11:35:00	N	II
KQ1908379-30	Carbon, Total Organic	DUP	K1905451-002	Water	5.90 mg/L	10 mL	590 mg/L	100	7	50		1	6/15/19 12:33:00	N	II
KQ1908379-31	Carbon, Total Organic	DUP	K1905589-001	Water	3.64 mg/L	10 mL	3.64 mg/L	1	0.07	0.50		3	6/15/19 13:01:00	N	II
KQ1908379-32	Carbon, Total Organic	DUP	K1905589-003	Water	2.58 mg/L	10 mL	2.58 mg/L	1	0.07	0.50		<1	6/15/19 13:30:00	N	II
KQ1908379-33	Carbon, Total Organic	DUP	K1905420-001	Water	0.39 mg/L	10 mL	39 mg/L J	100	7	50		NC	6/15/19 13:58:00	N	II
KQ1908379-34	Carbon, Total Organic	DUP	K1905449-001	Water	1.47 mg/L	10 mL	1.47 mg/L	1	0.07	0.50		5	6/15/19 14:40:00	N	II

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905198-006	Carbon, Total Organic	N/A		Ground Water	3.96 mg/L	10 mL	3.96 mg/L	1	0.07	0.50			6/15/19 03:07:00	N	IV
K1905409-001	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 20:48:00	N	I
K1905409-002	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:16:00	N	I
K1905449-002	Carbon, Total Organic	N/A		Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50			6/15/19 15:08:00	N	II
K1905477-001	Carbon, Total Organic	N/A		Water	1.72 mg/L	10 mL	1.72 mg/L	1	0.07	0.50			6/15/19 15:36:00	N	I
K1905477-002	Carbon, Total Organic	N/A		Water	19.94 mg/L	10 mL	19.9 mg/L	1	0.07	0.50			6/15/19 16:04:00	N	I
K1905477-003	Carbon, Total Organic	N/A		Water	2.68 mg/L	10 mL	2.68 mg/L	1	0.07	0.50			6/15/19 16:32:00	N	I
K1905477-004	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			6/15/19 17:59:00	N	I
K1905482-001	Carbon, Total Organic	N/A		Water	0.40 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 18:27:00	N	II
K1905482-002	Carbon, Total Organic	N/A		Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50			6/15/19 18:56:00	N	II
K1905482-003	Carbon, Total Organic	N/A		Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50			6/15/19 19:24:00	N	II
K1905482-004	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 mL	0.87 mg/L	1	0.07	0.50			6/15/19 19:52:00	N	II
K1905482-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 20:20:00	N	II
K1905558-001	Carbon, Total Organic	N/A		Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50			6/15/19 22:14:00	N	II
K1905558-002	Carbon, Total Organic	N/A		Water	1.64 mg/L	10 mL	1.64 mg/L	1	0.07	0.50			6/15/19 22:42:00	N	II
K1905558-003	Carbon, Total Organic	N/A		Water	1.07 mg/L	10 mL	1.07 mg/L	1	0.07	0.50			6/15/19 23:10:00	N	II
K1905558-004	Carbon, Total Organic	N/A		Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50			6/15/19 23:38:00	N	II
K1905558-005	Carbon, Total Organic	N/A		Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50			6/16/19 00:06:00	N	II
K1905586-001	Carbon, Total Organic	N/A		Water	0.69 mg/L	10 mL	0.69 mg/L	1	0.07	0.50			6/16/19 00:34:00	N	II
K1905586-002	Carbon, Total Organic	N/A		Water	0.19 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 01:02:00	N	II
KQ1908380-01	Carbon, Total Organic	MS	K1905198-006	Ground Water	25.56 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	86		6/16/19 10:45:00	N	IV
KQ1908380-02	Carbon, Total Organic	CCV		Ground Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/15/19 01:41:00	N	IV
KQ1908380-03	Carbon, Total Organic	CCV		Ground Water	25.46 mg/L	10 mL	25.5 mg/L	1					6/15/19 06:51:00	N	IV
KQ1908380-04	Carbon, Total Organic	CCV		Ground Water	24.96 mg/L	10 mL	25.0 mg/L	1					6/15/19 12:03:00	N	IV
KQ1908380-05	Carbon, Total Organic	CCV		Ground Water	24.89 mg/L	10 mL	24.9 mg/L	1					6/15/19 17:01:00	N	IV
KQ1908380-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 01:56:00	N	IV
KQ1908380-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:06:00	N	IV
KQ1908380-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 12:18:00	N	IV
KQ1908380-09	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:15:00	N	IV

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

06/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908380-10	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:21:00	N	IV
KQ1908380-11	Carbon, Total Organic	LCS		Ground Water	25.44 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/15/19 07:35:00	N	IV
KQ1908380-12	Carbon, Total Organic	DUP	K1905198-006	Ground Water	3.83 mg/L	10 mL	3.83 mg/L	1	0.07	0.50		3	6/15/19 03:07:00	N	IV
KQ1908380-13	Carbon, Total Organic	DUP	K1905449-002	Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		5	6/15/19 15:08:00	N	II
KQ1908380-14	Carbon, Total Organic	DUP	K1905477-001	Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50		2	6/15/19 15:36:00	N	I
KQ1908380-15	Carbon, Total Organic	DUP	K1905477-002	Water	19.70 mg/L	10 mL	19.7 mg/L	1	0.07	0.50		1	6/15/19 16:04:00	N	I
KQ1908380-16	Carbon, Total Organic	DUP	K1905477-003	Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50		5	6/15/19 16:32:00	N	I
KQ1908380-17	Carbon, Total Organic	DUP	K1905477-004	Water	1.13 mg/L	10 mL	1.13 mg/L	1	0.07	0.50		9	6/15/19 17:59:00	N	I
KQ1908380-18	Carbon, Total Organic	DUP	K1905482-001	Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50		NC	6/15/19 18:27:00	N	II
KQ1908380-19	Carbon, Total Organic	DUP	K1905482-002	Water	1.52 mg/L	10 mL	1.52 mg/L	1	0.07	0.50		<1	6/15/19 18:56:00	N	II
KQ1908380-20	Carbon, Total Organic	DUP	K1905482-003	Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50		2	6/15/19 19:24:00	N	II
KQ1908380-21	Carbon, Total Organic	DUP	K1905482-004	Water	0.82 mg/L	10 mL	0.82 mg/L	1	0.07	0.50		6	6/15/19 19:52:00	N	II
KQ1908380-22	Carbon, Total Organic	DUP	K1905482-005	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 20:20:00	N	II
KQ1908380-23	Carbon, Total Organic	DUP	K1905409-001	Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 20:48:00	N	I
KQ1908380-24	Carbon, Total Organic	DUP	K1905409-002	Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 21:16:00	N	I
KQ1908380-25	Carbon, Total Organic	DUP	K1905558-001	Water	1.41 mg/L	10 mL	1.41 mg/L	1	0.07	0.50		5	6/15/19 22:14:00	N	II
KQ1908380-26	Carbon, Total Organic	DUP	K1905558-002	Water	1.61 mg/L	10 mL	1.61 mg/L	1	0.07	0.50		2	6/15/19 22:42:00	N	II
KQ1908380-27	Carbon, Total Organic	DUP	K1905558-003	Water	1.06 mg/L	10 mL	1.06 mg/L	1	0.07	0.50		1	6/15/19 23:10:00	N	II
KQ1908380-28	Carbon, Total Organic	DUP	K1905558-004	Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50		3	6/15/19 23:38:00	N	II
KQ1908380-29	Carbon, Total Organic	DUP	K1905558-005	Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50		3	6/16/19 00:06:00	N	II
KQ1908380-30	Carbon, Total Organic	DUP	K1905586-001	Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50		4	6/16/19 00:34:00	N	II
KQ1908380-31	Carbon, Total Organic	DUP	K1905586-002	Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		NC	6/16/19 01:02:00	N	II
KQ1908380-32	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:59:00	N	IV
KQ1908380-33	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	IV
KQ1908380-34	Carbon, Total Organic	CCV		Ground Water	24.50 mg/L	10 mL	24.5 mg/L	1					6/15/19 21:44:00	N	IV
KQ1908380-35	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	IV
KQ1908380-36	Carbon, Total Organic	CCV		Ground Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	IV
KQ1908380-37	Carbon, Total Organic	CCV		Ground Water	25.11 mg/L	10 mL	25.1 mg/L	1					6/16/19 11:00:00	N	IV
KQ1908380-38	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908380-39	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 11:14:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639524 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905259-001	Carbon, Total Organic	N/A		Water	2.21 mg/L	10 mL	2.21 mg/L	1	0.07	0.50			6/16/19 06:15:00	N	IV
K1905597-001	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50			6/16/19 01:30:00	N	IV
K1905597-002	Carbon, Total Organic	N/A		Water	2.79 mg/L	10 mL	11.2 mg/L	4	0.3	2.0			6/16/19 01:58:00	N	IV
K1905597-003	Carbon, Total Organic	N/A		Water	2.72 mg/L	10 mL	10.9 mg/L	4	0.3	2.0			6/16/19 02:27:00	N	IV
K1905597-004	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:53:00	N	IV
K1905597-005	Carbon, Total Organic	N/A		Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50			6/16/19 04:22:00	N	IV
K1905597-006	Carbon, Total Organic	N/A		Water	2.34 mg/L	10 mL	2.34 mg/L	1	0.07	0.50			6/16/19 04:50:00	Y	IV
K1905597-007	Carbon, Total Organic	N/A		Water	1.43 mg/L	10 mL	1.43 mg/L	1	0.07	0.50			6/16/19 05:47:00	N	IV
KQ1908381-01	Carbon, Total Organic	CCV		Water	24.50 mg/L	10 mL	24.5 mg/L	1					6/15/19 21:44:00	N	IV
KQ1908381-02	Carbon, Total Organic	CCV		Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	IV
KQ1908381-03	Carbon, Total Organic	CCV		Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	IV
KQ1908381-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:59:00	N	IV
KQ1908381-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	IV
KQ1908381-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	IV
KQ1908381-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:30:00	N	IV
KQ1908381-08	Carbon, Total Organic	LCS		Water	25.11 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/15/19 17:45:00	N	IV
KQ1908381-09	Carbon, Total Organic	MS	K1905597-006	Water	26.78 mg/L	10 mL	53.6 mg/L	2	0.2	1.0	102		6/16/19 05:18:00	N	IV
KQ1908381-10	Carbon, Total Organic	DUP	K1905597-001	Water	0.50 mg/L	10 mL	0.50 mg/L J	1	0.07	0.50		20*	6/16/19 01:30:00	N	IV
KQ1908381-11	Carbon, Total Organic	DUP	K1905597-002	Water	2.79 mg/L	10 mL	11.2 mg/L	4	0.3	2.0		<1	6/16/19 01:58:00	N	IV
KQ1908381-12	Carbon, Total Organic	DUP	K1905597-003	Water	2.70 mg/L	10 mL	10.8 mg/L	4	0.3	2.0		<1	6/16/19 02:27:00	N	IV
KQ1908381-13	Carbon, Total Organic	DUP	K1905597-004	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/16/19 03:53:00	N	IV
KQ1908381-14	Carbon, Total Organic	DUP	K1905597-005	Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50		8	6/16/19 04:22:00	N	IV
KQ1908381-15	Carbon, Total Organic	DUP	K1905597-006	Water	2.37 mg/L	10 mL	2.37 mg/L	1	0.07	0.50		1	6/16/19 04:50:00	N	IV
KQ1908381-16	Carbon, Total Organic	DUP	K1905597-007	Water	1.41 mg/L	10 mL	1.41 mg/L	1	0.07	0.50		2	6/16/19 05:47:00	N	IV
KQ1908381-17	Carbon, Total Organic	DUP	K1905259-001	Water	2.25 mg/L	10 mL	2.25 mg/L	1	0.07	0.50		2	6/16/19 06:15:00	N	IV

06/18/19

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639525 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905589-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.12 mg/L	10 mL	3.12 mg/L	1	0.07	0.50			6/16/19 06:43:00	N	II
K1905589-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.29 mg/L	10 mL	2.29 mg/L	1	0.07	0.50			6/16/19 07:41:00	N	II
K1905595-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50			6/16/19 09:49:00	N	I
K1905595-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50			6/16/19 10:17:00	N	I
K1905625-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.22 mg/L	10 mL	1.22 mg/L	1	0.07	0.50			6/16/19 08:09:00	N	II
K1905625-002	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50			6/16/19 09:06:00	N	II
KQ1908382-01	Carbon, Dissolved Organic (DOC)	CCV		Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	II
KQ1908382-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	II
KQ1908382-03	Carbon, Dissolved Organic (DOC)	CCV		Water	25.11 mg/L	10 mL	25.1 mg/L	1					6/16/19 11:00:00	N	II
KQ1908382-04	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	II
KQ1908382-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	II
KQ1908382-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 11:14:00	N	II
KQ1908382-07	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:24:00	N	II
KQ1908382-08	Carbon, Dissolved Organic (DOC)	LCS		Water	25.10 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/16/19 03:39:00	N	II
KQ1908382-09	Carbon, Dissolved Organic (DOC)	MS	K1905625-001	Effluent	26.86 mg/L	10 mL	26.9 mg/L	1	0.07	0.50	103		6/16/19 08:37:00	N	II
KQ1908382-10	Carbon, Dissolved Organic (DOC)	DUP	K1905589-002	Water	3.13 mg/L	10 mL	3.13 mg/L	1	0.07	0.50		<1	6/16/19 06:43:00	N	II
KQ1908382-11	Carbon, Dissolved Organic (DOC)	DUP	K1905589-004	Water	2.30 mg/L	10 mL	2.30 mg/L	1	0.07	0.50		<1	6/16/19 07:41:00	N	II
KQ1908382-12	Carbon, Dissolved Organic (DOC)	DUP	K1905625-001	Effluent	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		5	6/16/19 08:09:00	N	II
KQ1908382-13	Carbon, Dissolved Organic (DOC)	DUP	K1905625-002	Effluent	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50		<1	6/16/19 09:06:00	N	II
KQ1908382-14	Carbon, Dissolved Organic (DOC)	DUP	K1905595-001	Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		2	6/16/19 09:49:00	N	I
KQ1908382-15	Carbon, Dissolved Organic (DOC)	DUP	K1905595-002	Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50		NC	6/16/19 10:17:00	N	I

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

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.937	0.0000	24.9374	24.9374	24.9	6/14/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/14/2019
4	MB1	1	0.000	0.0000	0.0000	0	<0.5	6/14/2019
5	[TOC] LCS [24ppm]	1	25.401	0.0000	25.4009	25.4009	25.4	6/14/2019
6	K1905258-006	100	3.314	0.0000	3.3140	331.4	331.40	6/15/2019
7	K1905258-006d	100	3.327	0.0000	3.3271	332.71	332.7	6/15/2019
8	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	25	6/15/2019
9	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
10	K1905198-003	100	13.598	0.0000	13.5984	1359.84	1359.84	6/15/2019
11	K1905198-003d	100	13.590	0.0000	13.5897	1358.97	1359.0	6/15/2019
12	K1905114-006	10	5.412	0.0000	5.4117	54.117	54.12	6/15/2019
13	K1905114-006d	10	6.290	0.0000	6.2895	62.895	62.90	6/15/2019
14	K1905440-001	1	21.348	0.0000	21.3480	21.348	21.35	6/15/2019
15	K1905440-001d	1	21.002	0.0000	21.0020	21.002	21.0	6/15/2019
16	K1905440-002	1	21.512	0.0000	21.5121	21.5121	21.5	6/15/2019
17	K1905440-002d	1	21.247	0.0000	21.2469	21.2469	21.25	6/15/2019
18	K1905440-003	1	20.626	0.0000	20.6264	20.6264	20.6	6/15/2019
19	K1905440-003d	1	20.933	0.0000	20.9333	20.9333	20.9	6/15/2019
20	K1905440-004	1	20.849	0.0000	20.8493	20.8493	20.85	6/15/2019
21	K1905440-004d	1	20.795	0.0000	20.7951	20.7951	20.80	6/15/2019
22	K1905478-001	1	28.056	0.0000	28.0558	28.0558	28.1	6/15/2019
23	K1905478-001d	1	28.385	0.0000	28.3853	28.3853	28.4	6/15/2019
24	K1905478-002	1	9.821	0.0000	9.8214	9.8214	9.82	6/15/2019
25	K1905478-002d	1	9.348	0.0000	9.3476	9.3476	9.35	6/15/2019

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

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

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

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

		date	time
Analyzed By:		Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	C] CCV 25 ppm [25 p	1	25.464	0.0000	25.4635	25.4635	25.46	6/15/2019
27	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
28	K1905478-003	1	18.571	0.0000	18.5707	18.5707	18.6	6/15/2019
29	K1905478-003d	1	18.705	0.0000	18.7046	18.7046	18.7	6/15/2019
30	K1905478-004	1	9.865	0.0000	9.8646	9.8646	9.9	6/15/2019
31	K1905478-004d	1	9.856	0.0000	9.8560	9.856	9.9	6/15/2019
32	K1905478-004ms	2	29.953	0.0000	29.9530	59.906	59.9	6/15/2019
33	K1905478-005	1	7.894	0.0000	7.8940	7.894	7.9	6/15/2019
34	K1905478-005d	1	7.970	0.0000	7.9703	7.9703	8.0	6/15/2019
35	K1905478-006	1	0.673	0.0000	0.6731	0.6731	0.7	6/15/2019
36	K1905478-006d	1	0.595	0.0000	0.5947	0.5947	0.6	6/15/2019
37	K1905478-007	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
38	K1905478-007d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
39	K1905451-001	100	6.462	0.0000	6.4621	646.21	646.2	6/15/2019
40	K1905451-001d	100	6.461	0.0000	6.4610	646.1	646.1	6/15/2019
41	C] CCV 25 ppm [25 p	1	24.963	0.0000	24.9627	24.9627	25.0	6/15/2019
42	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
43	K1905451-002	100	5.830	0.0000	5.8303	583.03	583.0	6/15/2019
44	K1905451-002d	100	5.902	0.0000	5.9022	590.22	590.2	6/15/2019
45	K1905589-001	1	3.741	0.0000	3.7412	3.7412	3.7	6/15/2019
46	K1905589-001d	1	3.637	0.0000	3.6370	3.637	3.6	6/15/2019
47	K1905589-003	1	2.586	0.0000	2.5861	2.5861	2.6	6/15/2019
48	K1905589-003d	1	2.583	0.0000	2.5834	2.5834	2.6	6/15/2019
49	K1905420-001	100	0.378	0.0000	0.3783	37.83	37.8	6/15/2019
50	K1905420-001d	100	0.387	0.0000	0.3867	38.67	38.7	6/15/2019

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905449-001	1	1.539	0.0000	1.5389	1.5389	1.54	6/15/2019
52	K1905449-001d	1	1.469	0.0000	1.4688	1.4688	1.5	6/15/2019
53	C] CCV 25 ppm [25 p	1	24.894	0.0000	24.8939	24.8939	24.9	6/15/2019
54	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BLD	Date Analyzed 6/16/19
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	24.6	6/15/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
4	K1905198-006	1	3.957	0.0000	3.9572	3.9572	4.0	6/15/2019
5	K1905198-006d	1	3.834	0.0000	3.8337	3.8337	3.8	6/15/2019
6	C] CCV 25 ppm [25 p	1	25.464	0.0000	25.4635	25.4635	25.46	6/15/2019
7	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
8	MB2	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
9	[TOC] LCS [24ppm]	1	25.436	0.0000	25.4355	25.4355	25.44	6/15/2019
10	C] CCV 25 ppm [25 p	1	24.963	0.0000	24.9627	24.9627	24.96	6/15/2019
11	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
12	K1905449-002	1	0.558	0.0000	0.5581	0.5581	0.56	6/15/2019
13	K1905449-002d	1	0.529	0.0000	0.5290	0.529	0.53	6/15/2019
14	K1905477-001	1	1.722	0.0000	1.7217	1.7217	1.72	6/15/2019
15	K1905477-001d	1	1.754	0.0000	1.7538	1.7538	1.8	6/15/2019
16	K1905477-002	1	19.942	0.0000	19.9421	19.9421	19.9	6/15/2019
17	K1905477-002d	1	19.696	0.0000	19.6957	19.6957	19.70	6/15/2019
18	K1905477-003	1	2.685	0.0000	2.6845	2.6845	2.7	6/15/2019
19	K1905477-003d	1	2.556	0.0000	2.5556	2.5556	2.6	6/15/2019
20	C] CCV 25 ppm [25 p	1	24.894	0.0000	24.8939	24.8939	24.89	6/15/2019
21	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
22	K1905477-004	1	1.231	0.0000	1.2310	1.231	1.2	6/15/2019
23	K1905477-004d	1	1.126	0.0000	1.1263	1.1263	1.1	6/15/2019
24	K1905482-001	1	0.404	0.0000	0.4040	0.404	<0.5	6/15/2019
25	K1905482-001d	1	0.464	0.0000	0.4636	0.4636	<0.5	6/15/2019

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

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

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

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

		date	time
Analyzed By:	[illegible]	Date Analyzed	6/16/19
Reviewed By:	[signature]	Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905482-002	1	1.537	0.0000	1.5366	1.5366	1.54	6/15/2019
27	K1905482-002d	1	1.522	0.0000	1.5215	1.5215	1.52	6/15/2019
28	K1905482-003	1	0.620	0.0000	0.6196	0.6196	0.6	6/15/2019
29	K1905482-003d	1	0.632	0.0000	0.6317	0.6317	0.6	6/15/2019
30	K1905482-004	1	0.870	0.0000	0.8701	0.8701	0.9	6/15/2019
31	K1905482-004d	1	0.818	0.0000	0.8181	0.8181	0.8	6/15/2019
32	K1905482-005	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
33	K1905482-005d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
34	K1905409-001	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
35	K1905409-001d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
36	K1905409-002	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
37	K1905409-002d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
38	C] CCV 25 ppm [25 p	1	24.499	0.0000	24.4988	24.4988	24.5	6/15/2019
39	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
40	K1905558-001	1	1.482	0.0000	1.4823	1.4823	1.5	6/15/2019
41	K1905558-001d	1	1.412	0.0000	1.4121	1.4121	1.4	6/15/2019
42	K1905558-002	1	1.642	0.0000	1.6423	1.6423	1.6	6/15/2019
43	K1905558-002d	1	1.608	0.0000	1.6080	1.608	1.6	6/15/2019
44	K1905558-003	1	1.073	0.0000	1.0728	1.0728	1.1	6/15/2019
45	K1905558-003d	1	1.061	0.0000	1.0610	1.061	1.1	6/15/2019
46	K1905558-004	1	1.588	0.0000	1.5881	1.5881	1.6	6/15/2019
47	K1905558-004d	1	1.543	0.0000	1.5426	1.5426	1.5	6/15/2019
48	K1905558-005	1	1.526	0.0000	1.5259	1.5259	1.5	6/16/2019
49	K1905558-005d	1	1.484	0.0000	1.4841	1.4841	1.5	6/16/2019
50	K1905586-001	1	0.693	0.0000	0.6929	0.6929	0.7	6/16/2019

Analyzed By: KCP	Date Analyzed 6/16/19
Reviewed By: [signature]	Date Reviewed 06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905586-001d	1	0.666	0.0000	0.6657	0.6657	0.67	6/16/2019
52	K1905586-002	1	0.189	0.0000	0.1892	0.1892	<0.5	6/16/2019
53	K1905586-002d	1	0.160	0.0000	0.1601	0.1601	<0.5	6/16/2019
54	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.5	6/16/2019
55	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
56	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24.1	6/16/2019
57	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
58	K1905198-006ms	1	25.561	0.0000	25.5611	25.5611	25.6	6/16/2019
59	C] CCV 25 ppm [25 p	1	25.111	0.0000	25.1105	25.1105	25.1	6/16/2019
60	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:	[signature]	Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	MB3	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
3	[TOC] LCS [25ppm]	1	25.114	0.0000	25.1136	25.1136	25.1	6/15/2019
4	C] CCV 25 ppm [25 p	1	24.499	0.0000	24.4988	24.4988	24.5	6/15/2019
5	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
6	K1905597-001	1	0.607	0.0000	0.6073	0.6073	0.61	6/16/2019
7	K1905597-001d	1	0.496	0.0000	0.4957	0.4957	<0.5	6/16/2019
8	K1905597-002	4	2.794	0.0000	2.7938	11.1752	11	6/16/2019
9	K1905597-002d	4	2.791	0.0000	2.7914	11.1656	11.17	6/16/2019
10	K1905597-003	4	2.724	0.0000	2.7238	10.8952	10.90	6/16/2019
11	K1905597-003d	4	2.704	0.0000	2.7035	10.814	10.8	6/16/2019
12	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.52	6/16/2019
13	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
14	K1905597-004	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
15	K1905597-004d	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
16	K1905597-005	1	0.325	0.0000	0.3247	0.3247	<0.5	6/16/2019
17	K1905597-005d	1	0.301	0.0000	0.3007	0.3007	<0.5	6/16/2019
18	K1905597-006	1	2.345	0.0000	2.3445	2.3445	2.3	6/16/2019
19	K1905597-006d	1	2.369	0.0000	2.3694	2.3694	2.4	6/16/2019
20	K1905597-006ms	2	26.784	0.0000	26.7837	53.5674	53.57	6/16/2019
21	K1905597-007	1	1.434	0.0000	1.4339	1.4339	1.43	6/16/2019
22	K1905597-007d	1	1.412	0.0000	1.4118	1.4118	1.4	6/16/2019
23	K1905259-001	1	2.214	0.0000	2.2135	2.2135	2.2	6/16/2019
24	K1905259-001d	1	2.252	0.0000	2.2524	2.2524	2.25	6/16/2019
25	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24.12	6/16/2019

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

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

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

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

		date time
Analyzed By: KCP	Date Analyzed	6/16/19
Reviewed By:	Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
27		1		0.0000	0.0000	0	<0.5	
28		1		0.0000	0.0000	0	<0.5	
29		1		0.0000	0.0000	0	<0.5	
30		1		0.0000	0.0000	0	<0.5	
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: RP	Date Analyzed 6/16/19
Reviewed By: [signature]	Date Reviewed 06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.5	6/16/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
4	MB4	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
5	[TOC] LCS [25ppm]	1	25.100	0.0000	25.1000	25.1	25.1	6/16/2019
6	K1905589-002	1	3.123	0.0000	3.1233	3.1233	3.12	6/16/2019
7	K1905589-002d	1	3.128	0.0000	3.1282	3.1282	3.1	6/16/2019
8	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24	6/16/2019
9	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
10	K1905589-004	1	2.294	0.0000	2.2935	2.2935	2.29	6/16/2019
11	K1905589-004d	1	2.303	0.0000	2.3031	2.3031	2.3	6/16/2019
12	K1905625-001	1	1.221	0.0000	1.2211	1.2211	1.22	6/16/2019
13	K1905625-001d	1	1.285	0.0000	1.2848	1.2848	1.28	6/16/2019
14	K1905625-001ms	1	26.865	0.0000	26.8649	26.8649	26.86	6/16/2019
15	K1905625-002	1	1.214	0.0000	1.2136	1.2136	1.2	6/16/2019
16	K1905625-002d	1	1.207	0.0000	1.2073	1.2073	1.2	6/16/2019
17	K1905595-001	1	0.568	0.0000	0.5675	0.5675	0.57	6/16/2019
18	K1905595-001d	1	0.578	0.0000	0.5782	0.5782	0.6	6/16/2019
19	K1905595-002 100X	100	0.000	0.0000	0.0000	0	<0.5	6/16/2019
20	K1905595-002 100Xd	100	0.000	0.0000	0.0000	0	<0.5	6/16/2019
21	C] CCV 25 ppm [25 p	1	25.111	0.0000	25.1105	25.1105	25.11	6/16/2019
22	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

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

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

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

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

		date	time
Analyzed By: KP	Date Analyzed	6/16/19	
Reviewed By: [signature]	Date Reviewed	06/18/19	

TOC: 639522, 639523, 639524, DOC: 639525

Schedule: 06142019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/06/15 16:20 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1905436-001.01	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1905436-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1905436-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	K1905436-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
8	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1905258-006.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1905198-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1905198-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1905114-006.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1905440-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1905440-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1905440-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1905440-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1905478-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1905478-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1905478-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1905478-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1905478-004.01 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
24	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1905478-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1905478-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1905478-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1905451-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1905451-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1905589-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1905589-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1905420-001.02 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
34	Sample	K1905449-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1905449-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1905477-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1905477-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1905477-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

NR
NR

06/18/19

Schedule: 06142019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1905477-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1905482-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1905482-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1905482-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1905482-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1905482-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1905409-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1905409-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1905558-001.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1905558-002.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1905558-003.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1905558-004.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1905558-005.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1905586-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1905586-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1905597-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1905597-002.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1905597-003.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1905597-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1905597-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1905597-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1905597-006.01 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
63	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
64	Sample	K1905597-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1905259-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1905589-002.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1905589-004.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1905625-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1905625-001.03 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
70	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
71	Sample	K1905625-002.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	FB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
73	Sample	K1905595-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1905595-002.03 100x doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample	K1905198-006.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

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Fusion Report - 06142019
Friday, June 14, 2019 03:25 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/06/18 08:56 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	06142019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8)		
Comment:			

Report Results

06/18/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/14 15:25

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.34	18.06	4.72	49.88	07:58
2	TC Clean	14.48	17.60	3.12	49.67	07:18
3	TC Clean	3.52	6.54	3.02	49.90	07:04
4	TC Clean	2.44	5.68	3.24	49.76	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/14 16:04

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.04	15.23	3.18	49.96	07:59

2	TC Clean	5.88	9.04	3.16	49.75	07:16
3	TC Clean	2.16	5.37	3.21	49.79	07:02
4	TC Clean	1.43	4.65	3.22	49.90	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/14 16:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.06	4.16	3.09	49.78	05:26
2	TC Clean	4.34	7.40	3.05	49.94	07:19
3	TC Clean	2.36	5.45	3.10	49.86	07:02
4	TC Clean	1.88	4.87	2.98	49.79	07:00

Sample Type: Blank (Creating v1266) — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/06/14 17:10

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.16	4.21	3.05	49.68	05:25
2	TC Clean	4.58	7.72	3.15	49.84	07:16
3	TC Clean	2.49	5.59	3.10	49.83	07:00
4	TC Clean	1.81	4.95	3.14	49.94	07:01
5	Reagent Blank	6.66	9.83	3.17	49.86	08:11
6	Acid Blank	1.49	4.73	3.24	49.69	05:29

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.3200 ppm	0.0000 ppm	0.0000%	2019/06/14 17:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3200	3.1998	11.13	14.35	3.22	50.07	10:29

Dilution **Blank Contribution** **Method** **Calibration**

1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9374 ppm (PASS)	0.0000 ppm	0%	2019/06/14 18:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9374	249.3739	178.74	181.86	3.12	50.09	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/14 18:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.93	11.23	3.30	50.20	10:29

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

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 18:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.04	10.20	3.16	50.08	10:28
2	TOC	0.0000	0.0000	7.38	10.54	3.17	49.99	10:29
3	TOC	0.0000	0.0000	7.03	10.13	3.09	49.96	10:27
4	TOC	0.0000	0.0000	7.13	10.13	3.00	49.92	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4375 ppm (PASS)	0.1009 ppm	0.40%	2019/06/14 19:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.4009	254.0086	181.88	184.97	3.09	49.87	10:27
C	TOC	25.0 ppm	2	25.5837	255.8368	183.12	186.21	3.08	49.84	10:25
C	TOC	25.0 ppm	3	25.4128	254.1279	181.96	185.20	3.24	49.89	10:27
C	TOC	25.0 ppm	4	25.3525	253.5254	181.55	184.86	3.30	49.81	10:30

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

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.2434 ppm	0.0000 ppm	0.0000%	2019/06/14 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2434	2.4338	10.61	13.81	3.20	49.81	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

NR no room

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1905436-001.01	0.7283 ppm	0.0388 ppm	5.3200%	2019/06/14 20:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7857	7.8566	14.29	17.55	3.25	49.80	10:27
2	TOC	0.7089	7.0891	13.77	17.02	3.25	49.80	10:30
3	TOC	0.7017	7.0169	13.72	16.97	3.25	49.80	10:28
4	TOC	0.7169	7.1686	13.83	16.98	3.15	49.83	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

NR no room

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1905436-001.01 ms	27.4897 ppm	0.0961 ppm	0.3500%	2019/06/14 21:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.5876	275.8760	196.22	199.32	3.10	49.83	10:28
2	TOC	27.3697	273.6972	194.74	198.12	3.38	49.84	10:28

3	TOC	27.5424	275.4238	195.92	199.07	3.15	49.85	10:30
4	TOC	27.4591	274.5914	195.35	198.50	3.14	49.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 22:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.54	10.78	3.24	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1905436-002.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.04	11.07	3.02	49.89	10:31
2	TOC	0.0000	0.0000	7.57	10.75	3.19	49.89	10:27
3	TOC	0.0000	0.0000	7.71	10.95	3.24	49.91	10:27
4	TOC	0.0000	0.0000	7.76	10.87	3.11	49.94	10:27

Per 6/18/19 K1905436 NC

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1905436-003.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 23:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.52	10.65	3.13	49.96	10:24
2	TOC	0.0000	0.0000	7.59	10.61	3.02	49.96	10:24
3	TOC	0.0000	0.0000	7.36	10.42	3.05	49.95	10:31
4	TOC	0.0000	0.0000	7.66	10.79	3.12	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 00:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.48	9.62	3.14	49.96	10:29
2	TOC	0.0000	0.0000	6.84	9.91	3.07	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1905258-006.01 100x	3.3205 ppm	0.0093 ppm	0.2800%	2019/06/15 01:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3140	33.1397	31.46	34.50	3.05	49.99	10:28
2	TOC	3.3271	33.2708	31.54	34.86	3.31	50.00	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5900 ppm (PASS)	0.0000 ppm	0%	2019/06/15 01:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5900	245.9001	176.38	179.52	3.14	50.01	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 01:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.08	10.33	3.25	50.01	10:33

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

Sample Type: Sample — From Schedule Version 3

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

◈	10	TOC	K1905198-003.01 100x	13.5940 ppm	0.0061 ppm	0.0500%	2019/06/15 02:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5984	135.9838	101.26	104.50	3.24	49.97	10:27
2	TOC	13.5897	135.8969	101.21	104.44	3.23	49.98	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 02:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.99	10.12	3.13	49.99	10:30
2	TOC	0.0000	0.0000	6.59	9.86	3.27	50.00	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1905198-006.01	3.8954 ppm	0.0873 ppm	2.2400%	2019/06/15 03:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9572	39.5717	35.82	39.04	3.22	50.00	10:29
2	TOC	3.8337	38.3371	34.98	38.07	3.09	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1905114-006.01 10x	5.8506 ppm	0.6208 ppm	10.6100%	2019/06/15 03:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.4117	54.1166	45.69	49.02	3.32	50.01	10:31
2	TOC	6.2895	62.8954	51.65	54.78	3.12	50.01	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1905440-001.01	21.1750 ppm	0.2447 ppm	1.1600%	2019/06/15 04:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.3480	213.4801	153.87	157.12	3.25	50.03	10:28
2	TOC	21.0020	210.0196	151.52	154.86	3.34	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1905440-002.01	21.3795 ppm	0.1875 ppm	0.8800%	2019/06/15 04:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.5121	215.1212	154.98	158.24	3.25	50.02	10:26
2	TOC	21.2469	212.4695	153.18	156.37	3.19	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1905440-003.01	20.7799 ppm	0.2170 ppm	1.0400%	2019/06/15 04:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.6264	206.2644	148.97	152.17	3.19	50.04	10:26
2	TOC	20.9333	209.3330	151.05	154.23	3.17	50.04	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1905440-004.01	20.8222 ppm	0.0383 ppm	0.1800%	2019/06/15 05:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.8493	208.4933	150.48	153.72	3.23	50.03	10:28
2	TOC	20.7951	207.9512	150.12	153.41	3.29	50.04	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1905478-001.01	28.2206 ppm	0.2330 ppm	0.8300%	2019/06/15 05:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0558	280.5579	199.40	202.57	3.17	50.01	10:27
2	TOC	28.3853	283.8534	201.64	204.78	3.14	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1905478-002.01	9.5845 ppm	0.3350 ppm	3.5000%	2019/06/15 06:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8214	98.2139	75.63	78.90	3.28	50.03	10:31
2	TOC	9.3476	93.4761	72.41	75.52	3.11	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4635 ppm (PASS)	0.0000 ppm	0%	2019/06/15 06:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4635	254.6347	182.31	185.62	3.32	50.02	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 07:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.42	11.67	3.25	50.01	10:31

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

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 07:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.06	10.22	3.16	50.01	10:36

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4355 ppm (PASS)	0.0000 ppm	0%	2019/06/15 07:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.4355	254.3548	182.12	185.25	3.13	50.02	10:31

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

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1905478-003.01	18.6377 ppm	0.0947 ppm	0.5100%	2019/06/15 07:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.5707	185.7073	135.02	138.21	3.19	50.04	10:30
2	TOC	18.7046	187.0465	135.93	139.24	3.32	50.00	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1905478-004.01	9.8603 ppm	0.0060 ppm	0.0600%	2019/06/15 08:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8646	98.6456	75.92	79.15	3.23	50.00	10:27
2	TOC	9.8560	98.5601	75.86	79.06	3.19	49.99	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1905478-004.01 ms 2x	29.9530 ppm	0.0000 ppm	0.0000%	2019/06/15 08:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.9530	299.5298	212.28	215.36	3.08	50.01	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.77	11.03	3.26	49.99	10:28
2	TOC	0.0000	0.0000	6.82	10.06	3.24	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1905478-005.01	7.9322 ppm	0.0540 ppm	0.6800%	2019/06/15 09:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8940	78.9400	62.54	65.71	3.16	49.95	10:31
2	TOC	7.9703	79.7032	63.06	66.27	3.21	49.94	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1905478-006.01	0.6339 ppm	0.0554 ppm	8.7400%	2019/06/15 10:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6731	6.7311	13.53	16.69	3.16	49.87	10:27
2	TOC	0.5947	5.9474	13.00	16.22	3.22	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1905478-007.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 10:59

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

1	TOC	0.0000	0.0000	7.39	10.50	3.11	49.81	10:29
2	TOC	0.0000	0.0000	7.27	10.48	3.21	49.79	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1905451-001.01 100x	6.4615 ppm	0.0007 ppm	0.0100%	2019/06/15 11:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4621	64.6205	52.82	55.88	3.05	49.78	10:28
2	TOC	6.4610	64.6102	52.82	55.95	3.14	49.76	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9627 ppm (PASS)	0.0000 ppm	0%	2019/06/15 12:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9627	249.6273	178.91	182.18	3.27	49.76	10:33

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 12:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.39	10.62	3.23	49.80	10:30

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1905451-002.01 100x	5.8663 ppm	0.0508 ppm	0.8700%	2019/06/15 12:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8303	58.3034	48.54	51.75	3.21	49.80	10:30
2	TOC	5.9022	59.0224	49.02	52.16	3.13	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1905589-001.01	3.6891 ppm	0.0736 ppm	2.0000%	2019/06/15 13:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7412	37.4120	34.35	37.49	3.13	49.77	10:27
2	TOC	3.6370	36.3704	33.65	36.75	3.10	49.81	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1905589-003.01	2.5847 ppm	0.0019 ppm	0.0700%	2019/06/15 13:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5861	25.8606	26.51	29.58	3.06	49.93	10:26
2	TOC	2.5834	25.8341	26.50	29.65	3.15	49.88	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1905420-001.02 100x	0.3825 ppm	0.0059 ppm	1.5500%	2019/06/15 13:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3783	3.7832	11.53	14.74	3.21	49.85	10:31
2	TOC	0.3867	3.8672	11.58	14.76	3.18	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 14:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.91	9.10	3.19	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1905449-001.02	1.5038 ppm	0.0496 ppm	3.3000%	2019/06/15 14:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5389	15.3891	19.41	22.54	3.14	49.92	10:26
2	TOC	1.4688	14.6879	18.93	22.03	3.10	49.91	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1905449-002.02	0.5435 ppm	0.0205 ppm	3.7800%	2019/06/15 15:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5581	5.5805	12.75	15.85	3.10	49.96	10:28
2	TOC	0.5290	5.2903	12.55	15.63	3.08	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1905477-001.02	1.7378 ppm	0.0227 ppm	1.3100%	2019/06/15 15:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7217	17.2173	20.65	23.75	3.10	49.91	10:25
2	TOC	1.7538	17.5385	20.86	23.98	3.11	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1905477-002.02	19.8189 ppm	0.1743 ppm	0.8800%	2019/06/15 16:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	19.9421	199.4213	144.33	147.57	3.25	49.94	10:29
2	TOC	19.6957	196.9567	142.65	145.86	3.21	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1905477-003.02	2.6200 ppm	0.0911 ppm	3.4800%	2019/06/15 16:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6845	26.8447	27.18	30.31	3.13	49.99	10:30
2	TOC	2.5556	25.5557	26.31	29.38	3.08	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8939 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8939	248.9393	178.44	181.45	3.01	50.04	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.72	9.73	3.01	50.03	10:34

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 17:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.76	8.85	3.09	50.09	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1136 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1136	251.1358	179.93	183.18	3.24	50.06	10:30

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1905477-004.02	1.1786 ppm	0.0741 ppm	6.2800%	2019/06/15 17:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2310	12.3101	17.32	20.63	3.31	49.99	10:27
2	TOC	1.1263	11.2627	16.60	19.84	3.24	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1905482-001.02	0.4338 ppm	0.0422 ppm	9.7300%	2019/06/15 18:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4040	4.0396	11.70	15.00	3.30	50.06	10:28
2	TOC	0.4636	4.6362	12.11	15.22	3.11	49.96	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1905482-002.02	1.5290 ppm	0.0106 ppm	0.6900%	2019/06/15 18:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5366	15.3655	19.39	22.43	3.04	49.99	10:27
2	TOC	1.5215	15.2153	19.29	22.48	3.19	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1905482-003.02	0.6257 ppm	0.0085 ppm	1.3700%	2019/06/15 19:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6196	6.1963	13.17	16.27	3.10	49.95	10:29
2	TOC	0.6317	6.3171	13.25	16.32	3.07	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1905482-004.02	0.8441 ppm	0.0368 ppm	4.3600%	2019/06/15 19:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8701	8.7008	14.87	17.98	3.11	49.92	10:25
2	TOC	0.8181	8.1807	14.51	17.78	3.27	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1905482-005.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 20:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.83	9.01	3.18	49.83	10:31
2	TOC	0.0000	0.0000	6.27	9.49	3.21	49.80	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1905409-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 20:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.61	8.78	3.17	49.79	10:29
2	TOC	0.0000	0.0000	5.86	8.91	3.05	49.77	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1905409-002.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 21:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.33	8.57	3.25	49.78	10:30
2	TOC	0.0000	0.0000	5.75	9.02	3.27	49.77	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4988 ppm (PASS)	0.0000 ppm	0%	2019/06/15 21:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4988	244.9882	175.76	178.90	3.14	49.76	10:32

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

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 21:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.20	9.37	3.17	49.80	10:34

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

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1905558-001.14	1.4472 ppm	0.0497 ppm	3.4300%	2019/06/15 22:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4823	14.8234	19.02	22.22	3.20	49.82	10:28
2	TOC	1.4121	14.1207	18.54	21.65	3.11	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1905558-002.14	1.6252 ppm	0.0243 ppm	1.4900%	2019/06/15 22:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6423	16.4233	20.11	23.32	3.21	49.84	10:29
2	TOC	1.6080	16.0800	19.88	23.13	3.26	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1905558-003.14	1.0669 ppm	0.0083 ppm	0.7800%	2019/06/15 23:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0728	10.7279	16.24	19.41	3.17	49.88	10:27
2	TOC	1.0610	10.6100	16.16	19.31	3.15	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1905558-004.14	1.5654 ppm	0.0322 ppm	2.0600%	2019/06/15 23:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5881	15.8811	19.74	22.67	2.93	49.90	10:30
2	TOC	1.5426	15.4259	19.43	22.58	3.15	49.90	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1905558-005.14	1.5050 ppm	0.0296 ppm	1.9700%	2019/06/16 00:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5259	15.2595	19.32	22.36	3.05	49.93	10:29
2	TOC	1.4841	14.8411	19.03	22.23	3.20	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1905586-001.01	0.6793 ppm	0.0192 ppm	2.8200%	2019/06/16 00:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6929	6.9285	13.66	16.86	3.20	49.93	10:30
2	TOC	0.6657	6.6574	13.48	16.66	3.18	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1905586-002.01	0.1747 ppm	0.0205 ppm	11.7500%	2019/06/16 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1892	1.8916	10.24	13.54	3.30	49.89	10:28
2	TOC	0.1601	1.6014	10.05	13.18	3.13	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1905597-001.01	0.5515 ppm	0.0789 ppm	14.3000%	2019/06/16 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6073	6.0726	13.08	16.24	3.16	49.89	10:28
2	TOC	0.4957	4.9574	12.32	15.62	3.29	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1905597-002.01 4x	2.7926 ppm	0.0017 ppm	0.0600%	2019/06/16 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7938	27.9378	27.92	31.16	3.24	49.92	10:28
2	TOC	2.7914	27.9142	27.91	31.03	3.12	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1905597-003.01 4x	2.7136 ppm	0.0144 ppm	0.5300%	2019/06/16 02:27

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	2.7238	27.2380	27.45	30.52	3.08	49.91	10:29
2	TOC	2.7035	27.0347	27.31	30.44	3.13	49.91	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5184 ppm (PASS)	0.0000 ppm	0%	2019/06/16 02:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5184	245.1841	175.89	178.91	3.01	49.91	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 03:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.87	9.03	3.16	49.90	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.10	8.27	3.17	49.91	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 03:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1000	251.0003	179.84	182.99	3.15	49.93	10:34

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1905597-004.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 03:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.74	11.82	3.08	49.93	10:32
2	TOC	0.0000	0.0000	7.73	10.91	3.18	49.95	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1905597-005.01	0.3127 ppm	0.0170 ppm	5.4300%	2019/06/16 04:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3247	3.2470	11.16	14.33	3.17	49.96	10:27
2	TOC	0.3007	3.0068	11.00	14.19	3.18	49.96	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1905597-006.01	2.3569 ppm	0.0176 ppm	0.7500%	2019/06/16 04:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3445	23.4446	24.87	27.92	3.05	49.98	10:25
2	TOC	2.3694	23.6935	25.04	28.05	3.01	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1905597-006.01 ms 2x	26.7837 ppm	0.0000 ppm	0.0000%	2019/06/16 05:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7837	267.8368	190.77	193.77	3.00	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 05:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.96	9.15	3.19	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1905597-007.01	1.4228 ppm	0.0156 ppm	1.1000%	2019/06/16 05:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4339	14.3387	18.69	21.73	3.04	50.01	10:29
2	TOC	1.4118	14.1177	18.54	21.56	3.02	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1905259-001.02	2.2329 ppm	0.0275 ppm	1.2300%	2019/06/16 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2135	22.1349	23.99	27.17	3.18	50.02	10:28
2	TOC	2.2524	22.5238	24.25	27.32	3.08	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1905589-002.02 doc	3.1258 ppm	0.0034 ppm	0.1100%	2019/06/16 06:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1233	31.2334	30.16	33.36	3.20	50.06	10:28
2	TOC	3.1282	31.2820	30.19	33.30	3.10	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1171 ppm (PASS)	0.0000 ppm	0%	2019/06/16 07:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1171	241.1711	173.17	176.46	3.30	50.07	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 07:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.56	8.74	3.18	50.07	10:35

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1905589-004.02 doc	2.2983 ppm	0.0068 ppm	0.2900%	2019/06/16 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2935	22.9348	24.53	27.49	2.96	50.06	10:30
2	TOC	2.3031	23.0306	24.59	27.60	3.01	50.06	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈	68	TOC	K1905625-001.03 doc	1.2530 ppm	0.0450 ppm	3.5900%	2019/06/16 08:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2211	12.2114	17.25	20.44	3.19	50.03	10:26
2	TOC	1.2848	12.8478	17.68	20.58	2.90	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1905625-001.03 ms doc	26.8649 ppm	0.0000 ppm	0.0000%	2019/06/16 08:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8649	268.6485	191.32	194.50	3.18	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 08:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.07	9.21	3.14	50.02	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1905625-002.03 doc	1.2105 ppm	0.0045 ppm	0.3700%	2019/06/16 09:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2136	12.1363	17.20	20.50	3.30	50.02	10:32
2	TOC	1.2073	12.0729	17.16	20.43	3.28	50.00	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	FB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.63	8.73	3.10	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1905595-001.03 doc	0.5729 ppm	0.0076 ppm	1.3300%	2019/06/16 09:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5675	5.6748	12.81	15.96	3.15	49.99	10:30
2	TOC	0.5782	5.7824	12.89	16.02	3.14	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1905595-002.03 100x doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 10:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.91	10.07	3.16	49.97	10:28
2	TOC	0.0000	0.0000	6.95	10.10	3.15	49.95	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	K1905198-006.01 ms	25.5611 ppm	0.0000 ppm	0.0000%	2019/06/16 10:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.5611	255.6107	182.47	185.58	3.12	49.91	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1105 ppm (PASS)	0.0000 ppm	0%	2019/06/16 11:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1105	251.1049	179.91	183.10	3.19	49.89	10:30

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

00949300

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

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.98	9.18	3.20	49.85	10:34

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1265	1.1340	1.2260	0.0000	0.0000	0.0000	2019/06/10 14:28	Fusion1 (Fusion1)
v1266	2.2187	1.4940	0.0000	0.0000	0.0000	2019/06/14 17:57	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

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

Methods

00949301

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

00949302

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/06/16 11:32

ALS Environmental

StarLIMS Run: 639522, 639523, 639524, 639525

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78I

21 % H3PO4: 11-GEN-05-78H

Equipment ID: K-TOC-03

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

FILTER ID: FE1165 6/15/19

Analyzed By:	BCD / HLM	Date Analyzed:	6/16/19
Reviewed By:		Date Reviewed:	06/18/19

June 19, 2019 Service Request No:R1905051

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

La orator Results for L AAP Site

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 05, 2019
For your reference, these analyses have been assigned our service request number **R**

All testing was performed according to our laboratory s quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab s accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as C failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report ualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

ALS Group SA Corp d a ALS En iron ental



Janice Jaeger
Project Manager

CC: Joni Blankfield

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
P O E 1 585 288 5380 FAX 1 585 288 8475
ALS Group SA Corp
dba ALS Environmental

Narrative Documents

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ALS Environmental

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1905051
Date Received: 06/05/2019

CASE NARRATIVE

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

Sample Receipt:

Six water samples were received for analysis at ALS Environmental on 06/05/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method Organic Acids, 06/06/2019: The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken.

Method Organic Acids, 06/06/2019: The upper control criterion was exceeded for one or more analytes in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ Date 06/19/2019

SAMPLE DETECTIO S MMAR

CLIE T ID A			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	430			10	mg/L	Organic Acids
Butanoic Acid (Butyric Acid)	370			20	mg/L	Organic Acids
Propionic Acid	1000			10	mg/L	Organic Acids

CLIE T ID A			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	110			1.0	mg/L	Organic Acids
Butanoic Acid (Butyric Acid)	3.1			2.0	mg/L	Organic Acids
Propionic Acid	170			1.0	mg/L	Organic Acids

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client ALS Environmental - US **Ser ice Re uest** R1905051
Pro ect LHAAP / Site 58

SAMPLE CROSS-REFERE CE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R1905051-001	35AWW19 060319	6/3/2019	0805
R1905051-002	LHSMW07 060319	6/3/2019	0900
R1905051-003	35AWW23 060319	6/3/2019	1000
R1905051-004	35AWW24 060319	6/3/2019	1055
R1905051-005	35AWW11 060319	6/3/2019	1150
R1905051-006	35AWW09 060319	6/3/2019	1250

00949310

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

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 / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	ERPIMS LOCID (15 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	Sample Analysis Requested (5): Volatile Fatty Acids	Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AMW19_060319		03 Jun 2019	0805	-	N		WG	1	X				
35LHSMW07_060319		03 Jun 2019	0900	-	N		WG	1	X				
35AMW23_060319		03 Jun 2019	1000	-	N		WG	1	X				
35AMW24_060319		03 Jun 2019	1055		N		WG	1	X				
35AMW11_060819		08 Jun 2019	1150		N		WG	1	X				
35AMW09_060819		08 Jun 2019	1250	-	N		WG	1	X				
				-									
				-									
				-									
				-									
				-									

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/3/19	1500	1. [signature]	6/5/19	0950
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

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

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

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment B

R1905051 5
ALS Laboratory Group
LHAAP / Site 58

Cooler Receipt and Preservation Check Form

R1905051 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client Rhety Folder Number

Cooler received on 6/5/19 by: @ COURIER: ALS (UPS) FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) ~~CLIENT~~
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 6/5/19 Time: 1020 ID: IR#7 (IR#10) From: ~~Temp Blank~~ Sample Bottle

Observed Temp (°C)	2.6						
Correction Factor (°C)	–						
Corrected Temp (°C)	2.6						
Temp from:Type of bottle	–						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by @ on 6/5/19 at 1025
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: 6/5/19 Time: 1950 by: DW

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (NA)
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated (NA)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: 040819-1BAC

Explain all Discrepancies/ Other Comments:

CLRES	BULK
DO	FLDT
HPROD	HGFB
HTR	LL3541
PH	SUB
SO3	MARRS
ALS	REV

Labels secondary reviewed by: dh
PC Secondary Review: MMS 6/7/19 *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

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

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: ALS Environmental - US
Project: LHAAP / Site 58/
Service Request: R1905051

Sample Name: 35AWW19_060319
Lab Code: R1905051-001
Sample Matrix: Water
Date Collected: 06/3/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: LHSMW07_060319
Lab Code: R1905051-002
Sample Matrix: Water
Date Collected: 06/3/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW23_060319
Lab Code: R1905051-003
Sample Matrix: Water
Date Collected: 06/3/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW24_060319
Lab Code: R1905051-004
Sample Matrix: Water
Date Collected: 06/3/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW11_060319
Lab Code: R1905051-005
Sample Matrix: Water
Date Collected: 06/3/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58/		

Sample Name:	35AWW09_060319	**Date Collected:**	06/3/19
Lab Code:	R1905051-006	**Date Received:**	06/5/19
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

Sample Results

ALS Environmental—Rochester Laboratory
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www.alsglobal.com

Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	06/03/19 08:05
Sample Matrix:	Water	**Date Received:**	06/05/19 09:50
Sample Name:	35AWW19_060319	**Units:**	mg/L
Lab Code:	R1905051-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 16:40	
Acetic Acid	ND U	1.0	1	06/06/19 16:40	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 16:40	
Lactic Acid	ND U	1.0	1	06/06/19 16:40	
Propionic Acid	ND U	1.0	1	06/06/19 16:40	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	06/03/19 09:00
Sample Matrix:	Water	**Date Received:**	06/05/19 09:50
Sample Name:	LHSMW07_060319	**Units:**	mg/L
Lab Code:	R1905051-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 17:17	
Acetic Acid	ND U	1.0	1	06/06/19 17:17	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 17:17	
Lactic Acid	ND U	1.0	1	06/06/19 17:17	
Propionic Acid	ND U	1.0	1	06/06/19 17:17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	06/03/19 10:00
Sample Matrix:	Water	**Date Received:**	06/05/19 09:50
Sample Name:	35AWW23_060319	**Units:**	mg/L
Lab Code:	R1905051-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	5.0	10	06/18/19 18:43	
Acetic Acid	**430**		10	10	06/18/19 18:43	
Butanoic Acid (Butyric Acid)	**370**		20	10	06/18/19 18:43	
Lactic Acid	ND	U	10	10	06/18/19 18:43	
Propionic Acid	**1000**		10	10	06/18/19 18:43	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	06/03/19 10:55
Sample Matrix:	Water	**Date Received:**	06/05/19 09:50
Sample Name:	35AWW24_060319	**Units:**	mg/L
Lab Code:	R1905051-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 18:41	
Acetic Acid	ND U	1.0	1	06/06/19 18:41	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 18:41	
Lactic Acid	ND U	1.0	1	06/06/19 18:41	
Propionic Acid	ND U	1.0	1	06/06/19 18:41	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	06/03/19 11:50
Sample Matrix:	Water	**Date Received:**	06/05/19 09:50
Sample Name:	35AWW11_060319	**Units:**	mg/L
Lab Code:	R1905051-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/18/19 19:47	
Acetic Acid	**110**	1.0	1	06/18/19 19:47	
Butanoic Acid (Butyric Acid)	**3.1**	2.0	1	06/18/19 19:47	
Lactic Acid	ND U	1.0	1	06/18/19 19:47	
Propionic Acid	**170**	1.0	1	06/18/19 19:47	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	06/03/19 12:50
Sample Matrix:	Water	**Date Received:**	06/05/19 09:50
Sample Name:	35AWW09_060319	**Units:**	mg/L
Lab Code:	R1905051-006	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 19:45	
Acetic Acid	ND U	1.0	1	06/06/19 19:45	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 19:45	
Lactic Acid	ND U	1.0	1	06/06/19 19:45	
Propionic Acid	ND U	1.0	1	06/06/19 19:45	

QC Summary Forms

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1905551-01	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 14:48	
Acetic Acid	ND U	1.0	1	06/06/19 14:48	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 14:48	
Lactic Acid	ND U	1.0	1	06/06/19 14:48	
Propionic Acid	ND U	1.0	1	06/06/19 14:48	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905051
Project:	LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1906068-01	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/18/19 14:32	
Acetic Acid	ND U	1.0	1	06/18/19 14:32	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/18/19 14:32	
Lactic Acid	ND U	1.0	1	06/18/19 14:32	
Propionic Acid	ND U	1.0	1	06/18/19 14:32	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1905051
Date Analyzed: 06/06/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1905551-02			RQ1905551-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.95	2.03	96	1.87	2.03	92	73-122	4	30
Acetic Acid	Organic Acids	18.6	19.9	93	18.4	19.9	93	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	28.8	20.5	140 *	29.1	20.5	142 *	86-128	1	30
Lactic Acid	Organic Acids	19.6	20.6	95	18.8	20.6	91	75-125	4	30
Propionic Acid	Organic Acids	19.8	20.1	98	19.1	20.1	95	63-153	4	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1905051
Date Analyzed: 06/18/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1906068-02			RQ1906068-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.97	2.03	97	1.92	2.03	95	73-122	2	30
Acetic Acid	Organic Acids	19.7	19.9	99	19.6	19.9	99	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	20.9	20.5	102	19.8	20.5	97	86-128	5	30
Lactic Acid	Organic Acids	21.3	20.6	103	21.0	20.6	102	75-125	2	30
Propionic Acid	Organic Acids	19.4	20.1	96	19.8	20.1	99	63-153	2	30

LABORATORY REPORT

June 18, 2019

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

RE: HS19060123

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on June 5, 2019. For your reference, these analyses have been assigned our service request number P1903217.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 10:28, June 18, 2019

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P1903217
Project: HS19060123

CASE NARRATIVE

The samples were received intact under chain of custody on June 5, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1903217-002	Ethane

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-006
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS19060123

Service Request: P1903217

Date Received: 6/5/2019
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35AWW19_060319	P1903217-001	Water	6/3/2019	08:05	X	X
LHSMW07_060319	P1903217-002	Water	6/3/2019	09:00	X	X
35AWW23_060319	P1903217-003	Water	6/3/2019	10:00	X	X
35AWW24_060319	P1903217-004	Water	6/3/2019	10:55	X	X
35AWW11_060319	P1903217-005	Water	6/3/2019	11:50	X	X
35AWW09_060319	P1903217-006	Water	6/3/2019	12:50	X	X

P1903217

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

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11514**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065 **Phone:** +1 805 526 7161

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: HS19060123
TSR: Danielle Winnings

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	**HS19060123-01**	**35AWW19_060319**	**Groundwater**	**03 Jun 2019 08:05**
	MEE plus CO2 Sub to ALS SimiValley			18 Jun 2019
2.	**HS19060123-02**	**LHSMW07_060319**	**Groundwater**	**03 Jun 2019 09:00**
	MEE plus CO2 Sub to ALS SimiValley			18 Jun 2019
3.	**HS19060123-03**	**35AWW23_060319**	**Groundwater**	**03 Jun 2019 10:00**
	MEE plus CO2 Sub to ALS SimiValley			18 Jun 2019
4.	**HS19060123-04**	**35AWW24_060319**	**Groundwater**	**03 Jun 2019 10:55**
	MEE plus CO2 Sub to ALS SimiValley			18 Jun 2019
5.	**HS19060123-05**	**35AWW11_060319**	**Groundwater**	**03 Jun 2019 11:50**
	MEE plus CO2 Sub to ALS SimiValley			18 Jun 2019
6.	**HS19060123-06**	**35AWW09_060319**	**Groundwater**	**03 Jun 2019 12:50**
	MEE plus CO2 Sub to ALS SimiValley			18 Jun 2019

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

QC Level: DOD IV (DoD Data Package)

P1903217

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **11514**

Relinquished By: _____ Date/Time: 6/4/19. 8:00.

Received By: _____ Date/Time: 6/5/19 0930

Cooler ID(s): _____ Temperature(s): 2°C CUT ICE

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1903217

Project: HS19060123

Sample(s) received on: 6/5/19 Date opened: 6/5/19 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C Thermometer ID T-111 Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler Lid Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1903217-001.01	40mL VOA NP		6		A	wh 6/12/19
P1903217-001.02	40mL VOA NP				A	
P1903217-001.04	40ml VOA HCL		1		A	wh 6/11/19
P1903217-001.05	40ml VOA HCL				A	
P1903217-002.01	40mL VOA NP		6		A	wh 6/12/19
P1903217-002.02	40mL VOA NP				A	
P1903217-002.04	40ml VOA HCL		1		A	wh 6/11/19
P1903217-002.05	40ml VOA HCL				A	
P1903217-003.01	40mL VOA NP		6		A	wh 6/12/19
P1903217-003.02	40mL VOA NP				A	
P1903217-003.04	40ml VOA HCL		1		A	wh 6/11/19
P1903217-003.05	40ml VOA HCL				A	
P1903217-004.01	40mL VOA NP		7		A	wh 6/12/19
P1903217-004.02	40mL VOA NP				A	
P1903217-004.04	40ml VOA HCL		1		A	wh 6/11/19

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1903217

Project: HS19060123

Sample(s) received on: 6/5/19 Date opened: 6/5/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1903217-004.05	40ml VOA HCL				A	
P1903217-005.01	40mL VOA NP		7		A	wh 6/12/19
P1903217-005.02	40mL VOA NP				A	
P1903217-005.04	40ml VOA HCL		1		A	wh 6/11/19
P1903217-005.05	40ml VOA HCL				A	
P1903217-006.01	40mL VOA NP		7		A	wh 6/12/19
P1903217-006.02	40mL VOA NP				A	
P1903217-006.04	40ml VOA HCL		1		A	wh 6/11/19
P1903217-006.05	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19060123** ALS Project ID: P1903217

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/12/19

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35AWW19_060319	P1903217-001	0.050	**560,000**	2,000	1,700	740	
LHSMW07_060319	P1903217-002	0.050	**660,000**	2,000	1,700	740	
35AWW23_060319	P1903217-003	0.050	**750,000**	2,000	1,700	740	
35AWW24_060319	P1903217-004	0.050	**530,000**	2,000	1,700	740	
35AWW11_060319	P1903217-005	0.050	**750,000**	2,000	1,700	740	
35AWW09_060319	P1903217-006	0.050	**620,000**	2,000	1,700	740	
Method Control Sample	P190612-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1903217
Client Project ID: **HS19060123** ALS Sample ID: P190612-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 6/12/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,900	19,800	**83**	**86**	80-122	4	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW19_060319**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P1903217-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.4**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **LHSMW07_060319**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P1903217-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**78**	1.3	1.0	0.51	
74-85-1	Ethene	**3.9**	1.0	0.55	0.24	
74-84-0	Ethane	**0.20**	0.60	0.47	0.16	**J**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW23_060319**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P1903217-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1,300**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW24_060319**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P1903217-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**4.2**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW11_060319**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P1903217-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**590**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW09_060319**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P1903217-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/3/19
Date Received: 6/5/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.3**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P190611-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19060123**

ALS Project ID: P1903217
ALS Sample ID: P190611-LCS
P190611-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.45	2.54	**97**	**101**	73-125	4	26	
74-85-1	Ethene	4.40	4.78	5.02	**109**	**114**	72-133	4	11	
74-84-0	Ethane	4.72	4.46	4.75	**94**	**101**	74-131	7	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 12:06:35
Operator : WH
Sample : p1903217-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:42:15 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

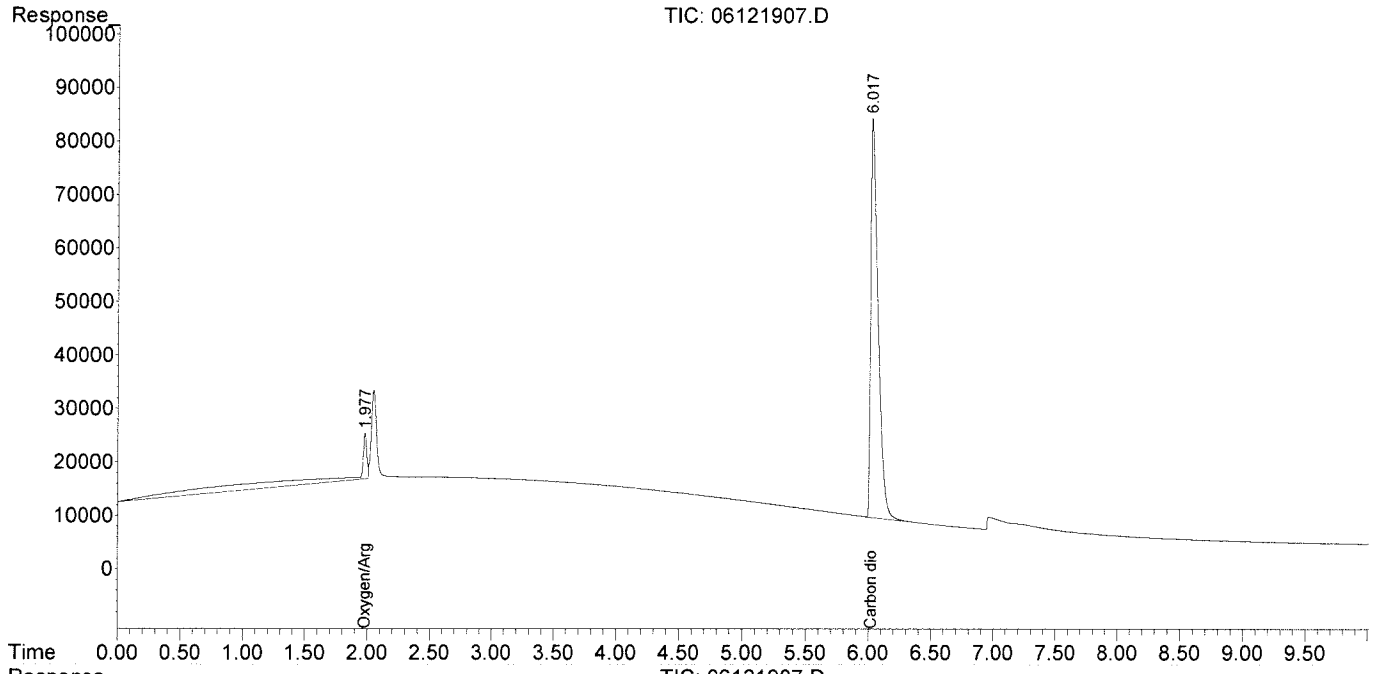
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.978f	1091697	0.229	ppm
2)	Carbon monoxide	1.978f	1091697	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.018	3026756	12894.672	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

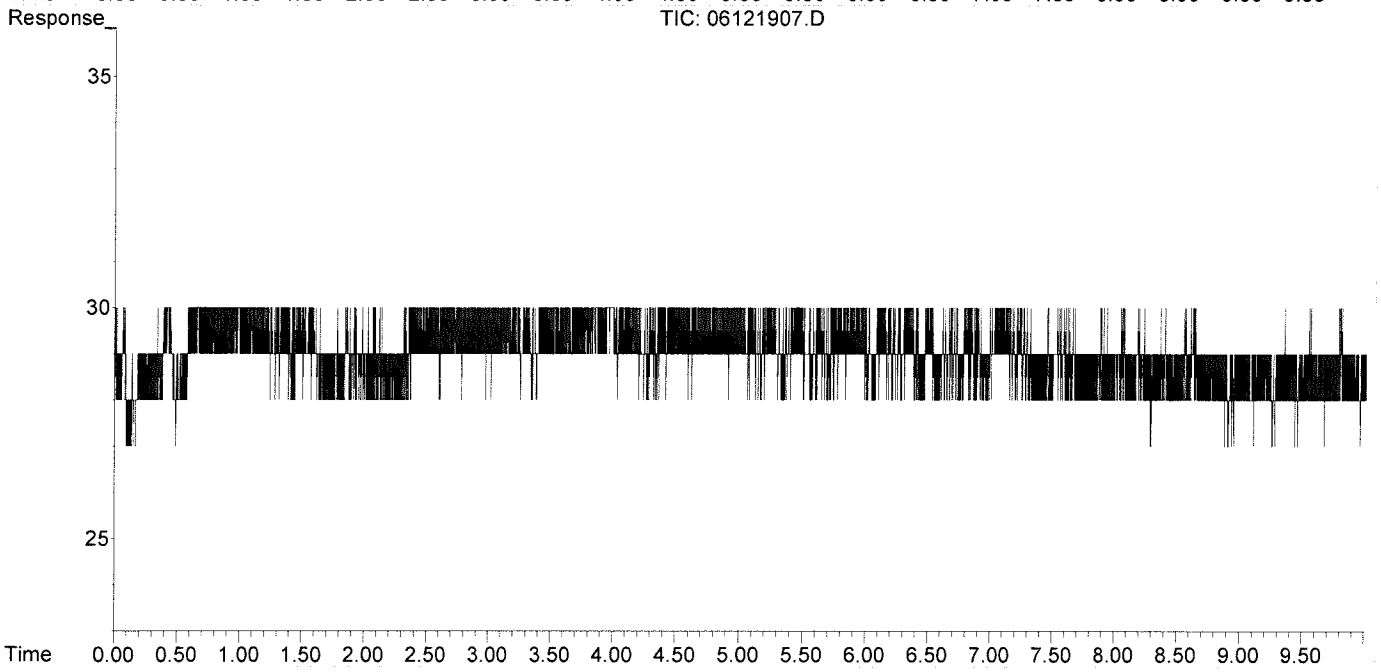
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 12:06:35
Operator : WH
Sample : p1903217-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:42:15 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 12:43:12
Operator : WH
Sample : P1903217-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 17:26:11 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

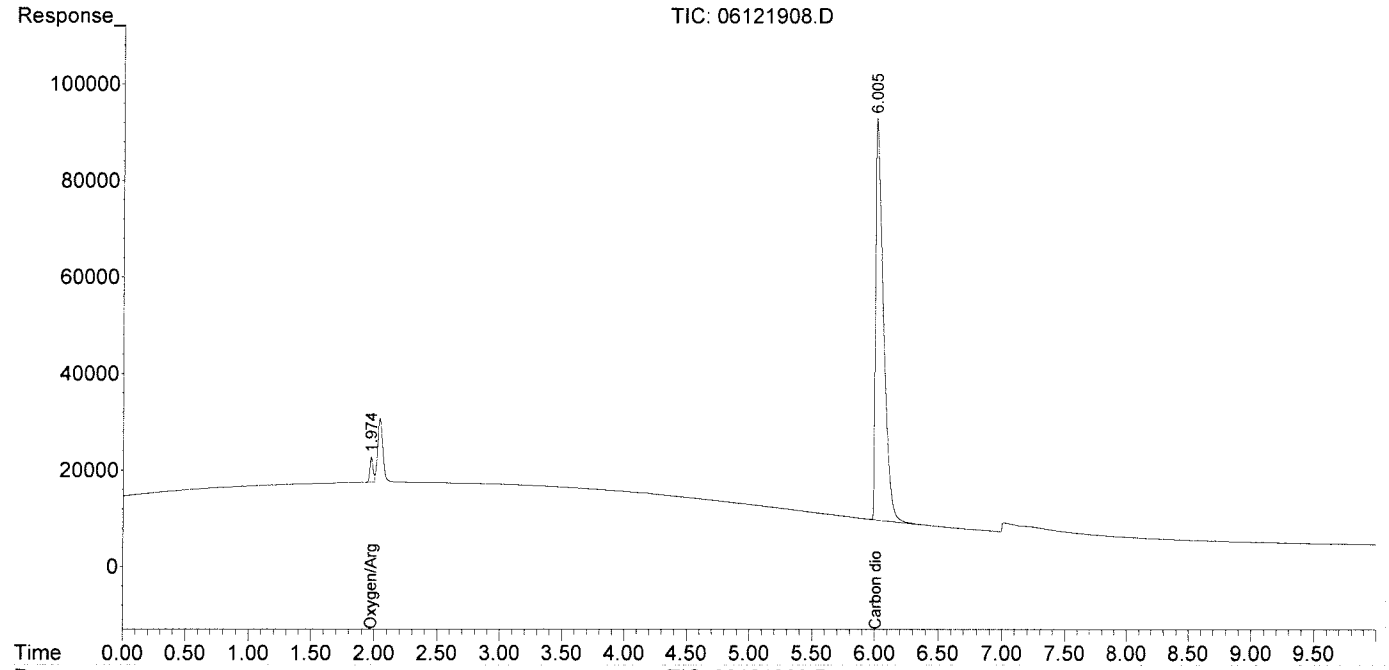
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.974f	93754	0.020	ppm
2)	Carbon monoxide	1.974f	93754	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.006	3549328	15120.947	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

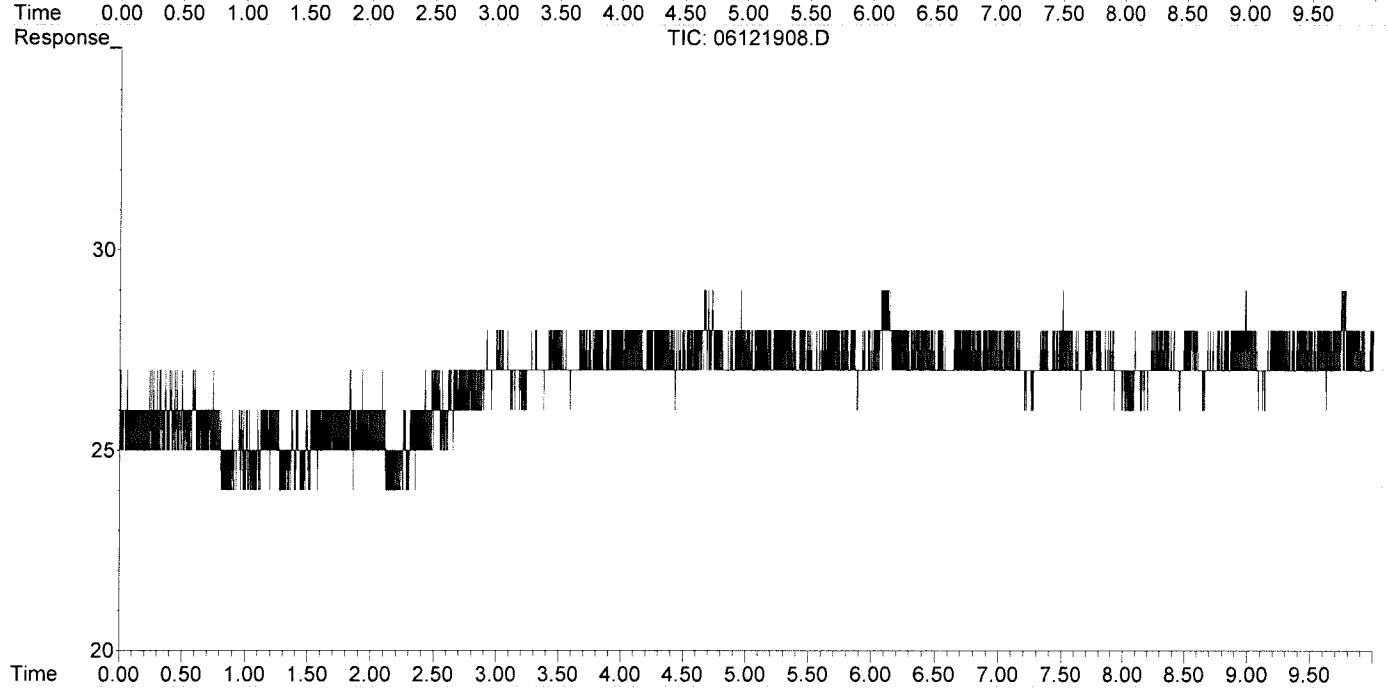
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 12:43:12
Operator : WH
Sample : P1903217-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 17:26:11 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 12:56:55
Operator : WH
Sample : P1903217-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:28:18 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

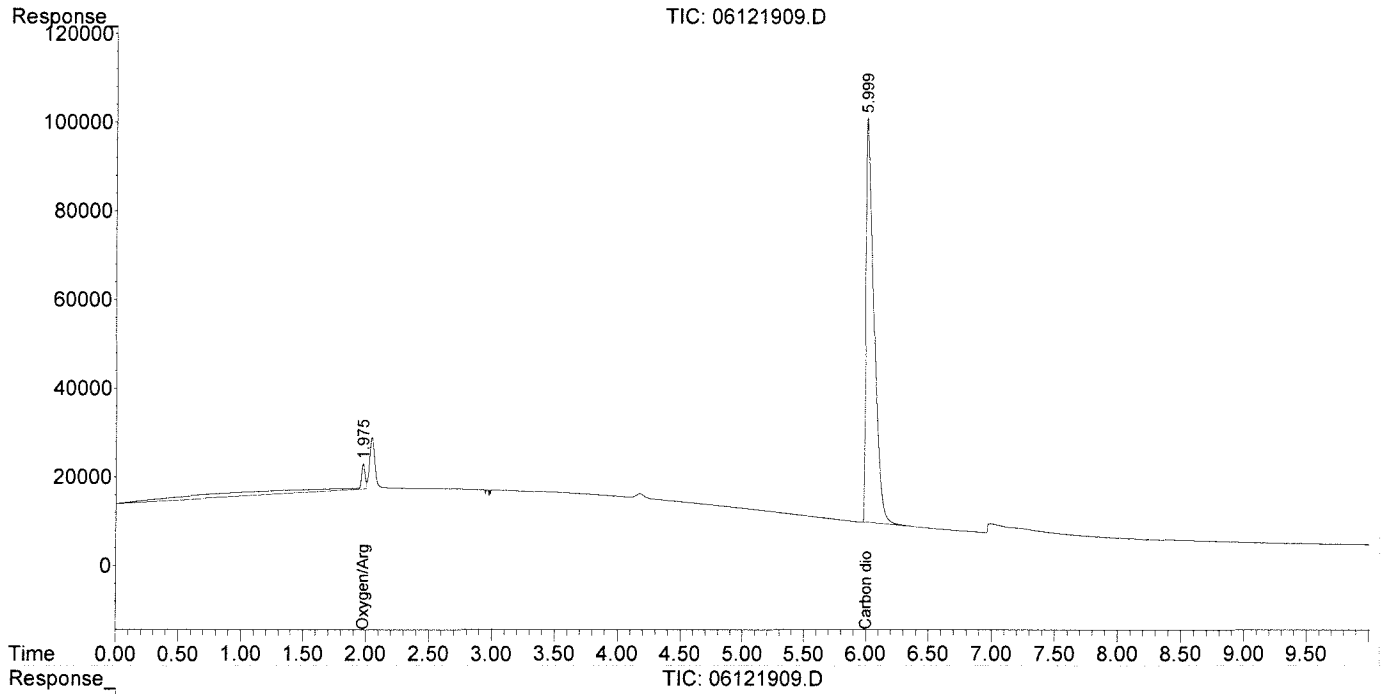
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.976f	814888	0.171	ppm
2)	Carbon monoxide	1.976f	814888	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.000	4007872	17074.451	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

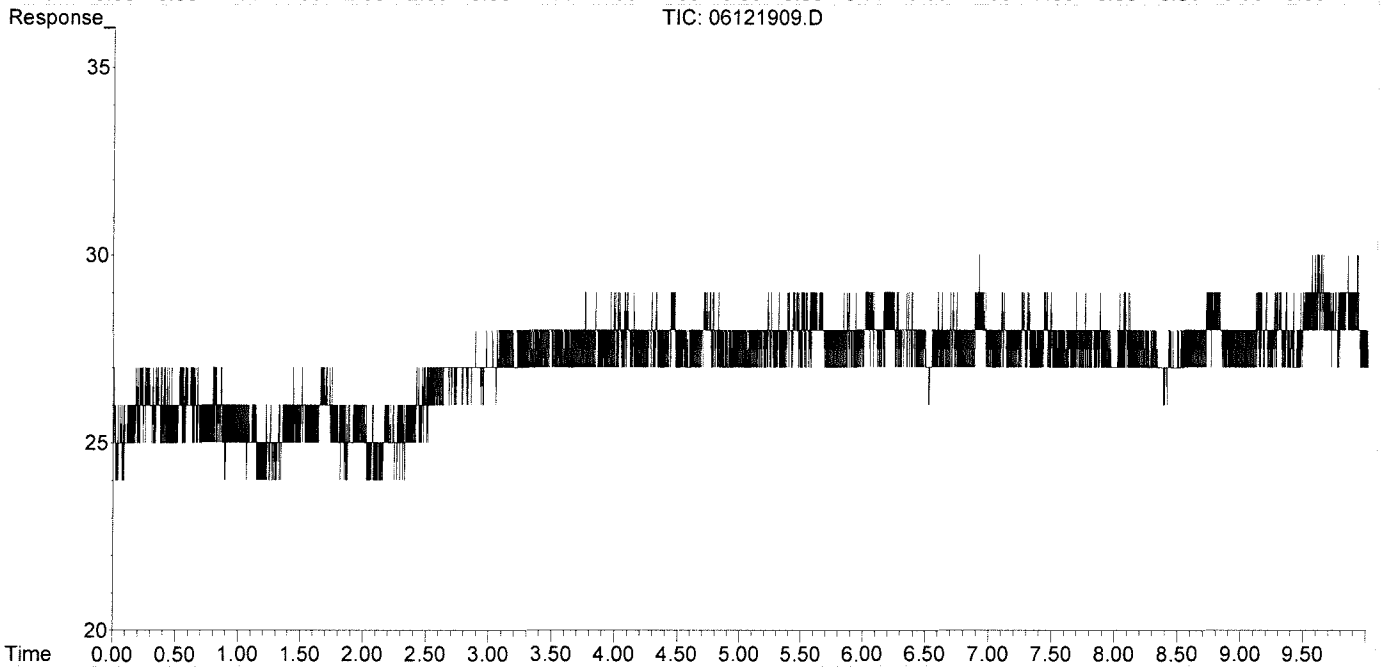
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 12:56:55
Operator : WH
Sample : P1903217-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:28:18 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 13:25:12
Operator : WH
Sample : P1903217-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 17:26:45 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

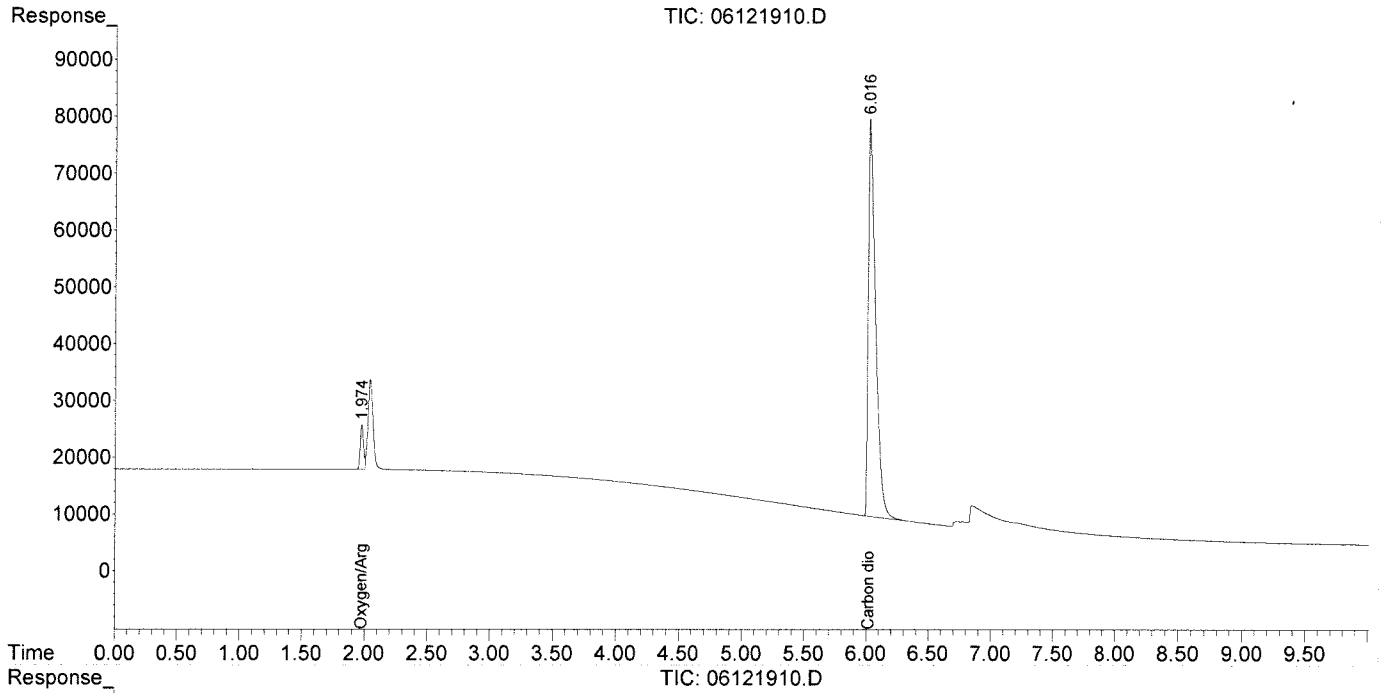
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.975f	140902	0.030	ppm
2)	Carbon monoxide	1.975f	140902	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.016	2831438	12062.573	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

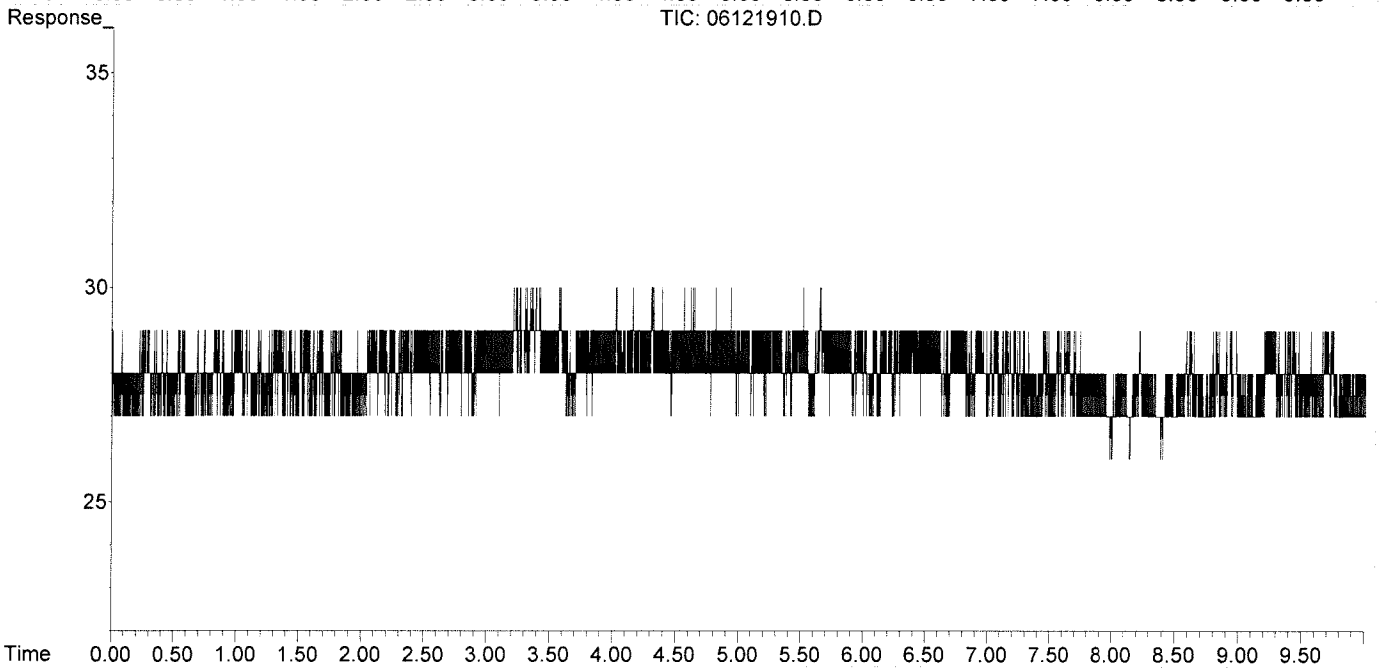
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 13:25:12
Operator : WH
Sample : P1903217-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 17:26:45 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 13:41:54
Operator : WH
Sample : P1903217-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:28:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

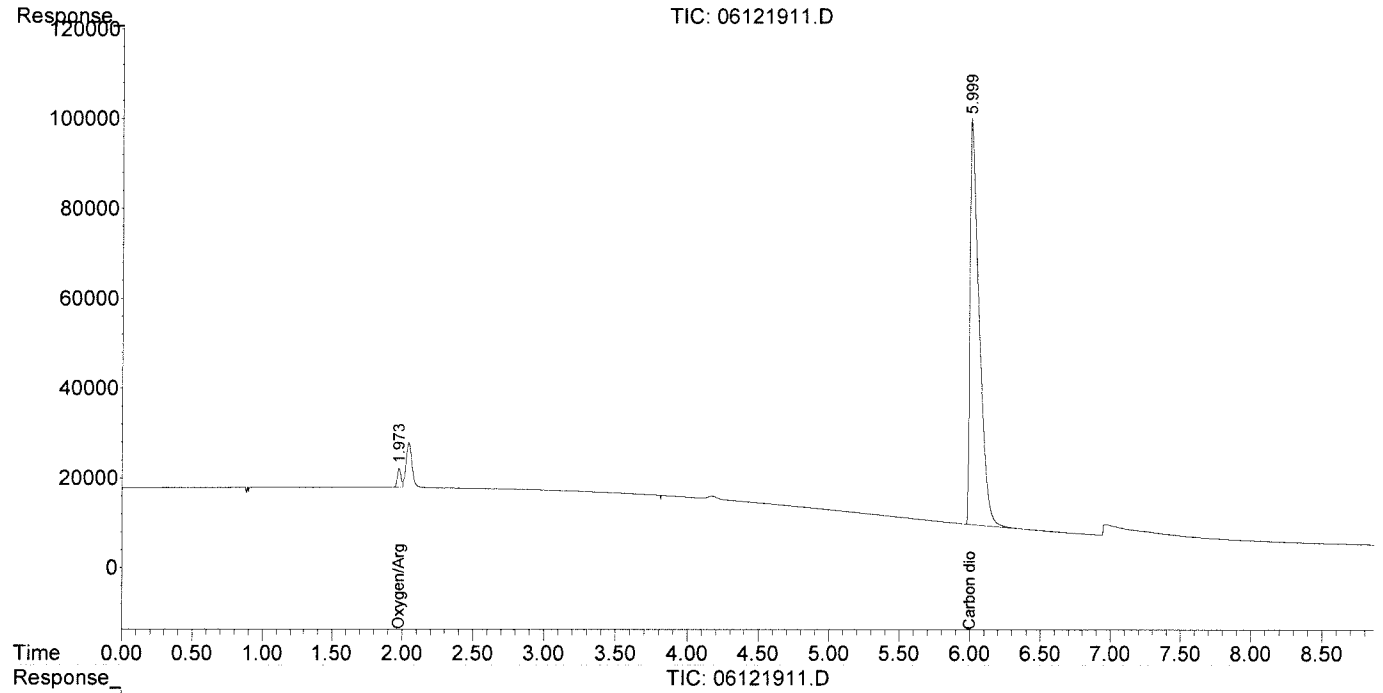
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.974f	78795	0.017 ppm
2)	Carbon monoxide	1.974f	78795	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	6.001	4022595	17137.173 ppm
6)	Methane (FID)	0.000	0	N.D. ppm
7)	Ethylene	0.000	0	N.D. ppm
8)	Ethane	0.000	0	N.D. ppm
9)	Propylene	0.000	0	N.D. ppm
10)	Propane	0.000	0	N.D. ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	0.000	0	N.D. ppm
13)	n-Butane	0.000	0	N.D. ppm

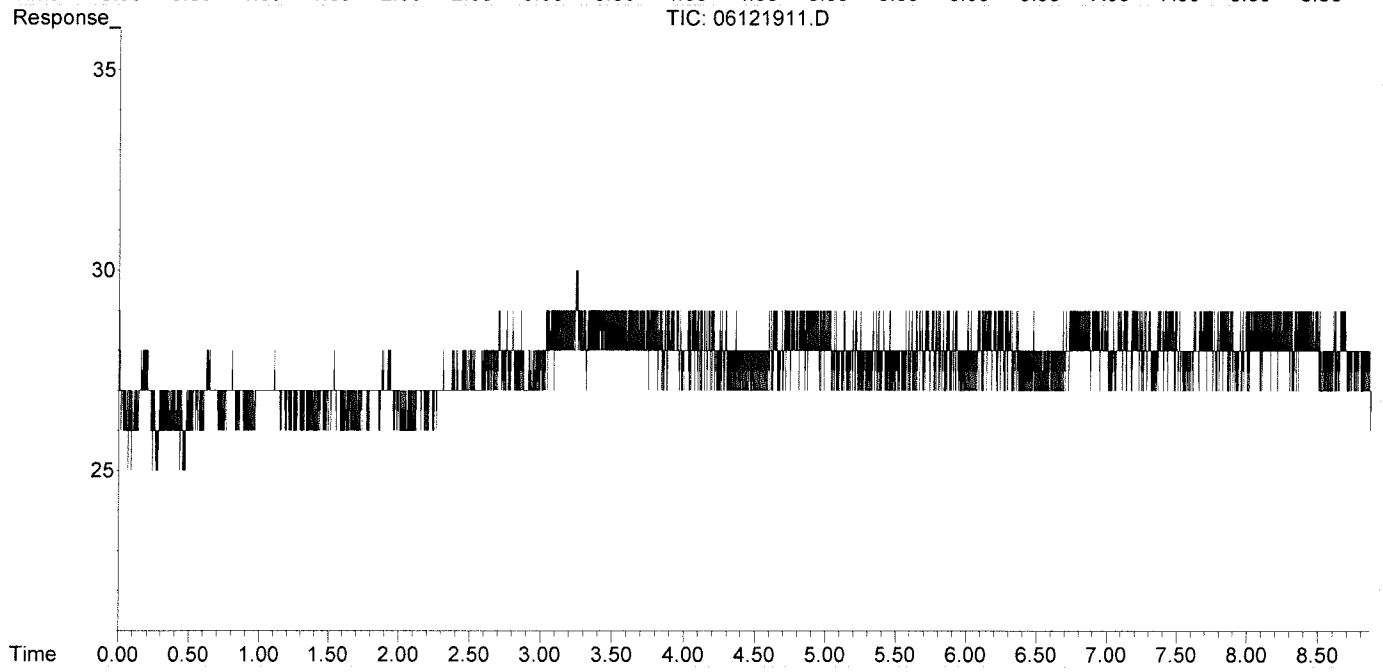
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 13:41:54
Operator : WH
Sample : P1903217-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:28:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 13:53:26
Operator : WH
Sample : P1903217-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 17:27:35 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

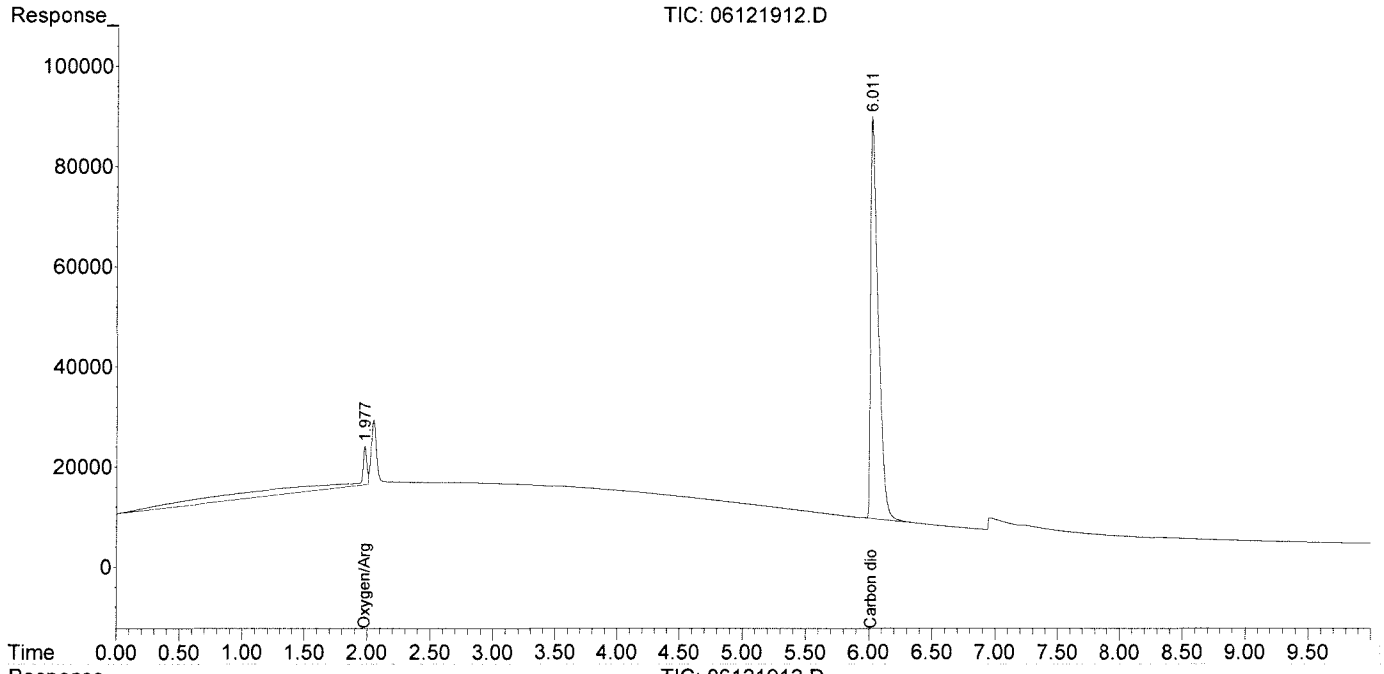
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.977f	1216152	0.256	ppm
2)	Carbon monoxide	1.977f	1216152	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.012	3337173	14217.121	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

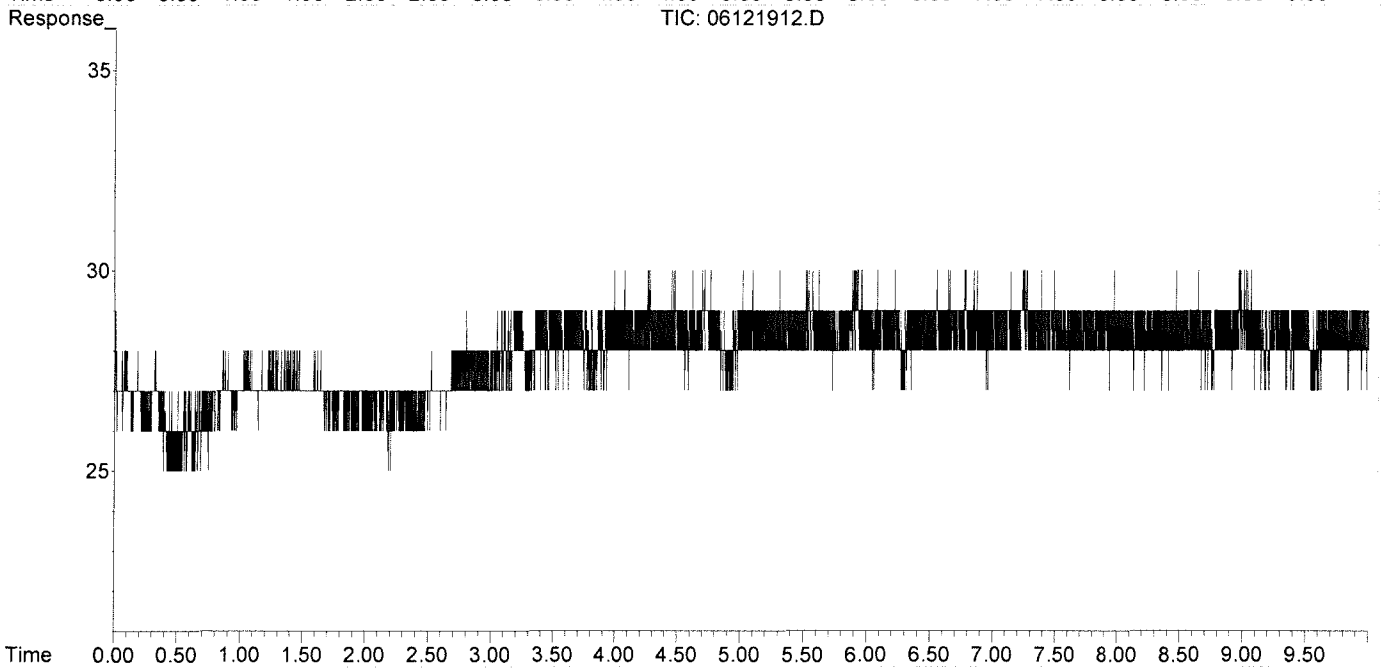
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 13:53:26
Operator : WH
Sample : P1903217-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 17:27:35 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 10:46:05
Operator : WH
Sample : MCS 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:35:35 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

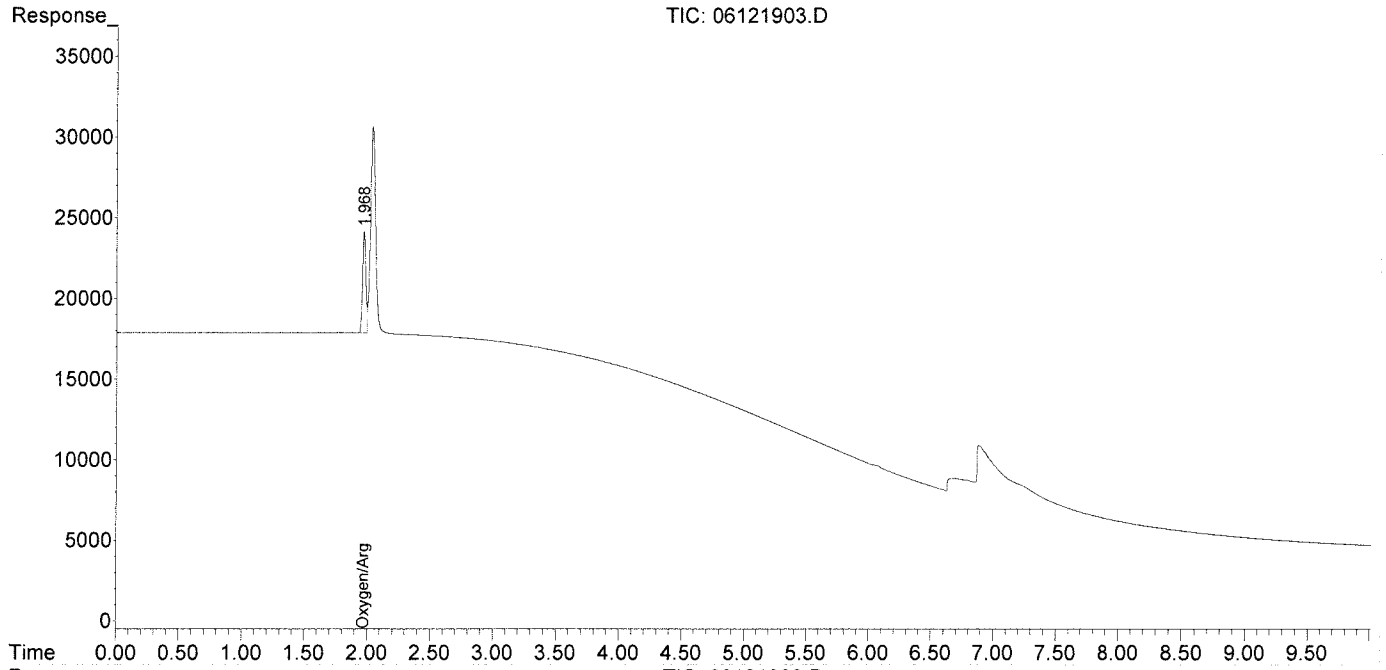
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	114576	0.024	ppm
2)	Carbon monoxide	1.968f	114576	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

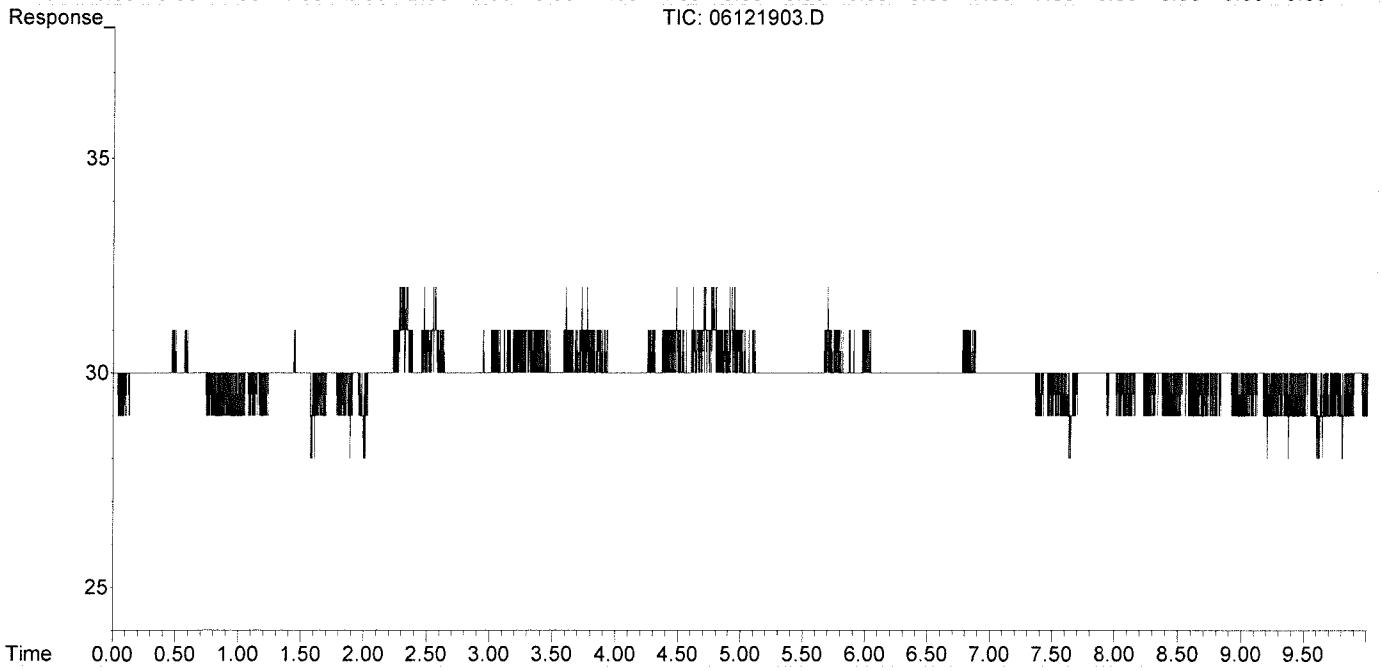
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 10:46:05
Operator : WH
Sample : MCS 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:35:35 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:05:17
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:24:58 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

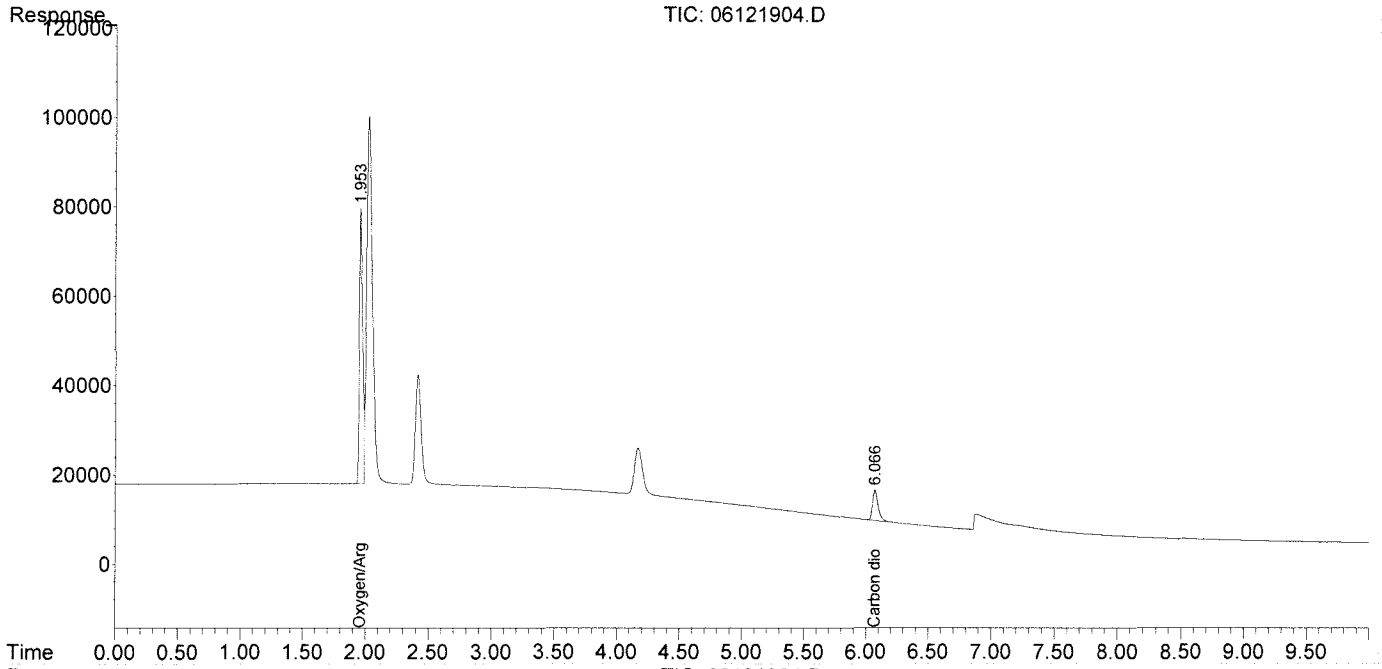
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.953f	1099974	0.231	ppm
2)	Carbon monoxide	1.953f	1099974	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.067	203531	867.089	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

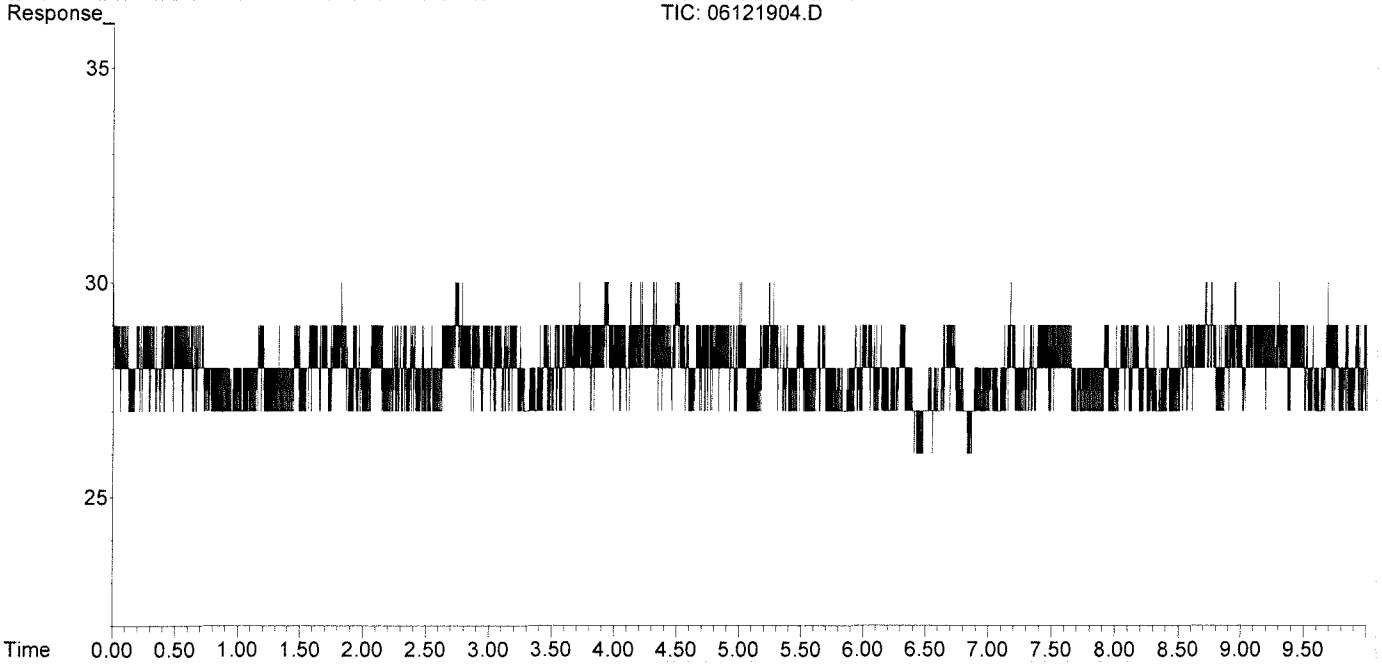
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:05:17
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:24:58 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:28:50
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:50:44 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

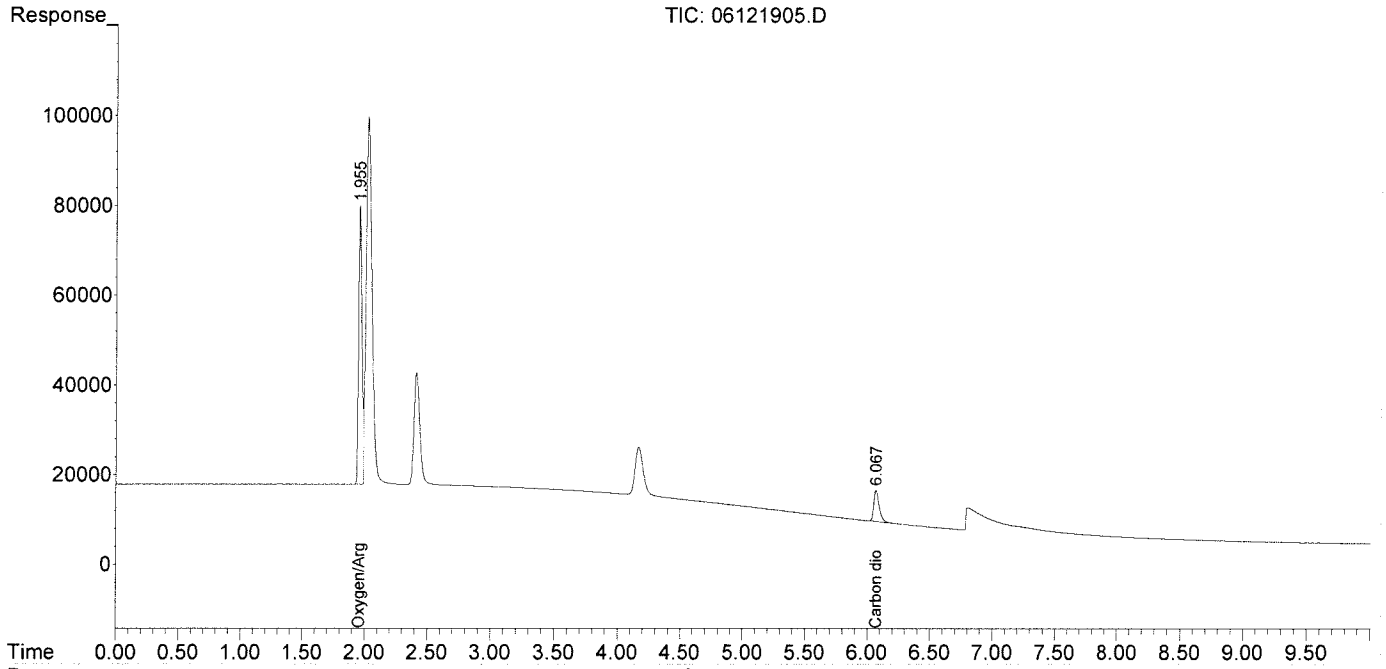
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.955f	1110401	0.233	ppm
2)	Carbon monoxide	1.955f	1110401	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.067	212864	906.849	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

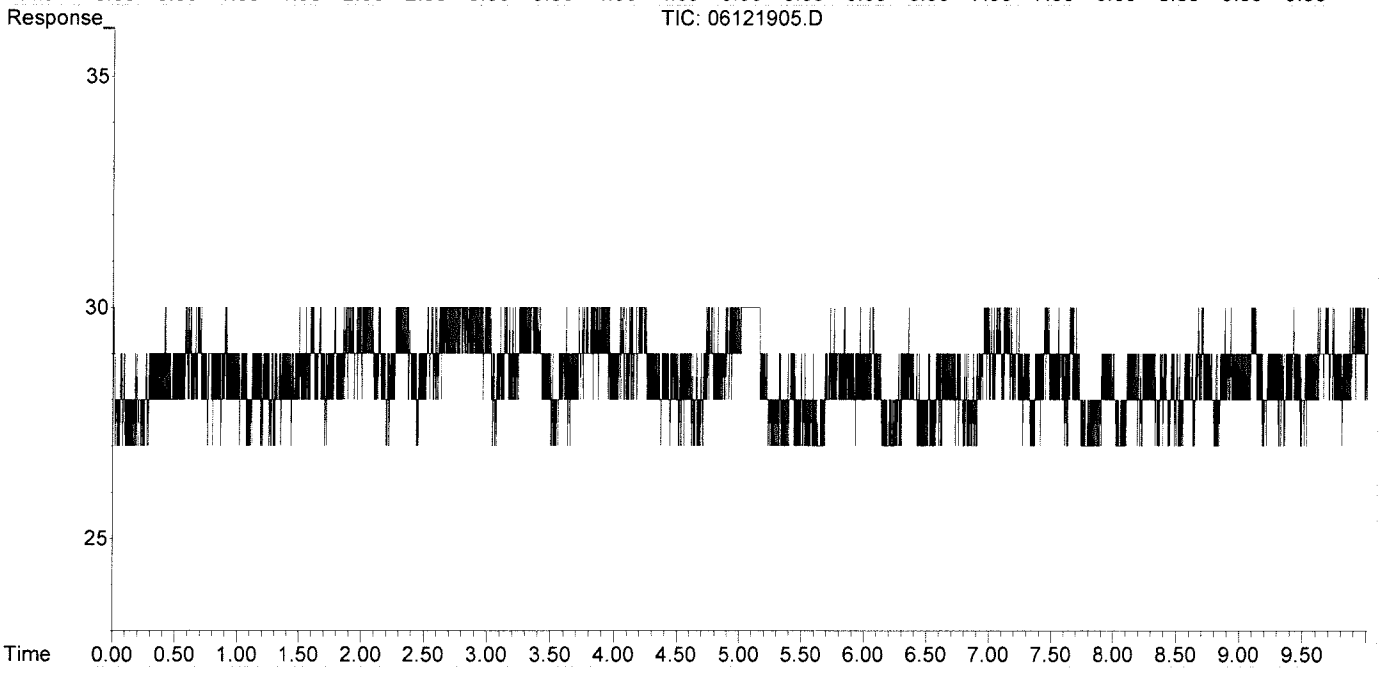
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:28:50
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:50:44 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

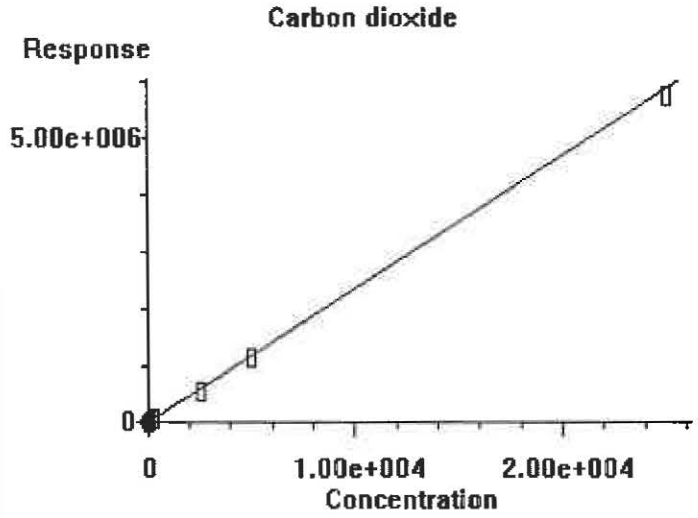
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

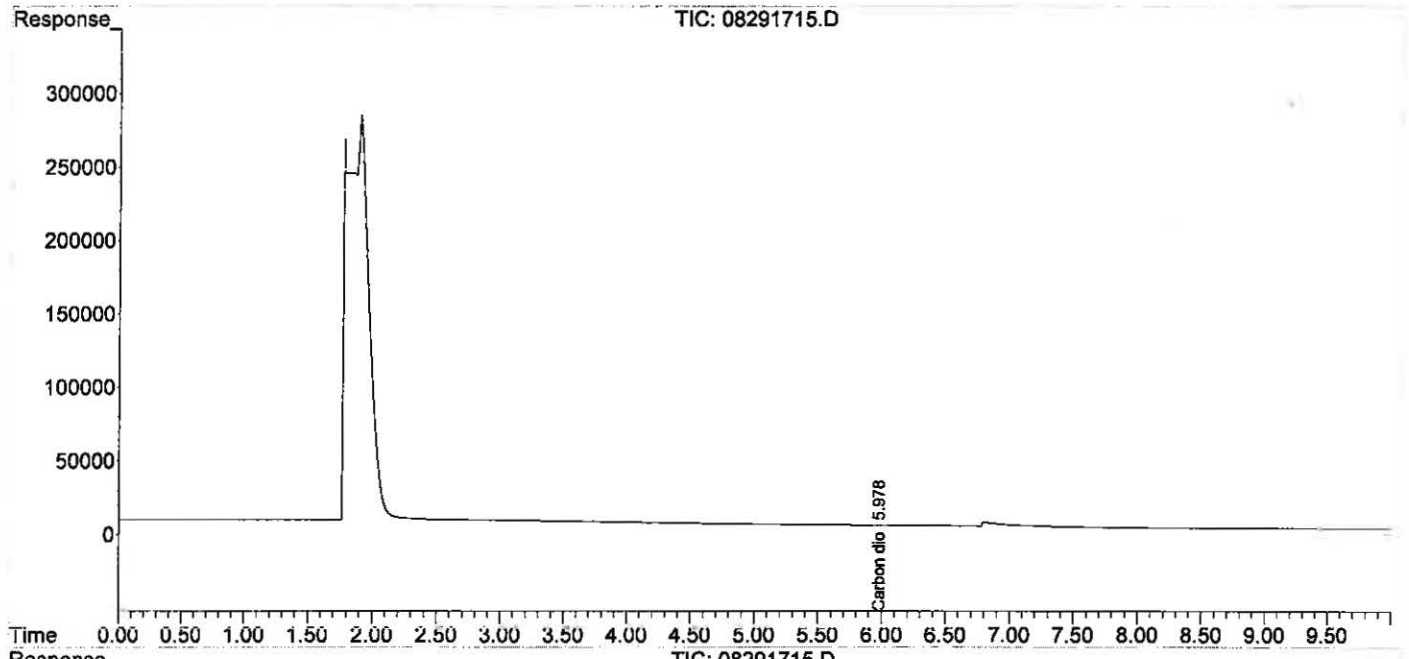
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

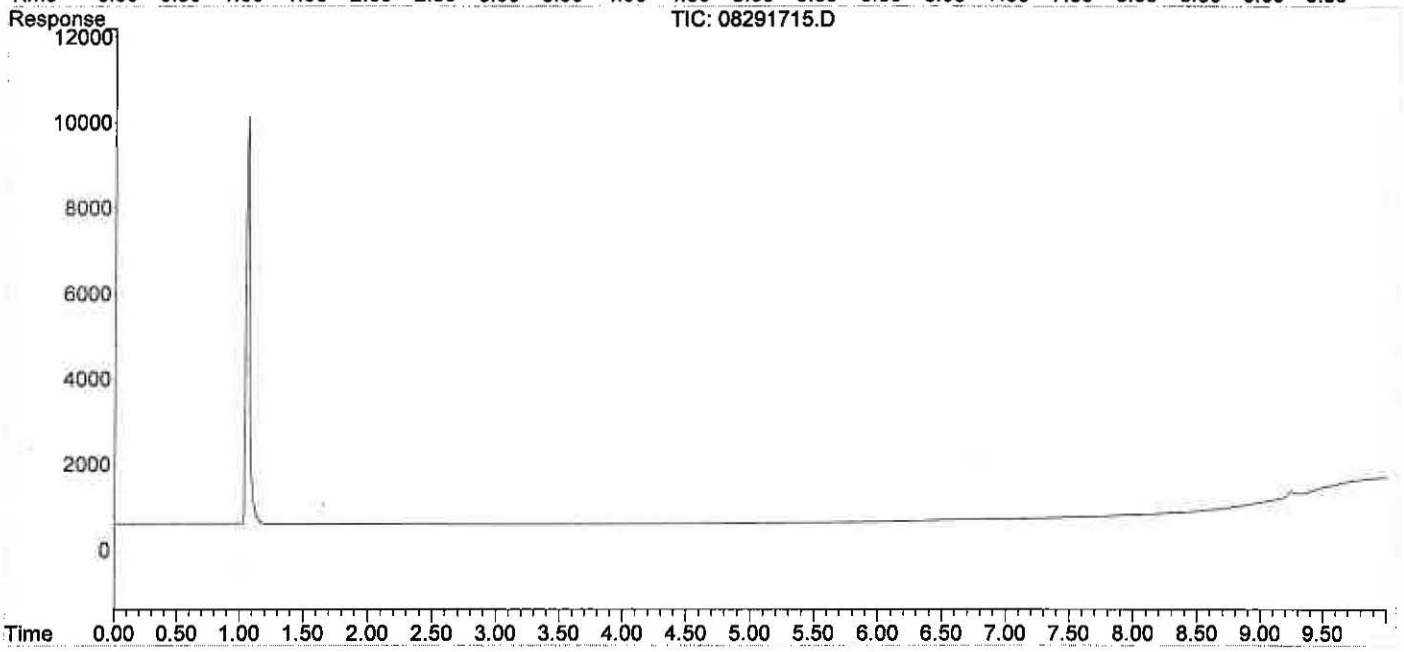
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

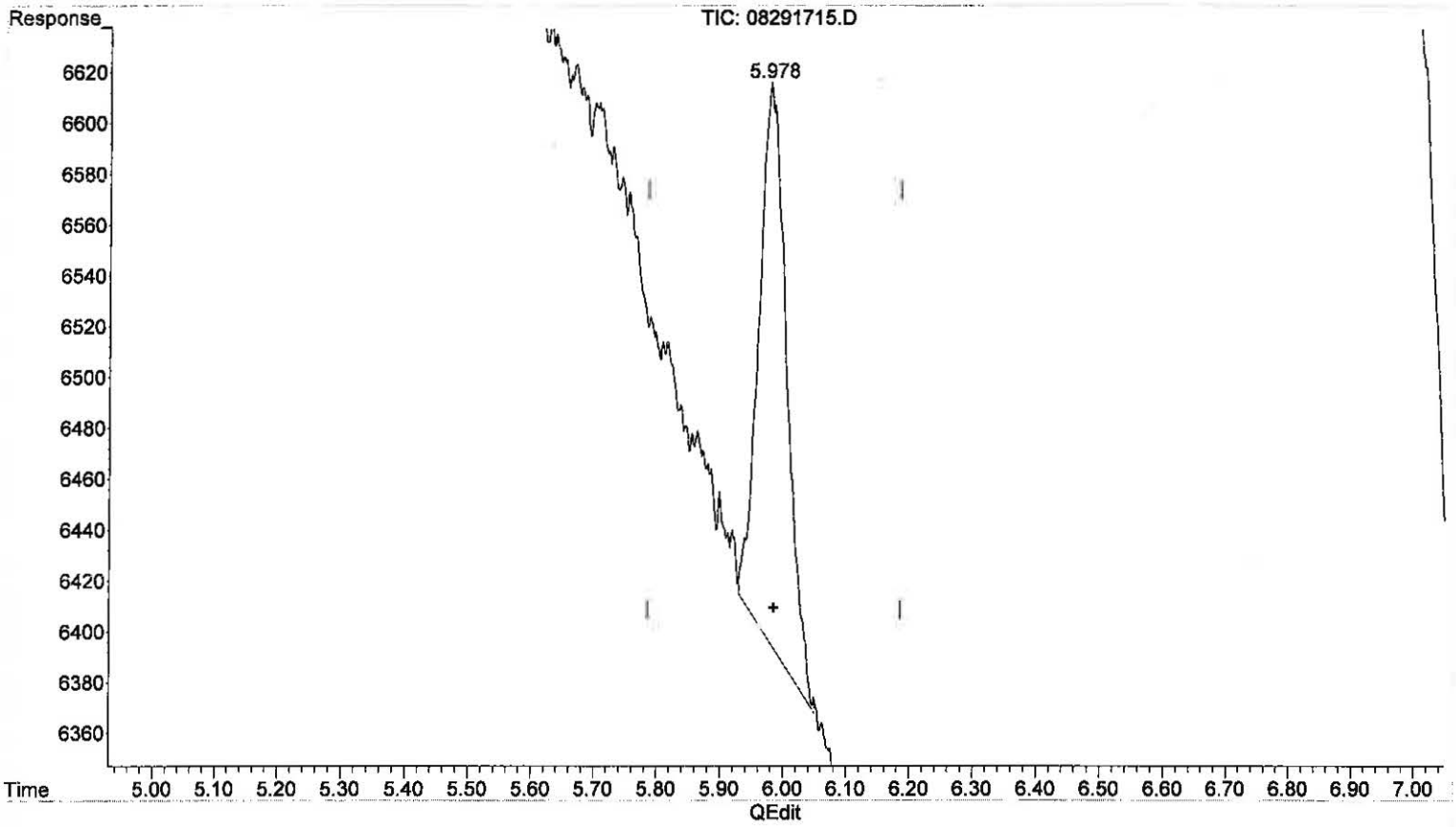




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

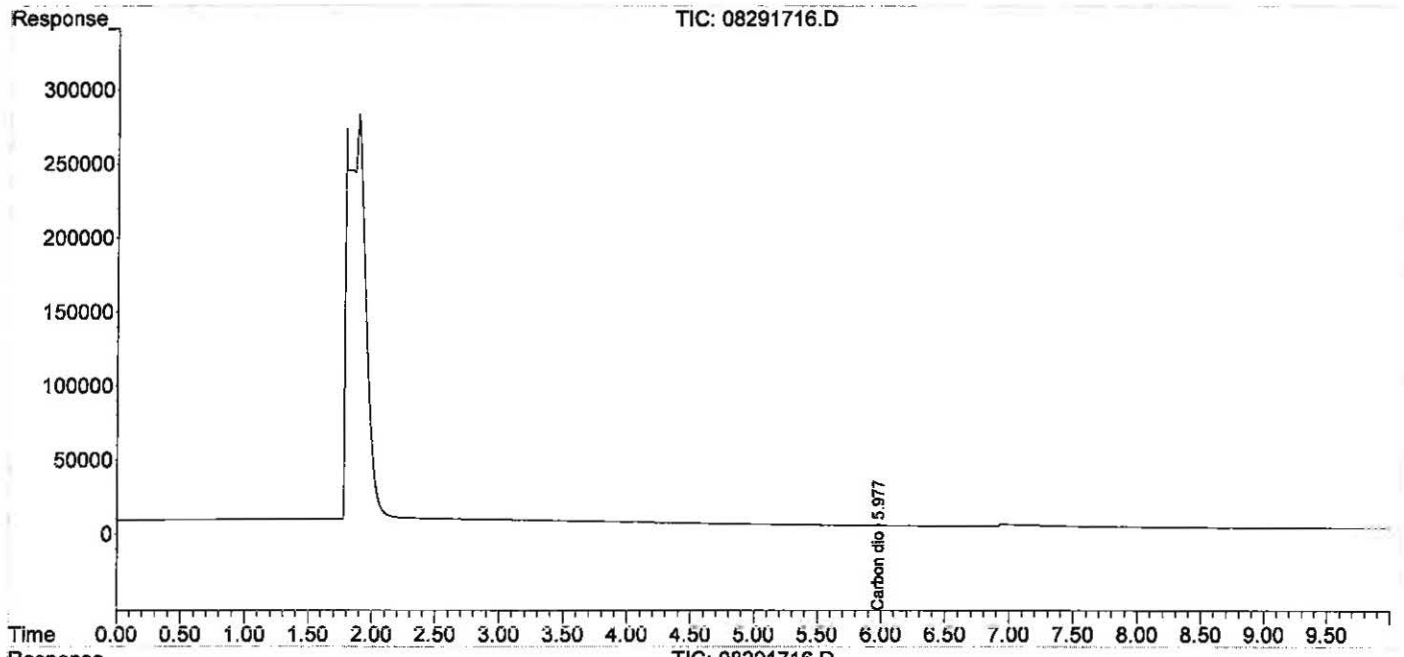
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

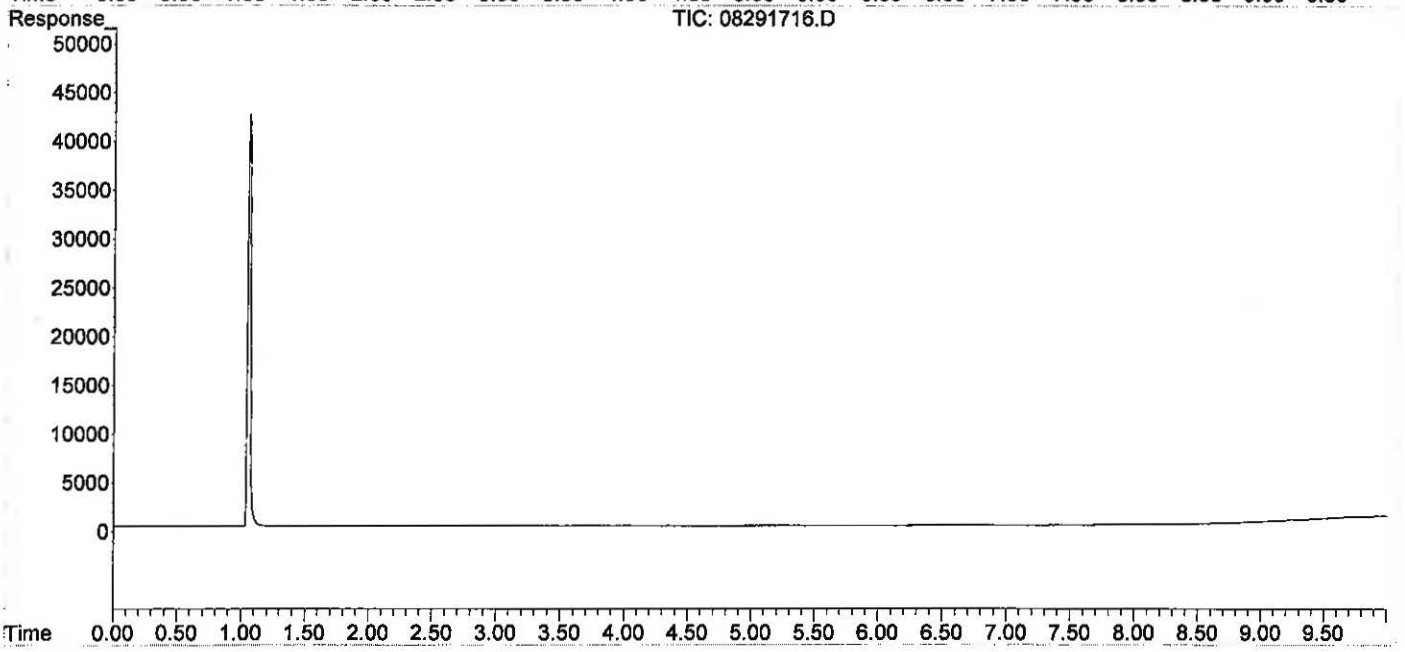
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

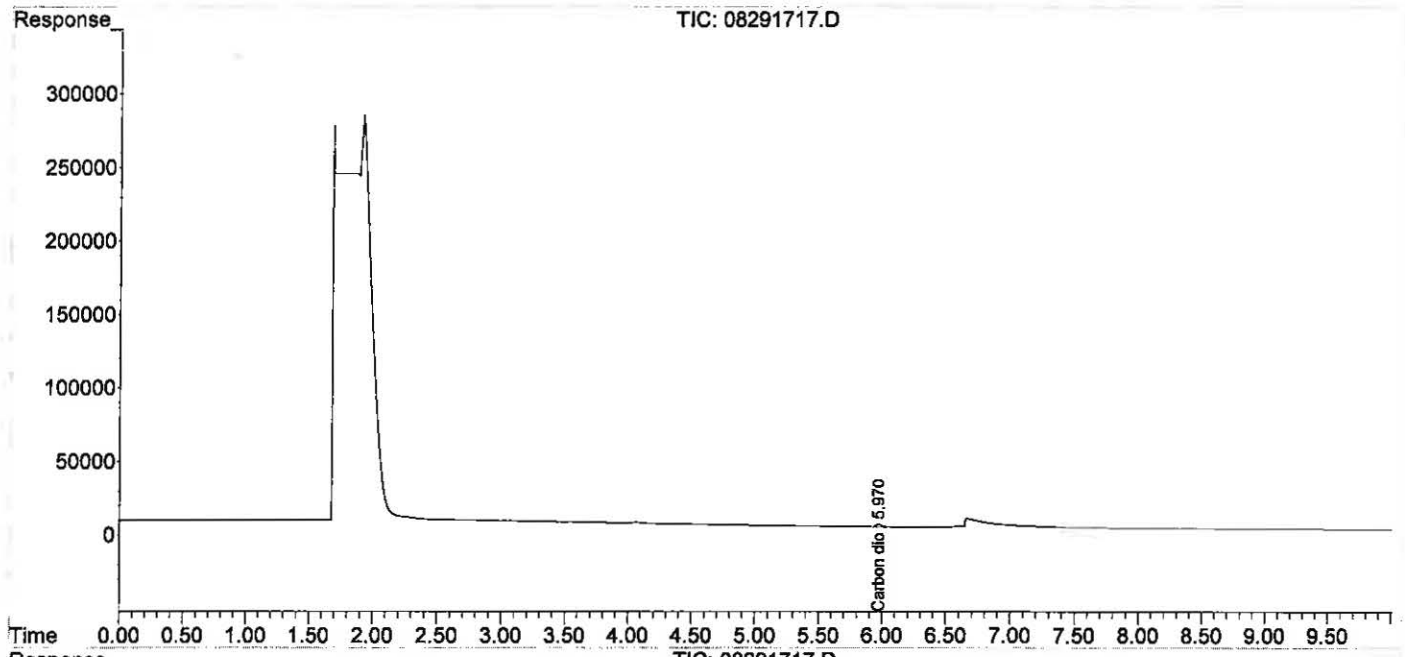
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

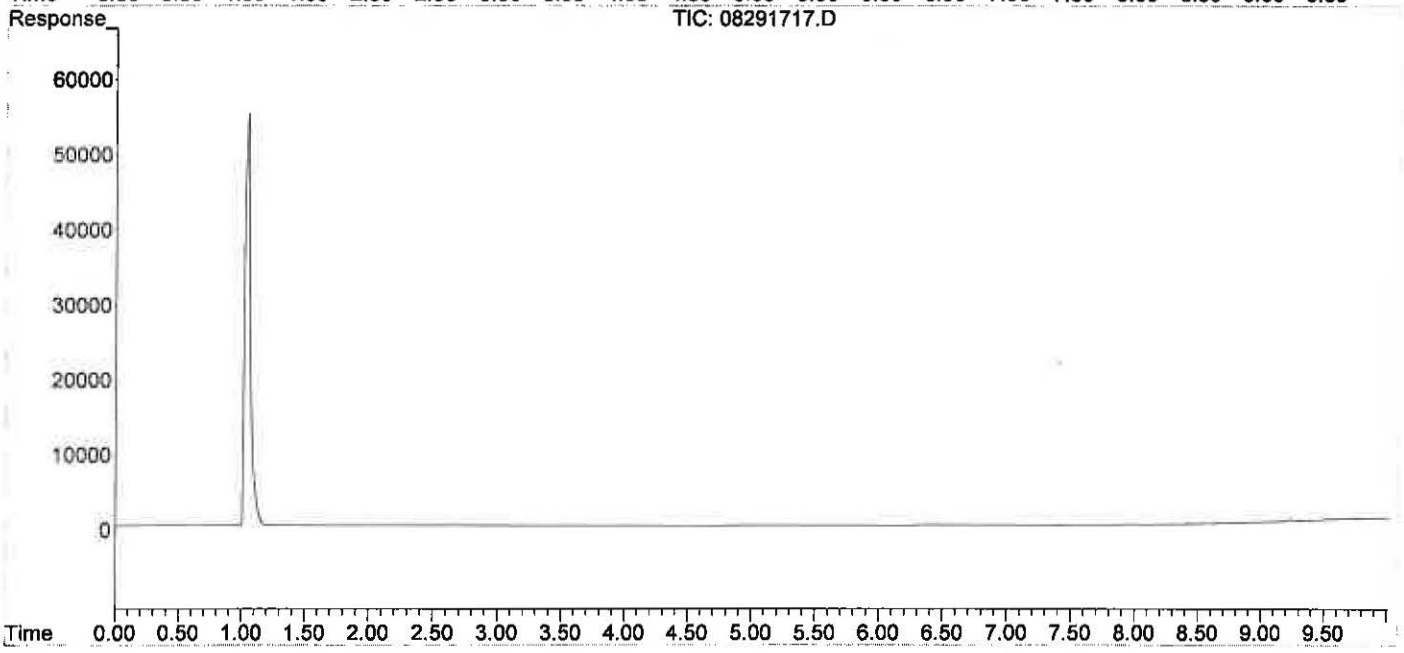
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



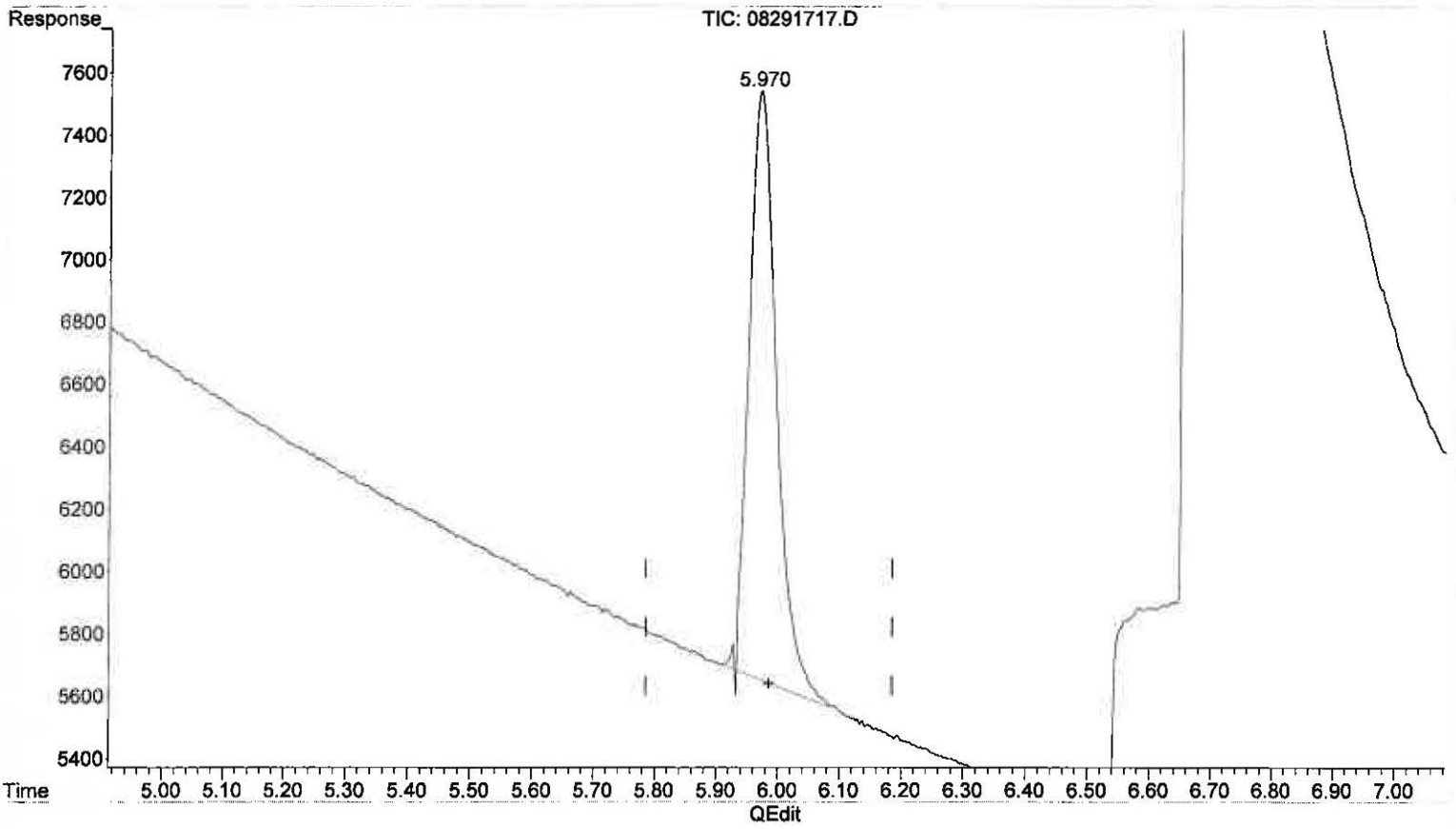


00949378

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

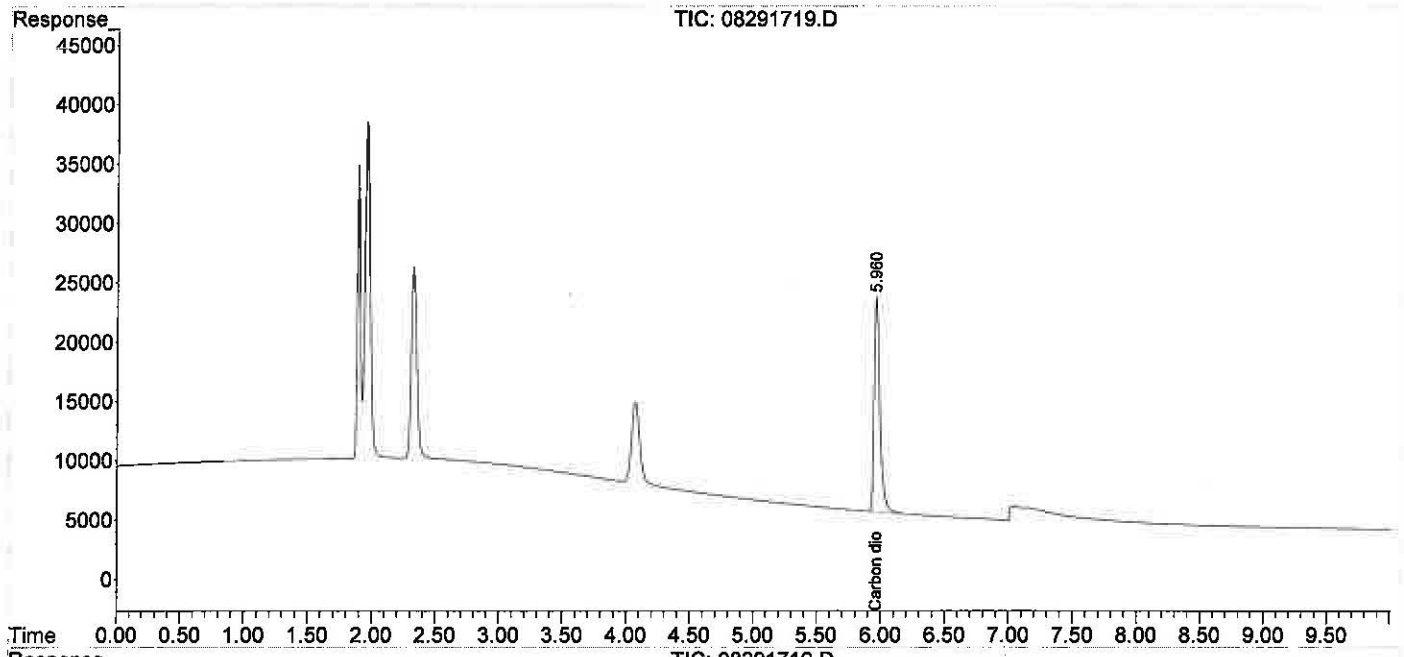
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

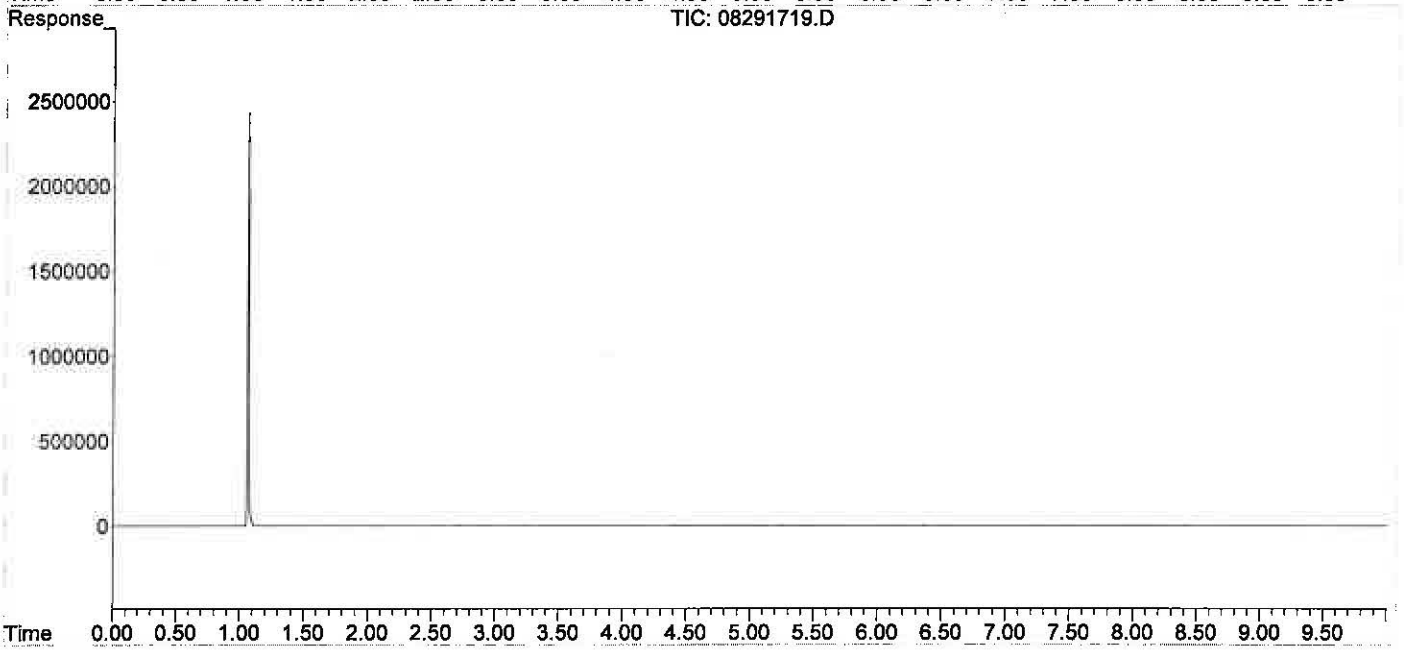
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

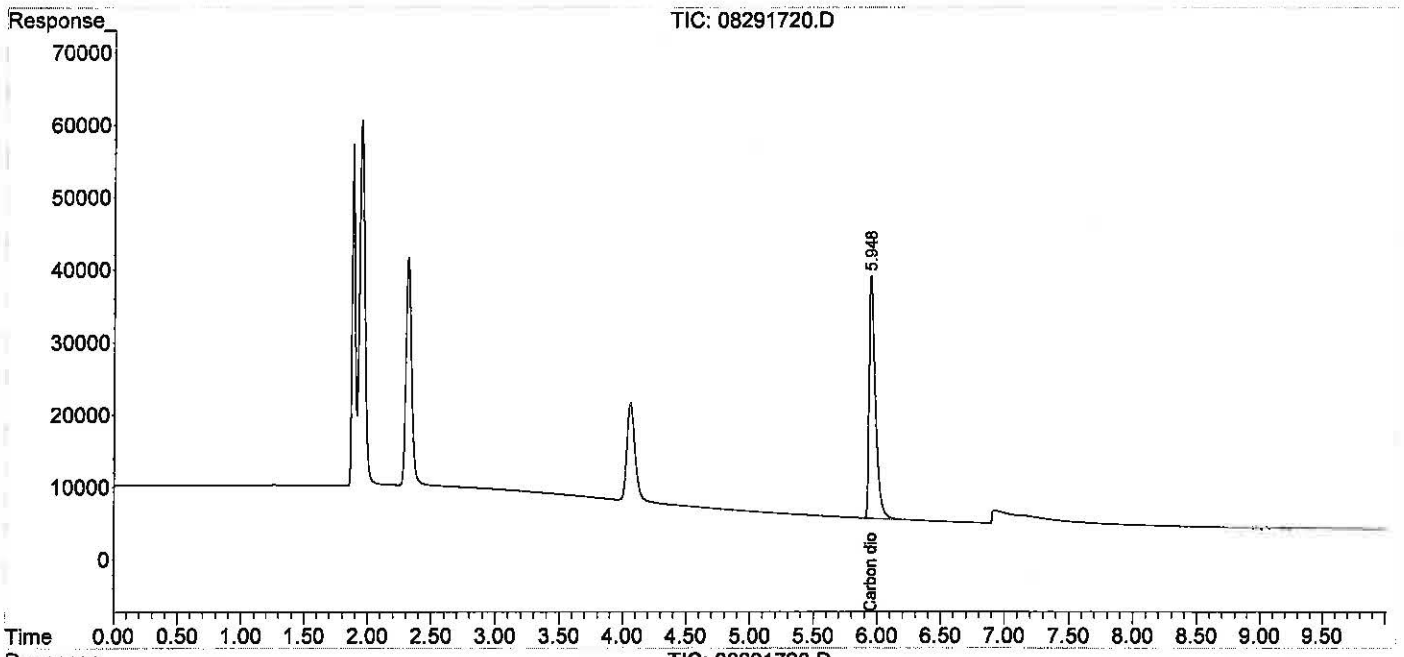
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

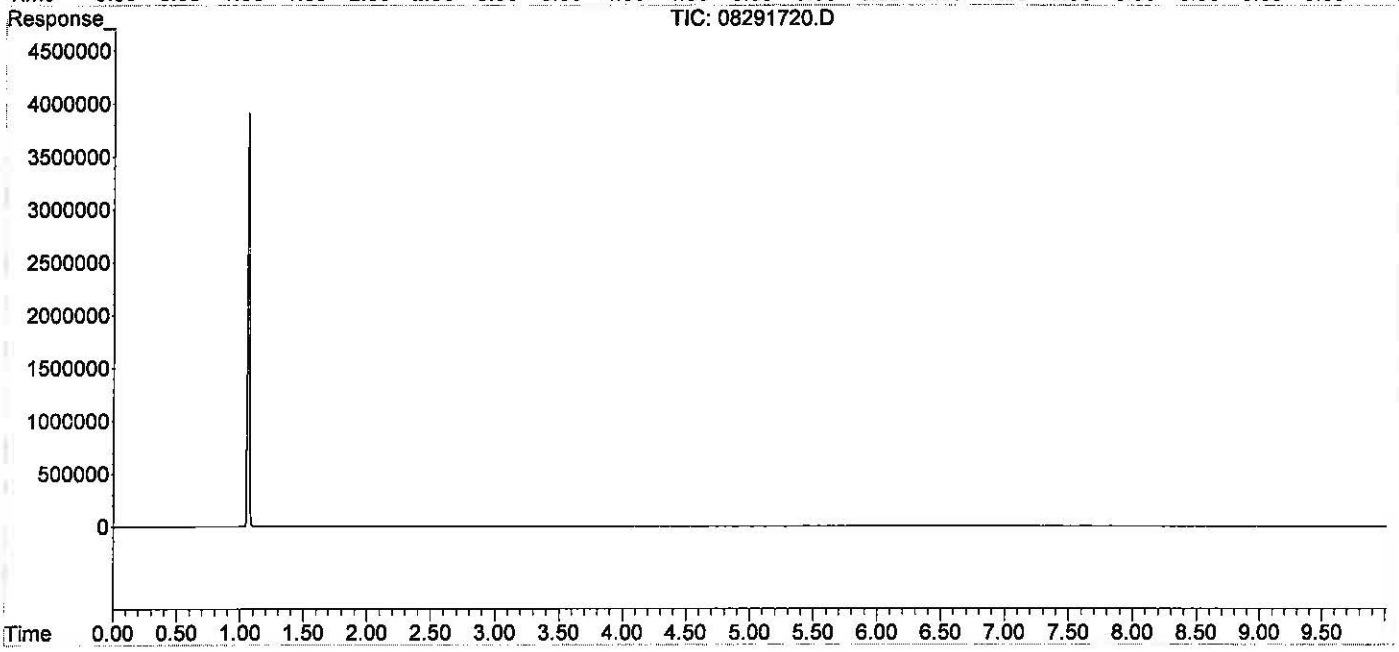
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

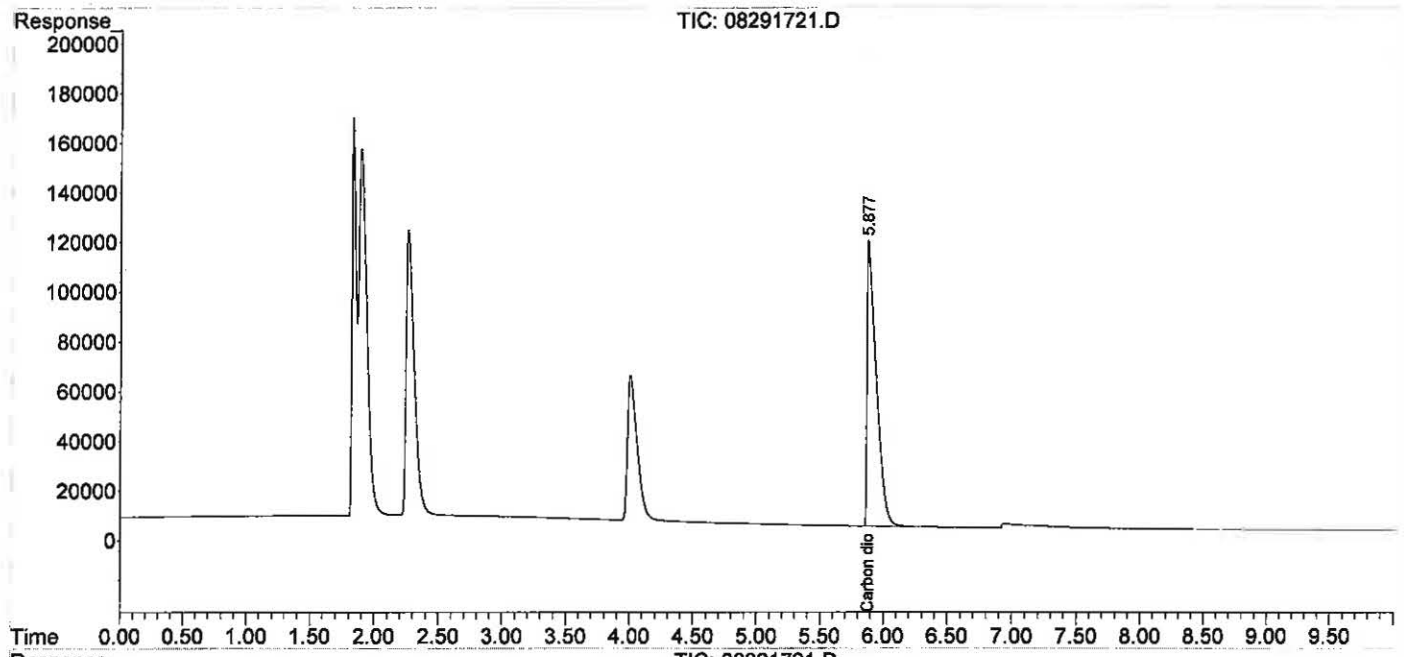
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

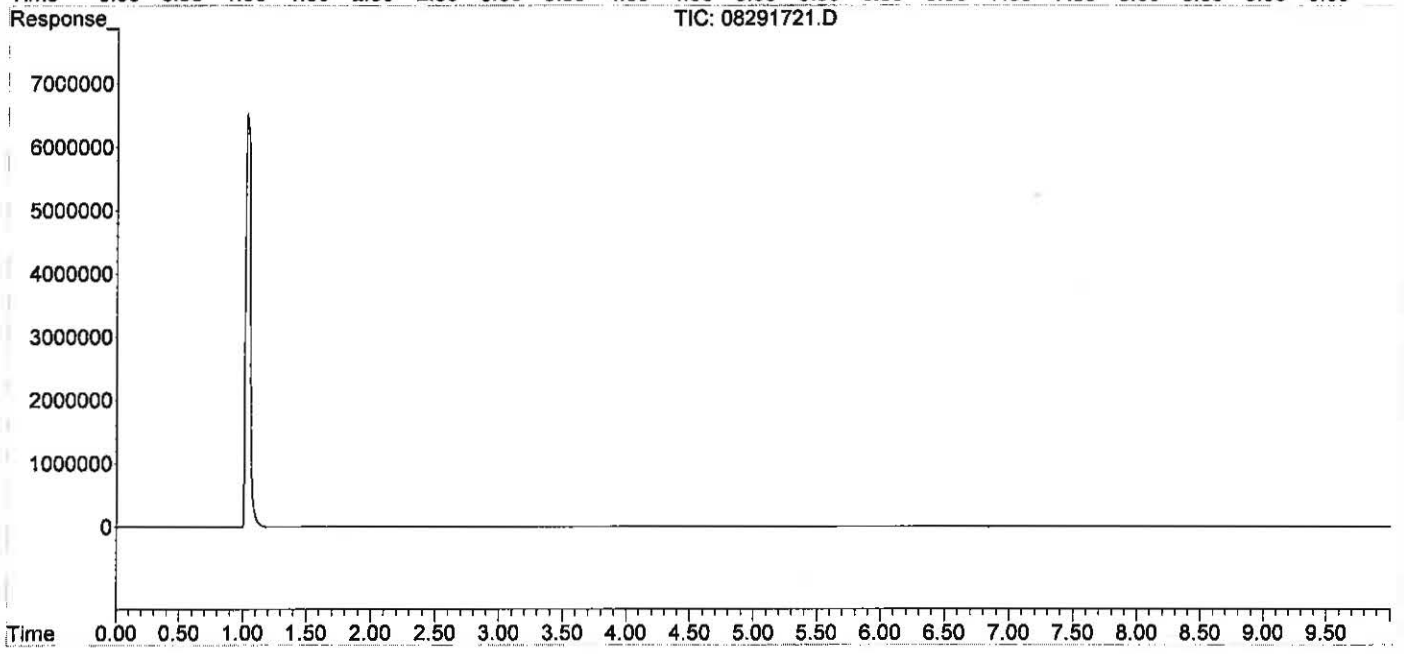
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

Actual %D
5000 99.16

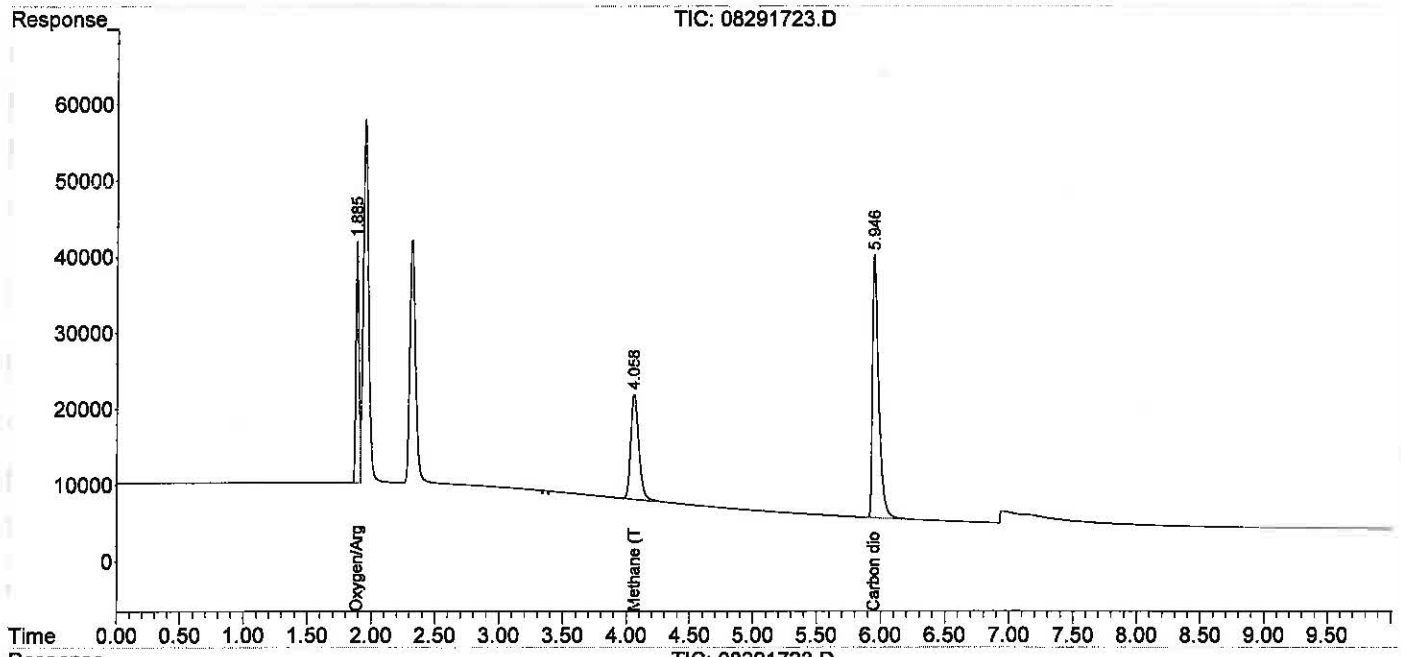
(f)=RT Delta > 1/2 Window (m)=manual int.

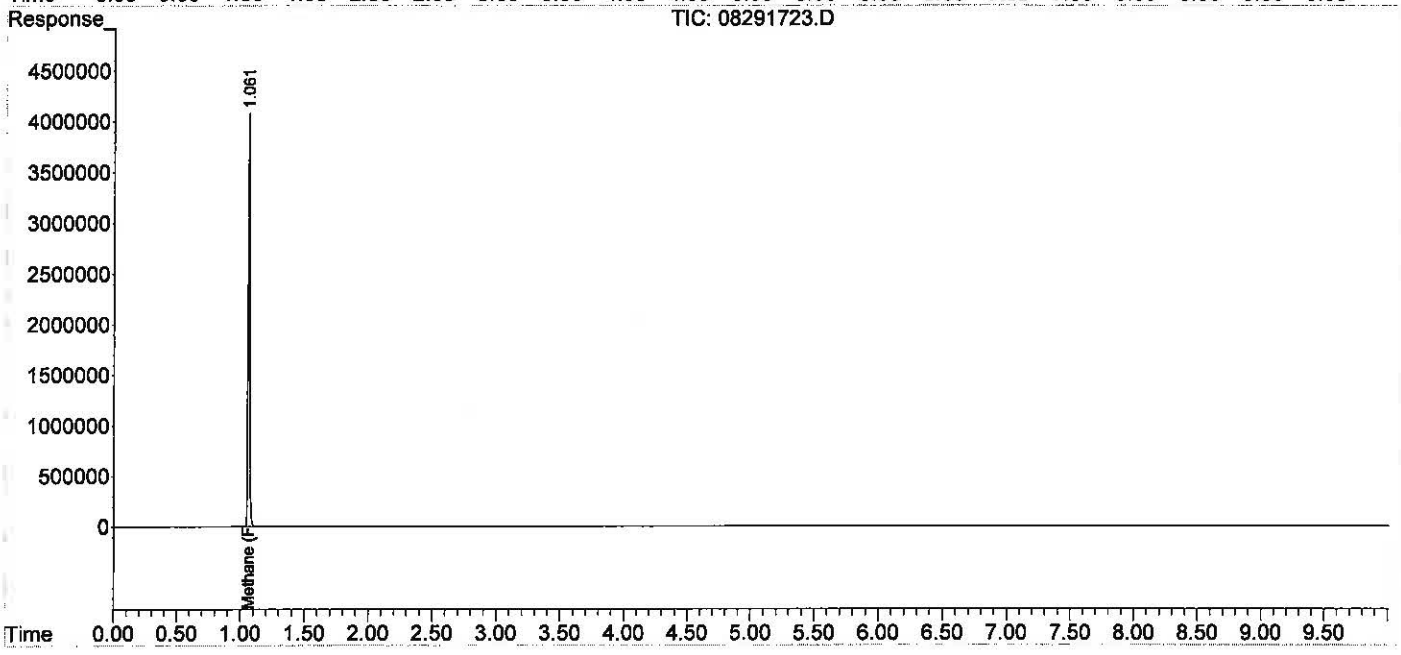
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : WH | Instrument : GC#10
Service Request: P1903217 | Date Analysis : 06/12/19 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-04251903	0.100	4632.707
ACTUAL		5000.00
%Difference		7.3%
MCS 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
LCS TCD 0.1ml	0.100	867.089
LCSD TCD 0.1ml	0.100	906.849
P1903217-001 50ul	0.050	12894.67
P1903217-002 50ul	0.050	15120.95
P1903217-003 50ul	0.050	17074.45
P1903217-004 50ul	0.050	12062.57
P1903217-005 50ul	0.050	17137.17
P1903217-006 50ul	0.050	14217.12

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
MCS 0.1ml	0.000
LCS TCD 0.1ml	8670.890
LCSD TCD 0.1ml	9068.490
P1903217-001 50ul	257893.44
P1903217-002 50ul	302418.94
P1903217-003 50ul	341489.02
P1903217-004 50ul	241251.46
P1903217-005 50ul	342743.46
P1903217-006 50ul	284342.42

std s32-04251903	4523.296
ACTUAL	5000.00
%Difference	9.5%

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 09:58:44
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 10:13:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

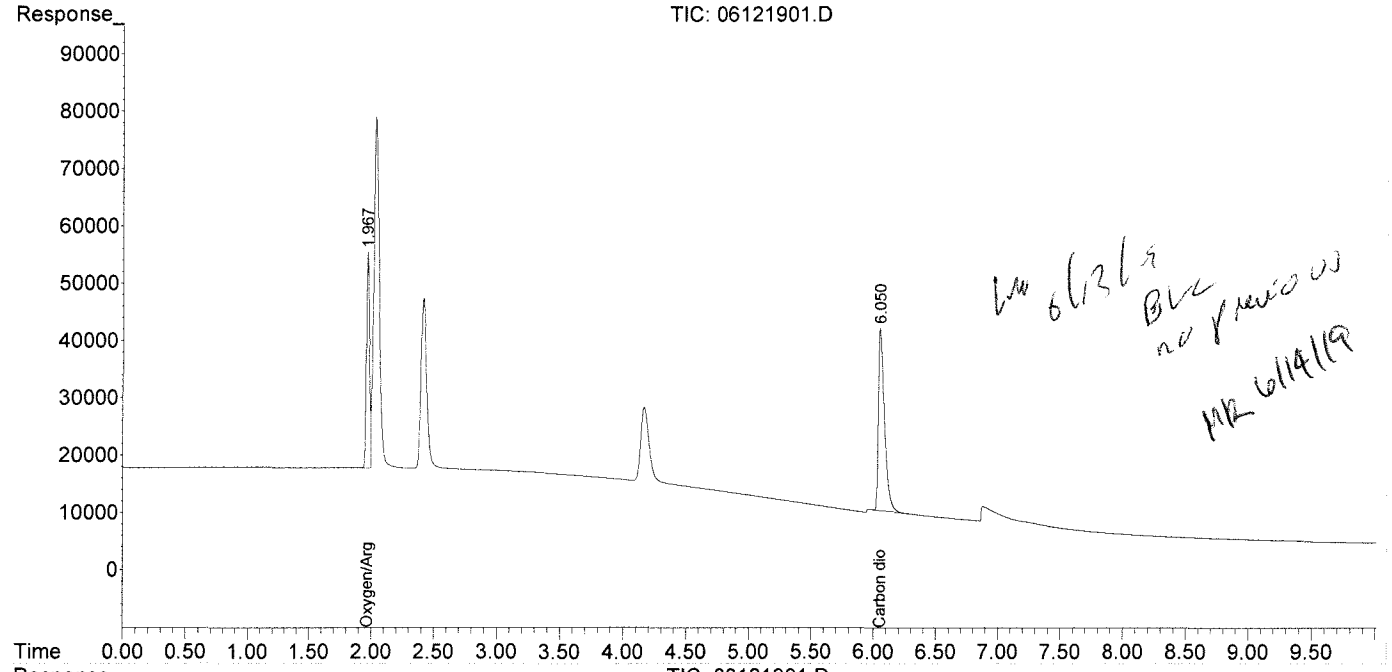
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.968f	652151	0.137	ppm	
2)	Carbon monoxide	1.968f	652151	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.050	1087432	4632.707	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

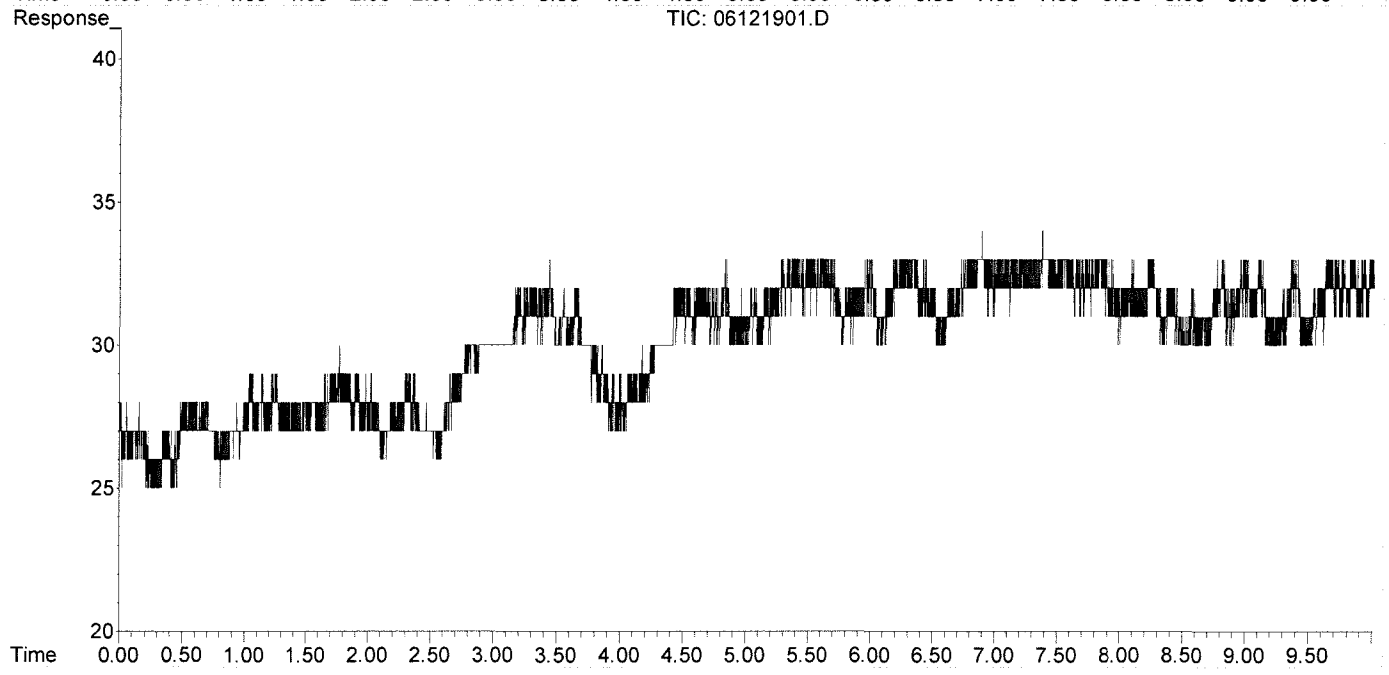
Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 09:58:44
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 10:13:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Lw 6/13/19 BLK no previous MR 6/14/19



Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 14:29:39
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:43:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

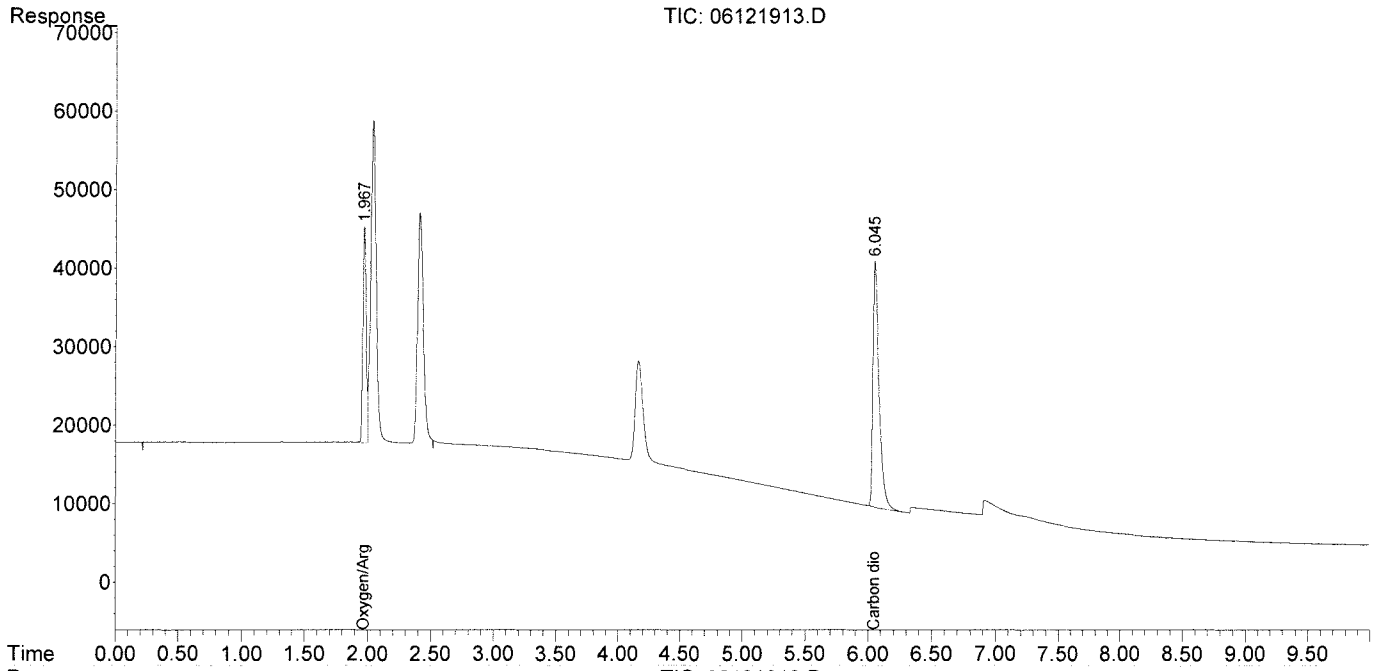
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	491243	0.103	ppm
2)	Carbon monoxide	1.968f	491243	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.046	1061750	4523.296	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

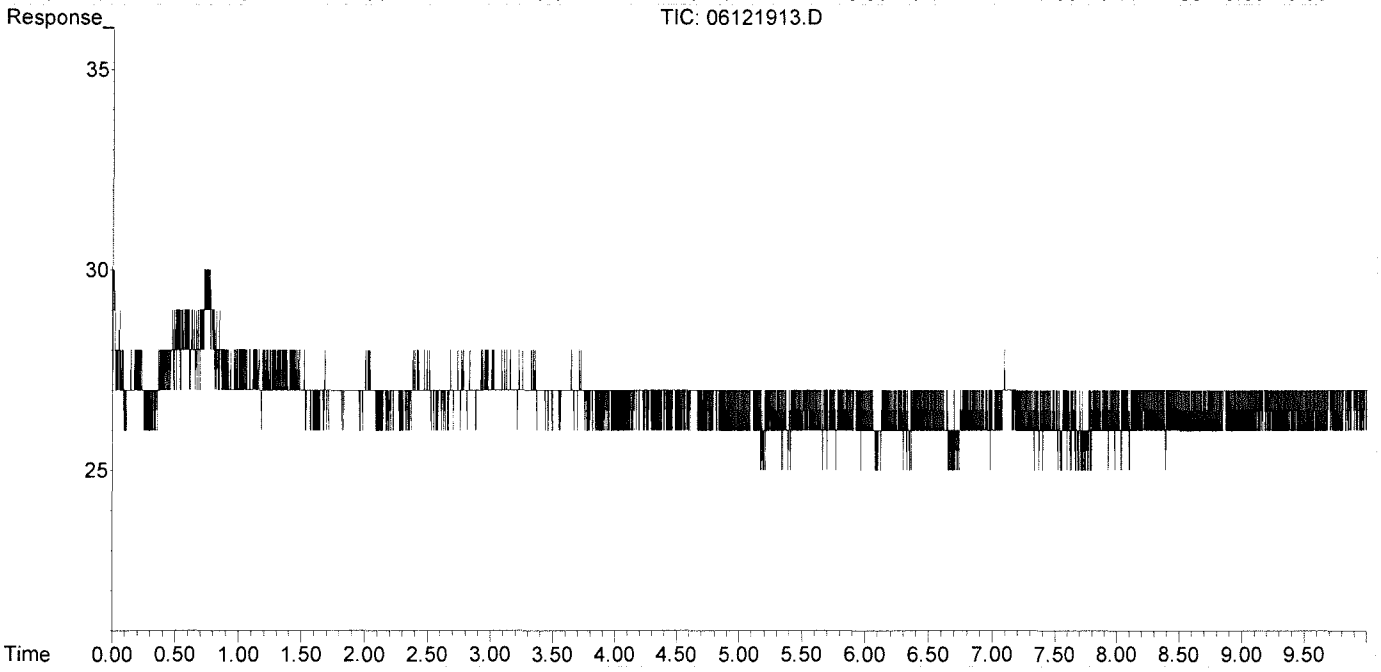
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 14:29:39
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:43:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_06\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Jun-19, 09:58:44	06121901.D	std s32-04251903		WH	RSKBOTH.M	pass
2	12-Jun-19, 10:15:08	06121902.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	12-Jun-19, 10:46:05	06121903.D	MCS 0.1ml		WH	RSKBOTH.M	pass
4	12-Jun-19, 11:05:17	06121904.D	LCS TCD 0.1ml		WH	RSKBOTH.M	pass
5	12-Jun-19, 11:28:50	06121905.D	LCSD TCD 0.1ml		WH	RSKBOTH.M	pass
6	12-Jun-19, 11:53:54	06121906.D	p1903217-001 0.1ml		WH	RSKBOTH.M	
7	12-Jun-19, 12:06:35	06121907.D	P1903217-001 50ul		WH	RSKBOTH.M	
8	12-Jun-19, 12:43:12	06121908.D	P1903217-002 50ul		WH	RSKBOTH.M	
9	12-Jun-19, 12:56:55	06121909.D	P1903217-003 50ul		WH	RSKBOTH.M	
10	12-Jun-19, 13:25:12	06121910.D	P1903217-004 50ul		WH	RSKBOTH.M	
11	12-Jun-19, 13:41:54	06121911.D	P1903217-005 50ul		WH	RSKBOTH.M	
12	12-Jun-19, 13:53:26	06121912.D	P1903217-006 50ul		WH	RSKBOTH.M	
13	12-Jun-19, 14:29:39	06121913.D	std s32-04251903		WH	RSKBOTH.M	pass
14	12-Jun-19, 14:44:58	06121914.D	xP1903244-001 50u		WH	RSKBOTH.M	
15	12-Jun-19, 14:58:42	06121915.D	P1903244-001 50ul		WH	RSKBOTH.M	
16	12-Jun-19, 15:17:41	06121916.D	P1903244-002 50ul		WH	RSKBOTH.M	
17	12-Jun-19, 15:31:33	06121917.D	xP1903244-003 50u		WH	RSKBOTH.M	
18	12-Jun-19, 15:47:49	06121918.D	P1903244-004 50ul		WH	RSKBOTH.M	
19	12-Jun-19, 16:08:34	06121919.D	P1903244-005 50ul		WH	RSKBOTH.M	
20	12-Jun-19, 16:32:46	06121920.D	P1903244-006 50ul		WH	RSKBOTH.M	
21	12-Jun-19, 16:48:17	06121921.D	P1903244-003 50ul		WH	RSKBOTH.M	
22	12-Jun-19, 17:06:26	06121922.D	std s32-04251903		WH	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 14:48:57
Operator : WH
Sample : P1903217-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

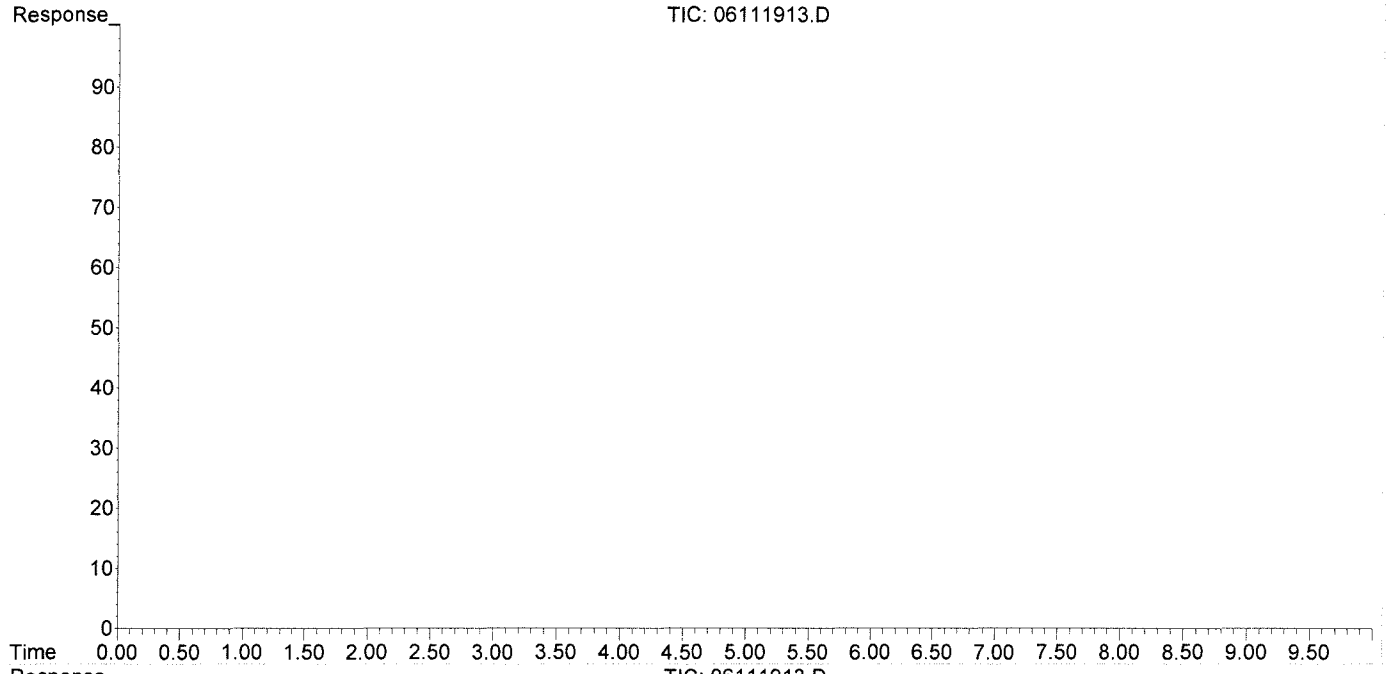
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	6568	0.724	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

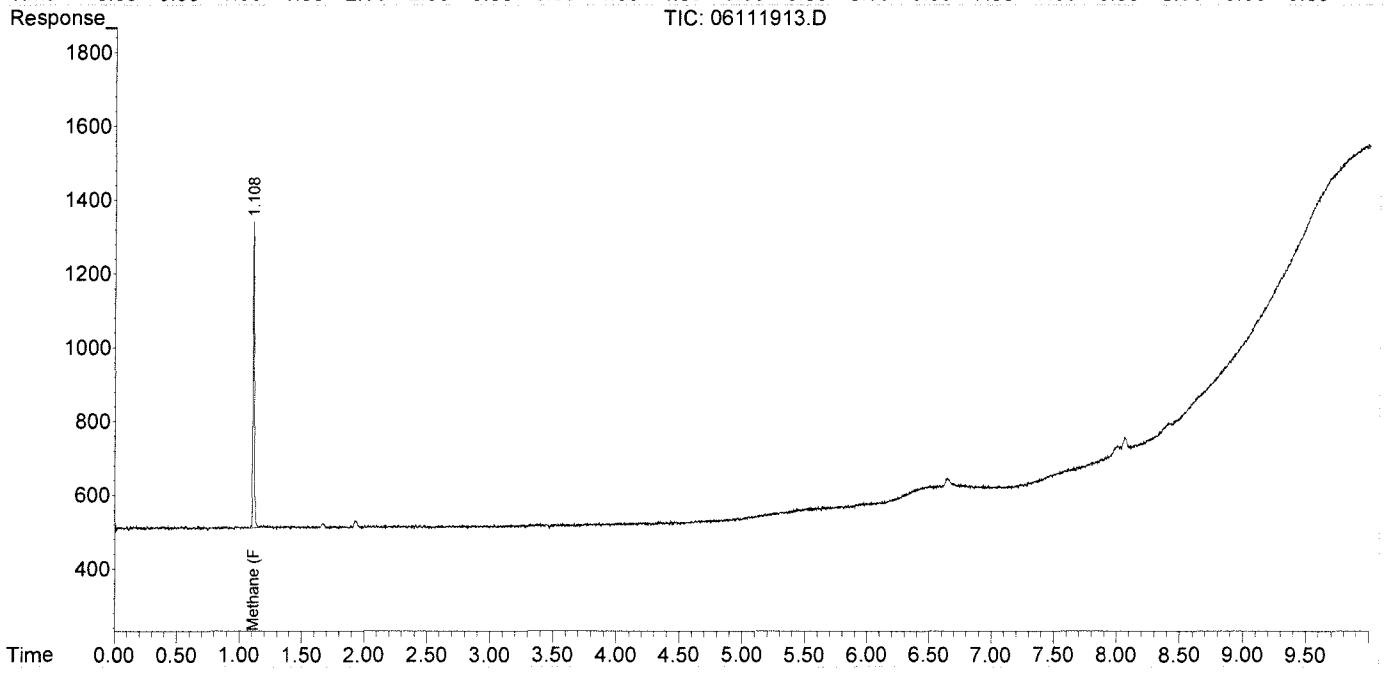
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 14:48:57
Operator : WH
Sample : P1903217-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:13:17
Operator : WH
Sample : P1903217-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:13 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

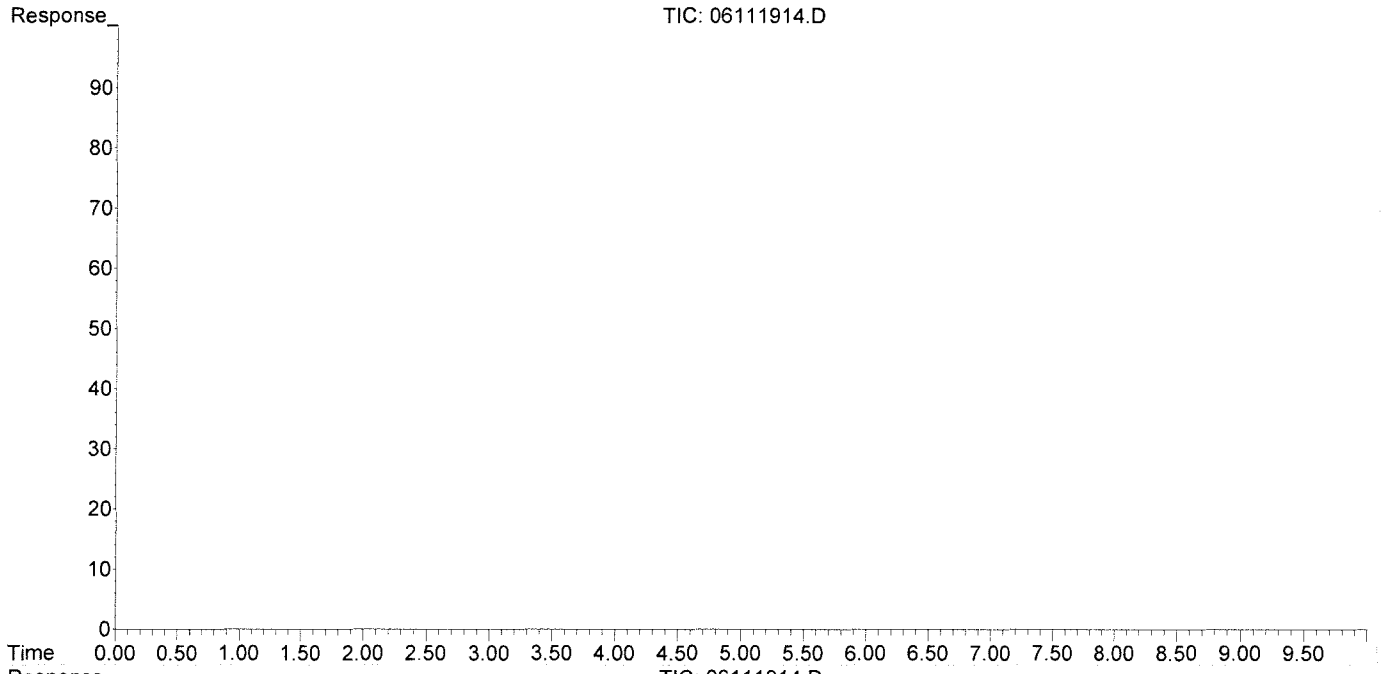
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.109	371941	41.005	ppm	
7)	Ethylene	1.667	14664	0.876	ppm	
8)	Ethane	1.930	904	0.053	ppm	m
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.646f	26227	0.985	ppm	
13)	n-Butane	6.646f	26227	0.985	ppm	

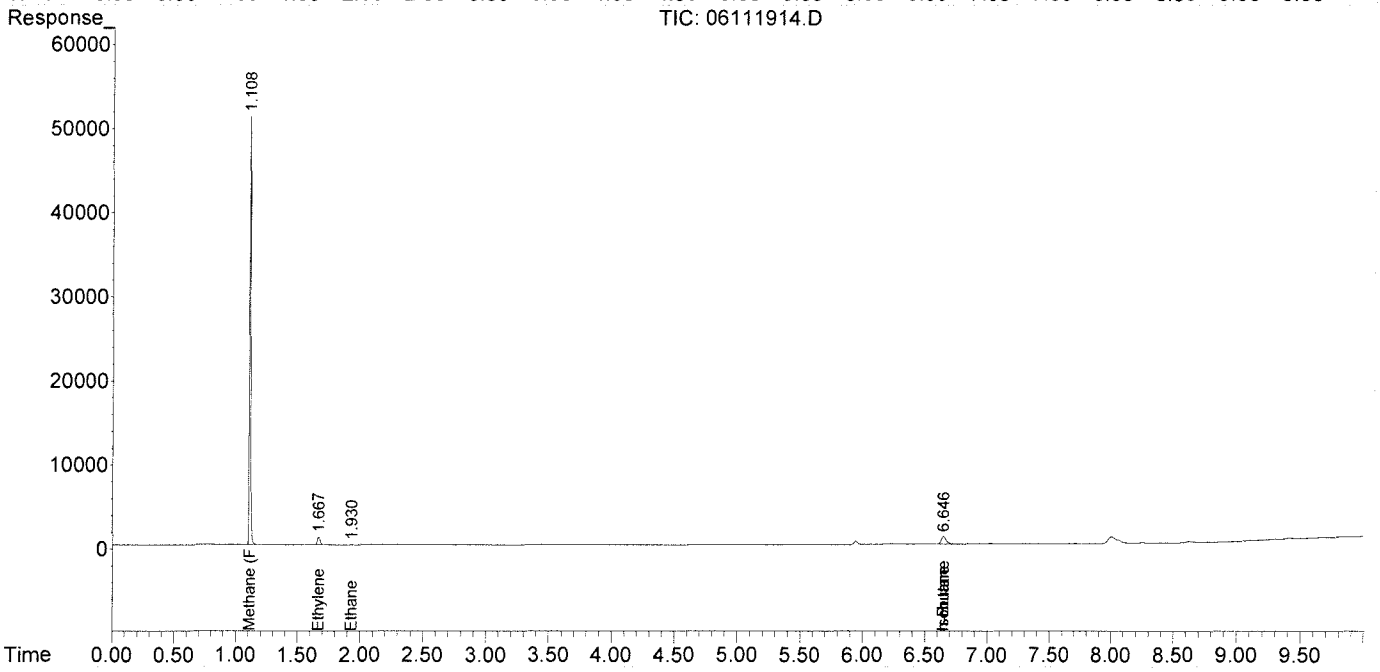
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:13:17
Operator : WH
Sample : P1903217-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:13 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

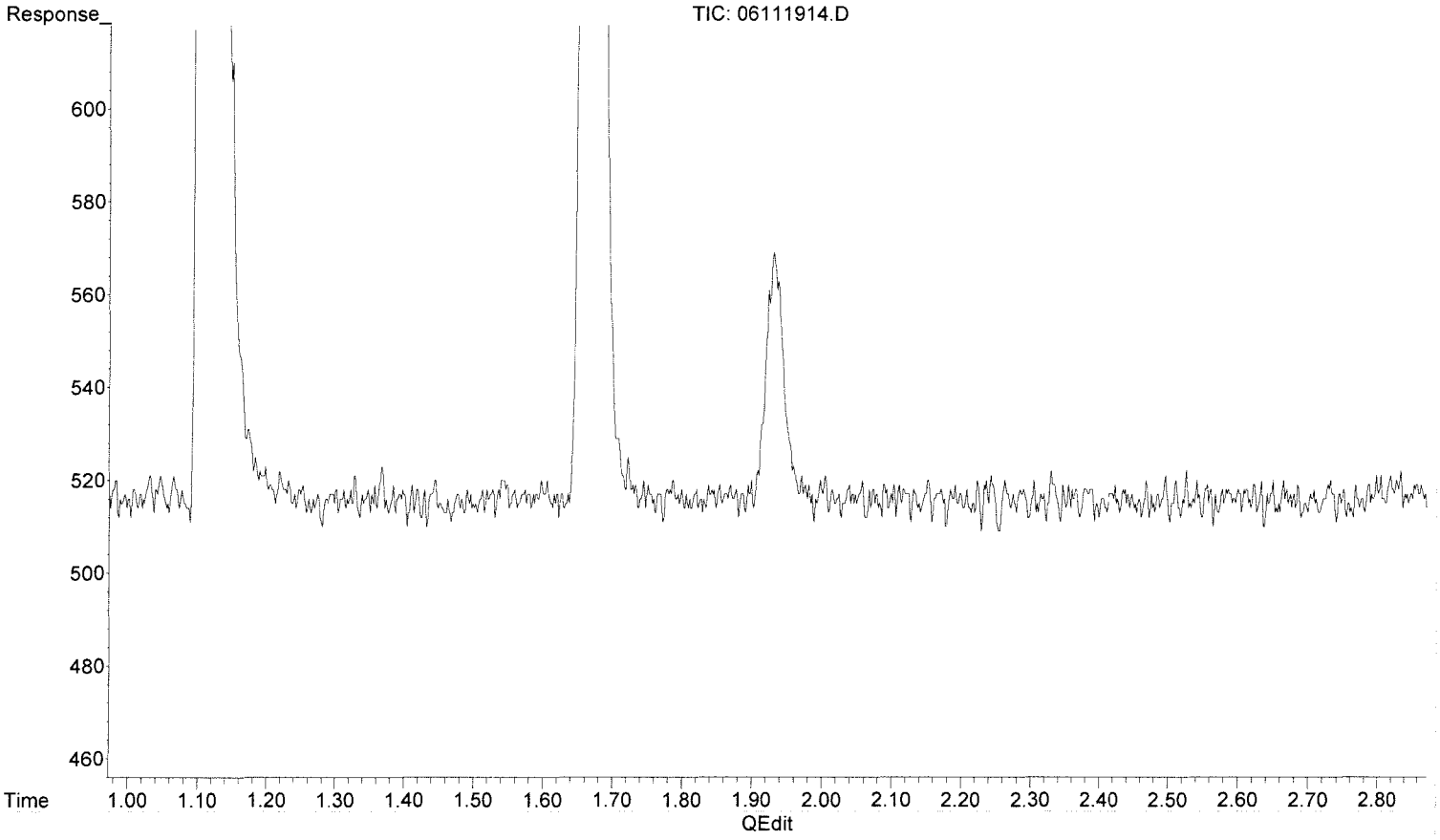




Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:13:17
Operator : WH
Sample : P1903217-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:13 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.923min 0.000 ppm

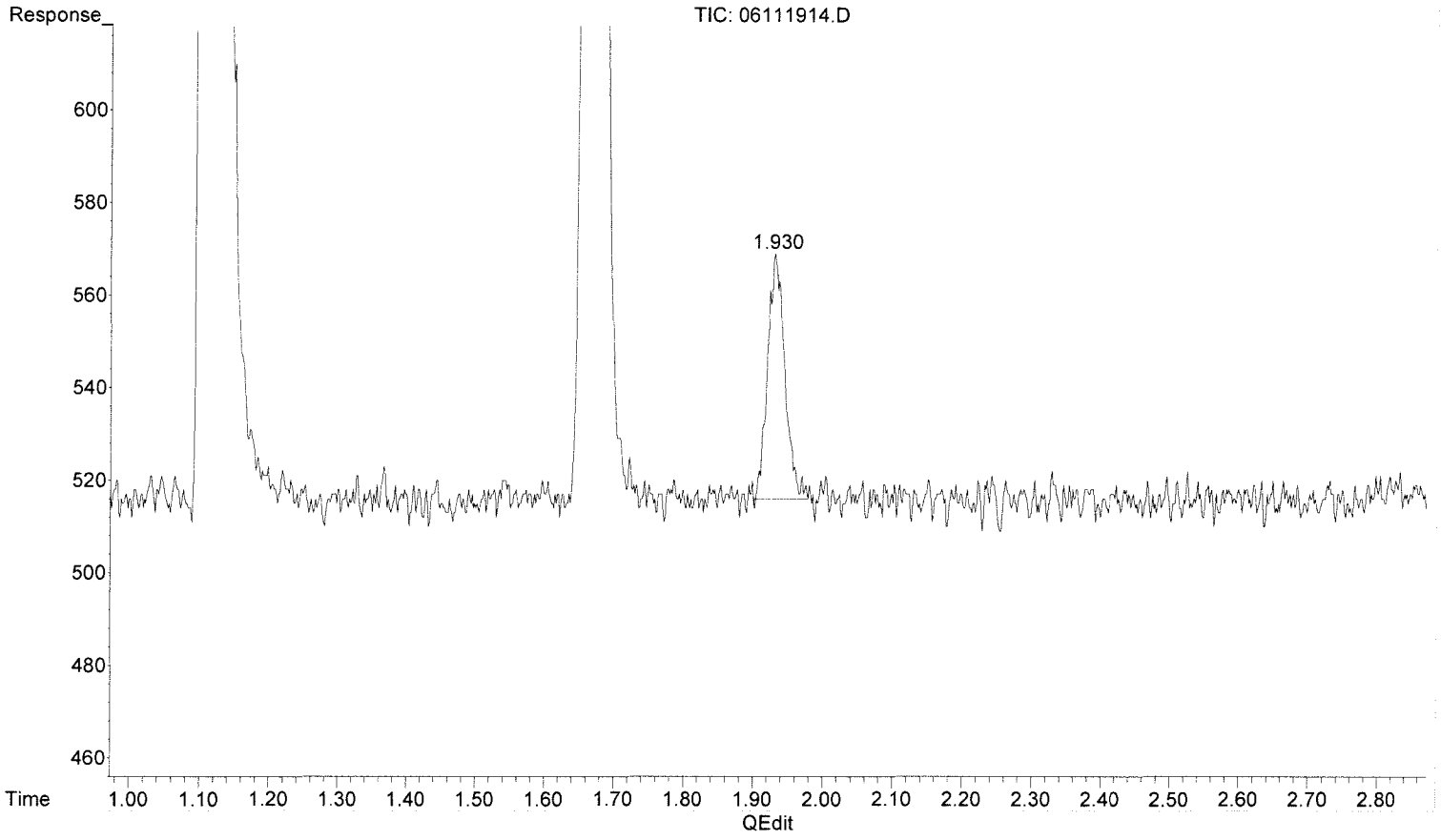
response 0

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:13:17
Operator : WH
Sample : P1903217-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:13 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.930min 0.053 ppm m

response 904

MP 6/12/19

MP 6/12/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:38:23
Operator : WH
Sample : P1903217-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:17 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

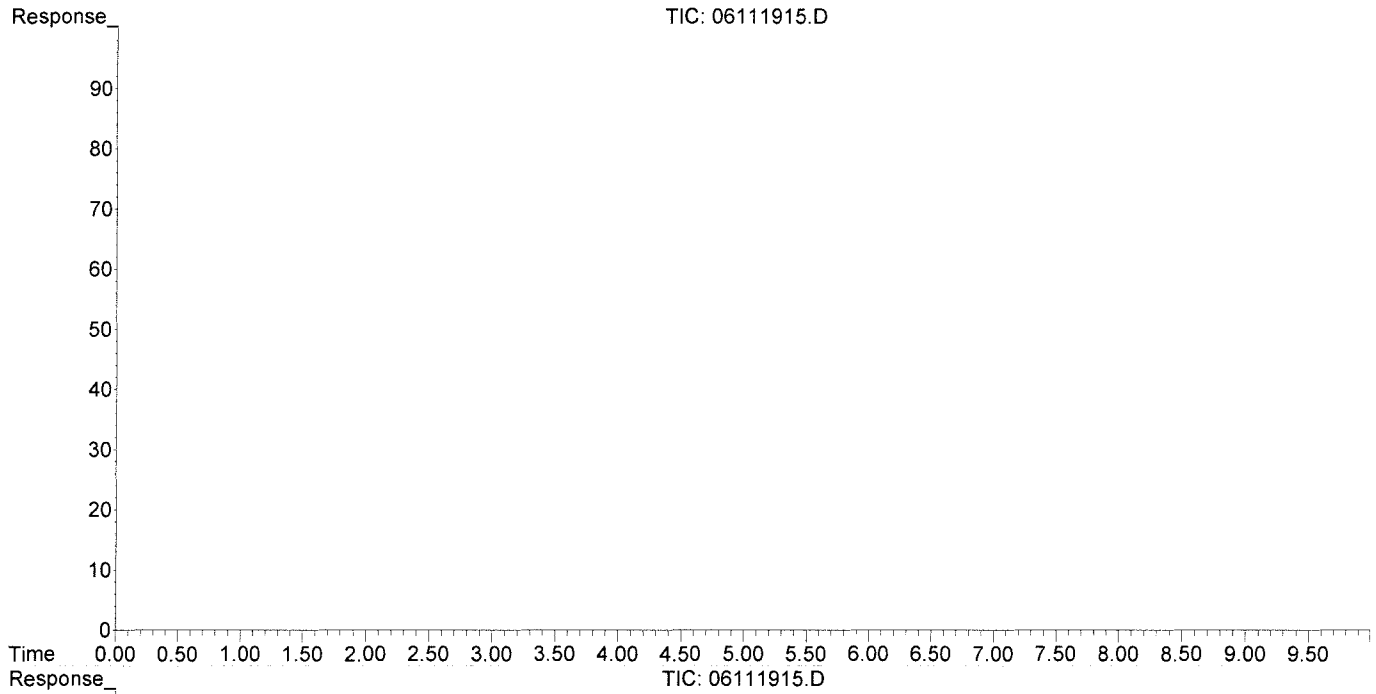
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.105	6195188	682.993	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

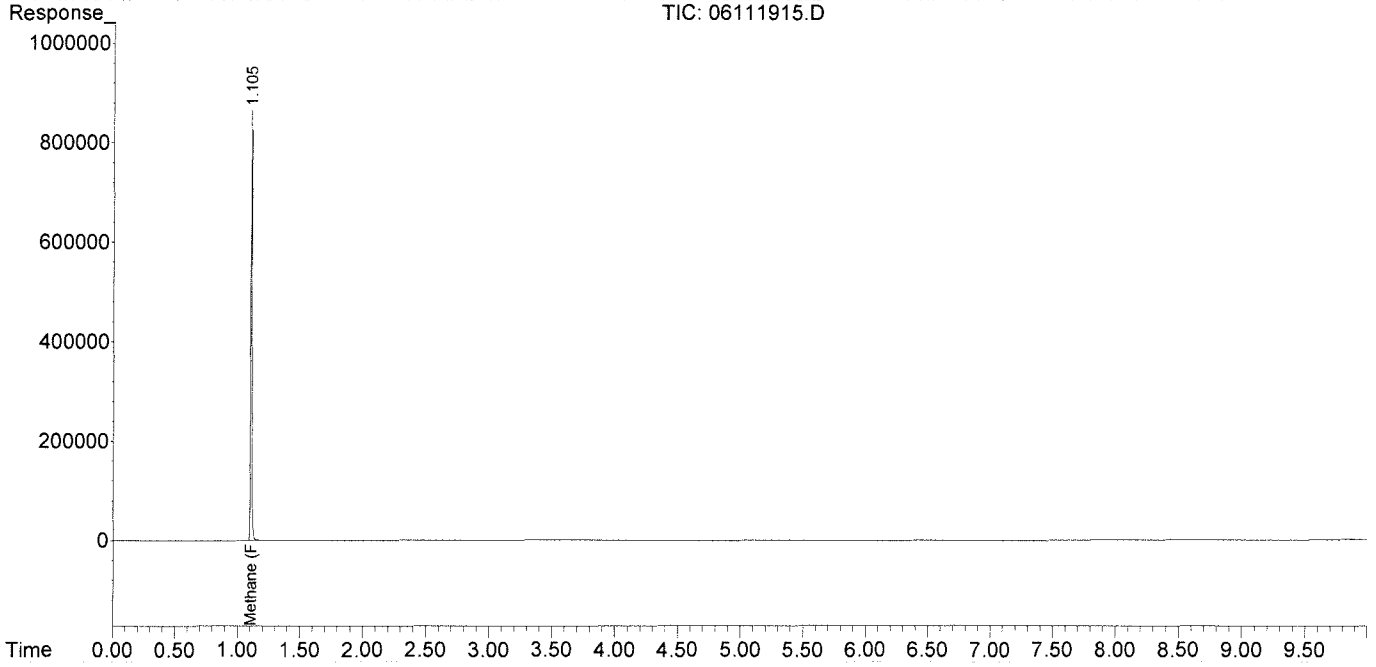
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:38:23
Operator : WH
Sample : P1903217-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:17 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:51:45
Operator : WH
Sample : P1903217-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:21 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

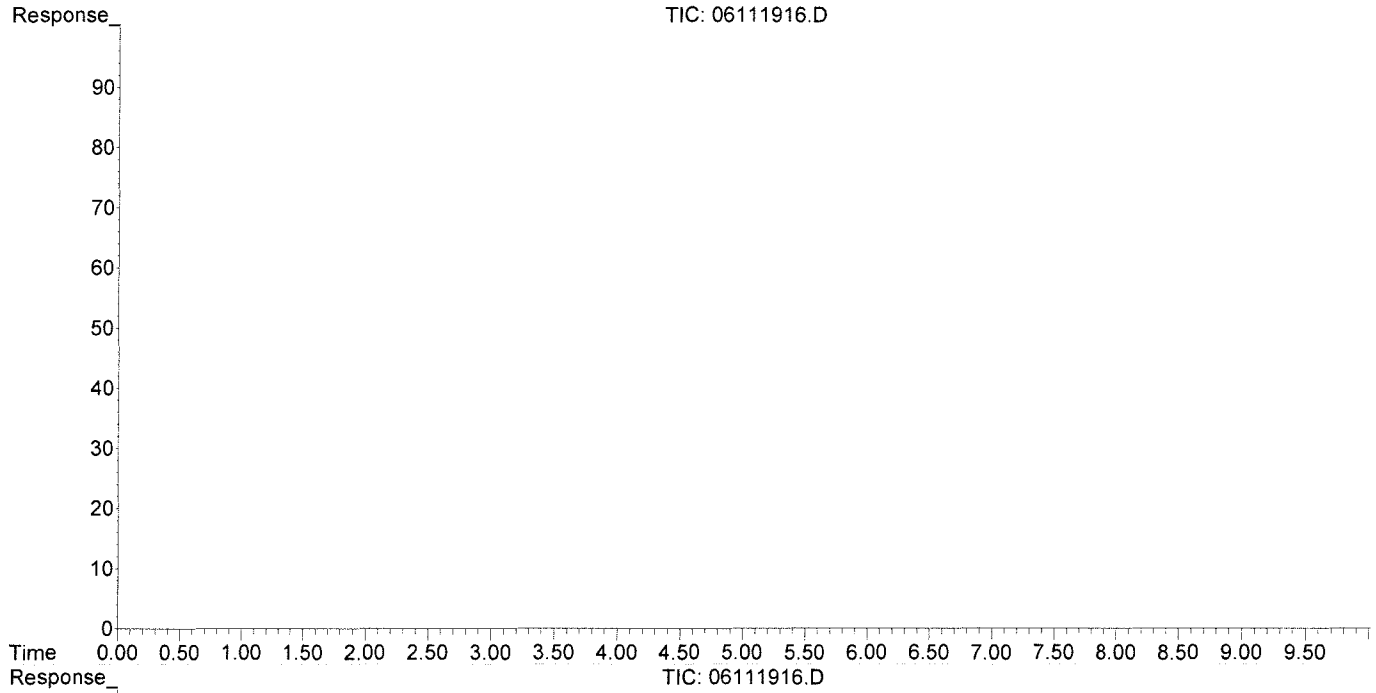
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	20247	2.232	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

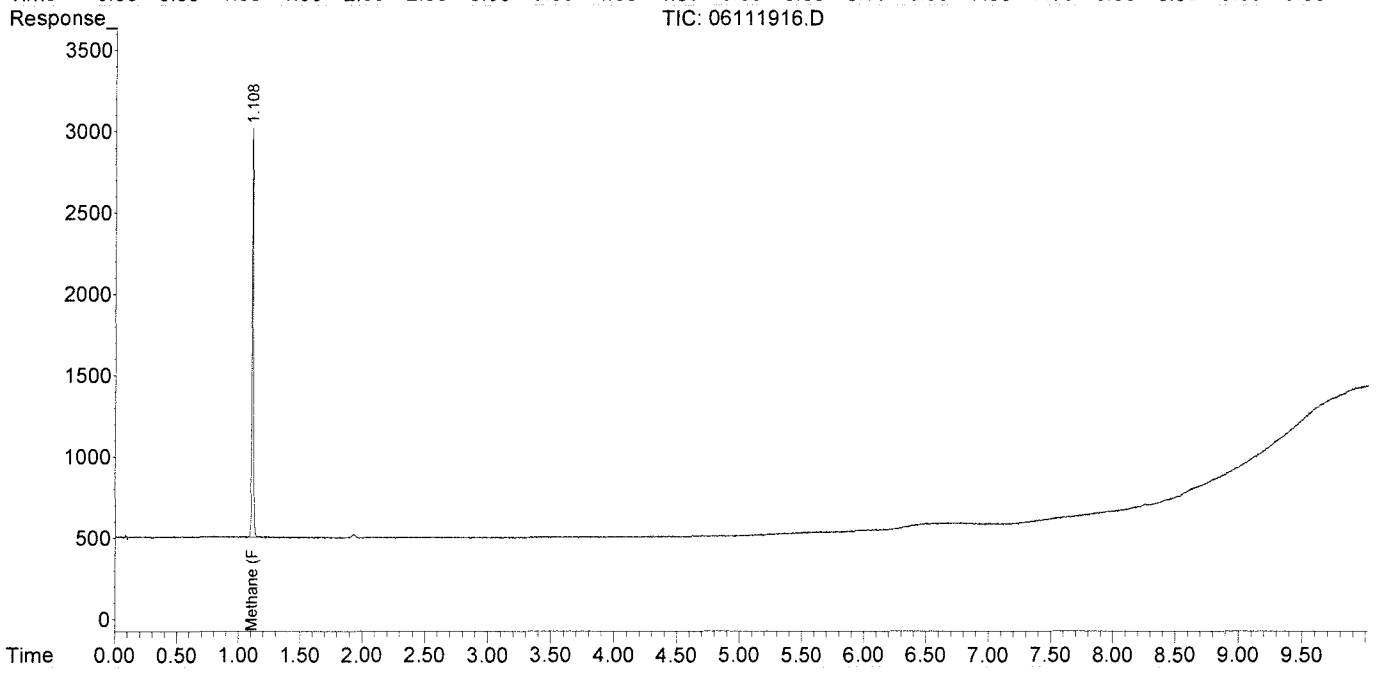
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 15:51:45
Operator : WH
Sample : P1903217-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:21 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 16:14:33
Operator : WH
Sample : P1903217-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:25 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

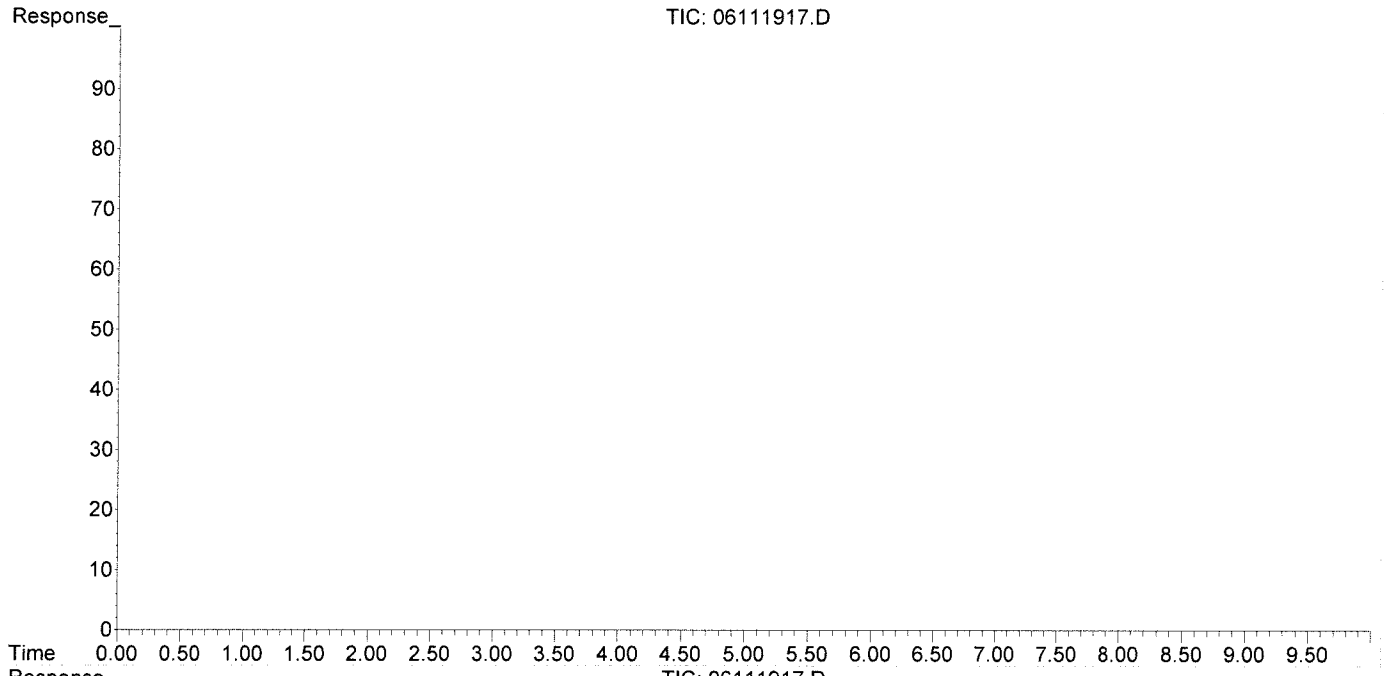
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	2788839	307.458	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

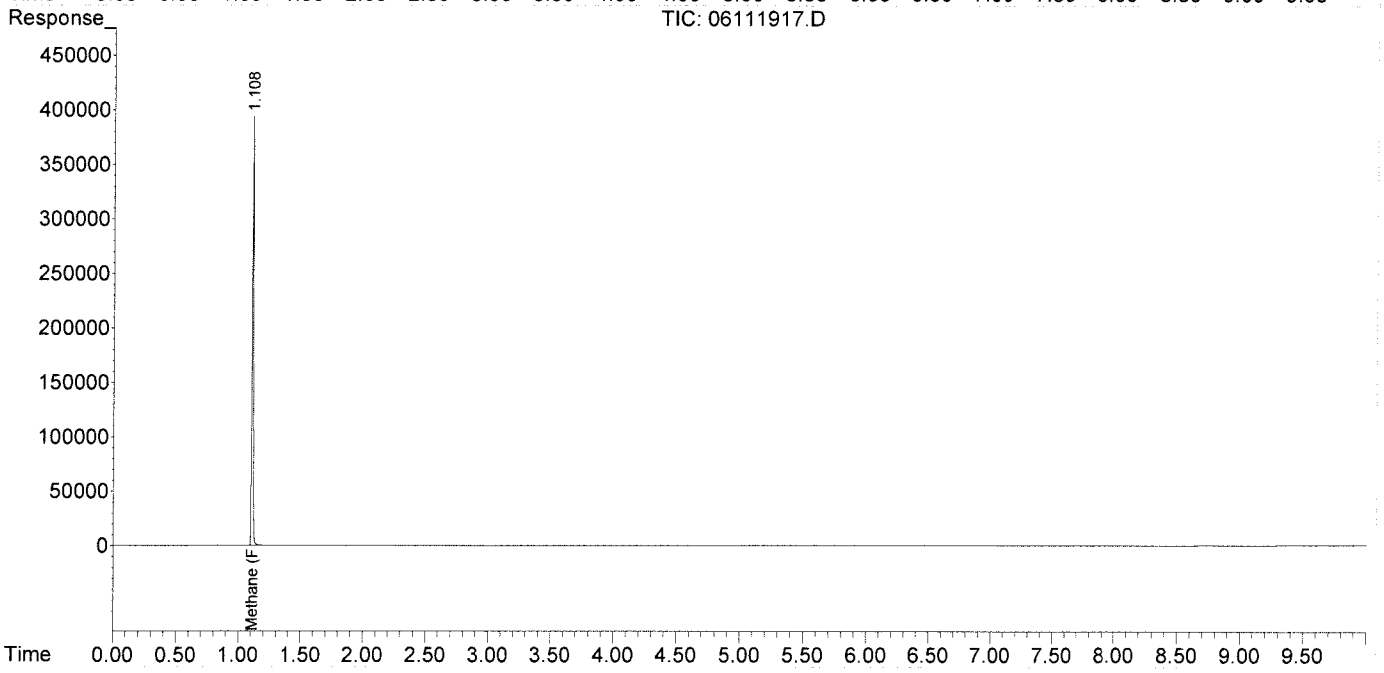
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 16:14:33
Operator : WH
Sample : P1903217-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:25 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 16:36:27
Operator : WH
Sample : P1903217-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:29 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

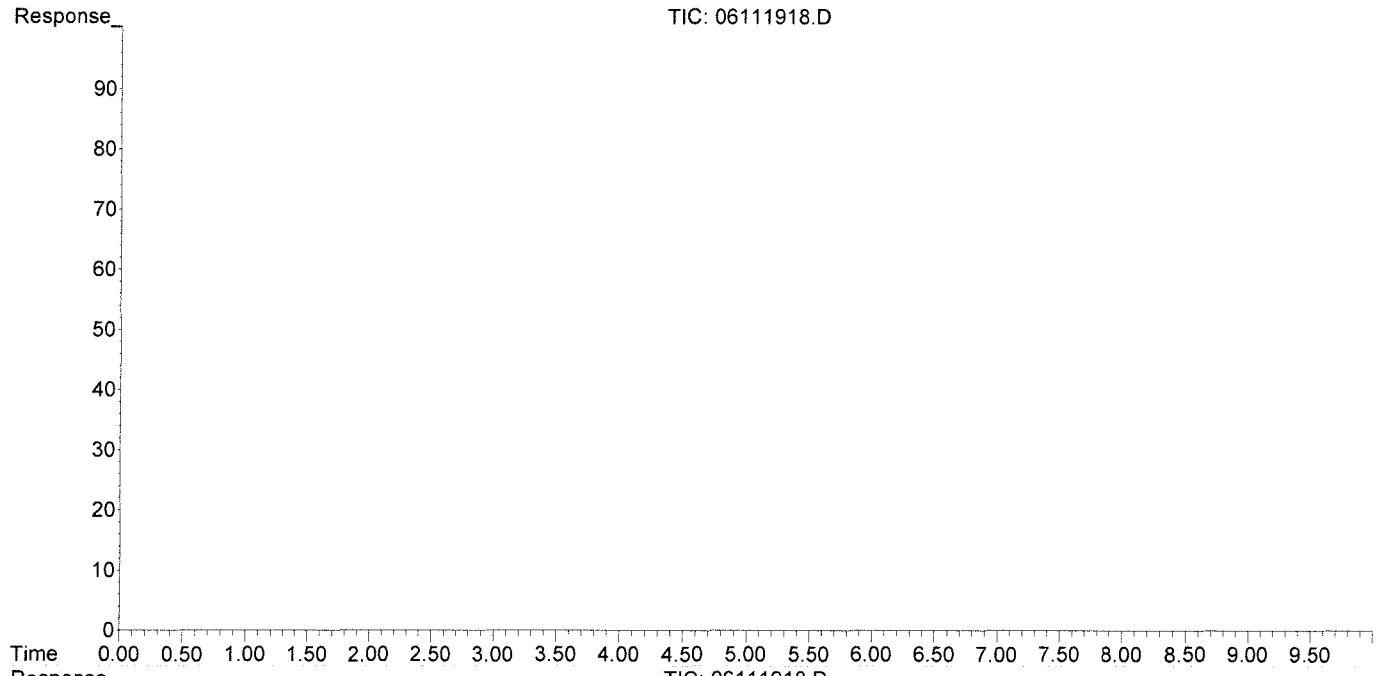
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	11174	1.232	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

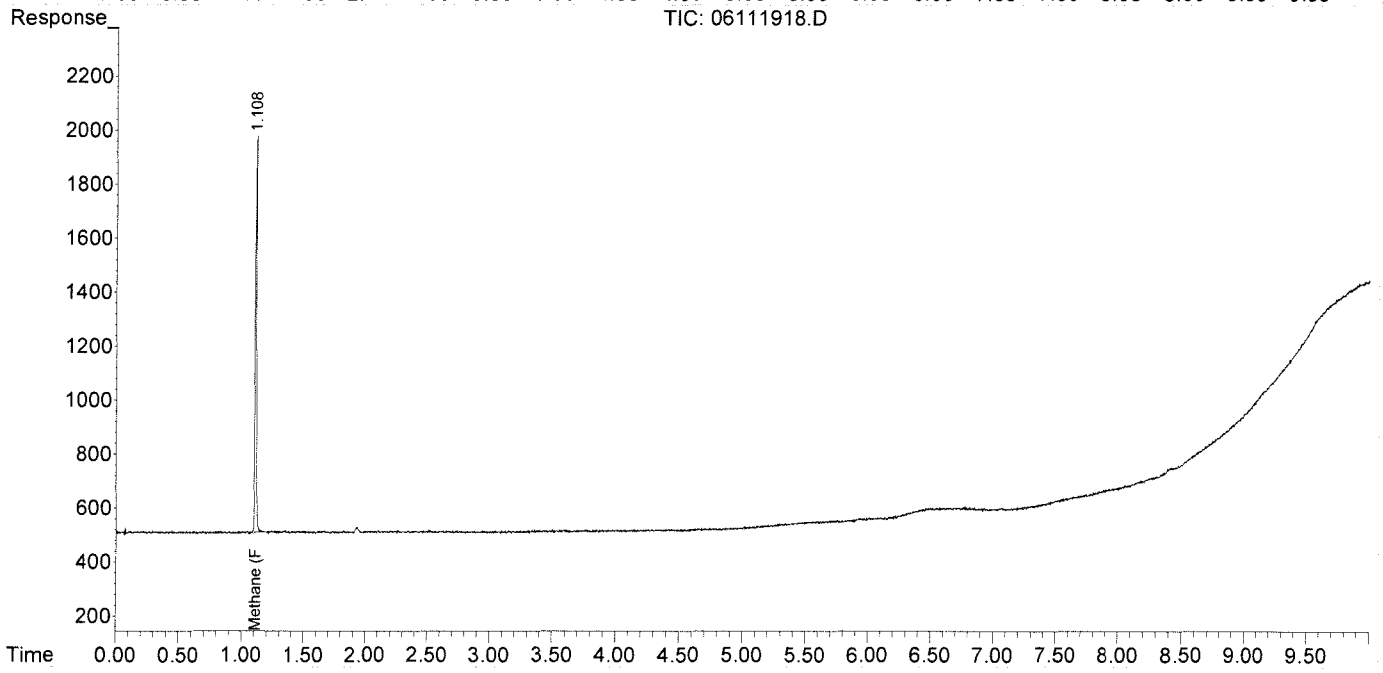
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 16:36:27
Operator : WH
Sample : P1903217-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 12:19:29 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:04:29
Operator : WH
Sample : MCS 0.1ML
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:36:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

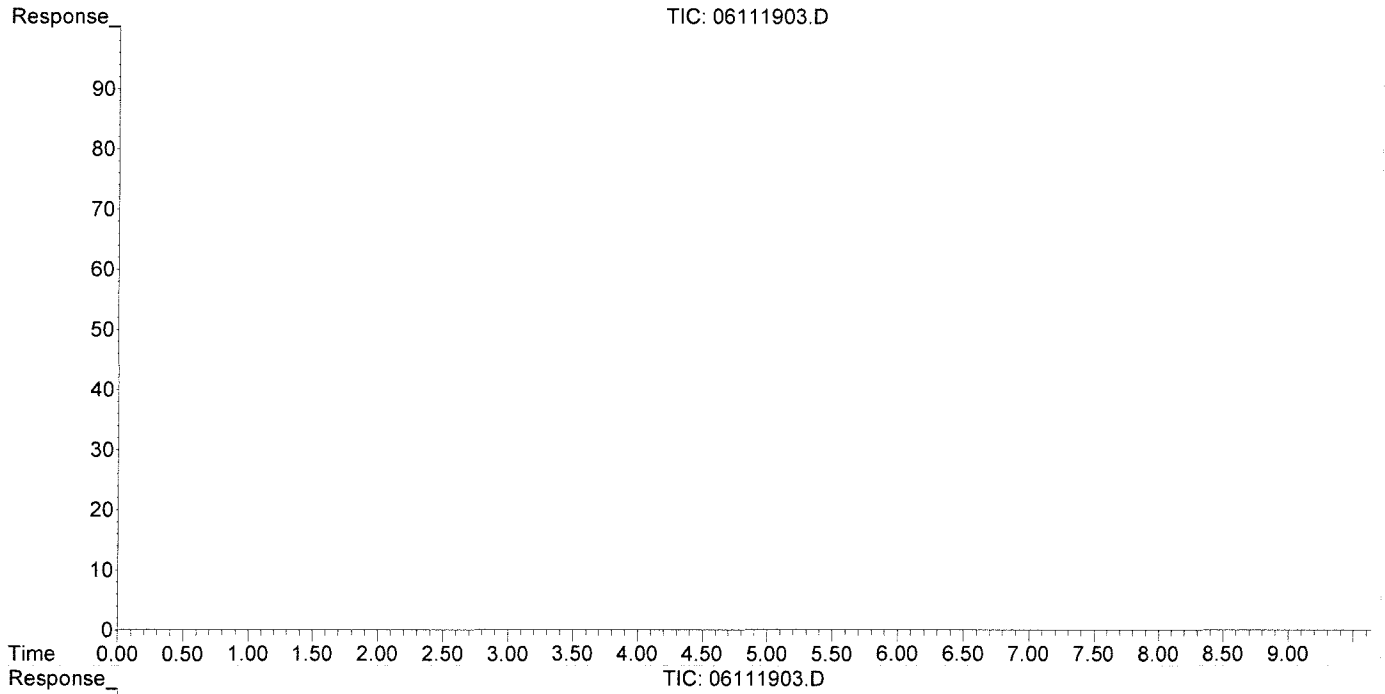
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

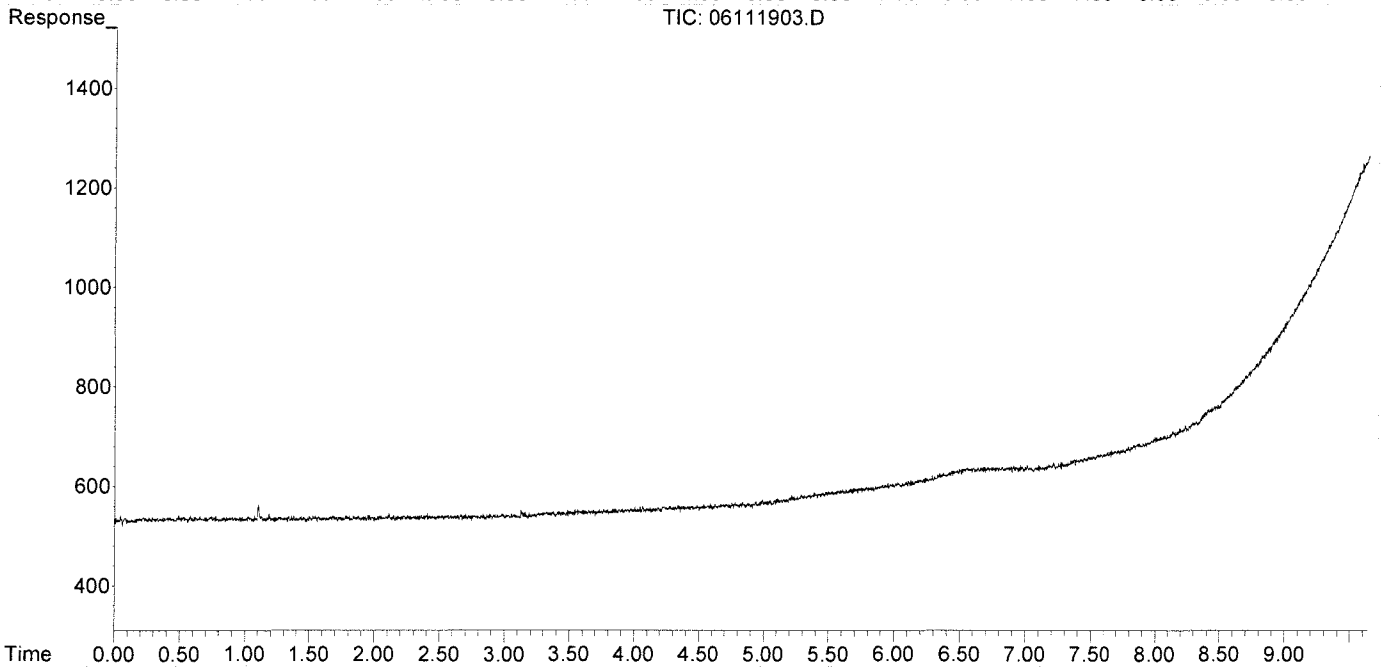
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:04:29
Operator : WH
Sample : MCS 0.1ML
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:36:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:33:06
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 13:42:21 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

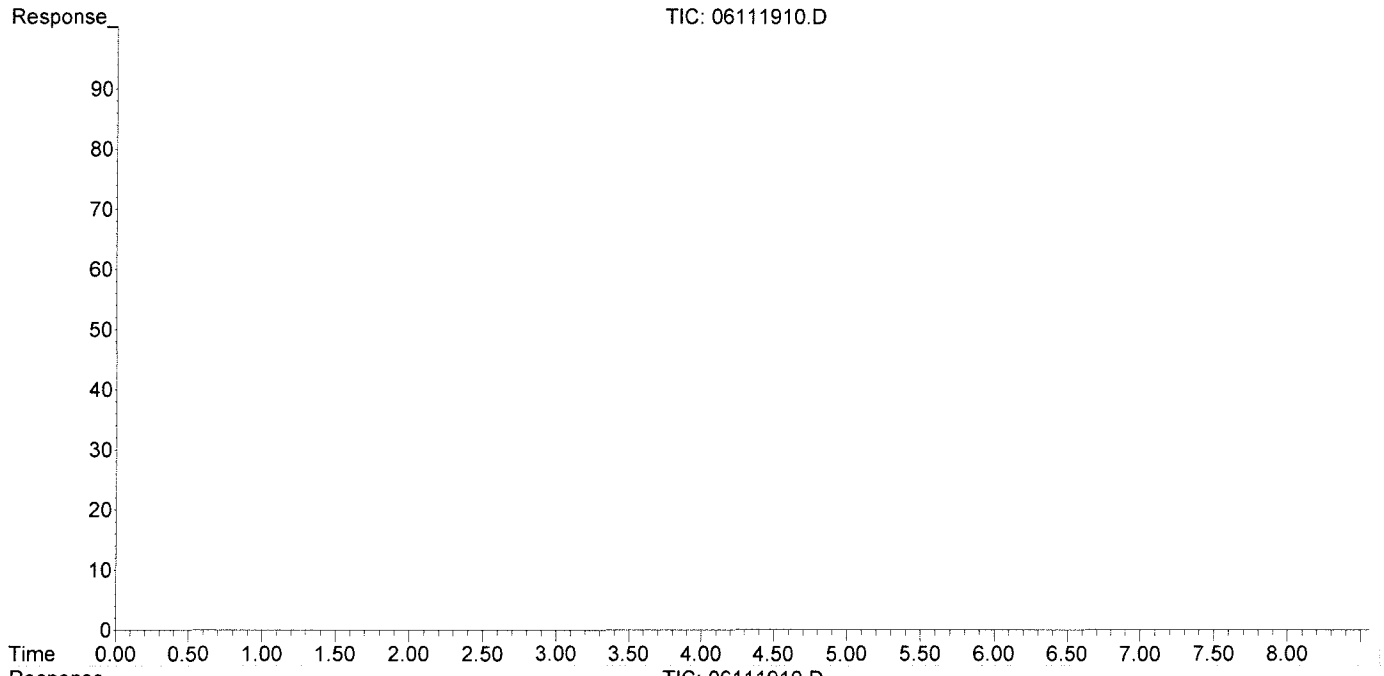
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.107	11662	1.286	ppm
7)	Ethylene	1.667	18008	1.076	ppm
8)	Ethane	1.928	20085	1.185	ppm
9)	Propylene	4.306	25142	1.073	ppm
10)	Propane	4.429	30346	1.220	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.646	39080	1.468	ppm
13)	n-Butane	6.646	39080	1.468	ppm

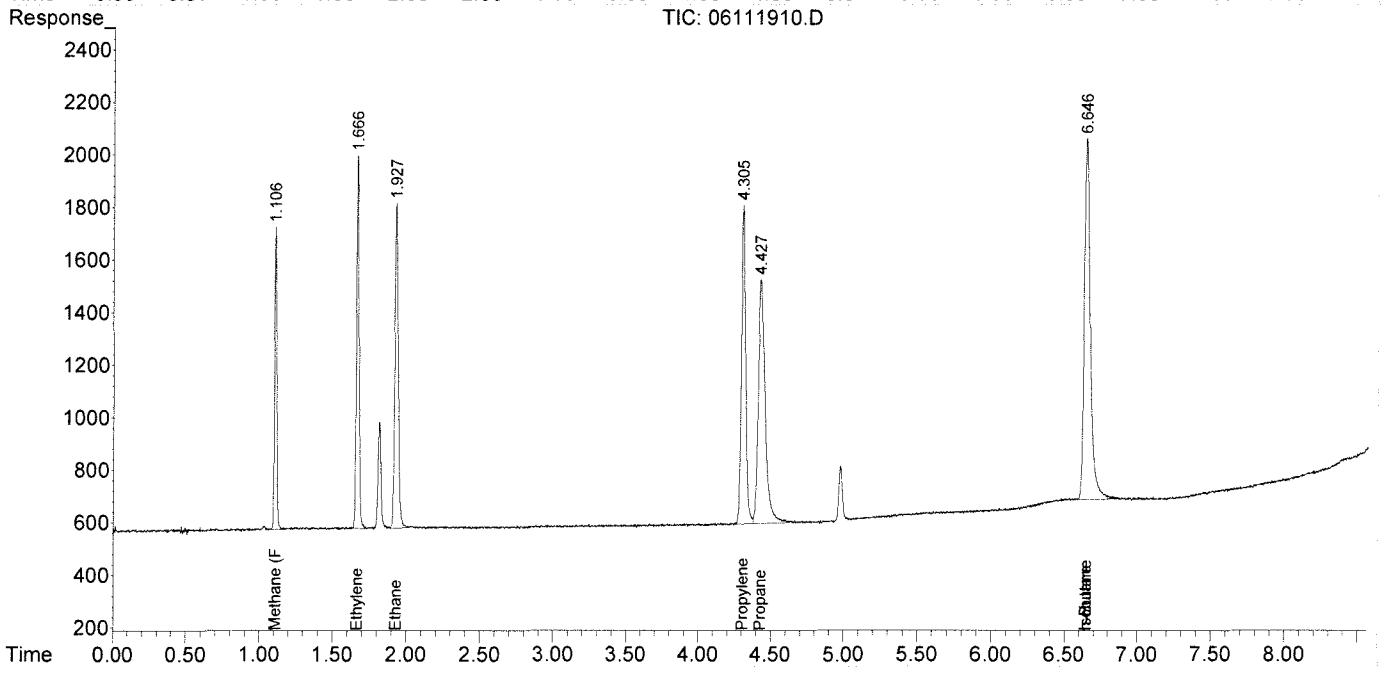
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:33:06
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 13:42:21 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:54:43
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:11:34 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

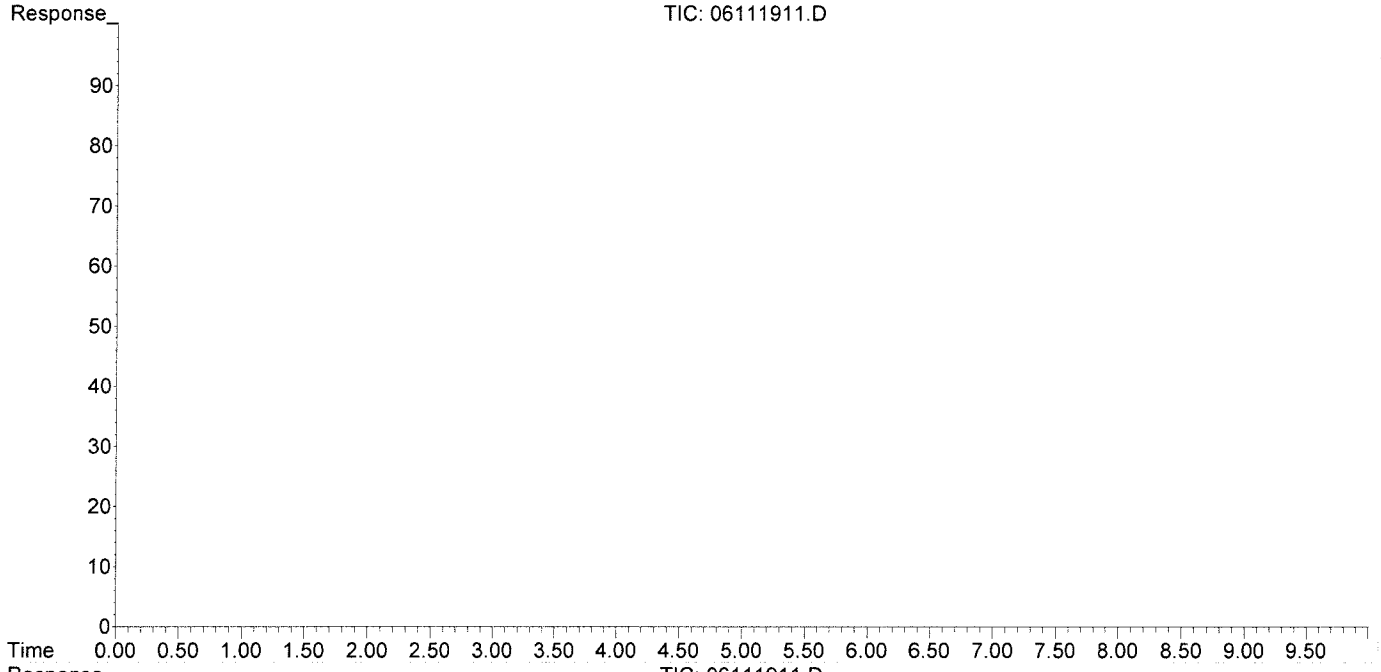
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	12106	1.335	ppm
7)	Ethylene	1.668	18922	1.131	ppm
8)	Ethane	1.929	21403	1.263	ppm
9)	Propylene	4.306	26661	1.138	ppm
10)	Propane	4.429	32816	1.319	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.645f	43079	1.618	ppm
13)	n-Butane	6.645f	43079	1.618	ppm

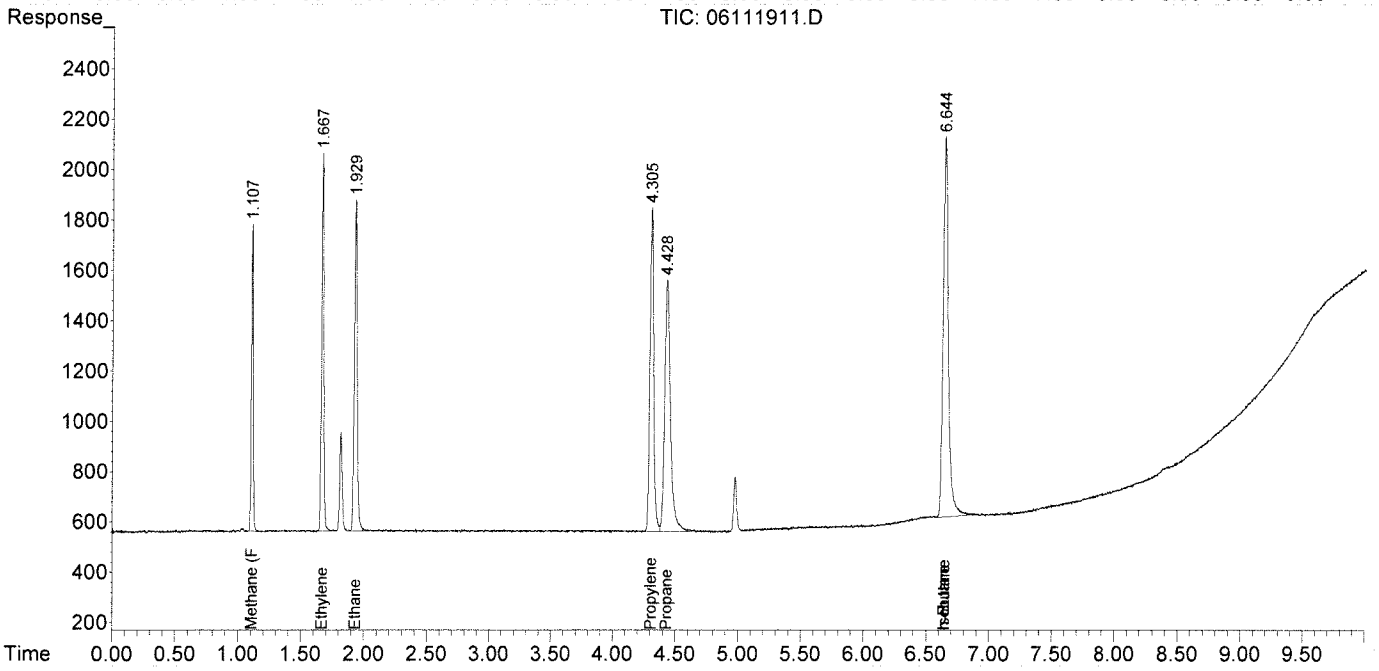
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:54:43
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:11:34 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

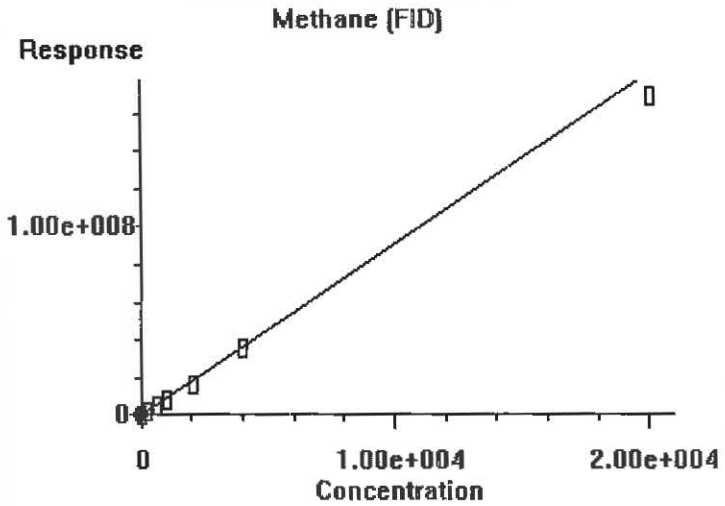
Edit Compounds -- Compound #6 -- Methane (FID)

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362
11	20000.000000	169009160.49199



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

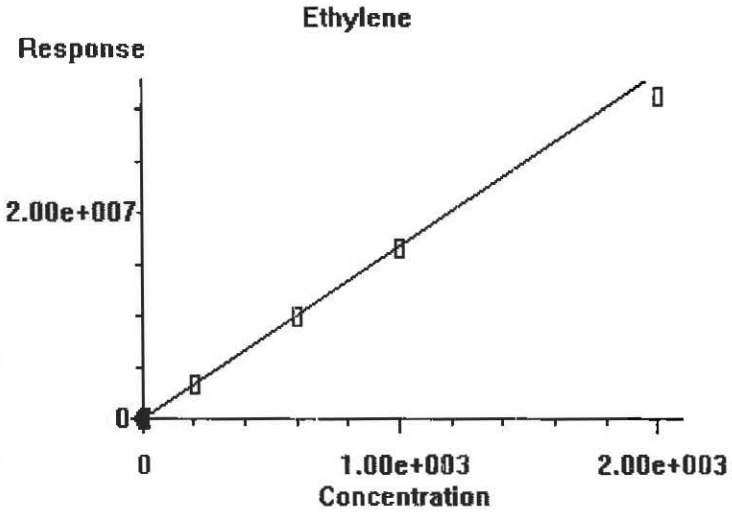
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

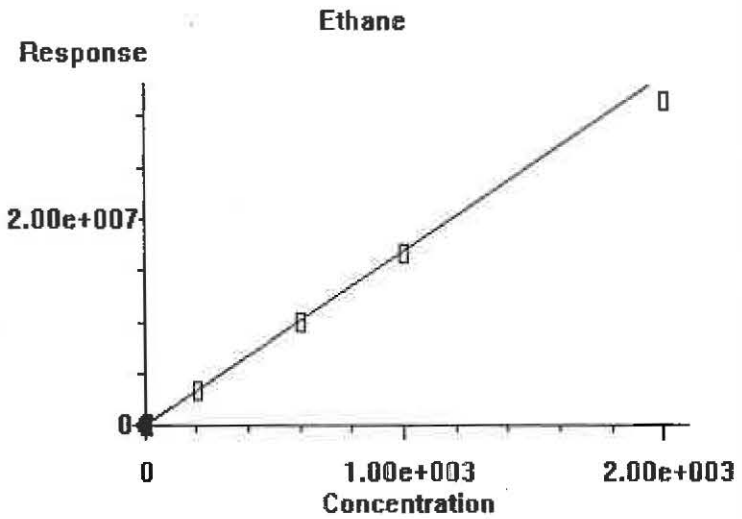
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

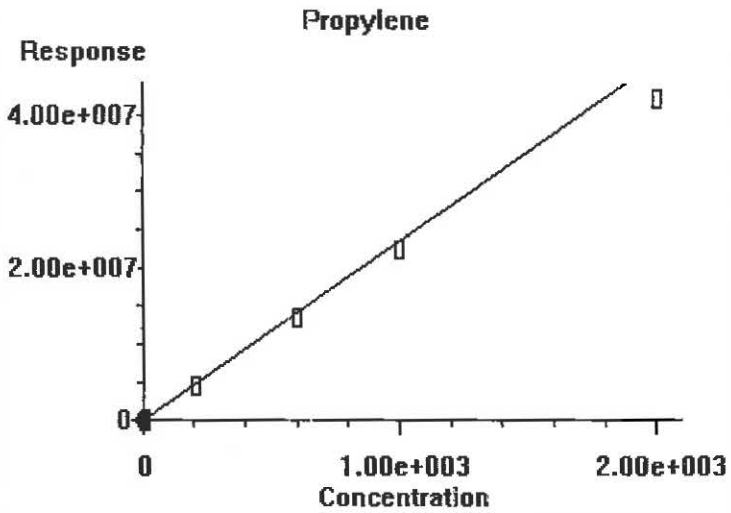
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

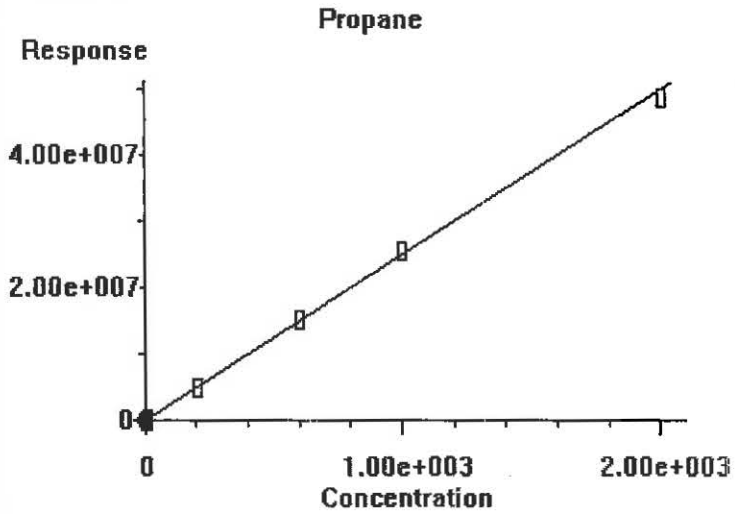
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00949419

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

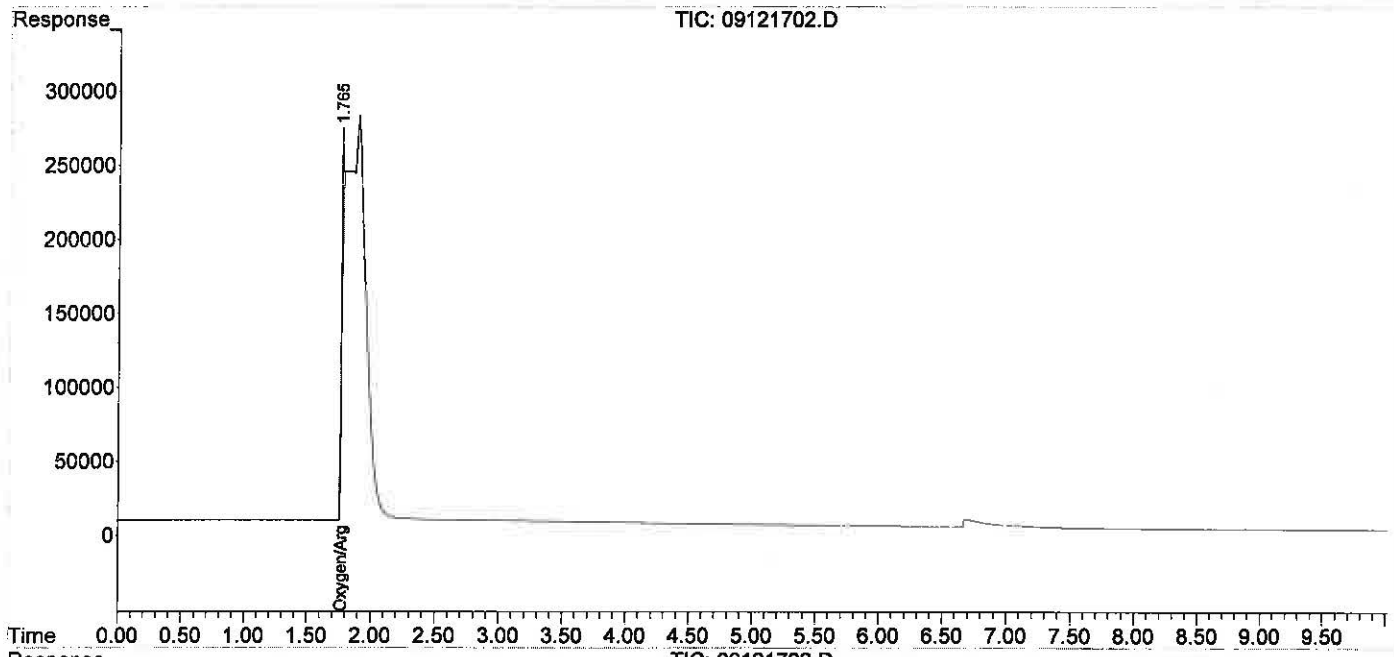
(f)=RT Delta > 1/2 Window (m)=manual int.

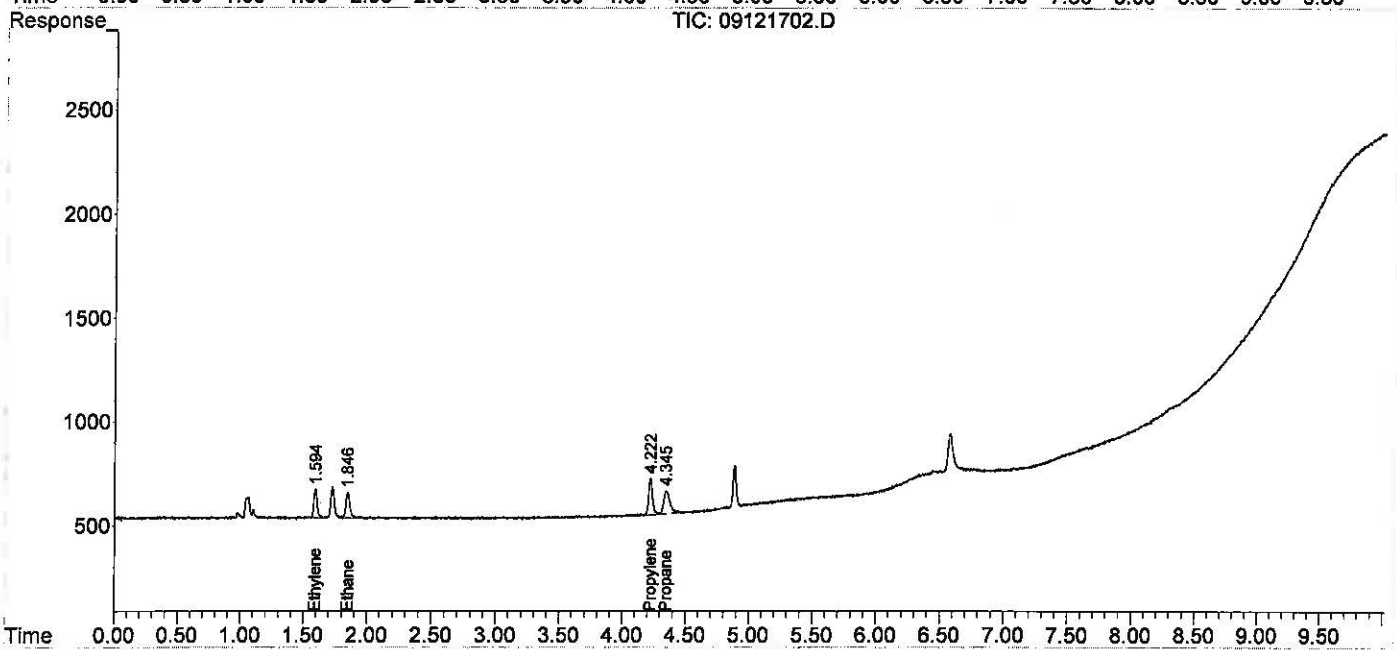
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

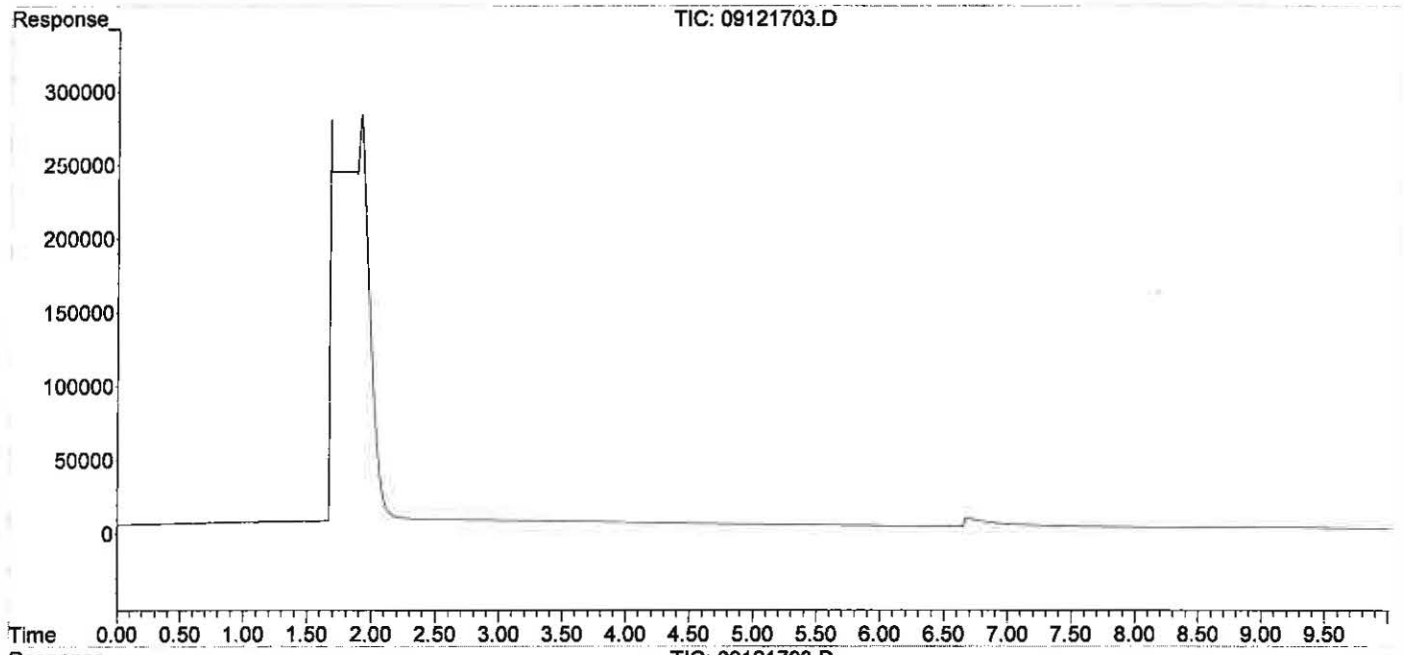
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

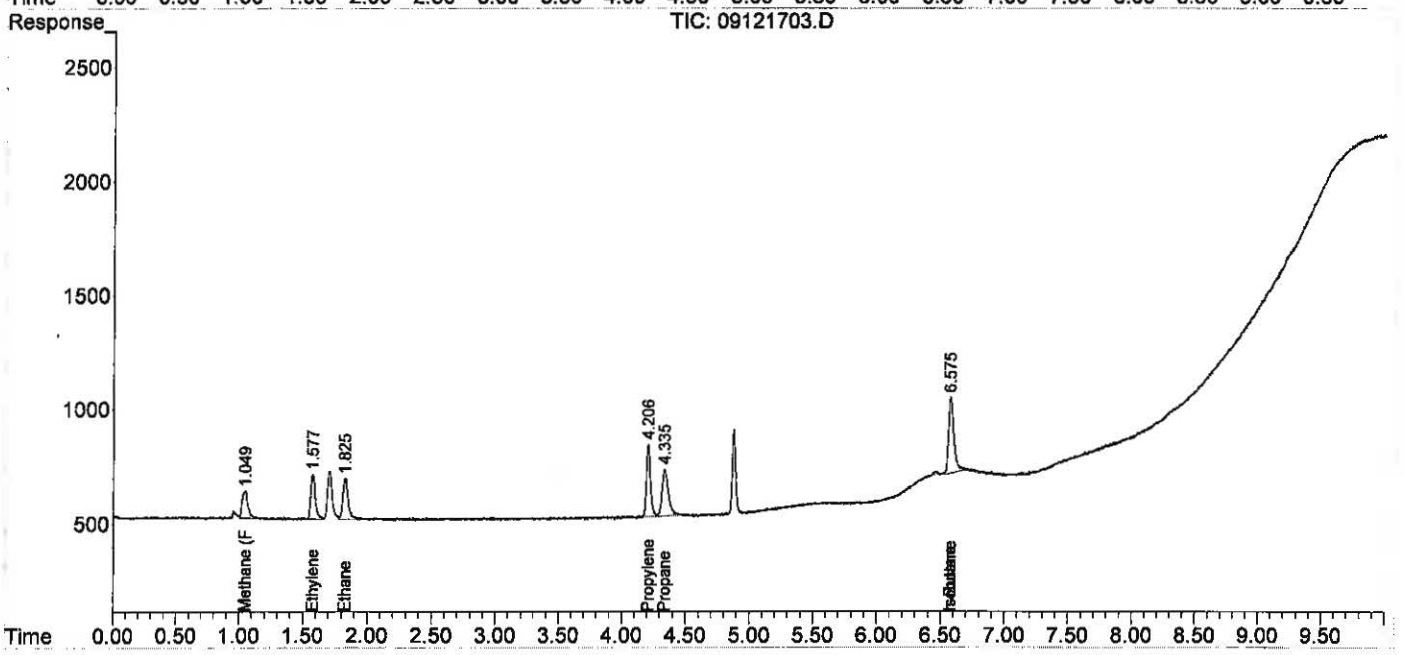
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



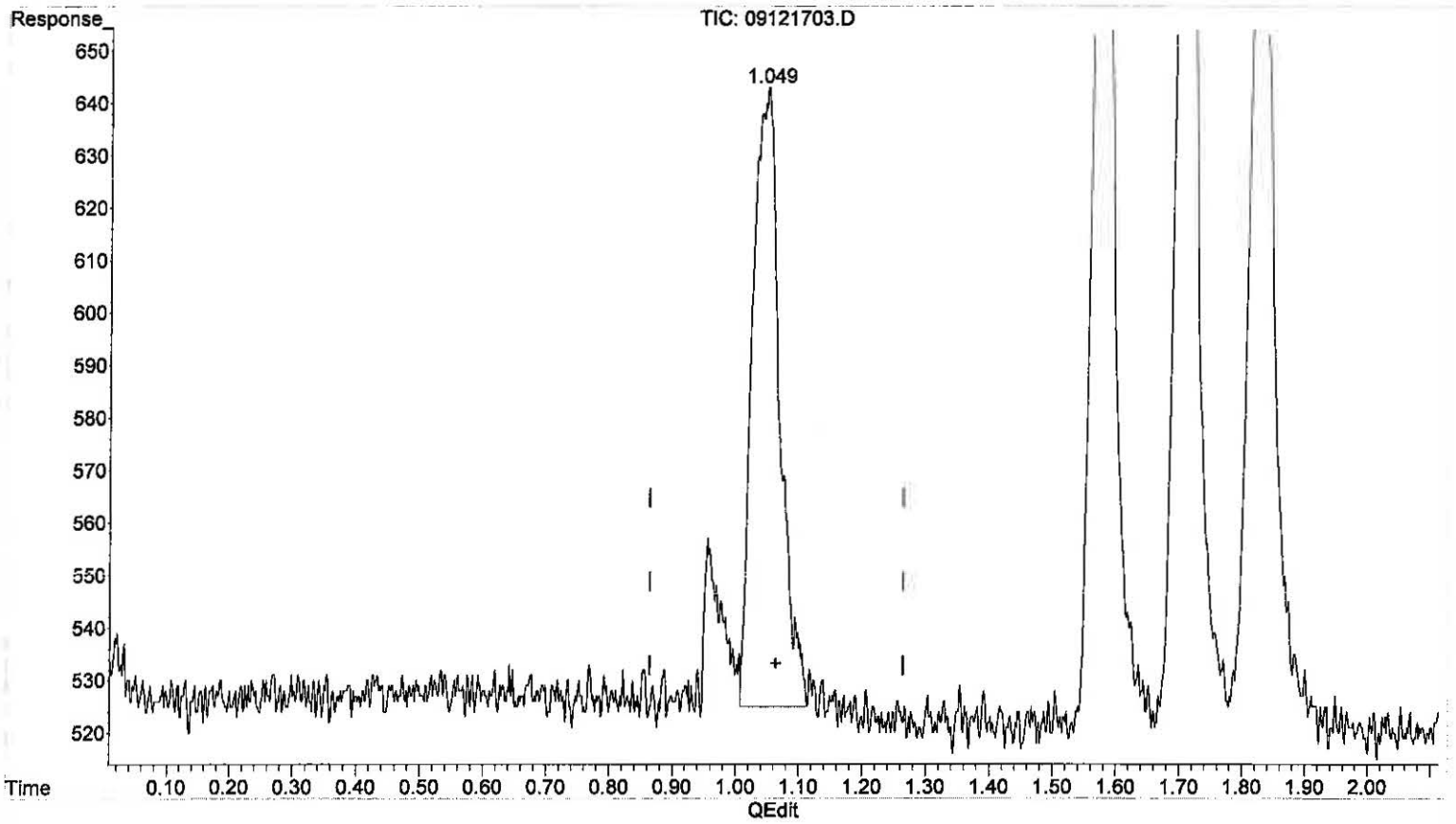


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

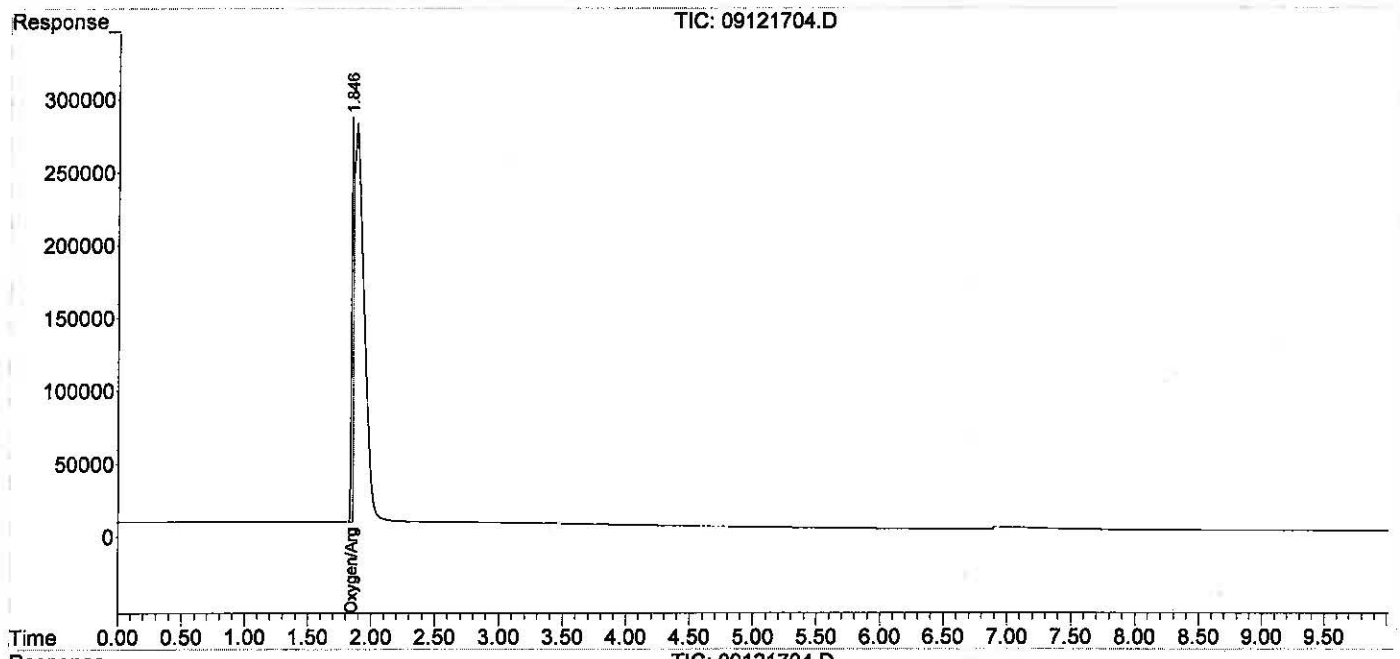
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.847	2536230	1.056 ppm
2)	Carbon monoxide	1.847	2536230	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	0.000	0	N.D. ppm
6)	Methane (FID)	1.064	14725	1.613 ppm
7)	Ethylene	1.598	26885	1.582 ppm
8)	Ethane	1.851	26944	1.555 ppm
9)	Propylene	4.220	39140	1.589 ppm
10)	Propane	4.349	39934	1.596 ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	6.578f	55348	1.020 ppm
13)	n-Butane	6.578f	55348	1.020 ppm

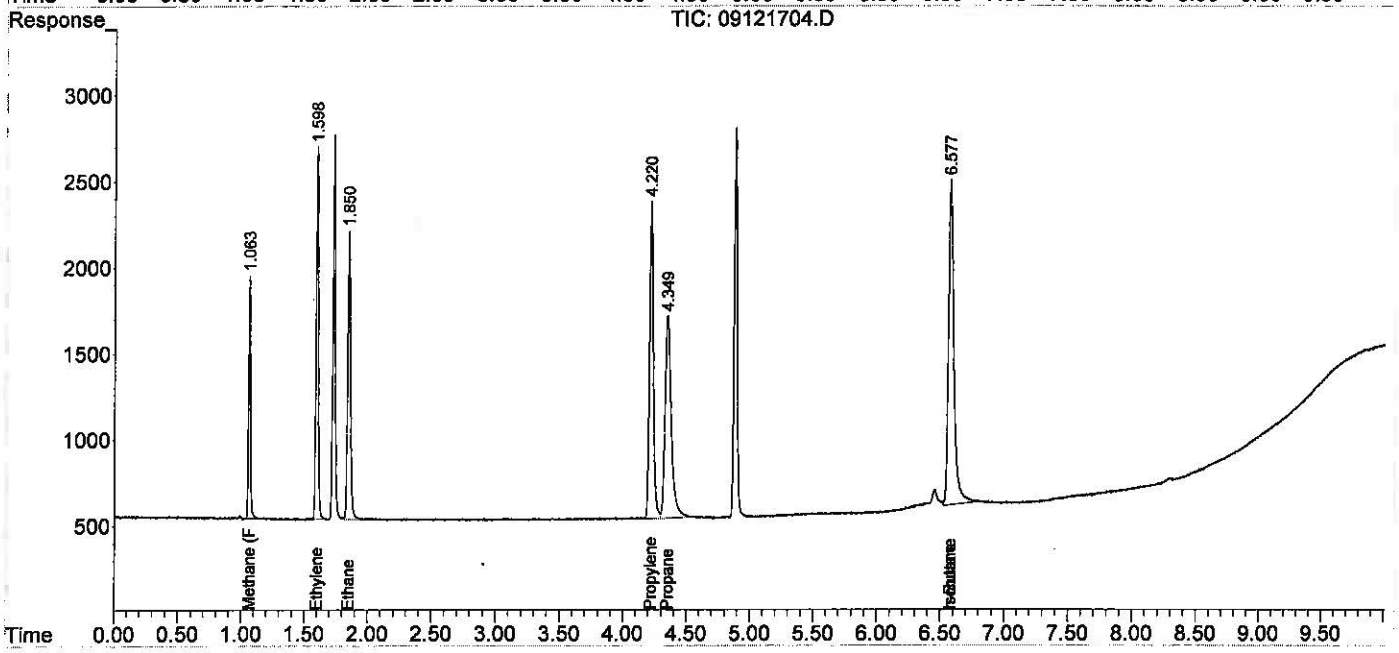
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

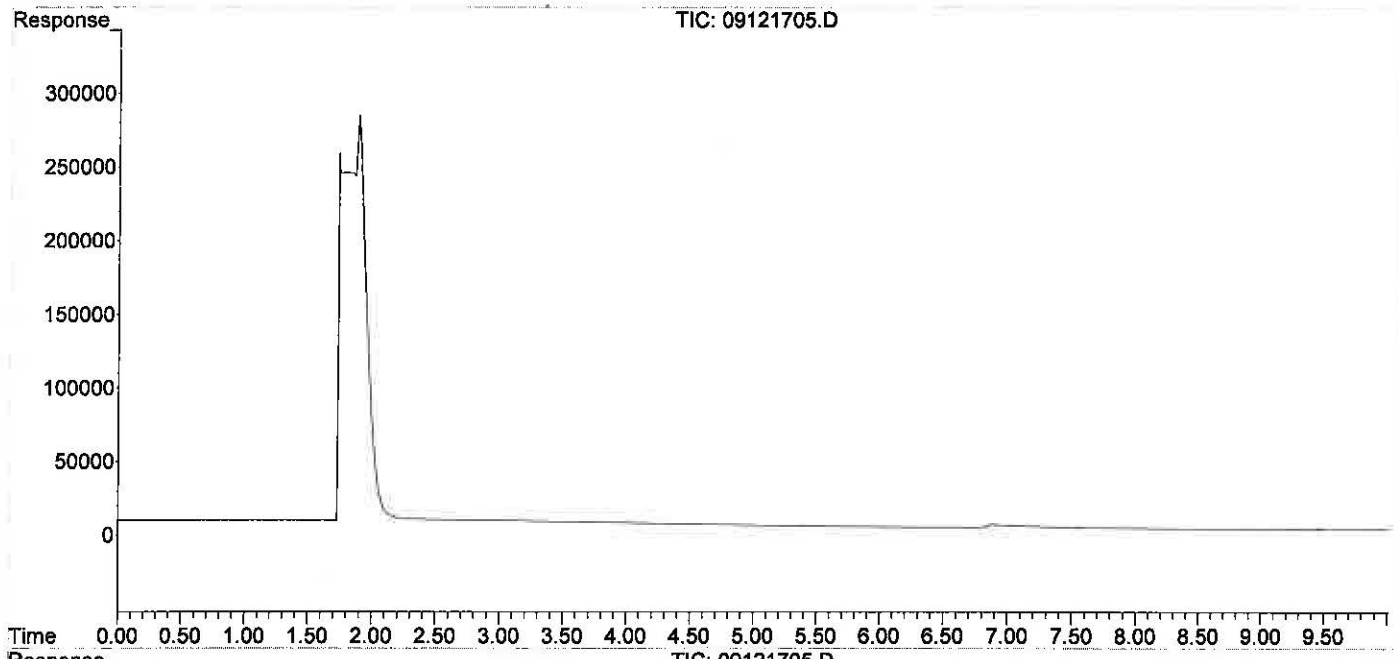
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

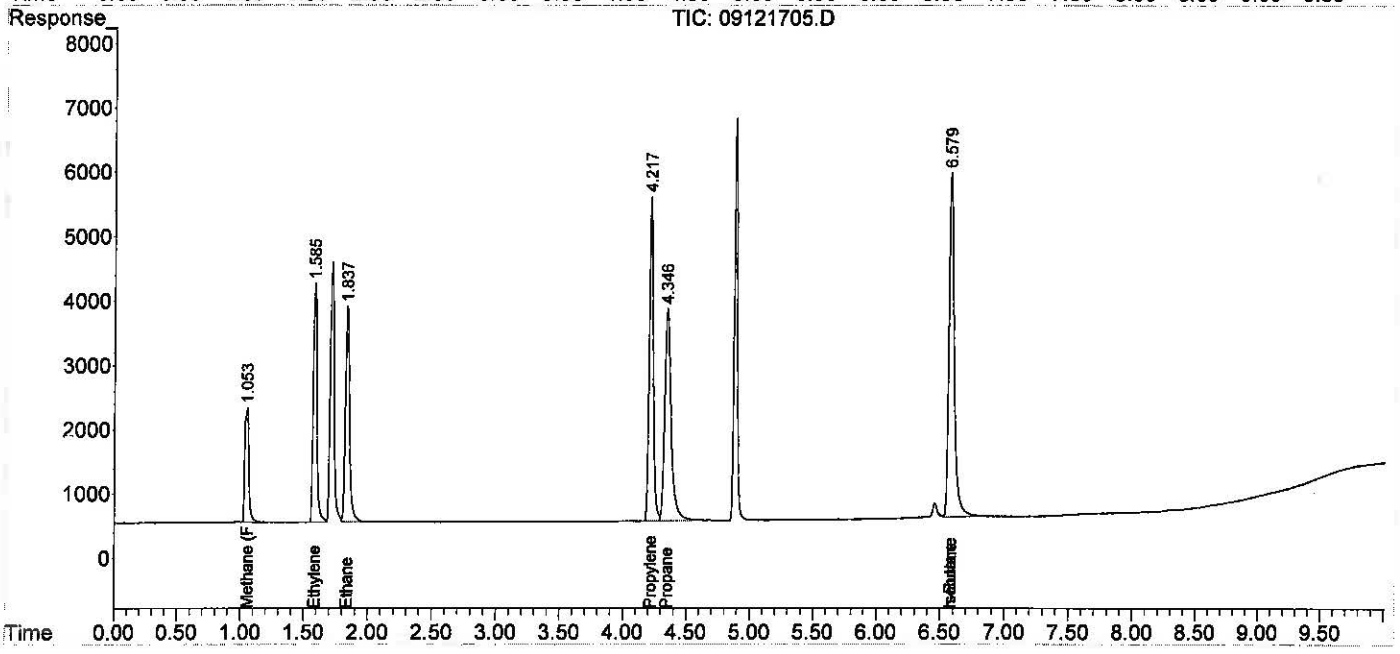
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

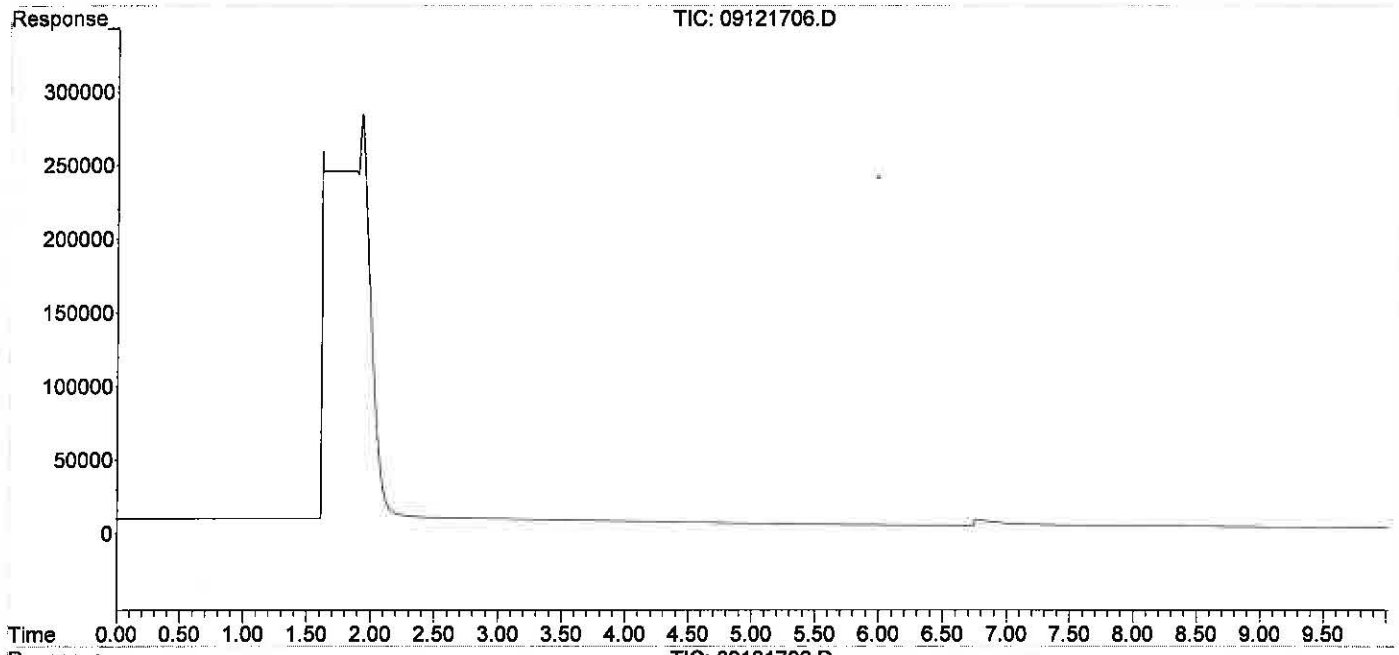
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

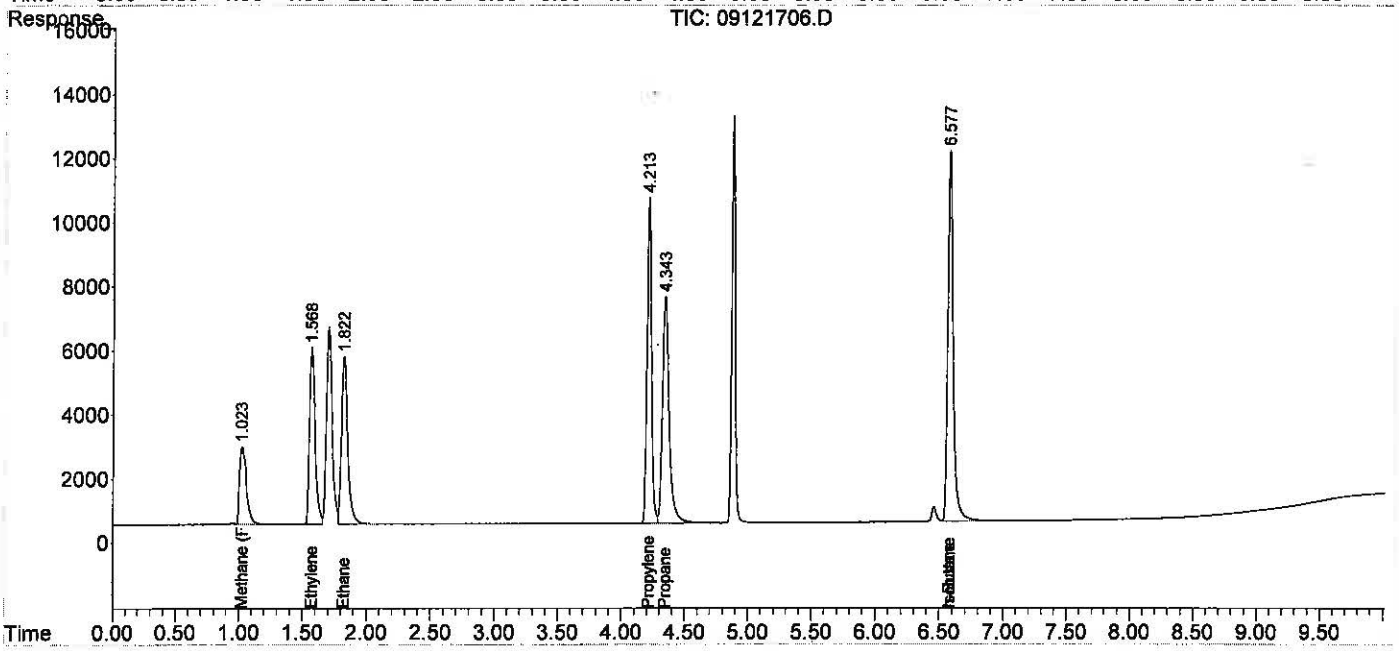
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

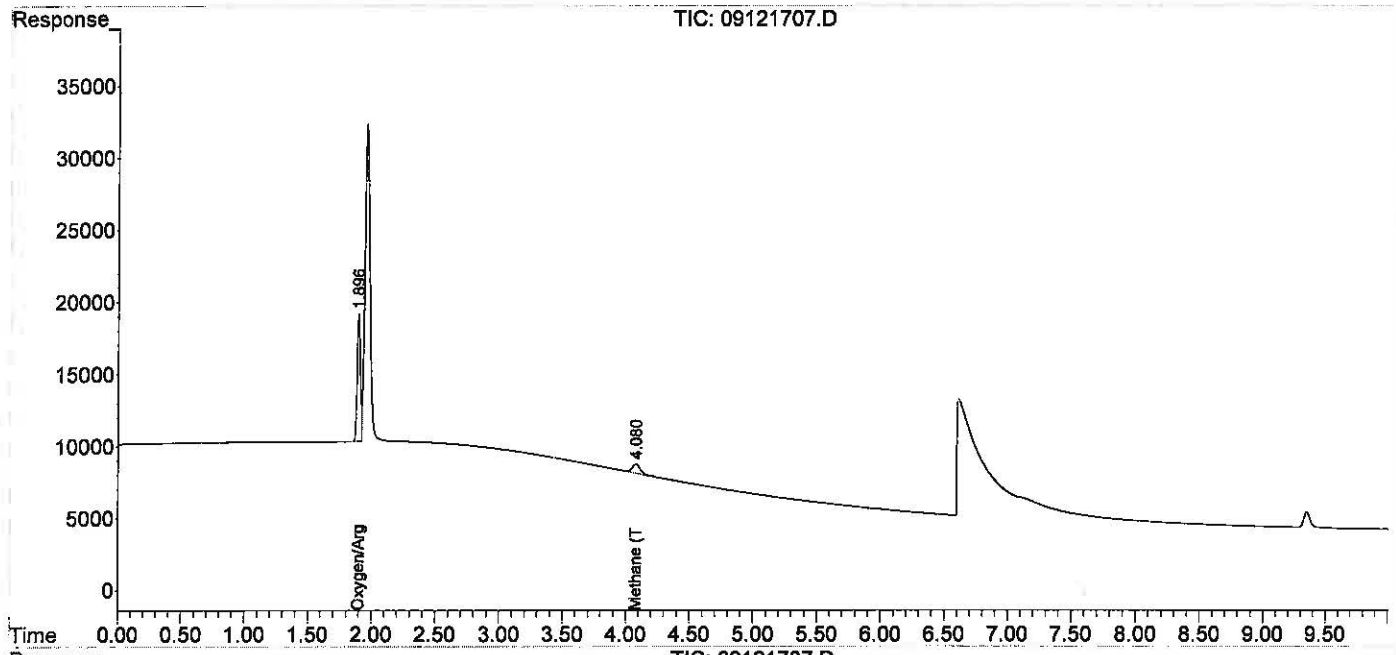
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

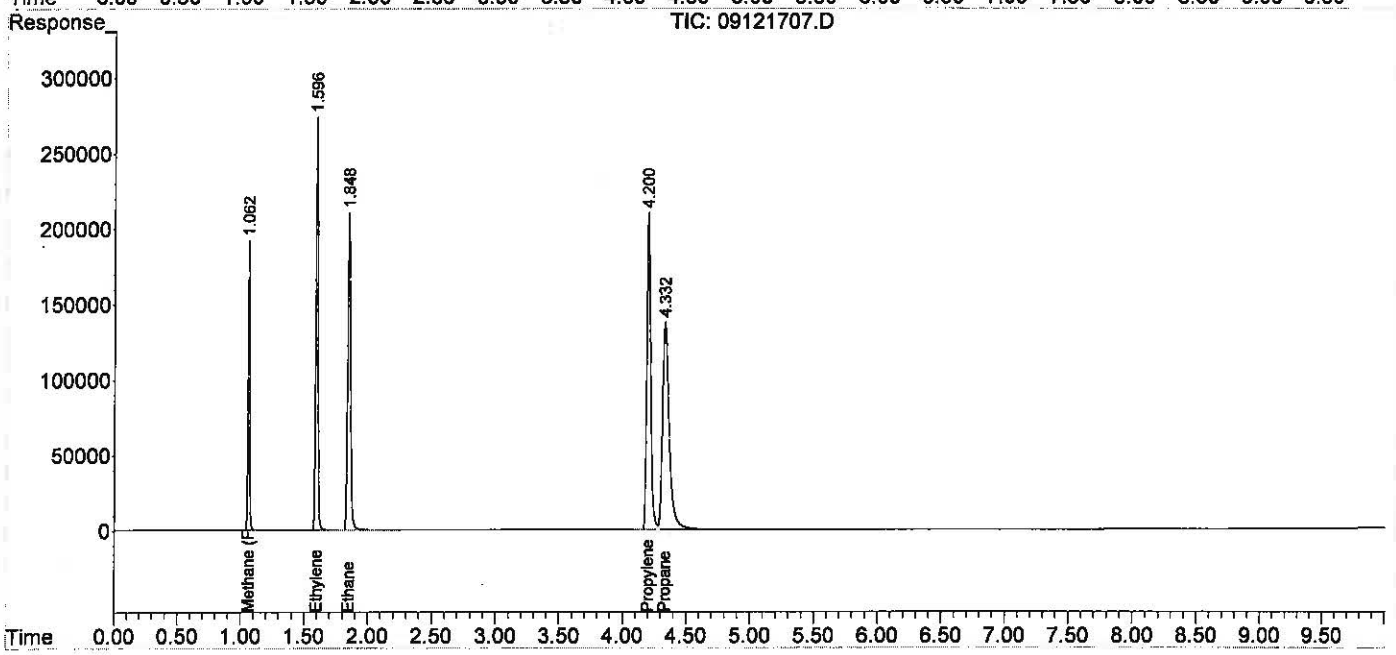
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

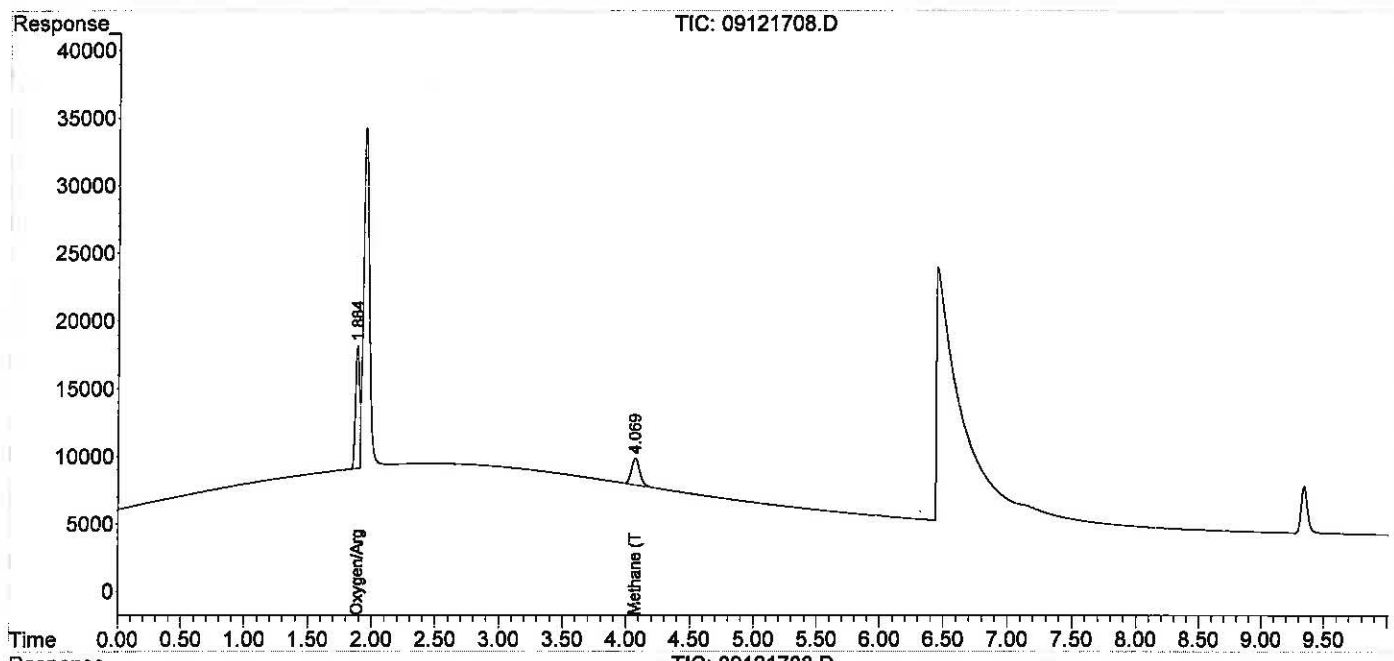
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

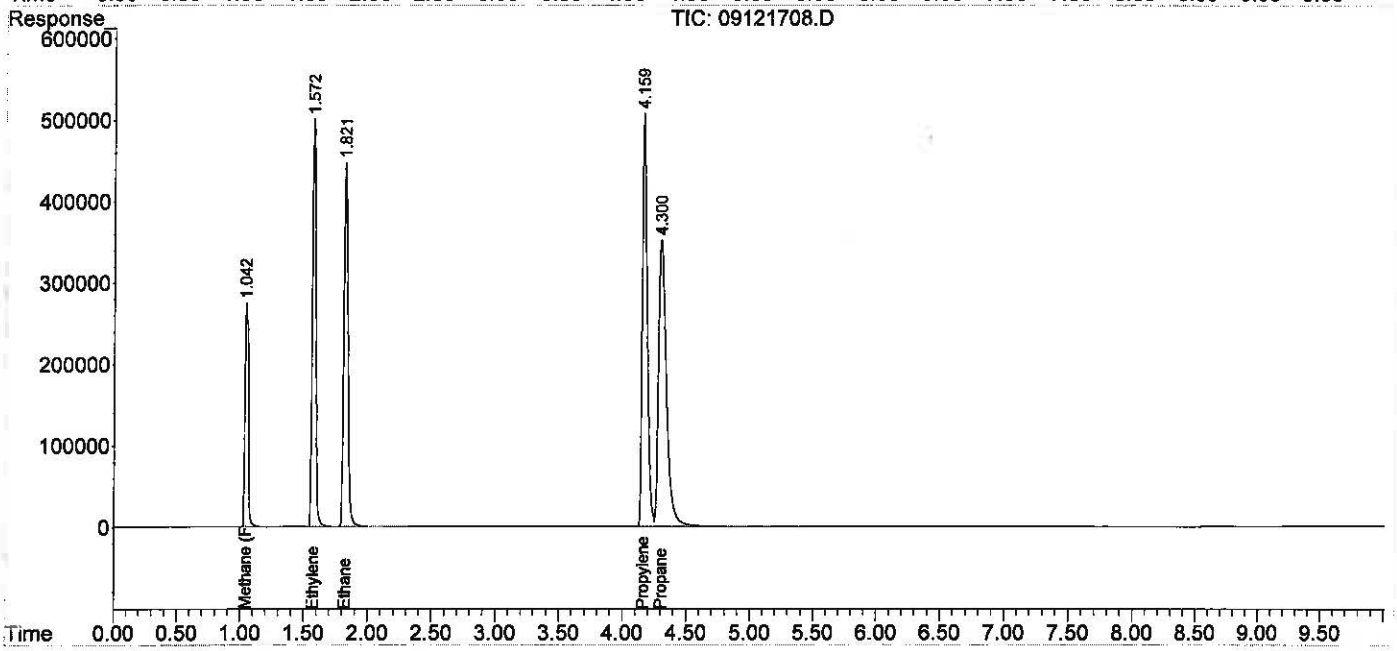
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

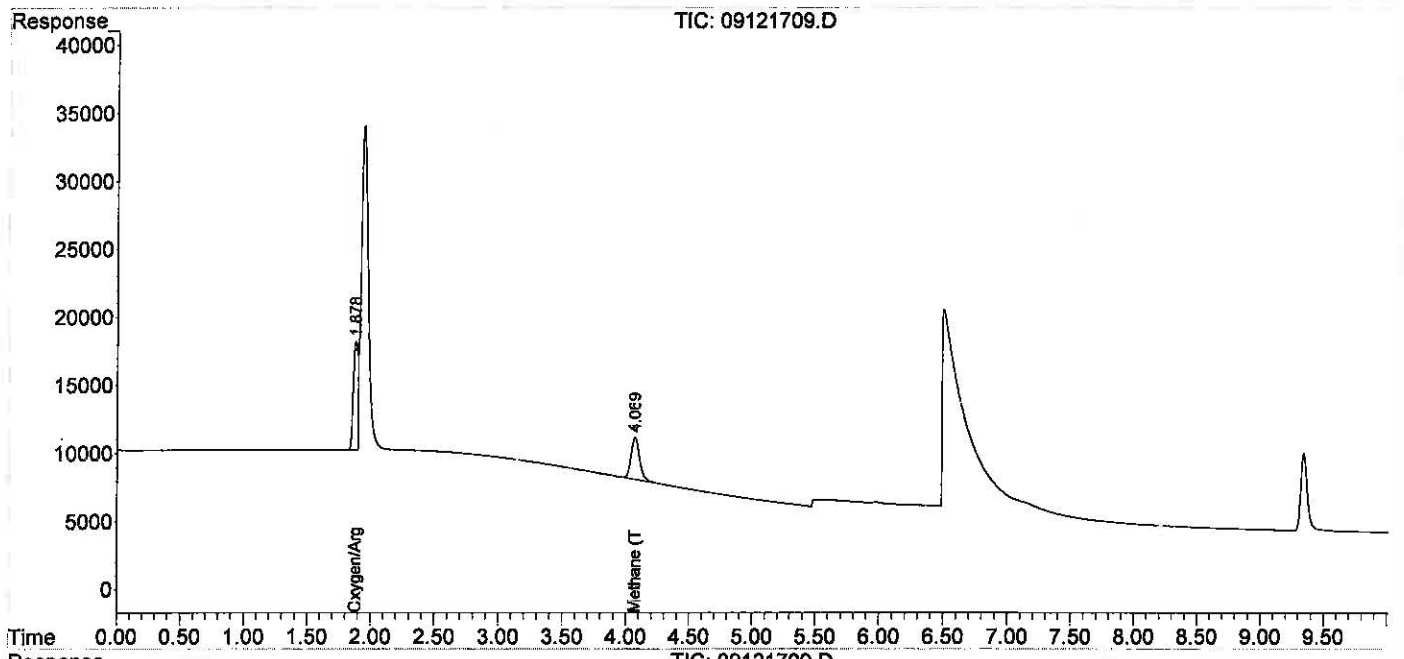
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

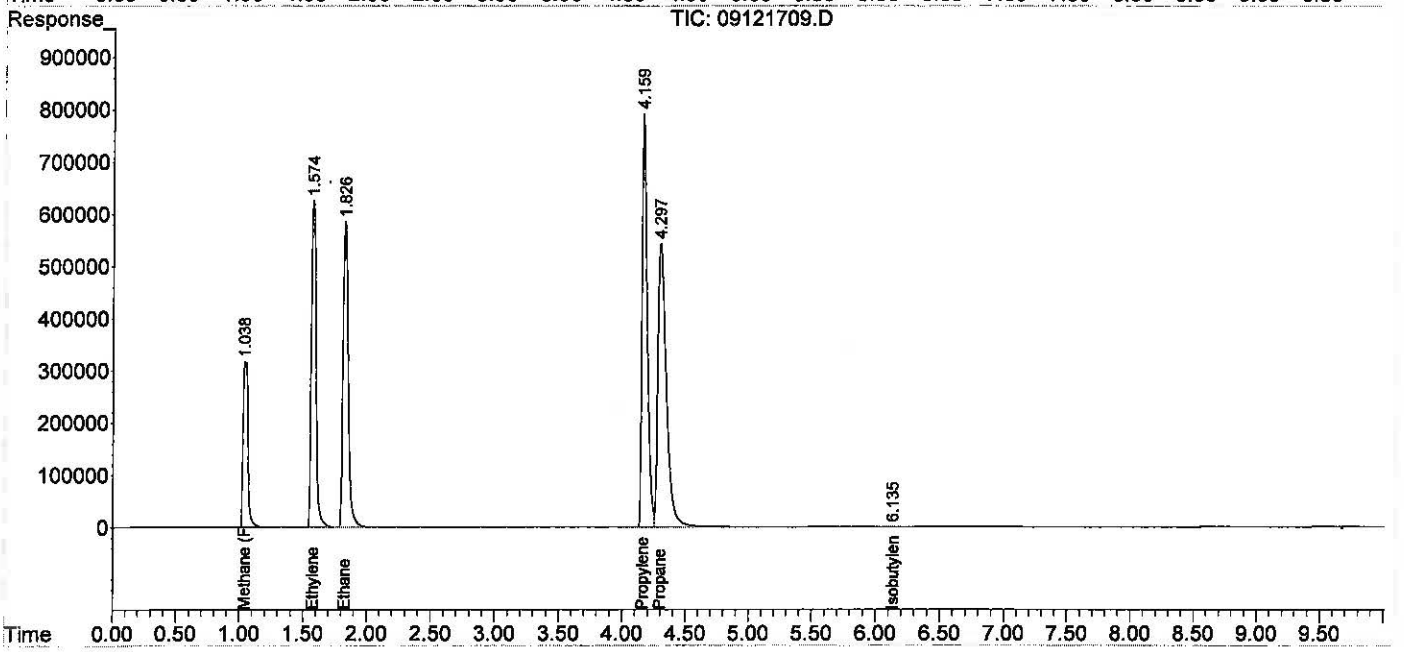
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

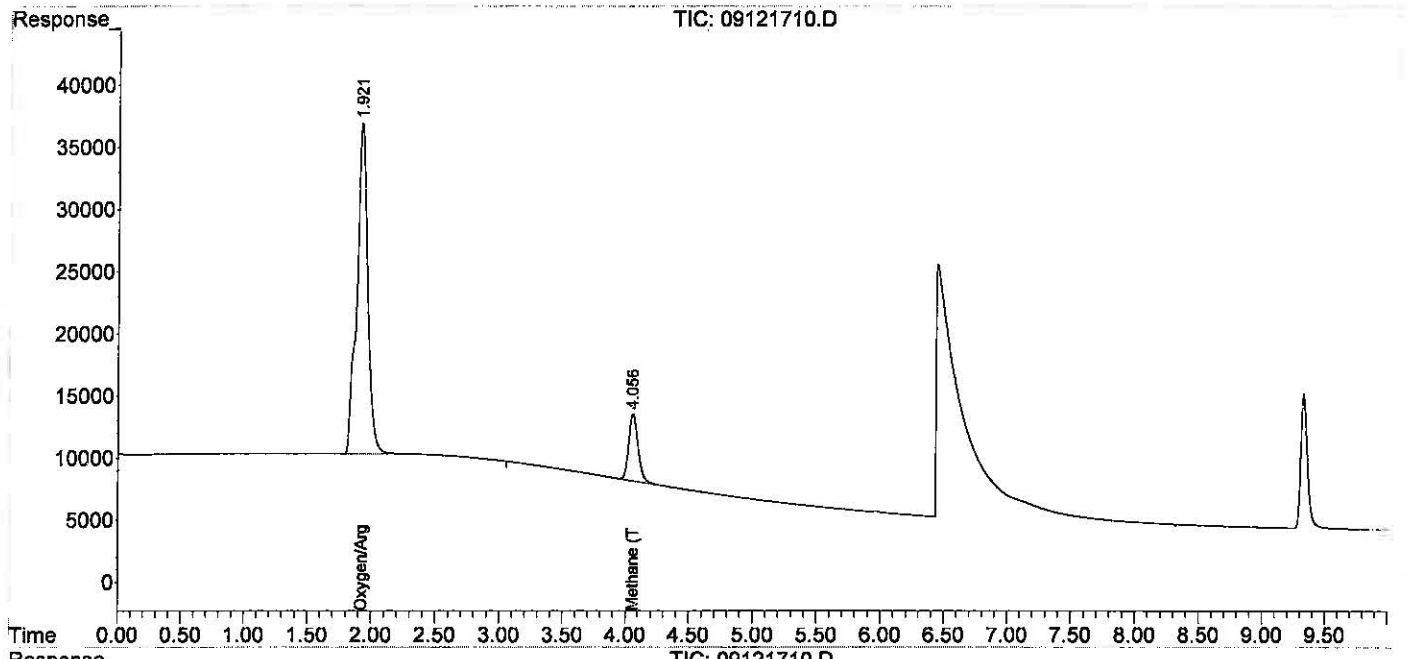
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

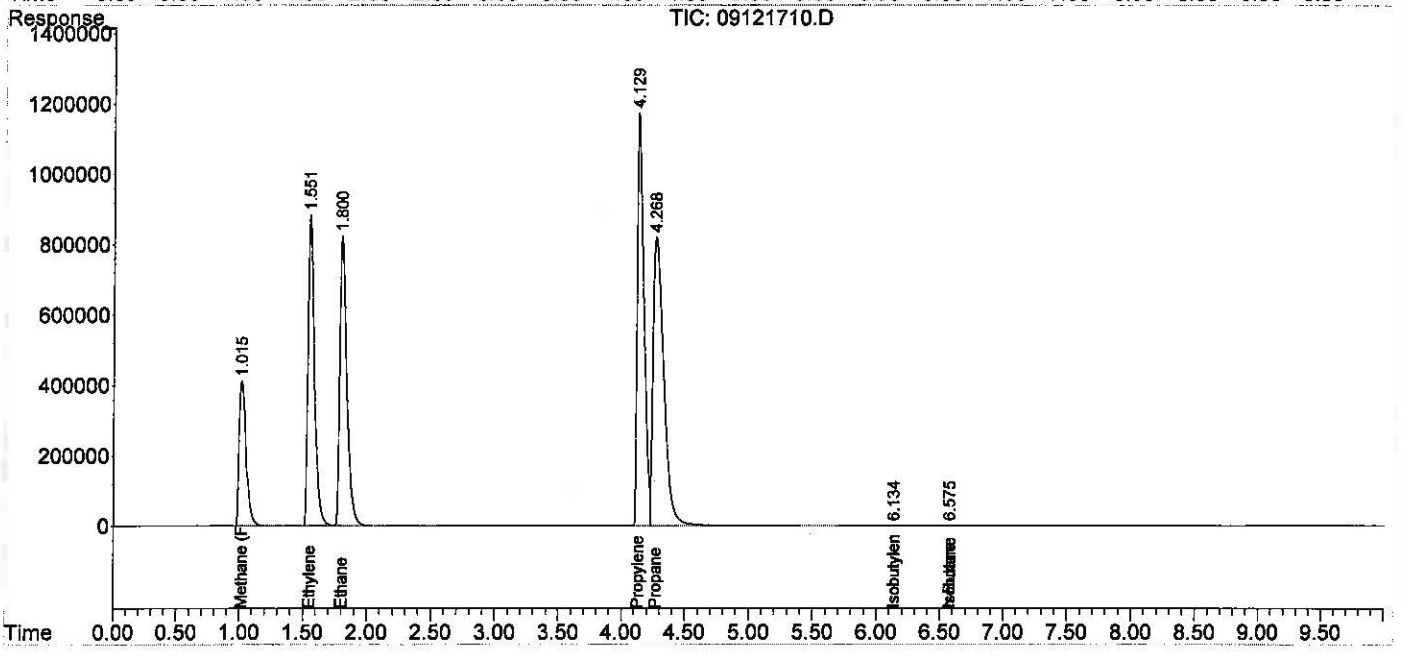
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



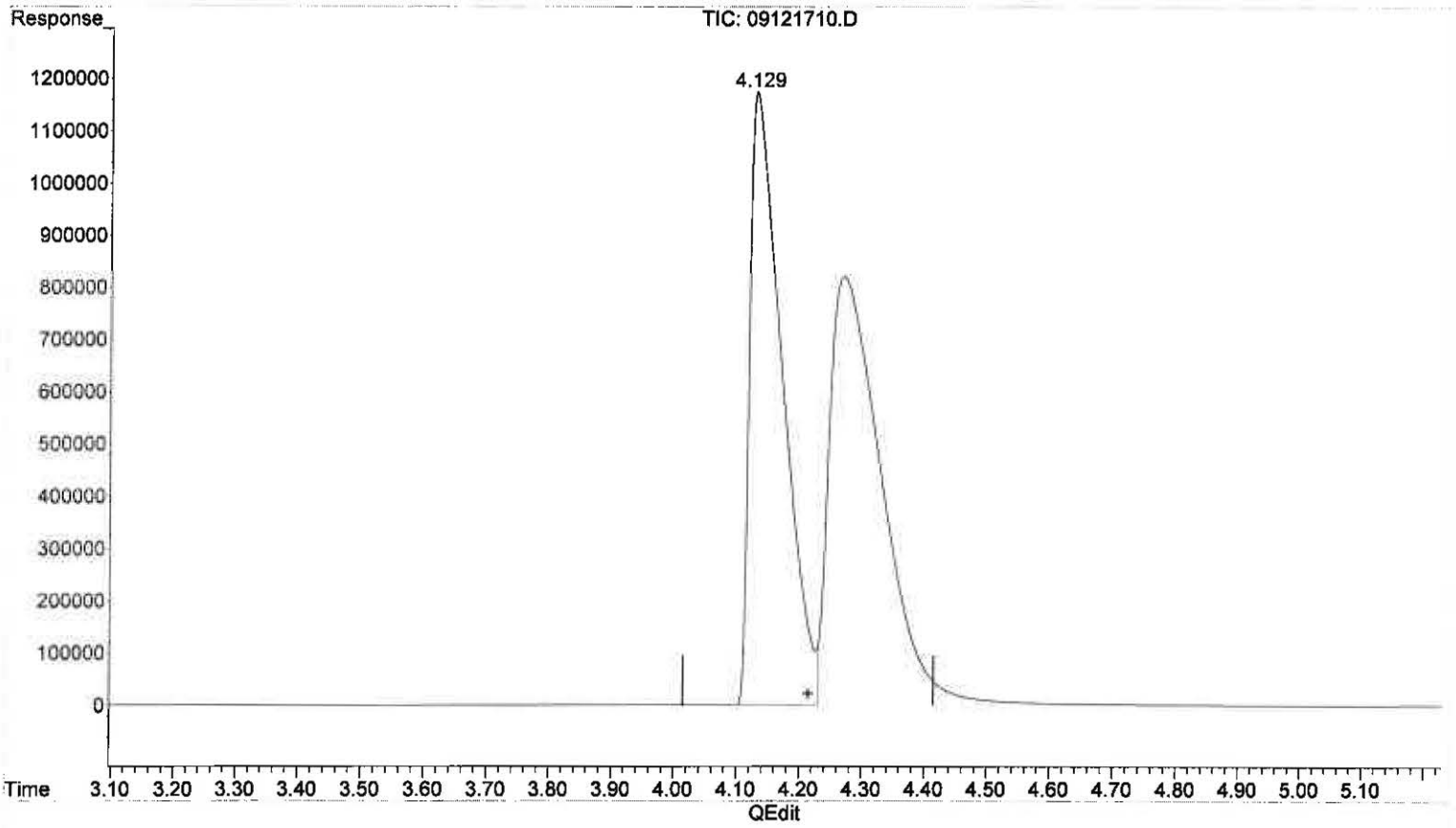


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

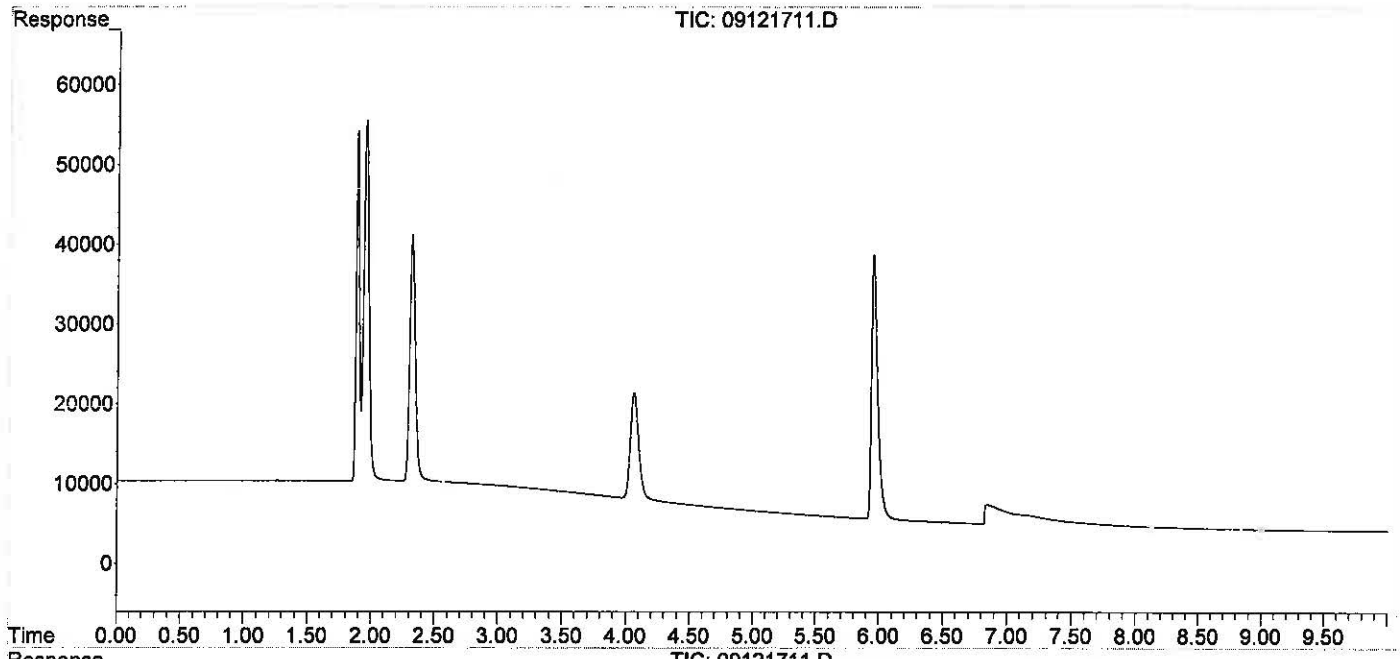
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

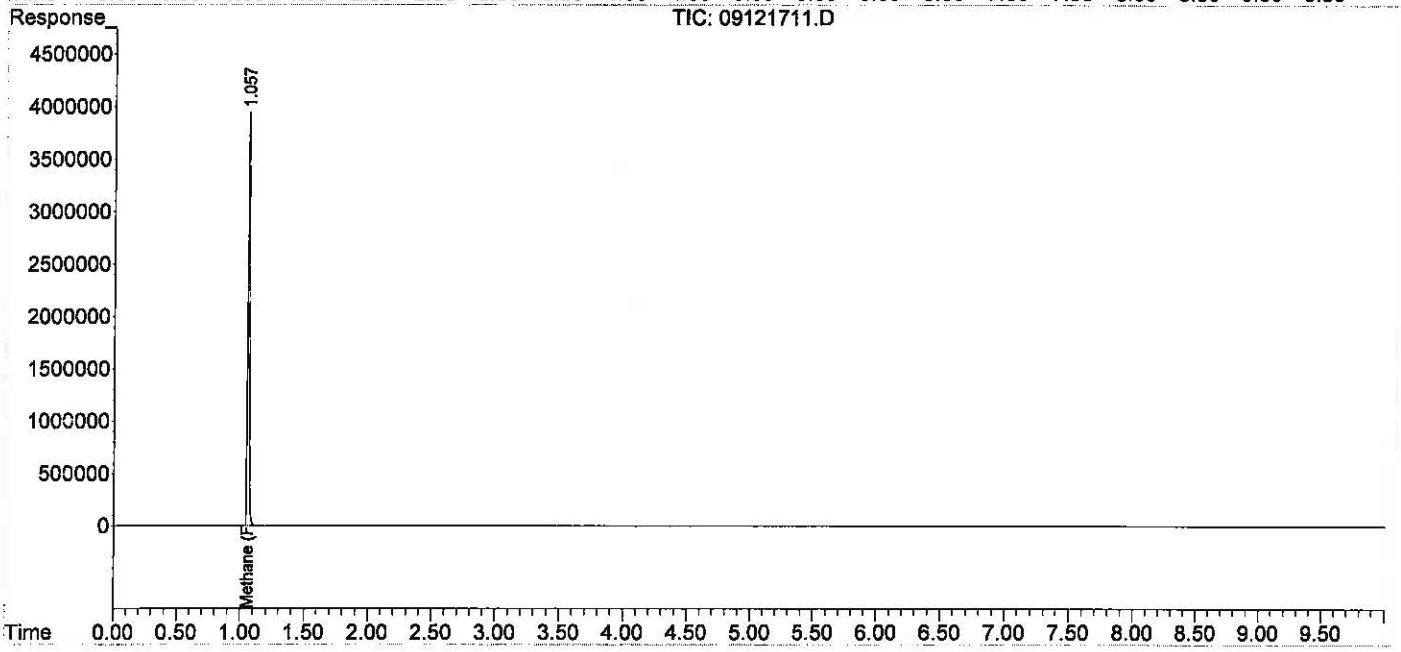
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

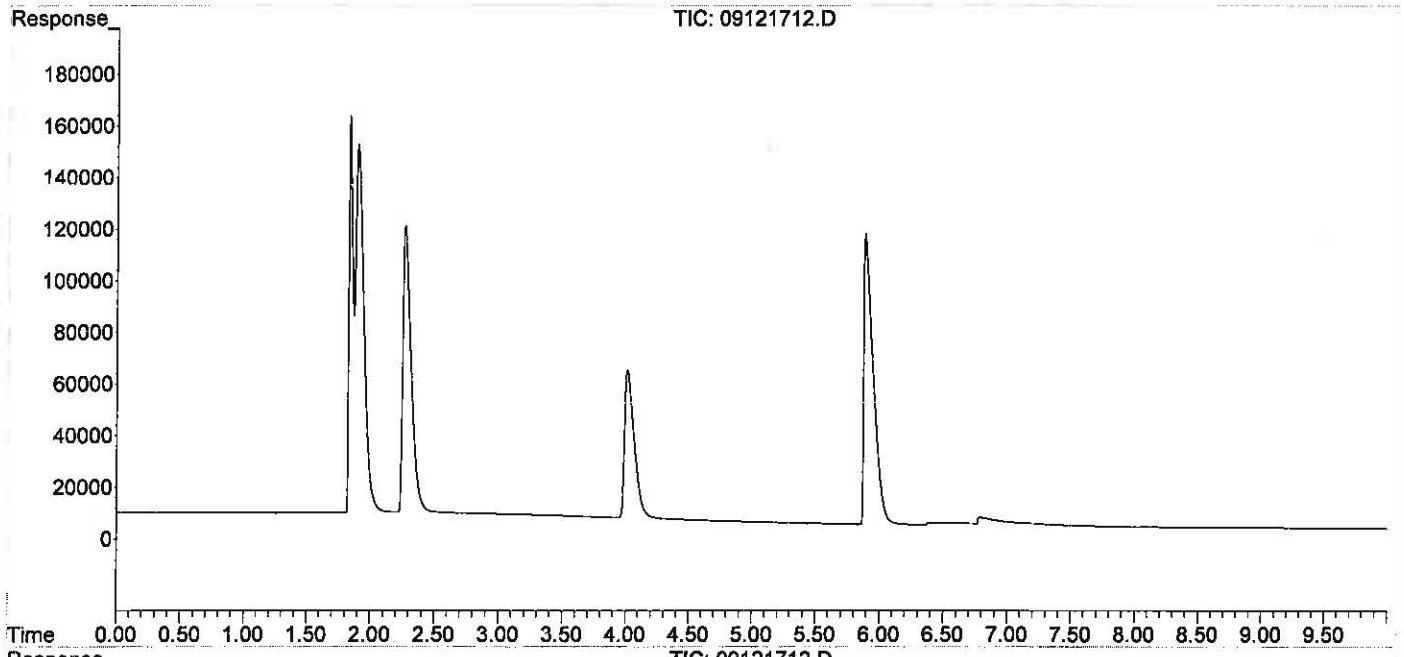
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

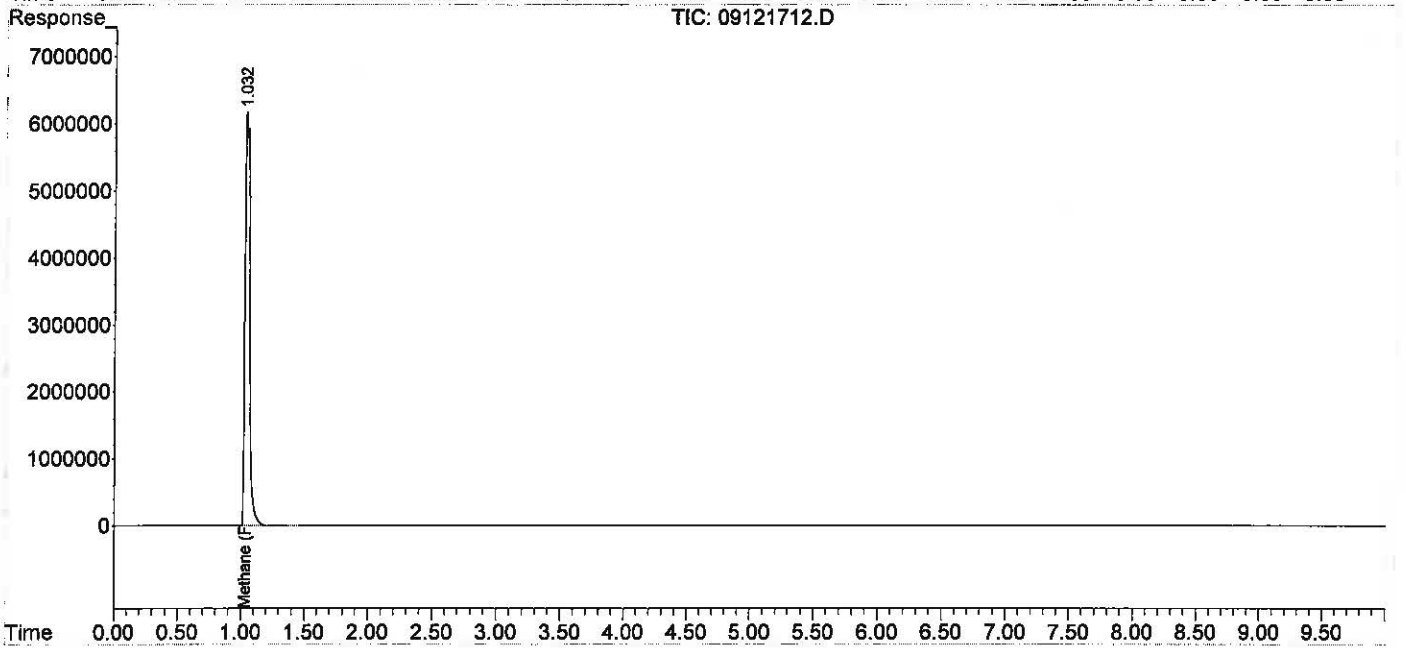
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%D	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1510~~	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1490~~	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1490~~	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	1511	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2		
13)	n-Butane	6.579f	48019	1.804	ppm			

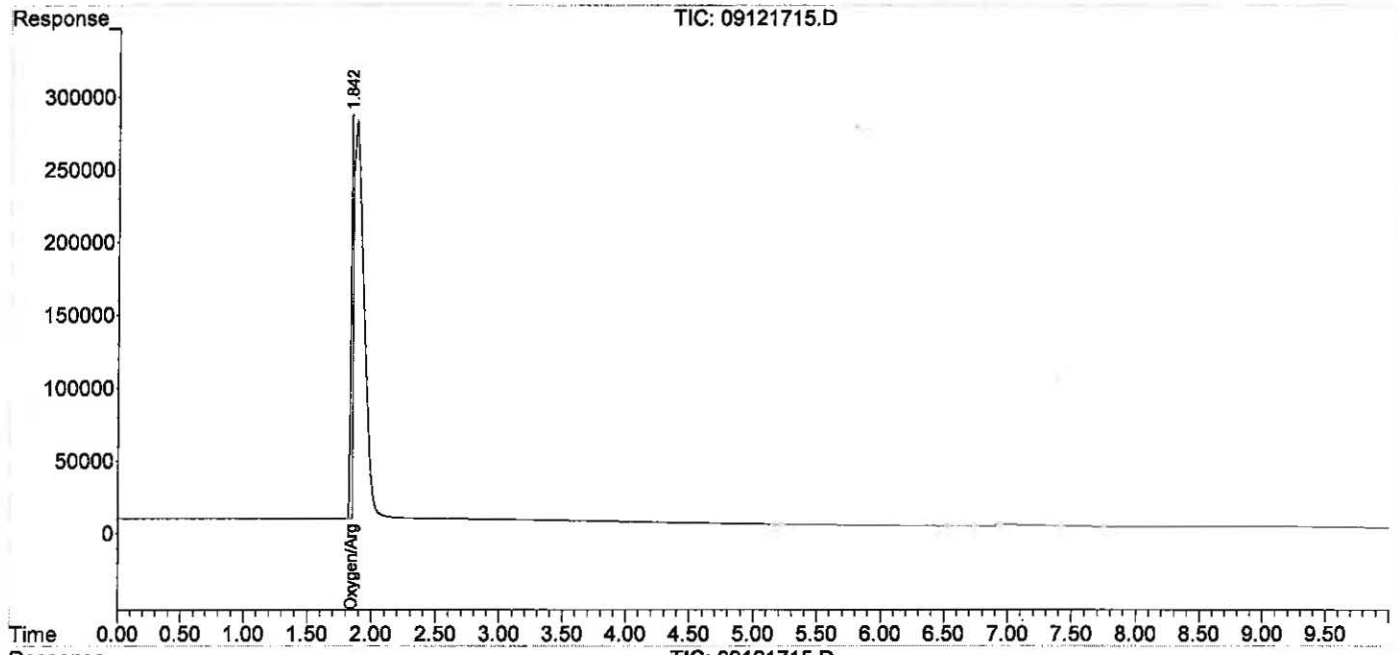
(f)=RT Delta > 1/2 Window (m)=manual int.

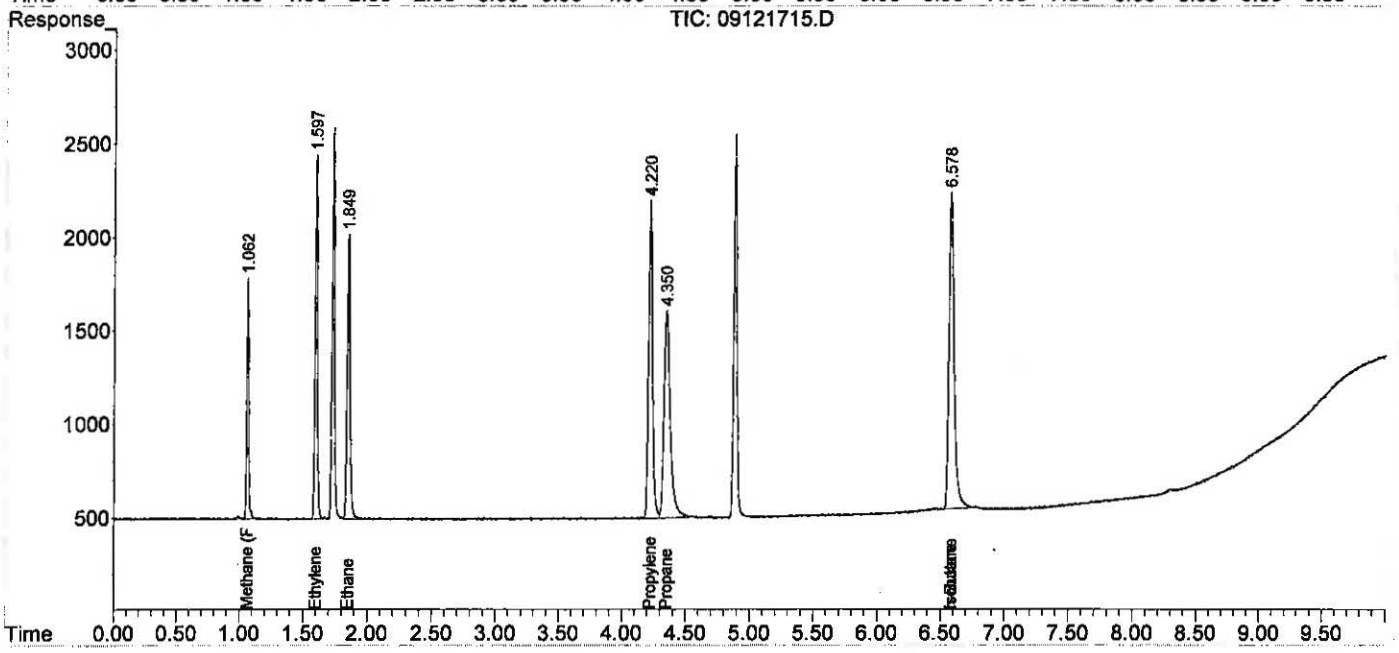
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1903217
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 06/11/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-05221901	0.100	92.320	98.364	97.463
ACTUAL		101.50	100.90	101.40
%Difference		9.0%	2.5%	3.9%
MCS 0.1ML	0.100	0.000	0.000	0.000
RB 0.1ML	0.100	0.040	0.000	0.000
lcs fid 0.1ml	0.100	1.286	1.076	1.185
lcsd fid 0.1ml	0.100	1.335	1.131	1.263
P1903217-001 0.1ml	0.100	0.724	0.000	0.000
P1903217-002 0.1ml	0.100	41.005	0.876	0.053
P1903217-003 0.1ml	0.100	682.993	0.000	0.000
P1903217-004 0.1ml	0.100	2.232	0.000	0.000
P1903217-005 0.1ml	0.100	307.458	0.000	0.000
P1903217-006 0.1ml	0.100	1.232	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
MCS 0.1ML	0.000	0.000	0.000
lcs fid 0.1ml	12.860	10.760	11.850
lcsd fid 0.1ml	13.350	11.310	12.630
P1903217-001 0.1ml	7.240	0.000	0.000
P1903217-002 0.1ml	410.050	8.760	0.530
P1903217-003 0.1ml	6829.930	0.000	0.000
P1903217-004 0.1ml	22.320	0.000	0.000
P1903217-005 0.1ml	3074.580	0.000	0.000
P1903217-006 0.1ml	12.320	0.000	0.000

STD s32-05221901	96.349	102.731	101.981
ACTUAL	101.50	100.90	101.40
%Difference	5.1%	1.8%	0.6%

00949447

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 10:13:41
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 10:36:39 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

6/12/19

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

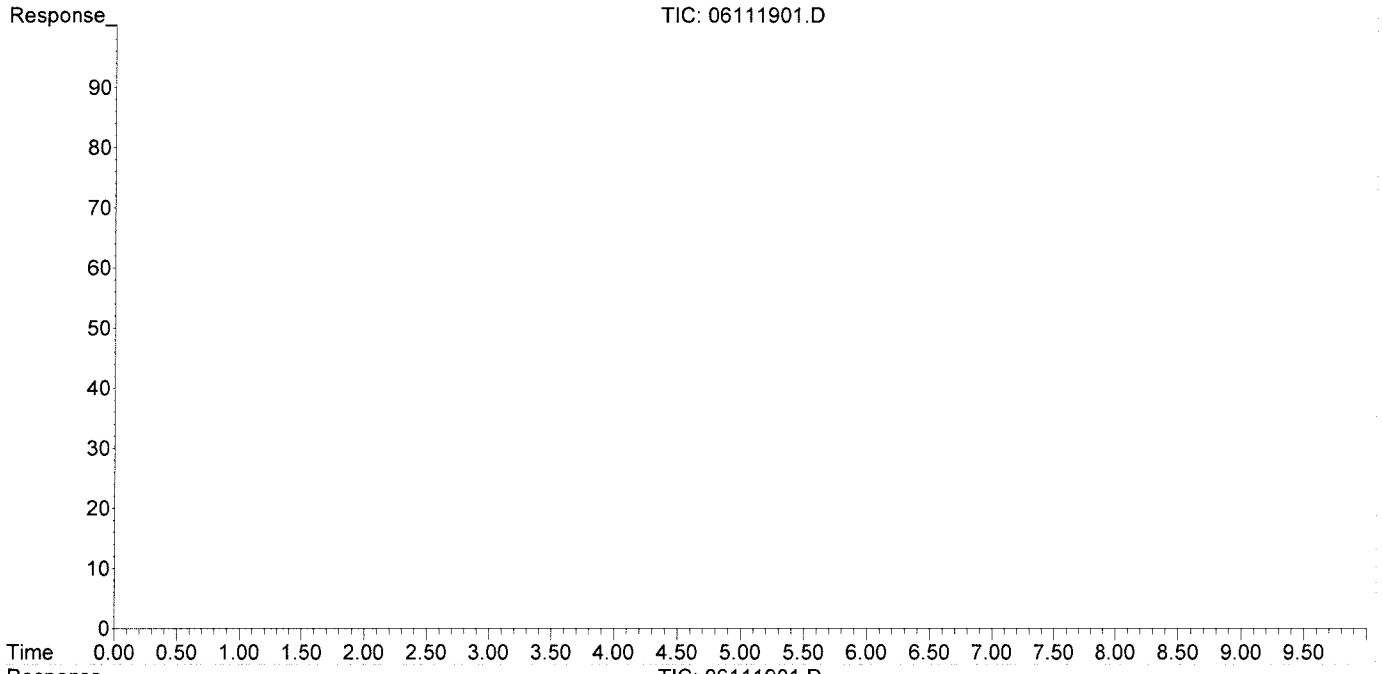
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	837405	92.320	ppm
7)	Ethylene	1.670	1646050	98.364	ppm
8)	Ethane	1.930	1652017	97.463	ppm
9)	Propylene	4.301	2419054	103.239	ppm
10)	Propane	4.426	2475195	99.484	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

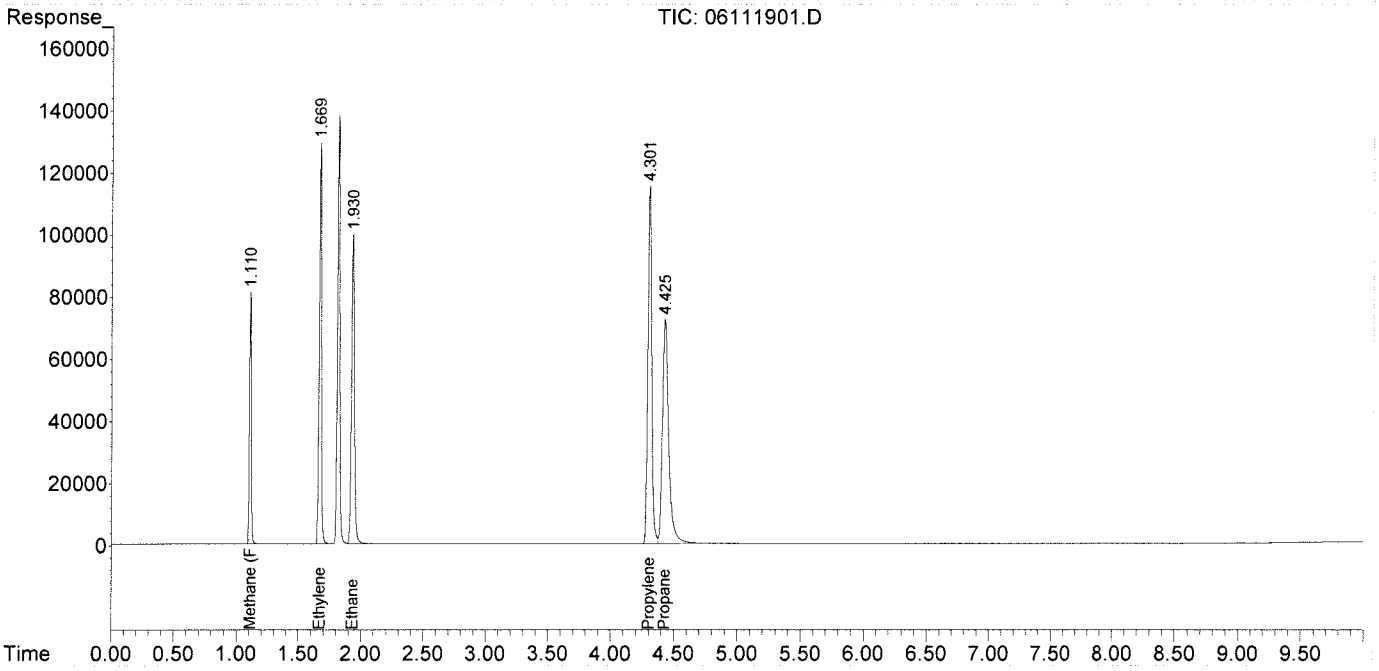
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 10:13:41
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 10:36:39 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 14:21:07
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:46:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

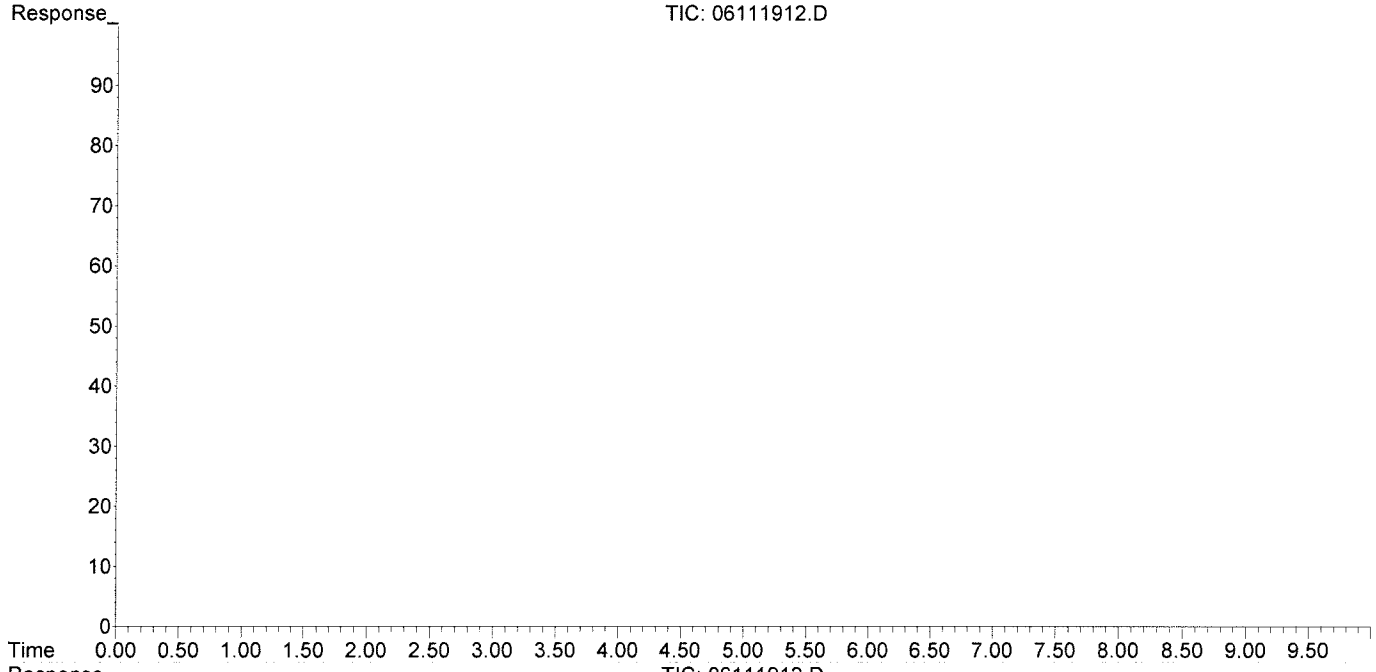
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	863192	95.163	ppm
7)	Ethylene	1.668	1695976	101.347	ppm
8)	Ethane	1.929	1703569	100.504	ppm
9)	Propylene	4.300	2497345	106.581	ppm
10)	Propane	4.424	2559918	102.890	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

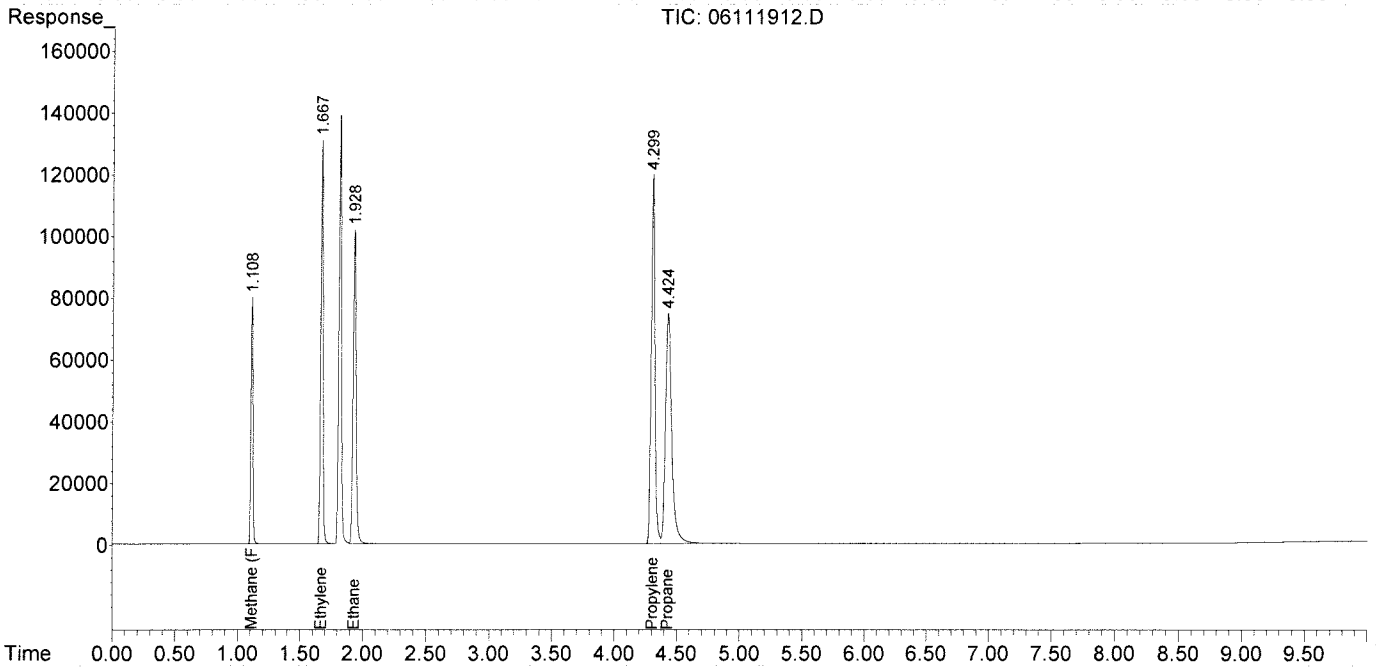
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 14:21:07
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:46:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 17:01:32
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 17:15:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

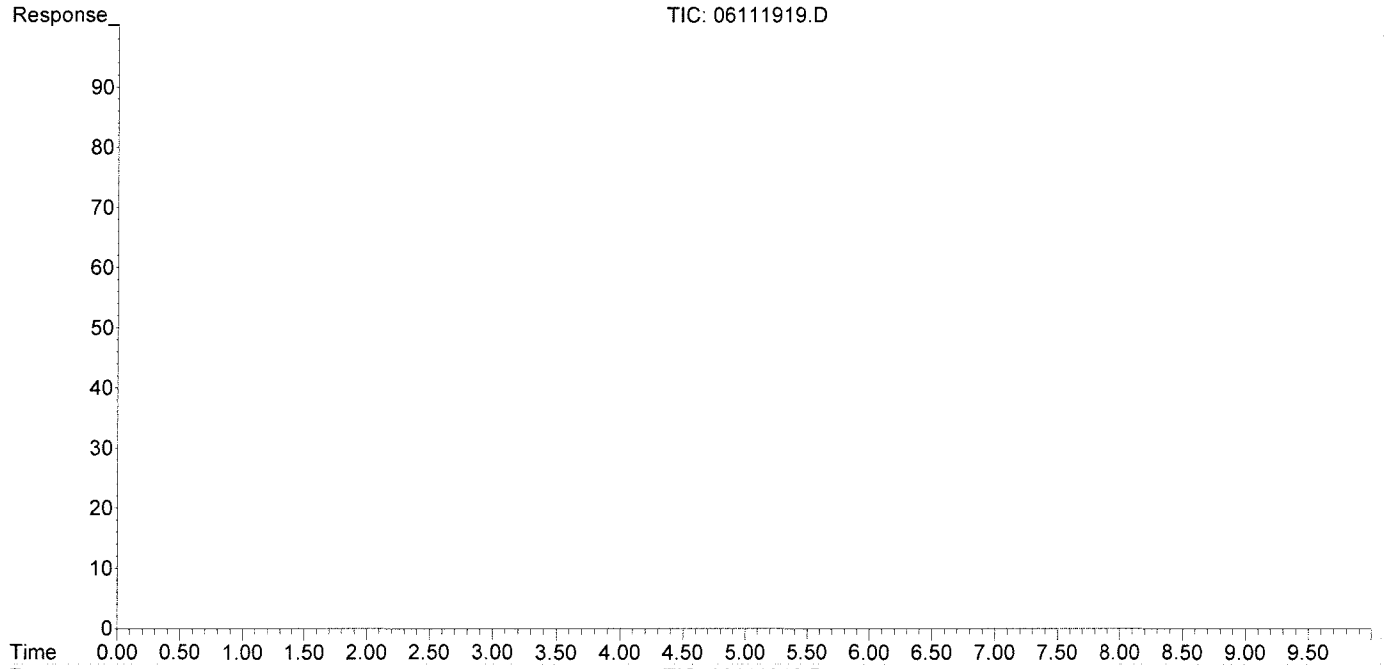
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	873947	96.349	ppm
7)	Ethylene	1.668	1719133	102.731	ppm
8)	Ethane	1.929	1728604	101.981	ppm
9)	Propylene	4.301	2531881	108.054	ppm
10)	Propane	4.425	2597688	104.408	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

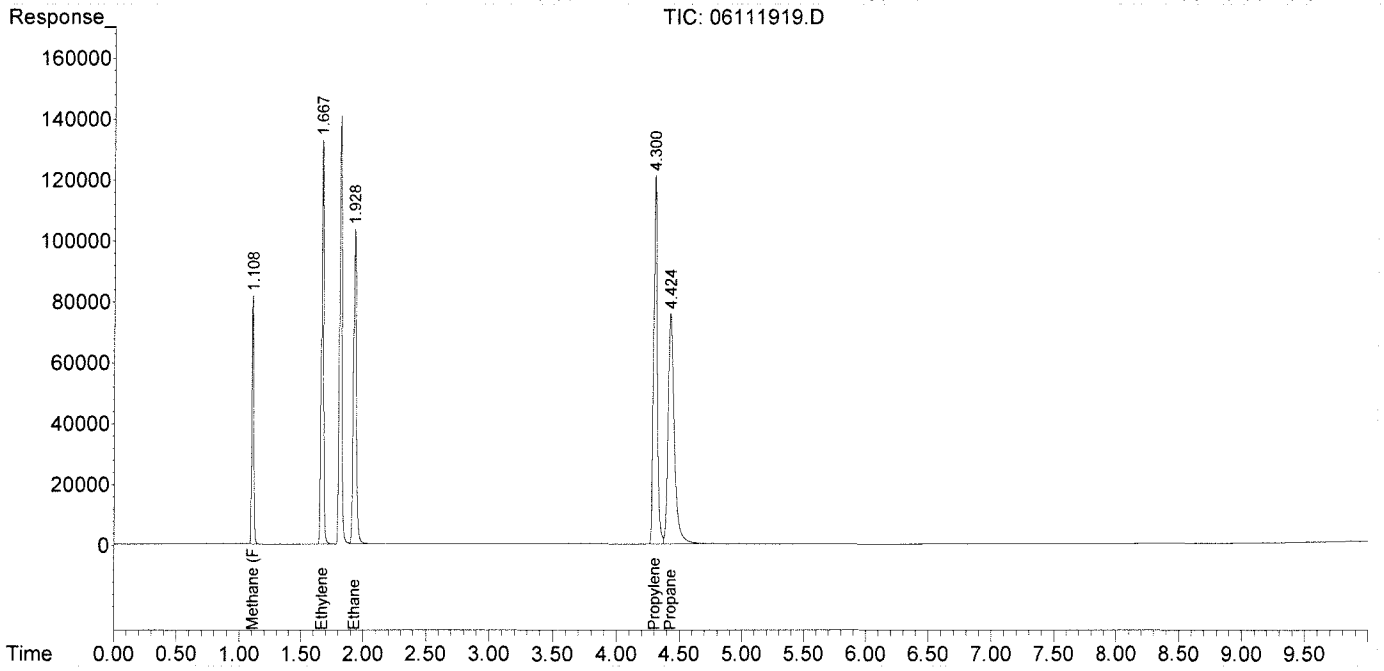
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 17:01:32
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 17:15:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_06\11\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	11-Jun-19, 10:13:41	06111901.D	std s32-05221901		WH	RSKBOTH.M	pass
2	11-Jun-19, 10:38:02	06111902.D	RB 0.1ML		WH	RSKBOTH.M	pass
3	11-Jun-19, 11:04:29	06111903.D	MCS 0.1ML		WH	RSKBOTH.M	pass
4	11-Jun-19, 11:25:19	06111904.D	P1903244-001 0.1ml		WH	RSKBOTH.M	
5	11-Jun-19, 11:46:28	06111905.D	P1903244-002 0.1ml		WH	RSKBOTH.M	
6	11-Jun-19, 12:04:41	06111906.D	P1903244-003 0.1ml		WH	RSKBOTH.M	
7	11-Jun-19, 12:21:51	06111907.D	P1903244-004 0.1ml		WH	RSKBOTH.M	
8	11-Jun-19, 12:48:27	06111908.D	P1903244-005 0.1ml		WH	RSKBOTH.M	
9	11-Jun-19, 13:06:16	06111909.D	P1903244-006 0.1ml		WH	RSKBOTH.M	
10	11-Jun-19, 13:33:06	06111910.D	lcs fid 0.1ml		WH	RSKBOTH.M	pass
11	11-Jun-19, 13:54:43	06111911.D	lcsd fid 0.1ml		WH	RSKBOTH.M	pass
12	11-Jun-19, 14:21:07	06111912.D	STD s32-05221901		WH	RSKBOTH.M	pass
13	11-Jun-19, 14:48:57	06111913.D	P1903217-001 0.1ml		WH	RSKBOTH.M	
14	11-Jun-19, 15:13:17	06111914.D	P1903217-002 0.1ml		WH	RSKBOTH.M	
15	11-Jun-19, 15:38:23	06111915.D	P1903217-003 0.1ml		WH	RSKBOTH.M	
16	11-Jun-19, 15:51:45	06111916.D	P1903217-004 0.1ml		WH	RSKBOTH.M	
17	11-Jun-19, 16:14:33	06111917.D	P1903217-005 0.1ml		WH	RSKBOTH.M	
18	11-Jun-19, 16:36:27	06111918.D	P1903217-006 0.1ml		WH	RSKBOTH.M	
19	11-Jun-19, 17:01:32	06111919.D	STD s32-05221901		WH	RSKBOTH.M	pass

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Project Manager: Kim Nemmers
Project Name: LHAAP-58
Project No.: NW01312.0150
Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☒ More samples to follow
☐ No Additional Samples

Report Type: ☐ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																						
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBt (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Naphalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
012QF1	35AMW19_060319	6/3/19	0805	WG						X		X																				
2	LHSMW07_060319	6/3/19	0900	WG						X		X																				
3	35AMW23_060319	6/3/19	1000	WG						X		X																				
4	35AMW24_060319	6/3/19	1055	WG						X		X																				
5	35AMW11_060319	6/3/19	1150	WG						X		X																				
6	35AMW09_060319	6/3/19	1250	WG						X		X																				

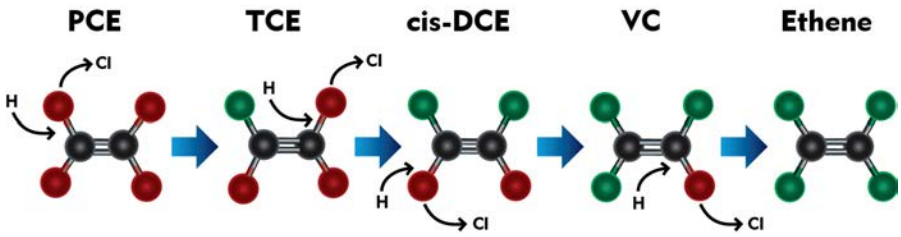
Relinquished by: [signature] 6/3/19 1500
Received by: [signature] Date 6-5-19

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

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CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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DHC Interpretation

Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

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How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

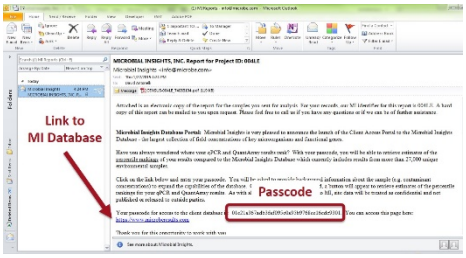
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

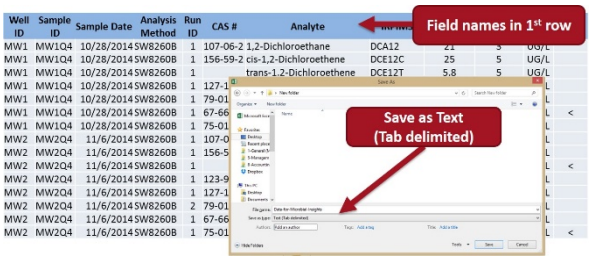
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





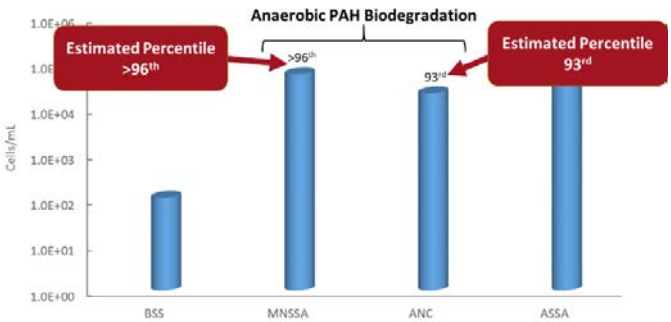
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



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With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

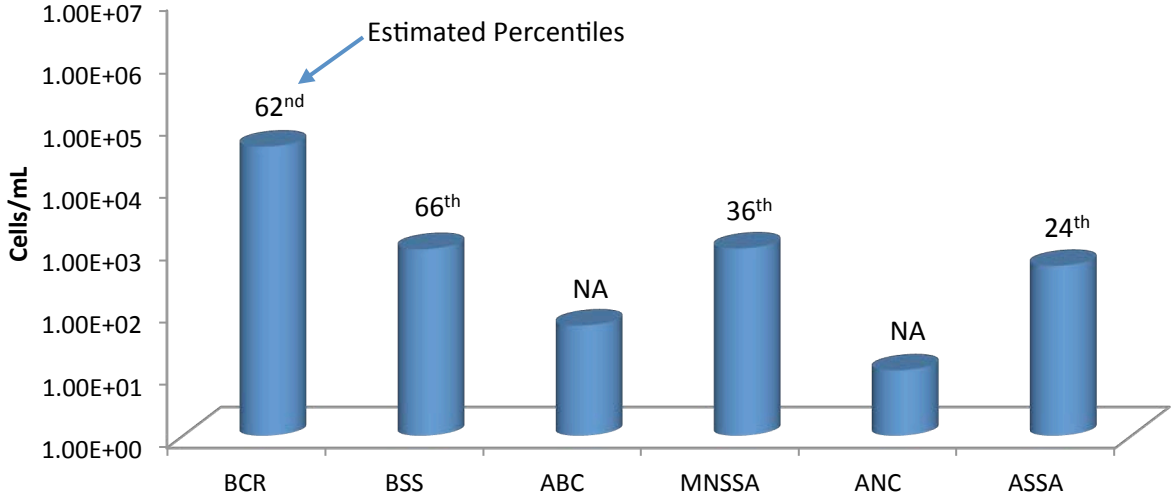
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

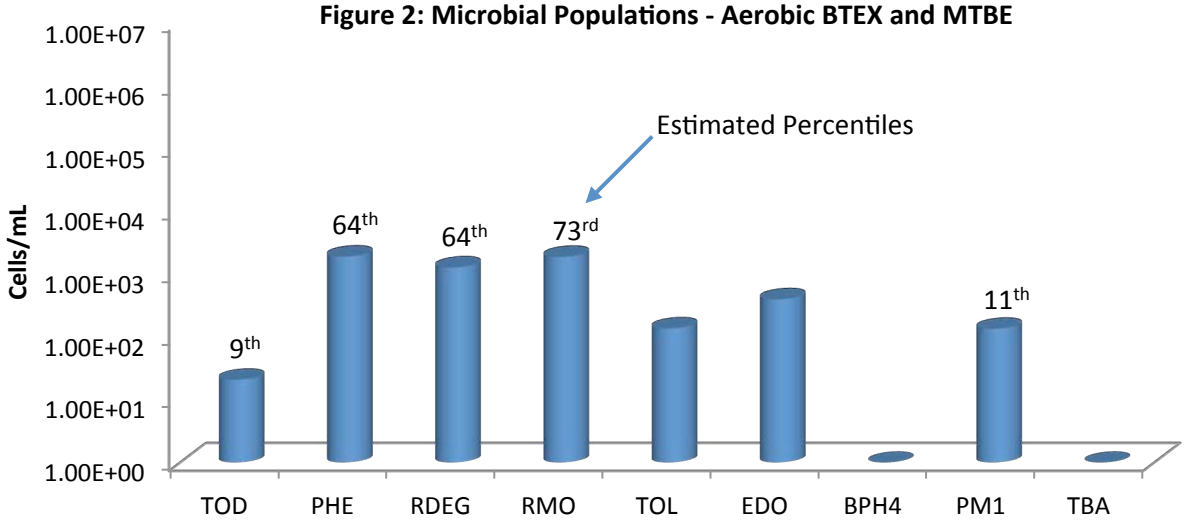
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66th percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36th.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



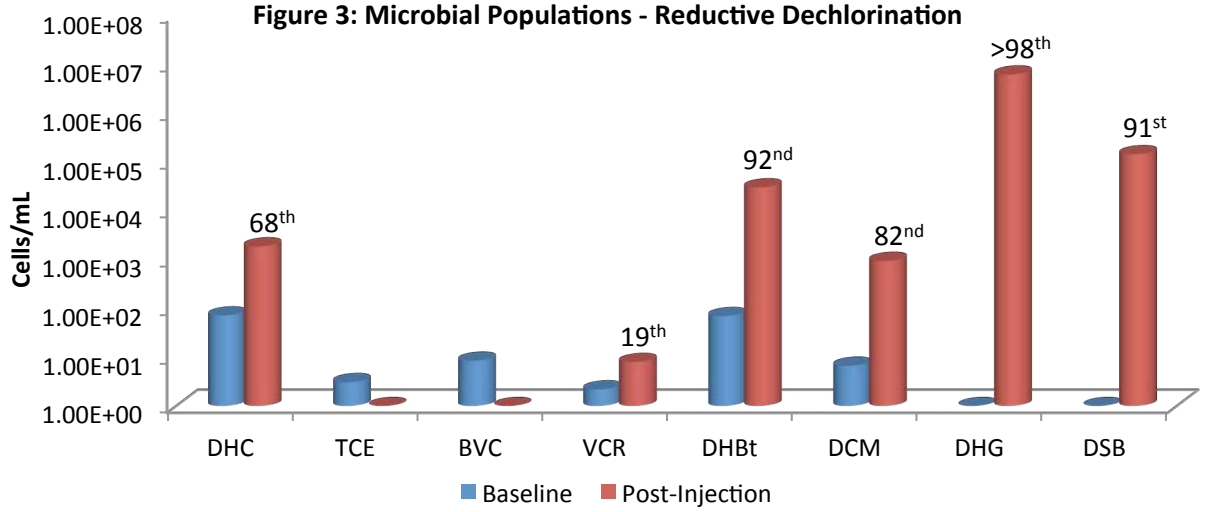
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

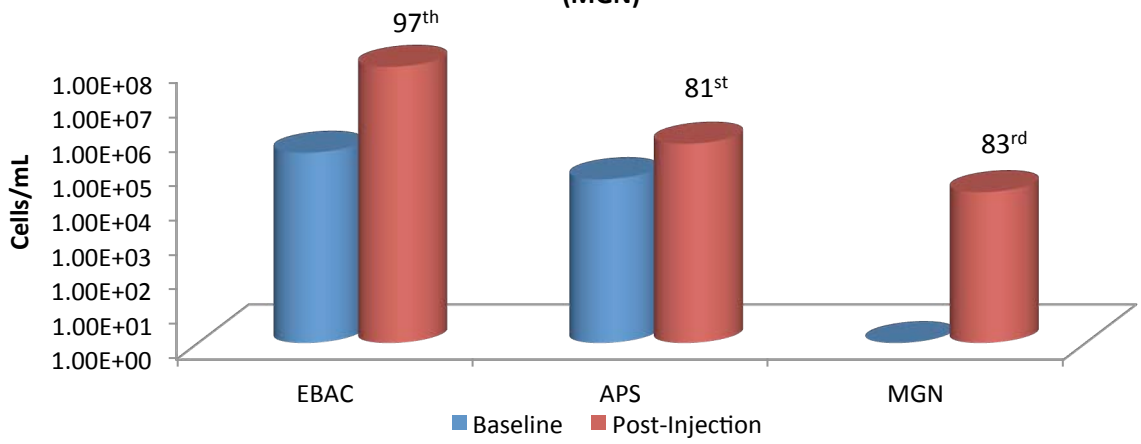
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92nd percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68th percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19th percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

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Client: RJ Modashia
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77040

Phone: 281-575-2279

Fax:

Identifier: 012QF **Date Rec:** 06/05/2019 **Report Date:** 06/12/2019

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **012QF**
Date Received: 06/05/2019

Sample Information

Client Sample ID:		**35AWW19_060319**	**LHSMW07_060319**	**35AWW23_060319**	**35AWW24_060319**	**35AWW11_060319**
Sample Date:		06/03/2019	06/03/2019	06/03/2019	06/03/2019	06/03/2019
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT	HT	HT
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**3.30E+00**	**7.58E+03**	**6.52E+02**	**9.00E-01**	**2.10E+03**
tceA Reductase	TCE	<5.00E-01	<1.00E+00	<3.80E+00	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<1.00E+00	**2.50E+00 (J)**	<5.00E-01	<5.00E-01
Vinyl Chloride Reductase	VCR	**1.00E-01 (J)**	**1.62E+03**	**7.27E+01**	<5.00E-01	**1.74E+02**
Dehalobacter spp.	*DHBt*	**6.27E+04**	<9.50E+00	<3.85E+01	**2.47E+01**	**2.57E+06**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **012QF**
Date Received: 06/05/2019

Sample Information

Client Sample ID:	**35AWW09_060319**
Sample Date:	06/03/2019
Units:	cells/mL
Analyst/Reviewer:	HT

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**5.80E+00**
tceA Reductase	TCE	<7.00E-01
BAV1 Vinyl Chloride Reductase	BVC	<7.00E-01
Vinyl Chloride Reductase	VCR	<7.00E-01
Dehalobacter spp.	*DHBt*	**7.33E+01**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **6/5/2019**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	06/05/2019	06/12/2019	5 °C	105%	non-detect	non-detect
TCE	06/05/2019	06/12/2019	5 °C	104%	non-detect	non-detect
VCR	06/05/2019	06/12/2019	5 °C	101%	non-detect	non-detect
DHBt	06/05/2019	06/12/2019	5 °C	110%	non-detect	non-detect
DHC	06/05/2019	06/12/2019	5 °C	100%	non-detect	non-detect

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June 27, 2019

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

Work Order: **HS19060185**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 8 sample(s) on Jun 05, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 27-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060185

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19060185-01	03WW01_060419	Groundwater		04-Jun-2019 07:45	05-Jun-2019 09:00	☐
HS19060185-02	34AWW08_060419	Groundwater		04-Jun-2019 08:20	05-Jun-2019 09:00	☐
HS19060185-03	35AWW20_060419	Groundwater		04-Jun-2019 09:25	05-Jun-2019 09:00	☐
HS19060185-04	35AWW10_060419	Groundwater		04-Jun-2019 10:30	05-Jun-2019 09:00	☐
HS19060185-05	35AWW10_060419_a	Groundwater		04-Jun-2019 10:30	05-Jun-2019 09:00	☐
HS19060185-06	35AWW06_060419	Groundwater		04-Jun-2019 11:35	05-Jun-2019 09:00	☐
HS19060185-07	35AWW18_060419	Groundwater		04-Jun-2019 12:20	05-Jun-2019 09:00	☐
HS19060185-08	Trip Blank	Water		04-Jun-2019 00:00	05-Jun-2019 09:00	☐

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS19060185

Work Order Comments

- The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.
- The analyses for MEE and CO2 were subcontracted to ALS Environmental in Simi Valley , CA. Final report attached.
- The analysis for VFA was subcontracted to ALS Environmental in Rochester, NY. Final report attached.
- The analysis for DHC/DHB were subcontracted to Microbial Insights in Knoxville TN. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R339998

Sample ID: 03WW01_060419 (HS19060185-01)

- Lowest practical dilution for sample HS19060185-01. Samples are foamy.

Sample ID: 34AWW08_060419 (HS19060185-02)

- Lowest practical dilution for sample HS19060185-02. Samples are foamy.

Sample ID: 35AWW20_060419 (HS19060185-03)

- Lowest practical dilution for sample HS19060185-03. Samples are foamy.

Sample ID: HS19060123-01MS

- MS and MSD are for an unrelated sample

Metals by Method SW6020

Batch ID: 141628

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

WetChemistry by Method SW9056

Batch ID: R339937

Sample ID: 03WW01_060419 (HS19060185-01)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

Sample ID: 34AWW08_060419 (HS19060185-02)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N),Sulfate)

Sample ID: HS19060180-01MS

- MS and MSD are for an unrelated sample (Sulfate)

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_060419
Collection Date: 04-Jun-2019 07:45

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,1,1-Trichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,1,2,2-Tetrachloroethane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,1-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,1-Dichloropropene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2,3-Trichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2,3-Trichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2,4-Trichlorobenzene	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2,4-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2-Dibromo-3-chloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2-Dibromoethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2-Dichlorobenzene	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,2-Dichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,3,5-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,3-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,3-Dichloropropane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
1,4-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
2,2-Dichloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
2-Butanone	5.0	U	2.5	5.0	10	UG/L	5	06-Jun-2019 18:58
2-Chlorotoluene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
2-Hexanone	5.0	U	5.0	5.0	10	UG/L	5	06-Jun-2019 18:58
4-Chlorotoluene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
4-Isopropyltoluene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
4-Methyl-2-pentanone	5.0	U	3.5	5.0	10	UG/L	5	06-Jun-2019 18:58
Acetone	5.0	U	2.0	5.0	10	UG/L	5	06-Jun-2019 18:58
Benzene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Bromobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Bromochloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Bromodichloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Bromoform	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Bromomethane	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Carbon disulfide	5.0	U	3.0	5.0	10	UG/L	5	06-Jun-2019 18:58
Carbon tetrachloride	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Chlorobenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Chloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Chloroform	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_060419
Collection Date: 04-Jun-2019 07:45

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
cis-1,2-Dichloroethene	**41**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 18:58
cis-1,3-Dichloropropene	2.5	U	0.50	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Dibromochloromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Dibromomethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Dichlorodifluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Ethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	UG/L	5	06-Jun-2019 18:58
Isopropylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
m,p-Xylene	5.0	U	2.5	5.0	10	UG/L	5	06-Jun-2019 18:58
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	06-Jun-2019 18:58
n-Butylbenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
n-Propylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Naphthalene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
o-Xylene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
sec-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Styrene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
tert-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Tetrachloroethene	**3.2**	J	**1.5**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 18:58
Toluene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
trans-1,2-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
trans-1,3-Dichloropropene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Trichloroethene	**2.9**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 18:58
Trichlorofluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 18:58
Vinyl chloride	**11**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 18:58
Surr: 1,2-Dichloroethane-d4	*96.3*			**0**	*81-118*	*%REC*	*5*	*06-Jun-2019 18:58*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*85-114*	*%REC*	*5*	*06-Jun-2019 18:58*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*5*	*06-Jun-2019 18:58*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*5*	*06-Jun-2019 18:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 05-Jun-2019		Analyst: JHD
Arsenic	**0.0133**		**0.000400**	**0.000500**	**0.00200**	**mg/L**	1	05-Jun-2019 22:38
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**809**		**10.0**	**25.0**	**25.0**	**mg/L**	50	06-Jun-2019 01:46
Nitrogen, Nitrate (As N)	**0.196**	J	**0.150**	**0.500**	**0.500**	**mg/L**	5	06-Jun-2019 01:28
Sulfate	**239**		**1.00**	**2.50**	**2.50**	**mg/L**	5	06-Jun-2019 01:28
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_060419
Collection Date: 04-Jun-2019 07:45

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	17-Jun-2019 15:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	**See Attched**		**0**	**0**	**0**	**NA**	1	27-Jun-2019 12:27

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS19060185
Sample ID: 34AWW08_060419 Lab ID:HS19060185-02
Collection Date: 04-Jun-2019 08:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,1,1-Trichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,1,2,2-Tetrachloroethane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,1-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,1-Dichloropropene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2,3-Trichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2,3-Trichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2,4-Trichlorobenzene	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2,4-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2-Dibromo-3-chloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2-Dibromoethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2-Dichlorobenzene	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,2-Dichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,3,5-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,3-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,3-Dichloropropane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
1,4-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
2,2-Dichloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
2-Butanone	5.0	U	2.5	5.0	10	UG/L	5	06-Jun-2019 19:22
2-Chlorotoluene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
2-Hexanone	5.0	U	5.0	5.0	10	UG/L	5	06-Jun-2019 19:22
4-Chlorotoluene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
4-Isopropyltoluene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
4-Methyl-2-pentanone	5.0	U	3.5	5.0	10	UG/L	5	06-Jun-2019 19:22
Acetone	**13**		**2.0**	**5.0**	**10**	**UG/L**	5	06-Jun-2019 19:22
Benzene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Bromobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Bromochloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Bromodichloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Bromoform	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Bromomethane	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Carbon disulfide	5.0	U	3.0	5.0	10	UG/L	5	06-Jun-2019 19:22
Carbon tetrachloride	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Chlorobenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Chloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Chloroform	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 34AWW08_060419
Collection Date: 04-Jun-2019 08:20

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
cis-1,2-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
cis-1,3-Dichloropropene	2.5	U	0.50	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Dibromochloromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Dibromomethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Dichlorodifluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Ethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	UG/L	5	06-Jun-2019 19:22
Isopropylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
m,p-Xylene	5.0	U	2.5	5.0	10	UG/L	5	06-Jun-2019 19:22
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	06-Jun-2019 19:22
n-Butylbenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
n-Propylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Naphthalene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
o-Xylene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
sec-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Styrene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
tert-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Tetrachloroethene	**4.8**	J	**1.5**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 19:22
Toluene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
trans-1,2-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
trans-1,3-Dichloropropene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Trichloroethene	**13**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 19:22
Trichlorofluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Vinyl chloride	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 19:22
Surr: 1,2-Dichloroethane-d4	*91.3*			**0**	*81-118*	*%REC*	*5*	*06-Jun-2019 19:22*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*5*	*06-Jun-2019 19:22*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*5*	*06-Jun-2019 19:22*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*5*	*06-Jun-2019 19:22*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 05-Jun-2019		Analyst: JHD
Arsenic	**0.116**		**0.000400**	**0.000500**	**0.00200**	**mg/L**	1	05-Jun-2019 22:44
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**2,510**		**20.0**	**50.0**	**50.0**	**mg/L**	100	06-Jun-2019 02:21
Nitrogen, Nitrate (As N)	**0.219**	J	**0.150**	**0.500**	**0.500**	**mg/L**	5	06-Jun-2019 02:04
Sulfate	**1.42**	J	**1.00**	**2.50**	**2.50**	**mg/L**	5	06-Jun-2019 02:04
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 34AWW08_060419
Collection Date: 04-Jun-2019 08:20

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	17-Jun-2019 15:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	**See Attched**		**0**	**0**	**0**	**NA**	1	27-Jun-2019 12:27
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_060419
Collection Date: 04-Jun-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,1,1-Trichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,1,2,2-Tetrachloroethane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,1,2-Trichloroethane	**45**		**1.5**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
1,1-Dichloroethane	**270**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
1,1-Dichloroethene	**1,800**		**5.0**	**12**	**25**	**UG/L**	25	06-Jun-2019 21:46
1,1-Dichloropropene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2,3-Trichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2,3-Trichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2,4-Trichlorobenzene	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2,4-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2-Dibromo-3-chloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2-Dibromoethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,2-Dichlorobenzene	**13**		**2.5**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
1,2-Dichloroethane	**21**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
1,2-Dichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,3,5-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,3-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,3-Dichloropropane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
1,4-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
2,2-Dichloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
2-Butanone	5.0	U	2.5	5.0	10	UG/L	5	06-Jun-2019 21:22
2-Chlorotoluene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
2-Hexanone	5.0	U	5.0	5.0	10	UG/L	5	06-Jun-2019 21:22
4-Chlorotoluene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
4-Isopropyltoluene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
4-Methyl-2-pentanone	5.0	U	3.5	5.0	10	UG/L	5	06-Jun-2019 21:22
Acetone	5.0	U	2.0	5.0	10	UG/L	5	06-Jun-2019 21:22
Benzene	**4.4**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
Bromobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Bromochloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Bromodichloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Bromoform	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Bromomethane	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Carbon disulfide	5.0	U	3.0	5.0	10	UG/L	5	06-Jun-2019 21:22
Carbon tetrachloride	2.5	U	2.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Chlorobenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Chloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Chloroform	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_060419
Collection Date: 04-Jun-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
cis-1,2-Dichloroethene	**79**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
cis-1,3-Dichloropropene	2.5	U	0.50	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Dibromochloromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Dibromomethane	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Dichlorodifluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Ethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	UG/L	5	06-Jun-2019 21:22
Isopropylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
m,p-Xylene	5.0	U	2.5	5.0	10	UG/L	5	06-Jun-2019 21:22
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	06-Jun-2019 21:22
n-Butylbenzene	2.5	U	2.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
n-Propylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Naphthalene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
o-Xylene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
sec-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Styrene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
tert-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Tetrachloroethene	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Toluene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
trans-1,2-Dichloroethene	**13**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
trans-1,3-Dichloropropene	2.5	U	1.0	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Trichloroethene	**230**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
Trichlorofluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	06-Jun-2019 21:22
Vinyl chloride	**140**		**1.0**	**2.5**	**5.0**	**UG/L**	5	06-Jun-2019 21:22
Surr: 1,2-Dichloroethane-d4	*93.4*			**0**	*81-118*	*%REC*	*5*	*06-Jun-2019 21:22*
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*25*	*06-Jun-2019 21:46*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*5*	*06-Jun-2019 21:22*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*06-Jun-2019 21:46*
Surr: Dibromofluoromethane	*94.5*			**0**	*80-119*	*%REC*	*5*	*06-Jun-2019 21:22*
Surr: Dibromofluoromethane	*95.3*			**0**	*80-119*	*%REC*	*25*	*06-Jun-2019 21:46*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*5*	*06-Jun-2019 21:22*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*25*	*06-Jun-2019 21:46*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 05-Jun-2019		Analyst: JHD
Arsenic	**0.00194**	J	**0.000400**	**0.000500**	**0.00200**	**mg/L**	1	05-Jun-2019 22:46
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,180**		**20.0**	**50.0**	**50.0**	**mg/L**	100	06-Jun-2019 02:56
Nitrogen, Nitrate (As N)	**0.194**	J	**0.150**	**0.500**	**0.500**	**mg/L**	5	06-Jun-2019 02:39
Sulfate	**1,240**		**20.0**	**50.0**	**50.0**	**mg/L**	100	06-Jun-2019 02:56

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_060419
Collection Date: 04-Jun-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	17-Jun-2019 15:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	**See Attched**		**0**	**0**	**0**	**NA**	1	27-Jun-2019 12:27
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_060419
Collection Date: 04-Jun-2019 10:30

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 19:46
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 19:46
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 19:46
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 19:46
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 19:46
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_060419
Collection Date: 04-Jun-2019 10:30

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 19:46
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 19:46
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 19:46
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 19:46
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 19:46
Surr: 1,2-Dichloroethane-d4	*92.1*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 19:46*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 19:46*
Surr: Dibromofluoromethane	*94.6*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 19:46*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 19:46*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**6.59**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Jun-2019 03:14
Nitrogen, Nitrate (As N)	**0.0497**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	06-Jun-2019 03:14
Sulfate	**68.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Jun-2019 03:14
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	17-Jun-2019 15:01

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_060419
Collection Date: 04-Jun-2019 10:30

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	**See Attched**		**0**	**0**	**0**	**NA**	1	27-Jun-2019 12:27
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_060419_a
Collection Date: 04-Jun-2019 10:30

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 20:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 20:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 20:10
Acetone	**2.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 20:10
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 20:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_060419_a
Collection Date: 04-Jun-2019 10:30

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 20:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 20:10
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 20:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:10
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 20:10*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 20:10*
Surr: Dibromofluoromethane	*95.4*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 20:10*
Surr: Toluene-d8	*99.6*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 20:10*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**6.56**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Jun-2019 04:07
Nitrogen, Nitrate (As N)	**0.0480**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	06-Jun-2019 04:07
Sulfate	**68.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Jun-2019 04:07
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	17-Jun-2019 15:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	**See Attched**		**0**	**0**	**0**	**NA**	1	27-Jun-2019 12:27

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_060419_a
Collection Date: 04-Jun-2019 10:30

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_060419
Collection Date: 04-Jun-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 20:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
2-Hexanone	**1.8**	J	**1.0**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 20:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 20:34
Acetone	**220**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 20:34
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 20:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_060419
Collection Date: 04-Jun-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 20:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 20:34
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 20:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:34
Surr: 1,2-Dichloroethane-d4	*93.2*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 20:34*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 20:34*
Surr: Dibromofluoromethane	*95.6*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 20:34*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 20:34*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**964**		**10.0**	**25.0**	**25.0**	**mg/L**	50	06-Jun-2019 05:00
Nitrogen, Nitrate (As N)	**0.180**	J	**0.150**	**0.500**	**0.500**	**mg/L**	5	06-Jun-2019 04:42
Sulfate	**2.08**	J	**1.00**	**2.50**	**2.50**	**mg/L**	5	06-Jun-2019 04:42
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jun-2019 16:54
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	17-Jun-2019 15:01

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_060419
Collection Date: 04-Jun-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	**See Attched**		**0**	**0**	**0**	**NA**	1	27-Jun-2019 12:27
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Jun-2019 10:19

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW18_060419
Collection Date: 04-Jun-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,1-Dichloroethane	**0.76**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 20:58
1,1-Dichloroethene	**3.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	06-Jun-2019 20:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 20:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 20:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 20:58
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 20:58
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 20:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW18_060419
Collection Date: 04-Jun-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 20:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 20:58
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 20:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 20:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 20:58
Surr: 1,2-Dichloroethane-d4	*95.5*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 20:58*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 20:58*
Surr: Dibromofluoromethane	*96.4*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 20:58*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 20:58*

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 04-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
2-Butanone	**1.4**	J	**0.50**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 14:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	06-Jun-2019 14:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	06-Jun-2019 14:09
Acetone	**20**		**0.40**	**1.0**	**2.0**	**UG/L**	1	06-Jun-2019 14:09
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	06-Jun-2019 14:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09

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

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 04-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060185
Lab ID:HS19060185-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	06-Jun-2019 14:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	06-Jun-2019 14:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	06-Jun-2019 14:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	06-Jun-2019 14:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	06-Jun-2019 14:09
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2019 14:09*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2019 14:09*
Surr: Dibromofluoromethane	*93.8*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2019 14:09*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2019 14:09*

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

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

Batch ID: 141628 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19060185-01	1	10	10 (mL)	1
HS19060185-02	1	10	10 (mL)	1
HS19060185-03	1	10	10 (mL)	1

ALS Houston, US Date: 27-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 141628	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19060185-01	03WW01_060419	04 Jun 2019 07:45		05 Jun 2019 14:21	05 Jun 2019 22:38	1
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20		05 Jun 2019 14:21	05 Jun 2019 22:44	1
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25		05 Jun 2019 14:21	05 Jun 2019 22:46	1
Batch ID R339937	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS19060185-01	03WW01_060419	04 Jun 2019 07:45			06 Jun 2019 01:46	50
HS19060185-01	03WW01_060419	04 Jun 2019 07:45			06 Jun 2019 01:28	5
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			06 Jun 2019 02:21	100
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			06 Jun 2019 02:04	5
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			06 Jun 2019 02:56	100
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			06 Jun 2019 02:39	5
HS19060185-04	35AWW10_060419	04 Jun 2019 10:30			06 Jun 2019 03:14	1
HS19060185-05	35AWW10_060419_a	04 Jun 2019 10:30			06 Jun 2019 04:07	1
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			06 Jun 2019 05:00	50
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			06 Jun 2019 04:42	5
Batch ID R339998	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19060185-08	Trip Blank	04 Jun 2019 00:00			06 Jun 2019 14:09	1
Batch ID R339998	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19060185-01	03WW01_060419	04 Jun 2019 07:45			06 Jun 2019 18:58	5
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			06 Jun 2019 19:22	5
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			06 Jun 2019 21:46	25
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			06 Jun 2019 21:22	5
HS19060185-04	35AWW10_060419	04 Jun 2019 10:30			06 Jun 2019 19:46	1
HS19060185-05	35AWW10_060419_a	04 Jun 2019 10:30			06 Jun 2019 20:10	1
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			06 Jun 2019 20:34	1
HS19060185-07	35AWW18_060419	04 Jun 2019 12:20			06 Jun 2019 20:58	1
Batch ID R340363	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB			**Matrix:** Groundwater		
HS19060185-01	03WW01_060419	04 Jun 2019 07:45			12 Jun 2019 16:54	1
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			12 Jun 2019 16:54	1
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			12 Jun 2019 16:54	1
HS19060185-04	35AWW10_060419	04 Jun 2019 10:30			12 Jun 2019 16:54	1
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			12 Jun 2019 16:54	1

ALS Houston, US Date: 27-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R340642	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS19060185-01	03WW01_060419	04 Jun 2019 07:45			17 Jun 2019 15:01	1
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			17 Jun 2019 15:01	1
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			17 Jun 2019 15:01	1
HS19060185-04	35AWW10_060419	04 Jun 2019 10:30			17 Jun 2019 15:01	1
HS19060185-05	35AWW10_060419_a	04 Jun 2019 10:30			17 Jun 2019 15:01	1
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			17 Jun 2019 15:01	1
Batch ID R340872	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			20 Jun 2019 10:19	1
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			20 Jun 2019 10:19	1
HS19060185-04	35AWW10_060419	04 Jun 2019 10:30			20 Jun 2019 10:19	1
HS19060185-05	35AWW10_060419_a	04 Jun 2019 10:30			20 Jun 2019 10:19	1
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			20 Jun 2019 10:19	1
Batch ID R341377	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19060185-01	03WW01_060419	04 Jun 2019 07:45			27 Jun 2019 12:27	1
HS19060185-02	34AWW08_060419	04 Jun 2019 08:20			27 Jun 2019 12:27	1
HS19060185-03	35AWW20_060419	04 Jun 2019 09:25			27 Jun 2019 12:27	1
HS19060185-04	35AWW10_060419	04 Jun 2019 10:30			27 Jun 2019 12:27	1
HS19060185-05	35AWW10_060419_a	04 Jun 2019 10:30			27 Jun 2019 12:27	1
HS19060185-06	35AWW06_060419	04 Jun 2019 11:35			27 Jun 2019 12:27	1

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: 141628 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-141628** Units: **mg/L** Analysis Date: **05-Jun-2019 22:04**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108740** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00200								U

LCS Sample ID: **LCS-141628** Units: **mg/L** Analysis Date: **05-Jun-2019 22:05**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108741** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05387	0.00200	0.05	0	108	80 - 120				

LCSD Sample ID: **LCSD-141628** Units: **mg/L** Analysis Date: **05-Jun-2019 22:07**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108742** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05339	0.00200	0.05	0	107	80 - 120	0.05387	0.902	20	

MS Sample ID: **HS19060168-01MS** Units: **mg/L** Analysis Date: **05-Jun-2019 22:13**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108745** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05451	0.00200	0.05	0.000923	107	80 - 120				

MSD Sample ID: **HS19060168-01MSD** Units: **mg/L** Analysis Date: **05-Jun-2019 22:14**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108746** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05604	0.00200	0.05	0.000923	110	80 - 120	0.05451	2.76	20	

PDS Sample ID: **HS19060168-01PDS** Units: **mg/L** Analysis Date: **05-Jun-2019 22:16**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108747** PrepDate: **05-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1042	0.00200	0.1	0.000923	103	75 - 125				

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: 141628 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS19060168-01SD** Units: **mg/L** Analysis Date: **05-Jun-2019 22:11**
Client ID: Run ID: **ICPMS06_339849** SeqNo: **5108744** PrepDate: **05-Jun-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002267	0.0100					0.000923	0	10	J

The following samples were analyzed in this batch: HS19060185-01 HS19060185-02 HS19060185-03

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:57**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110994** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:57**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110994** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.27*	*1.0*	*50*	*0*	*90.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.82*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*46.66*	*1.0*	*50*	*0*	*93.3*	*80 - 119*				
Surr: Toluene-d8	*53.19*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:09**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110993** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.6	1.0	20	0	98.0	78 - 124				
1,1,1-Trichloroethane	20.25	1.0	20	0	101	74 - 131				
1,1,2,2-Tetrachloroethane	18.44	1.0	20	0	92.2	71 - 121				
1,1,2-Trichloroethane	20.4	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	19.43	1.0	20	0	97.2	77 - 125				
1,1-Dichloroethene	19.42	1.0	20	0	97.1	71 - 131				
1,1-Dichloropropene	19.63	1.0	20	0	98.1	78 - 125				
1,2,3-Trichlorobenzene	17.18	1.0	20	0	85.9	69 - 129				
1,2,3-Trichloropropane	17.93	1.0	20	0	89.6	73 - 122				
1,2,4-Trichlorobenzene	18.84	1.0	20	0	94.2	69 - 130				
1,2,4-Trimethylbenzene	19.91	1.0	20	0	99.6	76 - 124				
1,2-Dibromo-3-chloropropane	17.46	1.0	20	0	87.3	62 - 128				
1,2-Dibromoethane	19.86	1.0	20	0	99.3	77 - 121				
1,2-Dichlorobenzene	19.41	1.0	20	0	97.0	80 - 119				
1,2-Dichloroethane	20.31	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	21.15	1.0	20	0	106	78 - 122				
1,3,5-Trimethylbenzene	19.82	1.0	20	0	99.1	75 - 124				
1,3-Dichlorobenzene	19.66	1.0	20	0	98.3	80 - 119				
1,3-Dichloropropane	21.39	1.0	20	0	107	80 - 119				
1,4-Dichlorobenzene	19.4	1.0	20	0	97.0	79 - 118				
2,2-Dichloropropane	19.78	1.0	20	0	98.9	60 - 139				
2-Butanone	42.76	2.0	40	0	107	56 - 143				
2-Chlorotoluene	19.33	1.0	20	0	96.6	79 - 122				
2-Hexanone	41.93	2.0	40	0	105	57 - 139				
4-Chlorotoluene	19.88	1.0	20	0	99.4	78 - 122				
4-Isopropyltoluene	20.23	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	40	2.0	40	0	100.0	67 - 130				
Acetone	45.22	2.0	40	0	113	39 - 160				
Benzene	20.3	1.0	20	0	102	79 - 120				
Bromobenzene	18.84	1.0	20	0	94.2	80 - 120				
Bromochloromethane	20.35	1.0	20	0	102	78 - 123				
Bromodichloromethane	19.68	1.0	20	0	98.4	79 - 125				
Bromoform	18.77	1.0	20	0	93.8	66 - 130				
Bromomethane	22.57	1.0	20	0	113	53 - 141				

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190606** Units: **UG/L** Analysis Date: **06-Jun-2019 12:09**
Client ID: Run ID: **VOA6_339998** SeqNo: **5110993** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	46.05	2.0	40	0	115	64 - 133				
Carbon tetrachloride	19.1	1.0	20	0	95.5	72 - 136				
Chlorobenzene	19.54	1.0	20	0	97.7	82 - 118				
Chloroethane	19.4	1.0	20	0	97.0	60 - 138				
Chloroform	20.61	1.0	20	0	103	79 - 124				
Chloromethane	17.27	1.0	20	0	86.3	50 - 139				
cis-1,2-Dichloroethene	19.72	1.0	20	0	98.6	78 - 123				
cis-1,3-Dichloropropene	20.52	1.0	20	0	103	75 - 124				
Dibromochloromethane	19.92	1.0	20	0	99.6	74 - 126				
Dibromomethane	19.98	1.0	20	0	99.9	79 - 123				
Dichlorodifluoromethane	18.99	1.0	20	0	95.0	32 - 152				
Ethylbenzene	19.69	1.0	20	0	98.5	79 - 121				
Hexachlorobutadiene	21.04	1.0	20	0	105	66 - 134				
Isopropylbenzene	20.27	1.0	20	0	101	72 - 131				
m,p-Xylene	39.34	2.0	40	0	98.4	80 - 121				
Methylene chloride	20.93	2.0	20	0	105	74 - 124				
Naphthalene	16.9	1.0	20	0	84.5	61 - 128				
n-Butylbenzene	20.45	1.0	20	0	102	75 - 128				
n-Propylbenzene	19.65	1.0	20	0	98.2	76 - 126				
o-Xylene	19.83	1.0	20	0	99.2	78 - 122				
sec-Butylbenzene	20.1	1.0	20	0	101	77 - 126				
Styrene	20.15	1.0	20	0	101	78 - 123				
tert-Butylbenzene	19.68	1.0	20	0	98.4	78 - 124				
Tetrachloroethene	19.96	1.0	20	0	99.8	74 - 129				
Toluene	20.51	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	19.57	1.0	20	0	97.9	75 - 124				
trans-1,3-Dichloropropene	20.06	1.0	20	0	100	73 - 127				
Trichloroethene	19.8	1.0	20	0	99.0	79 - 123				
Trichlorofluoromethane	19.03	1.0	20	0	95.2	65 - 141				
Vinyl chloride	17.4	1.0	20	0	87.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.35*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.64*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*52.92*	*1.0*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*50.05*	*1.0*	*50*	*0*	*100*	*89 - 112*				

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19060123-01MS** Units: **UG/L** Analysis Date: **06-Jun-2019 17:22**
Client ID: Run ID: **VOA6_339998** SeqNo: **5111005** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.23	1.0	20	0	96.2	78 - 124				
1,1,1-Trichloroethane	18.32	1.0	20	0	91.6	74 - 131				
1,1,2,2-Tetrachloroethane	20.07	1.0	20	0	100	71 - 121				
1,1,2-Trichloroethane	19.28	1.0	20	0	96.4	80 - 119				
1,1-Dichloroethane	18.26	1.0	20	0.6532	88.0	77 - 125				
1,1-Dichloroethene	20.79	1.0	20	2.626	90.8	71 - 131				
1,1-Dichloropropene	18.92	1.0	20	0	94.6	78 - 125				
1,2,3-Trichlorobenzene	19.87	1.0	20	0	99.3	69 - 129				
1,2,3-Trichloropropane	19.78	1.0	20	0	98.9	73 - 122				
1,2,4-Trichlorobenzene	20.91	1.0	20	0	105	69 - 130				
1,2,4-Trimethylbenzene	21.06	1.0	20	0	105	76 - 124				
1,2-Dibromo-3-chloropropane	18.9	1.0	20	0	94.5	62 - 128				
1,2-Dibromoethane	19	1.0	20	0	95.0	77 - 121				
1,2-Dichlorobenzene	19.7	1.0	20	0	98.5	80 - 119				
1,2-Dichloroethane	18.95	1.0	20	1.07	89.4	73 - 128				
1,2-Dichloropropane	19.37	1.0	20	0	96.9	78 - 122				
1,3,5-Trimethylbenzene	21.09	1.0	20	0	105	75 - 124				
1,3-Dichlorobenzene	20.09	1.0	20	0	100	80 - 119				
1,3-Dichloropropane	20.01	1.0	20	0	100	80 - 119				
1,4-Dichlorobenzene	19.95	1.0	20	0	99.7	79 - 118				
2,2-Dichloropropane	18.73	1.0	20	0	93.6	60 - 139				
2-Butanone	23.81	2.0	40	0	59.5	56 - 143				
2-Chlorotoluene	20.36	1.0	20	0	102	79 - 122				
2-Hexanone	28.12	2.0	40	0	70.3	57 - 139				
4-Chlorotoluene	20.2	1.0	20	0	101	78 - 122				
4-Isopropyltoluene	21.86	1.0	20	0	109	77 - 127				
4-Methyl-2-pentanone	27.78	2.0	40	0	69.4	67 - 130				
Acetone	23.63	2.0	40	0	59.1	39 - 160				
Benzene	18.3	1.0	20	0	91.5	79 - 120				
Bromobenzene	19.74	1.0	20	0	98.7	80 - 120				
Bromochloromethane	17.4	1.0	20	0	87.0	78 - 123				
Bromodichloromethane	17.55	1.0	20	0	87.7	79 - 125				
Bromoform	18.81	1.0	20	0	94.0	66 - 130				
Bromomethane	13.86	1.0	20	0	69.3	53 - 141				

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19060123-01MS** Units: **UG/L** Analysis Date: **06-Jun-2019 17:22**
Client ID: Run ID: **VOA6_339998** SeqNo: **5111005** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	24.97	2.0	40	0	62.4	64 - 133				S
Carbon tetrachloride	18.6	1.0	20	0	93.0	72 - 136				
Chlorobenzene	19.12	1.0	20	0	95.6	82 - 118				
Chloroethane	18.53	1.0	20	0	92.7	60 - 138				
Chloroform	17.48	1.0	20	0	87.4	79 - 124				
Chloromethane	15.15	1.0	20	0	75.8	50 - 139				
cis-1,2-Dichloroethene	17.54	1.0	20	0	87.7	78 - 123				
cis-1,3-Dichloropropene	18.2	1.0	20	0	91.0	75 - 124				
Dibromochloromethane	19.19	1.0	20	0	95.9	74 - 126				
Dibromomethane	18.09	1.0	20	0	90.4	79 - 123				
Dichlorodifluoromethane	16.95	1.0	20	0	84.8	32 - 152				
Ethylbenzene	19.96	1.0	20	0	99.8	79 - 121				
Hexachlorobutadiene	22.14	1.0	20	0	111	66 - 134				
Isopropylbenzene	21.05	1.0	20	0	105	72 - 131				
m,p-Xylene	39.46	2.0	40	0	98.7	80 - 121				
Methylene chloride	17.85	2.0	20	0	89.3	74 - 124				
Naphthalene	19.51	1.0	20	0	97.5	61 - 128				
n-Butylbenzene	21.99	1.0	20	0	110	75 - 128				
n-Propylbenzene	21.93	1.0	20	0	110	76 - 126				
o-Xylene	19.69	1.0	20	0	98.4	78 - 122				
sec-Butylbenzene	21.68	1.0	20	0	108	77 - 126				
Styrene	19.76	1.0	20	0	98.8	78 - 123				
tert-Butylbenzene	21.36	1.0	20	0	107	78 - 124				
Tetrachloroethene	21.49	1.0	20	0	107	74 - 129				
Toluene	19.87	1.0	20	0	99.4	80 - 121				
trans-1,2-Dichloroethene	17.94	1.0	20	0	89.7	75 - 124				
trans-1,3-Dichloropropene	17.84	1.0	20	0	89.2	73 - 127				
Trichloroethene	18.93	1.0	20	0	94.6	79 - 123				
Trichlorofluoromethane	18.45	1.0	20	0	92.2	65 - 141				
Vinyl chloride	16.29	1.0	20	0	81.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.56*	*1.0*	*50*	*0*	*93.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.01*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*48.12*	*1.0*	*50*	*0*	*96.2*	*80 - 119*				
Surr: Toluene-d8	*52.79*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19060123-01MSD** Units: **UG/L** Analysis Date: **06-Jun-2019 17:46**
Client ID: Run ID: **VOA6_339998** SeqNo: **5111006** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.18	1.0	20	0	95.9	78 - 124	19.23	0.269	20	
1,1,1-Trichloroethane	17.98	1.0	20	0	89.9	74 - 131	18.32	1.89	20	
1,1,2,2-Tetrachloroethane	19.55	1.0	20	0	97.8	71 - 121	20.07	2.61	20	
1,1,2-Trichloroethane	19.48	1.0	20	0	97.4	80 - 119	19.28	1.07	20	
1,1-Dichloroethane	18.13	1.0	20	0.6532	87.4	77 - 125	18.26	0.715	20	
1,1-Dichloroethene	20.63	1.0	20	2.626	90.0	71 - 131	20.79	0.774	20	
1,1-Dichloropropene	18.82	1.0	20	0	94.1	78 - 125	18.92	0.492	20	
1,2,3-Trichlorobenzene	20.45	1.0	20	0	102	69 - 129	19.87	2.89	20	
1,2,3-Trichloropropane	18.73	1.0	20	0	93.7	73 - 122	19.78	5.48	20	
1,2,4-Trichlorobenzene	21.43	1.0	20	0	107	69 - 130	20.91	2.47	20	
1,2,4-Trimethylbenzene	20.23	1.0	20	0	101	76 - 124	21.06	4.02	20	
1,2-Dibromo-3-chloropropane	18.98	1.0	20	0	94.9	62 - 128	18.9	0.434	20	
1,2-Dibromoethane	19.16	1.0	20	0	95.8	77 - 121	19	0.856	20	
1,2-Dichlorobenzene	20.04	1.0	20	0	100	80 - 119	19.7	1.7	20	
1,2-Dichloroethane	19.18	1.0	20	1.07	90.5	73 - 128	18.95	1.22	20	
1,2-Dichloropropane	19.21	1.0	20	0	96.1	78 - 122	19.37	0.843	20	
1,3,5-Trimethylbenzene	20.82	1.0	20	0	104	75 - 124	21.09	1.28	20	
1,3-Dichlorobenzene	19.85	1.0	20	0	99.3	80 - 119	20.09	1.17	20	
1,3-Dichloropropane	19.84	1.0	20	0	99.2	80 - 119	20.01	0.838	20	
1,4-Dichlorobenzene	19.38	1.0	20	0	96.9	79 - 118	19.95	2.92	20	
2,2-Dichloropropane	17.93	1.0	20	0	89.6	60 - 139	18.73	4.38	20	
2-Butanone	23.77	2.0	40	0	59.4	56 - 143	23.81	0.164	20	
2-Chlorotoluene	19.2	1.0	20	0	96.0	79 - 122	20.36	5.91	20	
2-Hexanone	27.85	2.0	40	0	69.6	57 - 139	28.12	0.961	20	
4-Chlorotoluene	20.09	1.0	20	0	100	78 - 122	20.2	0.521	20	
4-Isopropyltoluene	21.3	1.0	20	0	106	77 - 127	21.86	2.64	20	
4-Methyl-2-pentanone	27.75	2.0	40	0	69.4	67 - 130	27.78	0.097	20	
Acetone	26.08	2.0	40	0	65.2	39 - 160	23.63	9.87	20	
Benzene	18.4	1.0	20	0	92.0	79 - 120	18.3	0.55	20	
Bromobenzene	19.31	1.0	20	0	96.6	80 - 120	19.74	2.21	20	
Bromochloromethane	17.07	1.0	20	0	85.3	78 - 123	17.4	1.95	20	
Bromodichloromethane	18.04	1.0	20	0	90.2	79 - 125	17.55	2.74	20	
Bromoform	18.98	1.0	20	0	94.9	66 - 130	18.81	0.91	20	
Bromomethane	14.73	1.0	20	0	73.7	53 - 141	13.86	6.06	20	

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19060123-01MSD** Units: **UG/L** Analysis Date: **06-Jun-2019 17:46**
Client ID: Run ID: **VOA6_339998** SeqNo: **5111006** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	26.56	2.0	40	0	66.4	64 - 133	24.97	6.14	20	
Carbon tetrachloride	18.54	1.0	20	0	92.7	72 - 136	18.6	0.321	20	
Chlorobenzene	19.02	1.0	20	0	95.1	82 - 118	19.12	0.541	20	
Chloroethane	15.64	1.0	20	0	78.2	60 - 138	18.53	16.9	20	
Chloroform	17.45	1.0	20	0	87.2	79 - 124	17.48	0.195	20	
Chloromethane	14.56	1.0	20	0	72.8	50 - 139	15.15	4.02	20	
cis-1,2-Dichloroethene	17.39	1.0	20	0	87.0	78 - 123	17.54	0.879	20	
cis-1,3-Dichloropropene	18.41	1.0	20	0	92.0	75 - 124	18.2	1.14	20	
Dibromochloromethane	19.11	1.0	20	0	95.6	74 - 126	19.19	0.387	20	
Dibromomethane	18.02	1.0	20	0	90.1	79 - 123	18.09	0.394	20	
Dichlorodifluoromethane	16.45	1.0	20	0	82.2	32 - 152	16.95	3.02	20	
Ethylbenzene	19.33	1.0	20	0	96.6	79 - 121	19.96	3.23	20	
Hexachlorobutadiene	22.88	1.0	20	0	114	66 - 134	22.14	3.31	20	
Isopropylbenzene	21.25	1.0	20	0	106	72 - 131	21.05	0.955	20	
m,p-Xylene	38.53	2.0	40	0	96.3	80 - 121	39.46	2.39	20	
Methylene chloride	17.48	2.0	20	0	87.4	74 - 124	17.85	2.11	20	
Naphthalene	20.11	1.0	20	0	101	61 - 128	19.51	3.06	20	
n-Butylbenzene	22.68	1.0	20	0	113	75 - 128	21.99	3.11	20	
n-Propylbenzene	20.87	1.0	20	0	104	76 - 126	21.93	4.97	20	
o-Xylene	20.2	1.0	20	0	101	78 - 122	19.69	2.56	20	
sec-Butylbenzene	21.08	1.0	20	0	105	77 - 126	21.68	2.77	20	
Styrene	20.2	1.0	20	0	101	78 - 123	19.76	2.22	20	
tert-Butylbenzene	21.09	1.0	20	0	105	78 - 124	21.36	1.3	20	
Tetrachloroethene	20.81	1.0	20	0	104	74 - 129	21.49	3.2	20	
Toluene	19.76	1.0	20	0	98.8	80 - 121	19.87	0.565	20	
trans-1,2-Dichloroethene	17.51	1.0	20	0	87.5	75 - 124	17.94	2.45	20	
trans-1,3-Dichloropropene	18.41	1.0	20	0	92.1	73 - 127	17.84	3.14	20	
Trichloroethene	18.87	1.0	20	0	94.3	79 - 123	18.93	0.321	20	
Trichlorofluoromethane	18.14	1.0	20	0	90.7	65 - 141	18.45	1.7	20	
Vinyl chloride	15.81	1.0	20	0	79.0	58 - 137	16.29	3.03	20	
Surr: 1,2-Dichloroethane-d4	*46.22*	*1.0*	*50*	*0*	*92.4*	*81 - 118*	*46.56*	*0.735*	*20*	
Surr: 4-Bromofluorobenzene	*53.76*	*1.0*	*50*	*0*	*108*	*85 - 114*	*53.01*	*1.41*	*20*	
Surr: Dibromofluoromethane	*48.02*	*1.0*	*50*	*0*	*96.0*	*80 - 119*	*48.12*	*0.217*	*20*	
Surr: Toluene-d8	*52.32*	*1.0*	*50*	*0*	*105*	*89 - 112*	*52.79*	*0.907*	*20*	

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339998 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS19060185-01	HS19060185-02	HS19060185-03	HS19060185-04
HS19060185-05	HS19060185-06	HS19060185-07	HS19060185-08

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339937 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW2-060519** Units: **mg/L** Analysis Date: **06-Jun-2019 00:36**
Client ID: Run ID: **ICS-Integrion_339937** SeqNo: **5109571** 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
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW2-060519** Units: **mg/L** Analysis Date: **06-Jun-2019 00:53**
Client ID: Run ID: **ICS-Integrion_339937** SeqNo: **5109572** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.44	0.500	20	0	97.2	80 - 120				
Nitrogen, Nitrate (As N)	3.853	0.100	4	0	96.3	80 - 120				
Sulfate	19.55	0.500	20	0	97.8	80 - 120				

LCSD Sample ID: **WLCSDW2-060519** Units: **mg/L** Analysis Date: **06-Jun-2019 01:11**
Client ID: Run ID: **ICS-Integrion_339937** SeqNo: **5109573** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.44	0.500	20	0	97.2	80 - 120	19.44	0	20	
Nitrogen, Nitrate (As N)	3.861	0.100	4	0	96.5	80 - 120	3.853	0.192	20	
Sulfate	19.68	0.500	20	0	98.4	80 - 120	19.55	0.666	20	

MS Sample ID: **HS19060180-01MS** Units: **mg/L** Analysis Date: **06-Jun-2019 05:35**
Client ID: Run ID: **ICS-Integrion_339937** SeqNo: **5109588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	31.43	0.500	10	22.01	94.2	80 - 120				
Nitrogen, Nitrate (As N)	4.26	0.100	2	2.354	95.3	80 - 120				
Sulfate	305.5	0.500	10	299	65.2	80 - 120				SEO

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060185

QC BATCH REPORT

Batch ID: R339937 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS19060180-01MSD** Units: **mg/L** Analysis Date: **06-Jun-2019 05:53**
Client ID: Run ID: **ICS-Integrion_339937** SeqNo: **5109589** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	31.19	0.500	10	22.01	91.8	80 - 120	31.43	0.767	20	
Nitrogen, Nitrate (As N)	4.231	0.100	2	2.354	93.8	80 - 120	4.26	0.681	20	
Sulfate	303.5	0.500	10	299	45.7	80 - 120	305.5	0.639	20	SEO

The following samples were analyzed in this batch: HS19060185-01 HS19060185-02 HS19060185-03 HS19060185-04 HS19060185-05 HS19060185-06

ALS Houston, US Date: 27-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19060185**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Illinois	004438	29-Jun-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Louisiana	03087	30-Jun-2019
Maryland	343, 2018-2019	30-Jun-2019
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 27-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060185

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19060185-01	03WW01_060419	Login	05/06/2019 12:47:07	NDR	WET267
HS19060185-01	03WW01_060419	Login	05/06/2019 12:47:07	NDR	VOA102
HS19060185-01	03WW01_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-01	03WW01_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-02	34AWW08_060419	Login	05/06/2019 12:47:07	NDR	WET267
HS19060185-02	34AWW08_060419	Login	05/06/2019 12:47:07	NDR	VOA102
HS19060185-02	34AWW08_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-02	34AWW08_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-03	35AWW20_060419	Login	05/06/2019 12:47:07	NDR	WET267
HS19060185-03	35AWW20_060419	Login	05/06/2019 12:47:07	NDR	VOA102
HS19060185-03	35AWW20_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-03	35AWW20_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-04	35AWW10_060419	Login	05/06/2019 12:47:07	NDR	WET267
HS19060185-04	35AWW10_060419	Login	05/06/2019 12:47:07	NDR	VOA102
HS19060185-04	35AWW10_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-04	35AWW10_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-05	35AWW10_060419_a	Login	05/06/2019 12:47:07	NDR	WET267
HS19060185-05	35AWW10_060419_a	Login	05/06/2019 12:47:07	NDR	VOA102
HS19060185-05	35AWW10_060419_a	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-05	35AWW10_060419_a	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-06	35AWW06_060419	Login	05/06/2019 12:47:07	NDR	MET084
HS19060185-06	35AWW06_060419	Login	05/06/2019 12:47:07	NDR	WET267
HS19060185-06	35AWW06_060419	Login	05/06/2019 12:47:07	NDR	VOA102
HS19060185-06	35AWW06_060419	Login	05/06/2019 12:47:07	NDR	Sub
HS19060185-06	35AWW06_060419	Login	05/06/2019 12:47:07	NDR	Sub

ALS Houston, US Date: 27-Jun-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19060185
Date/Time Received: **05-Jun-2019 09:00**
Received by: **RPG**

Checklist completed by: *Nilesh D. Ranchod* eSignature 5-Jun-2019 Date
Reviewed by: *RJ Modashia* eSignature 5-Jun-2019 Date

Matrices: **Groundwater/Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	2.4c U/C	IR25
Cooler(s)/Kit(s):	44877	
Date/Time sample(s) sent to storage:	6/5/19 14:00	

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:	Nilesh D. Ranchod		

Login Notes:
SX # 03WW0_060419 & 35AWW08_060419
Metal pH>2(7).Preserved with 0.5mil HNO3
on 06/05/19 @ 12:35pm
Lot #309117005 By Nilesh
After preserved pH (1)
SX # 35AWW20_060419
Metal pH>2(4).Preserved with 0.5mil HNO3
on 06/05/19 @ 12:35pm
Lot #309117005 By Nilesh

Client Contacted: Date Contacted: Person Contacted:
Contacted By: Regarding:
Comments:
Corrective Action:

bhate

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 / Site 58

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	MEE	TOC	Carbon Dioxide	Anions	ARSENIC					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
03WW01_060419		04 JUN 2019	0745	-	N		WG	11	X	X	X	X	X	X								
35AWW08_060419		04 JUN 2019	0820	-	N		WG	11	X	X	X	X	X	X								
35AWW20_060419		04 JUN 2019	0925	-	N		WG	11	X	X	X	X	X	X								
35AWW10_060419		04 JUN 2019	1030		N		WG	10	X	X	X	X	X									
35AWW10_060419_a		04 JUN 2019	1030		FD		WG	10	X	X	X	X	X									
35AWW06_060419		04 JUN 2019	1135	-	N		WG	10	X	X	X	X	X									
35AWW18_060419		04 JUN 2019	1220	-	N		WG	3	X													
TRip BLANK		04 JUN 2019		-	TB		W	2	X													
				-																		
				-																		
				-																		

COMMENTS: ____

Bhate Environmental Associates, Inc.
LHAAP/ Site 58
HS19060185

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/4/19	1400	1. R Ciga	6/5/19	09:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: FEDEX Shipped 4509 7534 2910 No.:

Method of Shipment: Priority overnight

Fed Ex Airbill Number:

A23 HS Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time: 6/5/19 09:00.

cooler temp. 2.4C
IR #25
CFD

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:
Date:
Time:
Name:
Company:
ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel: +1 281 530 5656
Fax: +1 281 530 5887
Date:
Name:
Company:
FedEx
4809 7834 2910
WED - 05 JUN 10:30A
PRIORITY OVERNIGHT
77099

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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F 1 360 636 1068
alsglo al co

June 19, 2019

Anal tical Report for Ser ice Re uest o K1905258

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

RE S

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 06, 2019
For your reference, these analyses have been assigned our service request number **K**

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

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

Respectfully submitted,

ALS Group SA Corp d a ALS En iron ental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS RIGHT PARTNER

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ALS Group USA, Corp
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Kelso, WA 98626
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alsglo al co

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Acronyms

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

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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

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

Case Narrative

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

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

ALS Environmental

Client: ALS Environmental - US
Project: HS19060185
Sample Matrix: Water

Service Request: K1905258
Date Received: 06/06/2019

CASE NARRATIVE

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

Sample Receipt:

Six water samples were received for analysis at ALS Environmental on 06/06/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 06/19/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

K1905258

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

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11526**

SUBCONTRACT TO:

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

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

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

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS19060185
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19060185-01**	**03WW01_060419**	**Groundwater**	**04 Jun 2019 07:45**
	TOC Analysis for DOD Level IV/Excel EDD			13 Jun 2019
2.	**HS19060185-02**	**34AWW08_060419**	**Groundwater**	**04 Jun 2019 08:20**
	TOC Analysis for DOD Level IV/Excel EDD			13 Jun 2019
3.	**HS19060185-03**	**35AWW20_060419**	**Groundwater**	**04 Jun 2019 09:25**
	TOC Analysis for DOD Level IV/Excel EDD			13 Jun 2019
4.	**HS19060185-04**	**35AWW10_060419**	**Groundwater**	**04 Jun 2019 10:30**
	TOC Analysis for DOD Level IV/Excel EDD			13 Jun 2019
5.	**HS19060185-05**	**35AWW10_060419_a**	**Groundwater**	**04 Jun 2019 10:30**
	TOC Analysis for DOD Level IV/Excel EDD			13 Jun 2019
6.	**HS19060185-06**	**35AWW06_060419**	**Groundwater**	**04 Jun 2019 11:35**
	TOC Analysis for DOD Level IV/Excel EDD			13 Jun 2019

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

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11526**

Relinquished By: _____ Date/Time: 6/5/19 1800.

Received By: KMonroe ALS KLSO Date/Time: 6/6/19 0940

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

00949529

PC KL

Cooler Receipt and Preservation Form

Client ALS - Houston Service Request *K19* 05258

Received: 6/6/19 Opened: 6/6/19 By: AM Unloaded: 6/6/19 By: KL

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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.2	0.2	2.4	2.4	0	381	11526	480978347636	

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1905258
Project:	HS19060185	**Date Collected:**	06/4/19
Sample Matrix:	Water	**Date Received:**	06/6/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
03WW01_060419	K1905258-001	**66.1**	5.0	2.0	0.7	10	06/11/19 00:37	
34AWW08_060419	K1905258-002	**306**	5.0	2.0	0.7	10	06/11/19 01:33	
35AWW20_060419	K1905258-003	**12.9**	0.50	0.20	0.07	1	06/11/19 02:30	
35AWW10_060419	K1905258-004	**4.69**	0.50	0.20	0.07	1	06/11/19 02:58	
35AWW10_060419_a	K1905258-005	**4.11**	0.50	0.20	0.07	1	06/11/19 03:26	
35AWW06_060419	K1905258-006	**331**	50	20	7	100	06/15/19 01:13	
Method Blank	K1905258-MB1	ND U	0.50	0.20	0.07	1	06/11/19 04:24	
Method Blank	K1905258-MB2	ND U	0.50	0.20	0.07	1	06/14/19 18:41	

ALS Group USA, Corp.
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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905258
Project	HS19060185	**Date Collected:**	06/04/19
Sample Matrix:	Water	**Date Received:**	06/06/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
03WW01_060419	K1905258-001DUP	5.0	2.0	0.7	66.1	65.2	65.6	1	10	06/11/19
34AWW08_060419	K1905258-002DUP	5.0	2.0	0.7	306	302	304	1	10	06/11/19
35AWW20_060419	K1905258-003DUP	0.50	0.20	0.07	12.9	13.0	12.9	<1	10	06/11/19
35AWW10_060419	K1905258-004DUP	0.50	0.20	0.07	4.69	4.50	4.60	4	10	06/11/19
35AWW10_060419_a	K1905258-005DUP	0.50	0.20	0.07	4.11	4.16	4.13	1	10	06/11/19
35AWW06_060419	K1905258-006DUP	50	20	7	331	333	332	<1	10	06/15/19

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

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

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

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905258
Project:	HS19060185	**Date Analyzed:**	06/11/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	638810

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1905258-LCS1	25.4	25.0	101	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1905258
Project:	HS19060185	**Date Analyzed:**	06/14/19
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	639522

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1905258-LCS2	25.4	25.0	102	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1905258
Project: HS19060185

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

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

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	638810	KQ1908062-01	06/10/19 14:47	25.0	25.2	101	90-110
CCV2	638810	KQ1908062-02	06/10/19 22:43	25.0	27.5	110	90-110
CCV3	638810	KQ1908062-03	06/11/19 03:54	25.0	24.9	100	90-110
CCV4	638810	KQ1908062-04	06/11/19 08:37	25.0	24.9	99	90-110
CCV5	638810	KQ1908062-05	06/11/19 13:35	25.0	24.6	98	90-110
CCV6	639522	KQ1908379-01	06/14/19 18:11	25.0	24.9	100	90-110
CCV7	639522	KQ1908379-02	06/15/19 01:13	25.0	24.6	98	90-110
CCV8	639522	KQ1908379-03	06/15/19 06:51	25.0	25.5	102	90-110
CCV9	639522	KQ1908379-04	06/15/19 12:03	25.0	25.0	100	90-110
CCV10	639522	KQ1908379-05	06/15/19 17:01	25.0	24.9	100	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1905258
Project: HS19060185

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

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

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	638810	KQ1908062-06	06/10/19 15:02	0.50	0.20	0.07	ND	U
CCB2	638810	KQ1908062-07	06/10/19 22:58	0.50	0.20	0.07	0.19	J
CCB3	638810	KQ1908062-08	06/11/19 04:09	0.50	0.20	0.07	ND	U
CCB4	638810	KQ1908062-09	06/11/19 08:52	0.50	0.20	0.07	ND	U
CCB5	638810	KQ1908062-10	06/11/19 13:50	0.50	0.20	0.07	ND	U
CCB6	639522	KQ1908379-06	06/14/19 18:26	0.50	0.20	0.07	ND	U
CCB7	639522	KQ1908379-07	06/15/19 01:56	0.50	0.20	0.07	ND	U
CCB8	639522	KQ1908379-08	06/15/19 07:06	0.50	0.20	0.07	ND	U
CCB9	639522	KQ1908379-09	06/15/19 12:18	0.50	0.20	0.07	ND	U
CCB10	639522	KQ1908379-10	06/15/19 17:15	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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5361, 5369
III I

Work Request # Original ( ) KP05246, 5084, 5126, 5198, 5258, 5259, 5248, 5339, 5126, 5262, 5277, 5278, 5279, 5305, 5360

Tier: IV II III IV IV IV I II III IV IV III III II IV

Date Analyzed: 6/10/19

Analyst: JBCD

Analysis: TOC

TOC: 638808, 638810, 638815, 638817

Run #

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: KP05258-6, 5198-3 Sent for RA (Needs dilution)
KP05259-1 sent for RA due to high RSD% from sample carry over.
KP05126-2, 5198-4, 5277-2, 5279-1 Report a high % RSD. However, these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 06/14/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638808 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905246-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 17:23:00	N	IV
K1905246-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 18:18:00	N	IV
K1905246-004	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 19:14:00	N	IV
K1905246-005	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 21:20:00	N	IV
KQ1908058-01	Carbon, Total Organic	CCV		Ground Water	25.15 mg/L	10 mL	25.2 mg/L	1			101		6/10/19 14:47:00	N	IV
KQ1908058-02	Carbon, Total Organic	CCV		Ground Water	27.51 mg/L	10 mL	27.5 mg/L	1			110		6/10/19 22:43:00	N	IV
KQ1908058-03	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:02:00	N	IV
KQ1908058-04	Carbon, Total Organic	CCB		Ground Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			6/10/19 22:58:00	N	IV
KQ1908058-05	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-06	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-07	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-08	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:16:00	N	IV
KQ1908058-09	Carbon, Total Organic	LCS		Ground Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		6/10/19 16:12:00	N	IV
KQ1908058-10	Carbon, Total Organic	LCS		Ground Water	24.74 mg/L	10 mL	24.7 mg/L	1	0.07	0.50	99		6/10/19 16:12:00	N	IV
KQ1908058-11	Carbon, Total Organic	LCS		Ground Water	25.10 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/10/19 16:12:00	N	IV
KQ1908058-12	Carbon, Total Organic	LCS		Ground Water	24.96 mg/L	10 mL	25.0 mg/L	1	0.07	0.50	100		6/10/19 16:12:00	N	IV
KQ1908058-13	Carbon, Total Organic	DUP	K1905246-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 17:23:00	N	IV
KQ1908058-14	Carbon, Total Organic	TRP	K1905246-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 17:23:00	N	IV
KQ1908058-15	Carbon, Total Organic	QUAD	K1905246-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 17:23:00	N	IV
KQ1908058-16	Carbon, Total Organic	DUP	K1905246-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 18:18:00	N	IV
KQ1908058-17	Carbon, Total Organic	TRP	K1905246-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 18:18:00	N	IV
KQ1908058-18	Carbon, Total Organic	QUAD	K1905246-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 18:18:00	N	IV
KQ1908058-19	Carbon, Total Organic	DUP	K1905246-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 19:14:00	N	IV

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

06/14/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638808 **Method/Testcode:** 9060/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908058-20	Carbon, Total Organic	TRP	K1905246-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 19:14:00	N	IV
KQ1908058-21	Carbon, Total Organic	QUAD	K1905246-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 19:14:00	N	IV
KQ1908058-22	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.43 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/10/19 20:10:00	N	IV
KQ1908058-23	Carbon, Total Organic	DUP	K1905246-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 21:20:00	N	IV
KQ1908058-24	Carbon, Total Organic	TRP	K1905246-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 21:20:00	N	IV
KQ1908058-25	Carbon, Total Organic	QUAD	K1905246-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/10/19 21:20:00	N	IV
KQ1908058-26	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.58 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	102		6/10/19 20:10:00	N	IV
KQ1908058-27	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.72 mg/L	10 mL	25.7 mg/L	1	0.07	0.50	103		6/10/19 20:10:00	N	IV
KQ1908058-28	Carbon, Total Organic	MS	K1905246-004	Ground Water	25.75 mg/L	10 mL	25.8 mg/L	1	0.07	0.50	103		6/10/19 20:10:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638810 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905084-004	Carbon, Total Organic	N/A		Water	7.86 mg/L	10 mL	786 mg/L	100	7	50			6/11/19 06:17:00	N	II
K1905084-005	Carbon, Total Organic	N/A		Water	6.52 mg/L	10 mL	652 mg/L	100	7	50			6/11/19 06:45:00	N	II
K1905126-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 07:41:00	N	III
K1905126-002	Carbon, Total Organic	N/A		Ground Water	0.13 mg/L	10 mL	0.13 mg/L J	1	0.07	0.50			6/11/19 08:09:00	Y	III
K1905126-003	Carbon, Total Organic	N/A		Ground Water	0.27 mg/L	10 mL	0.27 mg/L J	1	0.07	0.50			6/11/19 09:36:00	N	III
K1905126-004	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 10:04:00	N	III
K1905198-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	2.0 mg/L U	4	0.3	2.0			6/10/19 22:15:00	N	IV
K1905198-004	Carbon, Total Organic	N/A		Ground Water	1.55 mg/L	10 mL	1.55 mg/L	1	0.07	0.50			6/10/19 23:13:00	N	IV
K1905198-005	Carbon, Total Organic	N/A		Ground Water	47.30 mg/L	10 mL	94.6 mg/L	2	0.2	1.0			6/10/19 23:41:00	N	IV
K1905258-001	Carbon, Total Organic	N/A		Water	6.61 mg/L	10 mL	66.1 mg/L	10	0.7	5.0			6/11/19 00:37:00	N	IV
K1905258-002	Carbon, Total Organic	N/A		Water	30.64 mg/L	10 mL	306 mg/L	10	0.7	5.0			6/11/19 01:33:00	N	IV
K1905258-003	Carbon, Total Organic	N/A		Water	12.86 mg/L	10 mL	12.9 mg/L	1	0.07	0.50			6/11/19 02:30:00	N	IV
K1905258-004	Carbon, Total Organic	N/A		Water	4.69 mg/L	10 mL	4.69 mg/L	1	0.07	0.50			6/11/19 02:58:00	N	IV
K1905258-005	Carbon, Total Organic	N/A		Water	4.11 mg/L	10 mL	4.11 mg/L	1	0.07	0.50			6/11/19 03:26:00	N	IV
K1905258-006	Carbon, Total Organic	N/A		Water	63.63 mg/L	10 mL	318 mg/L	5	0.4	2.5			6/11/19 04:53:00	N	IV
K1905259-001	Carbon, Total Organic	N/A		Water	2.92 mg/L	10 mL	2.92 mg/L	1	0.07	0.50			6/11/19 05:21:00	N	IV
K1905298-001	Carbon, Total Organic	N/A		Drinking Water	0.12 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 07:13:00	N	I
K1905338-001	Carbon, Total Organic	N/A		Water	1.66 mg/L	10 mL	1.66 mg/L	1	0.07	0.50			6/11/19 05:49:00	N	II
KQ1908062-01	Carbon, Total Organic	CCV		Water	25.15 mg/L	10 mL	25.2 mg/L	1			101		6/10/19 14:47:00	N	IV
KQ1908062-02	Carbon, Total Organic	CCV		Water	27.51 mg/L	10 mL	27.5 mg/L	1			110		6/10/19 22:43:00	N	IV
KQ1908062-03	Carbon, Total Organic	CCV		Water	24.91 mg/L	10 mL	24.9 mg/L	1			100		6/11/19 03:54:00	N	IV
KQ1908062-04	Carbon, Total Organic	CCV		Water	24.86 mg/L	10 mL	24.9 mg/L	1			100		6/11/19 08:37:00	N	IV
KQ1908062-05	Carbon, Total Organic	CCV		Water	24.61 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 13:35:00	N	IV
KQ1908062-06	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/10/19 15:02:00	N	IV
KQ1908062-07	Carbon, Total Organic	CCB		Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			6/10/19 22:58:00	N	IV
KQ1908062-08	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 04:09:00	N	IV
KQ1908062-09	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 08:52:00	N	IV
KQ1908062-10	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:50:00	N	IV
KQ1908062-11	Carbon, Total Organic	MB		Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 04:24:00	N	IV
KQ1908062-12	Carbon, Total Organic	LCS		Water	25.36 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	101		6/11/19 04:38:00	N	IV
KQ1908062-13	Carbon, Total Organic	DUP	K1905258-001	Water	6.52 mg/L	10 mL	65.2 mg/L	10	0.7	5.0		1	6/11/19 00:37:00	N	IV
KQ1908062-14	Carbon, Total Organic	DUP	K1905258-002	Water	30.25 mg/L	10 mL	302 mg/L	10	0.7	5.0		1	6/11/19 01:33:00	N	IV

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

Printed 6/14/19 11:11

Results Summary

06/14/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638810 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908062-15	Carbon, Total Organic	DUP	K1905258-003	Water	12.98 mg/L	10 mL	13.0 mg/L	1	0.07	0.50		<1	6/11/19 02:30:00	N	IV
KQ1908062-16	Carbon, Total Organic	DUP	K1905258-004	Water	4.50 mg/L	10 mL	4.50 mg/L	1	0.07	0.50		4	6/11/19 02:58:00	N	IV
KQ1908062-17	Carbon, Total Organic	DUP	K1905258-005	Water	4.16 mg/L	10 mL	4.16 mg/L	1	0.07	0.50		1	6/11/19 03:26:00	N	IV
KQ1908062-18	Carbon, Total Organic	DUP	K1905258-006	Water	63.10 mg/L	10 mL	316 mg/L	5	0.4	2.5		<1	6/11/19 04:53:00	N	IV
KQ1908062-19	Carbon, Total Organic	DUP	K1905259-001	Water	2.60 mg/L	10 mL	2.60 mg/L	1	0.07	0.50		12*	6/11/19 05:21:00	N	IV
KQ1908062-20	Carbon, Total Organic	DUP	K1905338-001	Water	1.64 mg/L	10 mL	1.64 mg/L	1	0.07	0.50		1	6/11/19 05:49:00	N	II
KQ1908062-21	Carbon, Total Organic	DUP	K1905084-004	Water	7.95 mg/L	10 mL	795 mg/L	100	7	50		1	6/11/19 06:17:00	N	II
KQ1908062-22	Carbon, Total Organic	DUP	K1905084-005	Water	6.46 mg/L	10 mL	646 mg/L	100	7	50		<1	6/11/19 06:45:00	N	II
KQ1908062-23	Carbon, Total Organic	DUP	K1905298-001	Drinking Water	0.05 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 07:13:00	N	I
KQ1908062-24	Carbon, Total Organic	DUP	K1905126-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 07:41:00	N	III
KQ1908062-25	Carbon, Total Organic	DUP	K1905126-002	Ground Water	0.18 mg/L	10 mL	0.18 mg/L J	1	0.07	0.50		33*	6/11/19 08:09:00	N	III
KQ1908062-26	Carbon, Total Organic	DUP	K1905126-003	Ground Water	0.25 mg/L	10 mL	0.25 mg/L J	1	0.07	0.50		7	6/11/19 09:36:00	N	III
KQ1908062-27	Carbon, Total Organic	DUP	K1905126-004	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 10:04:00	N	III
KQ1908062-28	Carbon, Total Organic	MS	K1905126-002	Ground Water	25.89 mg/L	10 mL	25.9 mg/L	1	0.07	0.50	103		6/11/19 09:07:00	N	III
KQ1908062-29	Carbon, Total Organic	DUP	K1905198-003	Ground Water	-0.01 mg/L	10 mL	2.0 mg/L U	4	0.3	2.0		NC	6/10/19 22:15:00	N	IV
KQ1908062-30	Carbon, Total Organic	DUP	K1905198-004	Ground Water	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		19*	6/10/19 23:13:00	N	IV
KQ1908062-31	Carbon, Total Organic	DUP	K1905198-005	Ground Water	47.09 mg/L	10 mL	94.2 mg/L	2	0.2	1.0		<1	6/10/19 23:41:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638815 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905126-005	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 10:32:00	N	III
K1905126-006	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 11:00:00	N	III
K1905126-007	Carbon, Total Organic	N/A		Ground Water	0.07 mg/L	10 mL	0.07 mg/L J	1	0.07	0.50			6/11/19 11:28:00	N	III
K1905126-008	Carbon, Total Organic	N/A		Ground Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50			6/11/19 11:56:00	N	III
K1905126-009	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 12:24:00	N	III
K1905262-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 12:53:00	N	IV
K1905262-002	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 14:19:00	N	IV
K1905277-001	Carbon, Total Organic	N/A		Ground Water	0.33 mg/L	10 mL	0.33 mg/L J	1	0.07	0.50			6/11/19 14:48:00	Y	IV
K1905277-002	Carbon, Total Organic	N/A		Ground Water	0.36 mg/L	10 mL	0.36 mg/L J	1	0.07	0.50			6/11/19 15:45:00	N	IV
K1905277-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 16:13:00	N	IV
KQ1908063-01	Carbon, Total Organic	MS	K1905277-001	Ground Water	25.85 mg/L	10 mL	25.9 mg/L	1	0.07	0.50	102		6/11/19 15:16:00	N	IV
KQ1908063-02	Carbon, Total Organic	DUP	K1905277-001	Ground Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50		9	6/11/19 14:48:00	N	IV
KQ1908063-03	Carbon, Total Organic	CCV		Ground Water	24.86 mg/L	10 mL	24.9 mg/L	1			100		6/11/19 08:37:00	N	III
KQ1908063-04	Carbon, Total Organic	CCV		Ground Water	24.61 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 13:21:00	N	III
KQ1908063-05	Carbon, Total Organic	CCV		Ground Water	24.69 mg/L	10 mL	24.7 mg/L	1			99		6/11/19 17:24:00	N	III
KQ1908063-06	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 08:52:00	N	III
KQ1908063-07	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:35:00	N	III
KQ1908063-08	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 17:39:00	N	III
KQ1908063-09	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:50:00	N	III
KQ1908063-10	Carbon, Total Organic	LCS		Ground Water	25.06 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/11/19 14:05:00	N	III
KQ1908063-11	Carbon, Total Organic	DUP	K1905126-005	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 10:32:00	N	III
KQ1908063-12	Carbon, Total Organic	DUP	K1905126-006	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 11:00:00	N	III
KQ1908063-13	Carbon, Total Organic	DUP	K1905126-007	Ground Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 11:28:00	N	III

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06/14/19

Printed 6/14/19 11:29

Results Summary

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638815 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908063-14	Carbon, Total Organic	DUP	K1905126-008	Ground Water	0.33 mg/L	10 mL	0.33 mg/L J	1	0.07	0.50		8	6/11/19 11:56:00	N	III
KQ1908063-15	Carbon, Total Organic	DUP	K1905126-009	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 12:24:00	N	III
KQ1908063-16	Carbon, Total Organic	DUP	K1905262-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 12:53:00	N	IV
KQ1908063-17	Carbon, Total Organic	DUP	K1905262-002	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 14:19:00	N	IV
KQ1908063-18	Carbon, Total Organic	DUP	K1905277-002	Ground Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50		12*	6/11/19 15:45:00	N	IV
KQ1908063-19	Carbon, Total Organic	DUP	K1905277-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 16:13:00	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638817 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905278-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 16:41:00	Y	III
K1905278-002	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 17:54:00	N	III
K1905278-003	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 18:22:00	N	III
K1905279-001	Carbon, Total Organic	N/A		Ground Water	0.49 mg/L	10 mL	0.49 mg/L J	1	0.07	0.50			6/11/19 18:50:00	N	III
K1905305-001	Carbon, Total Organic	N/A		Water	5.67 mg/L	10 mL	5.67 mg/L	1	0.07	0.50			6/11/19 19:18:00	N	II
K1905360-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 19:46:00	N	IV
K1905361-001	Carbon, Total Organic	N/A		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 20:14:00	N	III
K1905369-001	Carbon, Total Organic	N/A		Water	5.21 mg/L	10 mL	10.4 mg/L	2	0.2	1.0			6/11/19 20:42:00	N	I
K1905369-002	Carbon, Total Organic	N/A		Water	13.49 mg/L	10 mL	13.5 mg/L	1	0.07	0.50			6/11/19 21:10:00	N	I
K1905369-003	Carbon, Total Organic	N/A		Water	1.77 mg/L	10 mL	1.77 mg/L	1	0.07	0.50			6/11/19 21:38:00	N	I
K1905369-004	Carbon, Total Organic	N/A		Water	9.26 mg/L	10 mL	18.5 mg/L	2	0.2	1.0			6/11/19 22:06:00	N	I
K1905369-005	Carbon, Total Organic	N/A		Water	10.02 mg/L	10 mL	10.0 mg/L	1	0.07	0.50			6/11/19 23:33:00	N	I
K1905369-006	Carbon, Total Organic	N/A		Water	13.53 mg/L	10 mL	27.1 mg/L	2	0.2	1.0			6/12/19 00:01:00	N	I
K1905369-007	Carbon, Total Organic	N/A		Water	27.08 mg/L	10 mL	54.2 mg/L	2	0.2	1.0			6/12/19 00:29:00	N	I
K1905369-008	Carbon, Total Organic	N/A		Water	9.58 mg/L	10 mL	19.2 mg/L	2	0.2	1.0			6/12/19 00:58:00	N	I
K1905369-009	Carbon, Total Organic	N/A		Water	27.74 mg/L	10 mL	27.7 mg/L	1	0.07	0.50			6/12/19 01:26:00	N	I
KQ1908064-01	Carbon, Total Organic	CCV		Ground Water	24.61 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 13:21:00	N	III
KQ1908064-02	Carbon, Total Organic	CCV		Ground Water	24.69 mg/L	10 mL	24.7 mg/L	1			99		6/11/19 17:24:00	N	III
KQ1908064-03	Carbon, Total Organic	CCV		Ground Water	24.59 mg/L	10 mL	24.6 mg/L	1			98		6/11/19 22:34:00	N	III
KQ1908064-04	Carbon, Total Organic	CCV		Ground Water	25.23 mg/L	10 mL	25.2 mg/L	1			101		6/12/19 01:54:00	N	III
KQ1908064-05	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 13:35:00	N	III
KQ1908064-06	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 17:39:00	N	III
KQ1908064-07	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 22:49:00	N	III
KQ1908064-08	Carbon, Total Organic	CCB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/12/19 02:08:00	N	III
KQ1908064-09	Carbon, Total Organic	MB		Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/11/19 23:04:00	N	III
KQ1908064-10	Carbon, Total Organic	LCS		Ground Water	25.08 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/11/19 23:18:00	N	III
KQ1908064-11	Carbon, Total Organic	DUP	K1905278-001	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 16:41:00	N	III

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 638817 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908064-12	Carbon, Total Organic	MS	K1905278-001	Ground Water	25.08 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/11/19 17:10:00	N	III
KQ1908064-13	Carbon, Total Organic	DUP	K1905278-002	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 17:54:00	N	III
KQ1908064-14	Carbon, Total Organic	DUP	K1905278-003	Ground Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 18:22:00	N	III
KQ1908064-15	Carbon, Total Organic	DUP	K1905279-001	Ground Water	0.55 mg/L	10 mL	0.55 mg/L	1	0.07	0.50		11*	6/11/19 18:50:00	N	III
KQ1908064-16	Carbon, Total Organic	DUP	K1905305-001	Water	5.61 mg/L	10 mL	5.61 mg/L	1	0.07	0.50		1	6/11/19 19:18:00	N	II
KQ1908064-17	Carbon, Total Organic	DUP	K1905360-001	Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 19:46:00	N	III
KQ1908064-18	Carbon, Total Organic	DUP	K1905361-001	Water	-0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/11/19 20:14:00	N	III
KQ1908064-19	Carbon, Total Organic	DUP	K1905369-001	Water	5.20 mg/L	10 mL	10.4 mg/L	2	0.2	1.0		<1	6/11/19 20:42:00	N	I
KQ1908064-20	Carbon, Total Organic	DUP	K1905369-002	Water	13.23 mg/L	10 mL	13.2 mg/L	1	0.07	0.50		2	6/11/19 21:10:00	N	I
KQ1908064-21	Carbon, Total Organic	DUP	K1905369-003	Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50		1	6/11/19 21:38:00	N	I
KQ1908064-22	Carbon, Total Organic	DUP	K1905369-004	Water	9.13 mg/L	10 mL	18.3 mg/L	2	0.2	1.0		1	6/11/19 22:06:00	N	I
KQ1908064-23	Carbon, Total Organic	DUP	K1905369-005	Water	9.62 mg/L	10 mL	9.62 mg/L	1	0.07	0.50		4	6/11/19 23:33:00	N	I
KQ1908064-24	Carbon, Total Organic	DUP	K1905369-006	Water	13.51 mg/L	10 mL	27.0 mg/L	2	0.2	1.0		<1	6/12/19 00:01:00	N	I
KQ1908064-25	Carbon, Total Organic	DUP	K1905369-007	Water	26.81 mg/L	10 mL	53.6 mg/L	2	0.2	1.0		<1	6/12/19 00:29:00	N	I
KQ1908064-26	Carbon, Total Organic	DUP	K1905369-008	Water	9.35 mg/L	10 mL	18.7 mg/L	2	0.2	1.0		2	6/12/19 00:58:00	N	I
KQ1908064-27	Carbon, Total Organic	DUP	K1905369-009	Water	27.62 mg/L	10 mL	27.6 mg/L	1	0.07	0.50		<1	6/12/19 01:26:00	N	I

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0.207	OBSERVATIONS 15	ABOVE
0.000	STD Deviation 0.05347	0
0.000	AVERAGE 0.01381	0
0.000	UCL 0.06728	0
0.000	LCL -0.03967	0
0.000		0
0.000		0
0.000	OBSERVATIONS 0	0
0.000	STD Deviation 0.00000	0
0.000	AVERAGE #DIV/0!	0
0.000	UCL #DIV/0!	0
0.000	LCL #DIV/0!	0
0.000		0
0.000		0
0.000	OBSERVATIONS 0	0
	STD Deviation 0.00000	0
	AVERAGE #DIV/0!	0
	UCL #DIV/0!	0
	LCL #DIV/0!	0
		0
		0
	OBSERVATIONS 0	0
	STD Deviation #DIV/0!	0
	AVERAGE #DIV/0!	0
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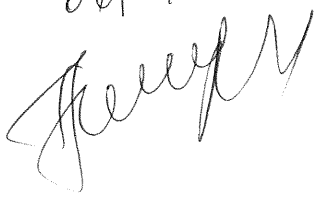
		0
		0
		0
		0

06/14/19



ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	25.166	0.0138	25.1522	25.15219	25.2	6/10/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
4	MB1	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
5	MB1d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
6	MB1t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
7	MB1q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
8	[TOC] LCS [24ppm]	1	24.636	0.0138	24.6226	24.62259	25	6/10/2019
9	[TOC] LCS [24ppm]d	1	24.757	0.0138	24.7428	24.74279	24.74	6/10/2019
10	[TOC] LCS [24ppm]t	1	25.110	0.0138	25.0962	25.09619	25.10	6/10/2019
11	[TOC] LCS [24ppm]q	1	24.975	0.0138	24.9613	24.96129	25.0	6/10/2019
12	K1905246-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
13	K1905246-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
14	K1905246-001t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
15	K1905246-001q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
16	K1905246-003	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
17	K1905246-003d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
18	K1905246-003t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
19	K1905246-003q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
20	K1905246-004	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
21	K1905246-004d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
22	K1905246-004t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
23	K1905246-004q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
24	K1905246-004ms	1	25.447	0.0138	25.4335	25.43349	25.43	6/10/2019
25	K1905246-004msd	1	25.594	0.0138	25.5797	25.57969	25.58	6/10/2019

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

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

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

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

	date	time
Analyzed By: KCP	Date Analyzed 6/10/19	
Reviewed By: [signature]	Date Reviewed 06/19/19	

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905246-004	1	25.734	0.0138	25.7198	25.71979	25.72	6/10/2019
27	K1905246-004	1	25.764	0.0138	25.7504	25.75039	25.75	6/10/2019
28	K1905246-005	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
29	K1905246-005d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
30	K1905246-005t	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
31	K1905246-005q	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
32	C] CCV 25 ppm [25 p	1	27.519	0.0138	27.5054	27.50539	27.5	6/10/2019
33	[TOC] CCB [0 ppm]	1	0.207	0.0138	0.1933	0.19329	<0.5	6/10/2019
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: BLP	Date Analyzed 6/10/19
Reviewed By:	Date Reviewed 06/14/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	25.166	0.0138	25.1522	25.15219	25.2	6/10/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/10/2019
4	K1905198-003	4	0.000	0.0138	-0.0138	-0.05524	<0.5	6/10/2019
5	K1905198-003d	4	0.000	0.0138	-0.0138	-0.05524	<0.5	6/10/2019
6	C] CCV 25 ppm [25 p	1	27.519	0.0138	27.5054	27.50539	27.51	6/10/2019
7	[TOC] CCB [0 ppm]	1	0.207	0.0138	0.1933	0.19329	<0.5	6/10/2019
8	K1905198-004	1	1.560	0.0138	1.5457	1.54569	2	6/10/2019
9	K1905198-004d	1	1.296	0.0138	1.2820	1.28199	1.28	6/10/2019
10	K1905198-005	2	47.316	0.0138	47.3022	94.60438	94.60	6/10/2019
11	K1905198-005d	2	47.104	0.0138	47.0906	94.18118	94.2	6/10/2019
12	K1905258-001	10	6.622	0.0138	6.6084	66.0839	66.08	6/11/2019
13	K1905258-001d	10	6.531	0.0138	6.5170	65.1699	65.17	6/11/2019
14	K1905258-002	10	30.649	0.0138	30.6355	306.3549	306.35	6/11/2019
15	K1905258-002d	10	30.260	0.0138	30.2457	302.4569	302.5	6/11/2019
16	K1905258-003	1	12.874	0.0138	12.8601	12.86009	12.9	6/11/2019
17	K1905258-003d	1	12.994	0.0138	12.9801	12.98009	12.98	6/11/2019
18	K1905258-004	1	4.703	0.0138	4.6889	4.68889	4.7	6/11/2019
19	K1905258-004d	1	4.518	0.0138	4.5042	4.50419	4.5	6/11/2019
20	K1905258-005	1	4.124	0.0138	4.1104	4.11039	4.11	6/11/2019
21	K1905258-005d	1	4.170	0.0138	4.1565	4.15649	4.16	6/11/2019
22	C] CCV 25 ppm [25 p	1	24.924	0.0138	24.9103	24.91029	24.9	6/11/2019
23	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
24	MB2	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
25	[TOC] LCS [24ppm]	1	25.379	0.0138	25.3648	25.36479	25.36	6/11/2019

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

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

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

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

		date time
Analyzed By: BP	Date Analyzed	6/10/19
Reviewed By:	Date Reviewed	06/14/19

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ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905258-006	5	63.641	0.0138	63.6273	318.13645	318.14	6/11/2019
27	K1905258-006d	5	63.117	0.0138	63.1030	315.51495	315.51	6/11/2019
28	K1905259-001	1	2.937	0.0138	2.9230	2.92299	2.9	6/11/2019
29	K1905259-001d	1	2.615	0.0138	2.6010	2.60099	2.6	6/11/2019
30	K1905338-001	1	1.671	0.0138	1.6567	1.65669	1.7	6/11/2019
31	K1905338-001d	1	1.650	0.0138	1.6360	1.63599	1.6	6/11/2019
32	K1905084-004	100	7.870	0.0138	7.8565	785.649	785.6	6/11/2019
33	K1905084-004d	100	7.963	0.0138	7.9490	794.899	794.9	6/11/2019
34	K1905084-005	100	6.537	0.0138	6.5231	652.309	652.3	6/11/2019
35	K1905084-005d	100	6.472	0.0138	6.4586	645.859	645.9	6/11/2019
36	K1905298-001	1	0.135	0.0138	0.1211	0.12109	<0.5	6/11/2019
37	K1905298-001d	1	0.067	0.0138	0.0532	0.05319	<0.5	6/11/2019
38	K1905126-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
39	K1905126-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
40	K1905126-002	1	0.140	0.0138	0.1264	0.12639	<0.5	6/11/2019
41	K1905126-002d	1	0.190	0.0138	0.1762	0.17619	<0.5	6/11/2019
42	C] CCV 25 ppm [25 p	1	24.876	0.0138	24.8620	24.86199	24.9	6/11/2019
43	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
44	K1905126-002ms	1	25.907	0.0138	25.8933	25.89329	25.9	6/11/2019
45	K1905126-003	1	0.280	0.0138	0.2660	0.26599	<0.5	6/11/2019
46	K1905126-003d	1	0.262	0.0138	0.2481	0.24809	<0.5	6/11/2019
47	K1905126-004	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
48	K1905126-004d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
49	C] CCV 25 ppm [25 p	1	24.628	0.0138	24.6141	24.61409	24.6	6/11/2019
50	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019

Analyzed By: BCD	Date Analyzed 6/19/19
Reviewed By:	Date Reviewed 06/18 14/19 TH

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.876	0.0138	24.8620	24.86199	24.9	6/11/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
4	K1905126-005	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
5	K1905126-005d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
6	K1905126-006	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
7	K1905126-006d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
8	K1905126-007	1	0.085	0.0138	0.0711	0.07109	<0.5	6/11/2019
9	K1905126-007d	1	0.023	0.0138	0.0095	0.00949	<0.5	6/11/2019
10	K1905126-008	1	0.314	0.0138	0.3000	0.29999	<0.5	6/11/2019
11	K1905126-008d	1	0.339	0.0138	0.3252	0.32519	<0.5	6/11/2019
12	K1905126-009	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
13	K1905126-009d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
14	K1905262-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
15	K1905262-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
16	C] CCV 25 ppm [25 p	1	24.628	0.0138	24.6141	24.61409	24.6	6/11/2019
17	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
18	MB3	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
19	[TOC] LCS [25ppm]	1	25.069	0.0138	25.0556	25.05559	25.1	6/11/2019
20	K1905262-002	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
21	K1905262-002d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
22	K1905277-001	1	0.344	0.0138	0.3302	0.33019	<0.5	6/11/2019
23	K1905277-001d	1	0.315	0.0138	0.3010	0.30099	<0.5	6/11/2019
24	K1905277-001ms	1	25.866	0.0138	25.8518	25.85179	25.85	6/11/2019
25	K1905277-002	1	0.375	0.0138	0.3611	0.36109	<0.5	6/11/2019

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

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

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

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

		date time
Analyzed By: BD	Date Analyzed	6/10/19
Reviewed By:	Date Reviewed	06/14/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905277-002d	1	0.333	0.0138	0.3193	0.31929	<0.5	6/11/2019
27	K1905277-003	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
28	K1905277-003d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
29	C] CCV 25 ppm [25 p	1	24.708	0.0138	24.6941	24.69409	24.7	6/11/2019
30	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BD	Date Analyzed	6/10/19
Reviewed By:		Date Reviewed	6/14/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.628	0.0138	24.6141	24.61409	24.6	6/11/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
4	K1905278-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
5	K1905278-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
6	K1905278-001ms	1	25.097	0.0138	25.0836	25.08359	25.08	6/11/2019
7	C] CCV 25 ppm [25 p	1	24.708	0.0138	24.6941	24.69409	24.7	6/11/2019
8	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
9	K1905278-002	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
10	K1905278-002d	1	0.009	0.0138	-0.0050	-0.00501	<0.5	6/11/2019
11	K1905278-003	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
12	K1905278-003d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
13	K1905279-001	1	0.506	0.0138	0.4918	0.49179	<0.5	6/11/2019
14	K1905279-001d	1	0.561	0.0138	0.5475	0.54749	0.55	6/11/2019
15	K1905305-001	1	5.683	0.0138	5.6692	5.66919	5.7	6/11/2019
16	K1905305-001d	1	5.625	0.0138	5.6109	5.61089	5.6	6/11/2019
17	K1905360-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
18	K1905360-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
19	K1905361-001	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
20	K1905361-001d	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
21	K1905369-001	2	5.225	0.0138	5.2116	10.42318	10.42	6/11/2019
22	K1905369-001d	2	5.217	0.0138	5.2032	10.40638	10.4	6/11/2019
23	K1905369-002	1	13.506	0.0138	13.4921	13.49209	13.5	6/11/2019
24	K1905369-002d	1	13.245	0.0138	13.2307	13.23069	13.23	6/11/2019
25	K1905369-003	1	1.788	0.0138	1.7744	1.77439	1.77	6/11/2019

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

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

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

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

		date	time
Analyzed By: BCB	Date Analyzed	6/10/19	
Reviewed By: [signature]	Date Reviewed	06/14/19	

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905369-003d	1	1.767	0.0138	1.7527	1.75269	1.75	6/11/2019
27	K1905369-004	2	9.272	0.0138	9.2581	18.51618	18.52	6/11/2019
28	K1905369-004d	2	9.143	0.0138	9.1287	18.25738	18.3	6/11/2019
29	C] CCV 25 ppm [25 p	1	24.605	0.0138	24.5909	24.59089	24.6	6/11/2019
30	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
31	MB4	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/11/2019
32	[TOC] LCS [25ppm]	1	25.095	0.0138	25.0808	25.08079	25.1	6/11/2019
33	K1905369-005	1	10.033	0.0138	10.0194	10.01939	10.0	6/11/2019
34	K1905369-005d	1	9.637	0.0138	9.6227	9.62269	9.6	6/11/2019
35	K1905369-006	2	13.541	0.0138	13.5276	27.05518	27.1	6/12/2019
36	K1905369-006d	2	13.525	0.0138	13.5114	27.02278	27.0	6/12/2019
37	K1905369-007	2	27.089	0.0138	27.0756	54.15118	54.2	6/12/2019
38	K1905369-007d	2	26.827	0.0138	26.8130	53.62598	53.6	6/12/2019
39	K1905369-008	2	9.595	0.0138	9.5814	19.16278	19.2	6/12/2019
40	K1905369-008d	2	9.361	0.0138	9.3469	18.69378	18.7	6/12/2019
41	K1905369-009	1	27.755	0.0138	27.7409	27.74089	27.7	6/12/2019
42	K1905369-009d	1	27.636	0.0138	27.6218	27.62179	27.6	6/12/2019
43	C] CCV 25 ppm [25 p	1	25.243	0.0138	25.2287	25.22869	25.2	6/12/2019
44	[TOC] CCB [0 ppm]	1	0.000	0.0138	-0.0138	-0.01381	<0.5	6/12/2019
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCD	Date Analyzed	6/10/19
Reviewed By:	[signature]	Date Reviewed	06/14/19

TOC: 638808, 638810, 638815, 638817

Schedule: 06102019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/06/10 14:58 - Monday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1905246-001.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1905246-003.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	K1905246-004.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
6	Sample	K1905246-004.08 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
8	Sample	K1905246-005.08	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
9	Sample	K1905198-003.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1905198-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1905198-005.01 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1905258-001.01 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1905258-001.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1905258-002.01 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1905258-002.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1905258-002.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1905258-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1905258-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1905258-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1905258-006.01 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1905259-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1905338-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1905084-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1905084-005.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1905298-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1905126-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1905126-002.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1905126-002.10 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	K1905126-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1905126-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1905126-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1905126-006.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1905126-007.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1905126-008.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1905126-009.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1905262-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

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Schedule: 06102019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1905262-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1905277-001.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1905277-001.07 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
43	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
44	Sample	K1905277-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1905277-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1905278-001.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1905278-001.10 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1905278-002.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1905278-003.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1905279-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1905305-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1905360-001.04	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1905361-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1905369-001.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1905369-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1905369-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1905369-004.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1905369-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1905369-006.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1905369-007.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1905369-008.02 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1905369-009.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 06102019
Monday, June 10, 2019 11:35 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/06/12 09:06 - Wednesday

Report Summary Information

Company Location: Gen Chem Lab
Schedule Name: 06102019
Instrument Name: Fusion1
Report Version: 1 of 1
Report Creation by Operators (schedule version): Fusion1 (Fusion1) (v2), Fusion1 (Fusion1) (v3), Fusion1 (Fusion1) (v4), Fusion1 (Fusion1) (v5), Fusion1 (Fusion1) (v6), Fusion1 (Fusion1) (v7), Fusion1 (Fusion1) (v8)
Comment:

Engine Version: 1.1.5.1
Firmware Version: 1.2.0696
Connection: RS232 COM1

06/14/19

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/10 11:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.10	19.05	5.96	49.89	08:00
2	TC Clean	10.04	13.22	3.18	49.69	07:17
3	TC Clean	2.58	5.76	3.18	49.62	07:02
4	TC Clean	1.54	4.74	3.19	49.82	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/10 12:10

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.40	15.52	3.12	49.83	07:59

2	TC Clean	4.03	7.15	3.12	49.77	07:17
3	TC Clean	1.73	4.78	3.05	49.80	07:02
4	TC Clean	1.09	4.26	3.17	49.70	07:01

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/10 12:44

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.96	3.91	2.95	49.91	07:58
2	TC Clean	3.32	6.45	3.13	49.77	07:17
3	TC Clean	1.69	4.71	3.02	49.76	07:02
4	TC Clean	1.63	4.45	2.82	49.80	07:03

Sample Type: Blank (Creating v1265) — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/06/10 13:42

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.85	12.74	2.90	49.71	05:29
2	TC Clean	4.64	7.74	3.11	49.84	07:16
3	TC Clean	1.95	4.81	2.86	49.87	07:01
4	TC Clean	1.13	4.26	3.13	49.92	07:01
5	Reagent Blank	3.40	6.47	3.07	49.91	08:12
6	Acid Blank	1.23	4.37	3.15	49.64	05:26

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 14:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.17	11.31	3.15	50.09	10:33

Dilution **Blank Contribution** **Method** **Calibration**

1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1660 ppm (PASS)	0.0000 ppm	0%	2019/06/10 14:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1660	251.6603	180.29	183.46	3.17	50.15	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/10 15:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.10	9.37	3.28	50.13	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 15:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.40	8.57	3.16	50.26	10:29
2	TOC	0.0000	0.0000	5.08	8.36	3.28	50.19	10:25
3	TOC	0.0000	0.0000	5.33	8.40	3.07	50.22	10:30
4	TOC	0.0000	0.0000	5.16	8.35	3.19	50.30	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.8695 ppm (PASS)	0.2130 ppm	0.86%	2019/06/10 16:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6364	246.3641	176.69	179.76	3.07	50.27	10:25
C	TOC	25.0 ppm	2	24.7566	247.5663	177.51	180.80	3.29	50.27	10:26
C	TOC	25.0 ppm	3	25.1100	251.1005	179.91	183.15	3.25	50.32	10:32
C	TOC	25.0 ppm	4	24.9751	249.7510	178.99	182.08	3.09	50.33	10:26

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

STD Conc - Pos C: 25 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 17:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.78	10.84	3.05	50.31	10:29

Dilution: 1:10

Blank Contribution: (TC) 8.7430 (IC) (v1265)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1905246-001.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 17:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.88	9.87	2.99	50.34	10:30
2	TOC	0.0000	0.0000	6.85	9.83	2.98	50.34	10:24
3	TOC	0.0000	0.0000	7.00	9.95	2.96	50.22	10:31
4	TOC	0.0000	0.0000	6.68	9.85	3.17	50.20	10:26

Dilution: 1:10

Blank Contribution: (TC) 8.7430 (IC) (v1265)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1905246-003.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 18:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.81	10.84	3.03	50.19	10:25
2	TOC	0.0000	0.0000	7.77	11.00	3.23	50.18	10:30

3	TOC	0.0000	0.0000	7.38	10.64	3.26	50.24	10:27
4	TOC	0.0000	0.0000	7.53	10.65	3.12	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1905246-004.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 19:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.37	9.43	3.07	50.18	10:27
2	TOC	0.0000	0.0000	6.56	9.77	3.21	50.20	10:26
3	TOC	0.0000	0.0000	5.94	9.20	3.25	50.20	10:27
4	TOC	0.0000	0.0000	6.33	9.39	3.06	50.18	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1905246-004.08 ms	25.6346 ppm	0.1453 ppm	0.5700%	2019/06/10 20:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.4473	254.4733	181.48	184.54	3.06	50.12	10:27
2	TOC	25.5935	255.9347	182.47	185.60	3.13	50.10	10:29
3	TOC	25.7336	257.3357	183.42	186.56	3.14	50.14	10:27
4	TOC	25.7642	257.6421	183.63	186.71	3.08	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 21:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.17	9.16	2.99	50.09	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1905246-005.08	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 21:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.16	10.27	3.10	50.11	10:27
2	TOC	0.0000	0.0000	7.54	10.56	3.02	50.18	10:30
3	TOC	0.0000	0.0000	7.57	10.61	3.04	50.11	10:29

4	TOC	0.0000	0.0000	7.27	10.27	3.00	50.07	10:26

Dilution 1:10 | **Blank Contribution** (TC) 8.7430 (IC) (v1265) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1905198-003.01 4x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/10 22:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	-42248.80	-42245.72	3.08	50.08	10:28
2	TOC	0.0000	0.0000	-15736.81	-15732.85	3.96	50.00	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.7430 (IC) (v1265) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	27.5192 ppm (PASS)	0.0000 ppm	0%	2019/06/10 22:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	27.5192	275.1917	196.26	200.18	3.92	50.00	10:33

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2071 ppm (PASS)	0.0000 ppm	0%	2019/06/10 22:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2071	2.0706	10.87	14.15	3.28	50.01	10:33

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

Sample Type: Sample — From Schedule Version 8

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	10	TOC	K1905198-004.01	1.4277 ppm	0.1865 ppm	13.0600%	2019/06/10 23:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5595	15.5952	19.33	22.57	3.24	50.12	10:29
2	TOC	1.2958	12.9582	17.54	20.47	2.93	50.01	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1905198-005.01 2x	47.2102 ppm	0.1496 ppm	0.3200%	2019/06/10 23:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	47.3160	473.1596	329.92	333.00	3.08	50.05	10:27
2	TOC	47.1044	471.0441	328.48	331.58	3.10	50.15	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1905258-001.01 5x	13.9756 ppm	0.3591 ppm	2.5700%	2019/06/11 00:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.2295	142.2949	105.33	108.53	3.20	50.02	10:28
2	TOC	13.7217	137.2168	101.88	105.03	3.15	50.09	10:25

NR, using other dilution BEP 6/14/19

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1905258-001.01 10x	6.5765 ppm	0.0646 ppm	0.9800%	2019/06/11 00:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.6222	66.2218	53.69	57.01	3.31	50.05	10:30
2	TOC	6.5308	65.3084	53.07	56.35	3.28	50.06	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1905258-002.01 5x	52.5986 ppm	0.3332 ppm	0.6300%	2019/06/11 01:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	52.3630	523.6300	364.18	367.44	3.26	50.11	10:29
2	TOC	52.8343	528.3428	367.38	370.92	3.54	50.05	10:27

NR, using other dilution BEP 6/14/19

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1905258-002.01 10x	30.4544 ppm	0.2756 ppm	0.9100%	2019/06/11 01:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.6493	306.4935	216.79	220.32	3.53	50.12	10:28
2	TOC	30.2595	302.5954	214.14	217.47	3.33	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1905258-002.01 20x	15.5532 ppm	0.1910 ppm	1.2300%	2019/06/11 02:02

NR using other dilution

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.6883	156.8826	115.23	118.48	3.25	49.98	10:32
2	TOC	15.4181	154.1807	113.40	116.42	3.02	50.07	10:30

BCD 6/13/19

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1905258-003.01	12.9339 ppm	0.0849 ppm	0.6600%	2019/06/11 02:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.8739	128.7385	96.13	99.19	3.06	49.97	10:32
2	TOC	12.9939	129.9392	96.94	100.08	3.13	49.93	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1905258-004.01	4.6104 ppm	0.1306 ppm	2.8300%	2019/06/11 02:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.7027	47.0275	40.66	43.80	3.13	49.99	10:32
2	TOC	4.5180	45.1801	39.41	42.59	3.17	49.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1905258-005.01	4.1473 ppm	0.0326 ppm	0.7900%	2019/06/11 03:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1242	41.2422	36.74	39.97	3.24	49.96	10:27
2	TOC	4.1703	41.7033	37.05	40.04	2.99	49.88	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9241 ppm (PASS)	0.0000 ppm	0%	2019/06/11 03:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9241	249.2413	178.65	181.87	3.23	49.88	10:28

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 04:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.93	10.05	3.12	49.87	10:33

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 04:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.44	8.60	3.16	49.87	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC)	CAS_salt_010711	CAS_salt_010711

(v1265) (v4) (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.3786 ppm (PASS)	0.0000 ppm	0%	2019/06/11 04:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.3786	253.7861	181.73	185.02	3.29	49.87	10:33

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1905258-006.01 5x	63.3789 ppm	0.3707 ppm	0.5800%	2019/06/11 04:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	63.6411	636.4109	440.73	443.84	3.10	49.87	10:29
2	TOC	63.1168	631.1678	437.18	440.33	3.16	49.86	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1905259-001.01	2.7758 ppm	0.2277 ppm	8.2000%	2019/06/11 05:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9368	29.3682	28.68	31.83	3.15	49.89	10:28
2	TOC	2.6148	26.1478	26.49	29.47	2.97	49.91	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1905338-001.02	1.6601 ppm	0.0146 ppm	0.8800%	2019/06/11 05:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6705	16.7046	20.08	23.26	3.17	49.90	10:29
2	TOC	1.6498	16.4983	19.94	23.11	3.17	49.90	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1905084-004.01 100x	7.9165 ppm	0.0654 ppm	0.8300%	2019/06/11 06:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8703	78.7027	62.17	65.29	3.13	49.92	10:26
2	TOC	7.9628	79.6279	62.79	65.86	3.06	49.90	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1905084-005.01 100x	6.5046 ppm	0.0456 ppm	0.7000%	2019/06/11 06:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5369	65.3688	53.12	56.34	3.23	49.91	10:29
2	TOC	6.4724	64.7235	52.68	55.85	3.17	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1905298-001.01	0.1010 ppm	0.0480 ppm	47.5600%	2019/06/11 07:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1349	1.3494	9.66	12.79	3.13	49.88	10:29
2	TOC	0.0670	0.6702	9.20	12.36	3.16	49.86	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1905126-001.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.52	10.68	3.17	49.88	10:26
2	TOC	0.0000	0.0000	7.37	10.62	3.25	49.79	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1905126-002.10	0.1651 ppm	0.0352 ppm	21.3200%	2019/06/11 08:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1402	1.4024	9.70	12.66	2.97	49.76	10:25
2	TOC	0.1900	1.9004	10.03	13.12	3.09	49.72	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8758 ppm (PASS)	0.0000 ppm	0%	2019/06/11 08:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8758	248.7581	178.32	181.28	2.96	49.78	10:29

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 08:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.34	8.50	3.16	49.80	10:31

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1905126-002.10 ms	25.9071 ppm	0.0000 ppm	0.0000%	2019/06/11 09:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.9071	259.0711	184.60	187.66	3.06	49.82	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC)	CAS_salt_010711	CAS_salt_010711

(v1265) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	30	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 09:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.60	8.68	3.08	49.73	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	31	TOC	K1905126-003.02	0.2708 ppm	0.0126 ppm	4.6500%	2019/06/11 09:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2798	2.7975	10.64	13.76	3.11	49.80	10:25
2	TOC	0.2619	2.6193	10.52	13.75	3.23	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	32	TOC	K1905126-004.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 10:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.77	9.83	3.06	50.02	10:27
2	TOC	0.0000	0.0000	6.91	10.04	3.13	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	33	TOC	K1905126-005.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 10:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.11	10.12	3.01	50.09	10:28
2	TOC	0.0000	0.0000	7.04	10.12	3.08	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	34	TOC	K1905126-006.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 11:00

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

1	TOC	0.0000	0.0000	6.72	9.66	2.95	50.15	10:28
2	TOC	0.0000	0.0000	6.57	9.54	2.97	50.15	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1905126-007.02	0.0541 ppm	0.0435 ppm	80.5500%	2019/06/11 11:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0849	0.8485	9.32	12.30	2.99	50.12	10:26
2	TOC	0.0233	0.2327	8.90	11.94	3.04	50.12	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1905126-008.02	0.3264 ppm	0.0178 ppm	5.4600%	2019/06/11 11:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3138	3.1379	10.87	13.83	2.96	50.14	10:27
2	TOC	0.3390	3.3898	11.04	13.97	2.93	50.14	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1905126-009.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 12:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.58	9.74	3.16	50.11	10:29
2	TOC	0.0000	0.0000	7.04	9.97	2.93	50.09	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1905262-001.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 12:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.96	9.96	3.00	50.07	10:28
2	TOC	0.0000	0.0000	7.17	10.25	3.08	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6279 ppm (PASS)	0.0000 ppm	0%	2019/06/11 13:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6279	246.2787	176.64	179.77	3.13	50.13	10:34

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 13:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.08	8.29	3.21	50.13	10:33

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 13:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.60	7.58	2.97	50.20	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0694 ppm (PASS)	0.0000 ppm	0%	2019/06/11 14:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0694	250.6939	179.63	182.89	3.25	50.13	10:28

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1905262-002.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 14:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.44	10.67	3.23	50.15	10:28
2	TOC	0.0000	0.0000	6.64	9.86	3.22	50.26	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1905277-001.07	0.3294 ppm	0.0206 ppm	6.2600%	2019/06/11 14:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3440	3.4399	11.08	14.27	3.19	50.25	10:27
2	TOC	0.3148	3.1482	10.88	14.02	3.14	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1905277-001.07 ms	25.8656 ppm	0.0000 ppm	0.0000%	2019/06/11 15:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.8656	258.6557	184.32	187.54	3.22	50.18	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 15:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.11	8.29	3.18	50.20	10:34

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1905277-002.01	0.3540 ppm	0.0296 ppm	8.3600%	2019/06/11 15:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3749	3.7492	11.29	14.27	2.98	50.20	10:28
2	TOC	0.3331	3.3308	11.00	14.29	3.28	50.24	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1905277-003.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 16:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.55	8.75	3.20	50.22	10:28
2	TOC	0.0000	0.0000	5.35	8.66	3.30	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1905278-001.10	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 16:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.70	10.85	3.15	50.27	10:29
2	TOC	0.0000	0.0000	7.96	10.95	2.99	50.28	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1905278-001.10 ms	25.0974 ppm	0.0000 ppm	0.0000%	2019/06/11 17:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.0974	250.9744	179.10	182.07	2.97	50.26	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

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

◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7079 ppm (PASS)	0.0000 ppm	0%	2019/06/11 17:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7079	247.0786	177.18	180.31	3.13	50.26	10:32

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 17:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.96	8.18	3.22	50.27	10:31

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1905278-002.04	0.0044 ppm	0.0062 ppm	141.4200%	2019/06/11 17:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.50	11.63	3.13	50.27	10:29
2	TOC	0.0088	0.0883	8.80	11.88	3.08	50.29	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1905278-003.04	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.59	8.67	3.08	50.30	10:28
2	TOC	0.0000	0.0000	5.15	8.27	3.12	50.23	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1905279-001.02	0.5334 ppm	0.0394 ppm	7.3800%	2019/06/11 18:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5056	5.0560	12.18	15.23	3.05	50.16	10:26
2	TOC	0.5613	5.6128	12.55	15.66	3.11	50.22	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1905305-001.01	5.6538 ppm	0.0413 ppm	0.7300%	2019/06/11 19:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6830	56.8301	47.32	50.44	3.12	50.18	10:25
2	TOC	5.6247	56.2467	46.92	50.07	3.14	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1905360-001.04	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 19:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.84	10.08	3.23	50.17	10:27
2	TOC	0.0000	0.0000	7.02	10.14	3.12	50.21	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1905361-001.03	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 20:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.81	10.97	3.16	50.17	10:30
2	TOC	0.0000	0.0000	7.96	11.25	3.29	50.19	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1905369-001.02 2x	5.2212 ppm	0.0059 ppm	0.1100%	2019/06/11 20:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2254	52.2544	44.21	47.40	3.19	50.19	10:27

2	TOC	5.2170	52.1704	44.16	47.37	3.21	50.23	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1905369-002.02	13.3752 ppm	0.1848 ppm	1.3800%	2019/06/11 21:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5059	135.0586	100.42	103.57	3.15	50.19	10:26
2	TOC	13.2445	132.4451	98.65	101.86	3.22	50.16	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1905369-003.02	1.7773 ppm	0.0153 ppm	0.8600%	2019/06/11 21:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7882	17.8817	20.88	24.25	3.37	50.24	10:26
2	TOC	1.7665	17.6651	20.73	23.96	3.22	50.16	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1905369-004.02 2x	9.2072 ppm	0.0915 ppm	0.9900%	2019/06/11 22:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.2719	92.7188	71.68	74.77	3.09	50.16	10:29
2	TOC	9.1425	91.4253	70.80	73.97	3.17	50.12	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6047 ppm (PASS)	0.0000 ppm	0%	2019/06/11 22:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6047	246.0474	176.48	179.71	3.24	50.04	10:29

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/11 22:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.11	8.22	3.11	50.05	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/11 23:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.45	7.48	3.03	50.06	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0946 ppm (PASS)	0.0000 ppm	0%	2019/06/11 23:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0946	250.9458	179.80	182.94	3.14	49.93	10:28

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1905369-005.02	9.8349 ppm	0.2805 ppm	2.8500%	2019/06/11 23:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.0332	100.3323	76.85	79.77	2.92	49.96	10:28
2	TOC	9.6365	96.3650	74.16	77.34	3.19	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1905369-006.02 2x	13.5333 ppm	0.0115 ppm	0.0800%	2019/06/12 00:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5414	135.4136	100.66	103.97	3.31	49.94	10:29
2	TOC	13.5252	135.2516	100.55	103.66	3.11	49.86	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1905369-007.02 2x	26.9581 ppm	0.1856 ppm	0.6900%	2019/06/12 00:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.0894	270.8936	192.62	195.65	3.03	49.97	10:31
2	TOC	26.8268	268.2683	190.84	193.78	2.94	49.88	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1905369-008.02 2x	9.4780 ppm	0.1658 ppm	1.7500%	2019/06/12 00:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.5952	95.9525	73.88	76.92	3.05	49.80	10:29
2	TOC	9.3607	93.6071	72.28	75.31	3.02	49.79	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1905369-009.02	27.6951 ppm	0.0842 ppm	0.3000%	2019/06/12 01:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.7547	277.5466	197.14	200.30	3.16	49.74	10:29

2	TOC	27.6356	276.3562	196.33	199.36	3.02	49.76	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7430 (IC) (v1265)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2425 ppm (PASS)	0.0000 ppm	0%	2019/06/12 01:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2425	252.4249	180.81	183.95	3.14	49.75	10:34

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/12 02:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.01	8.98	2.97	49.73	10:31

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1264	1.3990	1.2110	0.0000	0.0000	0.0000	2019/06/06 15:32	Fusion1 (Fusion1)
v1265	1.1340	1.2260	0.0000	0.0000	0.0000	2019/06/10 14:28	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

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

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off

SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/06/12 02:26

ALS Environmental

StarLIMS Run: 638808, 638810, 638815, 638817

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78F

21 % H3PO4: 11-GEN-05-78G

Equipment ID: K-TOC-03

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

FILTER ID: FE1165

Analyzed By:	BD	Date Analyzed:	6/10/19
Reviewed By:	[signature]	Date Reviewed:	06/14/19

Work Request # Original (_____) KP1905114-6,5198,5298,5420,5440,5449,5451,5478,5589,5198,5409,5444,5422,5482,5558,5589,5595,5625,5295,5597
Tier: IV IV IV II II II II II II IV I II I II II II

Date Analyzed: 6/16/19

Analyst: BCD/HLM

Analysis: TOC/DOC

TOC: 639522, 639523, 639524

Run # DOC: 639525

DATA QUALITY REPORT
INORGANICS

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

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

COMMENTS: KP1905420-1/1d, KP1905585-2/2d Sent for RA due to being overdiluted.
KP1905597-1/1d, 5478-6 report a high %RSD, but these samples are less than 5x the MRL.
KP1905114-6/6d repots a high %RSD due to non-homogenous, dirty sample.

Final Approved by: _____ Date: 06/18/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639522 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905114-006	Carbon, Total Organic	N/A		Ground Water	5.41 mg/L	10 mL	54.1 mg/L	10	0.7	5.0			6/15/19 03:35:00	N	IV
K1905198-003	Carbon, Total Organic	N/A		Ground Water	13.60 mg/L	10 mL	1360 mg/L	100	7	50			6/15/19 02:11:00	N	IV
K1905258-006	Carbon, Total Organic	N/A		Water	3.31 mg/L	10 mL	331 mg/L	100	7	50			6/15/19 01:13:00	N	IV
K1905420-001	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	50 mg/L U	100	7	50			6/15/19 13:58:00	N	II
K1905440-001	Carbon, Total Organic	N/A		Water	21.35 mg/L	10 mL	21.3 mg/L	1	0.07	0.50			6/15/19 04:03:00	N	II
K1905440-002	Carbon, Total Organic	N/A		Water	21.51 mg/L	10 mL	21.5 mg/L	1	0.07	0.50			6/15/19 04:31:00	N	II
K1905440-003	Carbon, Total Organic	N/A		Water	20.63 mg/L	10 mL	20.6 mg/L	1	0.07	0.50			6/15/19 04:59:00	N	II
K1905440-004	Carbon, Total Organic	N/A		Water	20.85 mg/L	10 mL	20.8 mg/L	1	0.07	0.50			6/15/19 05:27:00	N	II
K1905449-001	Carbon, Total Organic	N/A		Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50			6/15/19 14:40:00	N	II
K1905451-001	Carbon, Total Organic	N/A		Water	6.46 mg/L	10 mL	646 mg/L	100	7	50			6/15/19 11:35:00	N	II
K1905451-002	Carbon, Total Organic	N/A		Water	5.83 mg/L	10 mL	583 mg/L	100	7	50			6/15/19 12:33:00	N	II
K1905478-001	Carbon, Total Organic	N/A		Ground Water	28.06 mg/L	10 mL	28.1 mg/L	1	0.07	0.50			6/15/19 05:55:00	N	II
K1905478-002	Carbon, Total Organic	N/A		Ground Water	9.82 mg/L	10 mL	9.82 mg/L	1	0.07	0.50			6/15/19 06:23:00	N	II
K1905478-003	Carbon, Total Organic	N/A		Ground Water	18.57 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			6/15/19 07:50:00	N	II
K1905478-004	Carbon, Total Organic	N/A		Ground Water	9.86 mg/L	10 mL	9.86 mg/L	1	0.07	0.50			6/15/19 08:18:00	Y	II
K1905478-005	Carbon, Total Organic	N/A		Ground Water	7.89 mg/L	10 mL	7.89 mg/L	1	0.07	0.50			6/15/19 09:29:00	N	II
K1905478-006	Carbon, Total Organic	N/A		Ground Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50			6/15/19 10:11:00	N	II
K1905478-007	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 10:59:00	N	II
K1905589-001	Carbon, Total Organic	N/A		Water	3.74 mg/L	10 mL	3.74 mg/L	1	0.07	0.50			6/15/19 13:01:00	N	II
K1905589-003	Carbon, Total Organic	N/A		Water	2.59 mg/L	10 mL	2.59 mg/L	1	0.07	0.50			6/15/19 13:30:00	N	II
KQ1908379-01	Carbon, Total Organic	CCV		Water	24.94 mg/L	10 mL	24.9 mg/L	1					6/14/19 18:11:00	N	IV
KQ1908379-02	Carbon, Total Organic	CCV		Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/15/19 01:13:00	N	IV
KQ1908379-03	Carbon, Total Organic	CCV		Water	25.46 mg/L	10 mL	25.5 mg/L	1					6/15/19 06:51:00	N	IV
KQ1908379-04	Carbon, Total Organic	CCV		Water	24.96 mg/L	10 mL	25.0 mg/L	1					6/15/19 12:03:00	N	IV
KQ1908379-05	Carbon, Total Organic	CCV		Water	24.89 mg/L	10 mL	24.9 mg/L	1					6/15/19 17:01:00	N	IV
KQ1908379-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/14/19 18:26:00	N	IV
KQ1908379-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 01:56:00	N	IV
KQ1908379-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:06:00	N	IV
KQ1908379-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 12:18:00	N	IV
KQ1908379-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:15:00	N	IV
KQ1908379-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/14/19 18:41:00	N	IV
KQ1908379-12	Carbon, Total Organic	LCS		Water	25.40 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/14/19 19:37:00	N	IV

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

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06/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639522 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908379-13	Carbon, Total Organic	MS	K1905478-004	Ground Water	29.95 mg/L	10 mL	59.9 mg/L	2	0.2	1.0	100		6/15/19 08:46:00	N	II
KQ1908379-14	Carbon, Total Organic	DUP	K1905258-006	Water	3.33 mg/L	10 mL	333 mg/L	100	7	50		<1	6/15/19 01:13:00	N	IV
KQ1908379-15	Carbon, Total Organic	DUP	K1905198-003	Ground Water	13.59 mg/L	10 mL	1360 mg/L	100	7	50		<1	6/15/19 02:11:00	N	IV
KQ1908379-17	Carbon, Total Organic	DUP	K1905114-006	Ground Water	6.29 mg/L	10 mL	62.9 mg/L	10	0.7	5.0		15*	6/15/19 03:35:00	N	IV
KQ1908379-18	Carbon, Total Organic	DUP	K1905440-001	Water	21.00 mg/L	10 mL	21.0 mg/L	1	0.07	0.50		2	6/15/19 04:03:00	N	II
KQ1908379-19	Carbon, Total Organic	DUP	K1905440-002	Water	21.25 mg/L	10 mL	21.2 mg/L	1	0.07	0.50		1	6/15/19 04:31:00	N	II
KQ1908379-20	Carbon, Total Organic	DUP	K1905440-003	Water	20.93 mg/L	10 mL	20.9 mg/L	1	0.07	0.50		1	6/15/19 04:59:00	N	II
KQ1908379-21	Carbon, Total Organic	DUP	K1905440-004	Water	20.80 mg/L	10 mL	20.8 mg/L	1	0.07	0.50		<1	6/15/19 05:27:00	N	II
KQ1908379-22	Carbon, Total Organic	DUP	K1905478-001	Ground Water	28.39 mg/L	10 mL	28.4 mg/L	1	0.07	0.50		1	6/15/19 05:55:00	N	II
KQ1908379-23	Carbon, Total Organic	DUP	K1905478-002	Ground Water	9.35 mg/L	10 mL	9.35 mg/L	1	0.07	0.50		5	6/15/19 06:23:00	N	II
KQ1908379-24	Carbon, Total Organic	DUP	K1905478-003	Ground Water	18.70 mg/L	10 mL	18.7 mg/L	1	0.07	0.50		<1	6/15/19 07:50:00	N	II
KQ1908379-25	Carbon, Total Organic	DUP	K1905478-004	Ground Water	9.86 mg/L	10 mL	9.86 mg/L	1	0.07	0.50		<1	6/15/19 08:18:00	N	II
KQ1908379-26	Carbon, Total Organic	DUP	K1905478-005	Ground Water	7.97 mg/L	10 mL	7.97 mg/L	1	0.07	0.50		<1	6/15/19 09:29:00	N	II
KQ1908379-27	Carbon, Total Organic	DUP	K1905478-006	Ground Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50		12*	6/15/19 10:11:00	N	II
KQ1908379-28	Carbon, Total Organic	DUP	K1905478-007	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 10:59:00	N	II
KQ1908379-29	Carbon, Total Organic	DUP	K1905451-001	Water	6.46 mg/L	10 mL	646 mg/L	100	7	50		<1	6/15/19 11:35:00	N	II
KQ1908379-30	Carbon, Total Organic	DUP	K1905451-002	Water	5.90 mg/L	10 mL	590 mg/L	100	7	50		1	6/15/19 12:33:00	N	II
KQ1908379-31	Carbon, Total Organic	DUP	K1905589-001	Water	3.64 mg/L	10 mL	3.64 mg/L	1	0.07	0.50		3	6/15/19 13:01:00	N	II
KQ1908379-32	Carbon, Total Organic	DUP	K1905589-003	Water	2.58 mg/L	10 mL	2.58 mg/L	1	0.07	0.50		<1	6/15/19 13:30:00	N	II
KQ1908379-33	Carbon, Total Organic	DUP	K1905420-001	Water	0.39 mg/L	10 mL	39 mg/L J	100	7	50		NC	6/15/19 13:58:00	N	II
KQ1908379-34	Carbon, Total Organic	DUP	K1905449-001	Water	1.47 mg/L	10 mL	1.47 mg/L	1	0.07	0.50		5	6/15/19 14:40:00	N	II

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905198-006	Carbon, Total Organic	N/A		Ground Water	3.96 mg/L	10 mL	3.96 mg/L	1	0.07	0.50			6/15/19 03:07:00	N	IV
K1905409-001	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 20:48:00	N	I
K1905409-002	Carbon, Total Organic	N/A		Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:16:00	N	I
K1905449-002	Carbon, Total Organic	N/A		Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50			6/15/19 15:08:00	N	II
K1905477-001	Carbon, Total Organic	N/A		Water	1.72 mg/L	10 mL	1.72 mg/L	1	0.07	0.50			6/15/19 15:36:00	N	I
K1905477-002	Carbon, Total Organic	N/A		Water	19.94 mg/L	10 mL	19.9 mg/L	1	0.07	0.50			6/15/19 16:04:00	N	I
K1905477-003	Carbon, Total Organic	N/A		Water	2.68 mg/L	10 mL	2.68 mg/L	1	0.07	0.50			6/15/19 16:32:00	N	I
K1905477-004	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			6/15/19 17:59:00	N	I
K1905482-001	Carbon, Total Organic	N/A		Water	0.40 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 18:27:00	N	II
K1905482-002	Carbon, Total Organic	N/A		Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50			6/15/19 18:56:00	N	II
K1905482-003	Carbon, Total Organic	N/A		Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50			6/15/19 19:24:00	N	II
K1905482-004	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 mL	0.87 mg/L	1	0.07	0.50			6/15/19 19:52:00	N	II
K1905482-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 20:20:00	N	II
K1905558-001	Carbon, Total Organic	N/A		Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50			6/15/19 22:14:00	N	II
K1905558-002	Carbon, Total Organic	N/A		Water	1.64 mg/L	10 mL	1.64 mg/L	1	0.07	0.50			6/15/19 22:42:00	N	II
K1905558-003	Carbon, Total Organic	N/A		Water	1.07 mg/L	10 mL	1.07 mg/L	1	0.07	0.50			6/15/19 23:10:00	N	II
K1905558-004	Carbon, Total Organic	N/A		Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50			6/15/19 23:38:00	N	II
K1905558-005	Carbon, Total Organic	N/A		Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50			6/16/19 00:06:00	N	II
K1905586-001	Carbon, Total Organic	N/A		Water	0.69 mg/L	10 mL	0.69 mg/L	1	0.07	0.50			6/16/19 00:34:00	N	II
K1905586-002	Carbon, Total Organic	N/A		Water	0.19 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 01:02:00	N	II
KQ1908380-01	Carbon, Total Organic	MS	K1905198-006	Ground Water	25.56 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	86		6/16/19 10:45:00	N	IV
KQ1908380-02	Carbon, Total Organic	CCV		Ground Water	24.59 mg/L	10 mL	24.6 mg/L	1					6/15/19 01:41:00	N	IV
KQ1908380-03	Carbon, Total Organic	CCV		Ground Water	25.46 mg/L	10 mL	25.5 mg/L	1					6/15/19 06:51:00	N	IV
KQ1908380-04	Carbon, Total Organic	CCV		Ground Water	24.96 mg/L	10 mL	25.0 mg/L	1					6/15/19 12:03:00	N	IV
KQ1908380-05	Carbon, Total Organic	CCV		Ground Water	24.89 mg/L	10 mL	24.9 mg/L	1					6/15/19 17:01:00	N	IV
KQ1908380-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 01:56:00	N	IV
KQ1908380-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:06:00	N	IV
KQ1908380-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 12:18:00	N	IV
KQ1908380-09	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:15:00	N	IV

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

06/18/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908380-10	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 07:21:00	N	IV
KQ1908380-11	Carbon, Total Organic	LCS		Ground Water	25.44 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	102		6/15/19 07:35:00	N	IV
KQ1908380-12	Carbon, Total Organic	DUP	K1905198-006	Ground Water	3.83 mg/L	10 mL	3.83 mg/L	1	0.07	0.50		3	6/15/19 03:07:00	N	IV
KQ1908380-13	Carbon, Total Organic	DUP	K1905449-002	Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		5	6/15/19 15:08:00	N	II
KQ1908380-14	Carbon, Total Organic	DUP	K1905477-001	Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50		2	6/15/19 15:36:00	N	I
KQ1908380-15	Carbon, Total Organic	DUP	K1905477-002	Water	19.70 mg/L	10 mL	19.7 mg/L	1	0.07	0.50		1	6/15/19 16:04:00	N	I
KQ1908380-16	Carbon, Total Organic	DUP	K1905477-003	Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50		5	6/15/19 16:32:00	N	I
KQ1908380-17	Carbon, Total Organic	DUP	K1905477-004	Water	1.13 mg/L	10 mL	1.13 mg/L	1	0.07	0.50		9	6/15/19 17:59:00	N	I
KQ1908380-18	Carbon, Total Organic	DUP	K1905482-001	Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50		NC	6/15/19 18:27:00	N	II
KQ1908380-19	Carbon, Total Organic	DUP	K1905482-002	Water	1.52 mg/L	10 mL	1.52 mg/L	1	0.07	0.50		<1	6/15/19 18:56:00	N	II
KQ1908380-20	Carbon, Total Organic	DUP	K1905482-003	Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50		2	6/15/19 19:24:00	N	II
KQ1908380-21	Carbon, Total Organic	DUP	K1905482-004	Water	0.82 mg/L	10 mL	0.82 mg/L	1	0.07	0.50		6	6/15/19 19:52:00	N	II
KQ1908380-22	Carbon, Total Organic	DUP	K1905482-005	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 20:20:00	N	II
KQ1908380-23	Carbon, Total Organic	DUP	K1905409-001	Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 20:48:00	N	I
KQ1908380-24	Carbon, Total Organic	DUP	K1905409-002	Reagent Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/15/19 21:16:00	N	I
KQ1908380-25	Carbon, Total Organic	DUP	K1905558-001	Water	1.41 mg/L	10 mL	1.41 mg/L	1	0.07	0.50		5	6/15/19 22:14:00	N	II
KQ1908380-26	Carbon, Total Organic	DUP	K1905558-002	Water	1.61 mg/L	10 mL	1.61 mg/L	1	0.07	0.50		2	6/15/19 22:42:00	N	II
KQ1908380-27	Carbon, Total Organic	DUP	K1905558-003	Water	1.06 mg/L	10 mL	1.06 mg/L	1	0.07	0.50		1	6/15/19 23:10:00	N	II
KQ1908380-28	Carbon, Total Organic	DUP	K1905558-004	Water	1.54 mg/L	10 mL	1.54 mg/L	1	0.07	0.50		3	6/15/19 23:38:00	N	II
KQ1908380-29	Carbon, Total Organic	DUP	K1905558-005	Water	1.48 mg/L	10 mL	1.48 mg/L	1	0.07	0.50		3	6/16/19 00:06:00	N	II
KQ1908380-30	Carbon, Total Organic	DUP	K1905586-001	Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50		4	6/16/19 00:34:00	N	II
KQ1908380-31	Carbon, Total Organic	DUP	K1905586-002	Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		NC	6/16/19 01:02:00	N	II
KQ1908380-32	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:59:00	N	IV
KQ1908380-33	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	IV
KQ1908380-34	Carbon, Total Organic	CCV		Ground Water	24.50 mg/L	10 mL	24.5 mg/L	1					6/15/19 21:44:00	N	IV
KQ1908380-35	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	IV
KQ1908380-36	Carbon, Total Organic	CCV		Ground Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	IV
KQ1908380-37	Carbon, Total Organic	CCV		Ground Water	25.11 mg/L	10 mL	25.1 mg/L	1					6/16/19 11:00:00	N	IV
KQ1908380-38	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639523 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1908380-39	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 11:14:00	N	IV

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

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639524 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905259-001	Carbon, Total Organic	N/A		Water	2.21 mg/L	10 mL	2.21 mg/L	1	0.07	0.50			6/16/19 06:15:00	N	IV
K1905597-001	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50			6/16/19 01:30:00	N	IV
K1905597-002	Carbon, Total Organic	N/A		Water	2.79 mg/L	10 mL	11.2 mg/L	4	0.3	2.0			6/16/19 01:58:00	N	IV
K1905597-003	Carbon, Total Organic	N/A		Water	2.72 mg/L	10 mL	10.9 mg/L	4	0.3	2.0			6/16/19 02:27:00	N	IV
K1905597-004	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:53:00	N	IV
K1905597-005	Carbon, Total Organic	N/A		Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50			6/16/19 04:22:00	N	IV
K1905597-006	Carbon, Total Organic	N/A		Water	2.34 mg/L	10 mL	2.34 mg/L	1	0.07	0.50			6/16/19 04:50:00	Y	IV
K1905597-007	Carbon, Total Organic	N/A		Water	1.43 mg/L	10 mL	1.43 mg/L	1	0.07	0.50			6/16/19 05:47:00	N	IV
KQ1908381-01	Carbon, Total Organic	CCV		Water	24.50 mg/L	10 mL	24.5 mg/L	1					6/15/19 21:44:00	N	IV
KQ1908381-02	Carbon, Total Organic	CCV		Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	IV
KQ1908381-03	Carbon, Total Organic	CCV		Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	IV
KQ1908381-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 21:59:00	N	IV
KQ1908381-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	IV
KQ1908381-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	IV
KQ1908381-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/15/19 17:30:00	N	IV
KQ1908381-08	Carbon, Total Organic	LCS		Water	25.11 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/15/19 17:45:00	N	IV
KQ1908381-09	Carbon, Total Organic	MS	K1905597-006	Water	26.78 mg/L	10 mL	53.6 mg/L	2	0.2	1.0	102		6/16/19 05:18:00	N	IV
KQ1908381-10	Carbon, Total Organic	DUP	K1905597-001	Water	0.50 mg/L	10 mL	0.50 mg/L J	1	0.07	0.50		20*	6/16/19 01:30:00	N	IV
KQ1908381-11	Carbon, Total Organic	DUP	K1905597-002	Water	2.79 mg/L	10 mL	11.2 mg/L	4	0.3	2.0		<1	6/16/19 01:58:00	N	IV
KQ1908381-12	Carbon, Total Organic	DUP	K1905597-003	Water	2.70 mg/L	10 mL	10.8 mg/L	4	0.3	2.0		<1	6/16/19 02:27:00	N	IV
KQ1908381-13	Carbon, Total Organic	DUP	K1905597-004	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	6/16/19 03:53:00	N	IV
KQ1908381-14	Carbon, Total Organic	DUP	K1905597-005	Water	0.30 mg/L	10 mL	0.30 mg/L J	1	0.07	0.50		8	6/16/19 04:22:00	N	IV
KQ1908381-15	Carbon, Total Organic	DUP	K1905597-006	Water	2.37 mg/L	10 mL	2.37 mg/L	1	0.07	0.50		1	6/16/19 04:50:00	N	IV
KQ1908381-16	Carbon, Total Organic	DUP	K1905597-007	Water	1.41 mg/L	10 mL	1.41 mg/L	1	0.07	0.50		2	6/16/19 05:47:00	N	IV
KQ1908381-17	Carbon, Total Organic	DUP	K1905259-001	Water	2.25 mg/L	10 mL	2.25 mg/L	1	0.07	0.50		2	6/16/19 06:15:00	N	IV

06/18/19

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 639525 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1905589-002	Carbon, Dissolved Organic (DOC)	N/A		Water	3.12 mg/L	10 mL	3.12 mg/L	1	0.07	0.50			6/16/19 06:43:00	N	II
K1905589-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.29 mg/L	10 mL	2.29 mg/L	1	0.07	0.50			6/16/19 07:41:00	N	II
K1905595-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.57 mg/L	10 mL	0.57 mg/L	1	0.07	0.50			6/16/19 09:49:00	N	I
K1905595-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50			6/16/19 10:17:00	N	I
K1905625-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.22 mg/L	10 mL	1.22 mg/L	1	0.07	0.50			6/16/19 08:09:00	N	II
K1905625-002	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50			6/16/19 09:06:00	N	II
KQ1908382-01	Carbon, Dissolved Organic (DOC)	CCV		Water	24.52 mg/L	10 mL	24.5 mg/L	1					6/16/19 02:55:00	N	II
KQ1908382-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.12 mg/L	10 mL	24.1 mg/L	1					6/16/19 07:11:00	N	II
KQ1908382-03	Carbon, Dissolved Organic (DOC)	CCV		Water	25.11 mg/L	10 mL	25.1 mg/L	1					6/16/19 11:00:00	N	II
KQ1908382-04	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:09:00	N	II
KQ1908382-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 07:26:00	N	II
KQ1908382-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 11:14:00	N	II
KQ1908382-07	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/16/19 03:24:00	N	II
KQ1908382-08	Carbon, Dissolved Organic (DOC)	LCS		Water	25.10 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		6/16/19 03:39:00	N	II
KQ1908382-09	Carbon, Dissolved Organic (DOC)	MS	K1905625-001	Effluent	26.86 mg/L	10 mL	26.9 mg/L	1	0.07	0.50	103		6/16/19 08:37:00	N	II
KQ1908382-10	Carbon, Dissolved Organic (DOC)	DUP	K1905589-002	Water	3.13 mg/L	10 mL	3.13 mg/L	1	0.07	0.50		<1	6/16/19 06:43:00	N	II
KQ1908382-11	Carbon, Dissolved Organic (DOC)	DUP	K1905589-004	Water	2.30 mg/L	10 mL	2.30 mg/L	1	0.07	0.50		<1	6/16/19 07:41:00	N	II
KQ1908382-12	Carbon, Dissolved Organic (DOC)	DUP	K1905625-001	Effluent	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		5	6/16/19 08:09:00	N	II
KQ1908382-13	Carbon, Dissolved Organic (DOC)	DUP	K1905625-002	Effluent	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50		<1	6/16/19 09:06:00	N	II
KQ1908382-14	Carbon, Dissolved Organic (DOC)	DUP	K1905595-001	Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		2	6/16/19 09:49:00	N	I
KQ1908382-15	Carbon, Dissolved Organic (DOC)	DUP	K1905595-002	Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50		NC	6/16/19 10:17:00	N	I

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

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.937	0.0000	24.9374	24.9374	24.9	6/14/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/14/2019
4	MB1	1	0.000	0.0000	0.0000	0	<0.5	6/14/2019
5	[TOC] LCS [24ppm]	1	25.401	0.0000	25.4009	25.4009	25.4	6/14/2019
6	K1905258-006	100	3.314	0.0000	3.3140	331.4	331.40	6/15/2019
7	K1905258-006d	100	3.327	0.0000	3.3271	332.71	332.7	6/15/2019
8	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	25	6/15/2019
9	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
10	K1905198-003	100	13.598	0.0000	13.5984	1359.84	1359.84	6/15/2019
11	K1905198-003d	100	13.590	0.0000	13.5897	1358.97	1359.0	6/15/2019
12	K1905114-006	10	5.412	0.0000	5.4117	54.117	54.12	6/15/2019
13	K1905114-006d	10	6.290	0.0000	6.2895	62.895	62.90	6/15/2019
14	K1905440-001	1	21.348	0.0000	21.3480	21.348	21.35	6/15/2019
15	K1905440-001d	1	21.002	0.0000	21.0020	21.002	21.0	6/15/2019
16	K1905440-002	1	21.512	0.0000	21.5121	21.5121	21.5	6/15/2019
17	K1905440-002d	1	21.247	0.0000	21.2469	21.2469	21.25	6/15/2019
18	K1905440-003	1	20.626	0.0000	20.6264	20.6264	20.6	6/15/2019
19	K1905440-003d	1	20.933	0.0000	20.9333	20.9333	20.9	6/15/2019
20	K1905440-004	1	20.849	0.0000	20.8493	20.8493	20.85	6/15/2019
21	K1905440-004d	1	20.795	0.0000	20.7951	20.7951	20.80	6/15/2019
22	K1905478-001	1	28.056	0.0000	28.0558	28.0558	28.1	6/15/2019
23	K1905478-001d	1	28.385	0.0000	28.3853	28.3853	28.4	6/15/2019
24	K1905478-002	1	9.821	0.0000	9.8214	9.8214	9.82	6/15/2019
25	K1905478-002d	1	9.348	0.0000	9.3476	9.3476	9.35	6/15/2019

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

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

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

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

date time

Analyzed By: BCD	Date Analyzed 6/16/19
Reviewed By: [signature]	Date Reviewed 06/18/19

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

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	C] CCV 25 ppm [25 p	1	25.464	0.0000	25.4635	25.4635	25.46	6/15/2019
27	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
28	K1905478-003	1	18.571	0.0000	18.5707	18.5707	18.6	6/15/2019
29	K1905478-003d	1	18.705	0.0000	18.7046	18.7046	18.7	6/15/2019
30	K1905478-004	1	9.865	0.0000	9.8646	9.8646	9.9	6/15/2019
31	K1905478-004d	1	9.856	0.0000	9.8560	9.856	9.9	6/15/2019
32	K1905478-004ms	2	29.953	0.0000	29.9530	59.906	59.9	6/15/2019
33	K1905478-005	1	7.894	0.0000	7.8940	7.894	7.9	6/15/2019
34	K1905478-005d	1	7.970	0.0000	7.9703	7.9703	8.0	6/15/2019
35	K1905478-006	1	0.673	0.0000	0.6731	0.6731	0.7	6/15/2019
36	K1905478-006d	1	0.595	0.0000	0.5947	0.5947	0.6	6/15/2019
37	K1905478-007	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
38	K1905478-007d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
39	K1905451-001	100	6.462	0.0000	6.4621	646.21	646.2	6/15/2019
40	K1905451-001d	100	6.461	0.0000	6.4610	646.1	646.1	6/15/2019
41	C] CCV 25 ppm [25 p	1	24.963	0.0000	24.9627	24.9627	25.0	6/15/2019
42	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
43	K1905451-002	100	5.830	0.0000	5.8303	583.03	583.0	6/15/2019
44	K1905451-002d	100	5.902	0.0000	5.9022	590.22	590.2	6/15/2019
45	K1905589-001	1	3.741	0.0000	3.7412	3.7412	3.7	6/15/2019
46	K1905589-001d	1	3.637	0.0000	3.6370	3.637	3.6	6/15/2019
47	K1905589-003	1	2.586	0.0000	2.5861	2.5861	2.6	6/15/2019
48	K1905589-003d	1	2.583	0.0000	2.5834	2.5834	2.6	6/15/2019
49	K1905420-001	100	0.378	0.0000	0.3783	37.83	37.8	6/15/2019
50	K1905420-001d	100	0.387	0.0000	0.3867	38.67	38.7	6/15/2019

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905449-001	1	1.539	0.0000	1.5389	1.5389	1.54	6/15/2019
52	K1905449-001d	1	1.469	0.0000	1.4688	1.4688	1.5	6/15/2019
53	C] CCV 25 ppm [25 p	1	24.894	0.0000	24.8939	24.8939	24.9	6/15/2019
54	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BLD	Date Analyzed 6/16/19
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.590	0.0000	24.5900	24.59	24.6	6/15/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
4	K1905198-006	1	3.957	0.0000	3.9572	3.9572	4.0	6/15/2019
5	K1905198-006d	1	3.834	0.0000	3.8337	3.8337	3.8	6/15/2019
6	C] CCV 25 ppm [25 p	1	25.464	0.0000	25.4635	25.4635	25.46	6/15/2019
7	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
8	MB2	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
9	[TOC] LCS [24ppm]	1	25.436	0.0000	25.4355	25.4355	25.44	6/15/2019
10	C] CCV 25 ppm [25 p	1	24.963	0.0000	24.9627	24.9627	24.96	6/15/2019
11	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
12	K1905449-002	1	0.558	0.0000	0.5581	0.5581	0.56	6/15/2019
13	K1905449-002d	1	0.529	0.0000	0.5290	0.529	0.53	6/15/2019
14	K1905477-001	1	1.722	0.0000	1.7217	1.7217	1.72	6/15/2019
15	K1905477-001d	1	1.754	0.0000	1.7538	1.7538	1.8	6/15/2019
16	K1905477-002	1	19.942	0.0000	19.9421	19.9421	19.9	6/15/2019
17	K1905477-002d	1	19.696	0.0000	19.6957	19.6957	19.70	6/15/2019
18	K1905477-003	1	2.685	0.0000	2.6845	2.6845	2.7	6/15/2019
19	K1905477-003d	1	2.556	0.0000	2.5556	2.5556	2.6	6/15/2019
20	C] CCV 25 ppm [25 p	1	24.894	0.0000	24.8939	24.8939	24.89	6/15/2019
21	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
22	K1905477-004	1	1.231	0.0000	1.2310	1.231	1.2	6/15/2019
23	K1905477-004d	1	1.126	0.0000	1.1263	1.1263	1.1	6/15/2019
24	K1905482-001	1	0.404	0.0000	0.4040	0.404	<0.5	6/15/2019
25	K1905482-001d	1	0.464	0.0000	0.4636	0.4636	<0.5	6/15/2019

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

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

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

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

date time

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:	[signature]	Date Reviewed	06/18/19

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

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1905482-002	1	1.537	0.0000	1.5366	1.5366	1.54	6/15/2019
27	K1905482-002d	1	1.522	0.0000	1.5215	1.5215	1.52	6/15/2019
28	K1905482-003	1	0.620	0.0000	0.6196	0.6196	0.6	6/15/2019
29	K1905482-003d	1	0.632	0.0000	0.6317	0.6317	0.6	6/15/2019
30	K1905482-004	1	0.870	0.0000	0.8701	0.8701	0.9	6/15/2019
31	K1905482-004d	1	0.818	0.0000	0.8181	0.8181	0.8	6/15/2019
32	K1905482-005	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
33	K1905482-005d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
34	K1905409-001	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
35	K1905409-001d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
36	K1905409-002	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
37	K1905409-002d	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
38	C] CCV 25 ppm [25 p	1	24.499	0.0000	24.4988	24.4988	24.5	6/15/2019
39	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
40	K1905558-001	1	1.482	0.0000	1.4823	1.4823	1.5	6/15/2019
41	K1905558-001d	1	1.412	0.0000	1.4121	1.4121	1.4	6/15/2019
42	K1905558-002	1	1.642	0.0000	1.6423	1.6423	1.6	6/15/2019
43	K1905558-002d	1	1.608	0.0000	1.6080	1.608	1.6	6/15/2019
44	K1905558-003	1	1.073	0.0000	1.0728	1.0728	1.1	6/15/2019
45	K1905558-003d	1	1.061	0.0000	1.0610	1.061	1.1	6/15/2019
46	K1905558-004	1	1.588	0.0000	1.5881	1.5881	1.6	6/15/2019
47	K1905558-004d	1	1.543	0.0000	1.5426	1.5426	1.5	6/15/2019
48	K1905558-005	1	1.526	0.0000	1.5259	1.5259	1.5	6/16/2019
49	K1905558-005d	1	1.484	0.0000	1.4841	1.4841	1.5	6/16/2019
50	K1905586-001	1	0.693	0.0000	0.6929	0.6929	0.7	6/16/2019

Analyzed By: KCP	Date Analyzed 6/16/19
Reviewed By: [signature]	Date Reviewed 06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1905586-001d	1	0.666	0.0000	0.6657	0.6657	0.67	6/16/2019
52	K1905586-002	1	0.189	0.0000	0.1892	0.1892	<0.5	6/16/2019
53	K1905586-002d	1	0.160	0.0000	0.1601	0.1601	<0.5	6/16/2019
54	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.5	6/16/2019
55	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
56	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24.1	6/16/2019
57	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
58	K1905198-006ms	1	25.561	0.0000	25.5611	25.5611	25.6	6/16/2019
59	C] CCV 25 ppm [25 p	1	25.111	0.0000	25.1105	25.1105	25.1	6/16/2019
60	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCD	Date Analyzed	6/16/19
Reviewed By:		Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	MB3	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
3	[TOC] LCS [25ppm]	1	25.114	0.0000	25.1136	25.1136	25.1	6/15/2019
4	C] CCV 25 ppm [25 p	1	24.499	0.0000	24.4988	24.4988	24.5	6/15/2019
5	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/15/2019
6	K1905597-001	1	0.607	0.0000	0.6073	0.6073	0.61	6/16/2019
7	K1905597-001d	1	0.496	0.0000	0.4957	0.4957	<0.5	6/16/2019
8	K1905597-002	4	2.794	0.0000	2.7938	11.1752	11	6/16/2019
9	K1905597-002d	4	2.791	0.0000	2.7914	11.1656	11.17	6/16/2019
10	K1905597-003	4	2.724	0.0000	2.7238	10.8952	10.90	6/16/2019
11	K1905597-003d	4	2.704	0.0000	2.7035	10.814	10.8	6/16/2019
12	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.52	6/16/2019
13	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
14	K1905597-004	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
15	K1905597-004d	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
16	K1905597-005	1	0.325	0.0000	0.3247	0.3247	<0.5	6/16/2019
17	K1905597-005d	1	0.301	0.0000	0.3007	0.3007	<0.5	6/16/2019
18	K1905597-006	1	2.345	0.0000	2.3445	2.3445	2.3	6/16/2019
19	K1905597-006d	1	2.369	0.0000	2.3694	2.3694	2.4	6/16/2019
20	K1905597-006ms	2	26.784	0.0000	26.7837	53.5674	53.57	6/16/2019
21	K1905597-007	1	1.434	0.0000	1.4339	1.4339	1.43	6/16/2019
22	K1905597-007d	1	1.412	0.0000	1.4118	1.4118	1.4	6/16/2019
23	K1905259-001	1	2.214	0.0000	2.2135	2.2135	2.2	6/16/2019
24	K1905259-001d	1	2.252	0.0000	2.2524	2.2524	2.25	6/16/2019
25	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24.12	6/16/2019

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

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

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

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

		date time
Analyzed By: KCP	Date Analyzed	6/16/19
Reviewed By:	Date Reviewed	06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
27		1		0.0000	0.0000	0	<0.5	
28		1		0.0000	0.0000	0	<0.5	
29		1		0.0000	0.0000	0	<0.5	
30		1		0.0000	0.0000	0	<0.5	
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: RP	Date Analyzed 6/16/19
Reviewed By:	Date Reviewed 06/18/19

ALS ENVIRONMENTAL

Matrix: WATER

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

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	C] CCV 25 ppm [25 p	1	24.518	0.0000	24.5184	24.5184	24.5	6/16/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
4	MB4	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
5	[TOC] LCS [25ppm]	1	25.100	0.0000	25.1000	25.1	25.1	6/16/2019
6	K1905589-002	1	3.123	0.0000	3.1233	3.1233	3.12	6/16/2019
7	K1905589-002d	1	3.128	0.0000	3.1282	3.1282	3.1	6/16/2019
8	C] CCV 25 ppm [25 p	1	24.117	0.0000	24.1171	24.1171	24	6/16/2019
9	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
10	K1905589-004	1	2.294	0.0000	2.2935	2.2935	2.29	6/16/2019
11	K1905589-004d	1	2.303	0.0000	2.3031	2.3031	2.3	6/16/2019
12	K1905625-001	1	1.221	0.0000	1.2211	1.2211	1.22	6/16/2019
13	K1905625-001d	1	1.285	0.0000	1.2848	1.2848	1.28	6/16/2019
14	K1905625-001ms	1	26.865	0.0000	26.8649	26.8649	26.86	6/16/2019
15	K1905625-002	1	1.214	0.0000	1.2136	1.2136	1.2	6/16/2019
16	K1905625-002d	1	1.207	0.0000	1.2073	1.2073	1.2	6/16/2019
17	K1905595-001	1	0.568	0.0000	0.5675	0.5675	0.57	6/16/2019
18	K1905595-001d	1	0.578	0.0000	0.5782	0.5782	0.6	6/16/2019
19	K1905595-002 100X	100	0.000	0.0000	0.0000	0	<0.5	6/16/2019
20	K1905595-002 100Xd	100	0.000	0.0000	0.0000	0	<0.5	6/16/2019
21	C] CCV 25 ppm [25 p	1	25.111	0.0000	25.1105	25.1105	25.11	6/16/2019
22	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	6/16/2019
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

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

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

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

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

		date	time
Analyzed By: KP	Date Analyzed	6/16/19	
Reviewed By: [signature]	Date Reviewed	06/18/19	

TOC: 639522, 639523, 639524,
DOC: 639525

Schedule: 06142019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/06/15 16:20 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1905436-001.01	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
4	Sample	K1905436-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1905436-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
7	Sample	K1905436-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
8	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1905258-006.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1905198-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1905198-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1905114-006.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1905440-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1905440-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1905440-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1905440-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1905478-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1905478-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1905478-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1905478-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1905478-004.01 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
24	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1905478-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1905478-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1905478-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1905451-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1905451-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1905589-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1905589-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1905420-001.02 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
34	Sample	K1905449-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1905449-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1905477-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1905477-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1905477-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

NR
NR

06/18/19

Schedule: 06142019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1905477-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1905482-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1905482-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1905482-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1905482-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1905482-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1905409-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1905409-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1905558-001.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1905558-002.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1905558-003.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1905558-004.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1905558-005.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1905586-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1905586-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1905597-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1905597-002.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1905597-003.01 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1905597-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1905597-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1905597-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1905597-006.01 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
63	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
64	Sample	K1905597-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1905259-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1905589-002.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1905589-004.02 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1905625-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1905625-001.03 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
70	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
71	Sample	K1905625-002.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	FB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
73	Sample	K1905595-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1905595-002.03 100x doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample	K1905198-006.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

00949604

Fusion Report - 06142019
Friday, June 14, 2019 03:25 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/06/18 08:56 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	06142019	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8)		
Comment:			

Report Results

06/18/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/14 15:25

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.34	18.06	4.72	49.88	07:58
2	TC Clean	14.48	17.60	3.12	49.67	07:18
3	TC Clean	3.52	6.54	3.02	49.90	07:04
4	TC Clean	2.44	5.68	3.24	49.76	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/06/14 16:04

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.04	15.23	3.18	49.96	07:59

2	TC Clean	5.88	9.04	3.16	49.75	07:16
3	TC Clean	2.16	5.37	3.21	49.79	07:02
4	TC Clean	1.43	4.65	3.22	49.90	07:02

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/06/14 16:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.06	4.16	3.09	49.78	05:26
2	TC Clean	4.34	7.40	3.05	49.94	07:19
3	TC Clean	2.36	5.45	3.10	49.86	07:02
4	TC Clean	1.88	4.87	2.98	49.79	07:00

Sample Type: Blank (Creating v1266) — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/06/14 17:10

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.16	4.21	3.05	49.68	05:25
2	TC Clean	4.58	7.72	3.15	49.84	07:16
3	TC Clean	2.49	5.59	3.10	49.83	07:00
4	TC Clean	1.81	4.95	3.14	49.94	07:01
5	Reagent Blank	6.66	9.83	3.17	49.86	08:11
6	Acid Blank	1.49	4.73	3.24	49.69	05:29

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.3200 ppm	0.0000 ppm	0.0000%	2019/06/14 17:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3200	3.1998	11.13	14.35	3.22	50.07	10:29

Dilution **Blank Contribution** **Method** **Calibration**

1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9374 ppm (PASS)	0.0000 ppm	0%	2019/06/14 18:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9374	249.3739	178.74	181.86	3.12	50.09	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/14 18:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.93	11.23	3.30	50.20	10:29

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

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 18:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.04	10.20	3.16	50.08	10:28
2	TOC	0.0000	0.0000	7.38	10.54	3.17	49.99	10:29
3	TOC	0.0000	0.0000	7.03	10.13	3.09	49.96	10:27
4	TOC	0.0000	0.0000	7.13	10.13	3.00	49.92	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4375 ppm (PASS)	0.1009 ppm	0.40%	2019/06/14 19:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.4009	254.0086	181.88	184.97	3.09	49.87	10:27
C	TOC	25.0 ppm	2	25.5837	255.8368	183.12	186.21	3.08	49.84	10:25
C	TOC	25.0 ppm	3	25.4128	254.1279	181.96	185.20	3.24	49.89	10:27
C	TOC	25.0 ppm	4	25.3525	253.5254	181.55	184.86	3.30	49.81	10:30

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

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.2434 ppm	0.0000 ppm	0.0000%	2019/06/14 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2434	2.4338	10.61	13.81	3.20	49.81	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

NR no room

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1905436-001.01	0.7283 ppm	0.0388 ppm	5.3200%	2019/06/14 20:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7857	7.8566	14.29	17.55	3.25	49.80	10:27
2	TOC	0.7089	7.0891	13.77	17.02	3.25	49.80	10:30
3	TOC	0.7017	7.0169	13.72	16.97	3.25	49.80	10:28
4	TOC	0.7169	7.1686	13.83	16.98	3.15	49.83	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

NR no room

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1905436-001.01 ms	27.4897 ppm	0.0961 ppm	0.3500%	2019/06/14 21:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.5876	275.8760	196.22	199.32	3.10	49.83	10:28
2	TOC	27.3697	273.6972	194.74	198.12	3.38	49.84	10:28

3	TOC	27.5424	275.4238	195.92	199.07	3.15	49.85	10:30
4	TOC	27.4591	274.5914	195.35	198.50	3.14	49.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 22:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.54	10.78	3.24	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1905436-002.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.04	11.07	3.02	49.89	10:31
2	TOC	0.0000	0.0000	7.57	10.75	3.19	49.89	10:27
3	TOC	0.0000	0.0000	7.71	10.95	3.24	49.91	10:27
4	TOC	0.0000	0.0000	7.76	10.87	3.11	49.94	10:27

Per 6/18/19 K5436 NC

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1905436-003.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/14 23:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.52	10.65	3.13	49.96	10:24
2	TOC	0.0000	0.0000	7.59	10.61	3.02	49.96	10:24
3	TOC	0.0000	0.0000	7.36	10.42	3.05	49.95	10:31
4	TOC	0.0000	0.0000	7.66	10.79	3.12	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 00:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.48	9.62	3.14	49.96	10:29
2	TOC	0.0000	0.0000	6.84	9.91	3.07	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1905258-006.01 100x	3.3205 ppm	0.0093 ppm	0.2800%	2019/06/15 01:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3140	33.1397	31.46	34.50	3.05	49.99	10:28
2	TOC	3.3271	33.2708	31.54	34.86	3.31	50.00	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5900 ppm (PASS)	0.0000 ppm	0%	2019/06/15 01:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5900	245.9001	176.38	179.52	3.14	50.01	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 01:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.08	10.33	3.25	50.01	10:33

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

Sample Type: Sample — From Schedule Version 3

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

◈	10	TOC	K1905198-003.01 100x	13.5940 ppm	0.0061 ppm	0.0500%	2019/06/15 02:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5984	135.9838	101.26	104.50	3.24	49.97	10:27
2	TOC	13.5897	135.8969	101.21	104.44	3.23	49.98	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 02:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.99	10.12	3.13	49.99	10:30
2	TOC	0.0000	0.0000	6.59	9.86	3.27	50.00	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1905198-006.01	3.8954 ppm	0.0873 ppm	2.2400%	2019/06/15 03:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9572	39.5717	35.82	39.04	3.22	50.00	10:29
2	TOC	3.8337	38.3371	34.98	38.07	3.09	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1905114-006.01 10x	5.8506 ppm	0.6208 ppm	10.6100%	2019/06/15 03:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.4117	54.1166	45.69	49.02	3.32	50.01	10:31
2	TOC	6.2895	62.8954	51.65	54.78	3.12	50.01	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1905440-001.01	21.1750 ppm	0.2447 ppm	1.1600%	2019/06/15 04:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.3480	213.4801	153.87	157.12	3.25	50.03	10:28
2	TOC	21.0020	210.0196	151.52	154.86	3.34	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1905440-002.01	21.3795 ppm	0.1875 ppm	0.8800%	2019/06/15 04:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.5121	215.1212	154.98	158.24	3.25	50.02	10:26
2	TOC	21.2469	212.4695	153.18	156.37	3.19	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1905440-003.01	20.7799 ppm	0.2170 ppm	1.0400%	2019/06/15 04:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.6264	206.2644	148.97	152.17	3.19	50.04	10:26
2	TOC	20.9333	209.3330	151.05	154.23	3.17	50.04	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1905440-004.01	20.8222 ppm	0.0383 ppm	0.1800%	2019/06/15 05:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.8493	208.4933	150.48	153.72	3.23	50.03	10:28
2	TOC	20.7951	207.9512	150.12	153.41	3.29	50.04	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1905478-001.01	28.2206 ppm	0.2330 ppm	0.8300%	2019/06/15 05:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0558	280.5579	199.40	202.57	3.17	50.01	10:27
2	TOC	28.3853	283.8534	201.64	204.78	3.14	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1905478-002.01	9.5845 ppm	0.3350 ppm	3.5000%	2019/06/15 06:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8214	98.2139	75.63	78.90	3.28	50.03	10:31
2	TOC	9.3476	93.4761	72.41	75.52	3.11	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4635 ppm (PASS)	0.0000 ppm	0%	2019/06/15 06:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4635	254.6347	182.31	185.62	3.32	50.02	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 07:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.42	11.67	3.25	50.01	10:31

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

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 07:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.06	10.22	3.16	50.01	10:36

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.4355 ppm (PASS)	0.0000 ppm	0%	2019/06/15 07:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.4355	254.3548	182.12	185.25	3.13	50.02	10:31

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

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1905478-003.01	18.6377 ppm	0.0947 ppm	0.5100%	2019/06/15 07:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.5707	185.7073	135.02	138.21	3.19	50.04	10:30
2	TOC	18.7046	187.0465	135.93	139.24	3.32	50.00	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1905478-004.01	9.8603 ppm	0.0060 ppm	0.0600%	2019/06/15 08:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8646	98.6456	75.92	79.15	3.23	50.00	10:27
2	TOC	9.8560	98.5601	75.86	79.06	3.19	49.99	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1905478-004.01 ms 2x	29.9530 ppm	0.0000 ppm	0.0000%	2019/06/15 08:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.9530	299.5298	212.28	215.36	3.08	50.01	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.77	11.03	3.26	49.99	10:28
2	TOC	0.0000	0.0000	6.82	10.06	3.24	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1905478-005.01	7.9322 ppm	0.0540 ppm	0.6800%	2019/06/15 09:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8940	78.9400	62.54	65.71	3.16	49.95	10:31
2	TOC	7.9703	79.7032	63.06	66.27	3.21	49.94	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1905478-006.01	0.6339 ppm	0.0554 ppm	8.7400%	2019/06/15 10:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6731	6.7311	13.53	16.69	3.16	49.87	10:27
2	TOC	0.5947	5.9474	13.00	16.22	3.22	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1905478-007.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 10:59

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

1	TOC	0.0000	0.0000	7.39	10.50	3.11	49.81	10:29
2	TOC	0.0000	0.0000	7.27	10.48	3.21	49.79	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1905451-001.01 100x	6.4615 ppm	0.0007 ppm	0.0100%	2019/06/15 11:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4621	64.6205	52.82	55.88	3.05	49.78	10:28
2	TOC	6.4610	64.6102	52.82	55.95	3.14	49.76	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9627 ppm (PASS)	0.0000 ppm	0%	2019/06/15 12:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9627	249.6273	178.91	182.18	3.27	49.76	10:33

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

Sample Type: Check Standard --> CCB — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 12:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.39	10.62	3.23	49.80	10:30

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

Sample Type: Sample

From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1905451-002.01 100x	5.8663 ppm	0.0508 ppm	0.8700%	2019/06/15 12:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8303	58.3034	48.54	51.75	3.21	49.80	10:30
2	TOC	5.9022	59.0224	49.02	52.16	3.13	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1905589-001.01	3.6891 ppm	0.0736 ppm	2.0000%	2019/06/15 13:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7412	37.4120	34.35	37.49	3.13	49.77	10:27
2	TOC	3.6370	36.3704	33.65	36.75	3.10	49.81	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1905589-003.01	2.5847 ppm	0.0019 ppm	0.0700%	2019/06/15 13:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5861	25.8606	26.51	29.58	3.06	49.93	10:26
2	TOC	2.5834	25.8341	26.50	29.65	3.15	49.88	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1905420-001.02 100x	0.3825 ppm	0.0059 ppm	1.5500%	2019/06/15 13:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3783	3.7832	11.53	14.74	3.21	49.85	10:31
2	TOC	0.3867	3.8672	11.58	14.76	3.18	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 14:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.91	9.10	3.19	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1905449-001.02	1.5038 ppm	0.0496 ppm	3.3000%	2019/06/15 14:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5389	15.3891	19.41	22.54	3.14	49.92	10:26
2	TOC	1.4688	14.6879	18.93	22.03	3.10	49.91	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1905449-002.02	0.5435 ppm	0.0205 ppm	3.7800%	2019/06/15 15:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5581	5.5805	12.75	15.85	3.10	49.96	10:28
2	TOC	0.5290	5.2903	12.55	15.63	3.08	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1905477-001.02	1.7378 ppm	0.0227 ppm	1.3100%	2019/06/15 15:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7217	17.2173	20.65	23.75	3.10	49.91	10:25
2	TOC	1.7538	17.5385	20.86	23.98	3.11	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1905477-002.02	19.8189 ppm	0.1743 ppm	0.8800%	2019/06/15 16:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	19.9421	199.4213	144.33	147.57	3.25	49.94	10:29
2	TOC	19.6957	196.9567	142.65	145.86	3.21	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1905477-003.02	2.6200 ppm	0.0911 ppm	3.4800%	2019/06/15 16:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6845	26.8447	27.18	30.31	3.13	49.99	10:30
2	TOC	2.5556	25.5557	26.31	29.38	3.08	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8939 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8939	248.9393	178.44	181.45	3.01	50.04	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.72	9.73	3.01	50.03	10:34

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 17:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.76	8.85	3.09	50.09	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1136 ppm (PASS)	0.0000 ppm	0%	2019/06/15 17:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1136	251.1358	179.93	183.18	3.24	50.06	10:30

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1905477-004.02	1.1786 ppm	0.0741 ppm	6.2800%	2019/06/15 17:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2310	12.3101	17.32	20.63	3.31	49.99	10:27
2	TOC	1.1263	11.2627	16.60	19.84	3.24	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1905482-001.02	0.4338 ppm	0.0422 ppm	9.7300%	2019/06/15 18:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4040	4.0396	11.70	15.00	3.30	50.06	10:28
2	TOC	0.4636	4.6362	12.11	15.22	3.11	49.96	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1905482-002.02	1.5290 ppm	0.0106 ppm	0.6900%	2019/06/15 18:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5366	15.3655	19.39	22.43	3.04	49.99	10:27
2	TOC	1.5215	15.2153	19.29	22.48	3.19	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1905482-003.02	0.6257 ppm	0.0085 ppm	1.3700%	2019/06/15 19:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6196	6.1963	13.17	16.27	3.10	49.95	10:29
2	TOC	0.6317	6.3171	13.25	16.32	3.07	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1905482-004.02	0.8441 ppm	0.0368 ppm	4.3600%	2019/06/15 19:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8701	8.7008	14.87	17.98	3.11	49.92	10:25
2	TOC	0.8181	8.1807	14.51	17.78	3.27	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1905482-005.02	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 20:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.83	9.01	3.18	49.83	10:31
2	TOC	0.0000	0.0000	6.27	9.49	3.21	49.80	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1905409-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 20:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.61	8.78	3.17	49.79	10:29
2	TOC	0.0000	0.0000	5.86	8.91	3.05	49.77	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1905409-002.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/15 21:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.33	8.57	3.25	49.78	10:30
2	TOC	0.0000	0.0000	5.75	9.02	3.27	49.77	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4988 ppm (PASS)	0.0000 ppm	0%	2019/06/15 21:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4988	244.9882	175.76	178.90	3.14	49.76	10:32

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

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/15 21:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.20	9.37	3.17	49.80	10:34

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

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1905558-001.14	1.4472 ppm	0.0497 ppm	3.4300%	2019/06/15 22:14

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4823	14.8234	19.02	22.22	3.20	49.82	10:28
2	TOC	1.4121	14.1207	18.54	21.65	3.11	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1905558-002.14	1.6252 ppm	0.0243 ppm	1.4900%	2019/06/15 22:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6423	16.4233	20.11	23.32	3.21	49.84	10:29
2	TOC	1.6080	16.0800	19.88	23.13	3.26	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1905558-003.14	1.0669 ppm	0.0083 ppm	0.7800%	2019/06/15 23:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0728	10.7279	16.24	19.41	3.17	49.88	10:27
2	TOC	1.0610	10.6100	16.16	19.31	3.15	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1905558-004.14	1.5654 ppm	0.0322 ppm	2.0600%	2019/06/15 23:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5881	15.8811	19.74	22.67	2.93	49.90	10:30
2	TOC	1.5426	15.4259	19.43	22.58	3.15	49.90	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1905558-005.14	1.5050 ppm	0.0296 ppm	1.9700%	2019/06/16 00:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5259	15.2595	19.32	22.36	3.05	49.93	10:29
2	TOC	1.4841	14.8411	19.03	22.23	3.20	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC)	CAS_salt_010711	CAS_salt_010711

(v1266) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1905586-001.01	0.6793 ppm	0.0192 ppm	2.8200%	2019/06/16 00:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6929	6.9285	13.66	16.86	3.20	49.93	10:30
2	TOC	0.6657	6.6574	13.48	16.66	3.18	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1905586-002.01	0.1747 ppm	0.0205 ppm	11.7500%	2019/06/16 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1892	1.8916	10.24	13.54	3.30	49.89	10:28
2	TOC	0.1601	1.6014	10.05	13.18	3.13	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1905597-001.01	0.5515 ppm	0.0789 ppm	14.3000%	2019/06/16 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6073	6.0726	13.08	16.24	3.16	49.89	10:28
2	TOC	0.4957	4.9574	12.32	15.62	3.29	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1905597-002.01 4x	2.7926 ppm	0.0017 ppm	0.0600%	2019/06/16 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7938	27.9378	27.92	31.16	3.24	49.92	10:28
2	TOC	2.7914	27.9142	27.91	31.03	3.12	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1905597-003.01 4x	2.7136 ppm	0.0144 ppm	0.5300%	2019/06/16 02:27

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	2.7238	27.2380	27.45	30.52	3.08	49.91	10:29
2	TOC	2.7035	27.0347	27.31	30.44	3.13	49.91	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5184 ppm (PASS)	0.0000 ppm	0%	2019/06/16 02:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5184	245.1841	175.89	178.91	3.01	49.91	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 03:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.87	9.03	3.16	49.90	10:32

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.10	8.27	3.17	49.91	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 03:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1000	251.0003	179.84	182.99	3.15	49.93	10:34

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

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1905597-004.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 03:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.74	11.82	3.08	49.93	10:32
2	TOC	0.0000	0.0000	7.73	10.91	3.18	49.95	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1905597-005.01	0.3127 ppm	0.0170 ppm	5.4300%	2019/06/16 04:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3247	3.2470	11.16	14.33	3.17	49.96	10:27
2	TOC	0.3007	3.0068	11.00	14.19	3.18	49.96	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1905597-006.01	2.3569 ppm	0.0176 ppm	0.7500%	2019/06/16 04:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3445	23.4446	24.87	27.92	3.05	49.98	10:25
2	TOC	2.3694	23.6935	25.04	28.05	3.01	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1905597-006.01 ms 2x	26.7837 ppm	0.0000 ppm	0.0000%	2019/06/16 05:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7837	267.8368	190.77	193.77	3.00	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 05:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.96	9.15	3.19	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1905597-007.01	1.4228 ppm	0.0156 ppm	1.1000%	2019/06/16 05:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4339	14.3387	18.69	21.73	3.04	50.01	10:29
2	TOC	1.4118	14.1177	18.54	21.56	3.02	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1905259-001.02	2.2329 ppm	0.0275 ppm	1.2300%	2019/06/16 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2135	22.1349	23.99	27.17	3.18	50.02	10:28
2	TOC	2.2524	22.5238	24.25	27.32	3.08	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1905589-002.02 doc	3.1258 ppm	0.0034 ppm	0.1100%	2019/06/16 06:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1233	31.2334	30.16	33.36	3.20	50.06	10:28
2	TOC	3.1282	31.2820	30.19	33.30	3.10	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1171 ppm (PASS)	0.0000 ppm	0%	2019/06/16 07:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1171	241.1711	173.17	176.46	3.30	50.07	10:31

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/06/16 07:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.56	8.74	3.18	50.07	10:35

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

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1905589-004.02 doc	2.2983 ppm	0.0068 ppm	0.2900%	2019/06/16 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2935	22.9348	24.53	27.49	2.96	50.06	10:30
2	TOC	2.3031	23.0306	24.59	27.60	3.01	50.06	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈ 68	TOC	K1905625-001.03 doc	1.2530 ppm	0.0450 ppm	3.5900%	2019/06/16 08:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2211	12.2114	17.25	20.44	3.19	50.03	10:26
2	TOC	1.2848	12.8478	17.68	20.58	2.90	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1905625-001.03 ms doc	26.8649 ppm	0.0000 ppm	0.0000%	2019/06/16 08:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8649	268.6485	191.32	194.50	3.18	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 08:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.07	9.21	3.14	50.02	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1905625-002.03 doc	1.2105 ppm	0.0045 ppm	0.3700%	2019/06/16 09:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2136	12.1363	17.20	20.50	3.30	50.02	10:32
2	TOC	1.2073	12.0729	17.16	20.43	3.28	50.00	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	FB	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.63	8.73	3.10	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1905595-001.03 doc	0.5729 ppm	0.0076 ppm	1.3300%	2019/06/16 09:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5675	5.6748	12.81	15.96	3.15	49.99	10:30
2	TOC	0.5782	5.7824	12.89	16.02	3.14	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1905595-002.03 100x doc	0.0000 ppm	0.0000 ppm	0.0000%	2019/06/16 10:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.91	10.07	3.16	49.97	10:28
2	TOC	0.0000	0.0000	6.95	10.10	3.15	49.95	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	K1905198-006.01 ms	25.5611 ppm	0.0000 ppm	0.0000%	2019/06/16 10:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.5611	255.6107	182.47	185.58	3.12	49.91	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9600 (IC) (v1266)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1105 ppm (PASS)	0.0000 ppm	0%	2019/06/16 11:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1105	251.1049	179.91	183.10	3.19	49.89	10:30

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

Sample Type: Check Standard --> CCB — From Schedule Version 8

00949630

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

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.98	9.18	3.20	49.85	10:34

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

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1265	1.1340	1.2260	0.0000	0.0000	0.0000	2019/06/10 14:28	Fusion1 (Fusion1)
v1266	2.2187	1.4940	0.0000	0.0000	0.0000	2019/06/14 17:57	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

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

Methods

00949631

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/06/16 11:32

ALS Environmental

StarLIMS Run: 639522, 639523, 639524, 639525

Analysis: TOC/DOC

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

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78I

21 % H3PO4: 11-GEN-05-78H

Equipment ID: K-TOC-03

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

FILTER ID: FE1165 6/15/19

Analyzed By:	BCD / HLM	Date Analyzed:	6/16/19
Reviewed By:		Date Reviewed:	06/18/19

June 19, 2019 Service Request No:R1905052

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

La orator Results for L AAP Site

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 05, 2019
For your reference, these analyses have been assigned our service request number **R**

All testing was performed according to our laboratory s quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab s accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as C failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report ualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

ALS Group SA Corp d a ALS En iron ental

Janice Jaeger
Project Manager

CC: Joni Blankfield

Narrative Documents

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

1565 Jefferson Rd, Building 300, Rochester, NY 14623 | 585-288-5380 | www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1905052
Date Received: 06/05/2019

CASE NARRATIVE

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

Sample Receipt:

Five water samples were received for analysis at ALS Environmental on 06/05/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method Organic Acids, 06/06/2019: The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken.

Method Organic Acids, 06/06/2019: The upper control criterion was exceeded for one or more analytes in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ Date 06/19/2019

SAMPLE DETECTIO S MMAR

CLIE T ID A			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	20			1.0	mg/L	Organic Acids
Lactic Acid	12			1.0	mg/L	Organic Acids

CLIE T ID A			La ID R -			
Anal te	**Results**	**Flag**	**MDL**	**MRL**	**nits**	**Met od**
Acetic Acid	120			2.5	mg/L	Organic Acids
Butanoic Acid (Butyric Acid)	7.7			5.0	mg/L	Organic Acids
Propionic Acid	380			2.5	mg/L	Organic Acids

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client ALS Environmental - US **Ser ice Re uest** R1905052
Pro ect LHAAP / Site 58

SAMPLE CROSS-REFERE CE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R1905052-001	35AWW08 060419	6/4/2019	0820
R1905052-002	35AWW20 060419	6/4/2019	0925
R1905052-003	35AWW10 060419	6/4/2019	1030
R1905052-004	35AWW10 060419 a	6/4/2019	1030
R1905052-005	35AWW06 060419	6/4/2019	1135

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

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 / Site 58

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	Volatile Fatty Acids										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)			
~~BSAww01_060419~~		~~04 JUN 2019~~	~~0745~~	-	N		WG	1	X										Rec'd broken 6/5/19 RD			
BSAww08_060419		04 Jun 2019	0820	-	N		WG	1	X													
BSAww20_060419		04 Jun 2019	0925	-	N		WG	1	X													
BSAww10_060419		04 Jun 2019	1030		N		WG	1	X													
BSAww10_060419_a		04 Jun 2019	1030		FD		WG	1	X													
BSAww06_060419		04 Jun 2019	1135	-	N		WG	1	X													
				-																		
				-																		
				-																		
				-																		
				-																		

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/4/19	1400	1.	6/5/19	0900
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 I

R1905052 5
ALS Laboratory Group
LHAAP / Site 58

Cooler Receipt and Preservation Check Form

R1905052 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client Battle Folder Number

Cooler received on 6/5/19 by: [illegible]

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	Y (N)	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (Wet Ice) **Dry Ice Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 6/5/19 Time: 0948 ID: IR#7 (IR#10) From: Temp Blank (Sample Bottle)

Observed Temp (°C)	4.5						
Correction Factor (°C)	–						
Corrected Temp (°C)	4.5						
Temp from:Type of bottle	–						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by (DN) on 6/5/19 at 0951
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: 6/5/19 Time: 1950 by: dlw

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (N/A)
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: 040819-1B4C

Explain all Discrepancies/ Other Comments:

Rec'd: 03WX01_060419- Broken

CLRES	BULK
DO	FLDT
HPROD	HGFB
HTR	LL3541
PH	SUB
SO3	MARRS
ALS	REV

Labels secondary reviewed by: dlw
PC Secondary Review: MS 6/7/19 *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

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REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

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

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: ALS Environmental - US
Project: LHAAP / Site 58/
Service Request: R1905052

Sample Name: 35AWW08_060419
Lab Code: R1905052-001
Sample Matrix: Water
Date Collected: 06/4/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW20_060419
Lab Code: R1905052-002
Sample Matrix: Water
Date Collected: 06/4/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW10_060419
Lab Code: R1905052-003
Sample Matrix: Water
Date Collected: 06/4/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW10_060419_a
Lab Code: R1905052-004
Sample Matrix: Water
Date Collected: 06/4/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Sample Name: 35AWW06_060419
Lab Code: R1905052-005
Sample Matrix: Water
Date Collected: 06/4/19
Date Received: 06/5/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		BALLGEIER

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

Sample Results

ALS Environmental—Rochester Laboratory
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Semivolatile Organic Compounds by GC

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Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	06/04/19 08:20
Sample Matrix:	Water	**Date Received:**	06/05/19 09:00
Sample Name:	35AWW08_060419	**Units:**	mg/L
Lab Code:	R1905052-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.50	1	06/06/19 20:22	
Acetic Acid	**20**		1.0	1	06/06/19 20:22	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1	06/06/19 20:22	
Lactic Acid	**12**		1.0	1	06/06/19 20:22	
Propionic Acid	ND	U	1.0	1	06/06/19 20:22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	06/04/19 09:25
Sample Matrix:	Water	**Date Received:**	06/05/19 09:00
Sample Name:	35AWW20_060419	**Units:**	mg/L
Lab Code:	R1905052-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 21:36	
Acetic Acid	ND U	1.0	1	06/06/19 21:36	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 21:36	
Lactic Acid	ND U	1.0	1	06/06/19 21:36	
Propionic Acid	ND U	1.0	1	06/06/19 21:36	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	06/04/19 10:30
Sample Matrix:	Water	**Date Received:**	06/05/19 09:00
Sample Name:	35AWW10_060419	**Units:**	mg/L
Lab Code:	R1905052-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 22:13	
Acetic Acid	ND U	1.0	1	06/06/19 22:13	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 22:13	
Lactic Acid	ND U	1.0	1	06/06/19 22:13	
Propionic Acid	ND U	1.0	1	06/06/19 22:13	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	06/04/19 10:30
Sample Matrix:	Water	**Date Received:**	06/05/19 09:00
Sample Name:	35AWW10_060419_a	**Units:**	mg/L
Lab Code:	R1905052-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 22:13	
Acetic Acid	ND U	1.0	1	06/06/19 22:13	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 22:13	
Lactic Acid	ND U	1.0	1	06/06/19 22:13	
Propionic Acid	ND U	1.0	1	06/06/19 22:13	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	06/04/19 11:35
Sample Matrix:	Water	**Date Received:**	06/05/19 09:00
Sample Name:	35AWW06_060419	**Units:**	mg/L
Lab Code:	R1905052-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	1.3	2.5	06/18/19 20:51	
Acetic Acid	**120**		2.5	2.5	06/18/19 20:51	
Butanoic Acid (Butyric Acid)	**7.7**		5.0	2.5	06/18/19 20:51	
Lactic Acid	ND	U	2.5	2.5	06/18/19 20:51	
Propionic Acid	**380**		2.5	2.5	06/18/19 20:51	

QC Summary Forms

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1905551-01	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/06/19 14:48	
Acetic Acid	ND U	1.0	1	06/06/19 14:48	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/06/19 14:48	
Lactic Acid	ND U	1.0	1	06/06/19 14:48	
Propionic Acid	ND U	1.0	1	06/06/19 14:48	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1905052
Project:	LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1906068-01	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.50	1	06/18/19 14:32	
Acetic Acid	ND U	1.0	1	06/18/19 14:32	
Butanoic Acid (Butyric Acid)	ND U	2.0	1	06/18/19 14:32	
Lactic Acid	ND U	1.0	1	06/18/19 14:32	
Propionic Acid	ND U	1.0	1	06/18/19 14:32	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1905052
Date Analyzed: 06/06/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1905551-02			RQ1905551-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.95	2.03	96	1.87	2.03	92	73-122	4	30
Acetic Acid	Organic Acids	18.6	19.9	93	18.4	19.9	93	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	28.8	20.5	140 *	29.1	20.5	142 *	86-128	1	30
Lactic Acid	Organic Acids	19.6	20.6	95	18.8	20.6	91	75-125	4	30
Propionic Acid	Organic Acids	19.8	20.1	98	19.1	20.1	95	63-153	4	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1905052
Date Analyzed: 06/18/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1906068-02			RQ1906068-03					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.97	2.03	97	1.92	2.03	95	73-122	2	30
Acetic Acid	Organic Acids	19.7	19.9	99	19.6	19.9	99	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	20.9	20.5	102	19.8	20.5	97	86-128	5	30
Lactic Acid	Organic Acids	21.3	20.6	103	21.0	20.6	102	75-125	2	30
Propionic Acid	Organic Acids	19.4	20.1	96	19.8	20.1	99	63-153	2	30

LABORATORY REPORT

June 17, 2019

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

RE: HS19060185

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on June 6, 2019. For your reference, these analyses have been assigned our service request number P1903244.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 12:18, June 17, 2019

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P1903244
Project: HS19060185

CASE NARRATIVE

The samples were received intact under chain of custody on June 6, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1903244-003	Ethane

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-006
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Service Request: P1903244
Project ID: HS19060185

Date Received: 6/6/2019
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
03WW01_060419	P1903244-001	Water	6/4/2019	07:45	X	X
34AWW08_060419	P1903244-002	Water	6/4/2019	08:20	X	X
35AWW20_060419	P1903244-003	Water	6/4/2019	09:25	X	X
35AWW10_060419	P1903244-004	Water	6/4/2019	10:30	X	X
35AWW10_060419_a	P1903244-005	Water	6/4/2019	10:30	X	X
35AWW06_060419	P1903244-006	Water	6/4/2019	11:35	X	X

P1903244

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

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11527**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

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:	HS19060185
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19060185-01**	**03WW01_060419**	**Groundwater**	**04 Jun 2019 07:45**
	MEE plus CO2 Sub to ALS SimiValley			13 Jun 2019
2.	**HS19060185-02**	**34AWW08_060419**	**Groundwater**	**04 Jun 2019 08:20**
	MEE plus CO2 Sub to ALS SimiValley			13 Jun 2019
3.	**HS19060185-03**	**35AWW20_060419**	**Groundwater**	**04 Jun 2019 09:25**
	MEE plus CO2 Sub to ALS SimiValley			13 Jun 2019
4.	**HS19060185-04**	**35AWW10_060419**	**Groundwater**	**04 Jun 2019 10:30**
	MEE plus CO2 Sub to ALS SimiValley			13 Jun 2019
5.	**HS19060185-05**	**35AWW10_060419_a**	**Groundwater**	**04 Jun 2019 10:30**
	MEE plus CO2 Sub to ALS SimiValley			13 Jun 2019
6.	**HS19060185-06**	**35AWW06_060419**	**Groundwater**	**04 Jun 2019 11:35**
	MEE plus CO2 Sub to ALS SimiValley			13 Jun 2019

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

QC Level: DOD IV (DoD Data Package)

P1903244

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **11527**

Relinquished By:

Date/Time:

Received By:

Date/Time: 04/6/19 0930

Cooler ID(s):

Temperature(s): 2°

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1903244

Project: HS19060185

Sample(s) received on: 6/6/19 Date opened: 6/6/19 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C Thermometer ID T-111 Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1903244-001.01	40mL VOA NP		7		A	wh 6/12/19
P1903244-001.02	40mL VOA NP				A	
P1903244-001.04	40ml VOA HCL		1		A	wh 6/11/19
P1903244-001.05	40ml VOA HCL				A	
P1903244-002.01	40mL VOA NP		7		A	wh 6/12/19
P1903244-002.02	40mL VOA NP				A	
P1903244-002.04	40ml VOA HCL		1		A	wh 6/11/19
P1903244-002.05	40ml VOA HCL				A	
P1903244-003.01	40mL VOA NP		7		A	wh 6/12/19
P1903244-003.02	40mL VOA NP				A	
P1903244-003.04	40ml VOA HCL		1		A	wh 6/11/19
P1903244-003.05	40ml VOA HCL				A	
P1903244-004.01	40mL VOA NP		6		A	wh 6/12/19
P1903244-004.02	40mL VOA NP				A	
P1903244-004.04	40ml VOA HCL		1		A	wh 6/11/19

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1903244

Project: HS19060185

Sample(s) received on: 6/6/19 Date opened: 6/6/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1903244-004.05	40ml VOA HCL				A	
P1903244-005.01	40mL VOA NP		6		A	wh 6/12/19
P1903244-005.02	40mL VOA NP				A	
P1903244-005.04	40ml VOA HCL		1		A	wh 6/11/19
P1903244-005.05	40ml VOA HCL				A	
P1903244-006.01	40mL VOA NP		7		A	wh 6/12/19
P1903244-006.02	40mL VOA NP				A	
P1903244-006.04	40ml VOA HCL		1		A	wh 6/11/19
P1903244-006.05	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19060185** ALS Project ID: P1903244

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 6/4/19
Analyst: Wade Henton Date Received: 6/6/19
Matrix: Water Date Analyzed: 6/12/19
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
03WW01_060419	P1903244-001	0.050	**520,000**	2,000	1,700	740	
34AWW08_060419	P1903244-002	0.050	**260,000**	2,000	1,700	740	
35AWW20_060419	P1903244-003	0.050	**730,000**	2,000	1,700	740	
35AWW10_060419	P1903244-004	0.050	**670,000**	2,000	1,700	740	
35AWW10_060419_a	P1903244-005	0.050	**620,000**	2,000	1,700	740	
35AWW06_060419	P1903244-006	0.050	**750,000**	2,000	1,700	740	
Method Control Sample	P190612-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1903244
Client Project ID: **HS19060185** ALS Sample ID: P190612-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 6/12/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,900	19,800	**83**	**86**	80-122	4	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **03WW01_060419**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P1903244-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/4/19
Date Received: 6/6/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2,900**	1.3	1.0	0.51	
74-85-1	Ethene	**1.6**	1.0	0.55	0.24	
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **34AWW08_060419**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P1903244-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/4/19
Date Received: 6/6/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**3,000**	1.3	1.0	0.51	
74-85-1	Ethene	**4.1**	1.0	0.55	0.24	
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW20_060419**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P1903244-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/4/19
Date Received: 6/6/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**920**	1.3	1.0	0.51	
74-85-1	Ethene	**1.3**	1.0	0.55	0.24	
74-84-0	Ethane	**0.19**	0.60	0.47	0.16	**J**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW10_060419**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P1903244-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/4/19
Date Received: 6/6/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW10_060419_a**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P1903244-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/4/19
Date Received: 6/6/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35AWW06_060419**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P1903244-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 6/4/19
Date Received: 6/6/19
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1,500**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P190611-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19060185**

ALS Project ID: P1903244
ALS Sample ID: P190611-LCS
P190611-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/11/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.45	2.54	**97**	**101**	73-125	4	26	
74-85-1	Ethene	4.40	4.78	5.02	**109**	**114**	72-133	4	11	
74-84-0	Ethane	4.72	4.46	4.75	**94**	**101**	74-131	7	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 14:58:42
Operator : WH
Sample : P1903244-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:36:47 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

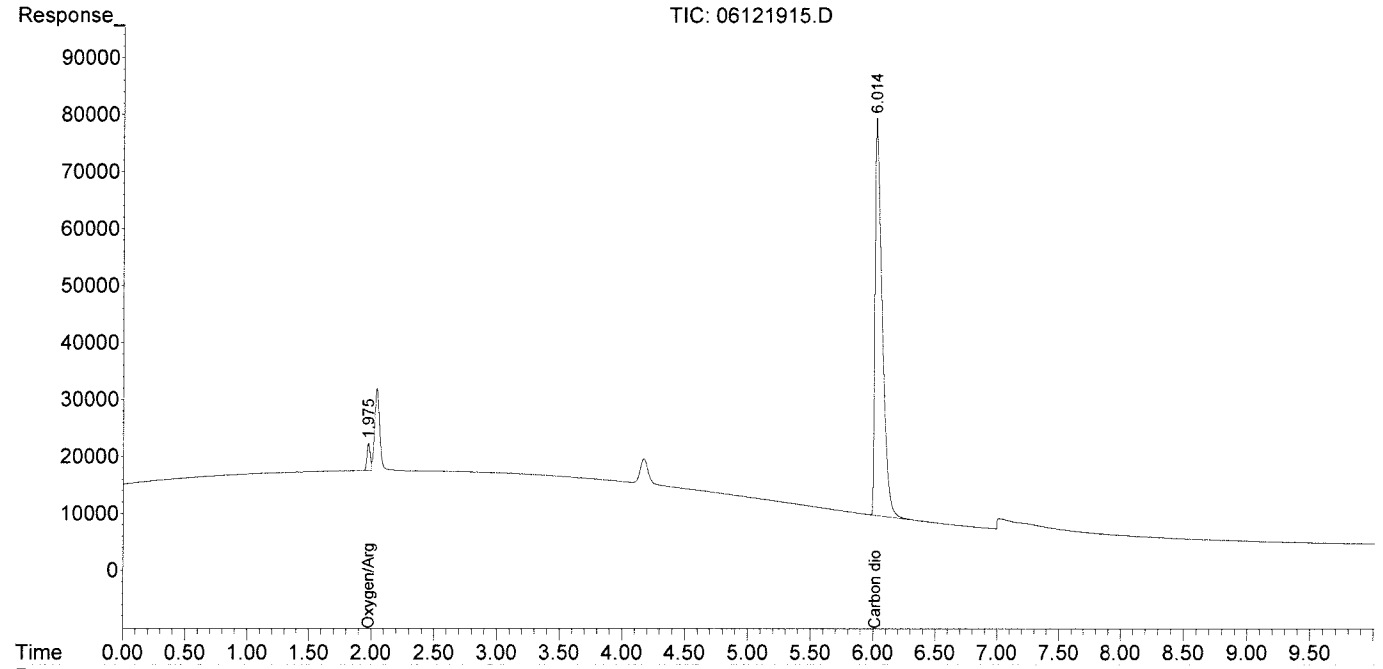
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.975f	86211	0.018	ppm
2)	Carbon monoxide	1.975f	86211	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.015	2772063	11809.622	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

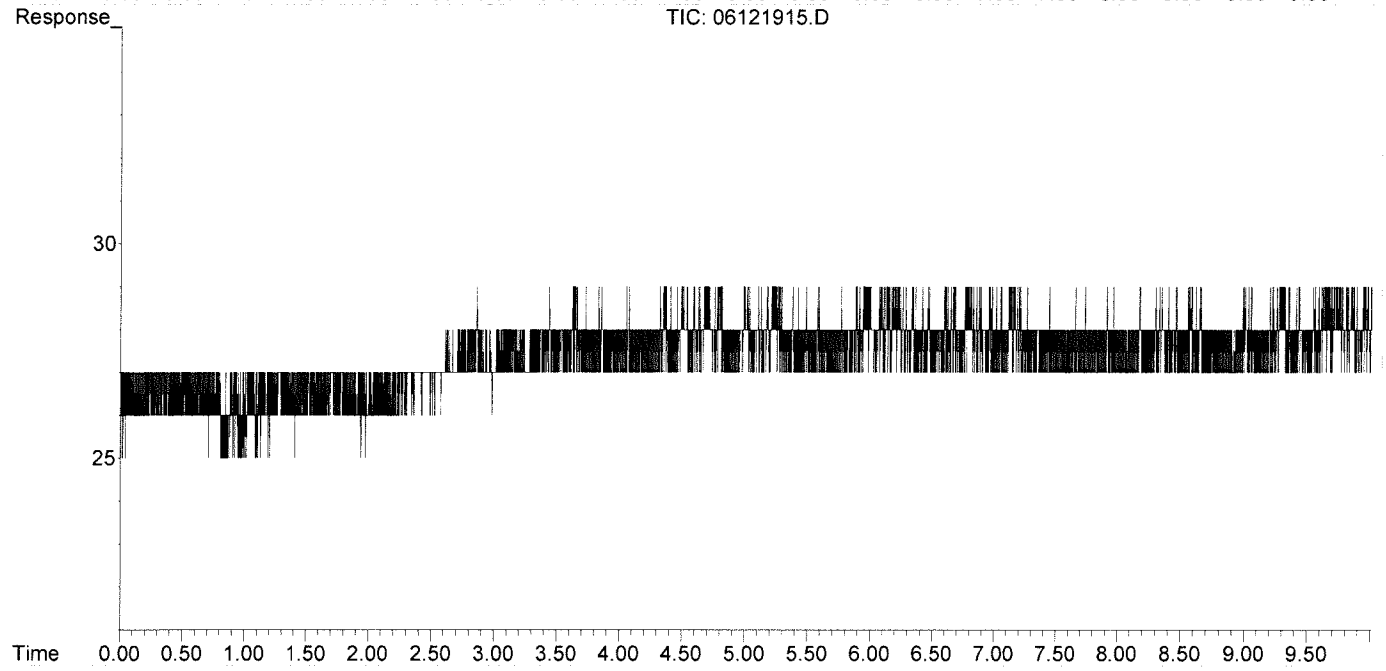
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 14:58:42
Operator : WH
Sample : P1903244-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:36:47 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 15:17:41
Operator : WH
Sample : P1903244-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:37:07 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

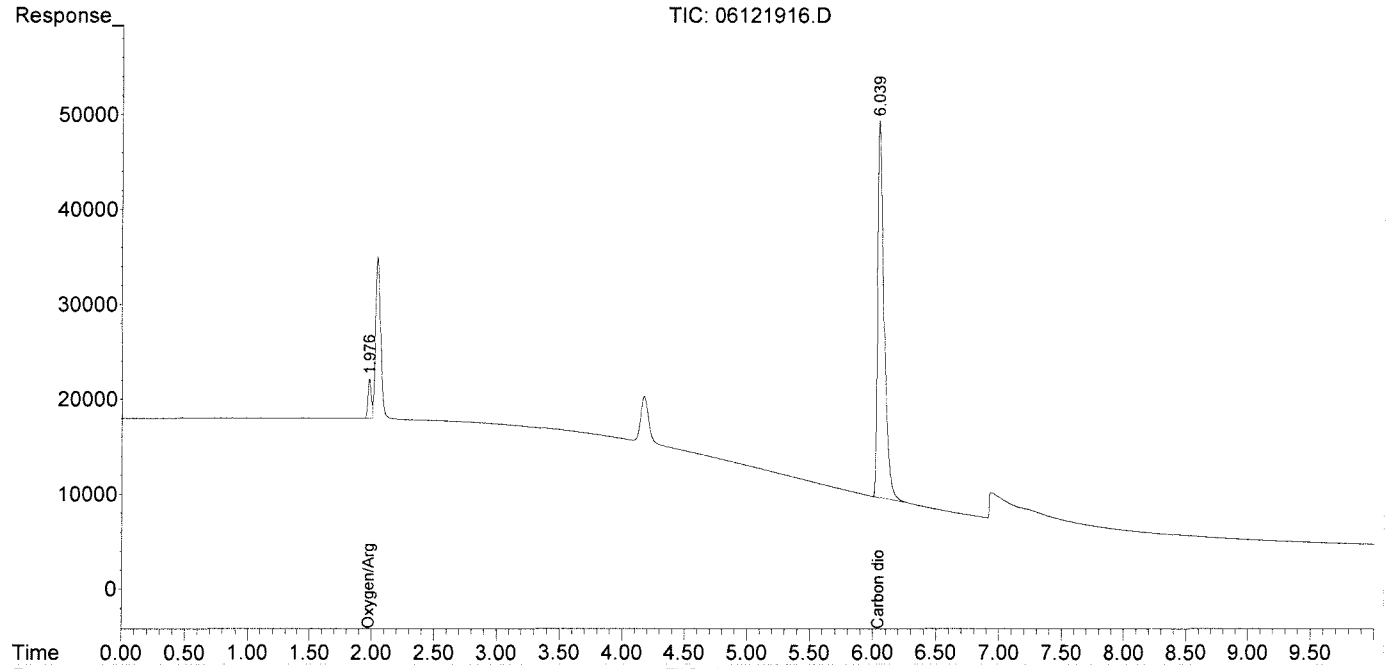
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.977f	74667	0.016	ppm
2)	Carbon monoxide	1.977f	74667	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.040	1379094	5875.256	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

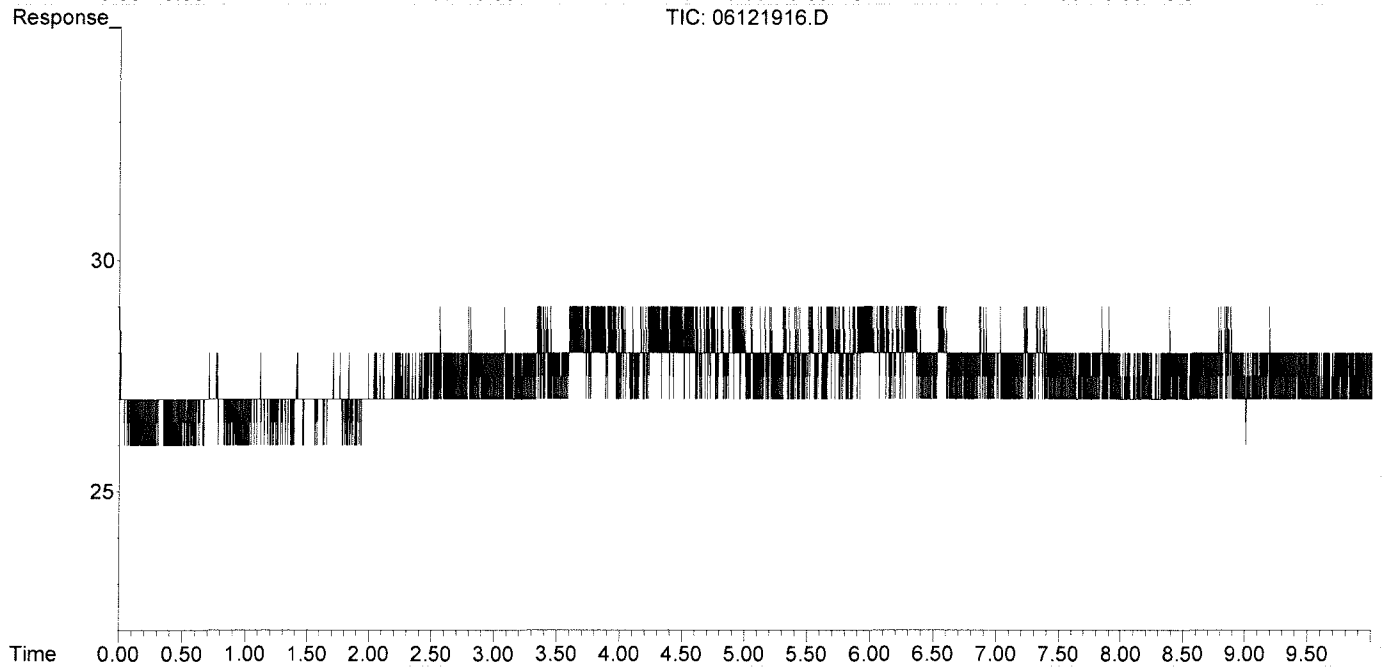
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 15:17:41
Operator : WH
Sample : P1903244-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:37:07 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 16:48:17
Operator : WH
Sample : P1903244-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 17:02:10 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

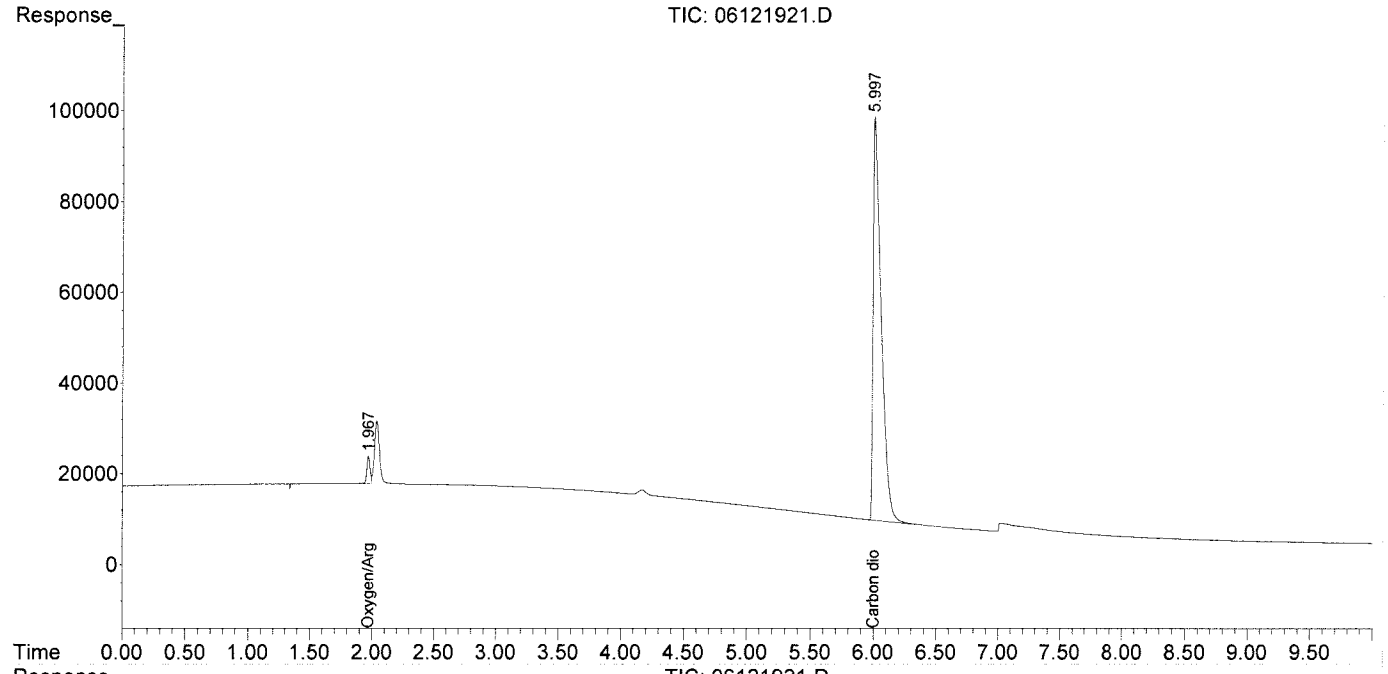
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	109177	0.023	ppm
2)	Carbon monoxide	1.968f	109177	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.999	3923111	16713.350	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

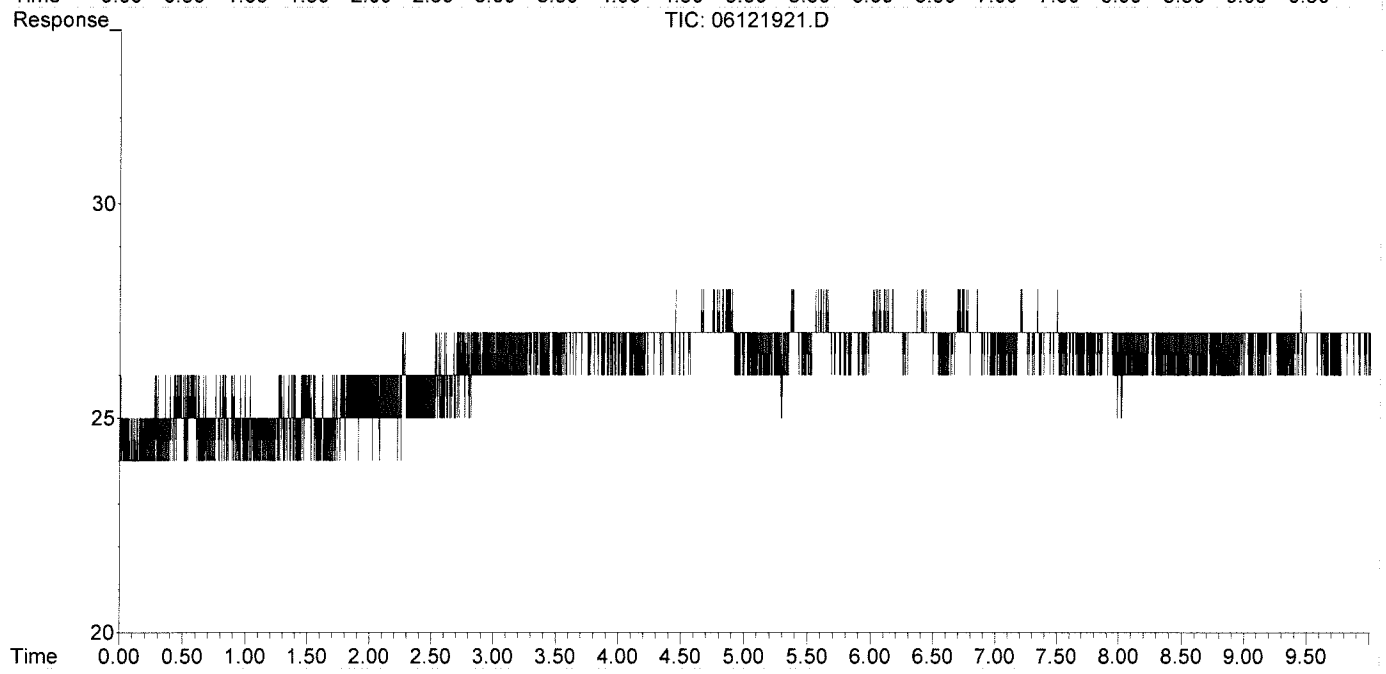
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 16:48:17
Operator : WH
Sample : P1903244-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 17:02:10 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 15:47:49
Operator : WH
Sample : P1903244-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 16:31:28 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

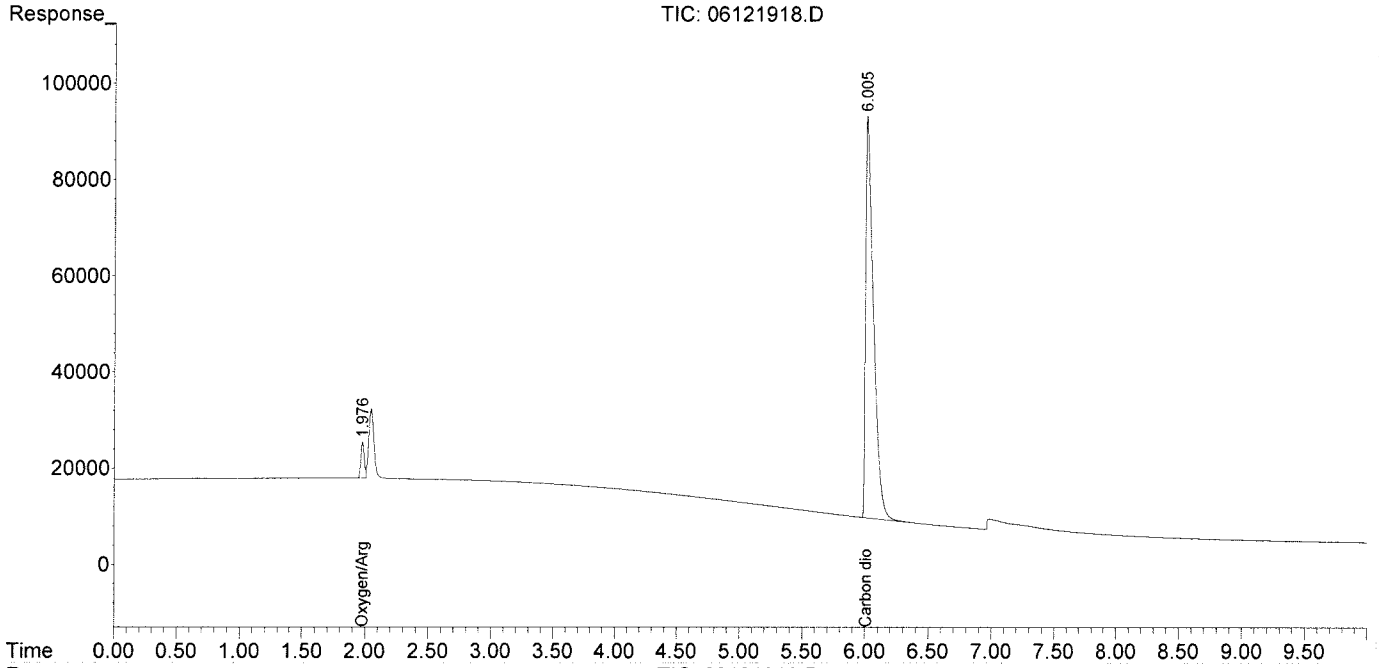
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.977f	136416	0.029	ppm
2)	Carbon monoxide	1.977f	136416	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.006	3587930	15285.401	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

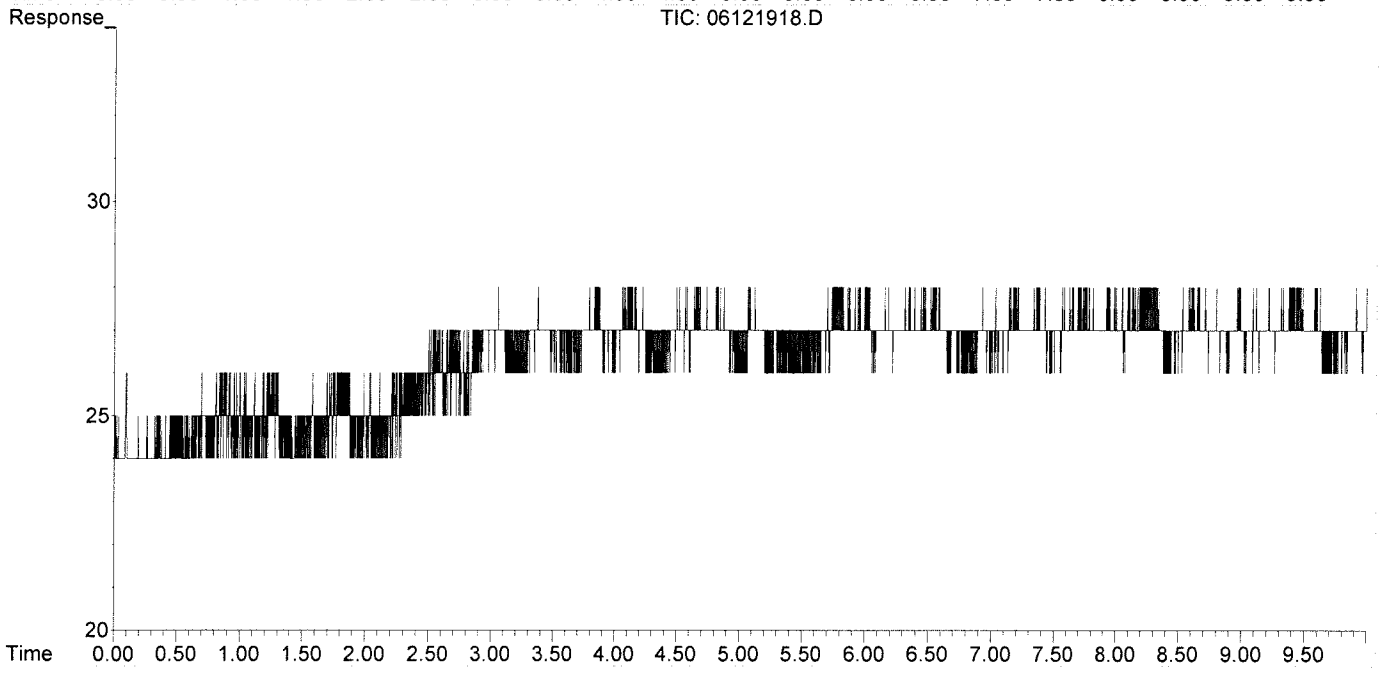
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 15:47:49
Operator : WH
Sample : P1903244-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 16:31:28 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 16:08:34
Operator : WH
Sample : P1903244-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:37:56 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

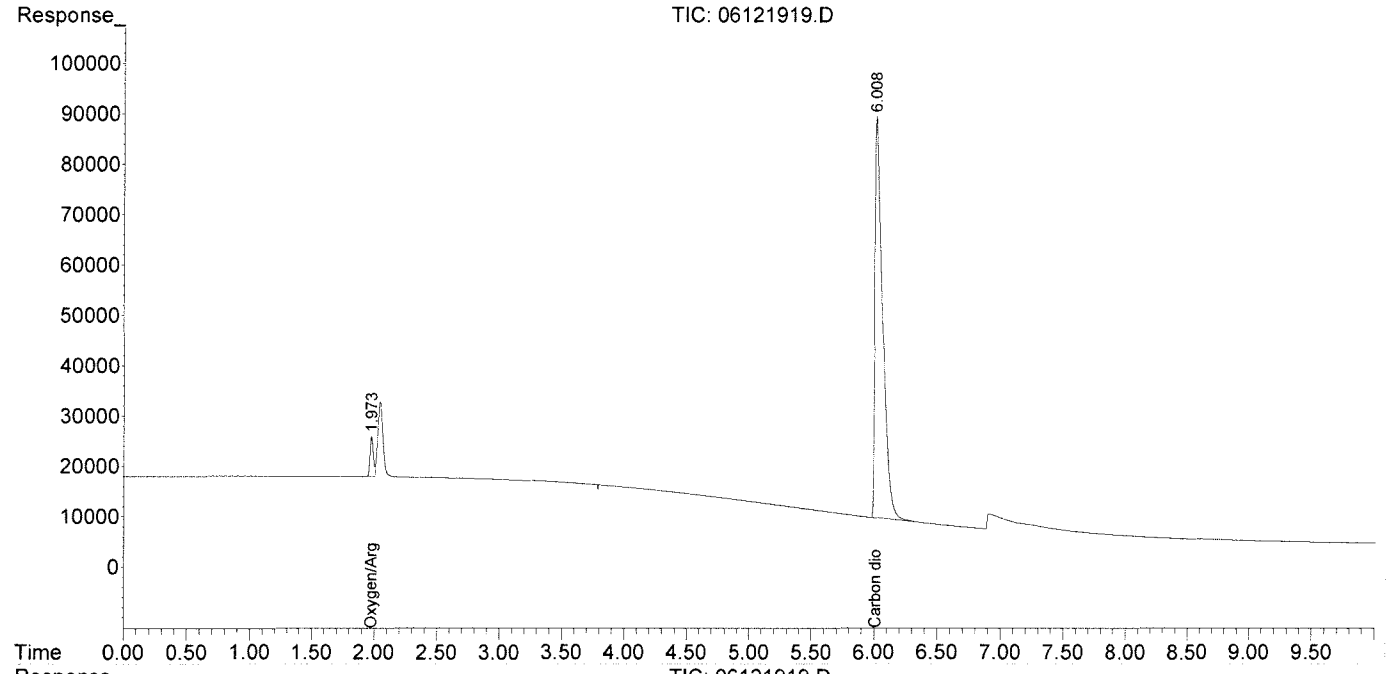
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.974f	142711	0.030	ppm
2)	Carbon monoxide	1.974f	142711	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.008	3360520	14316.582	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

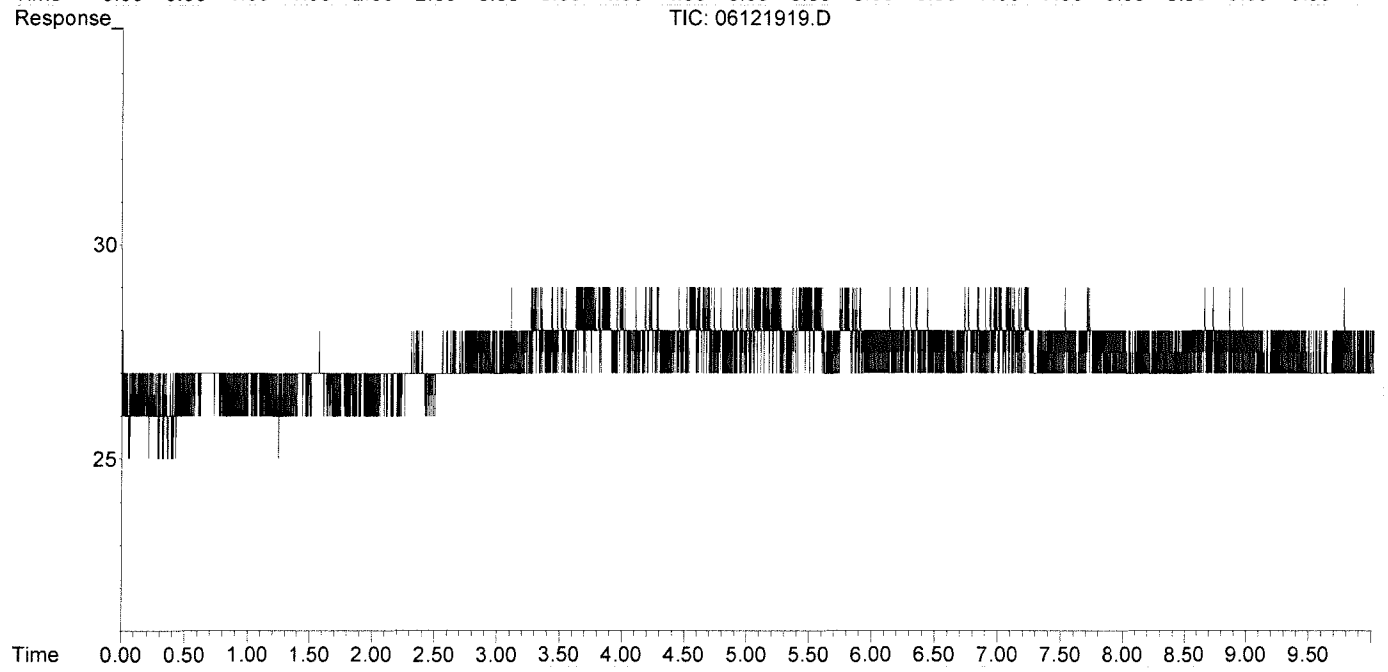
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 16:08:34
Operator : WH
Sample : P1903244-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:37:56 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 16:32:46
Operator : WH
Sample : P1903244-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 16:56:33 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

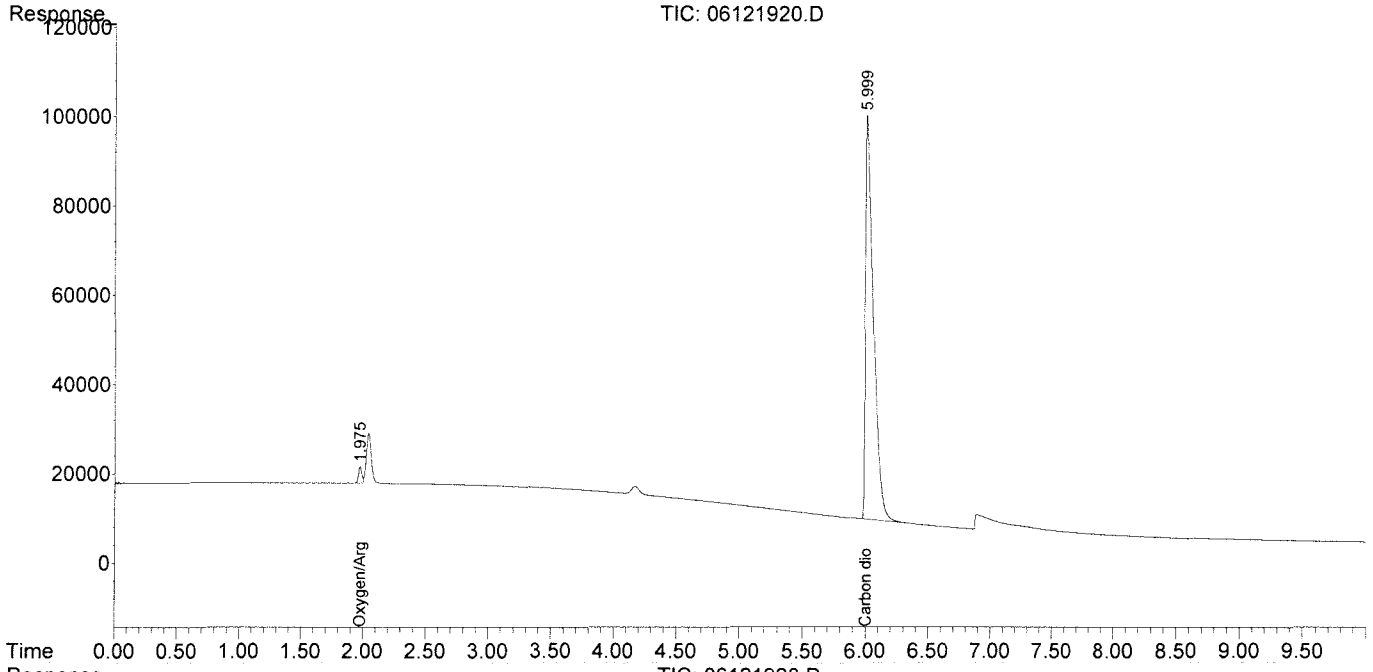
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.975f	67146	0.014	ppm
2)	Carbon monoxide	1.975f	67146	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.001	4038996	17207.045	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

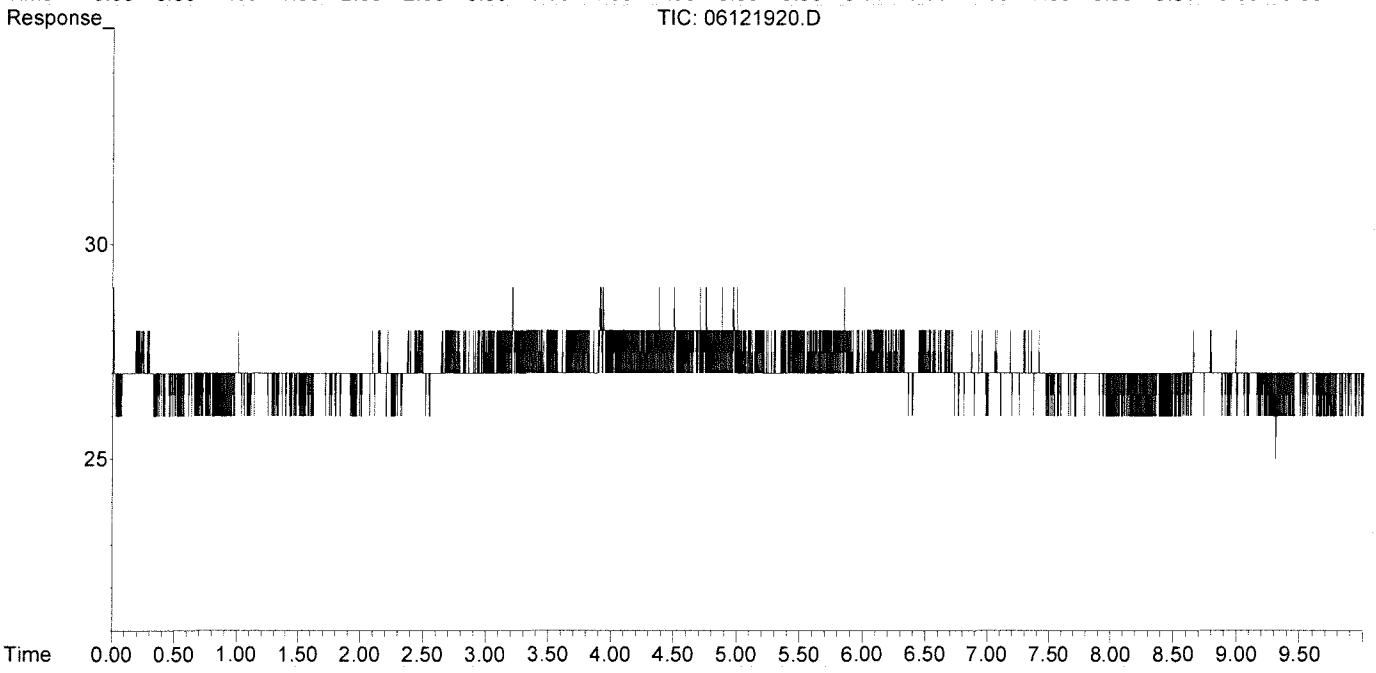
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 16:32:46
Operator : WH
Sample : P1903244-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 16:56:33 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 10:46:05
Operator : WH
Sample : MCS 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:35:35 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

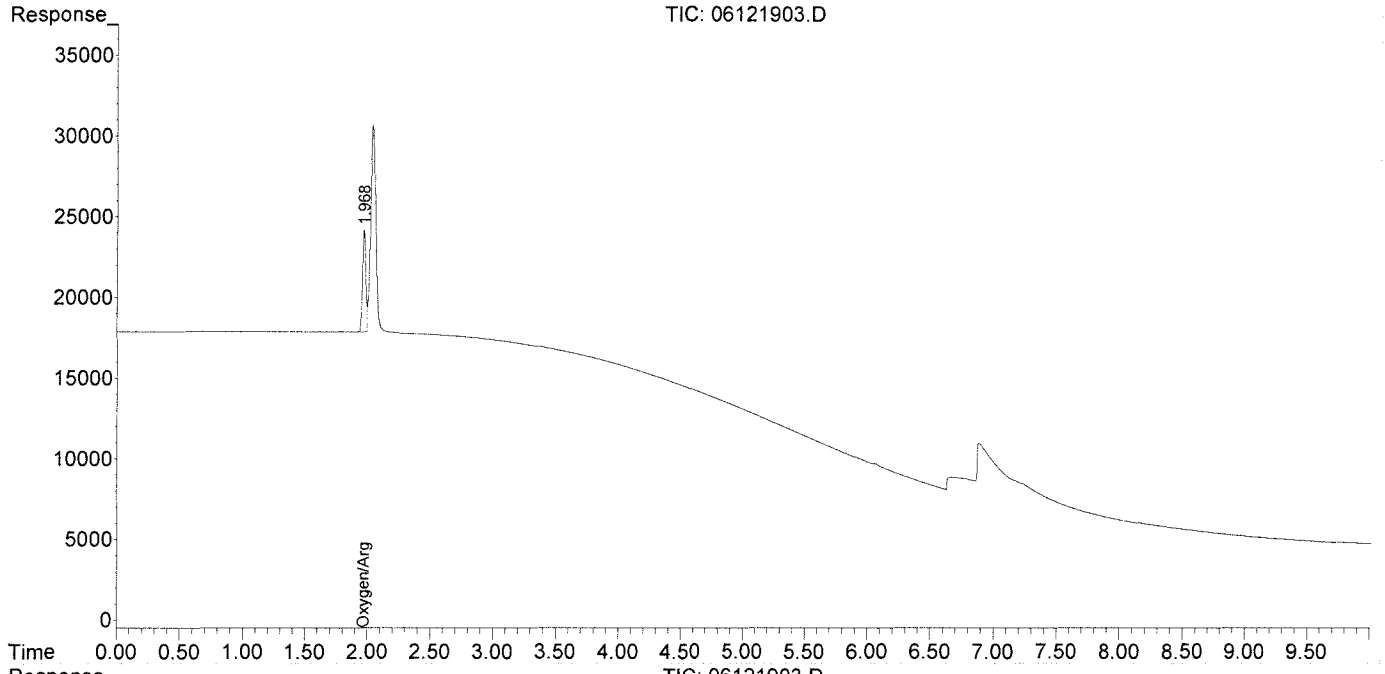
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	114576	0.024	ppm
2)	Carbon monoxide	1.968f	114576	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

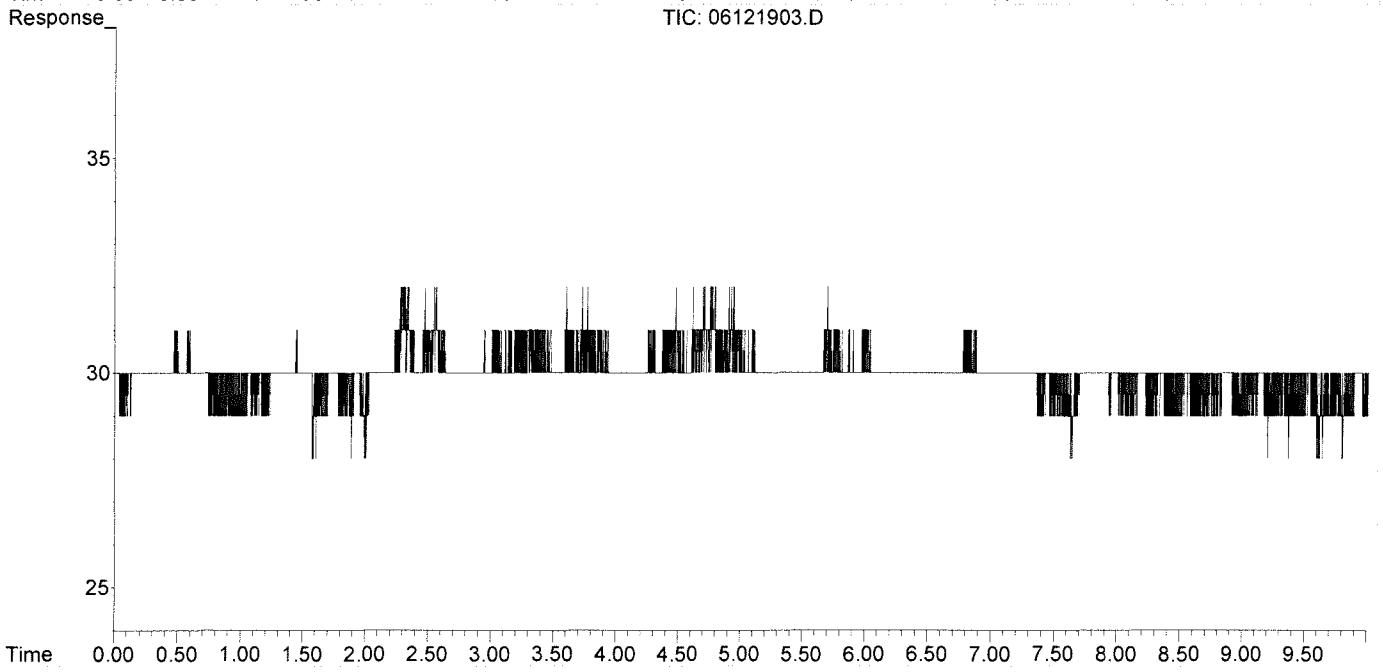
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 10:46:05
Operator : WH
Sample : MCS 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 13 15:35:35 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:05:17
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:24:58 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

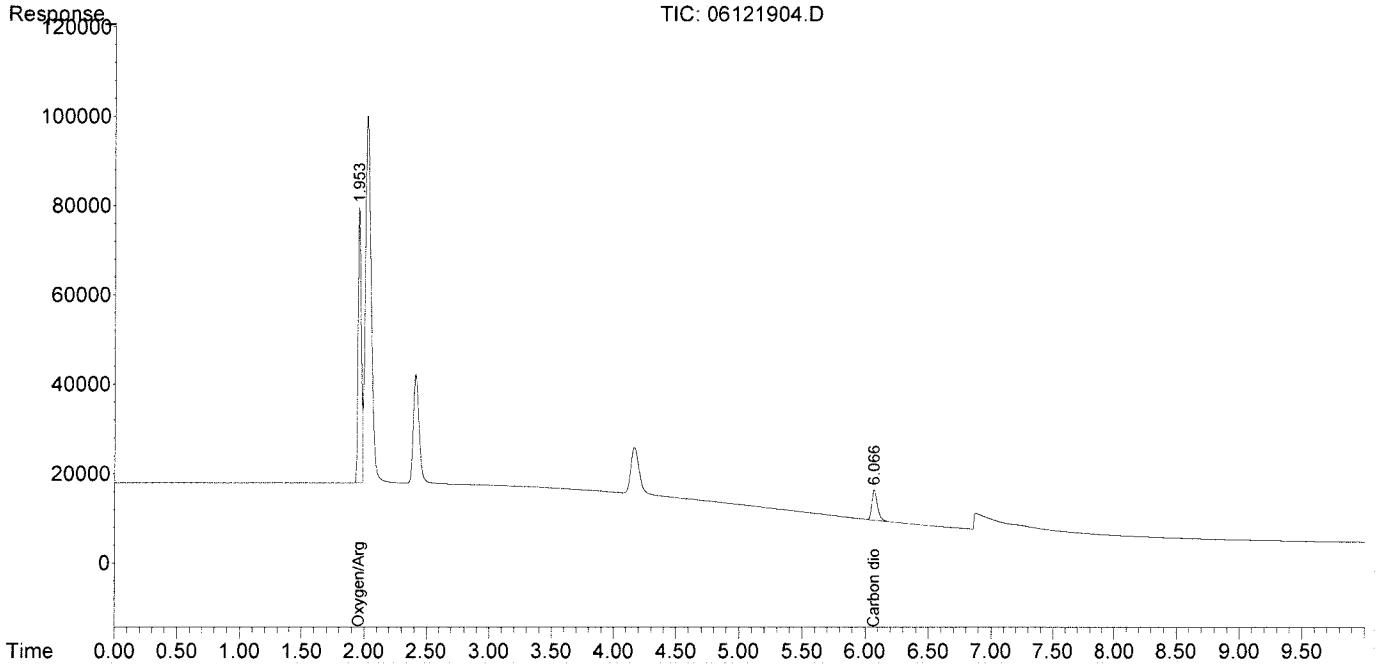
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.953f	1099974	0.231	ppm
2)	Carbon monoxide	1.953f	1099974	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.067	203531	867.089	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

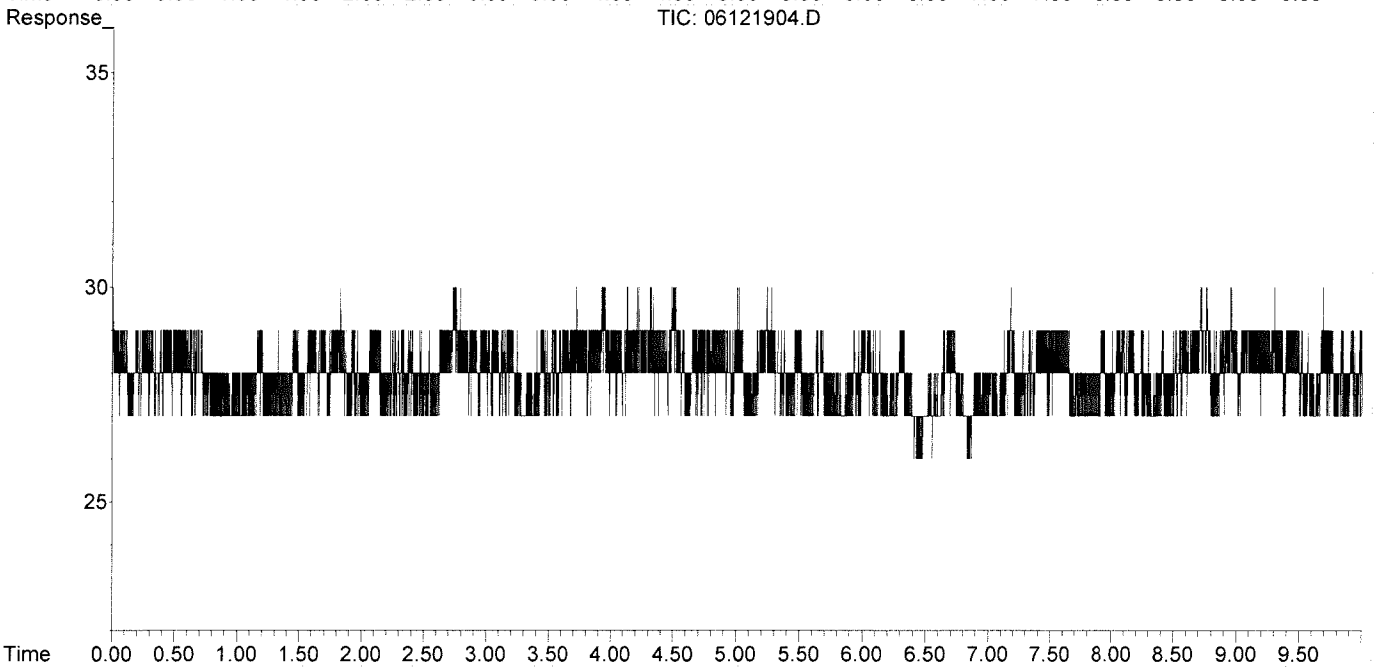
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:05:17
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:24:58 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:28:50
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:50:44 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

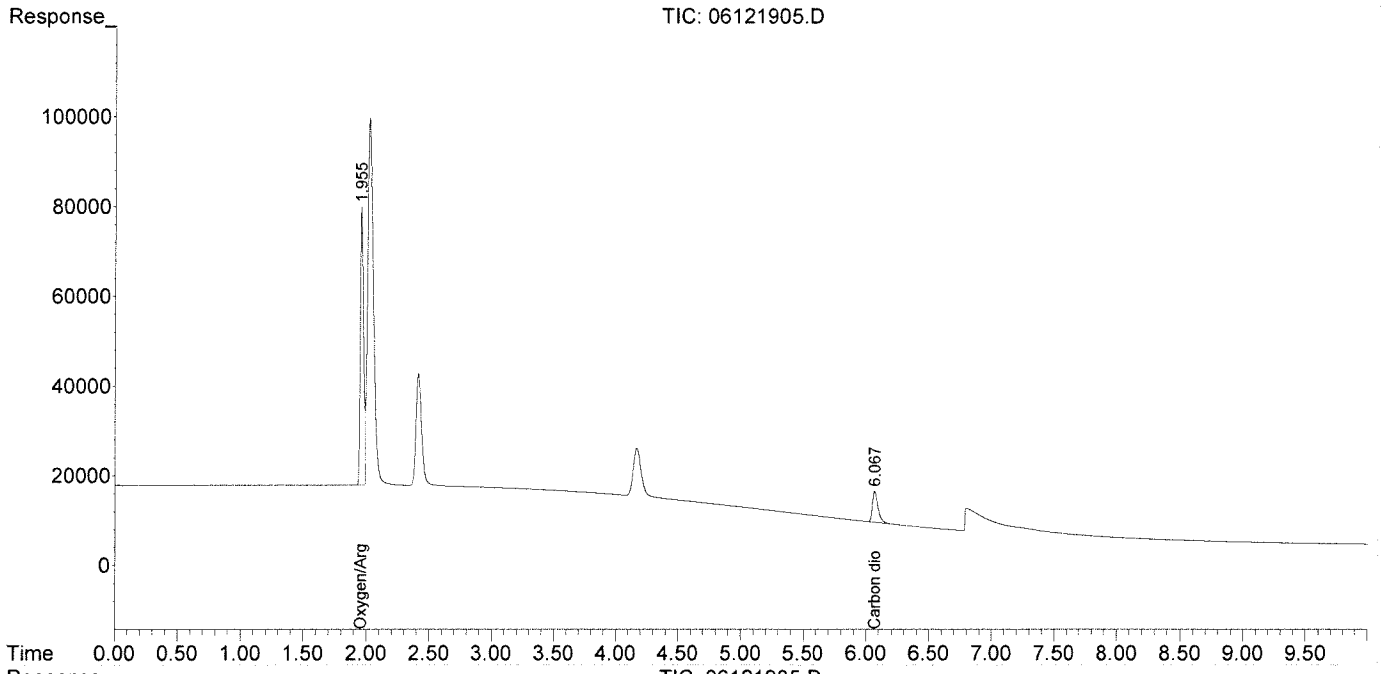
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.955f	1110401	0.233	ppm
2)	Carbon monoxide	1.955f	1110401	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.067	212864	906.849	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

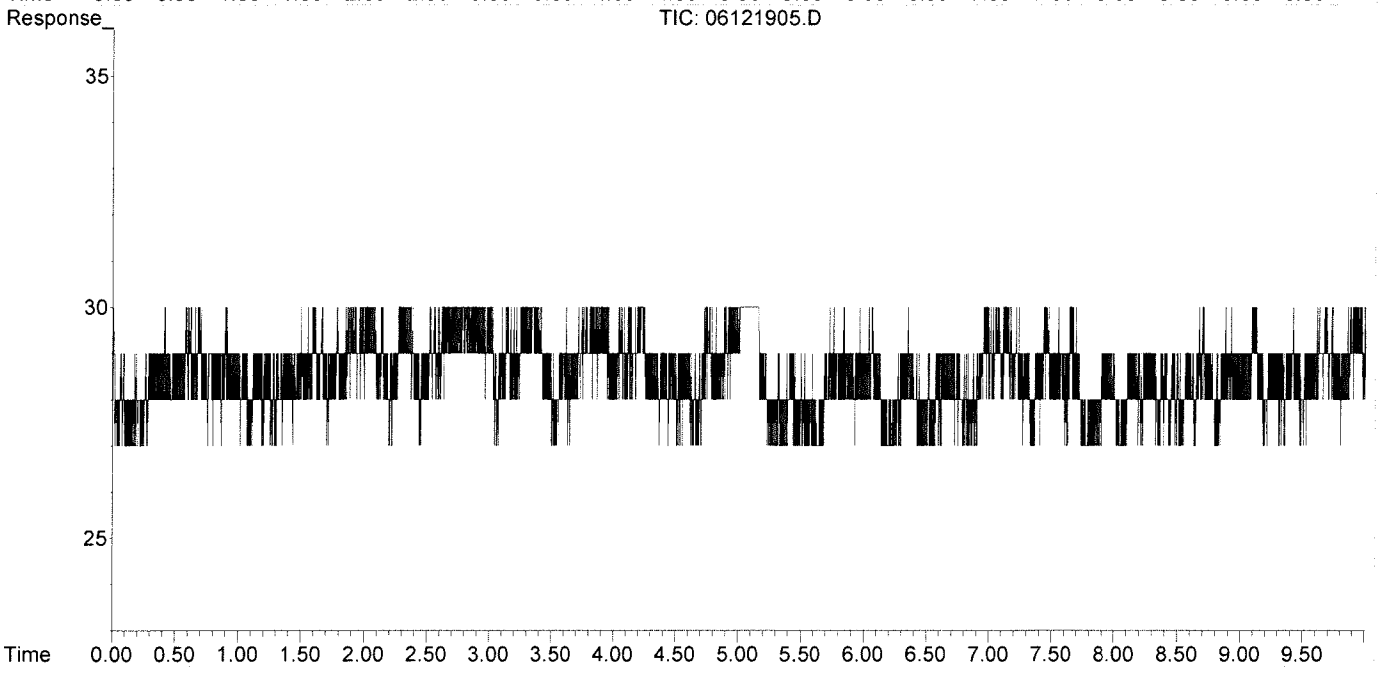
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 11:28:50
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:50:44 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

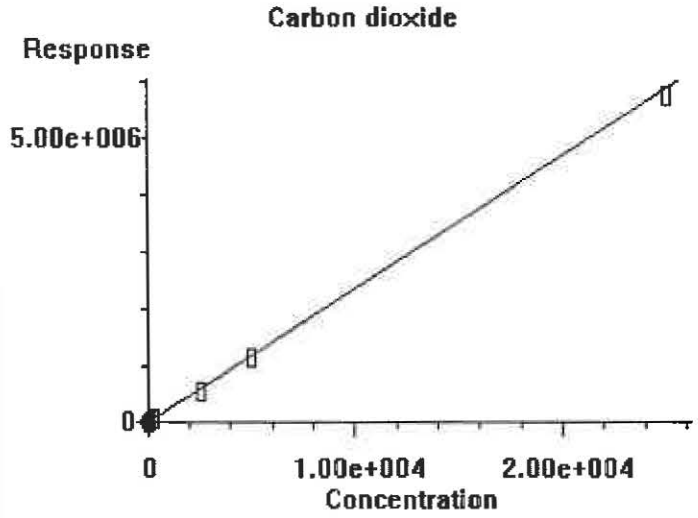
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

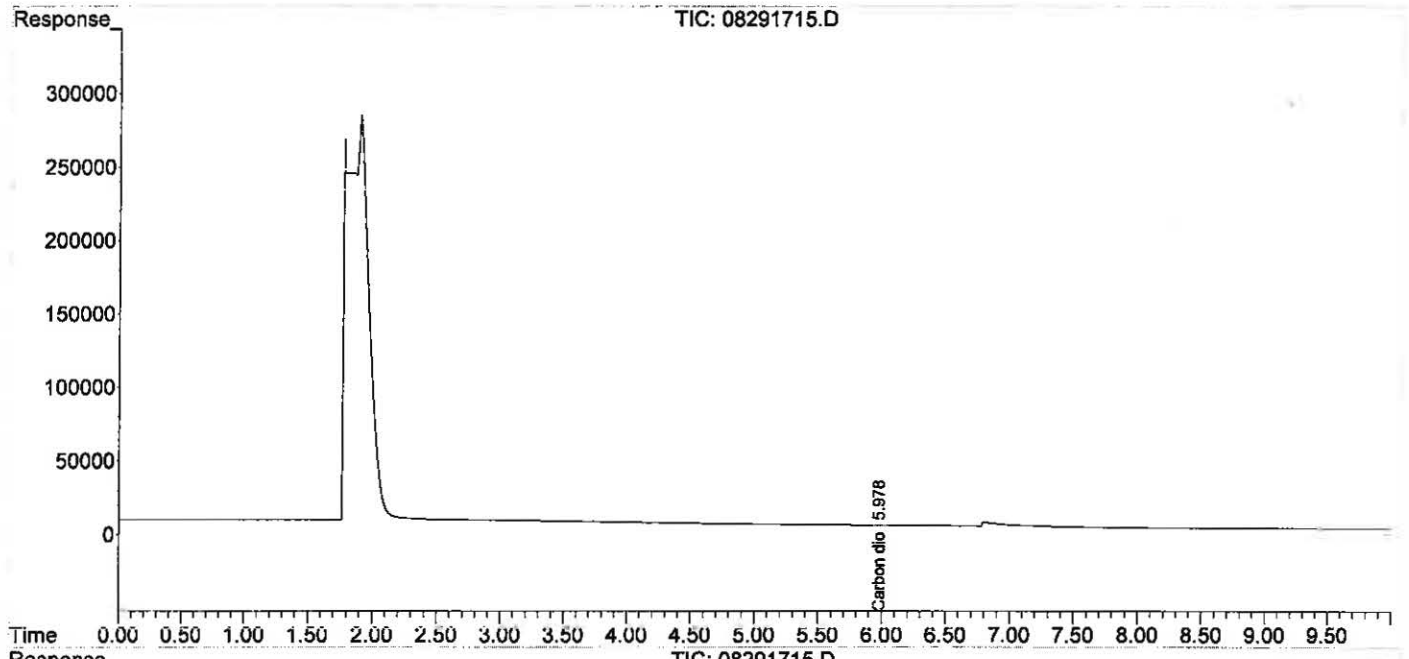
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

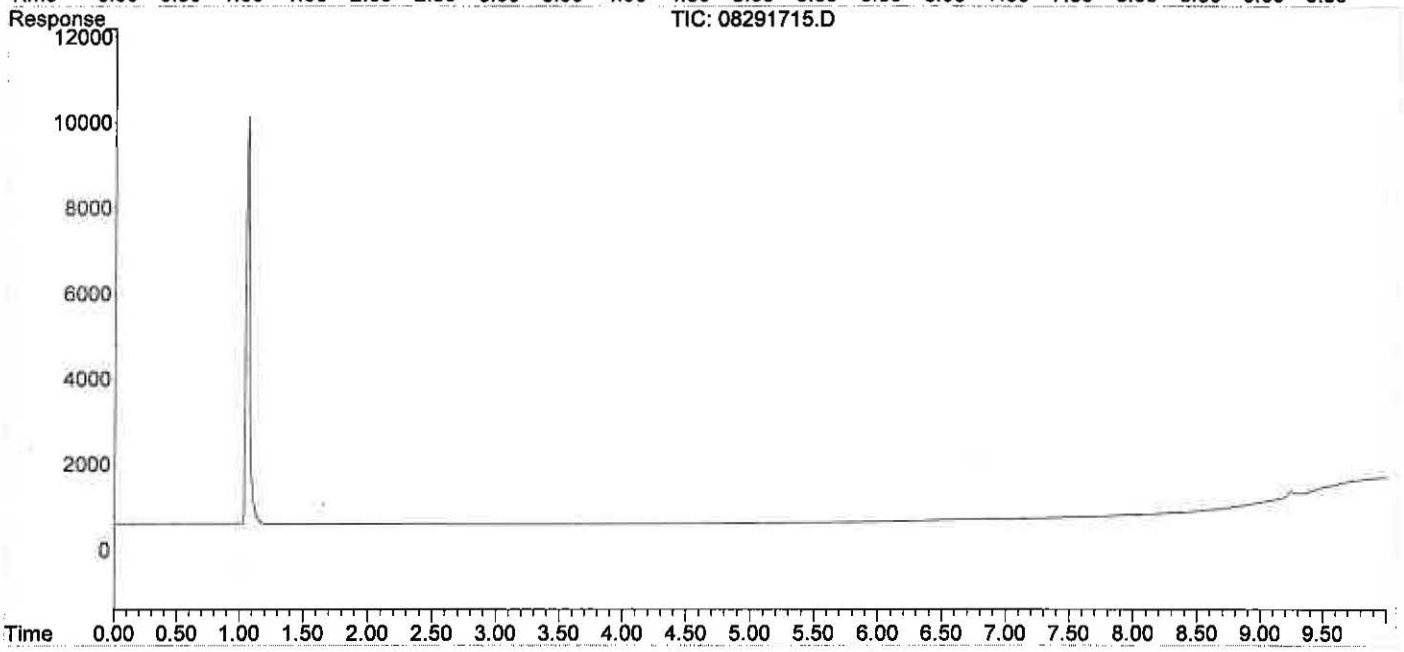
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

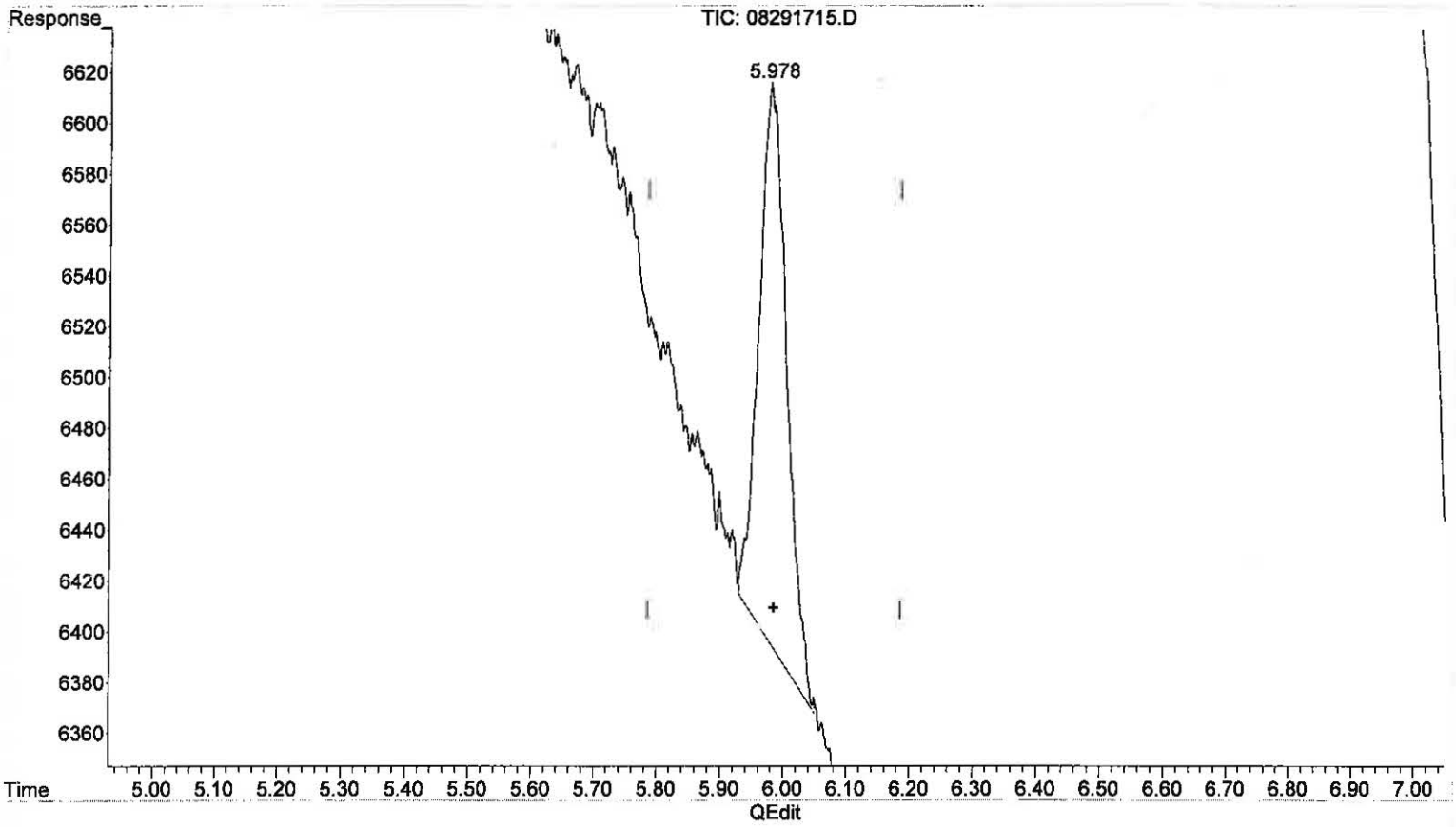




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

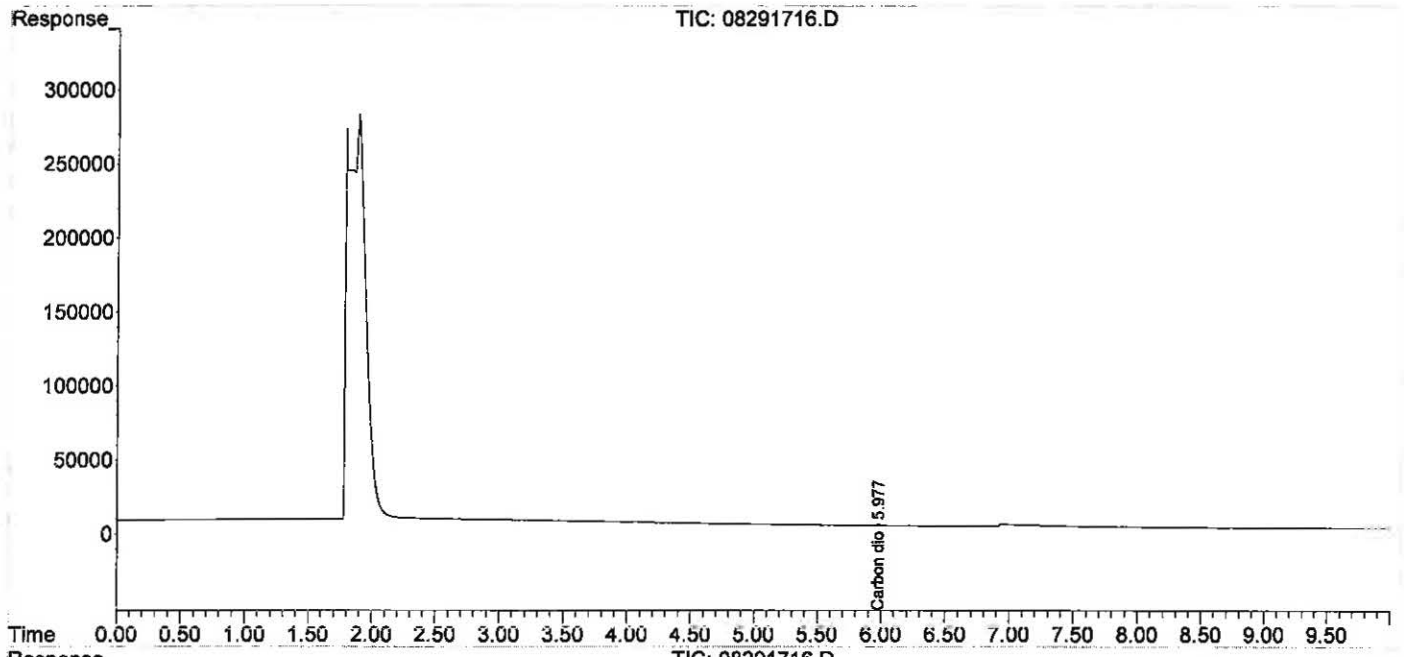
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

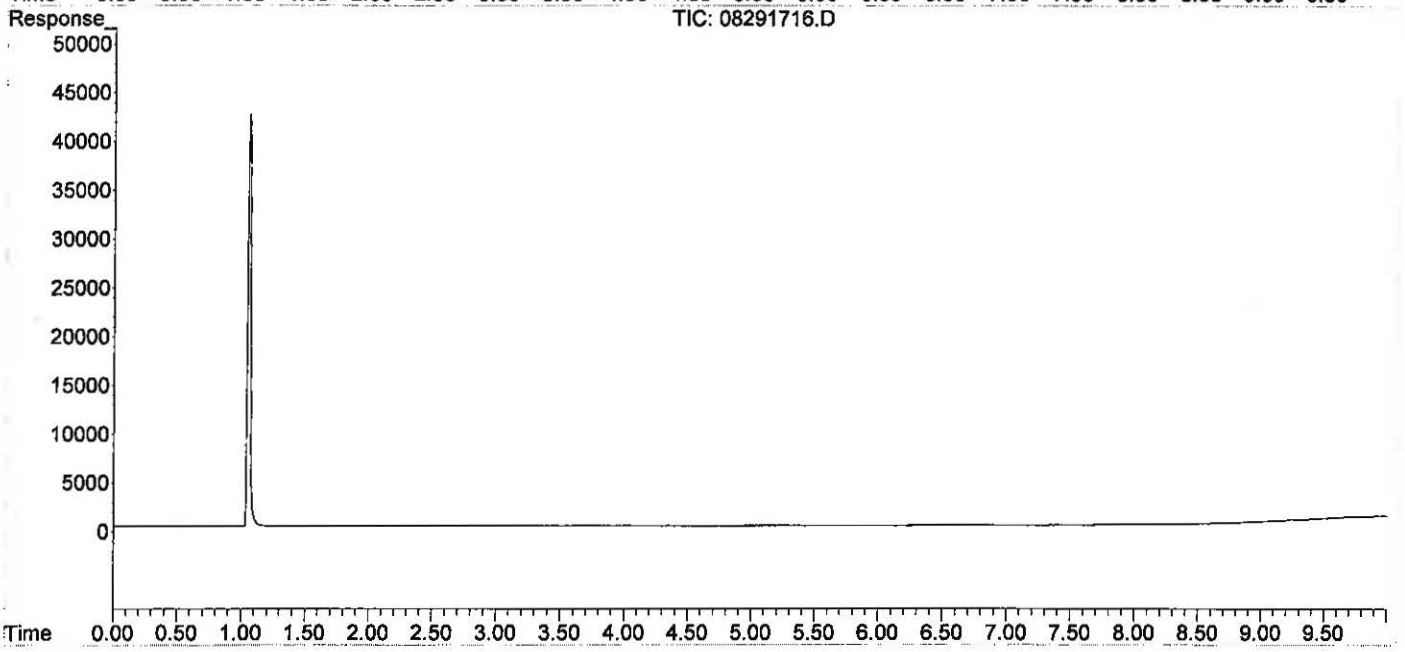
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

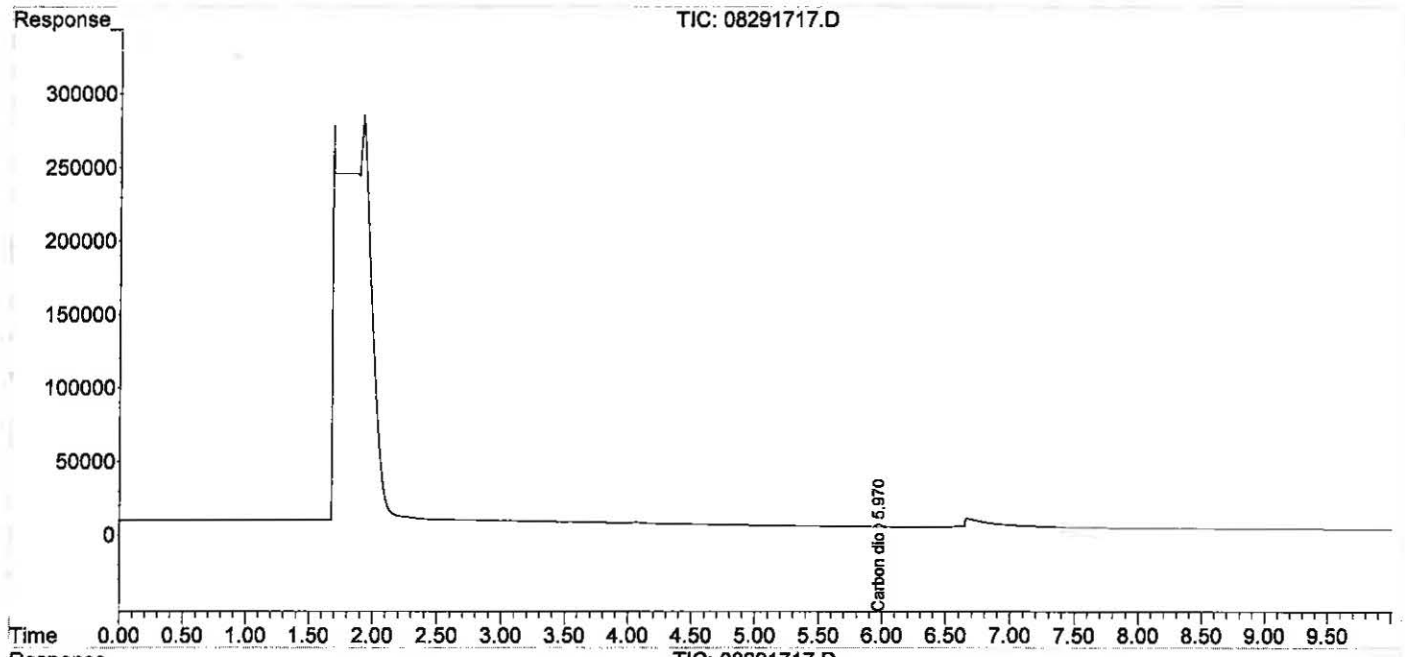
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

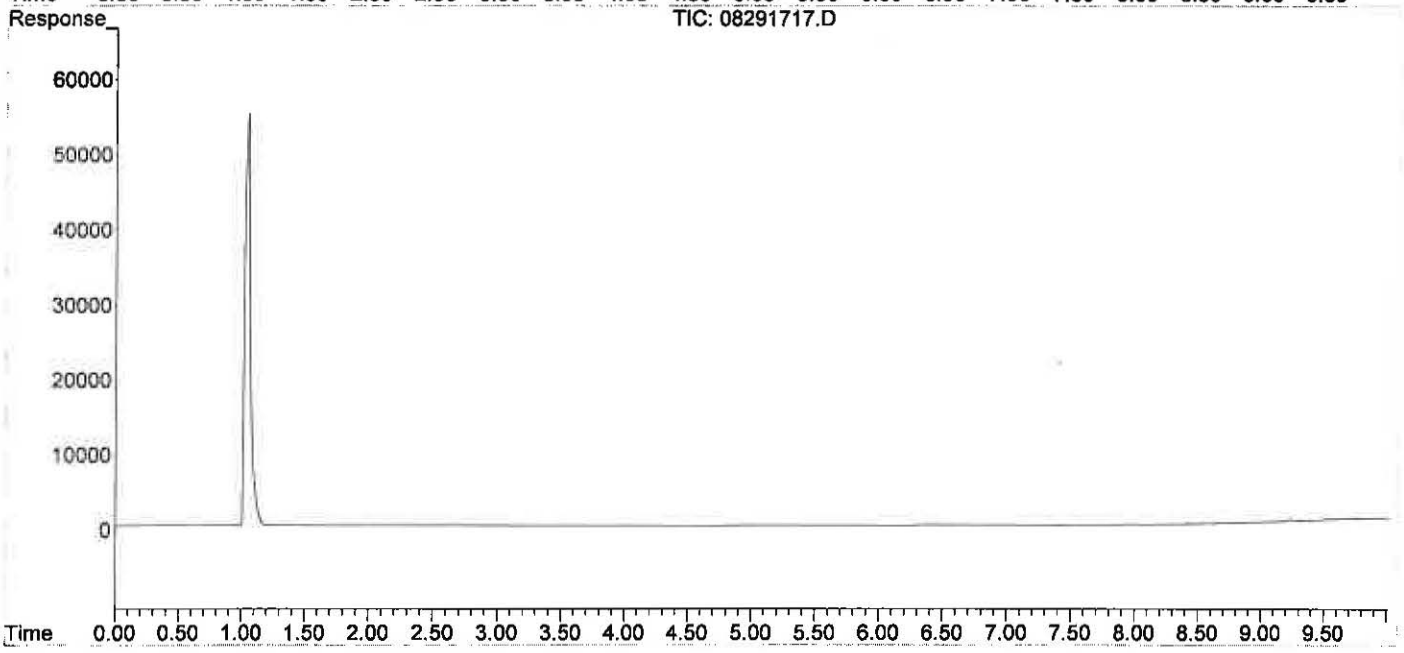
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

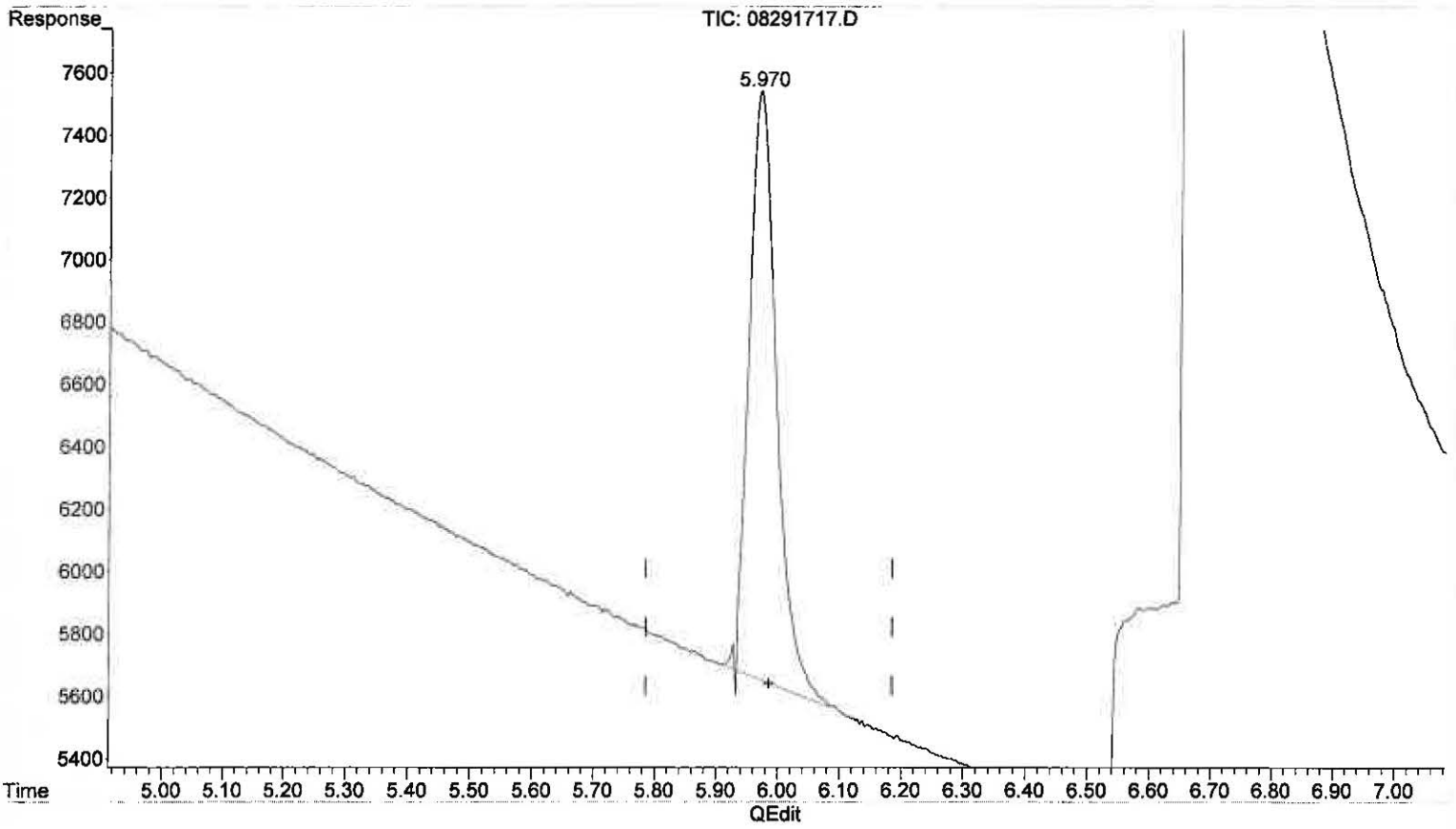




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

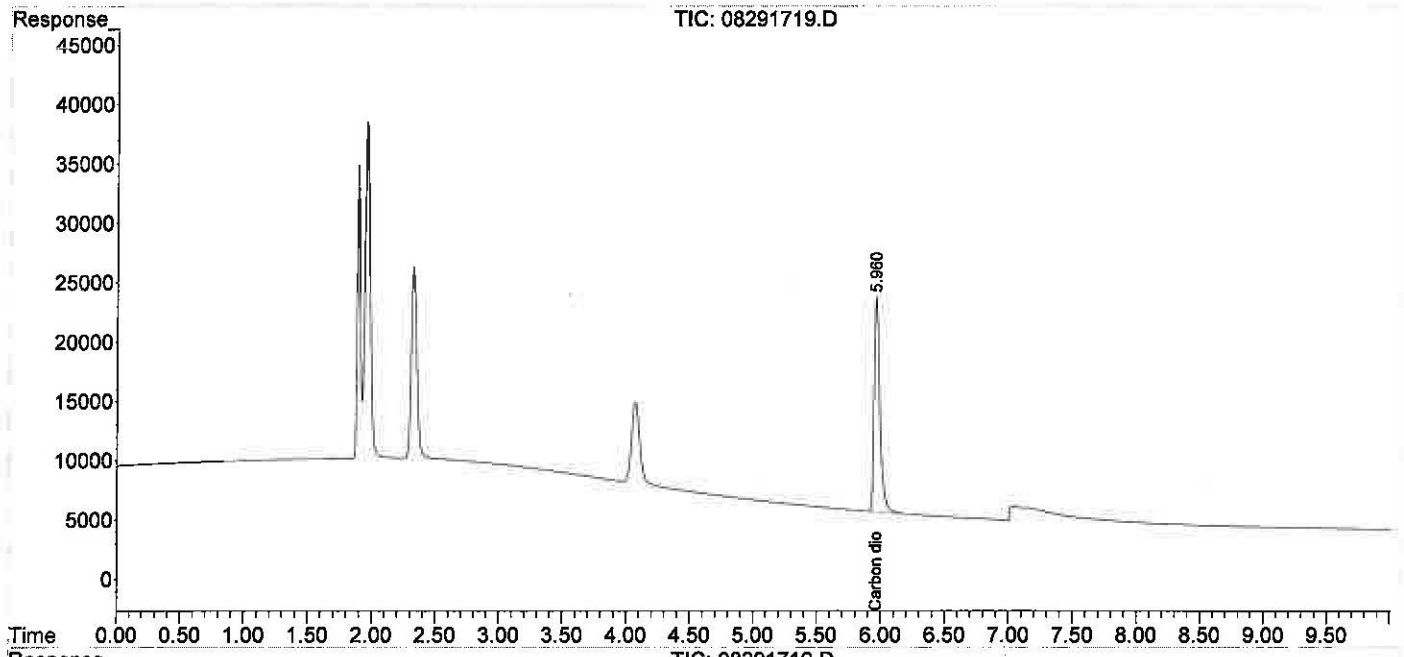
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

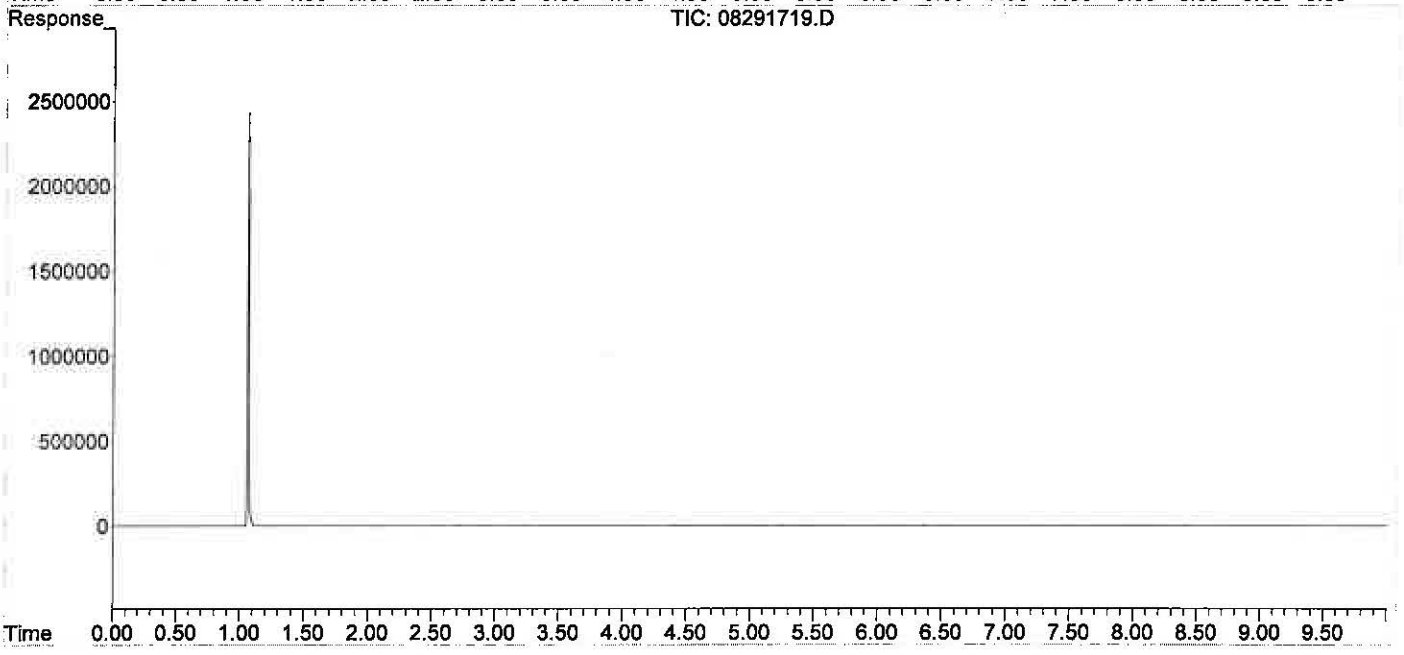
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

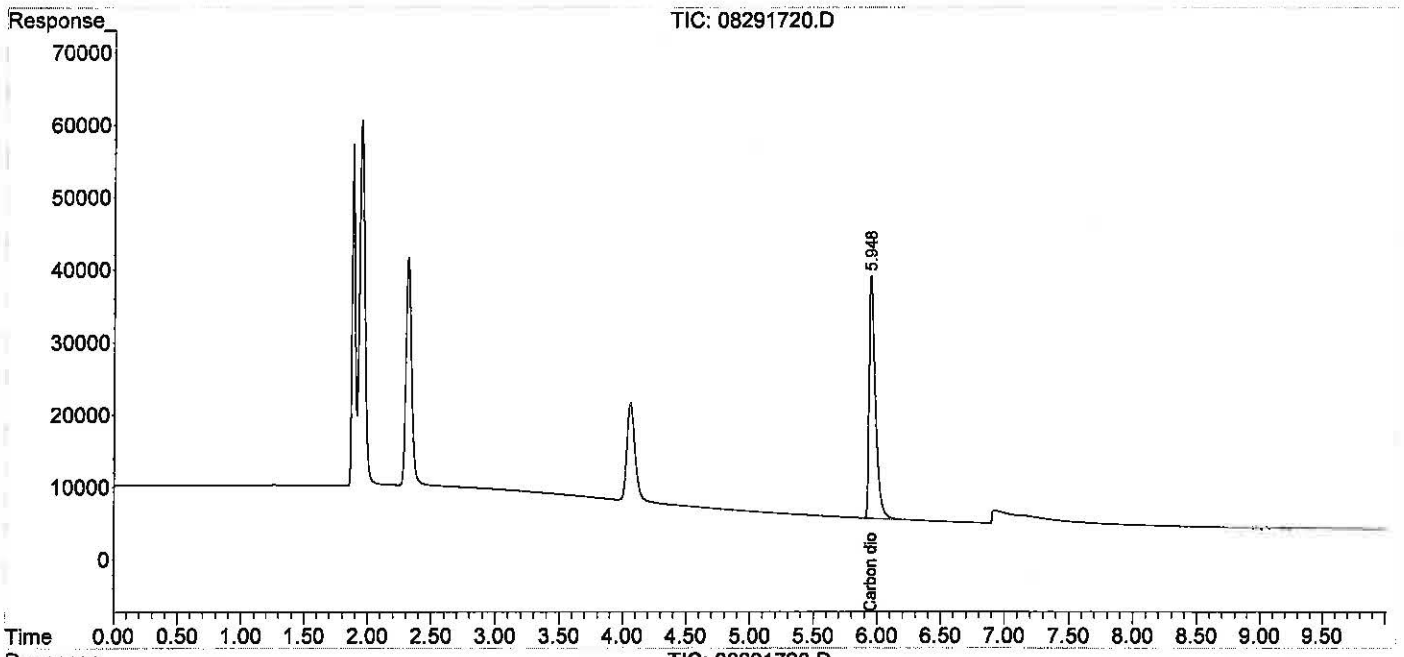
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

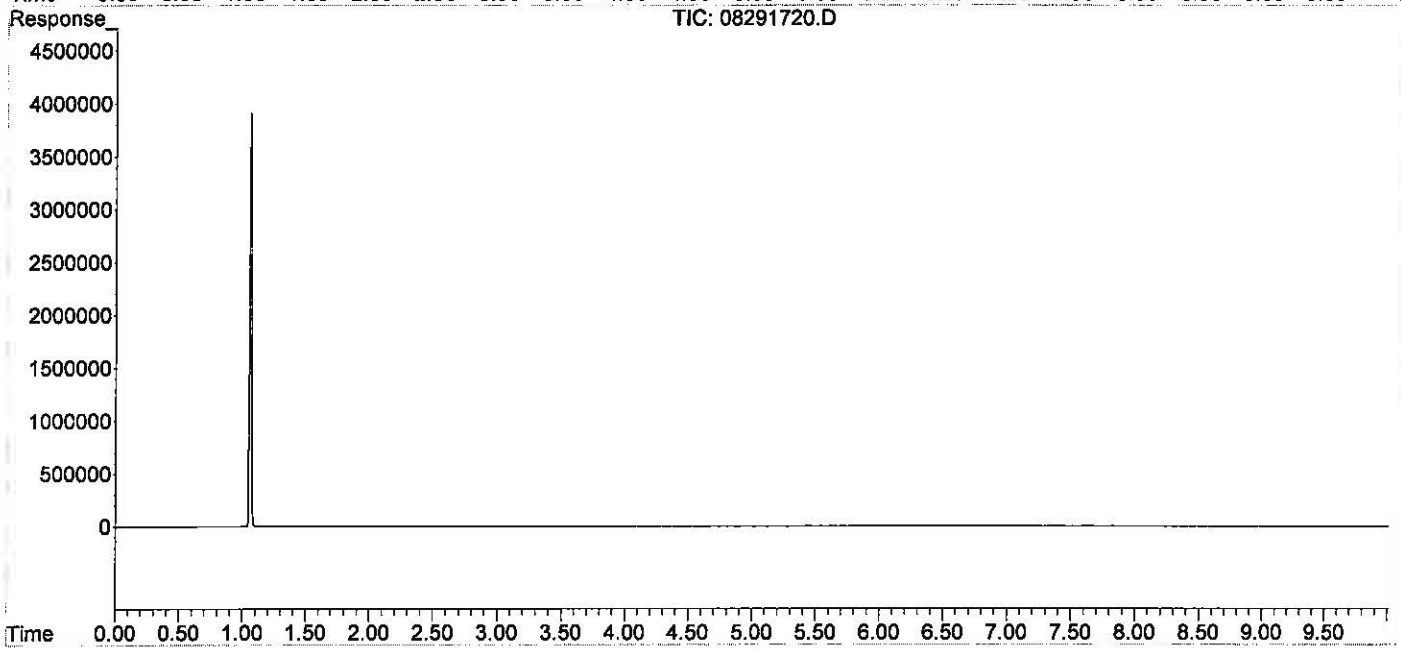
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

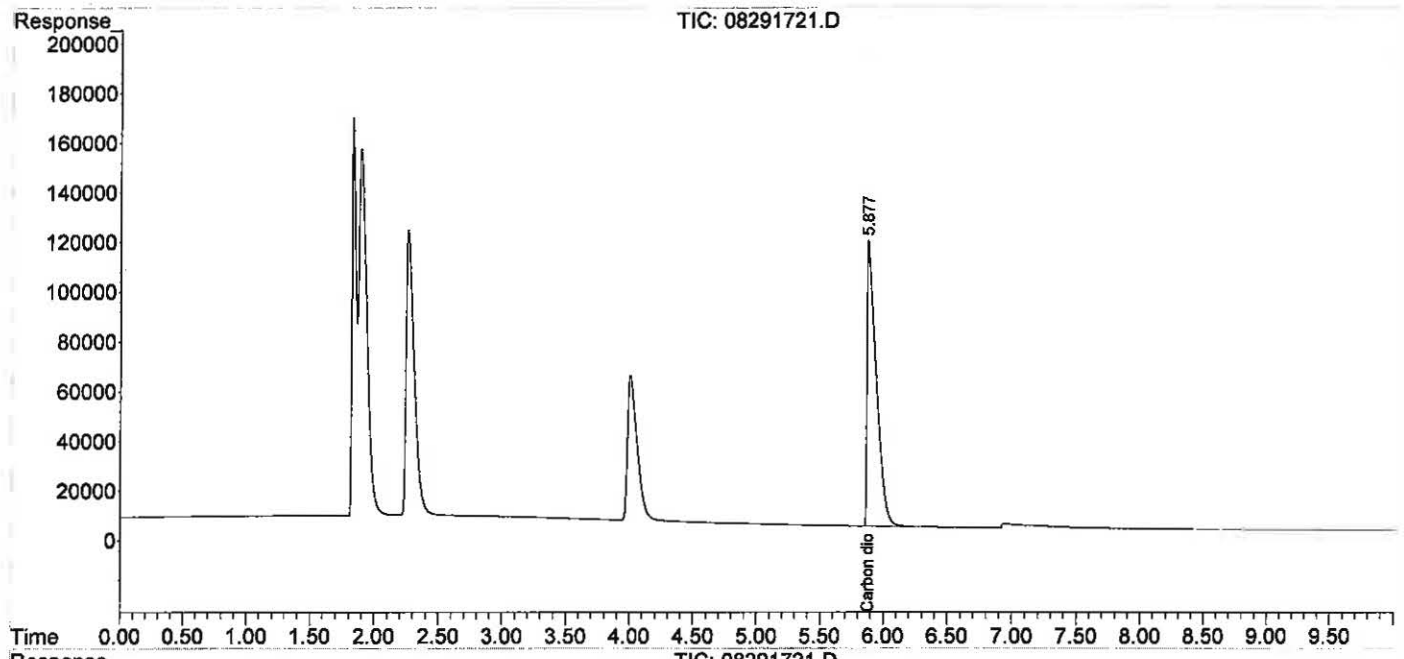
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

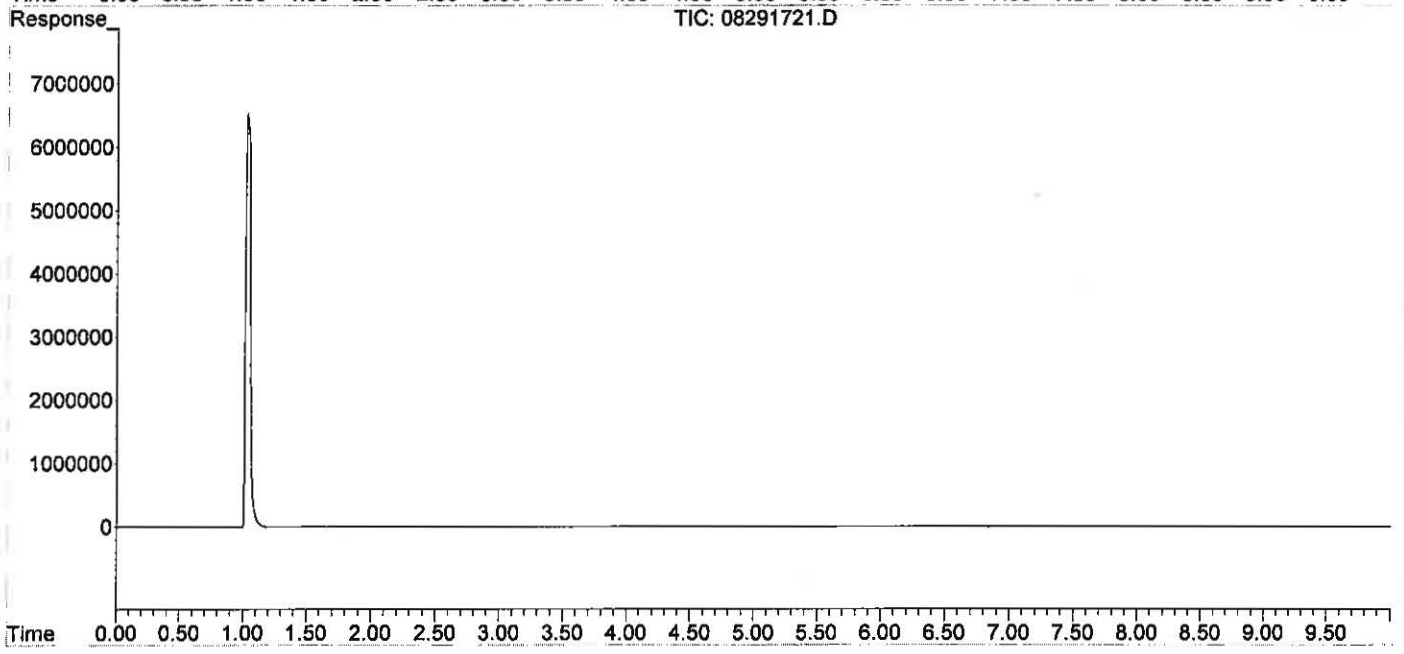
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

Actual %D
5000 99.16

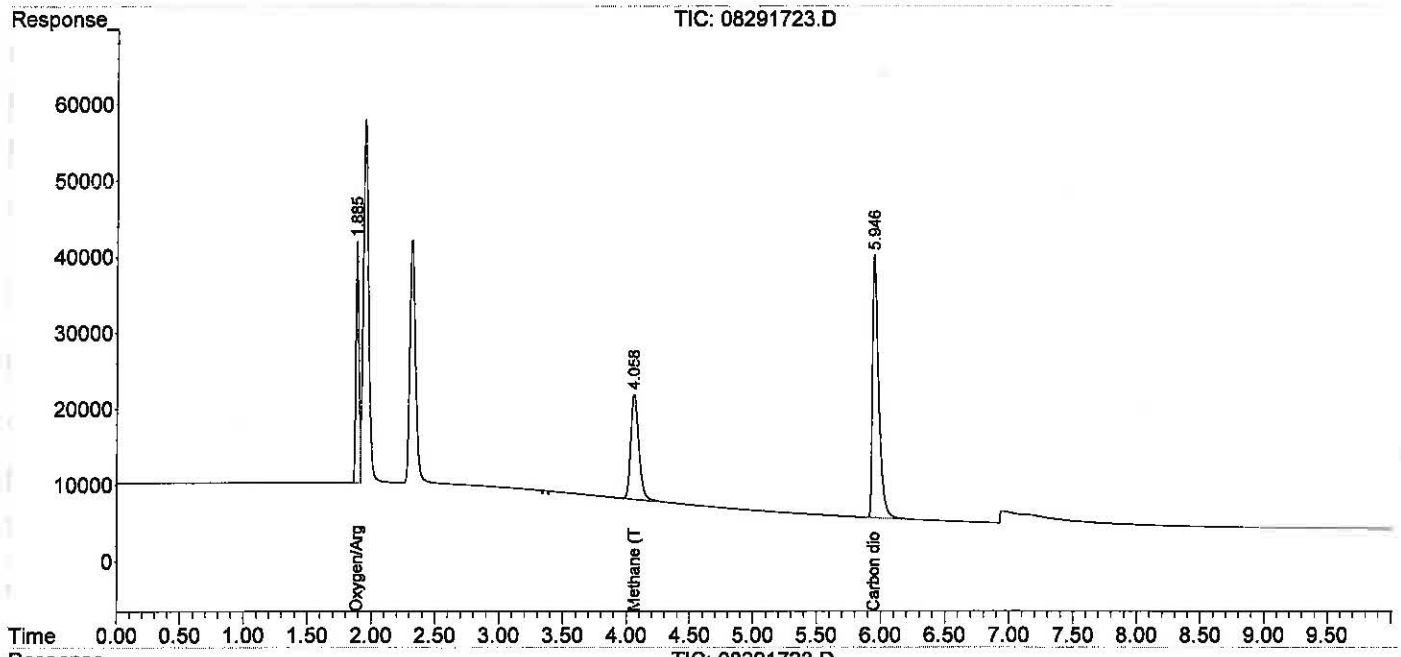
(f)=RT Delta > 1/2 Window (m)=manual int.

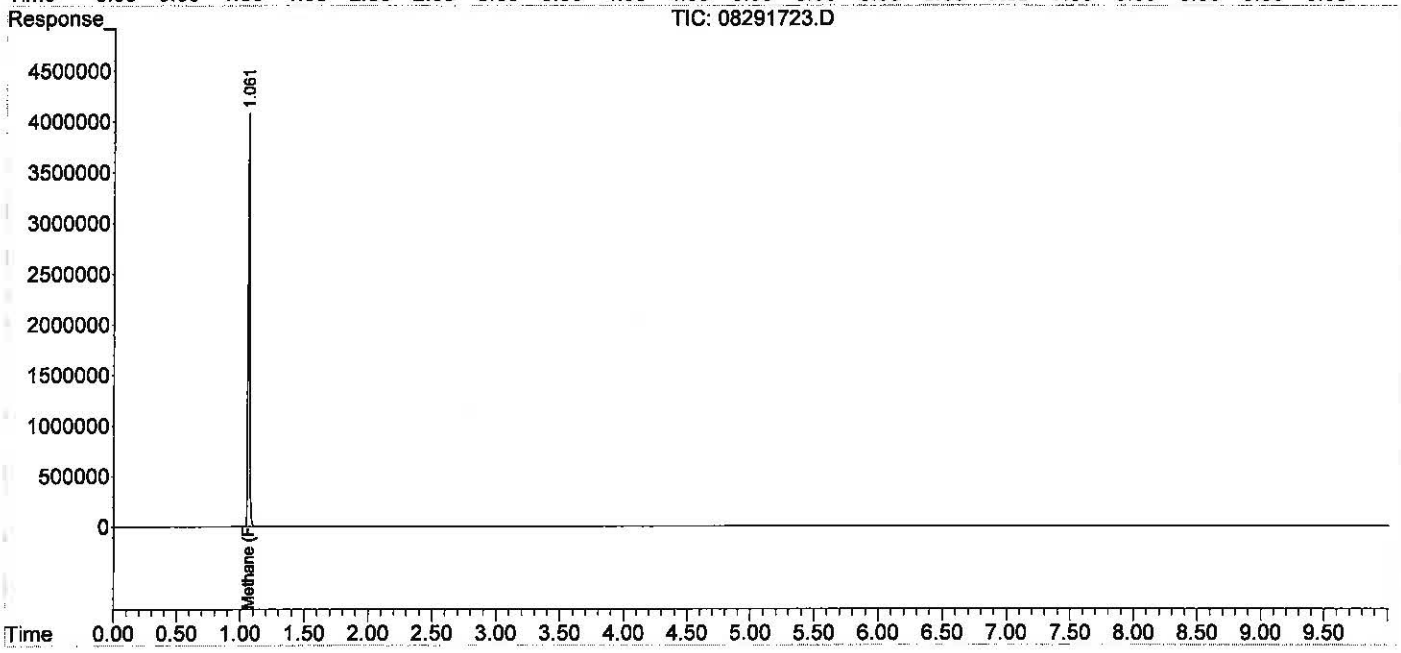
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : WH | Instrument : GC#10
Service Request: P1903244 | Date Analysis : 06/12/19 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-04251903	0.100	4632.707
ACTUAL		5000.00
%Difference		7.3%
MCS 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
LCS TCD 0.1ml	0.100	867.089
LCSD TCD 0.1ml	0.100	906.849
P1903244-001 50ul	0.050	11809.62
P1903244-002 50ul	0.050	5875.26
P1903244-003 50ul	0.050	16713.35
P1903244-004 50ul	0.050	15285.40
P1903244-005 50ul	0.050	14316.58
P1903244-006 50ul	0.050	17207.05

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
MCS 0.1ml	0.000
LCS TCD 0.1ml	8670.890
LCSD TCD 0.1ml	9068.490
P1903244-001 50ul	236192.44
P1903244-002 50ul	117505.12
P1903244-003 50ul	334267.00
P1903244-004 50ul	305708.02
P1903244-005 50ul	286331.64
P1903244-006 50ul	344140.90

std s32-04251903	4698.013
ACTUAL	5000.00
%Difference	6.0%

00949715

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 09:58:44
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 10:13:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

6/13/19

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

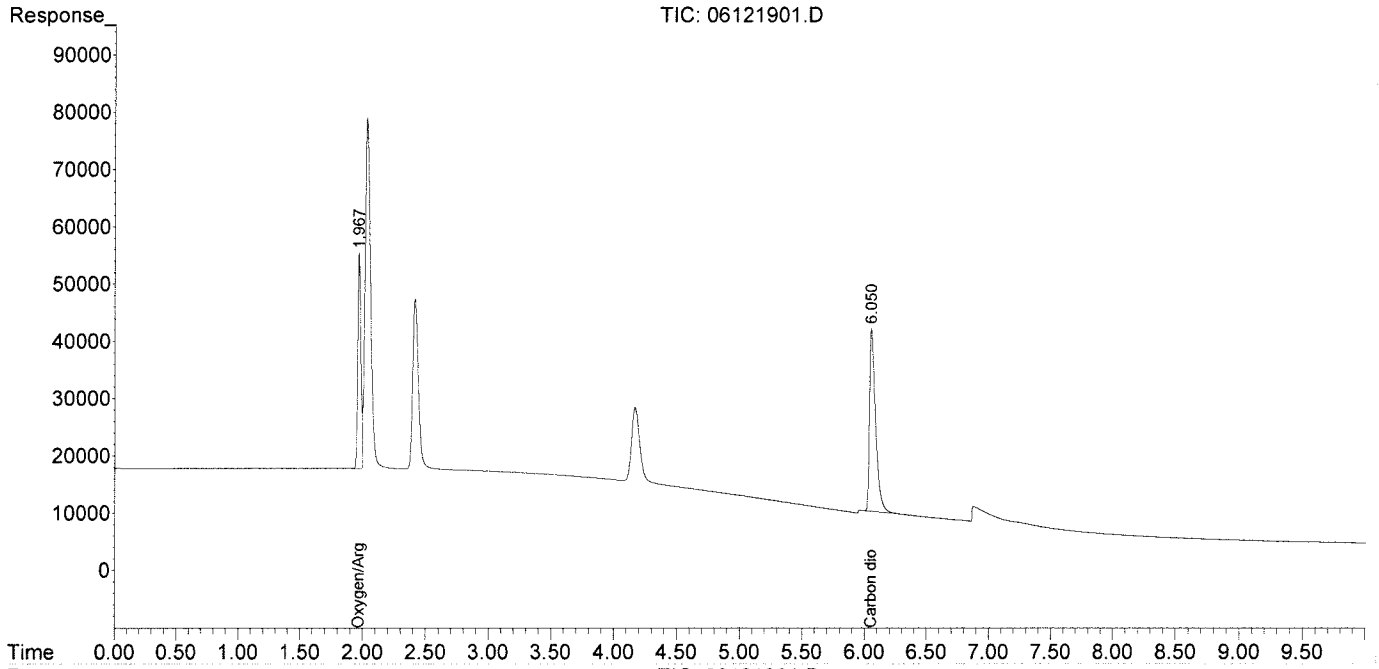
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.968f	652151	0.137	ppm	
2)	Carbon monoxide	1.968f	652151	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.050	1087432	4632.707	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

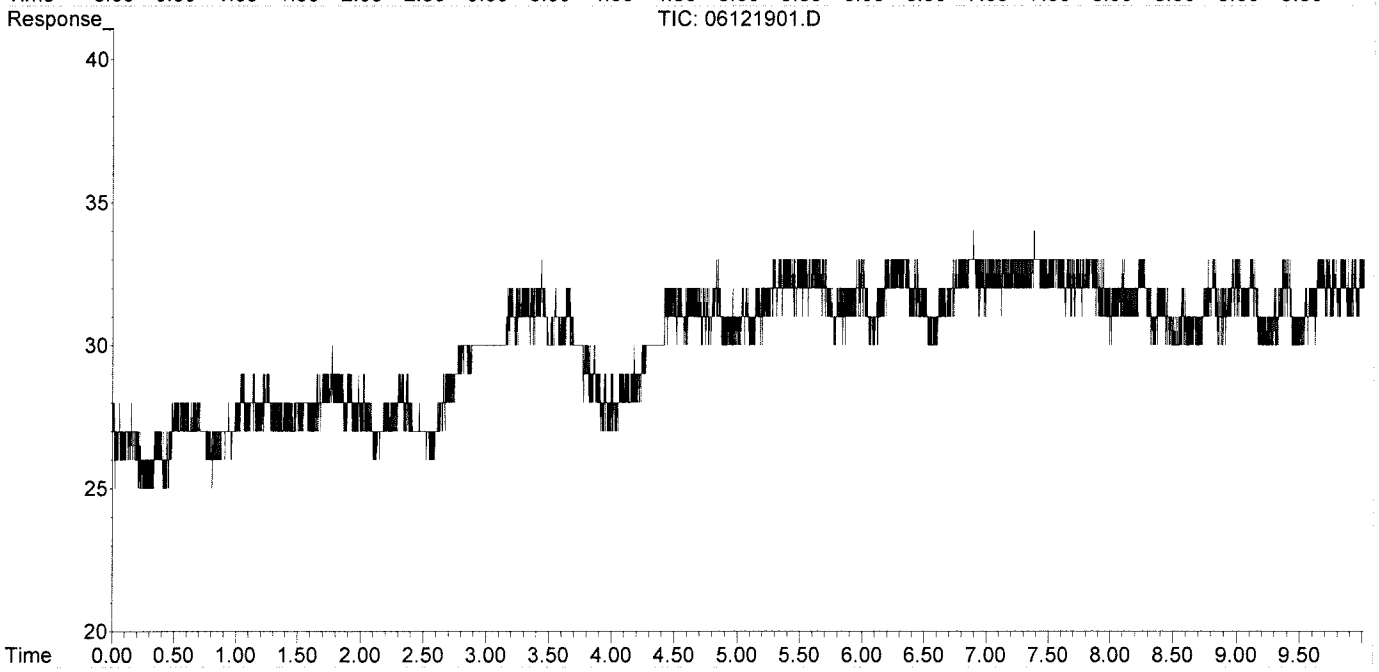
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 09:58:44
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 10:13:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

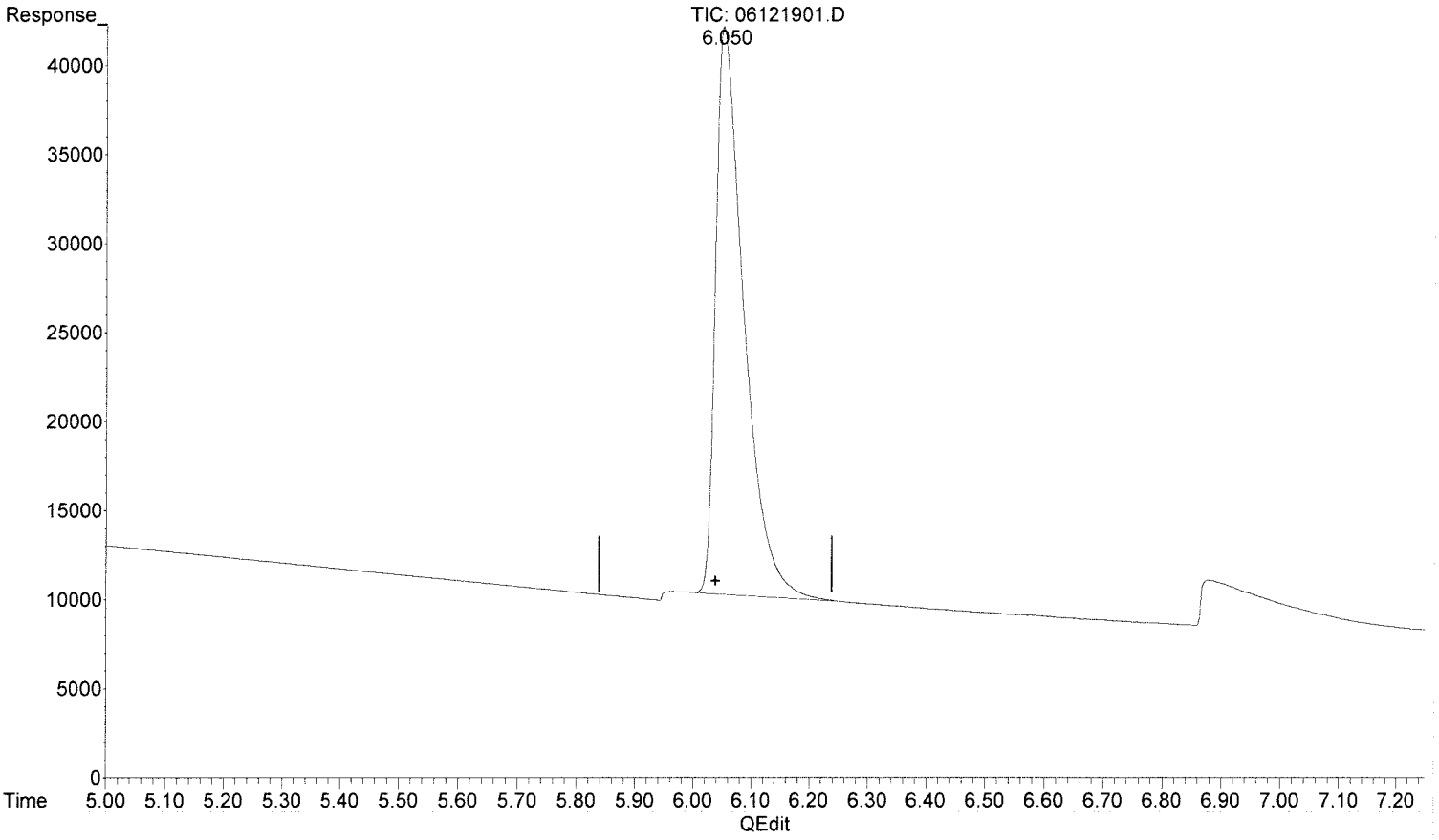




Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 09:58:44
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 10:13:32 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.050min 4632.707 ppm m

response 1087432

MK 6/13/19

LM 6/17/19 BLC no previous

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 14:29:39
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:43:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

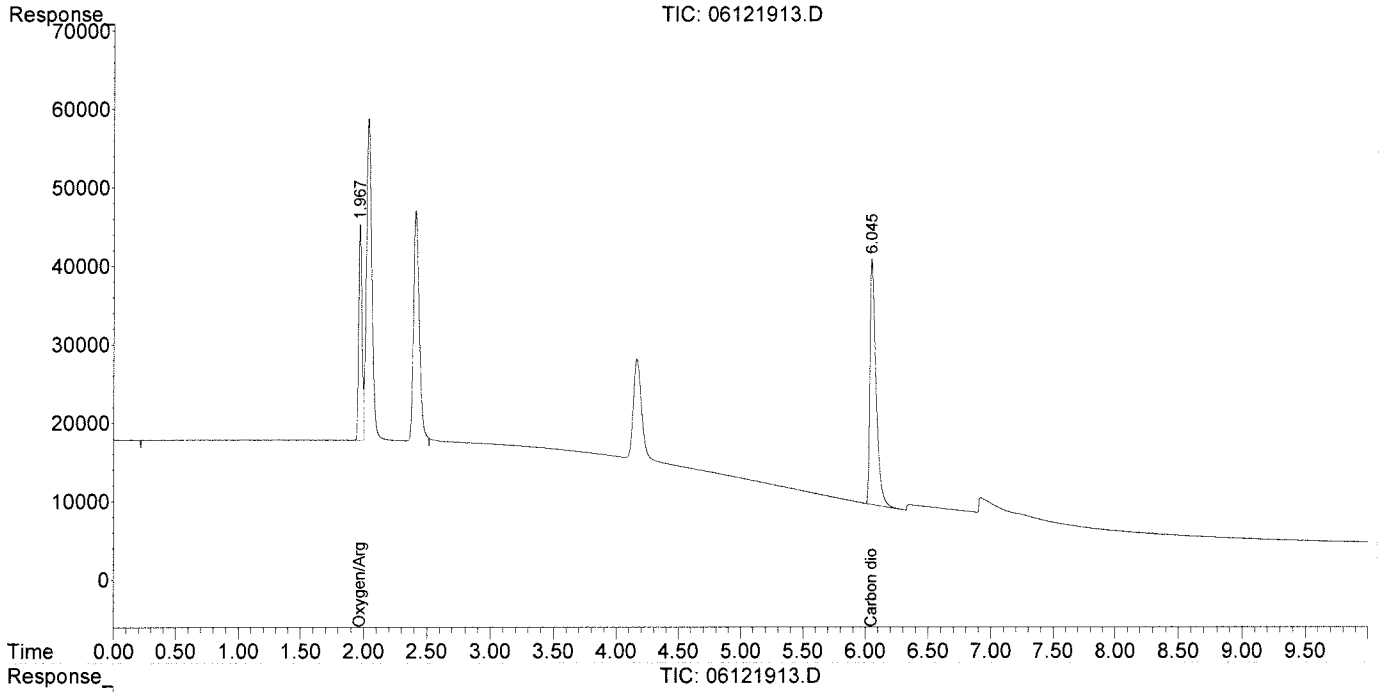
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	491243	0.103	ppm
2)	Carbon monoxide	1.968f	491243	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.046	1061750	4523.296	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

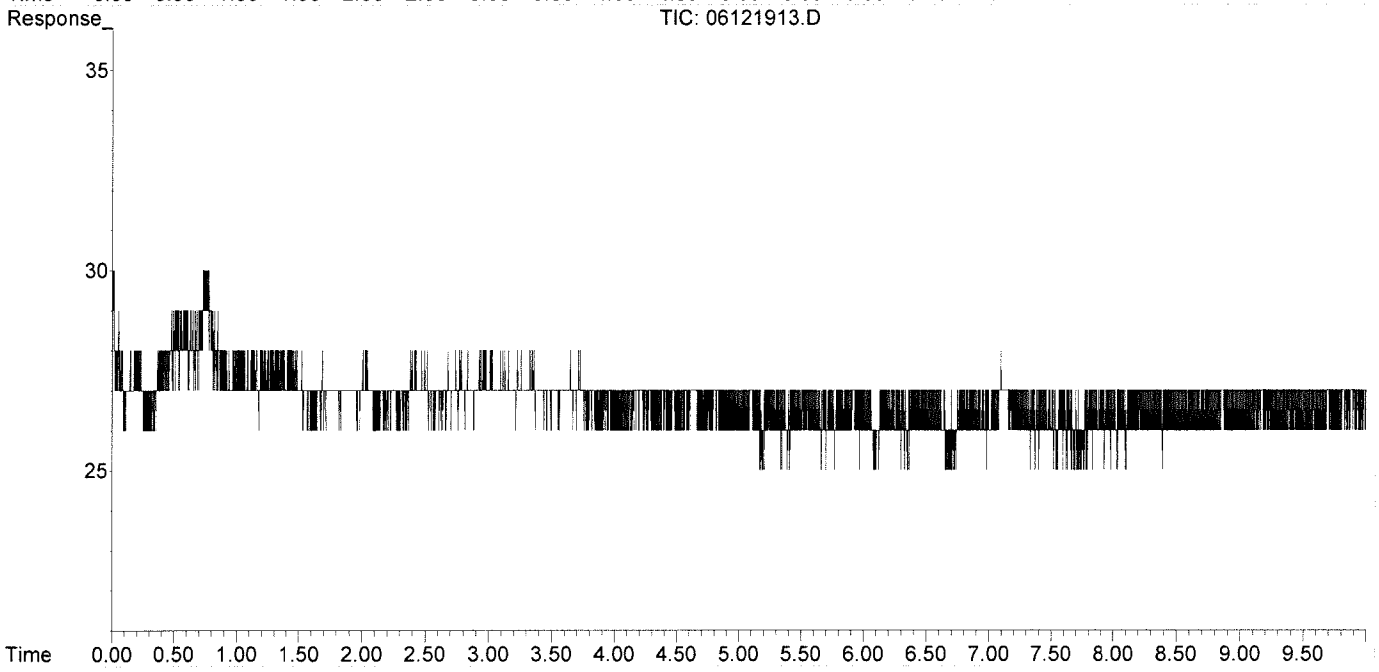
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 14:29:39
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 14:43:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121922.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 17:06:26
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 17:21:55 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

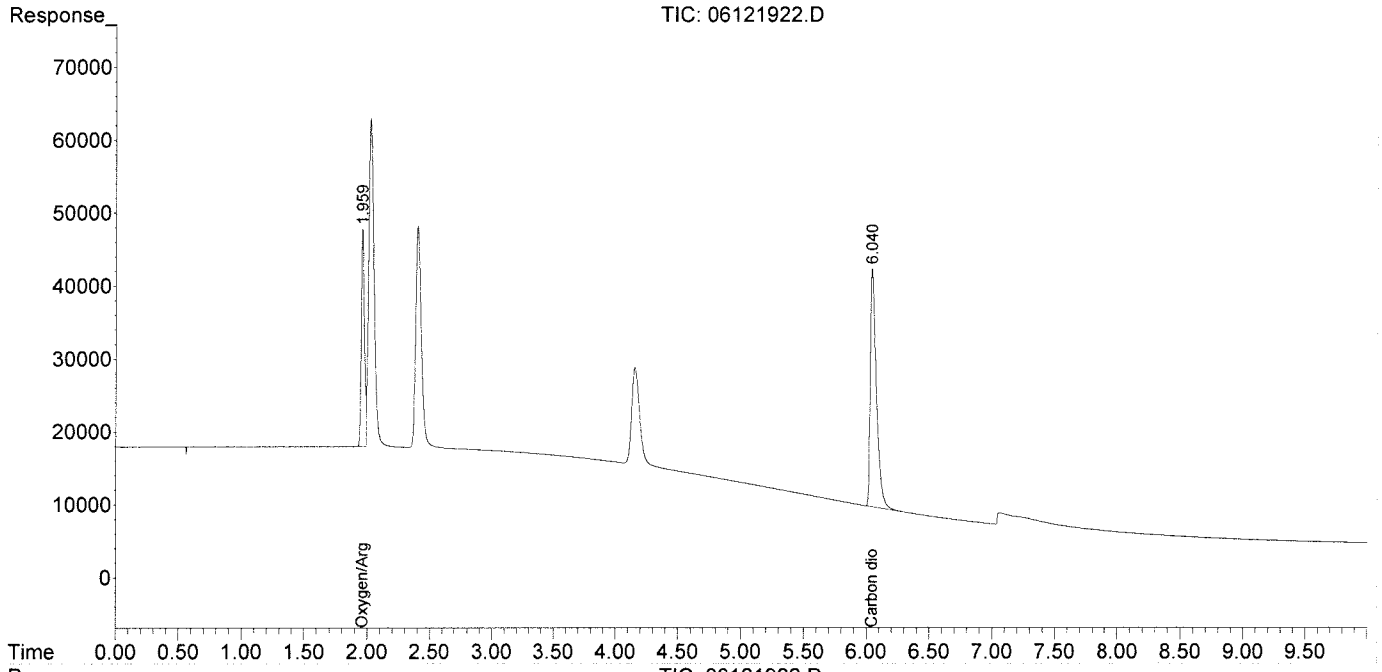
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.960f	527620	0.111	ppm
2)	Carbon monoxide	1.960f	527620	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.041	1102761	4698.013	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

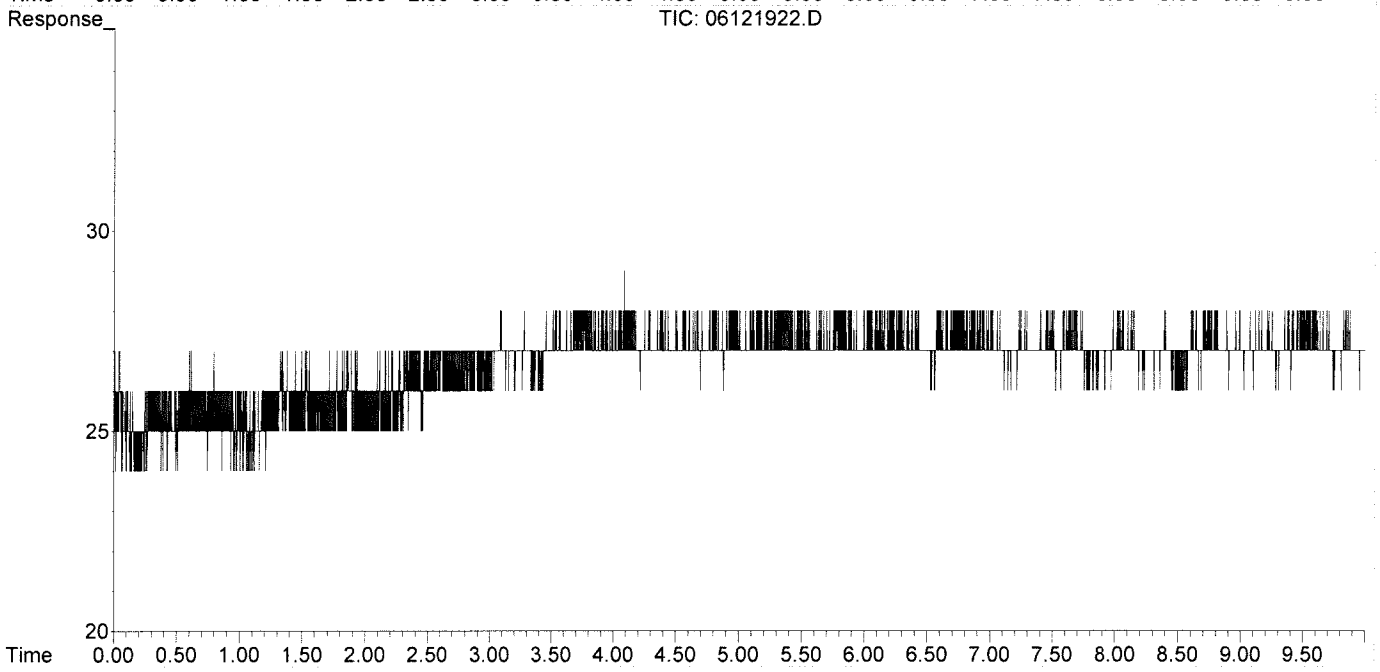
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_06\12\
Data File : 06121922.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Jun-2019, 17:06:26
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 17:21:55 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_06\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Jun-19, 09:58:44	06121901.D	std s32-04251903		WH	RSKBOTH.M	pass
2	12-Jun-19, 10:15:08	06121902.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	12-Jun-19, 10:46:05	06121903.D	MCS 0.1ml		WH	RSKBOTH.M	pass
4	12-Jun-19, 11:05:17	06121904.D	LCS TCD 0.1ml		WH	RSKBOTH.M	pass
5	12-Jun-19, 11:28:50	06121905.D	LCSD TCD 0.1ml		WH	RSKBOTH.M	pass
6	12-Jun-19, 11:53:54	06121906.D	p1903217-001 0.1ml		WH	RSKBOTH.M	
7	12-Jun-19, 12:06:35	06121907.D	P1903217-001 50ul		WH	RSKBOTH.M	
8	12-Jun-19, 12:43:12	06121908.D	P1903217-002 50ul		WH	RSKBOTH.M	
9	12-Jun-19, 12:56:55	06121909.D	P1903217-003 50ul		WH	RSKBOTH.M	
10	12-Jun-19, 13:25:12	06121910.D	P1903217-004 50ul		WH	RSKBOTH.M	
11	12-Jun-19, 13:41:54	06121911.D	P1903217-005 50ul		WH	RSKBOTH.M	
12	12-Jun-19, 13:53:26	06121912.D	P1903217-006 50ul		WH	RSKBOTH.M	
13	12-Jun-19, 14:29:39	06121913.D	std s32-04251903		WH	RSKBOTH.M	pass
14	12-Jun-19, 14:44:58	06121914.D	xP1903244-001 50u		WH	RSKBOTH.M	
15	12-Jun-19, 14:58:42	06121915.D	P1903244-001 50ul		WH	RSKBOTH.M	
16	12-Jun-19, 15:17:41	06121916.D	P1903244-002 50ul		WH	RSKBOTH.M	
17	12-Jun-19, 15:31:33	06121917.D	xP1903244-003 50u		WH	RSKBOTH.M	
18	12-Jun-19, 15:47:49	06121918.D	P1903244-004 50ul		WH	RSKBOTH.M	
19	12-Jun-19, 16:08:34	06121919.D	P1903244-005 50ul		WH	RSKBOTH.M	
20	12-Jun-19, 16:32:46	06121920.D	P1903244-006 50ul		WH	RSKBOTH.M	
21	12-Jun-19, 16:48:17	06121921.D	P1903244-003 50ul		WH	RSKBOTH.M	
22	12-Jun-19, 17:06:26	06121922.D	std s32-04251903		WH	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:25:19
Operator : WH
Sample : P1903244-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:12 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

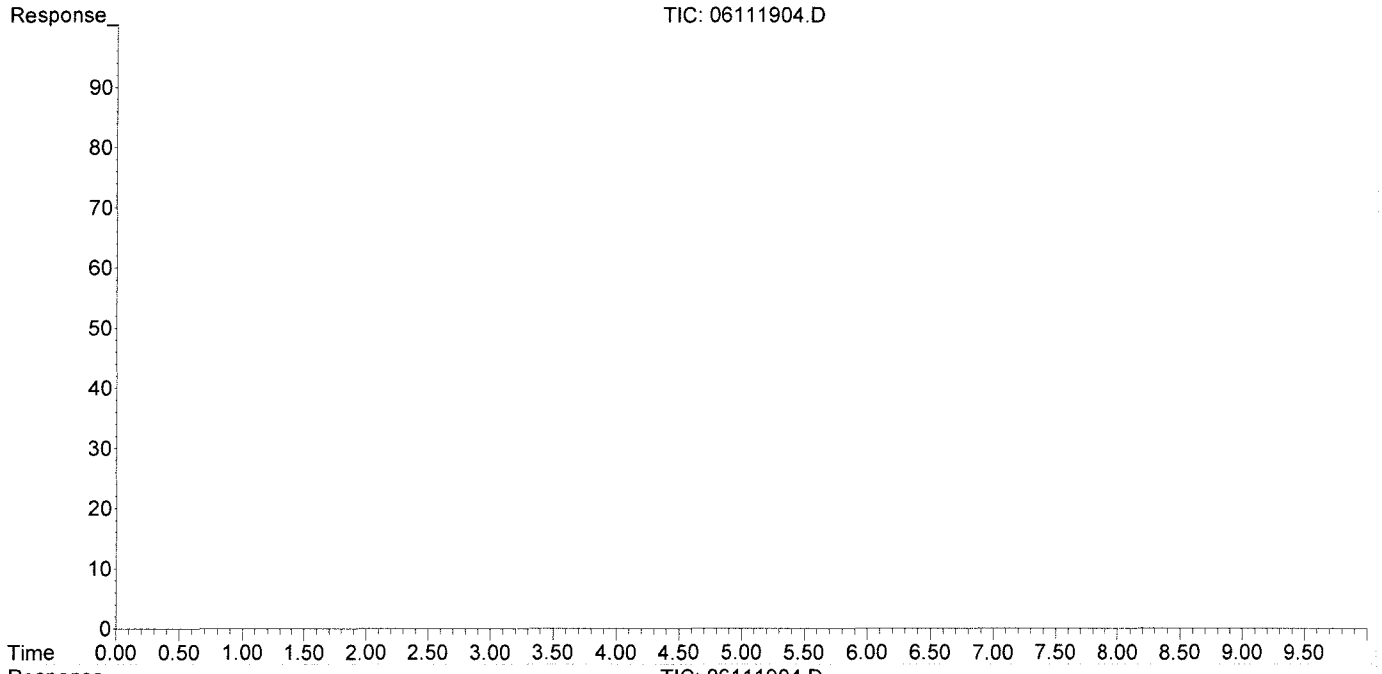
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.104	13993487	1542.723	ppm
7)	Ethylene	1.665	6178	0.369	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

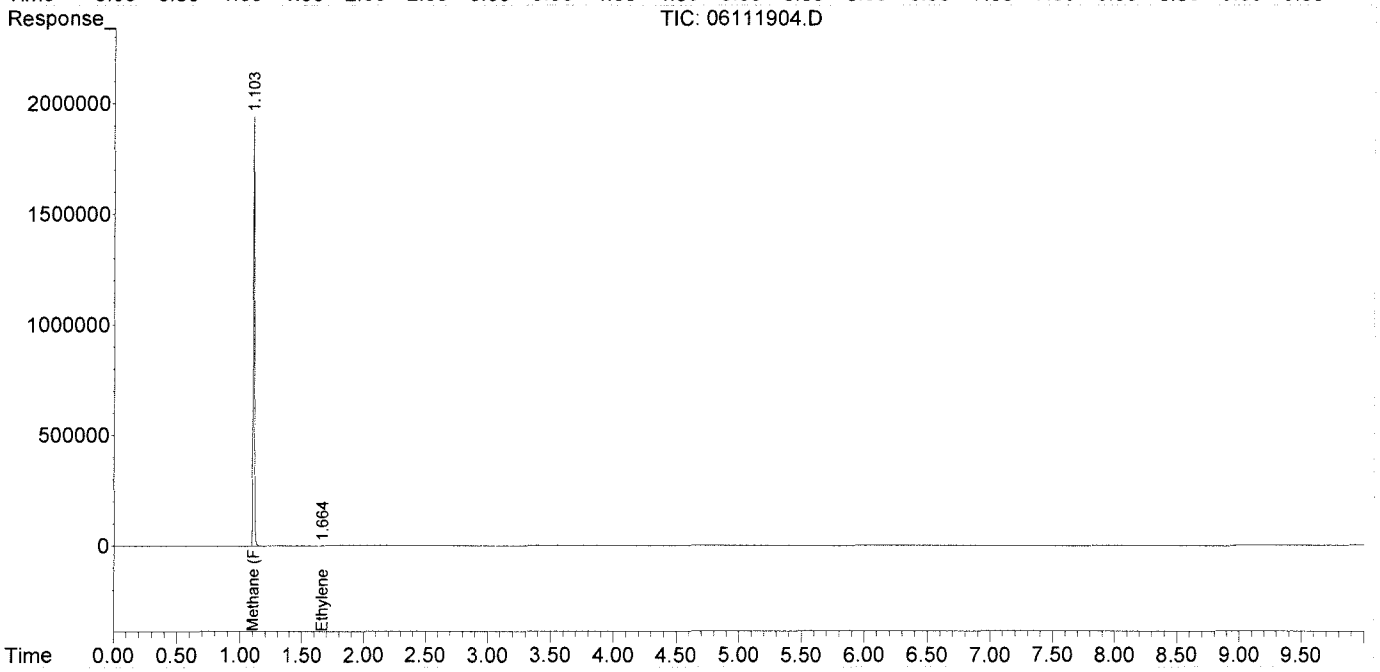
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:25:19
Operator : WH
Sample : P1903244-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:12 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:46:28
Operator : WH
Sample : P1903244-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:15 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

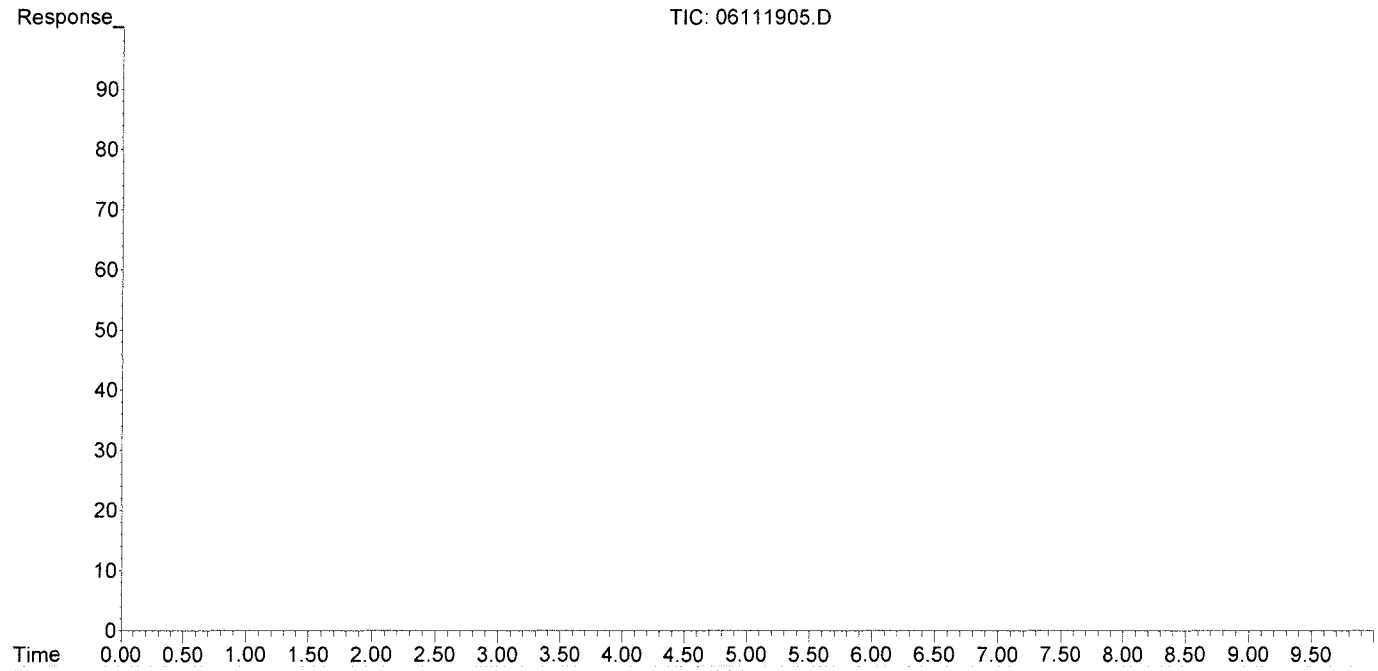
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	14203644	1565.892	ppm
7)	Ethylene	1.668	15448	0.923	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

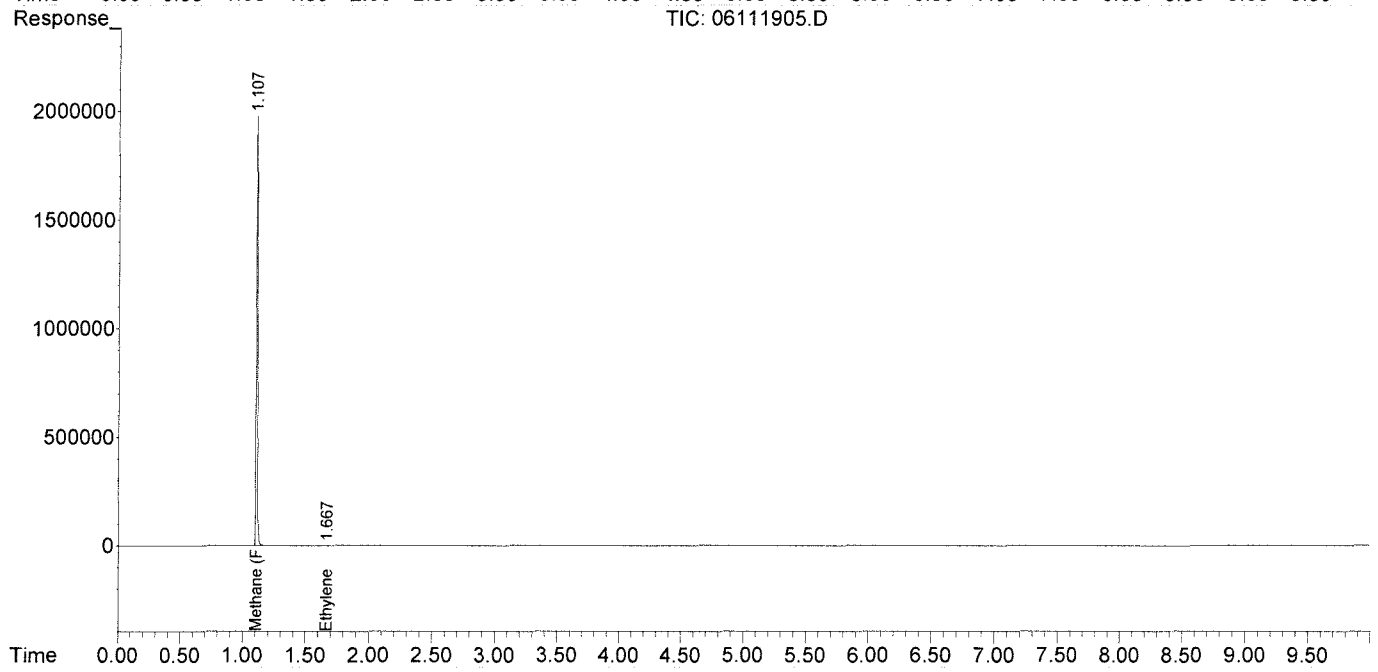
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:46:28
Operator : WH
Sample : P1903244-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:15 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:04:41
Operator : WH
Sample : P1903244-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:20 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

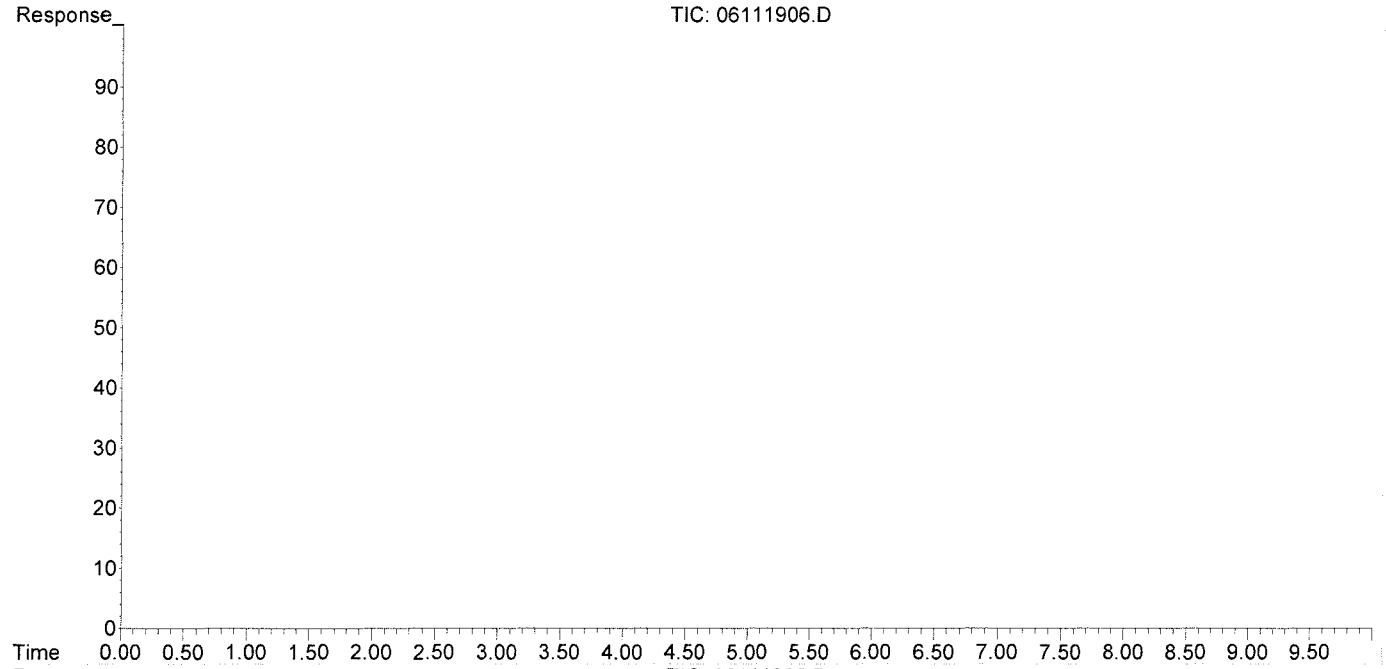
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.110	4387586	483.713	ppm	
7)	Ethylene	1.671	4932	0.295	ppm	
8)	Ethane	1.932	868	0.051	ppm	m
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.650	12137	0.456	ppm	
13)	n-Butane	6.650	12137	0.456	ppm	

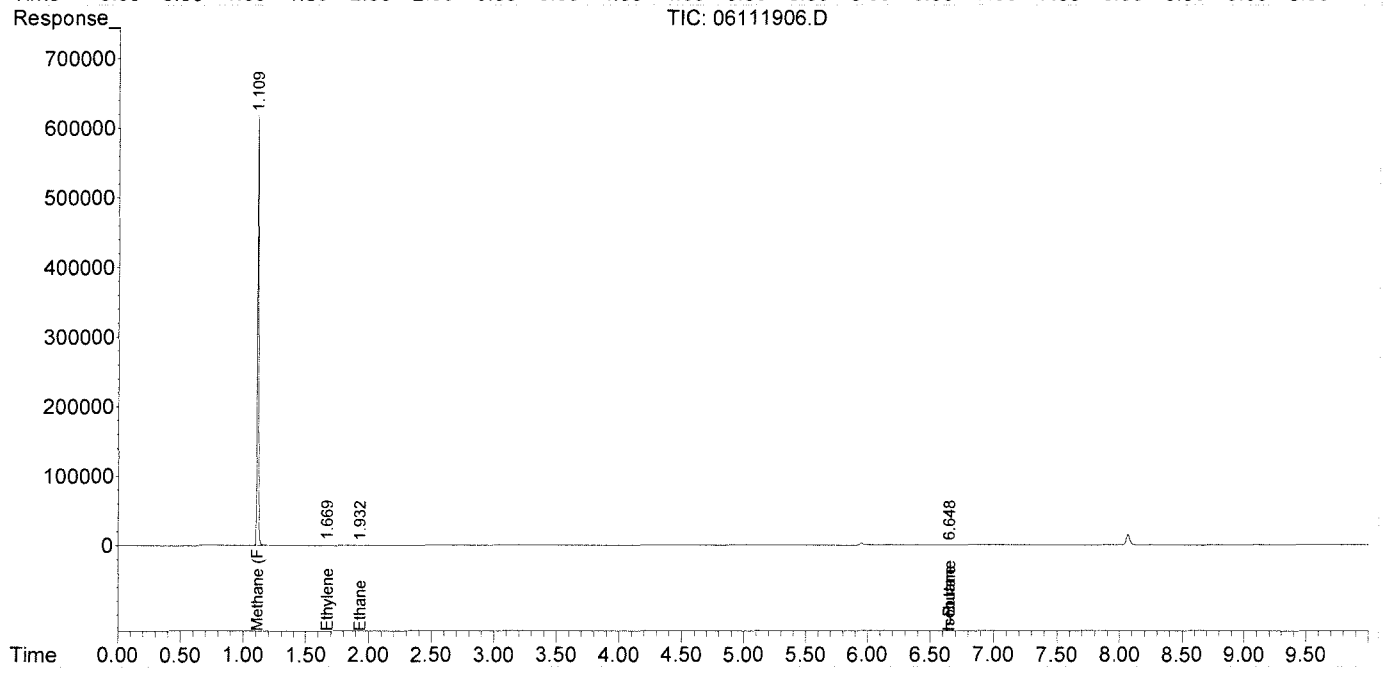
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:04:41
Operator : WH
Sample : P1903244-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:20 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

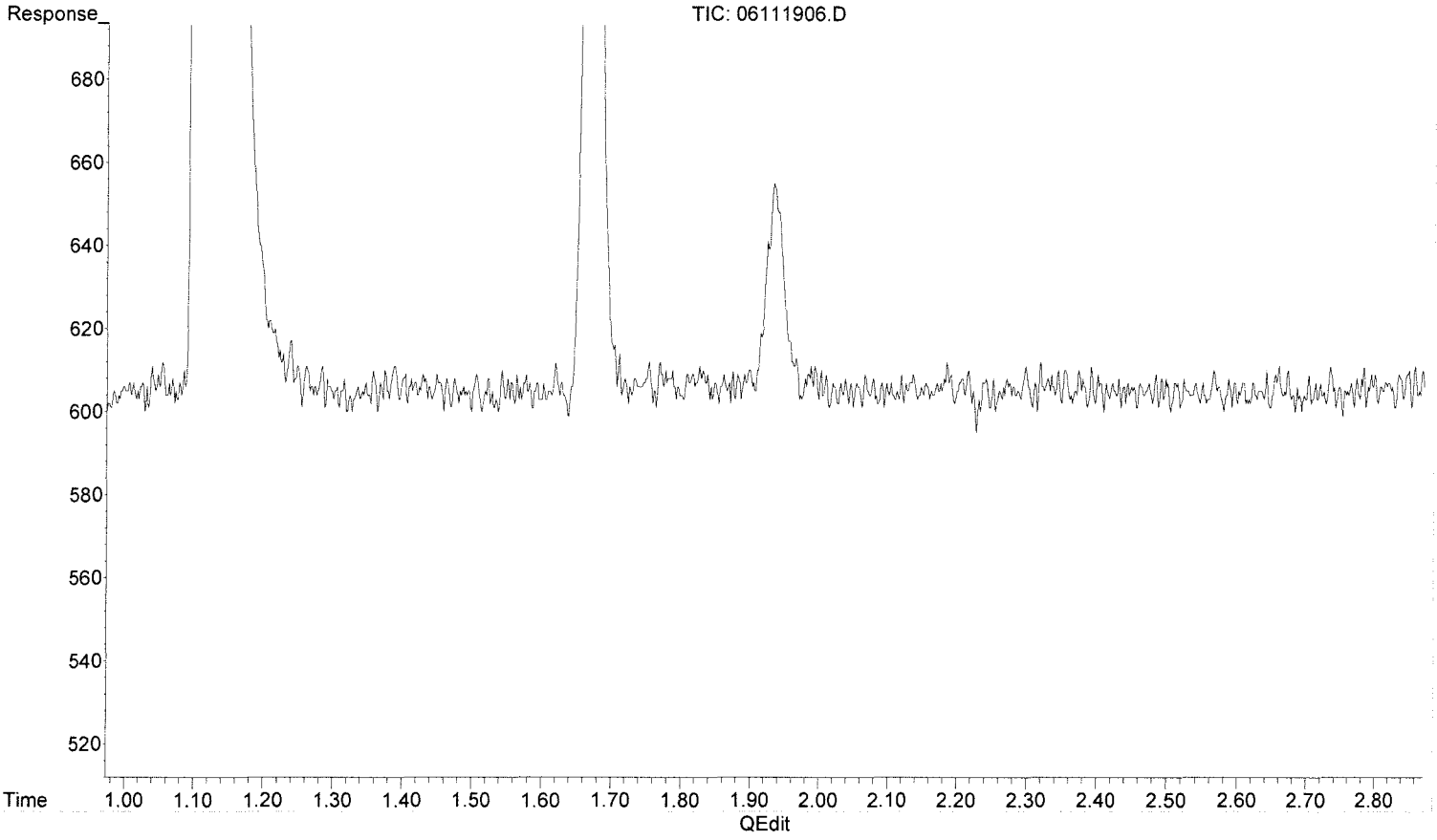




Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:04:41
Operator : WH
Sample : P1903244-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:20 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.923min 0.000 ppm

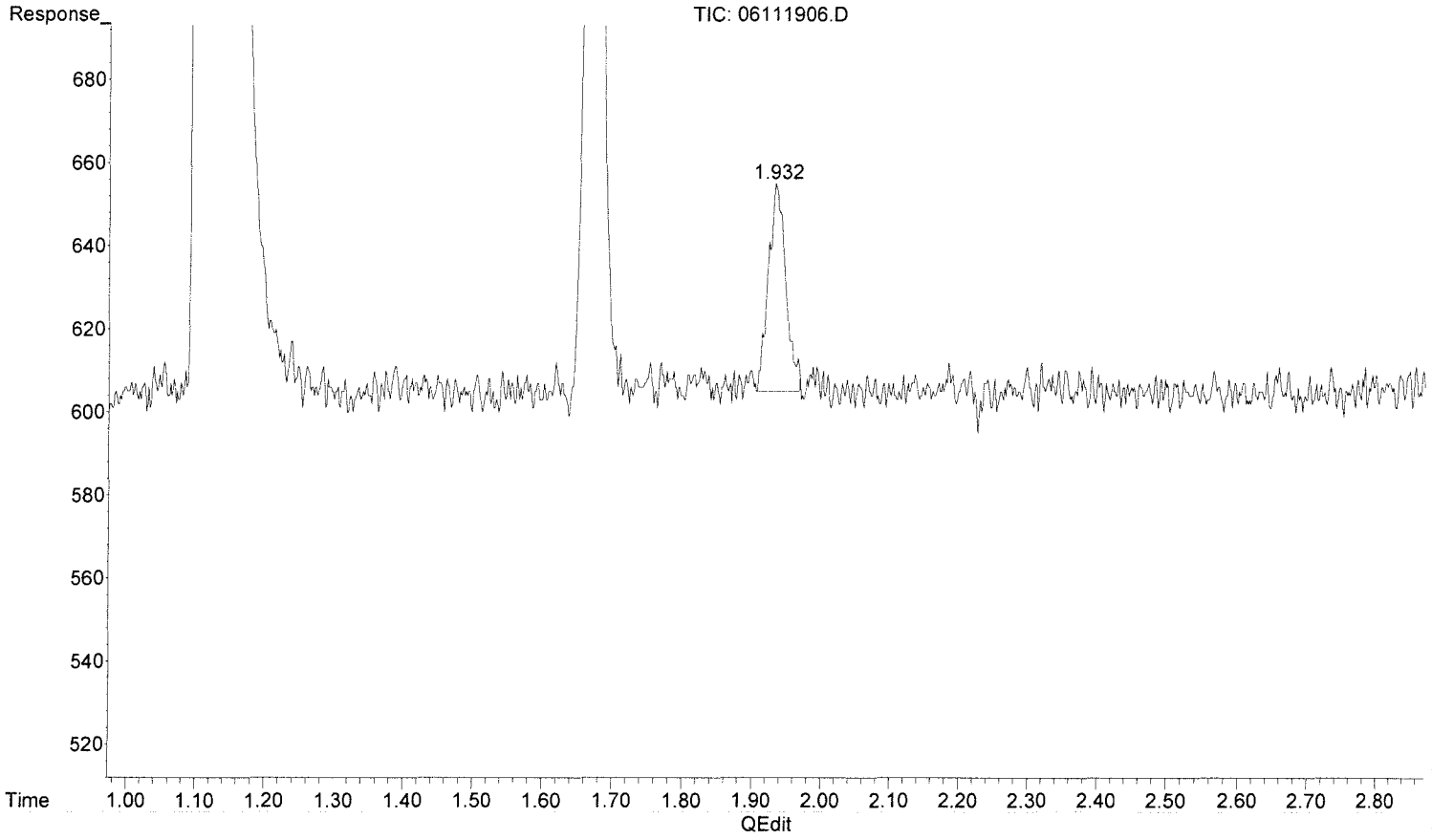
response 0

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:04:41
Operator : WH
Sample : P1903244-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:20 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.932min 0.051 ppm m

response 868

MK 6/12/19

6/12/19 MK

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:21:51
Operator : WH
Sample : P1903244-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

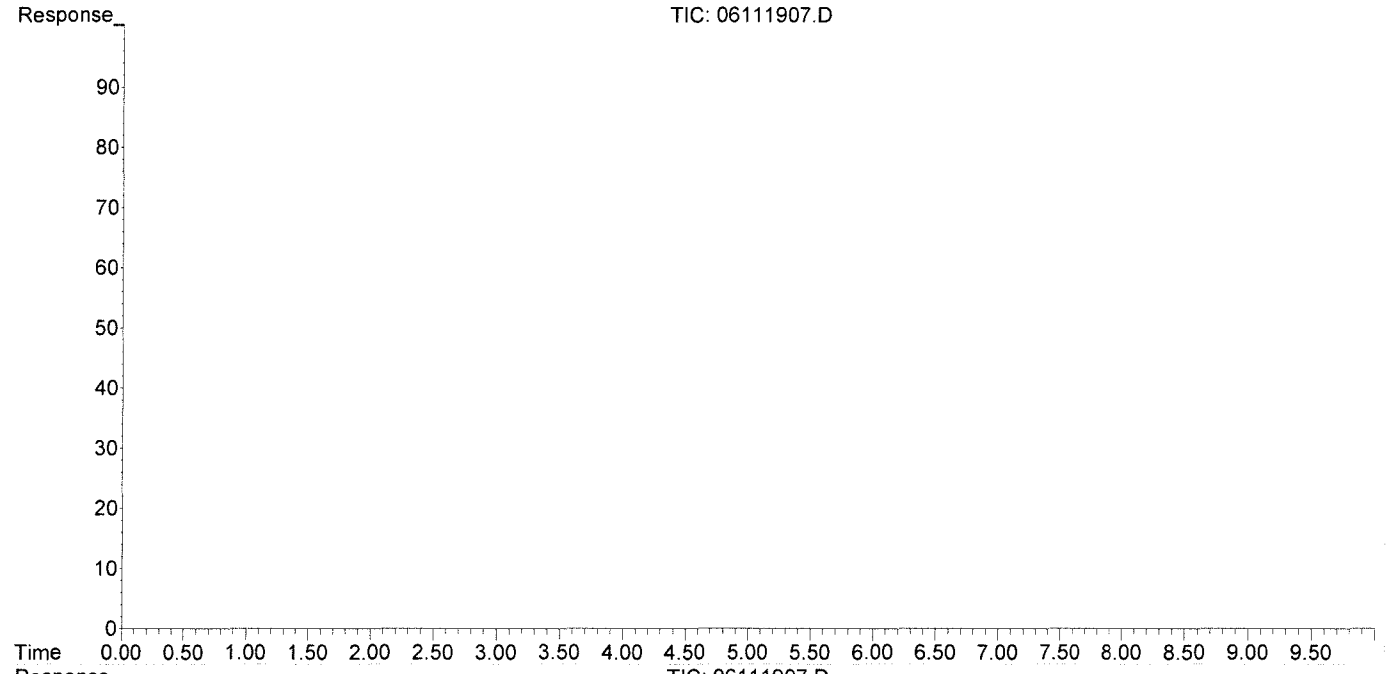
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.109	578	0.064	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

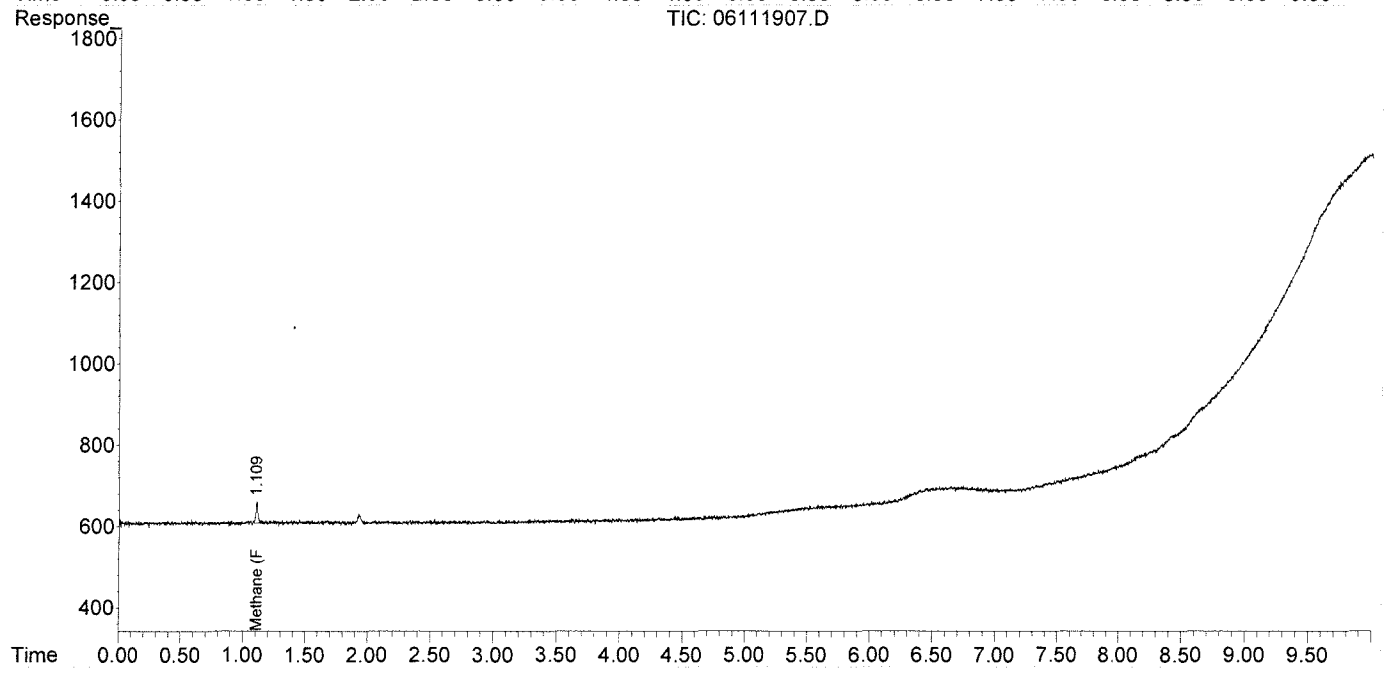
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:21:51
Operator : WH
Sample : P1903244-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

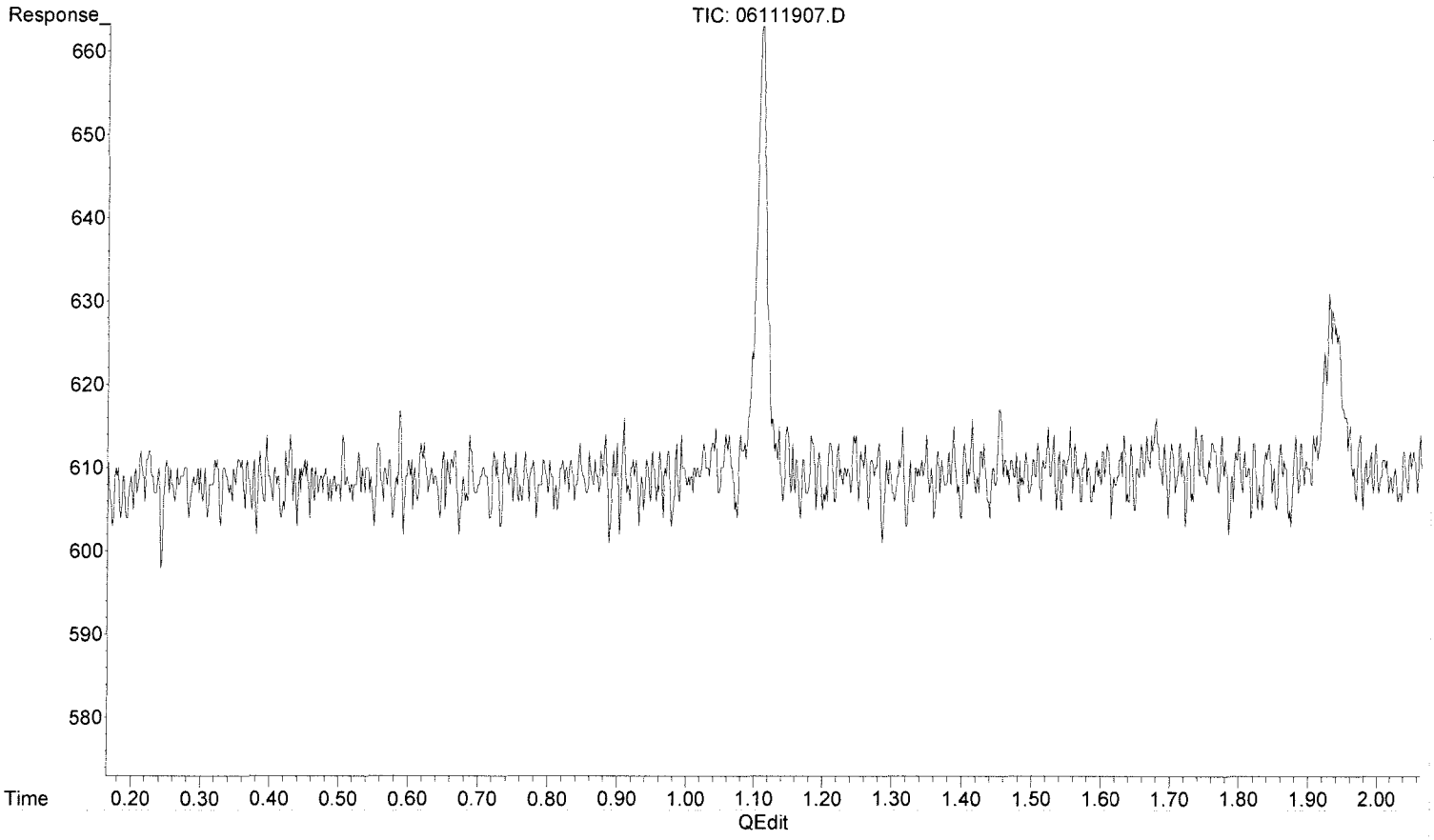




Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:21:51
Operator : WH
Sample : P1903244-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.115min 0.000 ppm

response 0

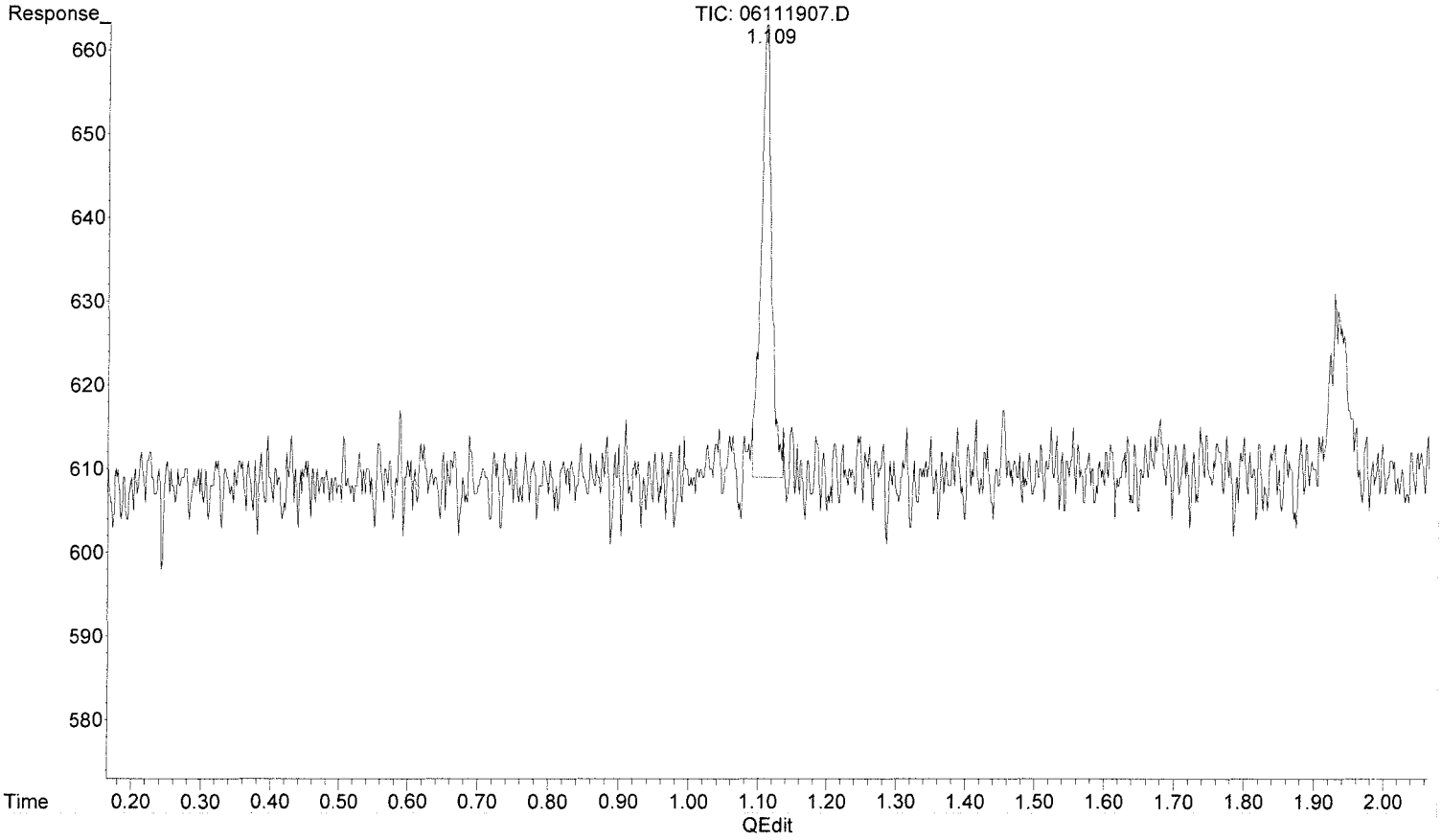
(+) = Expected Retention Time

00949736

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:21:51
Operator : WH
Sample : P1903244-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.109min 0.064 ppm m

response 578

MF 6/12/19

6/12/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:48:27
Operator : WH
Sample : P1903244-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:28 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

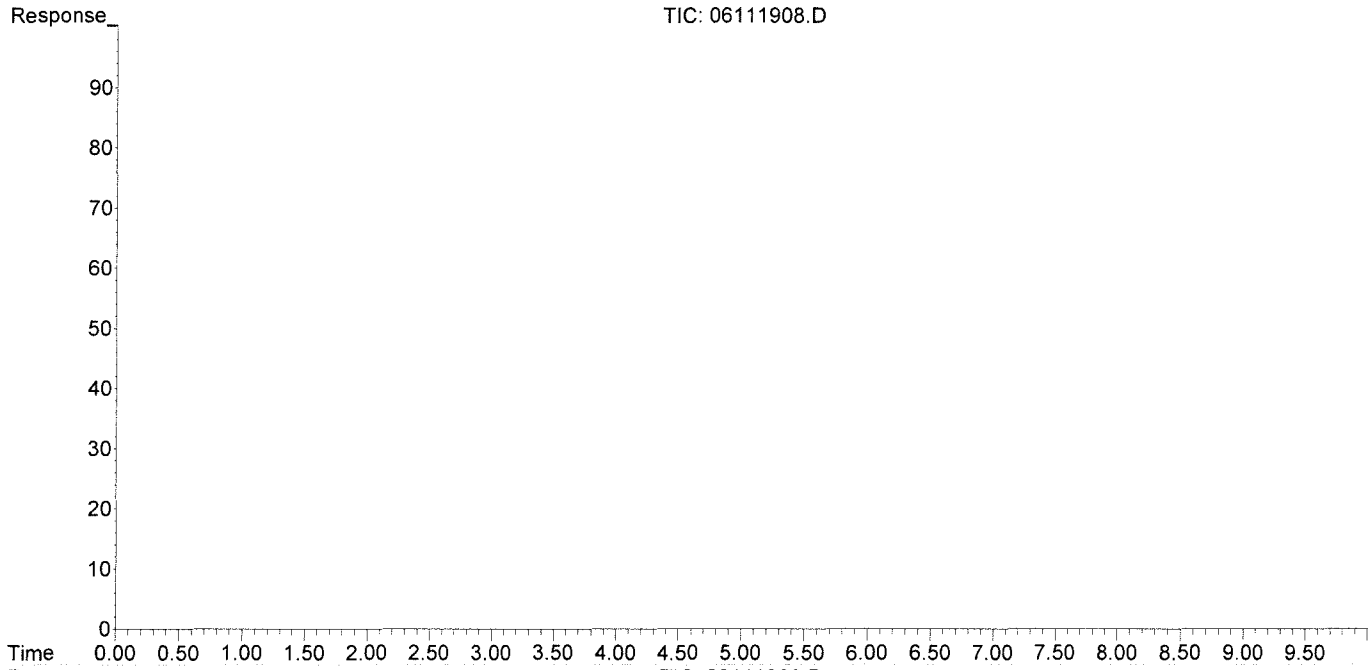
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.110	484	0.053	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

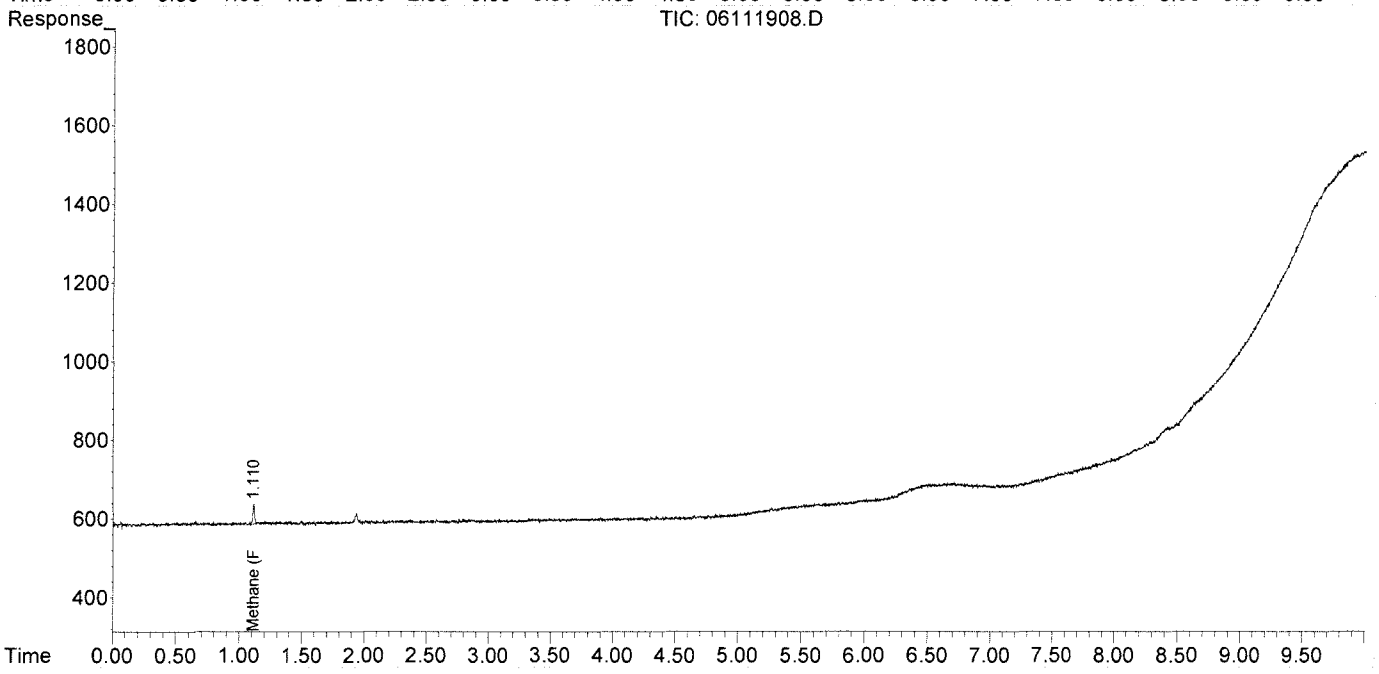
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:48:27
Operator : WH
Sample : P1903244-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:28 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

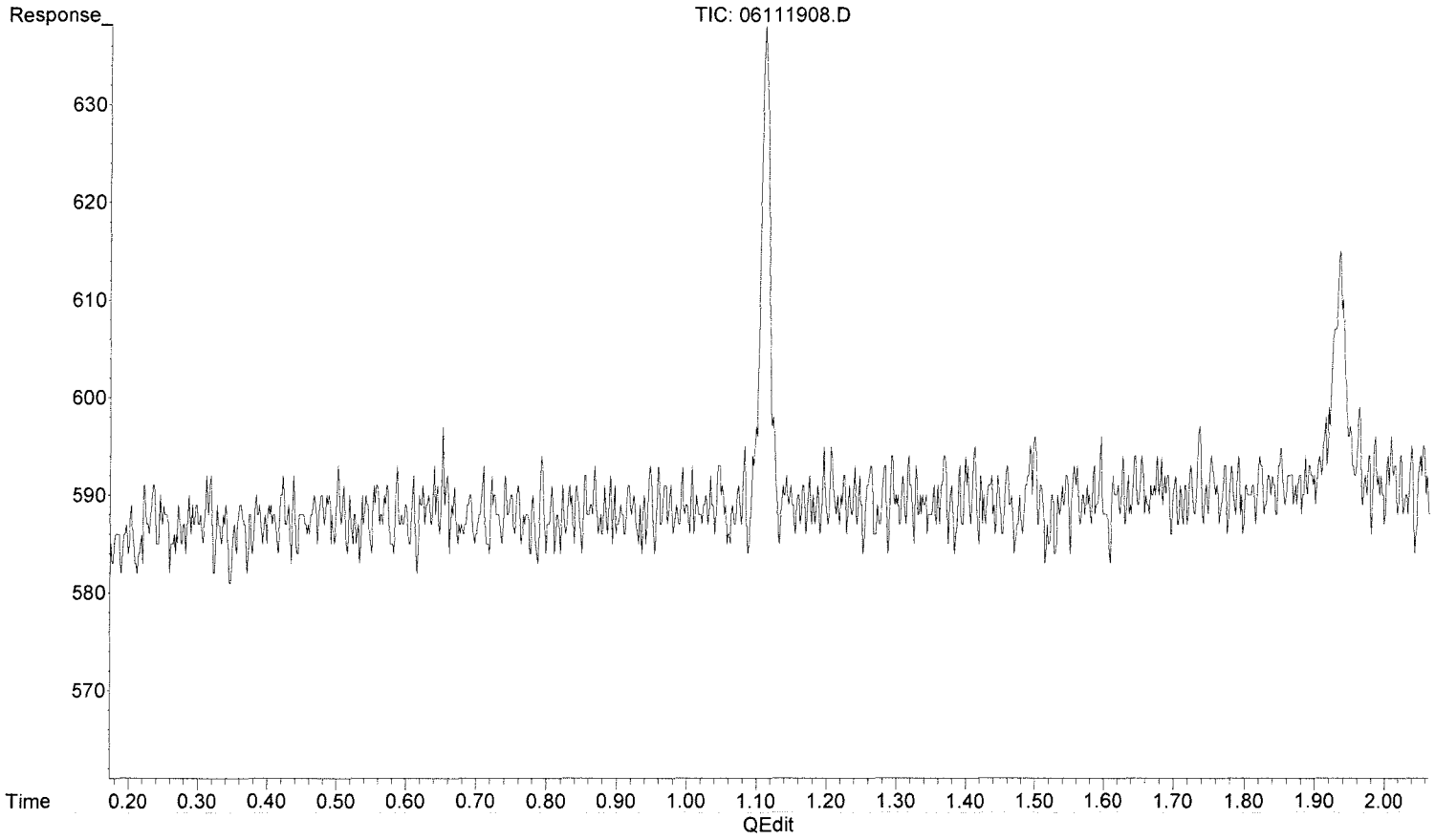




Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:48:27
Operator : WH
Sample : P1903244-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:28 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.115min 0.000 ppm

response 0

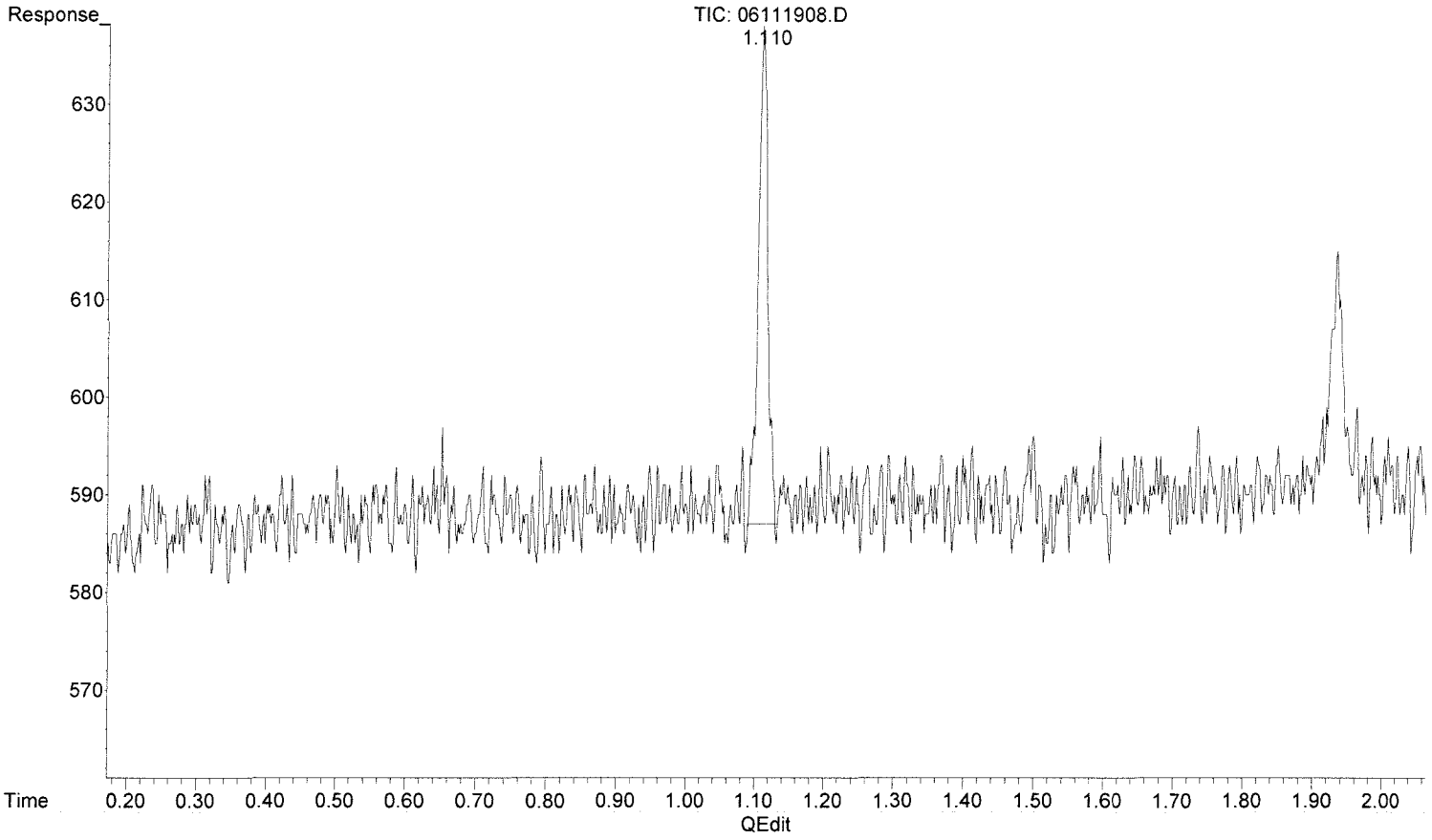
(+) = Expected Retention Time

00949740

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 12:48:27
Operator : WH
Sample : P1903244-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:28 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.110min 0.053 ppm m

response 484

MR 6/12/19

6/12/19 MR

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:06:16
Operator : WH
Sample : P1903244-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:32 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

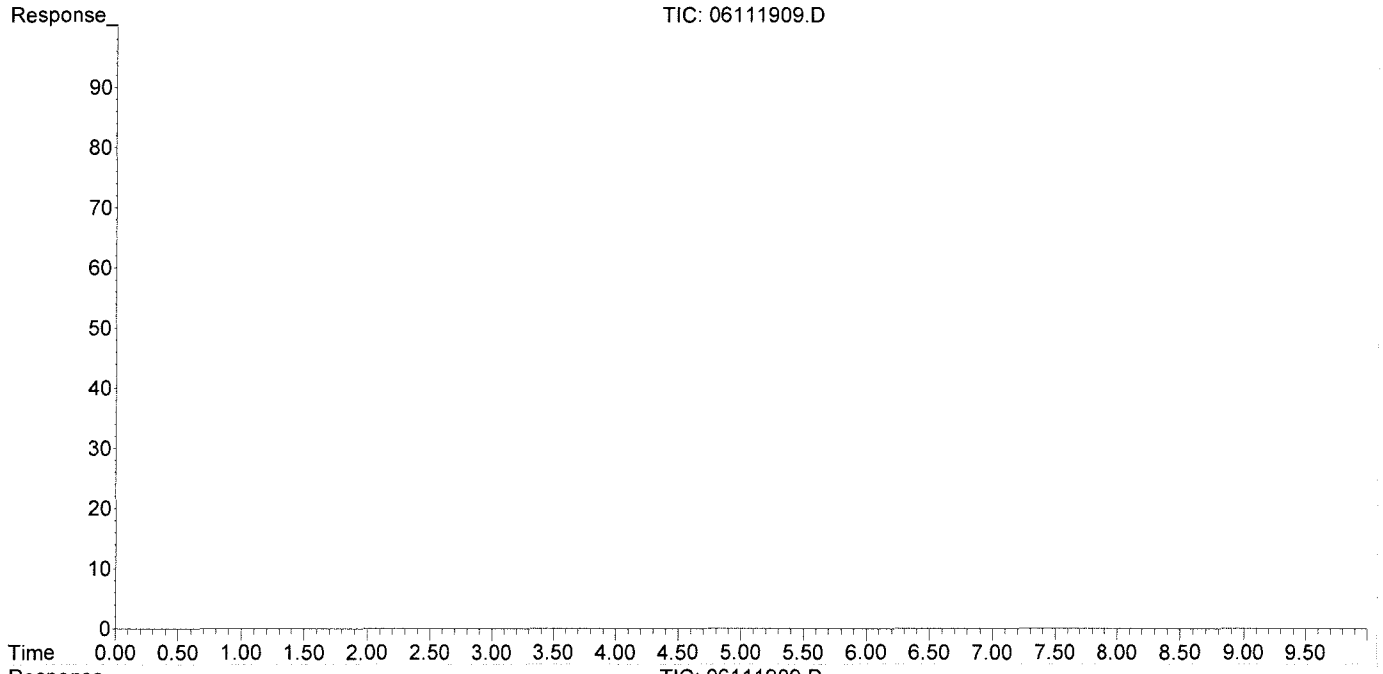
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.105	6992613	770.906	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

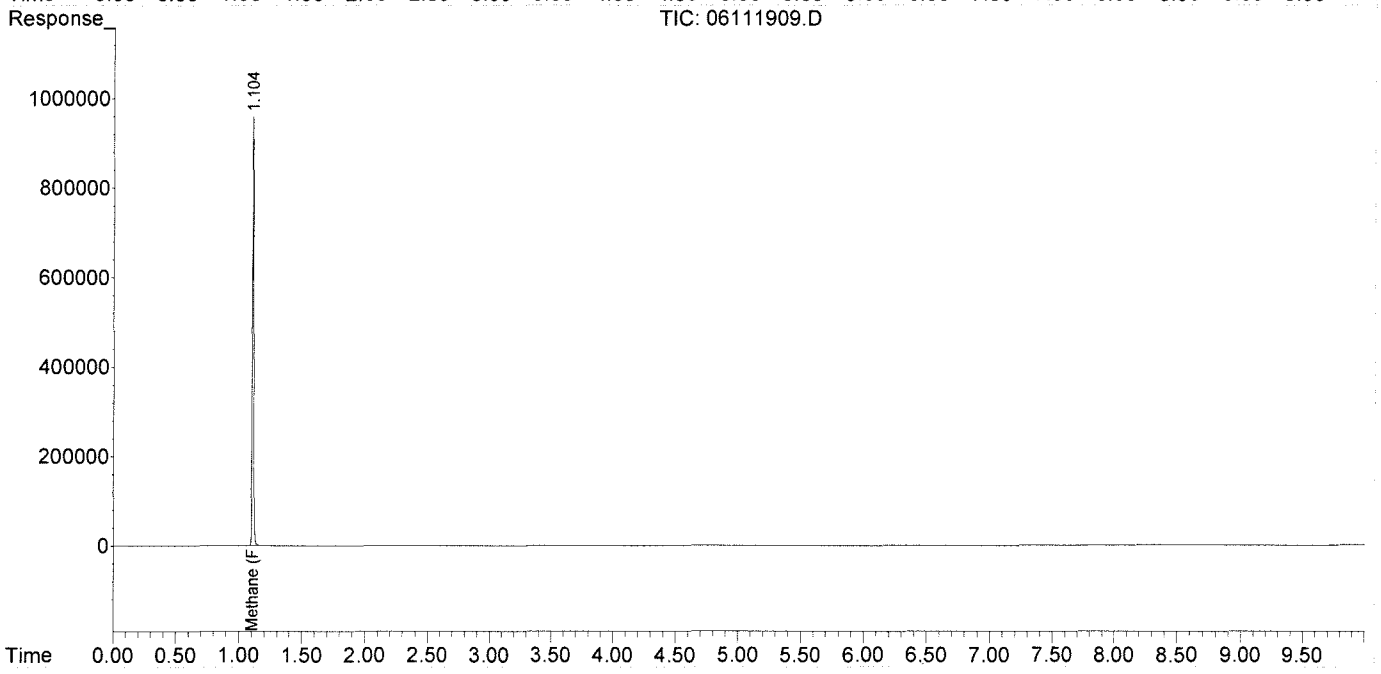
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:06:16
Operator : WH
Sample : P1903244-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:41:32 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:04:29
Operator : WH
Sample : MCS 0.1ML
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:36:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

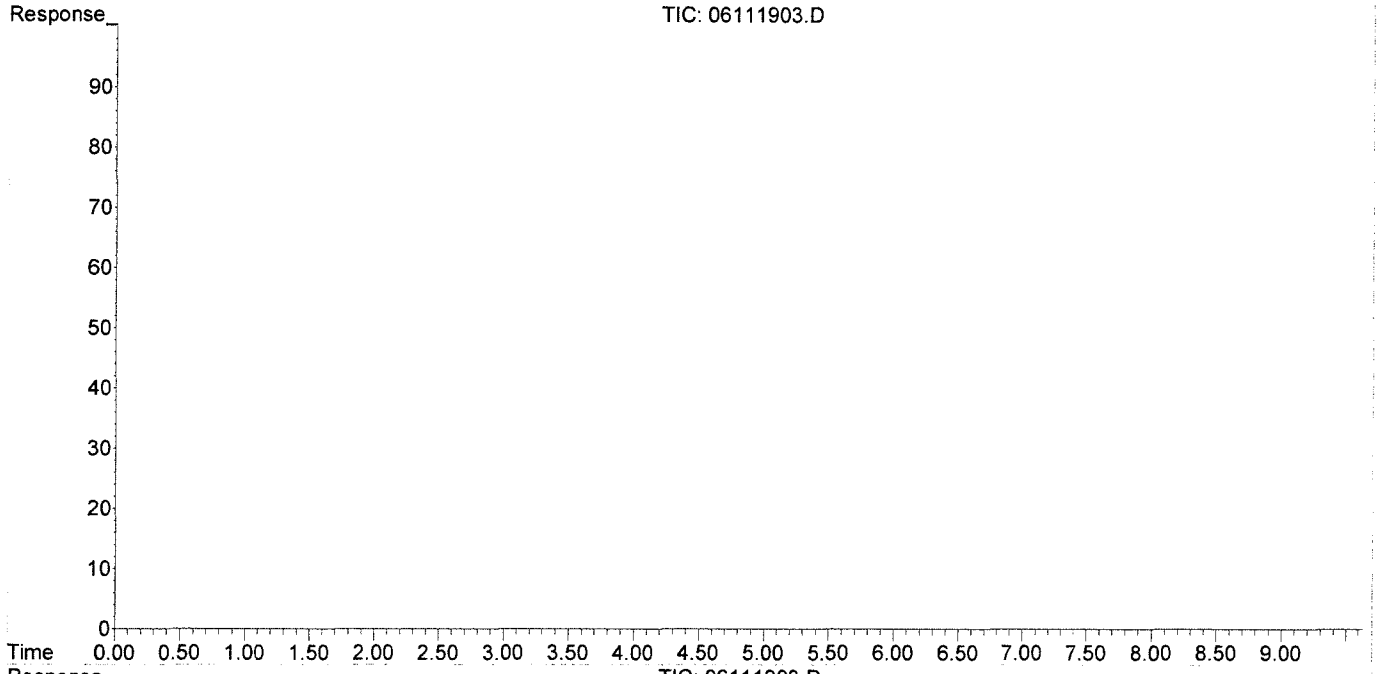
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

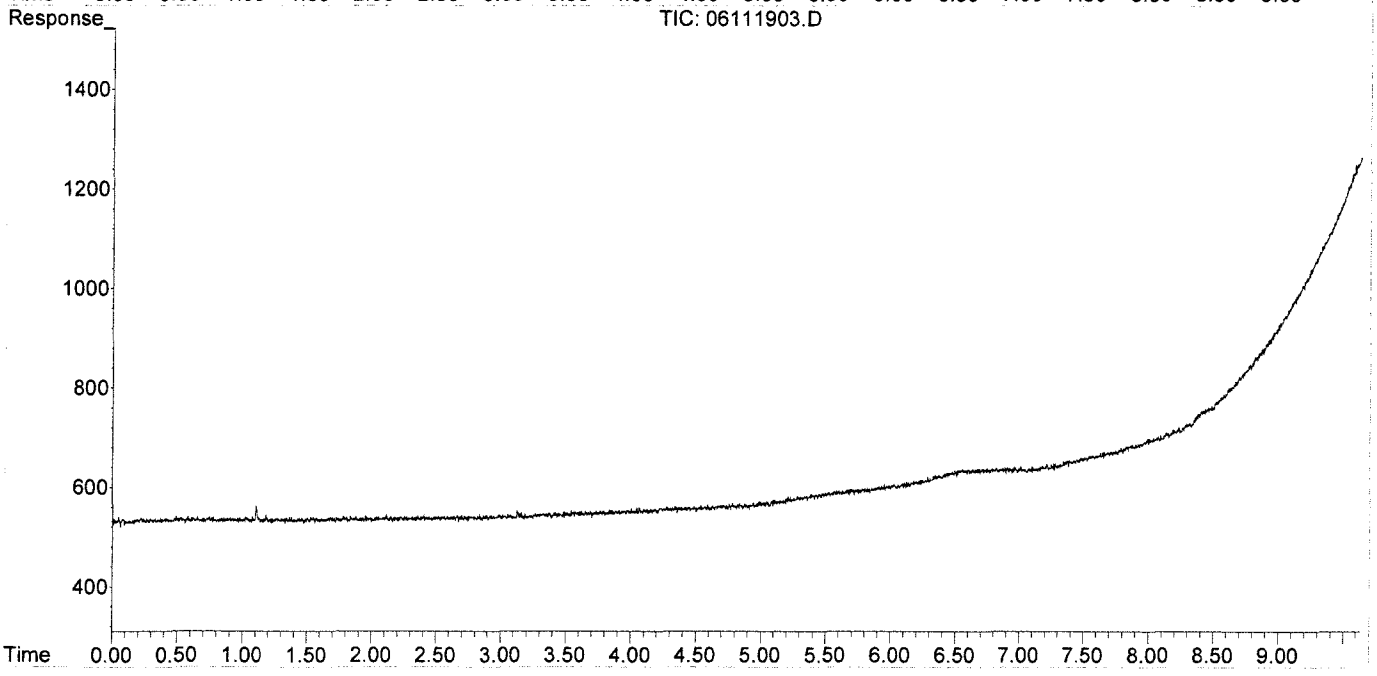
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 11:04:29
Operator : WH
Sample : MCS 0.1ML
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 12 11:36:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:33:06
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 13:42:21 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

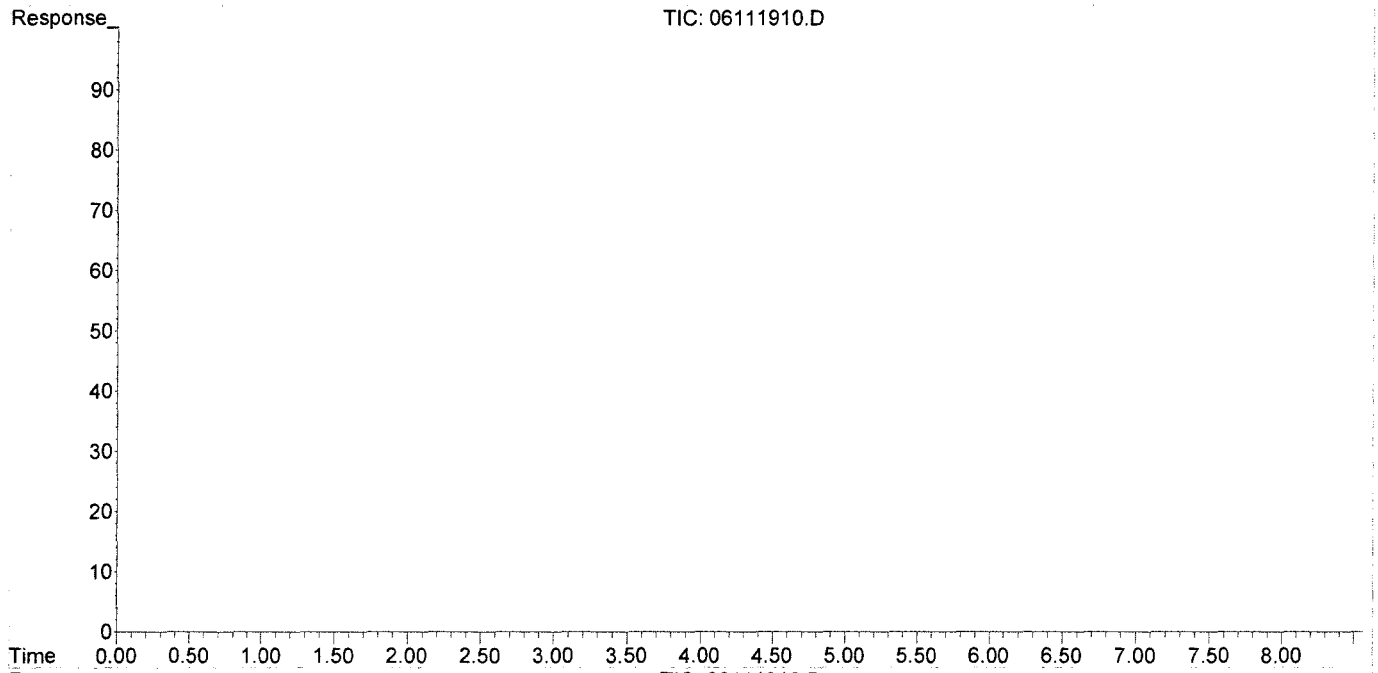
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.107	11662	1.286	ppm
7)	Ethylene	1.667	18008	1.076	ppm
8)	Ethane	1.928	20085	1.185	ppm
9)	Propylene	4.306	25142	1.073	ppm
10)	Propane	4.429	30346	1.220	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.646	39080	1.468	ppm
13)	n-Butane	6.646	39080	1.468	ppm

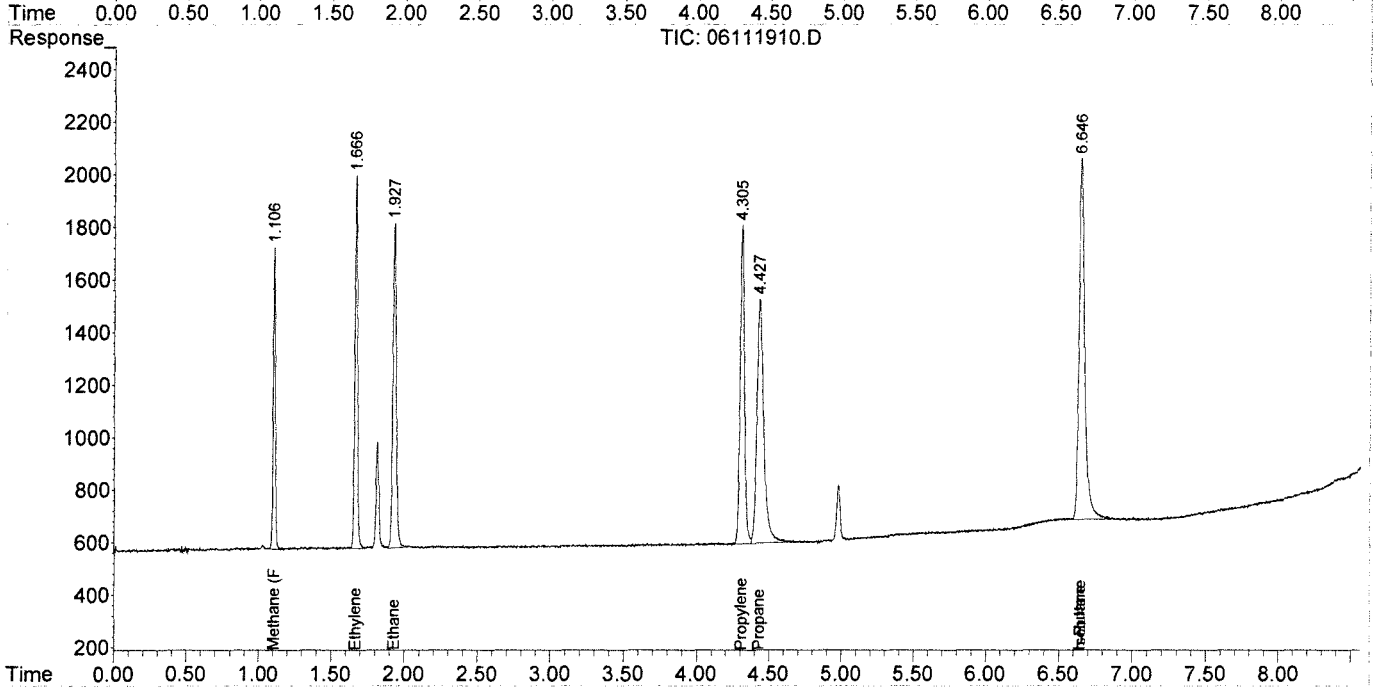
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:33:06
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 13:42:21 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:54:43
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:11:34 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

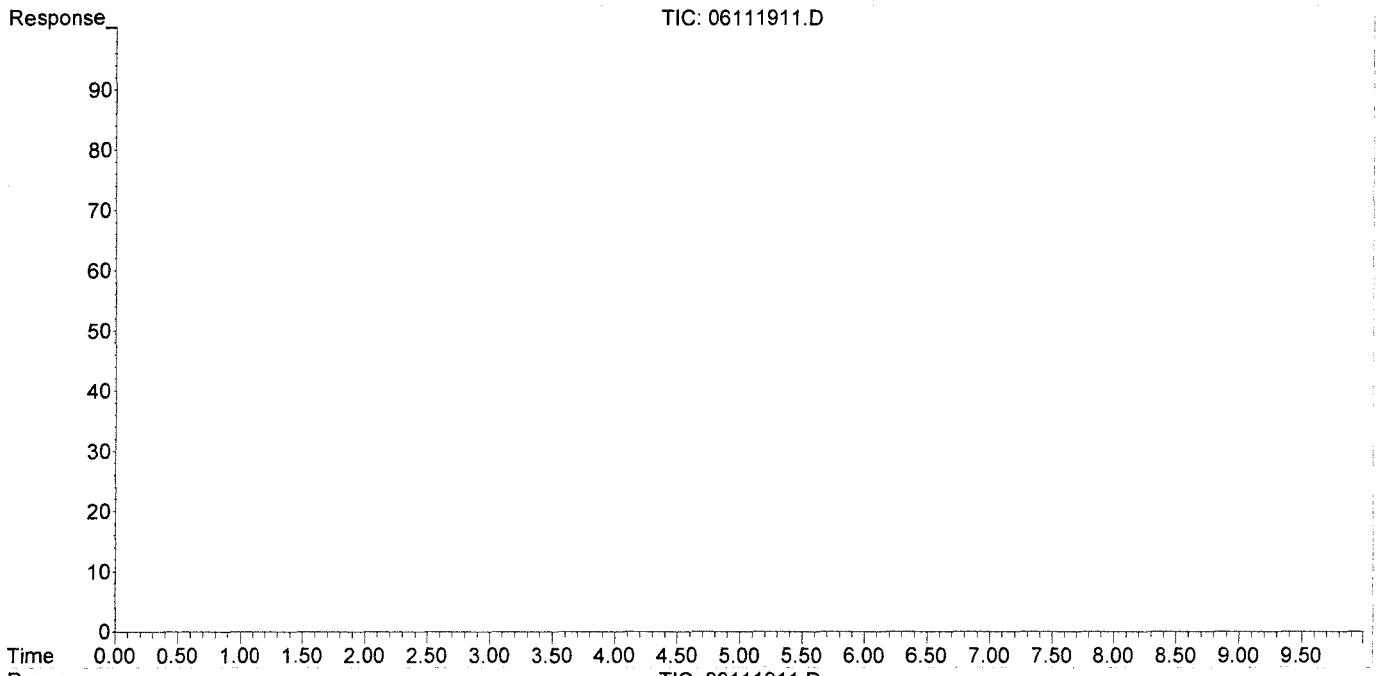
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	12106	1.335	ppm
7)	Ethylene	1.668	18922	1.131	ppm
8)	Ethane	1.929	21403	1.263	ppm
9)	Propylene	4.306	26661	1.138	ppm
10)	Propane	4.429	32816	1.319	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.645f	43079	1.618	ppm
13)	n-Butane	6.645f	43079	1.618	ppm

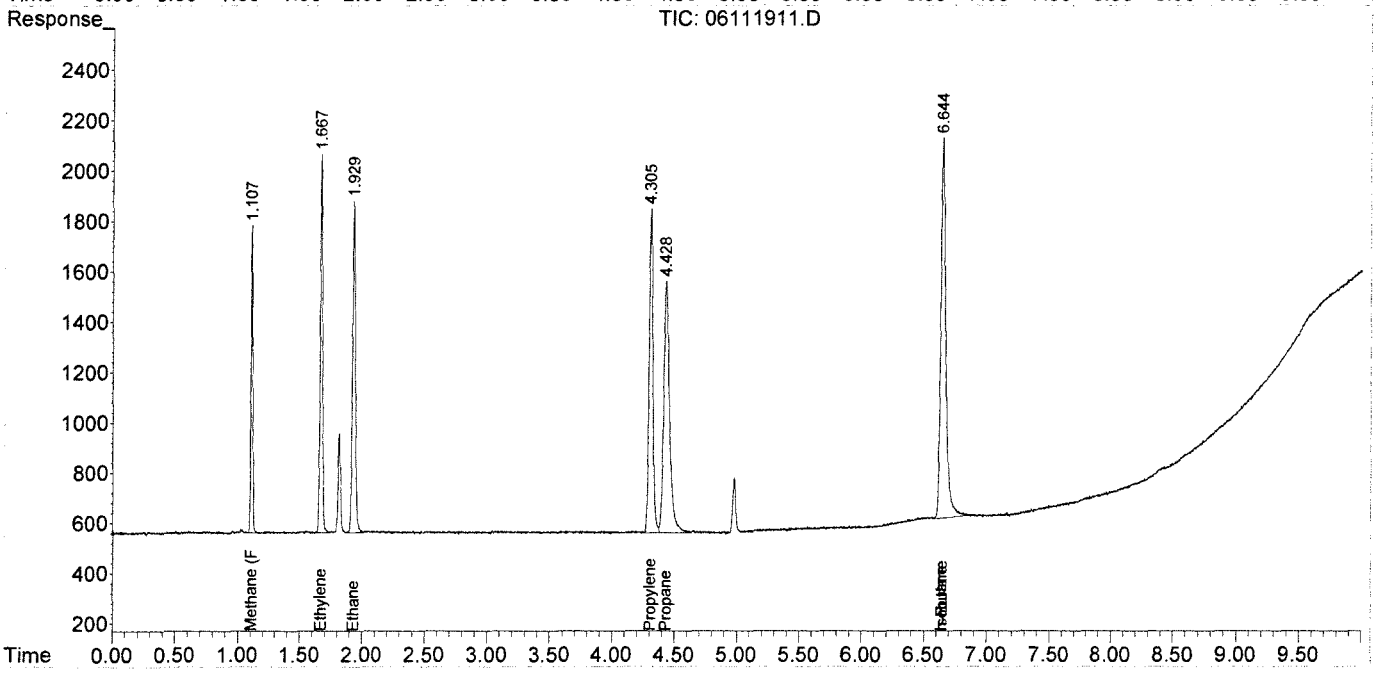
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 13:54:43
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:11:34 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

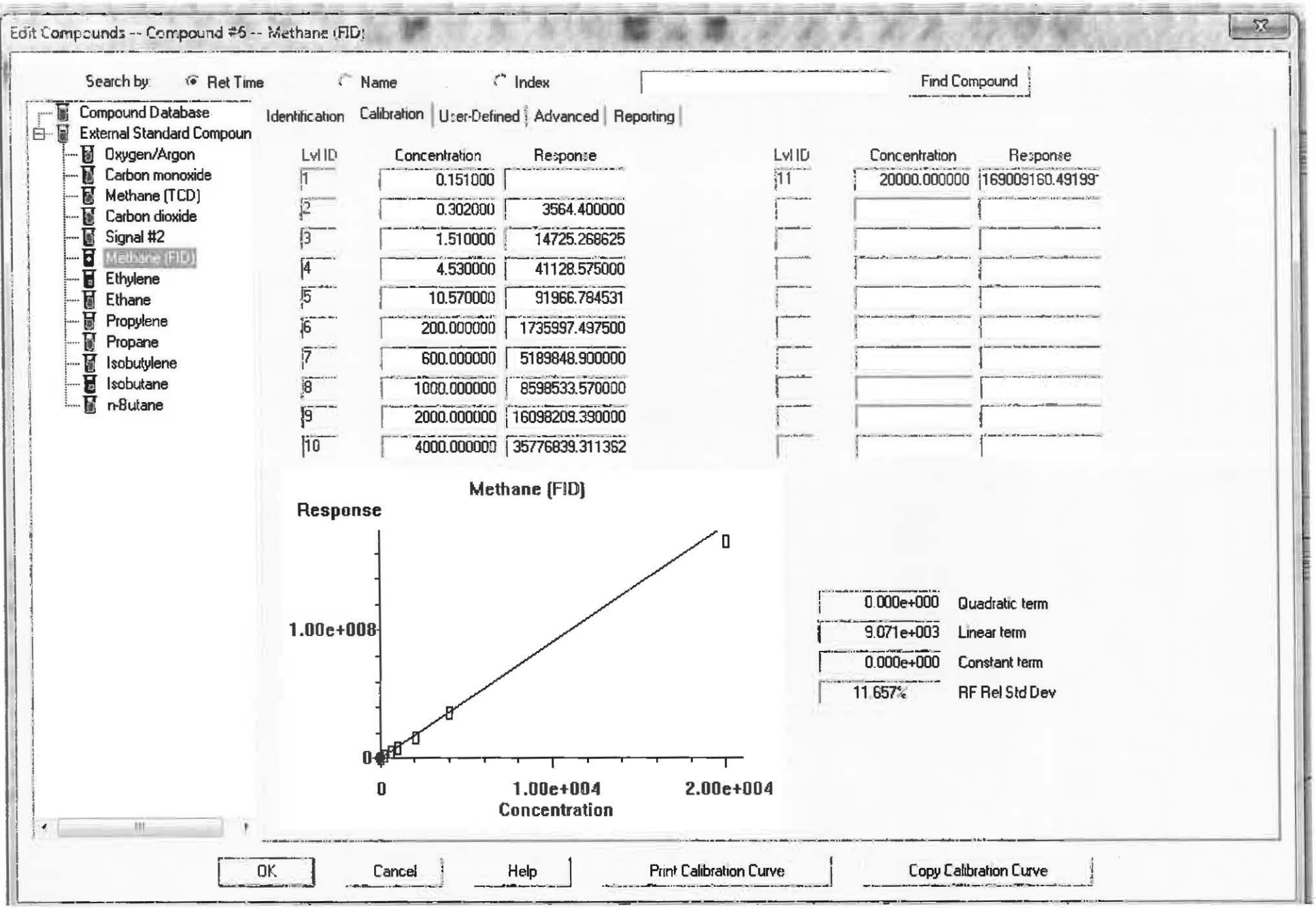
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017


Edit Compounds -- Compound #6 -- Methane (FID)
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compoun
Oxygen/Argon
Carbon monoxide
Methane (TCD)
Carbon dioxide
Signal #2
Methane (FID)
Ethylene
Ethane
Propylene
Propane
Isobutylene
Isobutane
n-Butane
Identification Calibration User-Defined Advanced Reporting
Lvl ID Concentration Response
1 0.151000
2 0.302000 3564.400000
3 1.510000 14725.268625
4 4.530000 41128.575000
5 10.570000 91966.784531
6 200.000000 1735997.497500
7 600.000000 5189848.900000
8 1000.000000 8598533.570000
9 2000.000000 16098209.390000
10 4000.000000 35776839.311362
Lvl ID Concentration Response
11 20000.000000 169009160.49199
Methane (FID)
Response
1.00e+008
0
0
1.00e+004
2.00e+004
Concentration
0.000e+000 Quadratic term
9.071e+003 Linear term
0.000e+000 Constant term
11.657% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

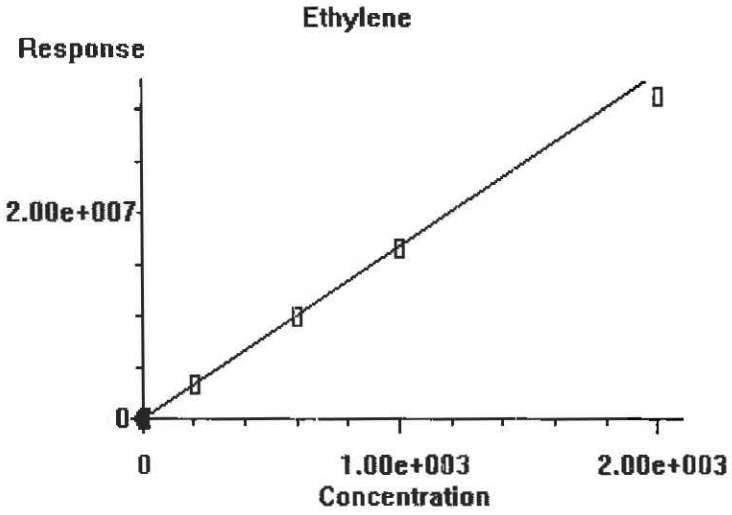
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

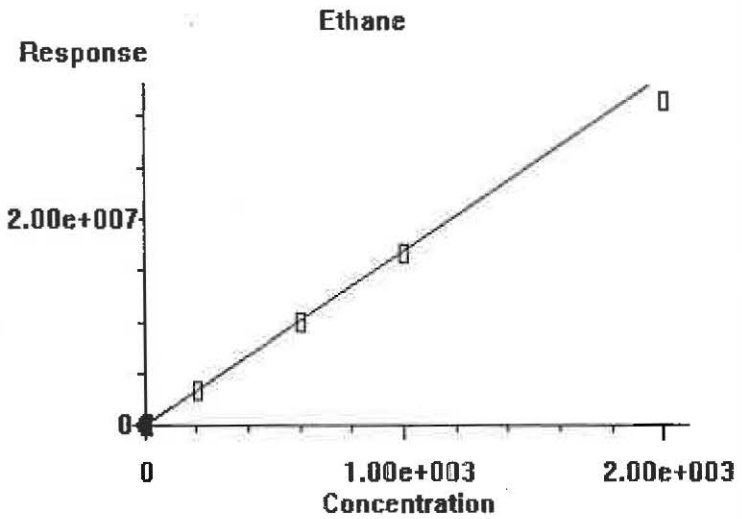
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

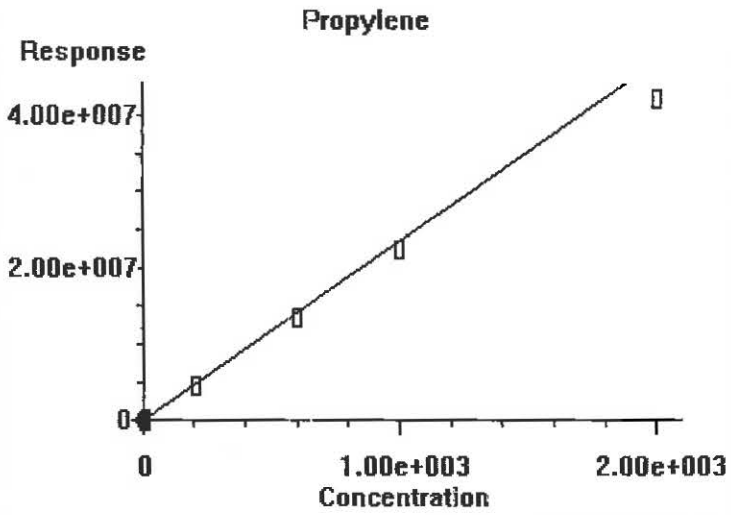
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

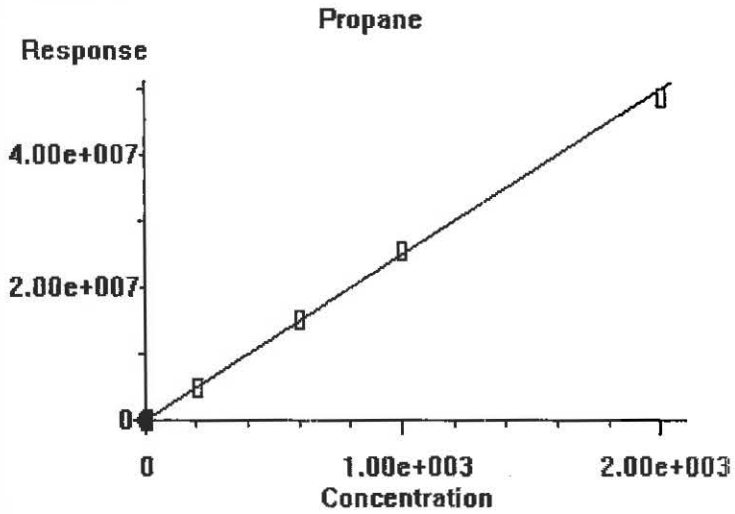
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00949754

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

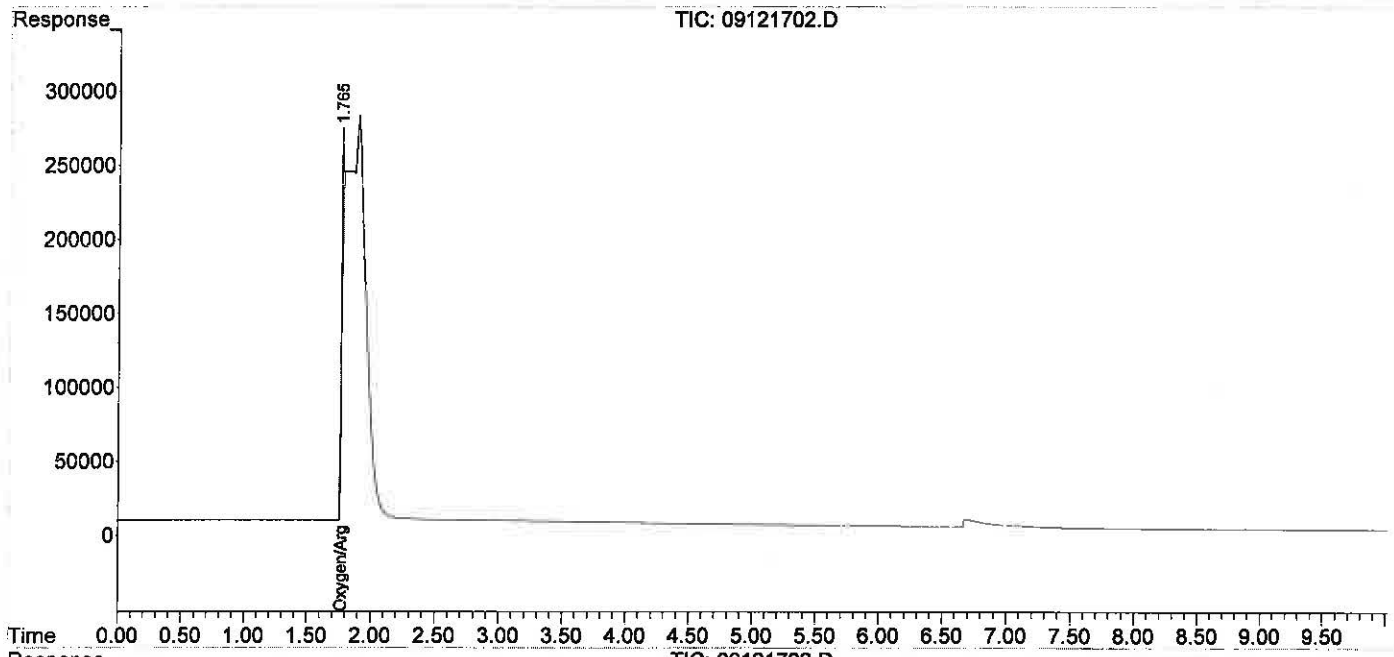
(f)=RT Delta > 1/2 Window (m)=manual int.

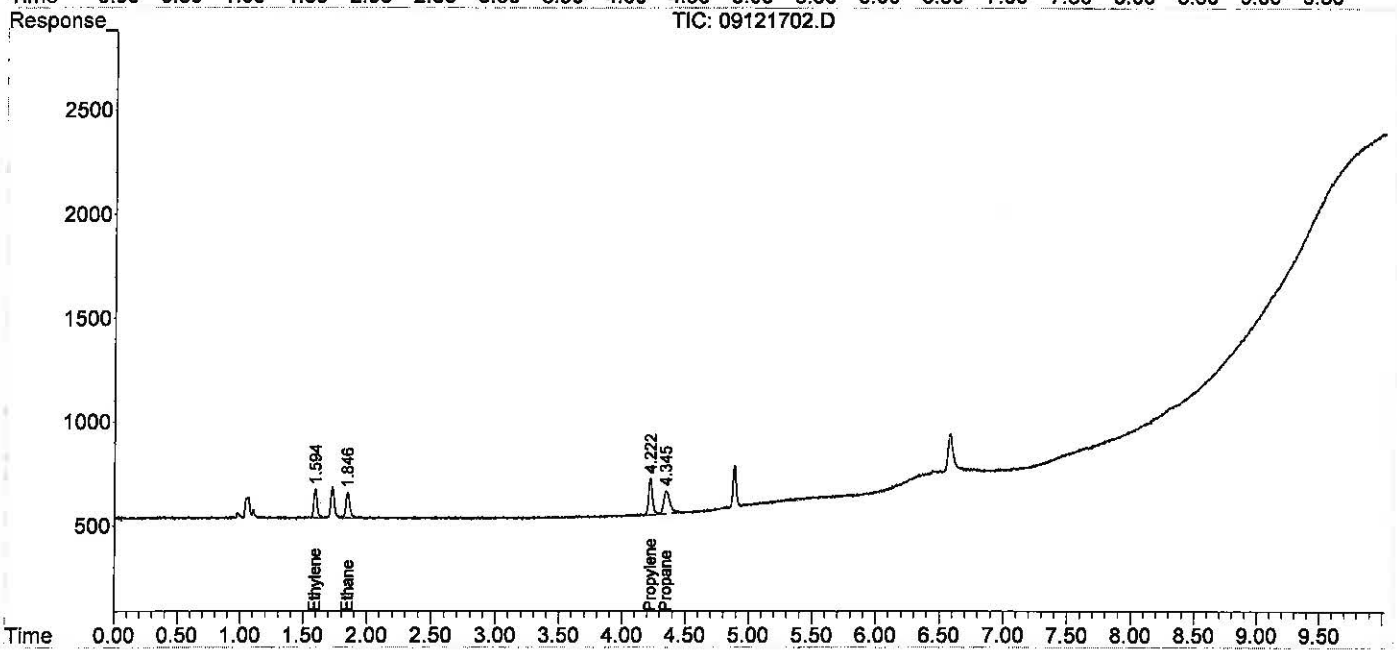
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

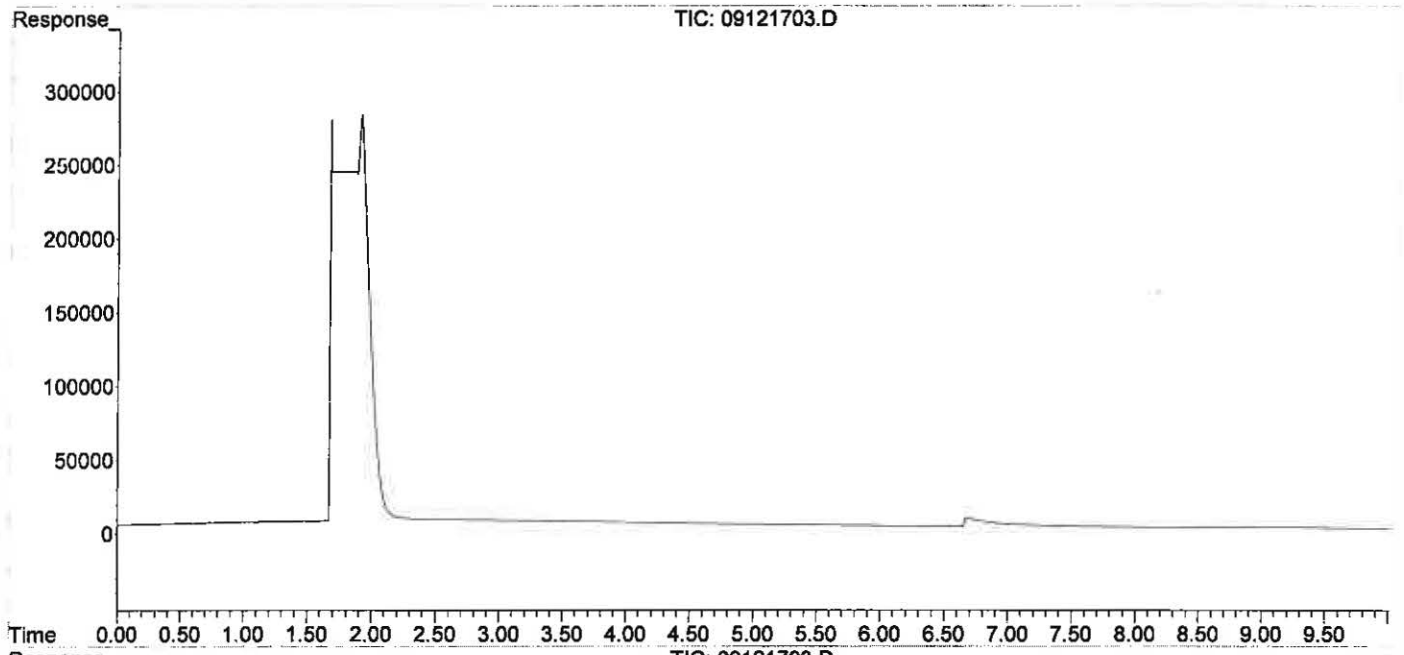
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

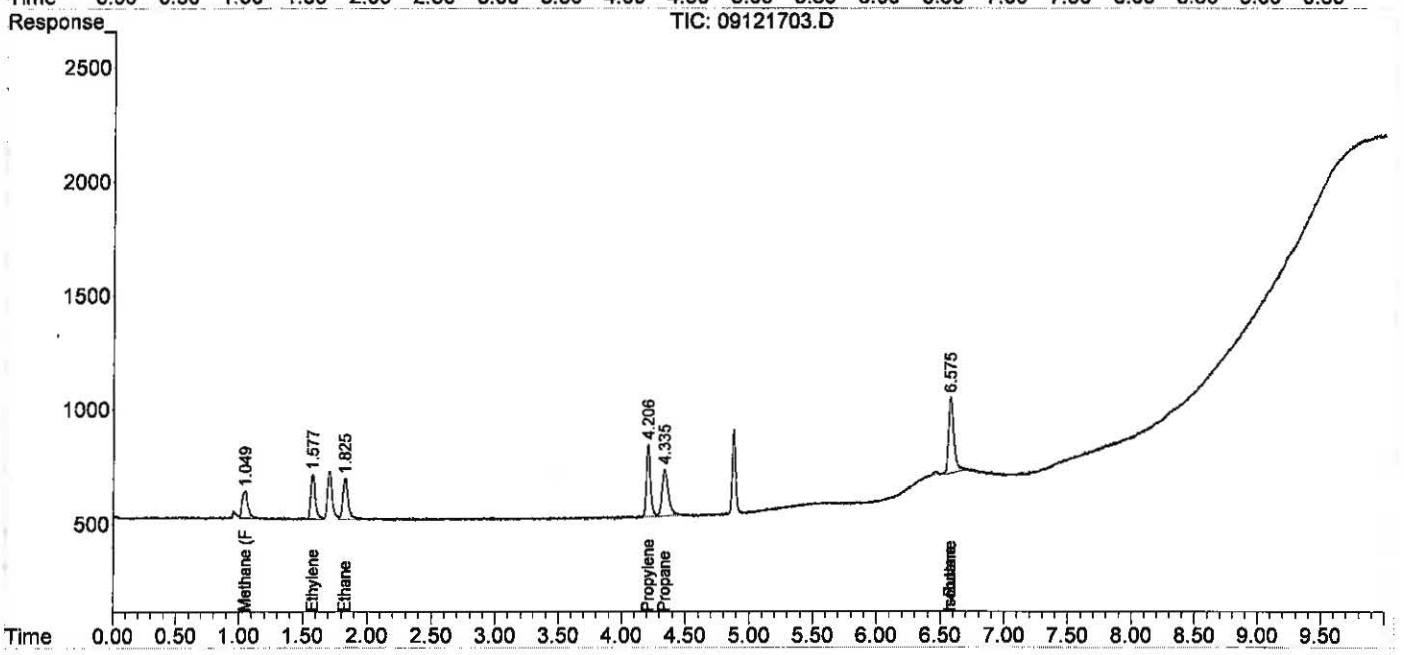
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



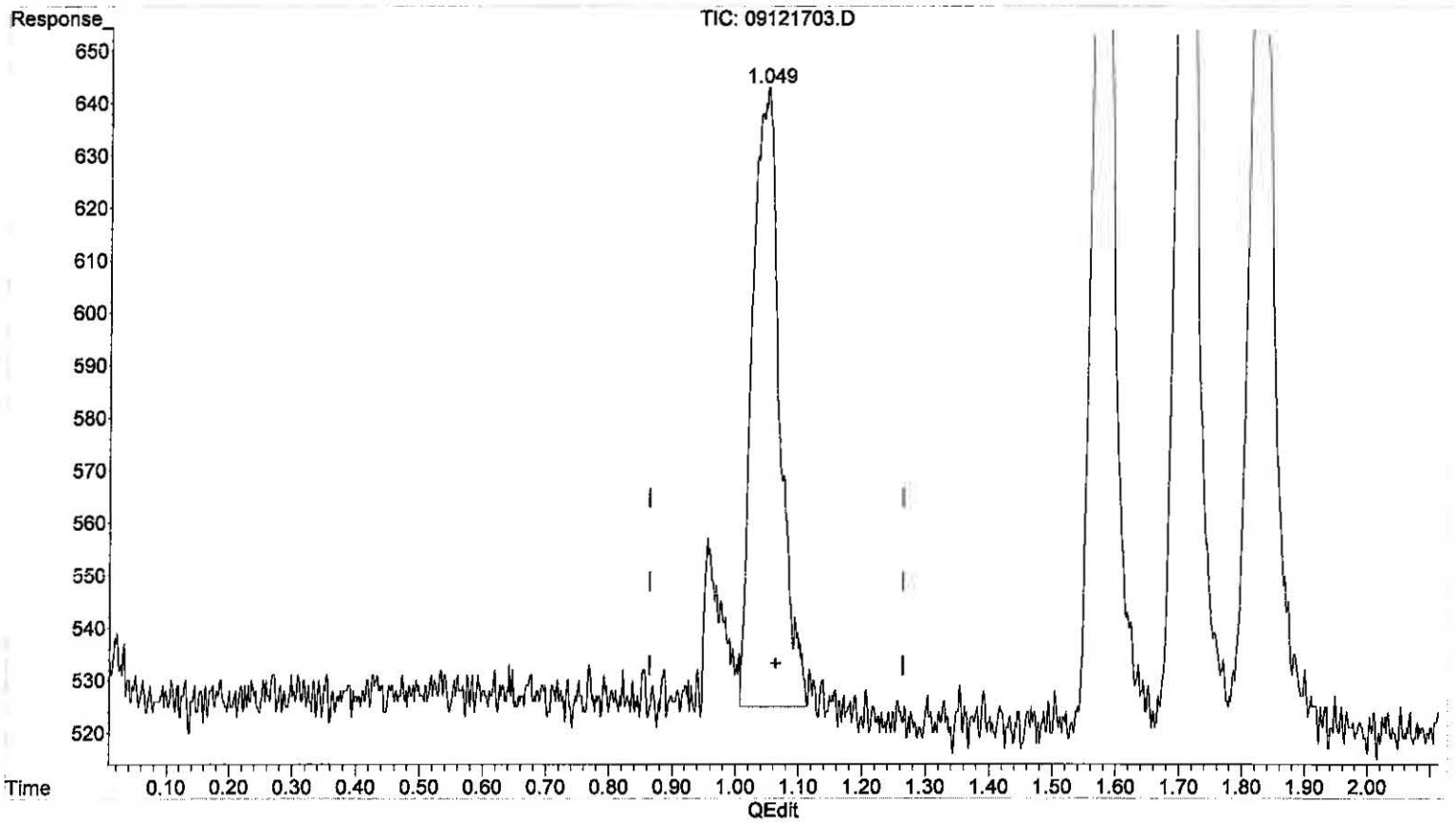


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

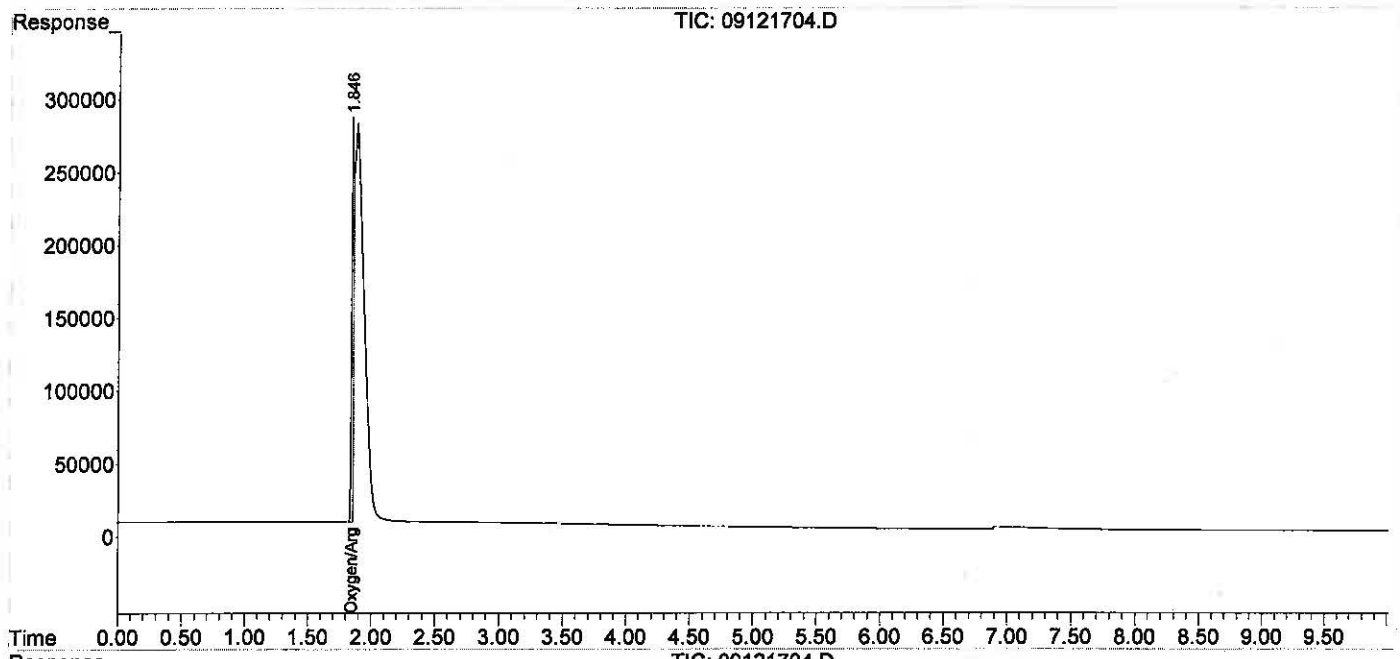
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.847	2536230	1.056 ppm
2)	Carbon monoxide	1.847	2536230	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	0.000	0	N.D. ppm
6)	Methane (FID)	1.064	14725	1.613 ppm
7)	Ethylene	1.598	26885	1.582 ppm
8)	Ethane	1.851	26944	1.555 ppm
9)	Propylene	4.220	39140	1.589 ppm
10)	Propane	4.349	39934	1.596 ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	6.578f	55348	1.020 ppm
13)	n-Butane	6.578f	55348	1.020 ppm

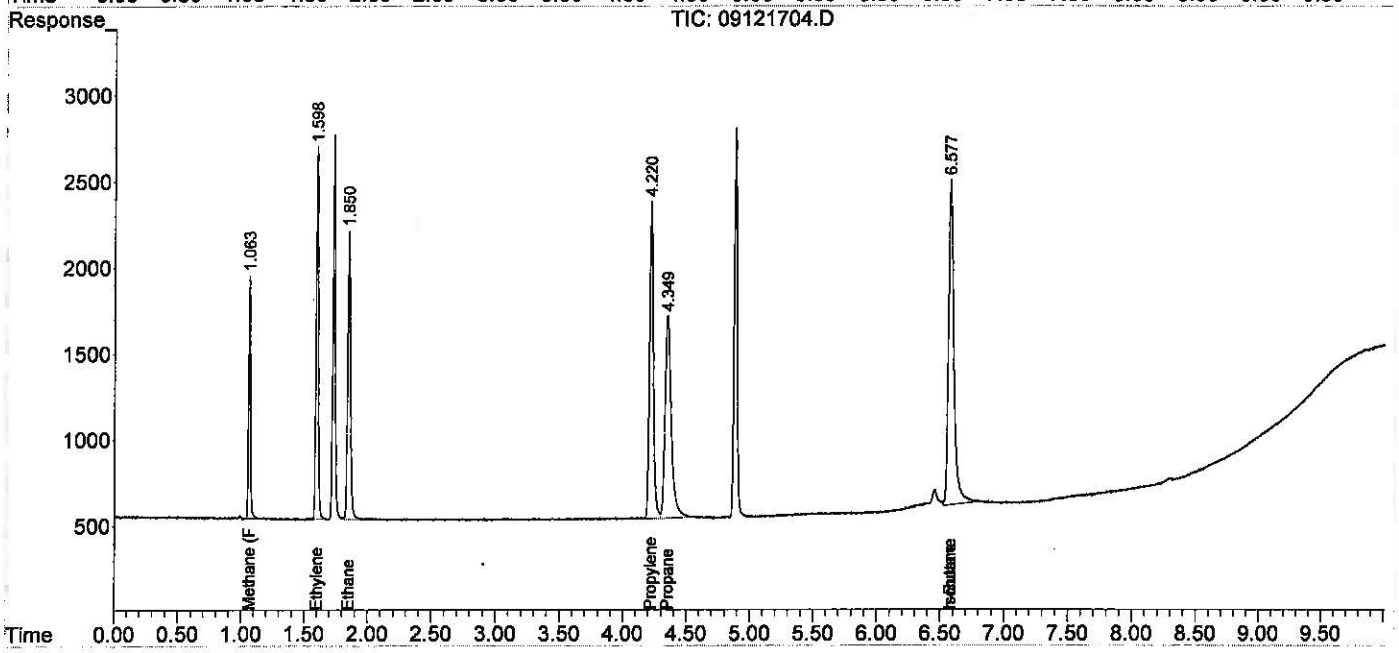
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

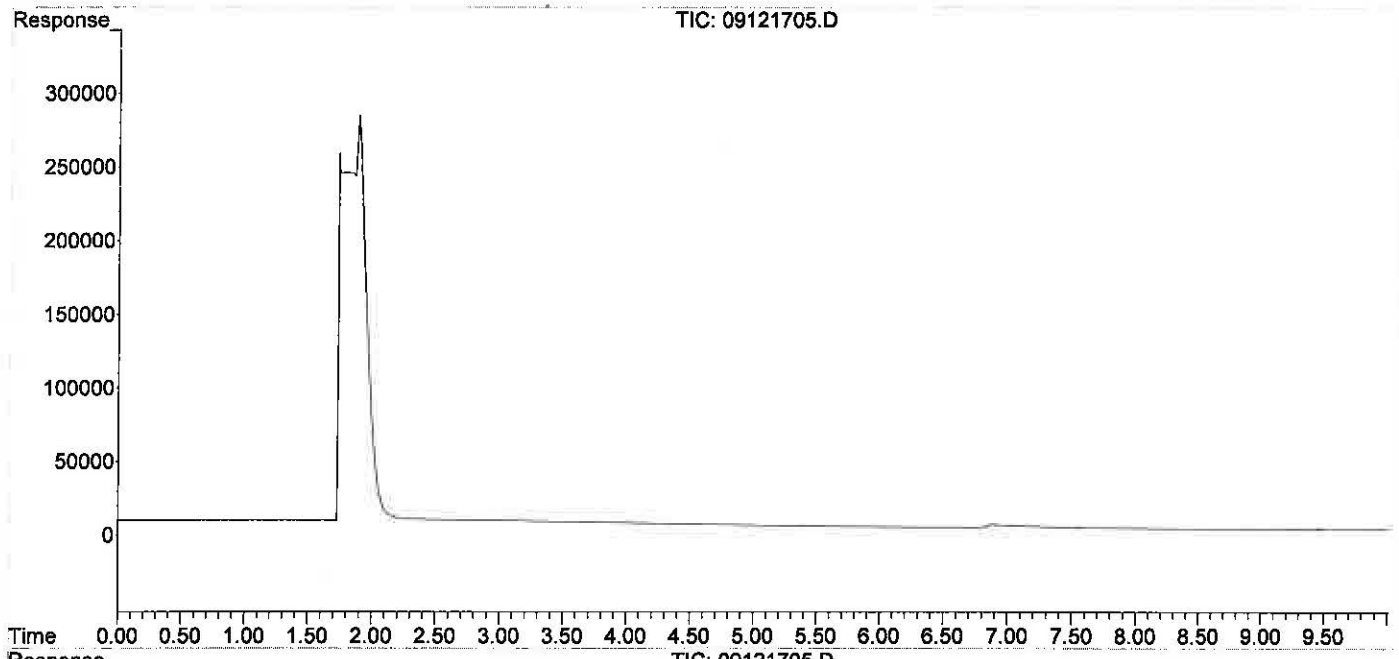
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

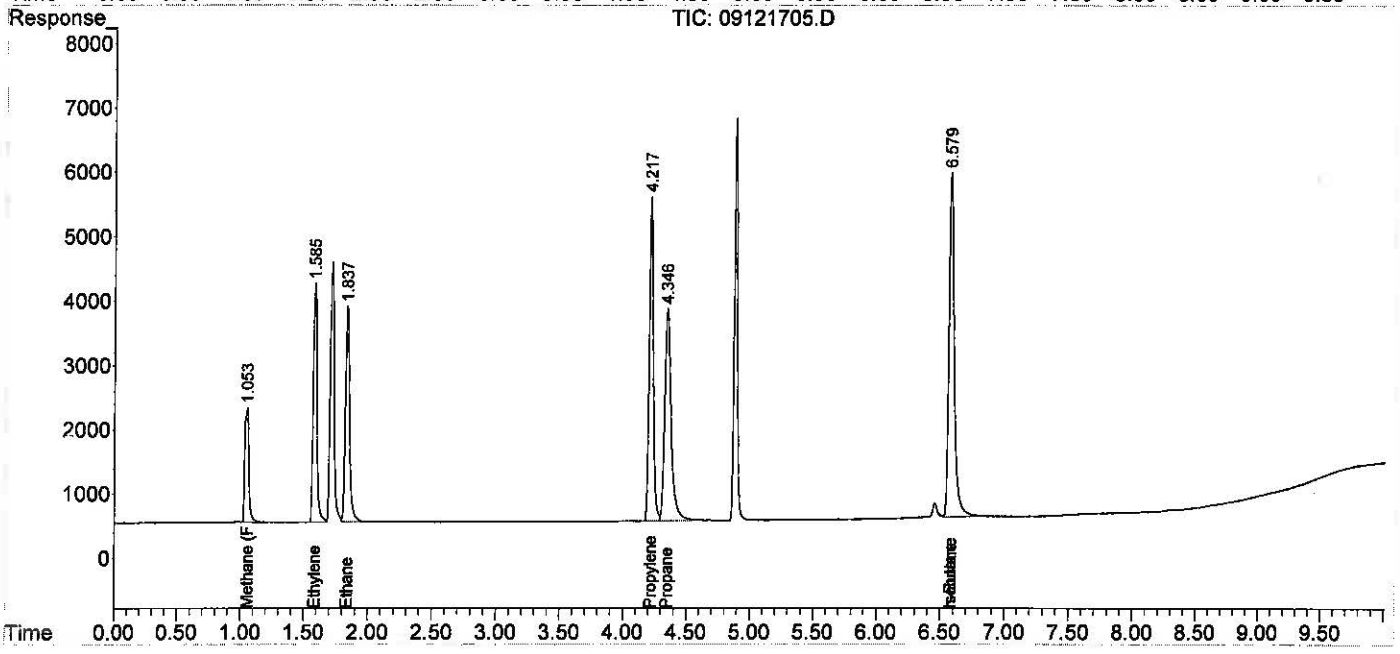
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

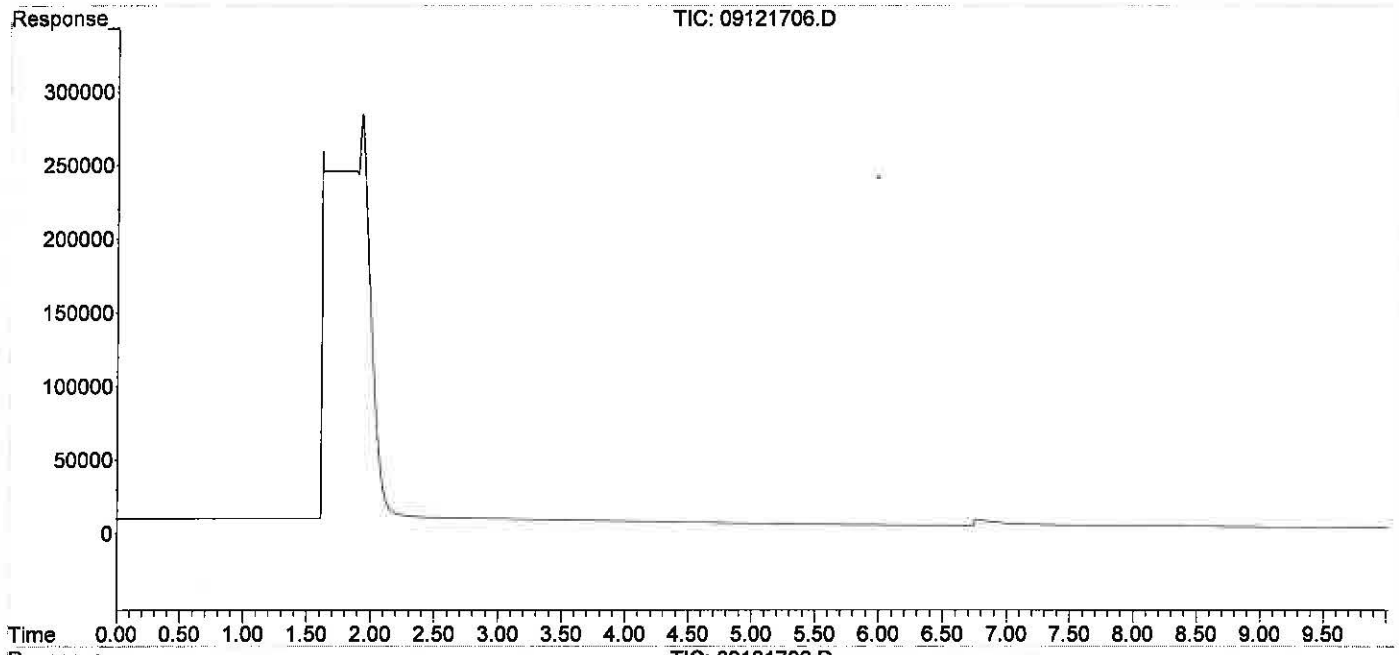
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

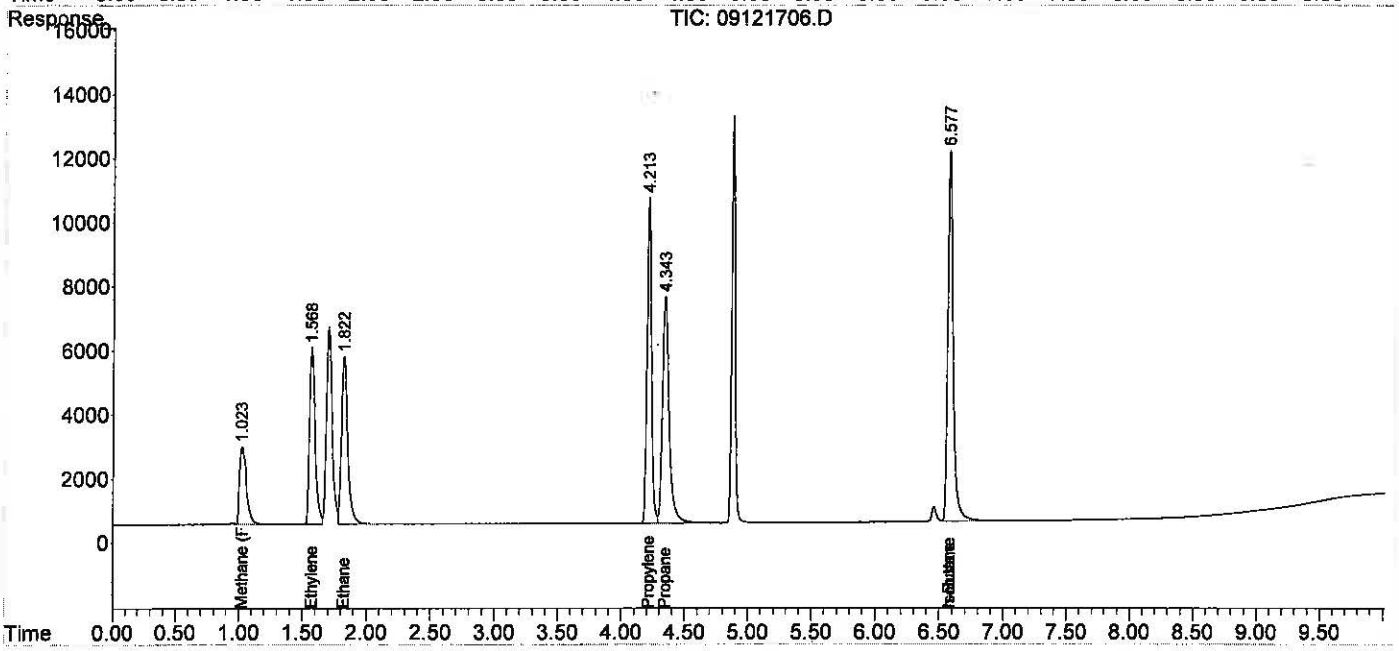
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

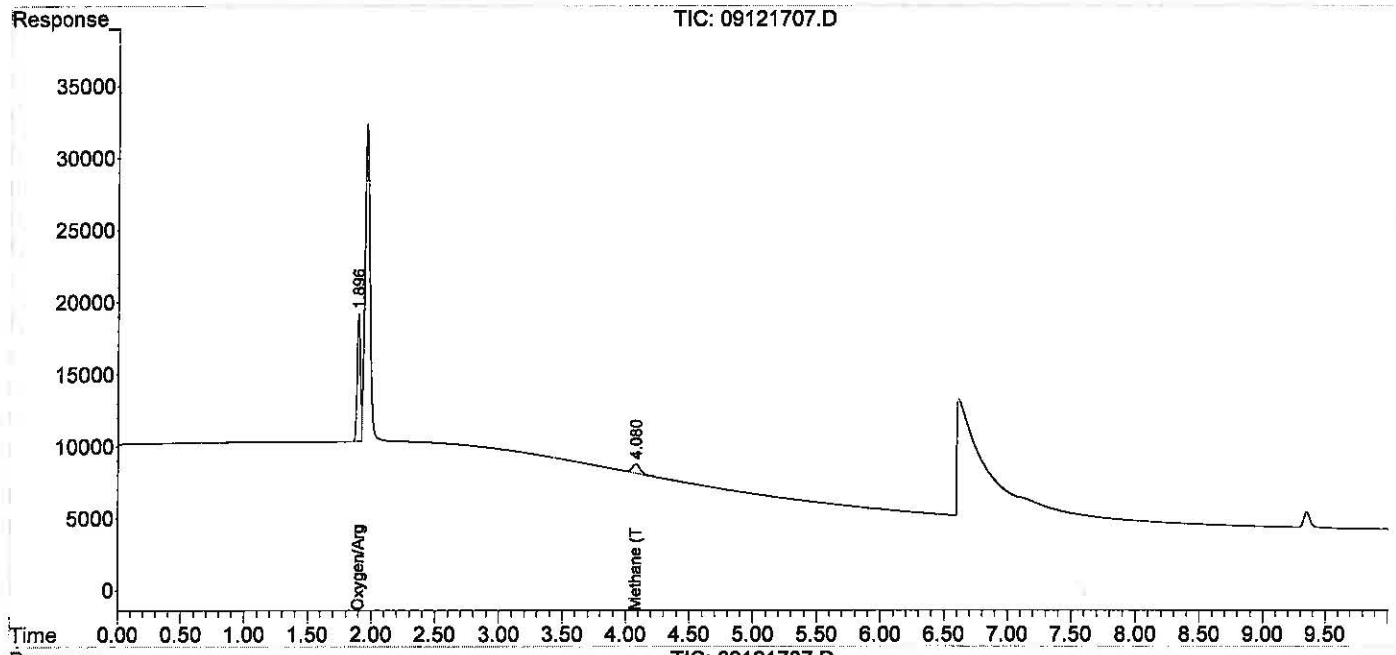
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

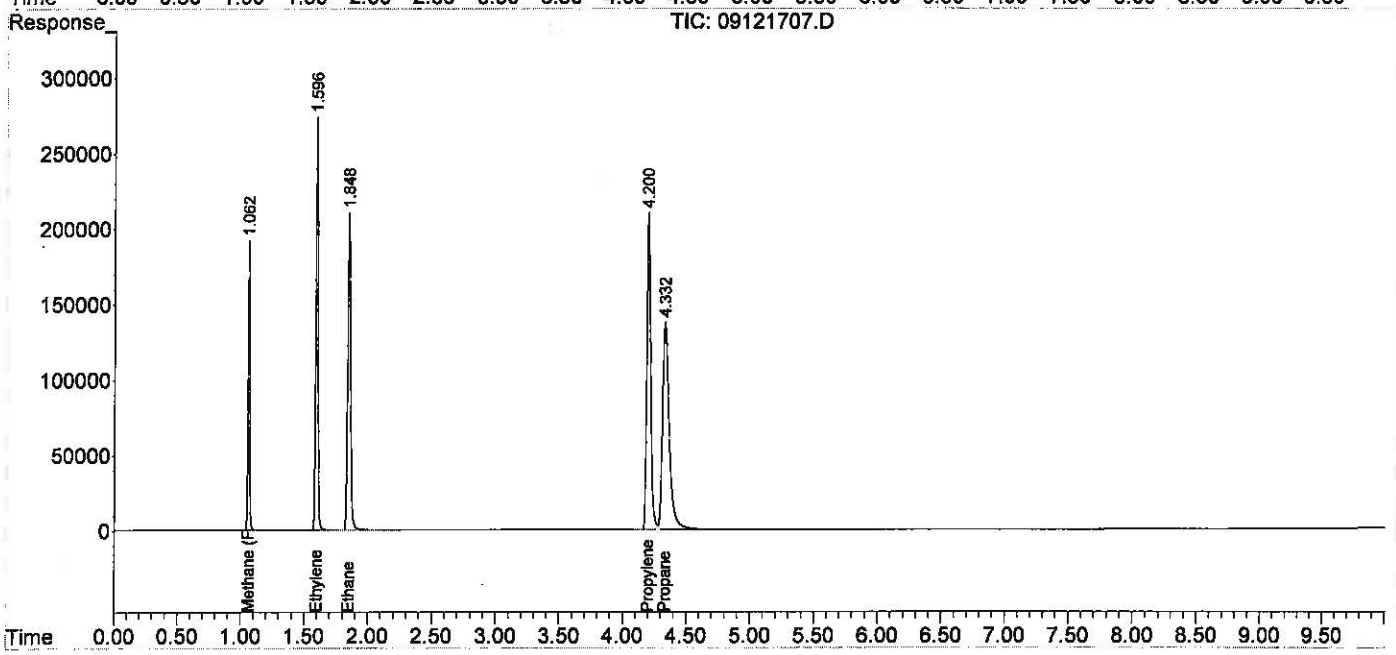
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

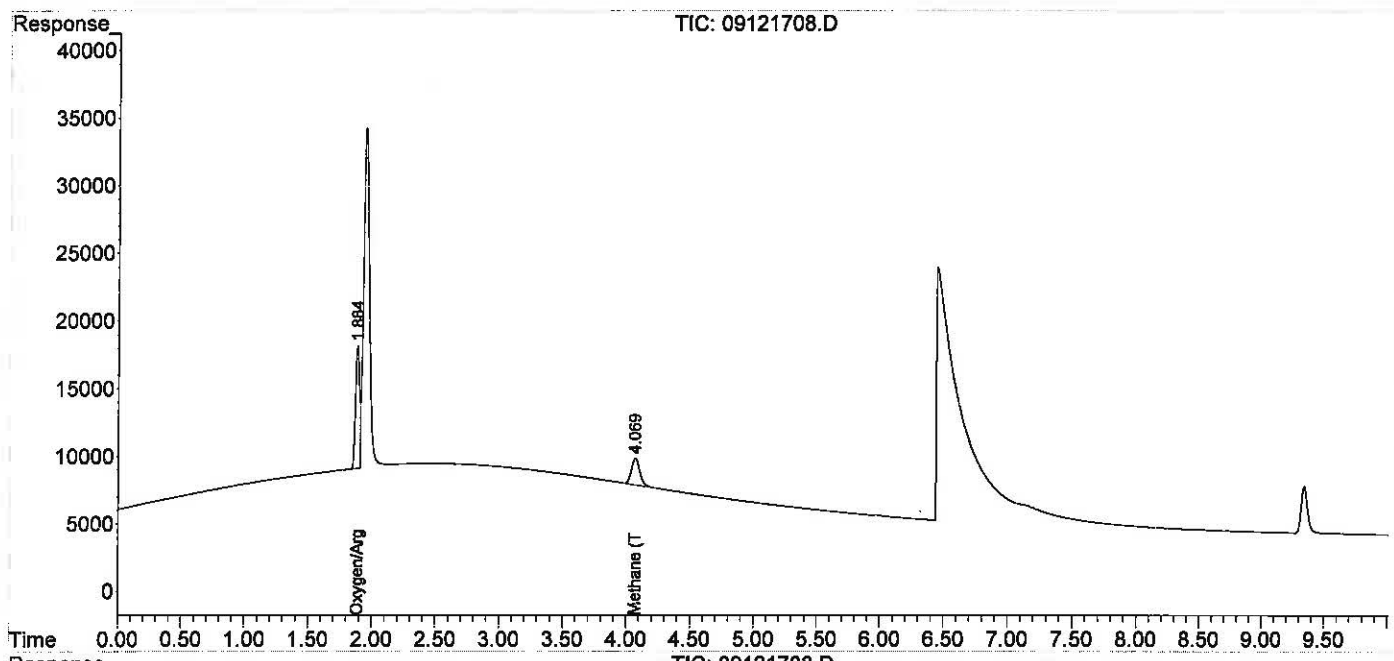
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

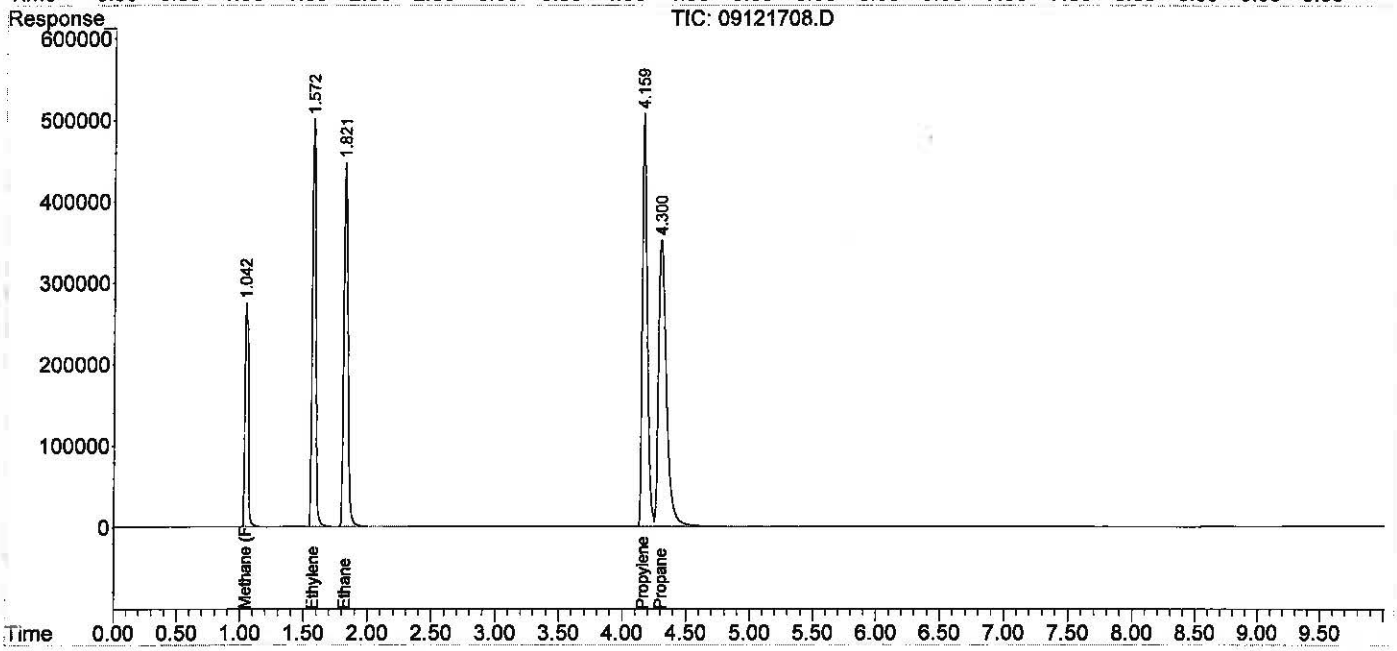
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

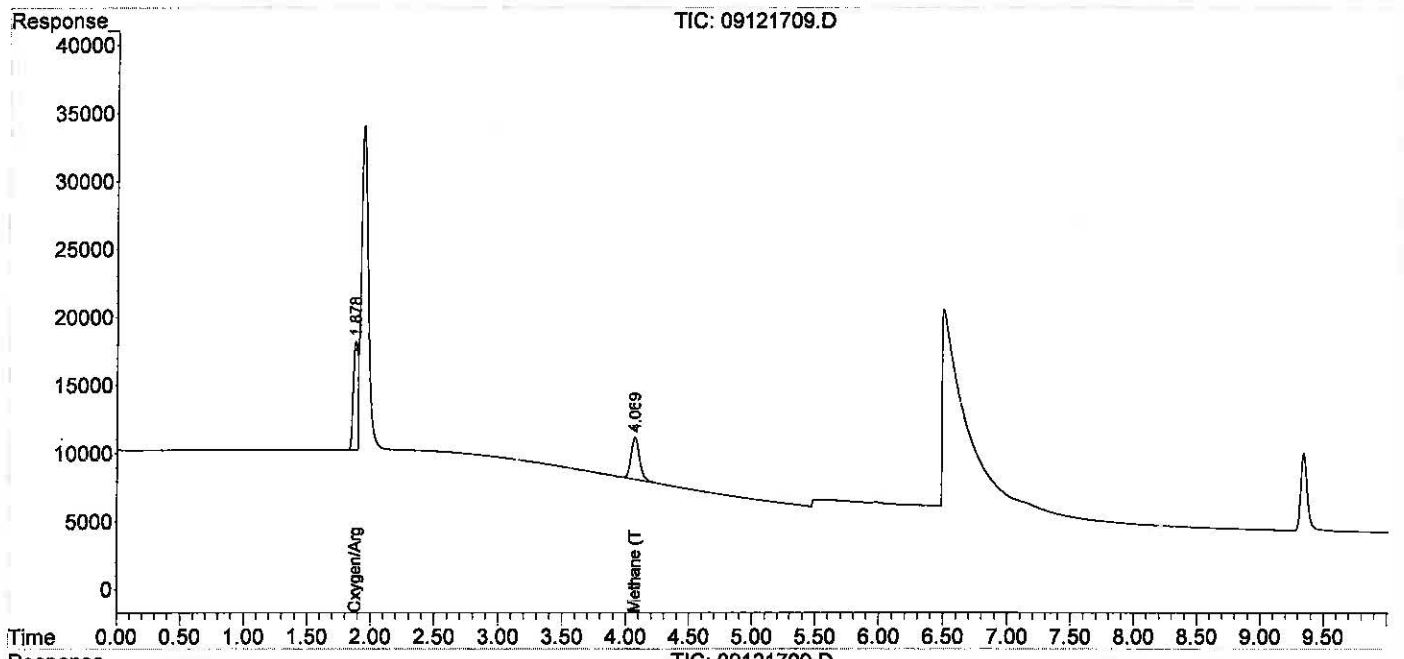
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

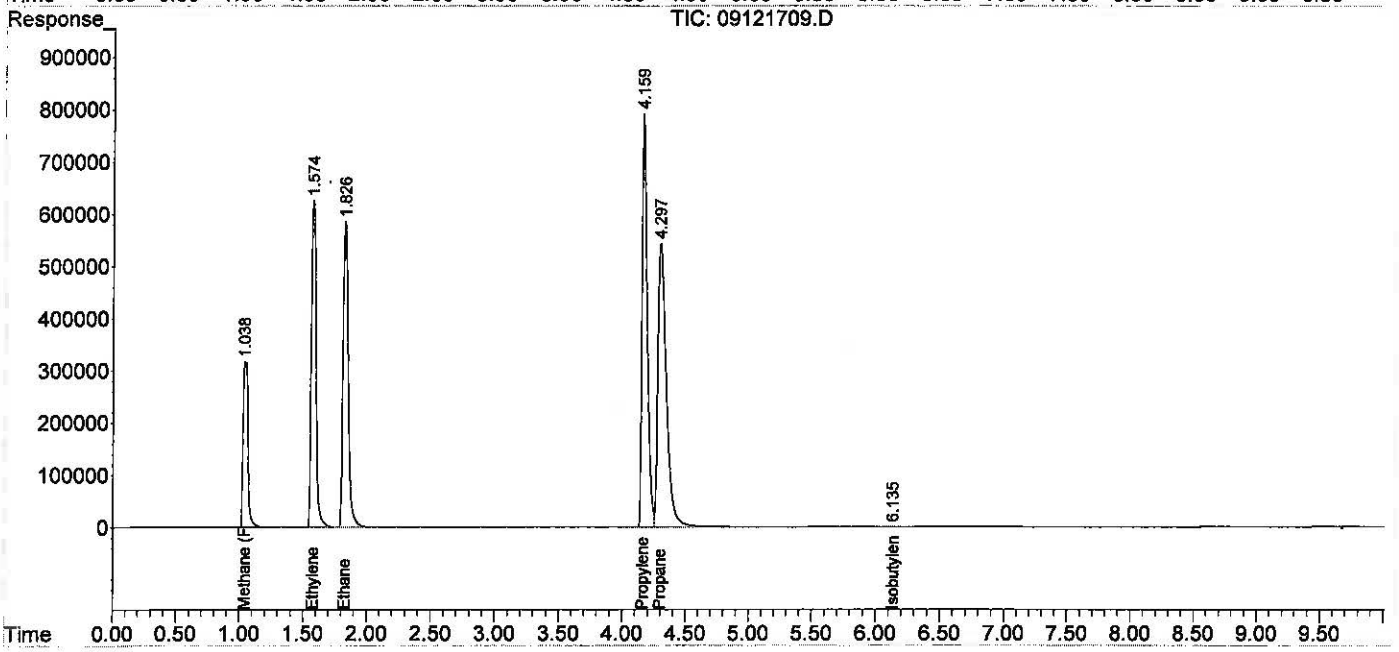
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

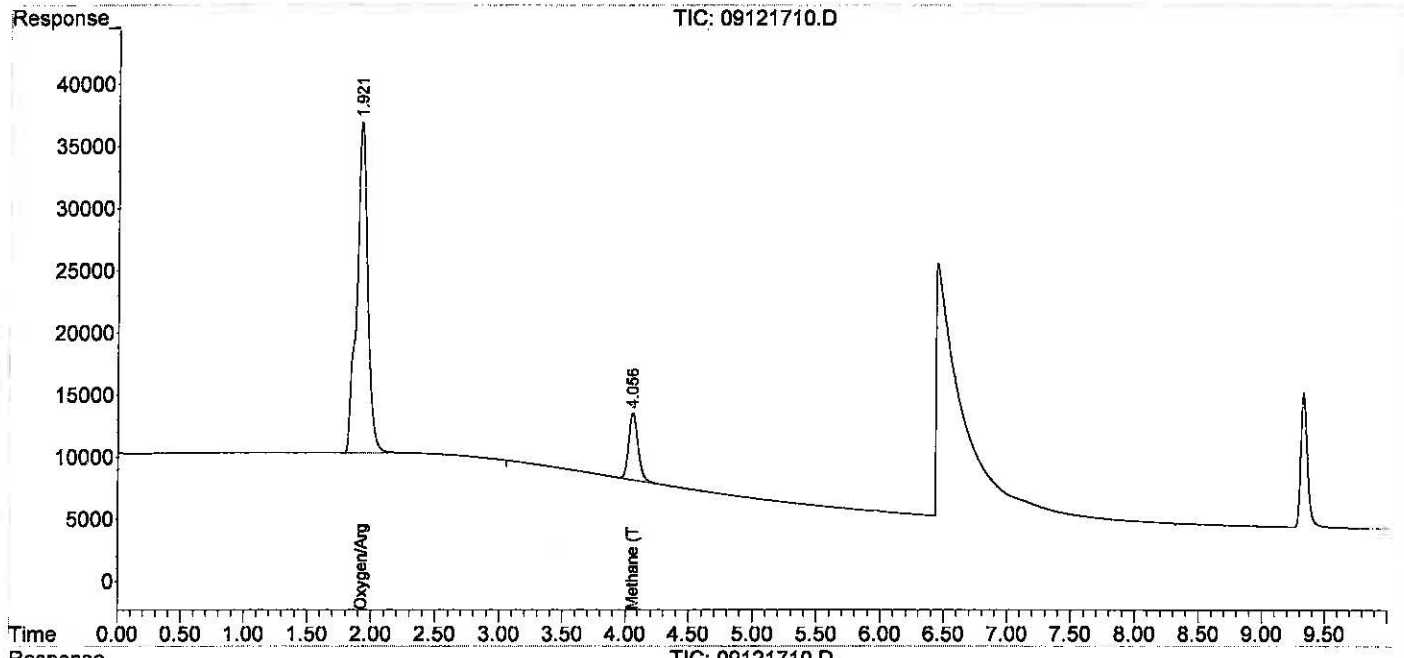
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

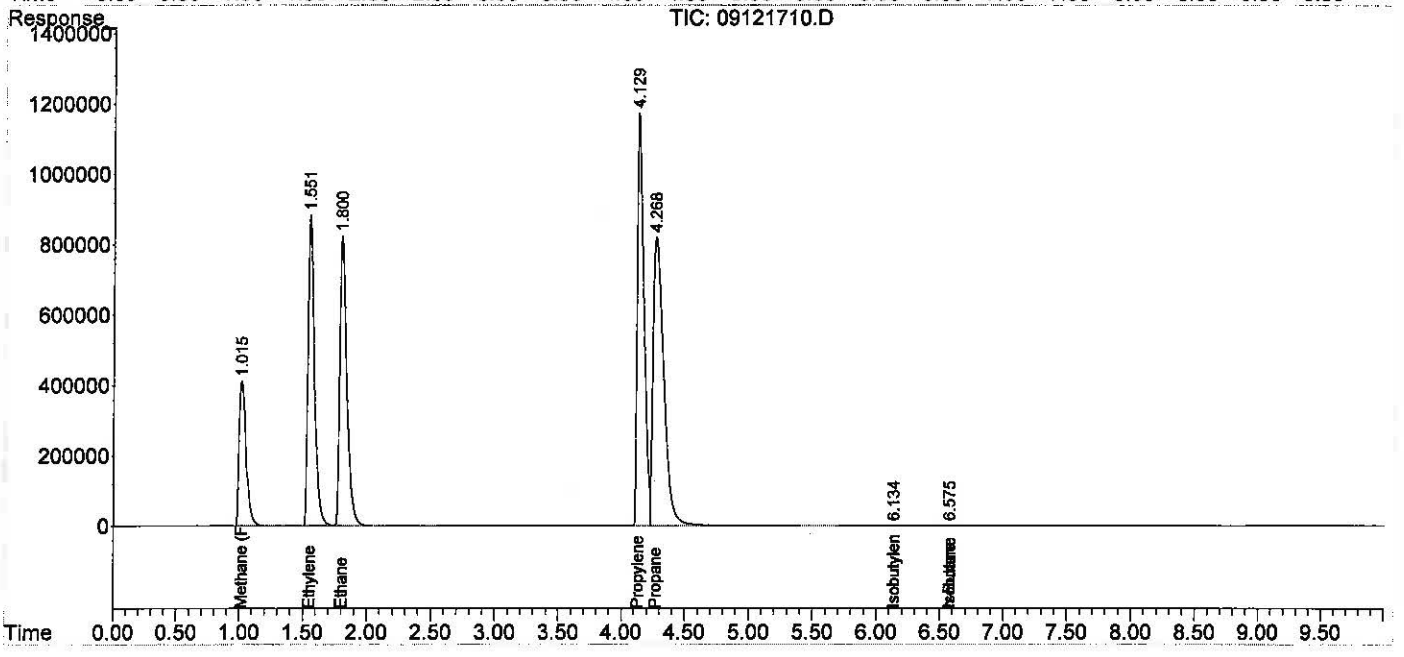
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



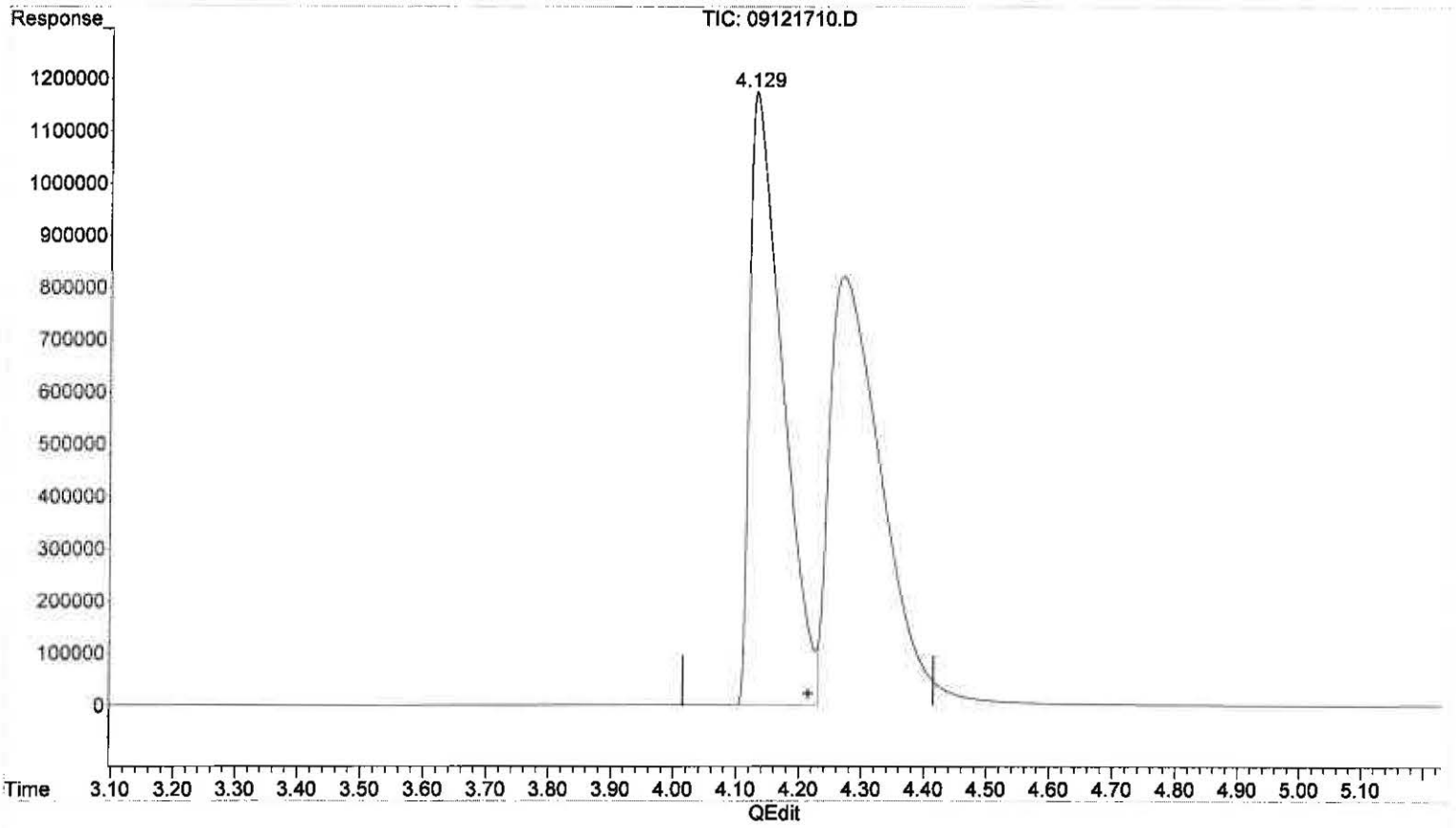


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

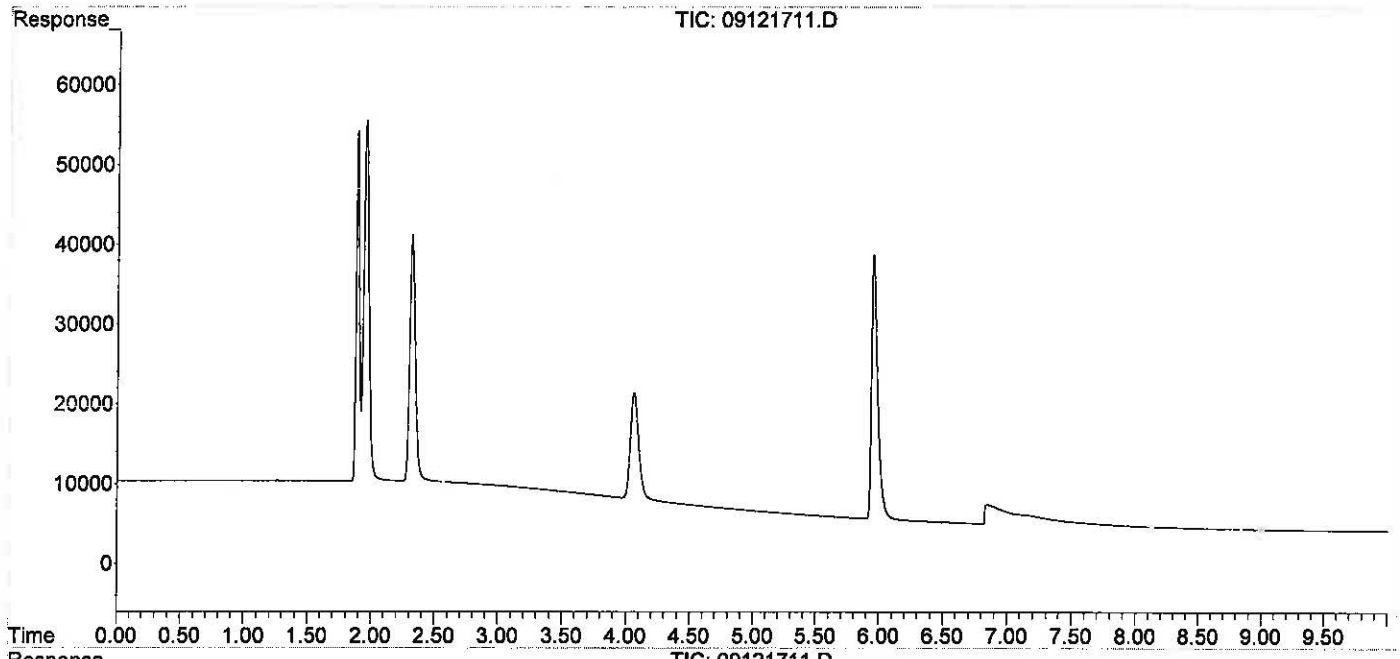
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

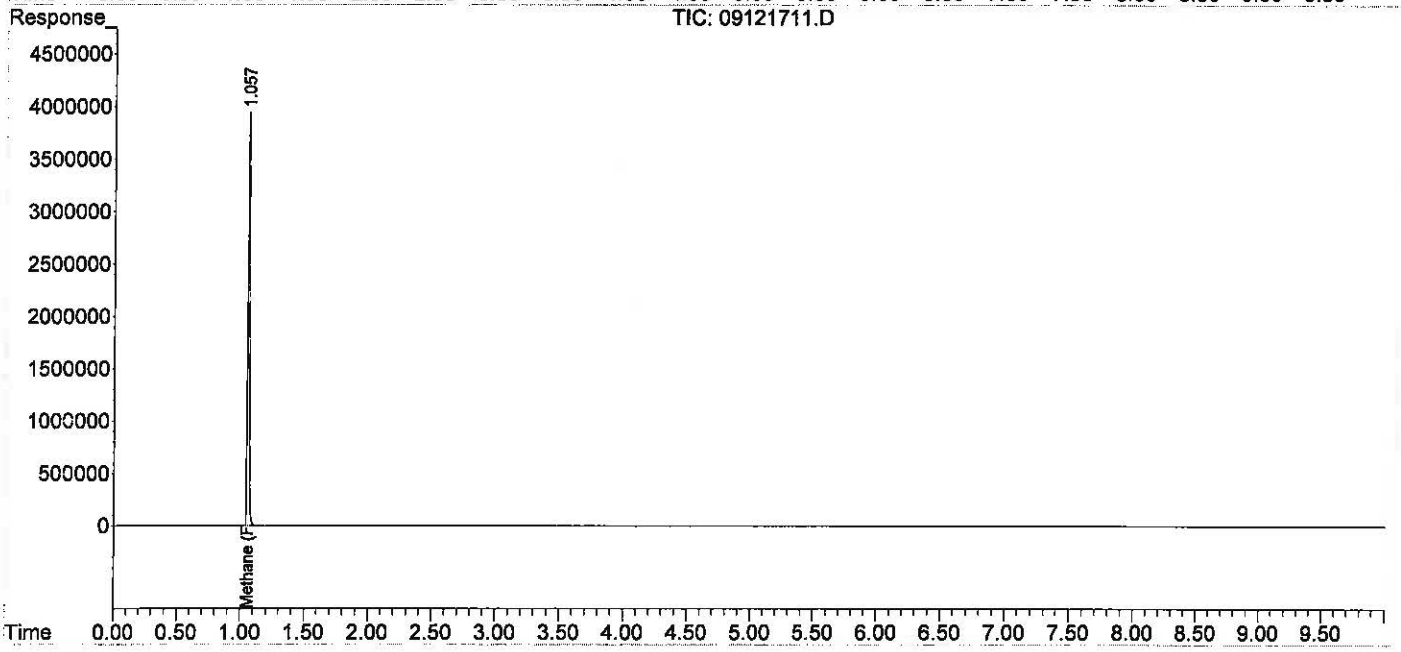
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

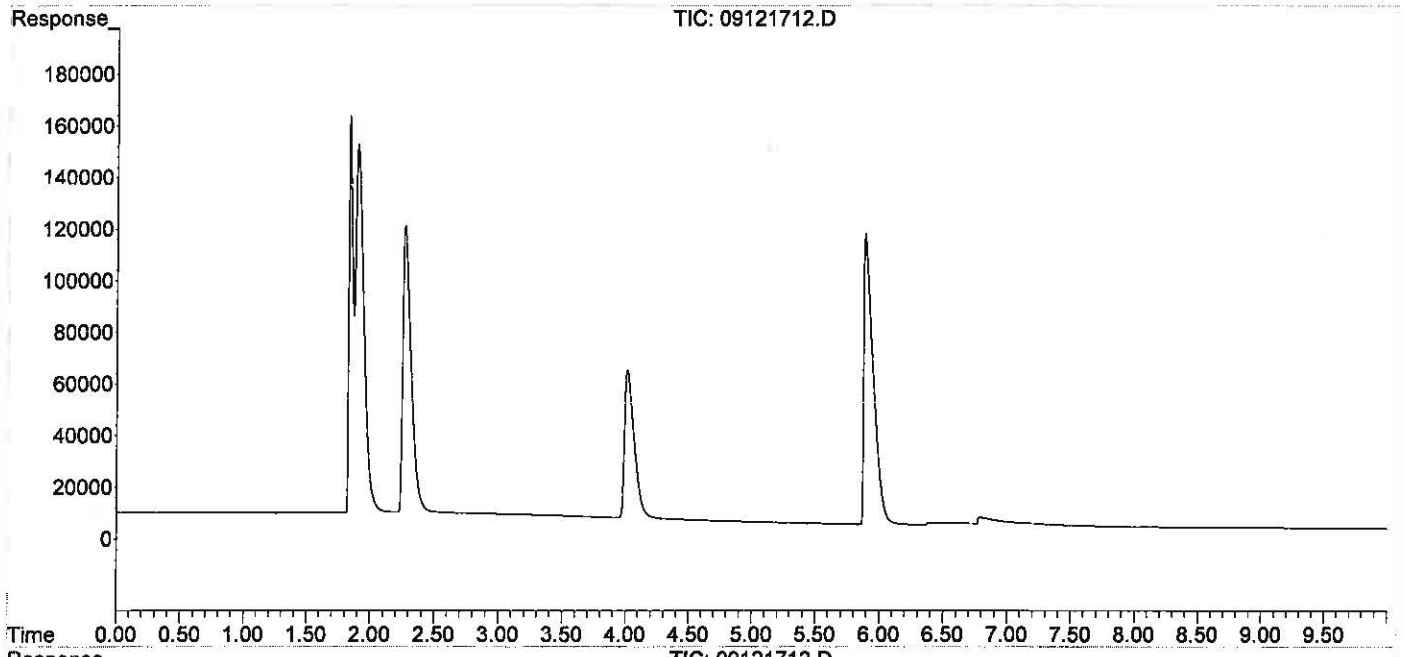
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

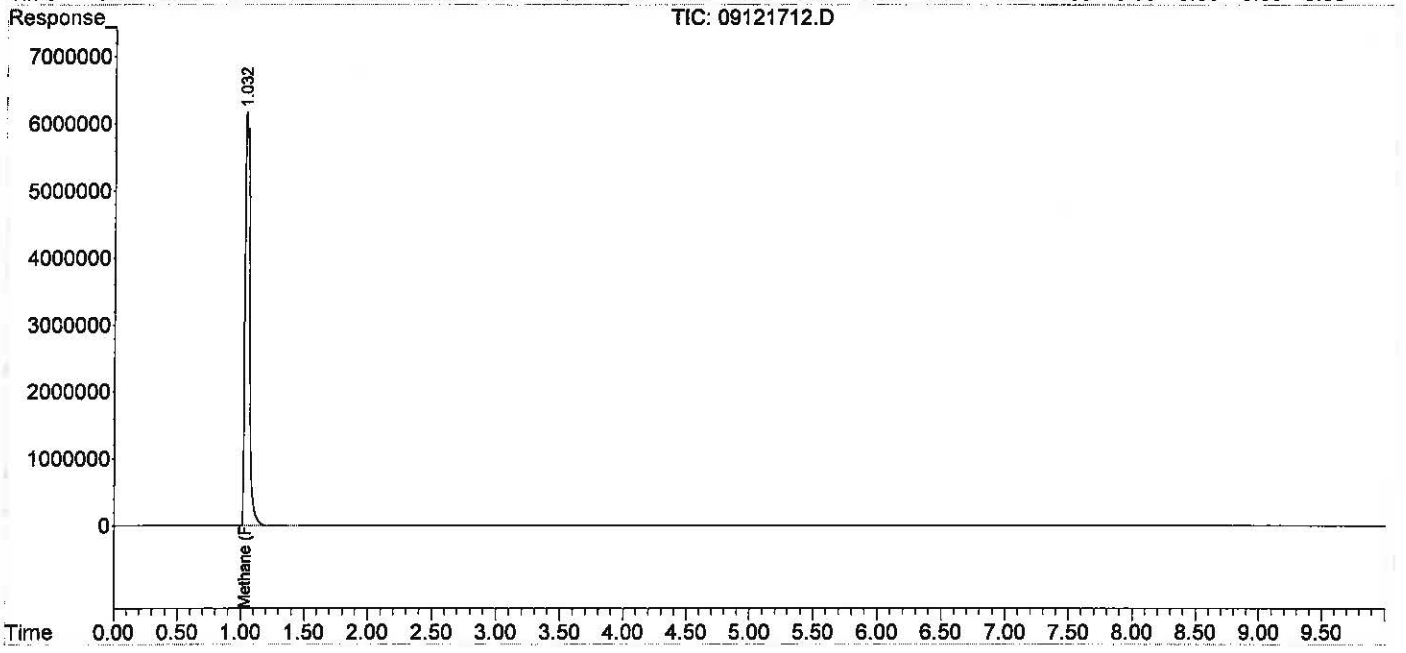
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%D	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	~~1510~~	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	~~1490~~	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	~~1500~~	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	~~1490~~	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	1511	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2		
13)	n-Butane	6.579f	48019	1.804	ppm			

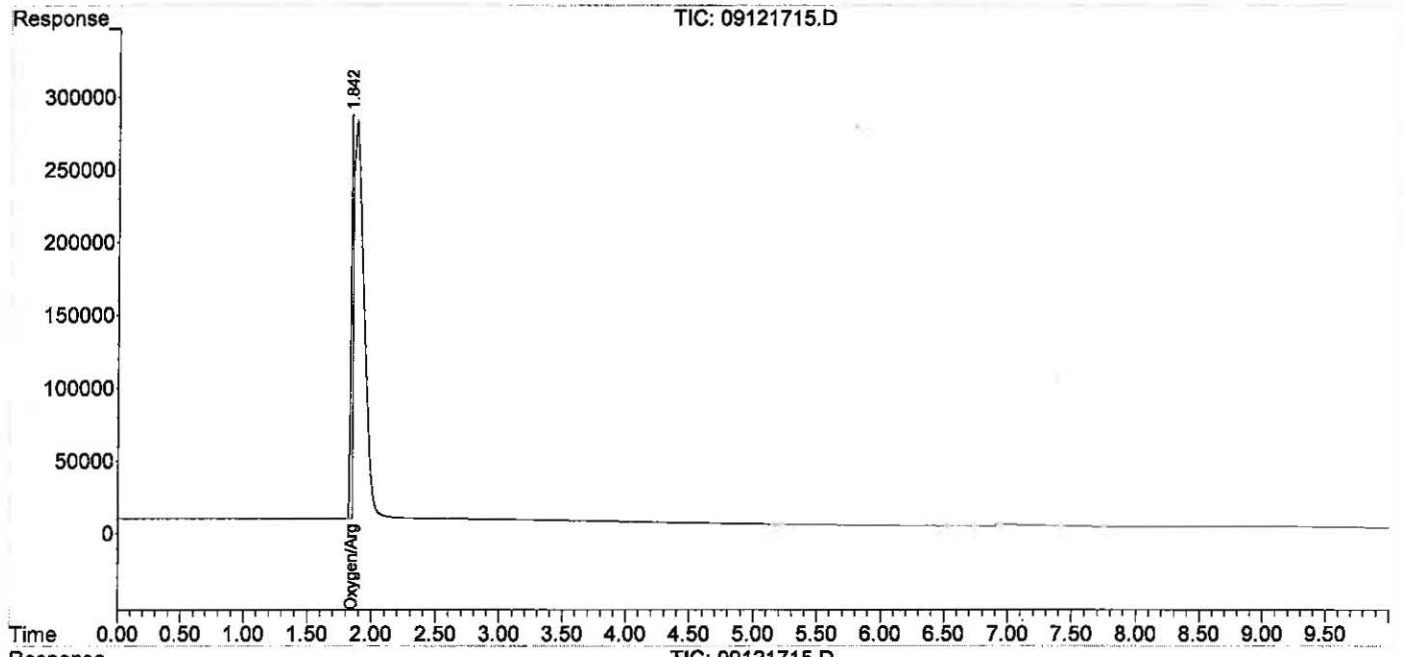
(f)=RT Delta > 1/2 Window (m)=manual int.

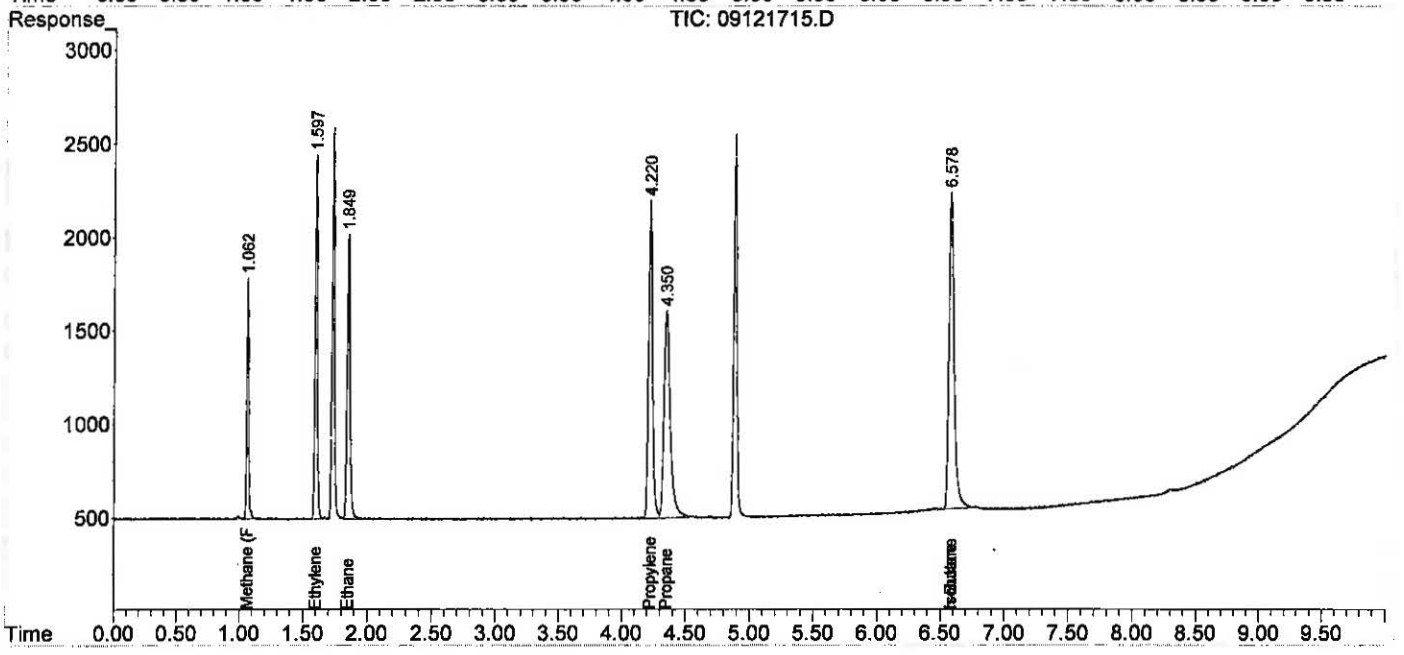
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1903244
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 06/11/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Ini. Vol.	Methane	Ethylene	Ethane
std s32-05221901	0.100	92.320	98.364	97.463
ACTUAL		101.50	100.90	101.40
%Difference		9.0%	2.5%	3.9%
MCS 0.1ML	0.100	0.000	0.000	0.000
RB 0.1ML	0.100	0.040	0.000	0.000
lcs fid 0.1ml	0.100	1.286	1.076	1.185
lcsd fid 0.1ml	0.100	1.335	1.131	1.263
P1903244-001 0.1ml	0.100	1542.72	0.369	0.000
P1903244-002 0.1ml	0.100	1565.89	0.923	0.000
P1903244-003 0.1ml	0.100	483.713	0.295	0.051
P1903244-004 0.1ml	0.100	0.064	0.000	0.000
P1903244-005 0.1ml	0.100	0.053	0.000	0.000
P1903244-006 0.1ml	0.100	770.906	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
MCS 0.1ML	0.000	0.000	0.000
lcs fid 0.1ml	12.860	10.760	11.850
lcsd fid 0.1ml	13.350	11.310	12.630
P1903244-001 0.1ml	15427.23	3.690	0.000
P1903244-002 0.1ml	15658.92	9.230	0.000
P1903244-003 0.1ml	4837.130	2.950	0.510
P1903244-004 0.1ml	0.640	0.000	0.000
P1903244-005 0.1ml	0.530	0.000	0.000
P1903244-006 0.1ml	7709.060	0.000	0.000

STD s32-05221901	95.163	101.347	100.504
ACTUAL	101.50	100.90	101.40
%Difference	6.2%	0.4%	0.9%

00949782

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 10:13:41
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 10:36:39 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

6/12/19

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	837405	92.320	ppm
7)	Ethylene	1.670	1646050	98.364	ppm
8)	Ethane	1.930	1652017	97.463	ppm
9)	Propylene	4.301	2419054	103.239	ppm
10)	Propane	4.426	2475195	99.484	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 10:13:41
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
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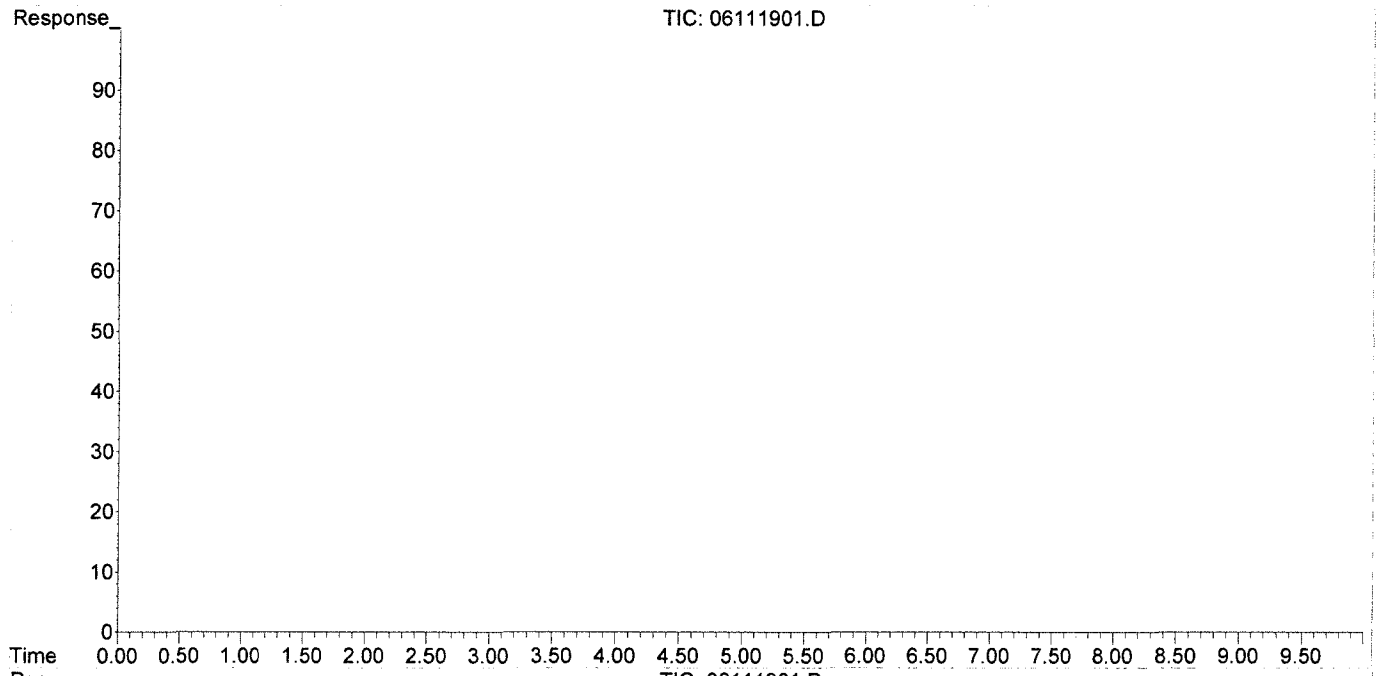
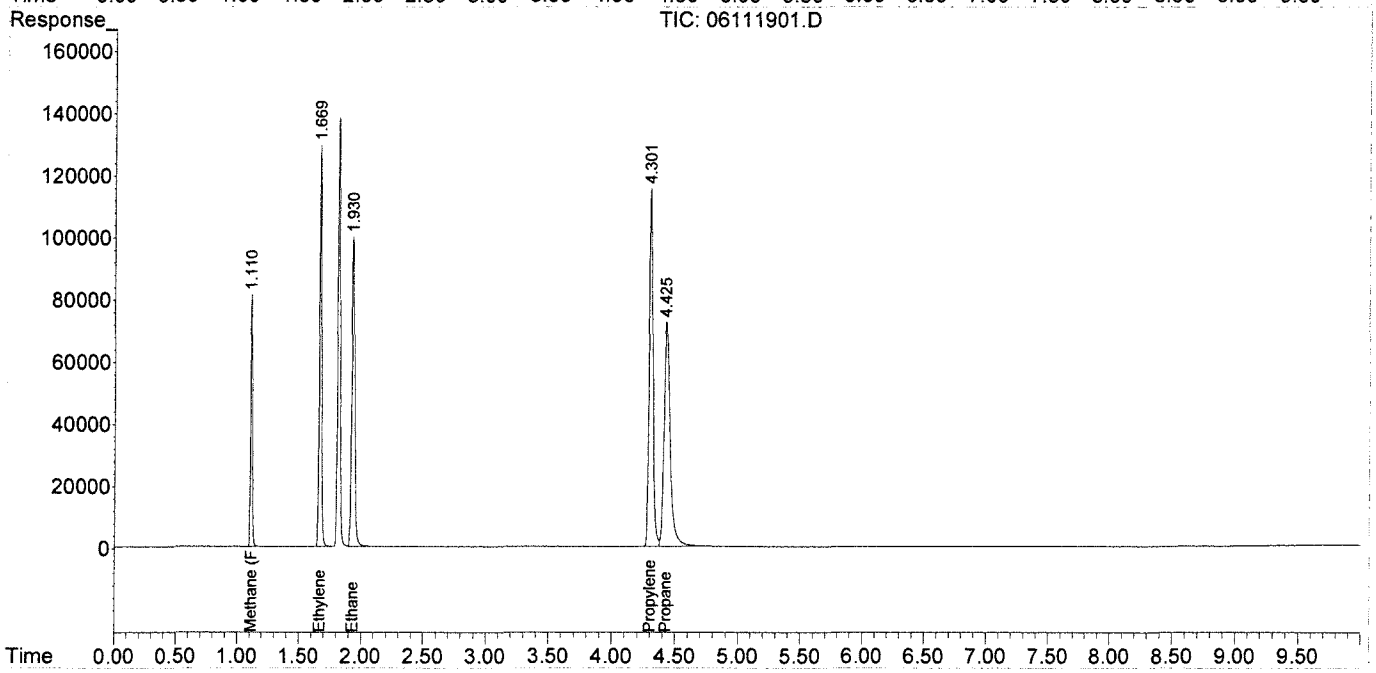
Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 14:21:07
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:46:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

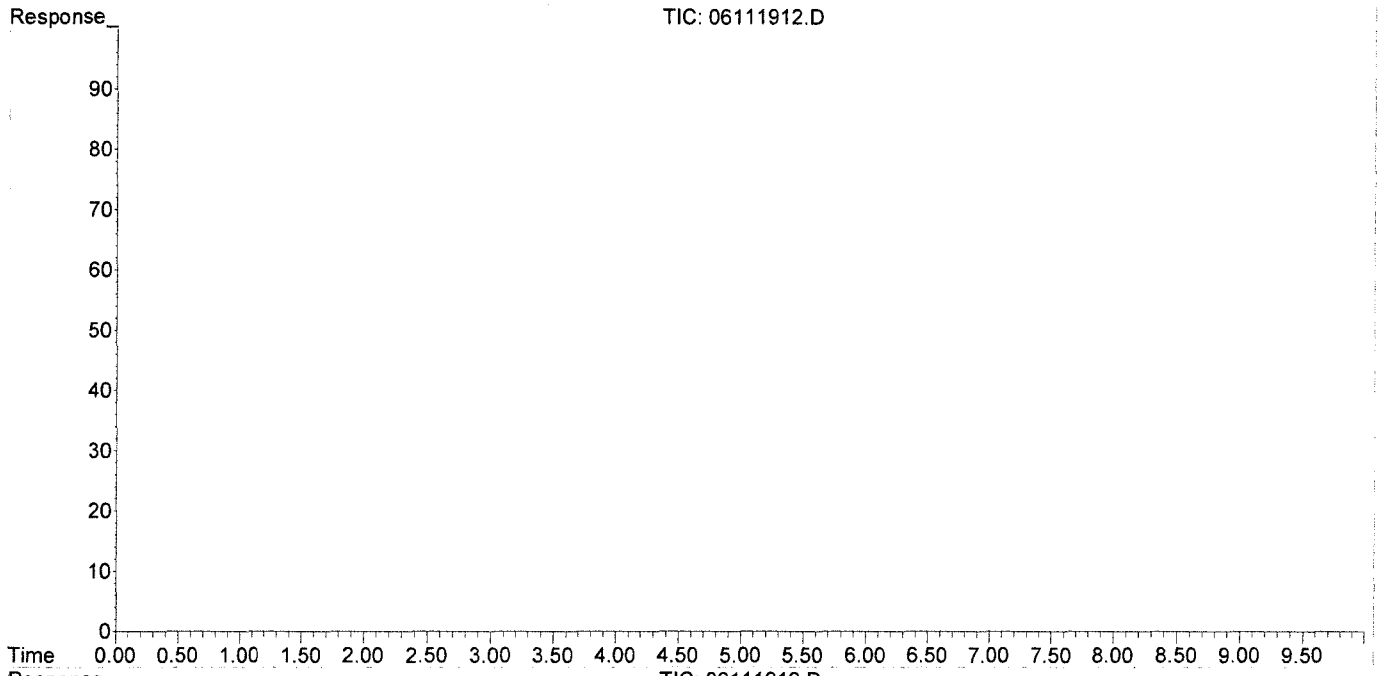
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	863192	95.163	ppm
7)	Ethylene	1.668	1695976	101.347	ppm
8)	Ethane	1.929	1703569	100.504	ppm
9)	Propylene	4.300	2497345	106.581	ppm
10)	Propane	4.424	2559918	102.890	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

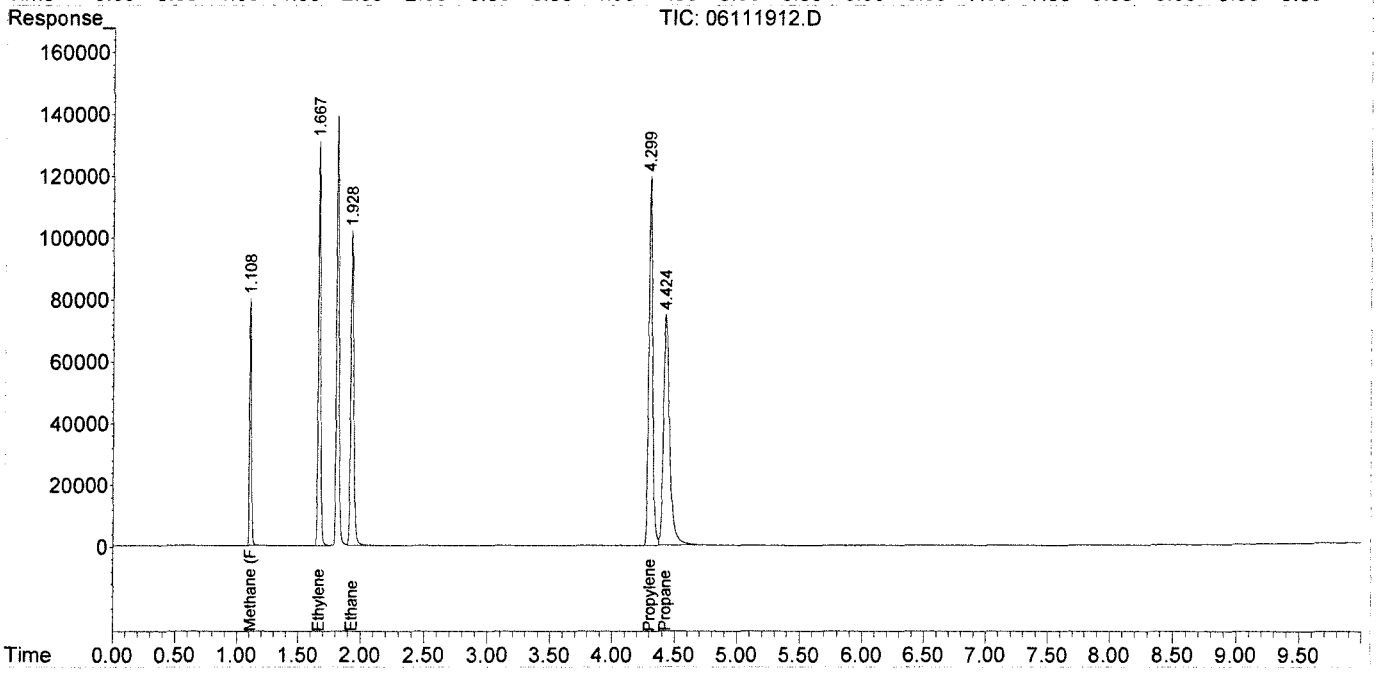
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_06\11\
Data File : 06111912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-Jun-2019, 14:21:07
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 11 14:46:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_06\11\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	11-Jun-19, 10:13:41	06111901.D	std s32-05221901		WH	RSKBOTH.M	pass
2	11-Jun-19, 10:38:02	06111902.D	RB 0.1ML		WH	RSKBOTH.M	pass
3	11-Jun-19, 11:04:29	06111903.D	MCS 0.1ML		WH	RSKBOTH.M	pass
4	11-Jun-19, 11:25:19	06111904.D	P1903244-001 0.1ml		WH	RSKBOTH.M	
5	11-Jun-19, 11:46:28	06111905.D	P1903244-002 0.1ml		WH	RSKBOTH.M	
6	11-Jun-19, 12:04:41	06111906.D	P1903244-003 0.1ml		WH	RSKBOTH.M	
7	11-Jun-19, 12:21:51	06111907.D	P1903244-004 0.1ml		WH	RSKBOTH.M	
8	11-Jun-19, 12:48:27	06111908.D	P1903244-005 0.1ml		WH	RSKBOTH.M	
9	11-Jun-19, 13:06:16	06111909.D	P1903244-006 0.1ml		WH	RSKBOTH.M	
10	11-Jun-19, 13:33:06	06111910.D	lcs fid 0.1ml		WH	RSKBOTH.M	pass
11	11-Jun-19, 13:54:43	06111911.D	lcsd fid 0.1ml		WH	RSKBOTH.M	pass
12	11-Jun-19, 14:21:07	06111912.D	STD s32-05221901		WH	RSKBOTH.M	pass
13	11-Jun-19, 14:48:57	06111913.D	P1903217-001 0.1ml		WH	RSKBOTH.M	
14	11-Jun-19, 15:13:17	06111914.D	P1903217-002 0.1ml		WH	RSKBOTH.M	
15	11-Jun-19, 15:38:23	06111915.D	P1903217-003 0.1ml		WH	RSKBOTH.M	
16	11-Jun-19, 15:51:45	06111916.D	P1903217-004 0.1ml		WH	RSKBOTH.M	
17	11-Jun-19, 16:14:33	06111917.D	P1903217-005 0.1ml		WH	RSKBOTH.M	
18	11-Jun-19, 16:36:27	06111918.D	P1903217-006 0.1ml		WH	RSKBOTH.M	
19	11-Jun-19, 17:01:32	06111919.D	STD s32-05221901		WH	RSKBOTH.M	pass

REPORT TO:
Name: MARCIA OLIVE
Company: BHATE ENVIRONMENTAL
Address: 445 UNION BLVD. STE. 129
LAKEWOOD, CO, 80228
email: molive@bhate.com
Phone: 720-463-3905
Fax:

INVOICE TO: (For Invoices paid by a third party it is imperative that all information be provided)
Name:
Company:
Address:
email:
Phone:
Fax:

microbialinsights
10515 Research Dr
Knoxville, TN 37932
865-573-8188
www.microbe.com

Project Manager: Kim Nemmers
Project Name: LHAAP-58
Project No.: NW01312.0150

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☐ More samples to follow
☒ No Additional Samples

Report Type: ☐ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																							
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBt (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Dentrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
009QF1	03WW01_060419	6/4/19	0745	WG						X		X																					
2	35AWW08_060419	6/4/19	0820	WG						X		X																					
3	35AWW20_060419	6/4/19	0925	WG						X		X																					
4	35AWW10_060419	6/4/19	1030	WG						X		X																					
5	35AWW06_060419	6/4/19	1135	WG						X		X																					

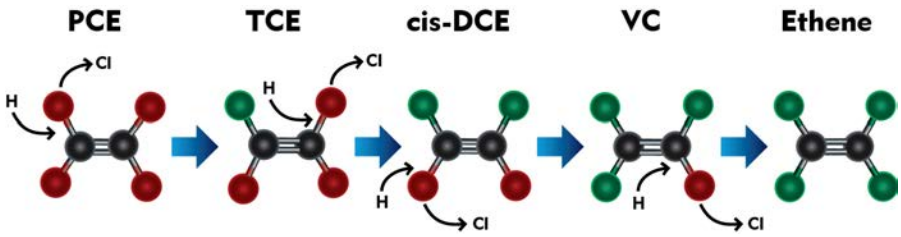
Relinquished by: Scott Beesing 6/4/19 1400
Received by: Savona Carbon Date 6-5-19

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

References

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How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

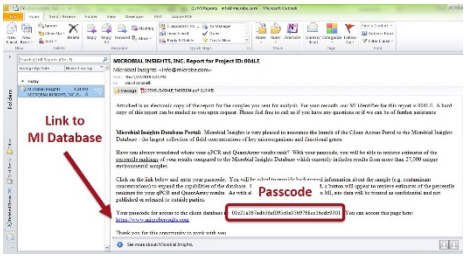
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

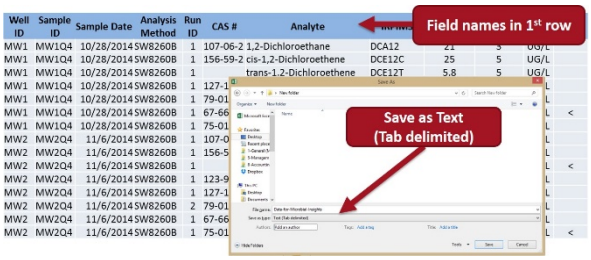
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





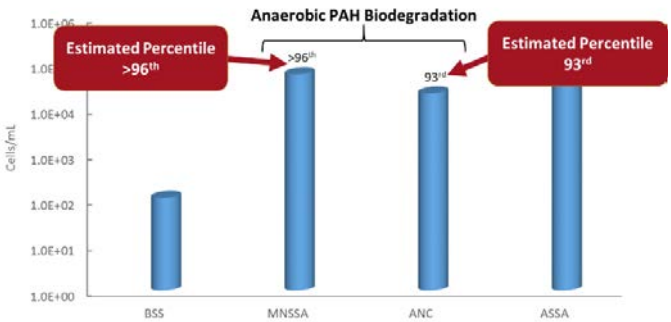
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

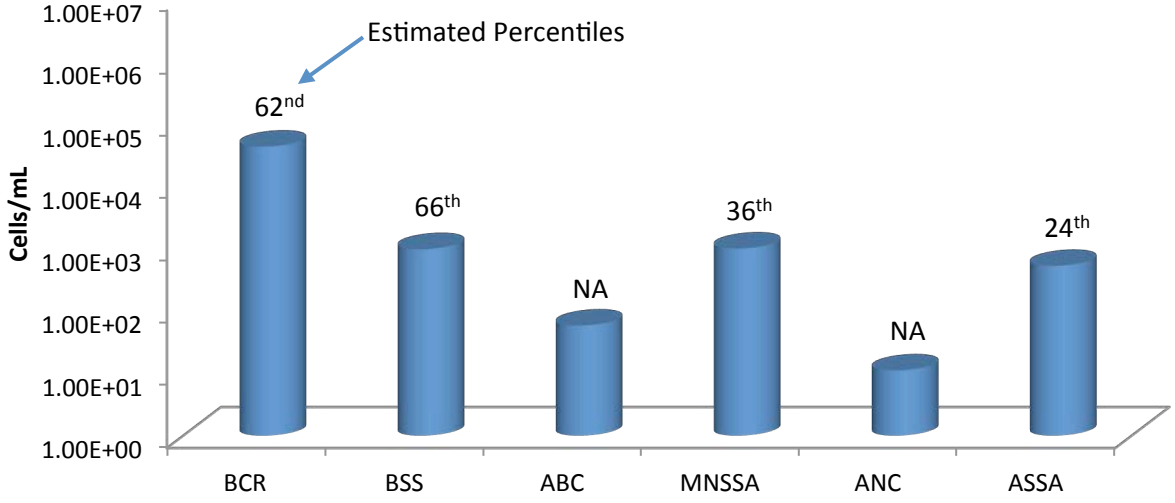
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

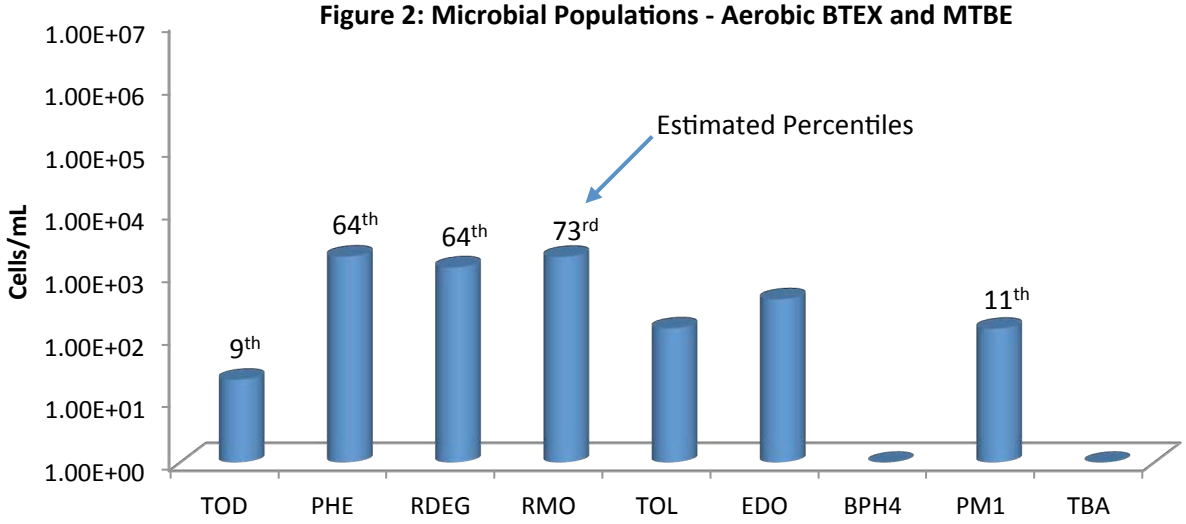
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66th percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36th.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



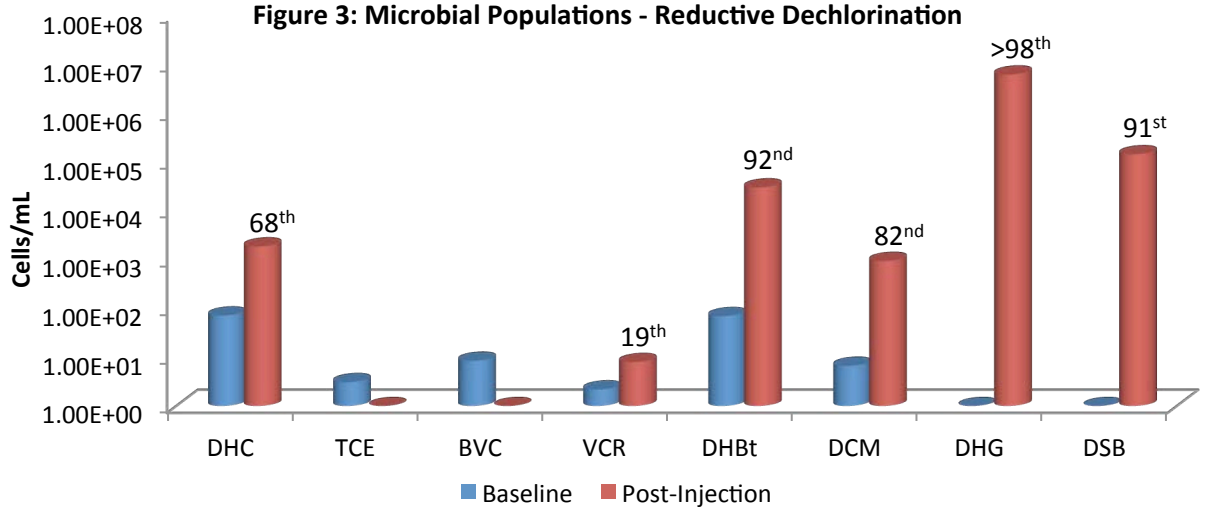
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

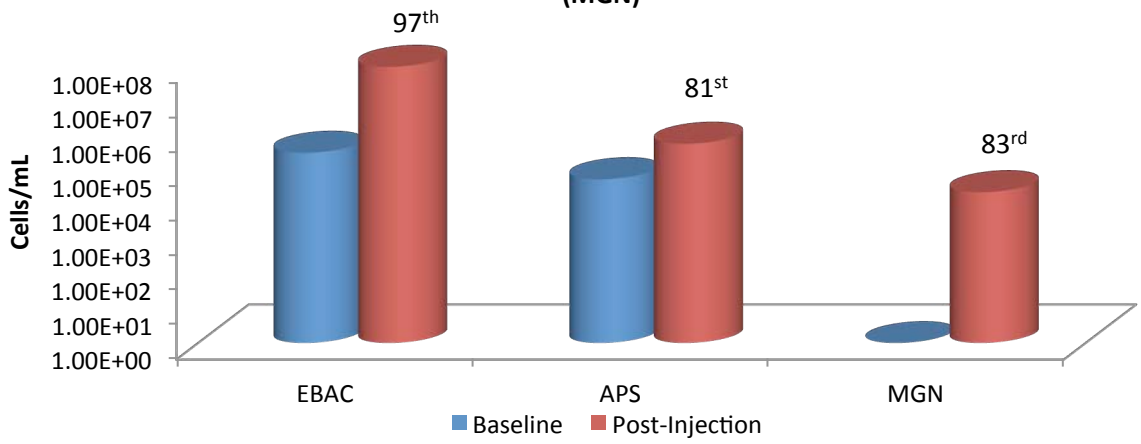
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92nd percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68th percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19th percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

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Phone: 281-575-2279

Fax:

Identifier: 009QF **Date Rec:** 06/05/2019 **Report Date:** 06/12/2019

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



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MICROBIAL INSIGHTS, INC.

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Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **009QF**
Date Received: 06/05/2019

Sample Information

Client Sample ID:		**03MW01_060419**	**35AWW08_060419**	**35AWW20_060419**	**35AWW10_060419**	**35AWW06_060419**
Sample Date:		06/04/2019	06/04/2019	06/04/2019	06/04/2019	06/04/2019
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT	HT	HT
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**6.04E+03**	**3.79E+06**	**1.55E+04**	**9.66E+01**	**2.68E+01**
tceA Reductase	TCE	**2.10E+00**	**4.80E+05**	<2.20E+00	**6.50E+00**	<1.60E+00
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<3.00E+00	**2.37E+03**	<5.00E-01	**8.00E-01 (J)**
Vinyl Chloride Reductase	VCR	**2.02E+03**	**2.65E+05**	<2.20E+00	**6.40E+00**	**9.00E-01 (J)**
Dehalobacter spp.	*DHBt*	**2.92E+02**	**1.39E+05**	<2.17E+01	**2.61E+02**	**1.59E+02**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **6/5/2019**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	06/05/2019	06/12/2019	1 °C	105%	non-detect	non-detect
TCE	06/05/2019	06/12/2019	1 °C	104%	non-detect	non-detect
VCR	06/05/2019	06/12/2019	1 °C	101%	non-detect	non-detect
DHBt	06/05/2019	06/12/2019	1 °C	110%	non-detect	non-detect
DHC	06/05/2019	06/12/2019	1 °C	100%	non-detect	non-detect

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June 21, 2019

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

Work Order: **HS19060461**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 6 sample(s) on Jun 08, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 21-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060461

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19060461-01	35AWW15_060719	Groundwater		07-Jun-2019 08:15	08-Jun-2019 08:45	☐
HS19060461-02	LHSMW06_060719	Groundwater		07-Jun-2019 09:00	08-Jun-2019 08:45	☐
HS19060461-03	35AWW13_060719	Groundwater		07-Jun-2019 09:50	08-Jun-2019 08:45	☐
HS19060461-04	35AWW14_060719	Groundwater		07-Jun-2019 10:10	08-Jun-2019 08:45	☐
HS19060461-05	35ASW03_060719	Groundwater		07-Jun-2019 10:25	08-Jun-2019 08:45	☐
HS19060461-06	Trip Blank	Water		07-Jun-2019 00:00	08-Jun-2019 08:45	☐

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060461

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R340945

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

Metals by Method SW6020

Batch ID: 142012

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW15_060719
Collection Date: 07-Jun-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 19:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	19-Jun-2019 19:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	19-Jun-2019 19:02
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 19:02
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	19-Jun-2019 19:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW15_060719
Collection Date: 07-Jun-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	19-Jun-2019 19:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 19:02
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 19:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:02
Surr: 1,2-Dichloroethane-d4	*88.5*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2019 19:02*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2019 19:02*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2019 19:02*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2019 19:02*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW06_060719
Collection Date: 07-Jun-2019 09:00

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,1-Dichloroethane	**2.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
1,1-Dichloroethene	**4.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 19:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	19-Jun-2019 19:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	19-Jun-2019 19:27
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 19:27
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	19-Jun-2019 19:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Chloroethane	**0.75**	J	**0.30**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS19060461
Sample ID: LHSMW06_060719 Lab ID:HS19060461-02
Collection Date: 07-Jun-2019 09:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
cis-1,2-Dichloroethene	**29**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	19-Jun-2019 19:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 19:27
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 19:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Tetrachloroethene	**1.4**		**0.30**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
trans-1,2-Dichloroethene	**0.46**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Trichloroethene	**7.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:27
Vinyl chloride	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 19:27
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2019 19:27*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2019 19:27*
Surr: Dibromofluoromethane	*90.8*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2019 19:27*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2019 19:27*
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 13-Jun-2019		Analyst: JHD
Arsenic	**0.00123**	J	**0.000400**	**0.000500**	**0.00200**	**mg/L**	1	17-Jun-2019 15:43

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW13_060719
Collection Date: 07-Jun-2019 09:50

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 19:51
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	19-Jun-2019 19:51
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	19-Jun-2019 19:51
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 19:51
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	19-Jun-2019 19:51
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW13_060719
Collection Date: 07-Jun-2019 09:50

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	19-Jun-2019 19:51
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 19:51
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 19:51
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 19:51
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 19:51
Surr: 1,2-Dichloroethane-d4	*88.5*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2019 19:51*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2019 19:51*
Surr: Dibromofluoromethane	*90.3*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2019 19:51*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2019 19:51*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW14_060719
Collection Date: 07-Jun-2019 10:10

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,1-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 21:27
1,1-Dichloroethene	**12**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 21:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 21:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	19-Jun-2019 21:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	19-Jun-2019 21:27
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 21:27
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	19-Jun-2019 21:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW14_060719
Collection Date: 07-Jun-2019 10:10

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
cis-1,2-Dichloroethene	**5.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 21:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	19-Jun-2019 21:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 21:27
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 21:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**UG/L**	1	19-Jun-2019 21:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:27
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2019 21:27*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2019 21:27*
Surr: Dibromofluoromethane	*90.1*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2019 21:27*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2019 21:27*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35ASW03_060719
Collection Date: 07-Jun-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 21:51
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	19-Jun-2019 21:51
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	19-Jun-2019 21:51
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 21:51
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	19-Jun-2019 21:51
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35ASW03_060719
Collection Date: 07-Jun-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	19-Jun-2019 21:51
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 21:51
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 21:51
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 21:51
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 21:51
Surr: 1,2-Dichloroethane-d4	*86.3*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2019 21:51*
Surr: 4-Bromofluorobenzene	*97.4*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2019 21:51*
Surr: Dibromofluoromethane	*89.4*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2019 21:51*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2019 21:51*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 07-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060461
Lab ID:HS19060461-06
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	19-Jun-2019 18:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 18:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	19-Jun-2019 18:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	19-Jun-2019 18:38
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 18:38
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	19-Jun-2019 18:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38

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

ALS Houston, US Date: 21-Jun-19

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

Project: LHAAP-58 WorkOrder:HS19060461

Sample ID: Trip Blank Lab ID:HS19060461-06

Collection Date: 07-Jun-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	19-Jun-2019 18:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	19-Jun-2019 18:38
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	19-Jun-2019 18:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	19-Jun-2019 18:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	19-Jun-2019 18:38
Surr: 1,2-Dichloroethane-d4	*87.4*			**0**	*81-118*	*%REC*	*1*	*19-Jun-2019 18:38*
Surr: 4-Bromofluorobenzene	*99.4*			**0**	*85-114*	*%REC*	*1*	*19-Jun-2019 18:38*
Surr: Dibromofluoromethane	*90.1*			**0**	*80-119*	*%REC*	*1*	*19-Jun-2019 18:38*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*19-Jun-2019 18:38*

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

ALS Houston, US

Date: 21-Jun-19

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

Batch ID: 142012 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19060461-02	1	10	10 (mL)	1

ALS Houston, US Date: 21-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 142012	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS19060461-02	LHSMW06_060719	07 Jun 2019 09:00		13 Jun 2019 09:00	17 Jun 2019 15:43	1
Batch ID R340945	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19060461-06	Trip Blank	07 Jun 2019 00:00			19 Jun 2019 18:38	1
Batch ID R340945	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19060461-01	35AWW15_060719	07 Jun 2019 08:15			19 Jun 2019 19:02	1
HS19060461-02	LHSMW06_060719	07 Jun 2019 09:00			19 Jun 2019 19:27	1
HS19060461-03	35AWW13_060719	07 Jun 2019 09:50			19 Jun 2019 19:51	1
HS19060461-04	35AWW14_060719	07 Jun 2019 10:10			19 Jun 2019 21:27	1
HS19060461-05	35ASW03_060719	07 Jun 2019 10:25			19 Jun 2019 21:51	1

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: 142012 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-142012** Units: **mg/L** Analysis Date: **17-Jun-2019 15:04**
Client ID: Run ID: **ICPMS04_340640** SeqNo: **5125857** PrepDate: **13-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00200								U

MBLK Sample ID: **MBLK-142012** Units: **mg/L** Analysis Date: **14-Jun-2019 22:50**
Client ID: Run ID: **ICPMS06_340535** SeqNo: **5124912** PrepDate: **13-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00200								U

LCS Sample ID: **LCS-142012** Units: **mg/L** Analysis Date: **14-Jun-2019 22:54**
Client ID: Run ID: **ICPMS06_340535** SeqNo: **5124914** PrepDate: **13-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0515	0.00200	0.05	0	103	80 - 120				

MS Sample ID: **HS19060404-07MS** Units: **mg/L** Analysis Date: **17-Jun-2019 15:39**
Client ID: Run ID: **ICPMS04_340640** SeqNo: **5125869** PrepDate: **13-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04729	0.00200	0.05	0.003532	87.5	80 - 120				

MSD Sample ID: **HS19060404-07MSD** Units: **mg/L** Analysis Date: **14-Jun-2019 23:01**
Client ID: Run ID: **ICPMS06_340535** SeqNo: **5124918** PrepDate: **13-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0548	0.00200	0.05	0.003532	103	80 - 120	0.05748	4.76	20	

PDS Sample ID: **HS19060404-07PDS** Units: **mg/L** Analysis Date: **14-Jun-2019 23:03**
Client ID: Run ID: **ICPMS06_340535** SeqNo: **5124919** PrepDate: **13-Jun-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09857	0.00200	0.1	0.003532	95.0	75 - 125				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: 142012 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS19060404-07SD** Units: **mg/L** Analysis Date: **14-Jun-2019 22:57**
Client ID: Run ID: **ICPMS06_340535** SeqNo: **5124916** PrepDate: **13-Jun-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.004609	0.0100					0.003532	0	10	J

The following samples were analyzed in this batch: HS19060461-02

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-190619** Units: **UG/L** Analysis Date: **19-Jun-2019 17:50**
Client ID: Run ID: **VOA6_340945** SeqNo: **5132736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-190619** Units: **UG/L** Analysis Date: **19-Jun-2019 17:50**
Client ID: Run ID: **VOA6_340945** SeqNo: **5132736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.14*	*1.0*	*50*	*0*	*86.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.75*	*1.0*	*50*	*0*	*99.5*	*85 - 114*				
Surr: Dibromofluoromethane	*44.59*	*1.0*	*50*	*0*	*89.2*	*80 - 119*				
Surr: Toluene-d8	*51.52*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190619** Units: **UG/L** Analysis Date: **19-Jun-2019 17:02**
Client ID: Run ID: **VOA6_340945** SeqNo: **5132735** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.73	1.0	20	0	98.7	78 - 124				
1,1,1-Trichloroethane	18.18	1.0	20	0	90.9	74 - 131				
1,1,2,2-Tetrachloroethane	19.49	1.0	20	0	97.4	71 - 121				
1,1,2-Trichloroethane	19.86	1.0	20	0	99.3	80 - 119				
1,1-Dichloroethane	18.12	1.0	20	0	90.6	77 - 125				
1,1-Dichloroethene	17.12	1.0	20	0	85.6	71 - 131				
1,1-Dichloropropene	17.02	1.0	20	0	85.1	78 - 125				
1,2,3-Trichlorobenzene	22.71	1.0	20	0	114	69 - 129				
1,2,3-Trichloropropane	19.53	1.0	20	0	97.6	73 - 122				
1,2,4-Trichlorobenzene	20.12	1.0	20	0	101	69 - 130				
1,2,4-Trimethylbenzene	18.5	1.0	20	0	92.5	76 - 124				
1,2-Dibromo-3-chloropropane	20.42	1.0	20	0	102	62 - 128				
1,2-Dibromoethane	19.78	1.0	20	0	98.9	77 - 121				
1,2-Dichlorobenzene	18.74	1.0	20	0	93.7	80 - 119				
1,2-Dichloroethane	19	1.0	20	0	95.0	73 - 128				
1,2-Dichloropropane	18.82	1.0	20	0	94.1	78 - 122				
1,3,5-Trimethylbenzene	17.59	1.0	20	0	88.0	75 - 124				
1,3-Dichlorobenzene	18.75	1.0	20	0	93.7	80 - 119				
1,3-Dichloropropane	20.63	1.0	20	0	103	80 - 119				
1,4-Dichlorobenzene	18.62	1.0	20	0	93.1	79 - 118				
2,2-Dichloropropane	18.63	1.0	20	0	93.1	60 - 139				
2-Butanone	45.65	2.0	40	0	114	56 - 143				
2-Chlorotoluene	17.62	1.0	20	0	88.1	79 - 122				
2-Hexanone	41.22	2.0	40	0	103	57 - 139				
4-Chlorotoluene	17.8	1.0	20	0	89.0	78 - 122				
4-Isopropyltoluene	16.86	1.0	20	0	84.3	77 - 127				
4-Methyl-2-pentanone	40.67	2.0	40	0	102	67 - 130				
Acetone	43.15	2.0	40	0	108	39 - 160				
Benzene	18.59	1.0	20	0	92.9	79 - 120				
Bromobenzene	18.57	1.0	20	0	92.8	80 - 120				
Bromochloromethane	18.92	1.0	20	0	94.6	78 - 123				
Bromodichloromethane	19.35	1.0	20	0	96.8	79 - 125				
Bromoform	20.65	1.0	20	0	103	66 - 130				
Bromomethane	20.82	1.0	20	0	104	53 - 141				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190619** Units: **UG/L** Analysis Date: **19-Jun-2019 17:02**
Client ID: Run ID: **VOA6_340945** SeqNo: **5132735** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	35.41	2.0	40	0	88.5	64 - 133				
Carbon tetrachloride	16.09	1.0	20	0	80.4	72 - 136				
Chlorobenzene	18.98	1.0	20	0	94.9	82 - 118				
Chloroethane	20.77	1.0	20	0	104	60 - 138				
Chloroform	18.67	1.0	20	0	93.4	79 - 124				
Chloromethane	17.75	1.0	20	0	88.8	50 - 139				
cis-1,2-Dichloroethene	18.7	1.0	20	0	93.5	78 - 123				
cis-1,3-Dichloropropene	20	1.0	20	0	100	75 - 124				
Dibromochloromethane	19.2	1.0	20	0	96.0	74 - 126				
Dibromomethane	19.69	1.0	20	0	98.4	79 - 123				
Dichlorodifluoromethane	16.18	1.0	20	0	80.9	32 - 152				
Ethylbenzene	18.29	1.0	20	0	91.5	79 - 121				
Hexachlorobutadiene	18.77	1.0	20	0	93.8	66 - 134				
Isopropylbenzene	17.67	1.0	20	0	88.3	72 - 131				
m,p-Xylene	37.49	2.0	40	0	93.7	80 - 121				
Methylene chloride	19.58	2.0	20	0	97.9	74 - 124				
Naphthalene	21.63	1.0	20	0	108	61 - 128				
n-Butylbenzene	16.75	1.0	20	0	83.8	75 - 128				
n-Propylbenzene	17.15	1.0	20	0	85.7	76 - 126				
o-Xylene	18.69	1.0	20	0	93.5	78 - 122				
sec-Butylbenzene	15.93	1.0	20	0	79.7	77 - 126				
Styrene	19.61	1.0	20	0	98.0	78 - 123				
tert-Butylbenzene	16.63	1.0	20	0	83.1	78 - 124				
Tetrachloroethene	18.06	1.0	20	0	90.3	74 - 129				
Toluene	18.75	1.0	20	0	93.7	80 - 121				
trans-1,2-Dichloroethene	18.67	1.0	20	0	93.4	75 - 124				
trans-1,3-Dichloropropene	20.21	1.0	20	0	101	73 - 127				
Trichloroethene	18.96	1.0	20	0	94.8	79 - 123				
Trichlorofluoromethane	16.31	1.0	20	0	81.5	65 - 141				
Vinyl chloride	16.84	1.0	20	0	84.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.08*	*1.0*	*50*	*0*	*100*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.93*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*50.53*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*48.59*	*1.0*	*50*	*0*	*97.2*	*89 - 112*				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19060461-03MS** Units: **UG/L** Analysis Date: **19-Jun-2019 20:15**
Client ID: **35AWW13_060719** Run ID: **VOA6_340945** SeqNo: **5132742** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.8	1.0	20	0	99.0	78 - 124				
1,1,1-Trichloroethane	17.86	1.0	20	0	89.3	74 - 131				
1,1,2,2-Tetrachloroethane	19.17	1.0	20	0	95.8	71 - 121				
1,1,2-Trichloroethane	19.66	1.0	20	0	98.3	80 - 119				
1,1-Dichloroethane	16.86	1.0	20	0	84.3	77 - 125				
1,1-Dichloroethene	17.73	1.0	20	0	88.6	71 - 131				
1,1-Dichloropropene	18.74	1.0	20	0	93.7	78 - 125				
1,2,3-Trichlorobenzene	17.75	1.0	20	0	88.8	69 - 129				
1,2,3-Trichloropropane	19.1	1.0	20	0	95.5	73 - 122				
1,2,4-Trichlorobenzene	18.04	1.0	20	0	90.2	69 - 130				
1,2,4-Trimethylbenzene	20.32	1.0	20	0	102	76 - 124				
1,2-Dibromo-3-chloropropane	18.25	1.0	20	0	91.3	62 - 128				
1,2-Dibromoethane	18.9	1.0	20	0	94.5	77 - 121				
1,2-Dichlorobenzene	19.25	1.0	20	0	96.2	80 - 119				
1,2-Dichloroethane	18.11	1.0	20	0	90.6	73 - 128				
1,2-Dichloropropane	17.92	1.0	20	0	89.6	78 - 122				
1,3,5-Trimethylbenzene	20.23	1.0	20	0	101	75 - 124				
1,3-Dichlorobenzene	19.77	1.0	20	0	98.8	80 - 119				
1,3-Dichloropropane	19.94	1.0	20	0	99.7	80 - 119				
1,4-Dichlorobenzene	19.61	1.0	20	0	98.1	79 - 118				
2,2-Dichloropropane	16.53	1.0	20	0	82.7	60 - 139				
2-Butanone	34.27	2.0	40	0	85.7	56 - 143				
2-Chlorotoluene	19.72	1.0	20	0	98.6	79 - 122				
2-Hexanone	36.8	2.0	40	0	92.0	57 - 139				
4-Chlorotoluene	19.55	1.0	20	0	97.8	78 - 122				
4-Isopropyltoluene	20.19	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	38.71	2.0	40	0	96.8	67 - 130				
Acetone	30.47	2.0	40	0	76.2	39 - 160				
Benzene	18.34	1.0	20	0	91.7	79 - 120				
Bromobenzene	19.74	1.0	20	0	98.7	80 - 120				
Bromochloromethane	16.84	1.0	20	0	84.2	78 - 123				
Bromodichloromethane	18.47	1.0	20	0	92.3	79 - 125				
Bromoform	19.44	1.0	20	0	97.2	66 - 130				
Bromomethane	18.92	1.0	20	0	94.6	53 - 141				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19060461-03MS** Units: **UG/L** Analysis Date: **19-Jun-2019 20:15**
Client ID: **35AWW13_060719** Run ID: **VOA6_340945** SeqNo: **5132742** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	34.71	2.0	40	0	86.8	64 - 133				
Carbon tetrachloride	18.47	1.0	20	0	92.4	72 - 136				
Chlorobenzene	19.6	1.0	20	0	98.0	82 - 118				
Chloroethane	17.97	1.0	20	0	89.9	60 - 138				
Chloroform	17.15	1.0	20	0	85.7	79 - 124				
Chloromethane	16.25	1.0	20	0	81.3	50 - 139				
cis-1,2-Dichloroethene	17.23	1.0	20	0	86.1	78 - 123				
cis-1,3-Dichloropropene	18.49	1.0	20	0	92.4	75 - 124				
Dibromochloromethane	19.35	1.0	20	0	96.8	74 - 126				
Dibromomethane	18.18	1.0	20	0	90.9	79 - 123				
Dichlorodifluoromethane	10.99	1.0	20	0	54.9	32 - 152				
Ethylbenzene	19.8	1.0	20	0	99.0	79 - 121				
Hexachlorobutadiene	17.88	1.0	20	0	89.4	66 - 134				
Isopropylbenzene	20.09	1.0	20	0	100	72 - 131				
m,p-Xylene	39.7	2.0	40	0	99.2	80 - 121				
Methylene chloride	17.11	2.0	20	0	85.5	74 - 124				
Naphthalene	16.96	1.0	20	0	84.8	61 - 128				
n-Butylbenzene	19.79	1.0	20	0	98.9	75 - 128				
n-Propylbenzene	20.38	1.0	20	0	102	76 - 126				
o-Xylene	19.63	1.0	20	0	98.2	78 - 122				
sec-Butylbenzene	20	1.0	20	0	100.0	77 - 126				
Styrene	19.74	1.0	20	0	98.7	78 - 123				
tert-Butylbenzene	20.14	1.0	20	0	101	78 - 124				
Tetrachloroethene	21.01	1.0	20	0	105	74 - 129				
Toluene	20.05	1.0	20	0	100	80 - 121				
trans-1,2-Dichloroethene	17.78	1.0	20	0	88.9	75 - 124				
trans-1,3-Dichloropropene	18	1.0	20	0	90.0	73 - 127				
Trichloroethene	19.04	1.0	20	0	95.2	79 - 123				
Trichlorofluoromethane	17.66	1.0	20	0	88.3	65 - 141				
Vinyl chloride	16.1	1.0	20	0	80.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.49*	*1.0*	*50*	*0*	*87.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.47*	*1.0*	*50*	*0*	*98.9*	*85 - 114*				
Surr: Dibromofluoromethane	*45.25*	*1.0*	*50*	*0*	*90.5*	*80 - 119*				
Surr: Toluene-d8	*51.51*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19060461-03MSD** Units: **UG/L** Analysis Date: **19-Jun-2019 20:39**
Client ID: **35AWW13_060719** Run ID: **VOA6_340945** SeqNo: **5132743** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.73	1.0	20	0	98.6	78 - 124	19.8	0.372	20	
1,1,1-Trichloroethane	17.29	1.0	20	0	86.5	74 - 131	17.86	3.21	20	
1,1,2,2-Tetrachloroethane	19.54	1.0	20	0	97.7	71 - 121	19.17	1.91	20	
1,1,2-Trichloroethane	19.57	1.0	20	0	97.9	80 - 119	19.66	0.453	20	
1,1-Dichloroethane	16.34	1.0	20	0	81.7	77 - 125	16.86	3.15	20	
1,1-Dichloroethene	17.29	1.0	20	0	86.5	71 - 131	17.73	2.49	20	
1,1-Dichloropropene	17.98	1.0	20	0	89.9	78 - 125	18.74	4.14	20	
1,2,3-Trichlorobenzene	18.99	1.0	20	0	94.9	69 - 129	17.75	6.72	20	
1,2,3-Trichloropropane	19.28	1.0	20	0	96.4	73 - 122	19.1	0.968	20	
1,2,4-Trichlorobenzene	18.56	1.0	20	0	92.8	69 - 130	18.04	2.84	20	
1,2,4-Trimethylbenzene	20.15	1.0	20	0	101	76 - 124	20.32	0.86	20	
1,2-Dibromo-3-chloropropane	19.17	1.0	20	0	95.9	62 - 128	18.25	4.91	20	
1,2-Dibromoethane	19.19	1.0	20	0	95.9	77 - 121	18.9	1.52	20	
1,2-Dichlorobenzene	19.31	1.0	20	0	96.5	80 - 119	19.25	0.303	20	
1,2-Dichloroethane	17.94	1.0	20	0	89.7	73 - 128	18.11	0.942	20	
1,2-Dichloropropane	17.72	1.0	20	0	88.6	78 - 122	17.92	1.14	20	
1,3,5-Trimethylbenzene	19.97	1.0	20	0	99.8	75 - 124	20.23	1.31	20	
1,3-Dichlorobenzene	19.71	1.0	20	0	98.6	80 - 119	19.77	0.277	20	
1,3-Dichloropropane	19.95	1.0	20	0	99.8	80 - 119	19.94	0.0665	20	
1,4-Dichlorobenzene	19.5	1.0	20	0	97.5	79 - 118	19.61	0.598	20	
2,2-Dichloropropane	16.14	1.0	20	0	80.7	60 - 139	16.53	2.43	20	
2-Butanone	35.49	2.0	40	0	88.7	56 - 143	34.27	3.51	20	
2-Chlorotoluene	19.56	1.0	20	0	97.8	79 - 122	19.72	0.814	20	
2-Hexanone	36.56	2.0	40	0	91.4	57 - 139	36.8	0.645	20	
4-Chlorotoluene	19.62	1.0	20	0	98.1	78 - 122	19.55	0.355	20	
4-Isopropyltoluene	20.16	1.0	20	0	101	77 - 127	20.19	0.136	20	
4-Methyl-2-pentanone	38.09	2.0	40	0	95.2	67 - 130	38.71	1.61	20	
Acetone	31.39	2.0	40	0	78.5	39 - 160	30.47	2.95	20	
Benzene	18.06	1.0	20	0	90.3	79 - 120	18.34	1.53	20	
Bromobenzene	19.38	1.0	20	0	96.9	80 - 120	19.74	1.81	20	
Bromochloromethane	16.4	1.0	20	0	82.0	78 - 123	16.84	2.67	20	
Bromodichloromethane	18.34	1.0	20	0	91.7	79 - 125	18.47	0.661	20	
Bromoform	19.66	1.0	20	0	98.3	66 - 130	19.44	1.12	20	
Bromomethane	17.34	1.0	20	0	86.7	53 - 141	18.92	8.73	20	

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19060461-03MSD** Units: **UG/L** Analysis Date: **19-Jun-2019 20:39**
Client ID: **35AWW13_060719** Run ID: **VOA6_340945** SeqNo: **5132743** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	34.09	2.0	40	0	85.2	64 - 133	34.71	1.81	20	
Carbon tetrachloride	17.95	1.0	20	0	89.8	72 - 136	18.47	2.85	20	
Chlorobenzene	19.12	1.0	20	0	95.6	82 - 118	19.6	2.5	20	
Chloroethane	17.42	1.0	20	0	87.1	60 - 138	17.97	3.11	20	
Chloroform	16.88	1.0	20	0	84.4	79 - 124	17.15	1.55	20	
Chloromethane	15.56	1.0	20	0	77.8	50 - 139	16.25	4.31	20	
cis-1,2-Dichloroethene	16.86	1.0	20	0	84.3	78 - 123	17.23	2.17	20	
cis-1,3-Dichloropropene	18.21	1.0	20	0	91.1	75 - 124	18.49	1.49	20	
Dibromochloromethane	19.22	1.0	20	0	96.1	74 - 126	19.35	0.681	20	
Dibromomethane	18.27	1.0	20	0	91.4	79 - 123	18.18	0.499	20	
Dichlorodifluoromethane	10.46	1.0	20	0	52.3	32 - 152	10.99	4.88	20	
Ethylbenzene	19.82	1.0	20	0	99.1	79 - 121	19.8	0.114	20	
Hexachlorobutadiene	18.78	1.0	20	0	93.9	66 - 134	17.88	4.87	20	
Isopropylbenzene	19.73	1.0	20	0	98.6	72 - 131	20.09	1.81	20	
m,p-Xylene	39.12	2.0	40	0	97.8	80 - 121	39.7	1.47	20	
Methylene chloride	17.12	2.0	20	0	85.6	74 - 124	17.11	0.0991	20	
Naphthalene	17.89	1.0	20	0	89.5	61 - 128	16.96	5.37	20	
n-Butylbenzene	20.02	1.0	20	0	100	75 - 128	19.79	1.15	20	
n-Propylbenzene	20.1	1.0	20	0	100	76 - 126	20.38	1.38	20	
o-Xylene	19.2	1.0	20	0	96.0	78 - 122	19.63	2.26	20	
sec-Butylbenzene	19.86	1.0	20	0	99.3	77 - 126	20	0.692	20	
Styrene	19.62	1.0	20	0	98.1	78 - 123	19.74	0.62	20	
tert-Butylbenzene	19.97	1.0	20	0	99.9	78 - 124	20.14	0.816	20	
Tetrachloroethene	20.32	1.0	20	0	102	74 - 129	21.01	3.33	20	
Toluene	19.43	1.0	20	0	97.2	80 - 121	20.05	3.15	20	
trans-1,2-Dichloroethene	17.07	1.0	20	0	85.4	75 - 124	17.78	4.06	20	
trans-1,3-Dichloropropene	18.16	1.0	20	0	90.8	73 - 127	18	0.862	20	
Trichloroethene	18.48	1.0	20	0	92.4	79 - 123	19.04	2.97	20	
Trichlorofluoromethane	17.17	1.0	20	0	85.9	65 - 141	17.66	2.83	20	
Vinyl chloride	15.93	1.0	20	0	79.6	58 - 137	16.1	1.08	20	
Surr: 1,2-Dichloroethane-d4	*43.99*	*1.0*	*50*	*0*	*88.0*	*81 - 118*	*43.49*	*1.15*	*20*	
Surr: 4-Bromofluorobenzene	*50.17*	*1.0*	*50*	*0*	*100*	*85 - 114*	*49.47*	*1.41*	*20*	
Surr: Dibromofluoromethane	*45.6*	*1.0*	*50*	*0*	*91.2*	*80 - 119*	*45.25*	*0.768*	*20*	
Surr: Toluene-d8	*50.71*	*1.0*	*50*	*0*	*101*	*89 - 112*	*51.51*	*1.56*	*20*	

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060461

QC BATCH REPORT

Batch ID: R340945 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS19060461-01	HS19060461-02	HS19060461-03	HS19060461-04
HS19060461-05	HS19060461-06		

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19060461**

QUALIFIERS, ACRONYMS, UNITS

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

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

ALS Houston, US Date: 21-Jun-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Illinois	004438	29-Jun-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Louisiana	03087	30-Jun-2019
Maryland	343, 2018-2019	30-Jun-2019
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 21-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060461

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19060461-01	35AWW15_060719	Login	10/06/2019 13:00:50	RPG	WET267
HS19060461-01	35AWW15_060719	Login	10/06/2019 13:00:50	RPG	VOA102
HS19060461-01	35AWW15_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-01	35AWW15_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-01	35AWW15_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-02	LHSMW06_060719	Login	10/06/2019 13:00:50	RPG	MET084
HS19060461-02	LHSMW06_060719	Login	10/06/2019 13:00:50	RPG	WET267
HS19060461-02	LHSMW06_060719	Login	10/06/2019 13:00:50	RPG	VOA102
HS19060461-02	LHSMW06_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-02	LHSMW06_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-02	LHSMW06_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-03	35AWW13_060719	Login	10/06/2019 13:00:50	RPG	WET267
HS19060461-03	35AWW13_060719	Login	10/06/2019 13:00:50	RPG	VOA102
HS19060461-03	35AWW13_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-03	35AWW13_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-03	35AWW13_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-04	35AWW14_060719	Login	10/06/2019 13:00:50	RPG	WET267
HS19060461-04	35AWW14_060719	Login	10/06/2019 13:00:50	RPG	VOA102
HS19060461-04	35AWW14_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-04	35AWW14_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-04	35AWW14_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-05	35ASW03_060719	Login	10/06/2019 13:00:50	RPG	WET267
HS19060461-05	35ASW03_060719	Login	10/06/2019 13:00:50	RPG	VOA102
HS19060461-05	35ASW03_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-05	35ASW03_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-05	35ASW03_060719	Login	10/06/2019 13:00:50	RPG	Sub
HS19060461-06	Trip Blank	Login	10/06/2019 13:00:50	RPG	VOA102

00949835

ALS Houston, US Date: 21-Jun-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19060461
Date/Time Received: **08-Jun-2019 08:45**
Received by: **AC**

Checklist completed by: *Raegen Giga* eSignature — 10-Jun-2019 Date
Reviewed by: *RJ Modashia* eSignature — 10-Jun-2019 Date

Matrices: **GW**
Carrier name: **FedEx First Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	3.0c uc/c	IR 25
Cooler(s)/Kit(s):	44161	
Date/Time sample(s) sent to storage:	06/10/2019 13:31	

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

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 / Site 58

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	MEE	TOC	Carbon Dioxide	Anions	Arsenic					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW15-060719		07 JUN 2019	0815	-	N		WG	3	X													
LHSMW06-060719		07 JUN 2019	0900	-	N		WG	3	X					X								
35AWW13-060719		07 JUN 2019	0950	-	N		WG	3	X													
35AWW13-060719-MS		07 JUN 2019	0950		MS		WG	3	X													
35AWW13-060719-MSD		07 JUN 2019	0950		SD		WG	3	X													
35AWW14-060719		07 JUN 2019	1010	-	N		WG	3	X													
35ASW03-060719		07 JUN 2019	1025	-	N		WG	3	X													
TRIP BLANK		07 JUN 2019		-	TB		W	2	X													
				-																		
				-																		
				-																		

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

HS19060461

Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (Signed)	Date	Time
1. Scott Beesinger	6/7/19	1130	1. AK	6/8/19	0745
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

44161

00949836

00949837

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44161

CUSTODY SEAL

Date: 6/7/13 Time: 1130
Name: Scott Beesinger
Comp Any: BHATE

Seal Broken By: SW
Date: 6/10/13

44161

Must Deliver Next Business Day
Time and Tempature Sensitive!

44161

ALS

ORIGIN ID:SGRA (303) 597-2450
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 24MAY13
ACTWGT: 1.00 LB MAN
CAD: 30C130/CAFE3211
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-BO 55568-DW

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7834 2900

SATURDAY 12:00P
PRIORITY OVERNIGHT

77099
TX-US
IAH

X0 SGRA

FRM 5121768 07JUN13 GGGA 553C1/B210/8C8A

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

June 21, 2019

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

Work Order: **HS19060573**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 10 sample(s) on Jun 11, 2019 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 21-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060573

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19060573-01	35AWW22_061019	Groundwater		10-Jun-2019 07:50	11-Jun-2019 11:11	☐
HS19060573-02	35AWW12_061019	Groundwater		10-Jun-2019 08:40	11-Jun-2019 11:11	☐
HS19060573-03	35AWW12_061019a	Groundwater		10-Jun-2019 08:40	11-Jun-2019 11:11	☐
HS19060573-04	35AWW21_061019	Groundwater		10-Jun-2019 09:30	11-Jun-2019 11:11	☐
HS19060573-05	35AWW21_060119_a	Groundwater		10-Jun-2019 09:30	11-Jun-2019 11:11	☐
HS19060573-06	35AWW01_061019	Groundwater		10-Jun-2019 10:20	11-Jun-2019 11:11	☐
HS19060573-07	35AWW05_061019	Groundwater		10-Jun-2019 11:10	11-Jun-2019 11:11	☐
HS19060573-08	35AWW16_061019	Groundwater		10-Jun-2019 11:55	11-Jun-2019 11:11	☐
HS19060573-09	35AWW17_061019	Groundwater		10-Jun-2019 12:50	11-Jun-2019 11:11	☐
HS19060573-10	Trip Blank	Water		10-Jun-2019 00:00	11-Jun-2019 11:11	☐

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060573

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R340996

Sample ID: 35AWW01_061019 (HS19060573-06MS)

- MS/MSD failed QC limits for some compounds.

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW22_061019
Collection Date: 10-Jun-2019 07:50

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 15:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 15:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 15:57
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 15:57
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 15:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW22_061019
Collection Date: 10-Jun-2019 07:50

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 15:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 15:57
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 15:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 15:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 15:57
Surr: 1,2-Dichloroethane-d4	*82.1*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 15:57*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 15:57*
Surr: Dibromofluoromethane	*85.1*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 15:57*
Surr: Toluene-d8	*97.0*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 15:57*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_061019
Collection Date: 10-Jun-2019 08:40

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 16:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 16:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 16:21
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 16:21
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 16:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_061019
Collection Date: 10-Jun-2019 08:40

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 16:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 16:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 16:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:21
Surr: 1,2-Dichloroethane-d4	*82.6*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 16:21*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 16:21*
Surr: Dibromofluoromethane	*85.6*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 16:21*
Surr: Toluene-d8	*96.8*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 16:21*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_061019a
Collection Date: 10-Jun-2019 08:40

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 16:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 16:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 16:45
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 16:45
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 16:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_061019a
Collection Date: 10-Jun-2019 08:40

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 16:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 16:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 16:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 16:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 16:45
Surr: 1,2-Dichloroethane-d4	*83.9*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 16:45*
Surr: 4-Bromofluorobenzene	*100.0*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 16:45*
Surr: Dibromofluoromethane	*86.6*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 16:45*
Surr: Toluene-d8	*94.5*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 16:45*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_061019
Collection Date: 10-Jun-2019 09:30

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 17:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 17:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 17:09
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 17:09
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 17:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_061019
Collection Date: 10-Jun-2019 09:30

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 17:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 17:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 17:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:09
Surr: 1,2-Dichloroethane-d4	*82.4*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 17:09*
Surr: 4-Bromofluorobenzene	*99.8*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 17:09*
Surr: Dibromofluoromethane	*84.4*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 17:09*
Surr: Toluene-d8	*95.7*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 17:09*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_060119_a
Collection Date: 10-Jun-2019 09:30

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 17:33
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 17:33
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 17:33
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 17:33
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 17:33
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_060119_a
Collection Date: 10-Jun-2019 09:30

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 17:33
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 17:33
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 17:33
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:33
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:33
Surr: 1,2-Dichloroethane-d4	*83.5*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 17:33*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 17:33*
Surr: Dibromofluoromethane	*87.0*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 17:33*
Surr: Toluene-d8	*98.1*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 17:33*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_061019
Collection Date: 10-Jun-2019 10:20

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 14:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 14:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 14:21
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 14:21
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 14:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_061019
Collection Date: 10-Jun-2019 10:20

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 14:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 14:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 14:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 14:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 14:21
Surr: 1,2-Dichloroethane-d4	*85.0*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 14:21*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 14:21*
Surr: Dibromofluoromethane	*88.3*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 14:21*
Surr: Toluene-d8	*99.7*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 14:21*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW05_061019
Collection Date: 10-Jun-2019 11:10

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 17:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 17:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 17:57
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 17:57
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 17:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW05_061019
Collection Date: 10-Jun-2019 11:10

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 17:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 17:57
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 17:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 17:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 17:57
Surr: 1,2-Dichloroethane-d4	*83.8*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 17:57*
Surr: 4-Bromofluorobenzene	*99.8*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 17:57*
Surr: Dibromofluoromethane	*88.2*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 17:57*
Surr: Toluene-d8	*96.4*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 17:57*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16_061019
Collection Date: 10-Jun-2019 11:55

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,1-Dichloroethane	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	20-Jun-2019 18:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 18:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 18:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 18:20
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 18:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 18:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16_061019
Collection Date: 10-Jun-2019 11:55

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 18:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 18:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 18:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:20
Surr: 1,2-Dichloroethane-d4	*81.5*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 18:20*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 18:20*
Surr: Dibromofluoromethane	*85.9*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 18:20*
Surr: Toluene-d8	*94.1*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 18:20*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW17_061019
Collection Date: 10-Jun-2019 12:50

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 18:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 18:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 18:44
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 18:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 18:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW17_061019
Collection Date: 10-Jun-2019 12:50

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 18:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 18:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 18:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 18:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 18:44
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 18:44*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 18:44*
Surr: Dibromofluoromethane	*89.1*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 18:44*
Surr: Toluene-d8	*95.6*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 18:44*

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 10-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-10
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	20-Jun-2019 12:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 12:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Jun-2019 12:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Jun-2019 12:21
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 12:21
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Jun-2019 12:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21

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

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 10-Jun-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19060573
Lab ID:HS19060573-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Jun-2019 12:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Jun-2019 12:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	20-Jun-2019 12:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Jun-2019 12:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Jun-2019 12:21
Surr: 1,2-Dichloroethane-d4	*81.7*			**0**	*81-118*	*%REC*	*1*	*20-Jun-2019 12:21*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*1*	*20-Jun-2019 12:21*
Surr: Dibromofluoromethane	*86.7*			**0**	*80-119*	*%REC*	*1*	*20-Jun-2019 12:21*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*20-Jun-2019 12:21*

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

ALS Houston, US Date: 21-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R340996	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19060573-10	Trip Blank	10 Jun 2019 00:00			20 Jun 2019 12:21	1
Batch ID R340996	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19060573-01	35AWW22_061019	10 Jun 2019 07:50			20 Jun 2019 15:57	1
HS19060573-02	35AWW12_061019	10 Jun 2019 08:40			20 Jun 2019 16:21	1
HS19060573-03	35AWW12_061019a	10 Jun 2019 08:40			20 Jun 2019 16:45	1
HS19060573-04	35AWW21_061019	10 Jun 2019 09:30			20 Jun 2019 17:09	1
HS19060573-05	35AWW21_060119_a	10 Jun 2019 09:30			20 Jun 2019 17:33	1
HS19060573-06	35AWW01_061019	10 Jun 2019 10:20			20 Jun 2019 14:21	1
HS19060573-07	35AWW05_061019	10 Jun 2019 11:10			20 Jun 2019 17:57	1
HS19060573-08	35AWW16_061019	10 Jun 2019 11:55			20 Jun 2019 18:20	1
HS19060573-09	35AWW17_061019	10 Jun 2019 12:50			20 Jun 2019 18:44	1

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-190620** Units: **UG/L** Analysis Date: **20-Jun-2019 11:33**
Client ID: Run ID: **VOA6_340996** SeqNo: **5133849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-190620** Units: **UG/L** Analysis Date: **20-Jun-2019 11:33**
Client ID: Run ID: **VOA6_340996** SeqNo: **5133849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*41.57*	*1.0*	*50*	*0*	*83.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.23*	*1.0*	*50*	*0*	*96.5*	*85 - 114*				
Surr: Dibromofluoromethane	*43.71*	*1.0*	*50*	*0*	*87.4*	*80 - 119*				
Surr: Toluene-d8	*52.42*	*1.0*	*50*	*0*	*105*	*89 - 112*				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190620** Units: **UG/L** Analysis Date: **20-Jun-2019 10:45**
Client ID: Run ID: **VOA6_340996** SeqNo: **5133848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.82	1.0	20	0	99.1	78 - 124				
1,1,1-Trichloroethane	17.72	1.0	20	0	88.6	74 - 131				
1,1,2,2-Tetrachloroethane	17.36	1.0	20	0	86.8	71 - 121				
1,1,2-Trichloroethane	20.45	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	17.45	1.0	20	0	87.2	77 - 125				
1,1-Dichloroethene	17.72	1.0	20	0	88.6	71 - 131				
1,1-Dichloropropene	17.22	1.0	20	0	86.1	78 - 125				
1,2,3-Trichlorobenzene	18.94	1.0	20	0	94.7	69 - 129				
1,2,3-Trichloropropane	17.56	1.0	20	0	87.8	73 - 122				
1,2,4-Trichlorobenzene	18.83	1.0	20	0	94.2	69 - 130				
1,2,4-Trimethylbenzene	19.68	1.0	20	0	98.4	76 - 124				
1,2-Dibromo-3-chloropropane	17.68	1.0	20	0	88.4	62 - 128				
1,2-Dibromoethane	19.3	1.0	20	0	96.5	77 - 121				
1,2-Dichlorobenzene	19.42	1.0	20	0	97.1	80 - 119				
1,2-Dichloroethane	18.97	1.0	20	0	94.9	73 - 128				
1,2-Dichloropropane	18.78	1.0	20	0	93.9	78 - 122				
1,3,5-Trimethylbenzene	18.89	1.0	20	0	94.4	75 - 124				
1,3-Dichlorobenzene	19.97	1.0	20	0	99.9	80 - 119				
1,3-Dichloropropane	20.35	1.0	20	0	102	80 - 119				
1,4-Dichlorobenzene	19.62	1.0	20	0	98.1	79 - 118				
2,2-Dichloropropane	18.35	1.0	20	0	91.8	60 - 139				
2-Butanone	37.42	2.0	40	0	93.5	56 - 143				
2-Chlorotoluene	18.67	1.0	20	0	93.3	79 - 122				
2-Hexanone	35.93	2.0	40	0	89.8	57 - 139				
4-Chlorotoluene	18.96	1.0	20	0	94.8	78 - 122				
4-Isopropyltoluene	18.53	1.0	20	0	92.7	77 - 127				
4-Methyl-2-pentanone	37.47	2.0	40	0	93.7	67 - 130				
Acetone	39.15	2.0	40	0	97.9	39 - 160				
Benzene	18.81	1.0	20	0	94.1	79 - 120				
Bromobenzene	18.86	1.0	20	0	94.3	80 - 120				
Bromochloromethane	18.73	1.0	20	0	93.7	78 - 123				
Bromodichloromethane	19.53	1.0	20	0	97.6	79 - 125				
Bromoform	19.93	1.0	20	0	99.7	66 - 130				
Bromomethane	21.2	1.0	20	0	106	53 - 141				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190620** Units: **UG/L** Analysis Date: **20-Jun-2019 10:45**
Client ID: Run ID: **VOA6_340996** SeqNo: **5133848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	35.13	2.0	40	0	87.8	64 - 133				
Carbon tetrachloride	17.16	1.0	20	0	85.8	72 - 136				
Chlorobenzene	19.57	1.0	20	0	97.8	82 - 118				
Chloroethane	18.62	1.0	20	0	93.1	60 - 138				
Chloroform	18.33	1.0	20	0	91.7	79 - 124				
Chloromethane	16.45	1.0	20	0	82.3	50 - 139				
cis-1,2-Dichloroethene	18.38	1.0	20	0	91.9	78 - 123				
cis-1,3-Dichloropropene	20.2	1.0	20	0	101	75 - 124				
Dibromochloromethane	19.72	1.0	20	0	98.6	74 - 126				
Dibromomethane	19.53	1.0	20	0	97.6	79 - 123				
Dichlorodifluoromethane	17.24	1.0	20	0	86.2	32 - 152				
Ethylbenzene	19.16	1.0	20	0	95.8	79 - 121				
Hexachlorobutadiene	21.8	1.0	20	0	109	66 - 134				
Isopropylbenzene	18.38	1.0	20	0	91.9	72 - 131				
m,p-Xylene	38.78	2.0	40	0	96.9	80 - 121				
Methylene chloride	19.05	2.0	20	0	95.2	74 - 124				
Naphthalene	17.5	1.0	20	0	87.5	61 - 128				
n-Butylbenzene	18.69	1.0	20	0	93.5	75 - 128				
n-Propylbenzene	17.87	1.0	20	0	89.3	76 - 126				
o-Xylene	19	1.0	20	0	95.0	78 - 122				
sec-Butylbenzene	17.94	1.0	20	0	89.7	77 - 126				
Styrene	19.94	1.0	20	0	99.7	78 - 123				
tert-Butylbenzene	17.91	1.0	20	0	89.5	78 - 124				
Tetrachloroethene	19.91	1.0	20	0	99.5	74 - 129				
Toluene	19.77	1.0	20	0	98.9	80 - 121				
trans-1,2-Dichloroethene	18.07	1.0	20	0	90.3	75 - 124				
trans-1,3-Dichloropropene	19.93	1.0	20	0	99.7	73 - 127				
Trichloroethene	19.22	1.0	20	0	96.1	79 - 123				
Trichlorofluoromethane	17.32	1.0	20	0	86.6	65 - 141				
Vinyl chloride	17.08	1.0	20	0	85.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.4*	*1.0*	*50*	*0*	*94.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.02*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*49.54*	*1.0*	*50*	*0*	*99.1*	*80 - 119*				
Surr: Toluene-d8	*49.84*	*1.0*	*50*	*0*	*99.7*	*89 - 112*				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19060573-06MS** Units: **UG/L** Analysis Date: **20-Jun-2019 14:45**
Client ID: **35AWW01_061019** Run ID: **VOA6_340996** SeqNo: **5133852** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.14	1.0	20	0	95.7	78 - 124				
1,1,1-Trichloroethane	16.29	1.0	20	0	81.5	74 - 131				
1,1,2,2-Tetrachloroethane	14.02	1.0	20	0	70.1	71 - 121				S
1,1,2-Trichloroethane	16.27	1.0	20	0	81.4	80 - 119				
1,1-Dichloroethane	12.32	1.0	20	0	61.6	77 - 125				S
1,1-Dichloroethene	11.95	1.0	20	0	59.7	71 - 131				S
1,1-Dichloropropene	16.12	1.0	20	0	80.6	78 - 125				
1,2,3-Trichlorobenzene	17.48	1.0	20	0	87.4	69 - 129				
1,2,3-Trichloropropane	13.99	1.0	20	0	70.0	73 - 122				S
1,2,4-Trichlorobenzene	17.74	1.0	20	0	88.7	69 - 130				
1,2,4-Trimethylbenzene	17.74	1.0	20	0	88.7	76 - 124				
1,2-Dibromo-3-chloropropane	17.1	1.0	20	0	85.5	62 - 128				
1,2-Dibromoethane	17	1.0	20	0	85.0	77 - 121				
1,2-Dichlorobenzene	17.49	1.0	20	0	87.4	80 - 119				
1,2-Dichloroethane	16.61	1.0	20	0	83.1	73 - 128				
1,2-Dichloropropane	13.4	1.0	20	0	67.0	78 - 122				S
1,3,5-Trimethylbenzene	17.63	1.0	20	0	88.1	75 - 124				
1,3-Dichlorobenzene	17.93	1.0	20	0	89.7	80 - 119				
1,3-Dichloropropane	16.31	1.0	20	0	81.6	80 - 119				
1,4-Dichlorobenzene	17.69	1.0	20	0	88.5	79 - 118				
2,2-Dichloropropane	15.34	1.0	20	0	76.7	60 - 139				
2-Butanone	21.9	2.0	40	0	54.7	56 - 143				S
2-Chlorotoluene	15.98	1.0	20	0	79.9	79 - 122				
2-Hexanone	24.3	2.0	40	0	60.8	57 - 139				
4-Chlorotoluene	16.45	1.0	20	0	82.2	78 - 122				
4-Isopropyltoluene	18.36	1.0	20	0	91.8	77 - 127				
4-Methyl-2-pentanone	25.94	2.0	40	0	64.9	67 - 130				S
Acetone	16.25	2.0	40	0	40.6	39 - 160				
Benzene	15.43	1.0	20	0	77.1	79 - 120				S
Bromobenzene	17.81	1.0	20	0	89.0	80 - 120				
Bromochloromethane	15.29	1.0	20	0	76.5	78 - 123				S
Bromodichloromethane	17.08	1.0	20	0	85.4	79 - 125				
Bromoform	20	1.0	20	0	100.0	66 - 130				
Bromomethane	12.31	1.0	20	0	61.5	53 - 141				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19060573-06MS** Units: **UG/L** Analysis Date: **20-Jun-2019 14:45**
Client ID: **35AWW01_061019** Run ID: **VOA6_340996** SeqNo: **5133852** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	26.53	2.0	40	0	66.3	64 - 133				
Carbon tetrachloride	18.92	1.0	20	0	94.6	72 - 136				
Chlorobenzene	17.92	1.0	20	0	89.6	82 - 118				
Chloroethane	9.39	1.0	20	0	47.0	60 - 138				S
Chloroform	14.53	1.0	20	0	72.6	79 - 124				S
Chloromethane	8.228	1.0	20	0	41.1	50 - 139				S
cis-1,2-Dichloroethene	14.15	1.0	20	0	70.7	78 - 123				S
cis-1,3-Dichloropropene	15.92	1.0	20	0	79.6	75 - 124				
Dibromochloromethane	18.35	1.0	20	0	91.7	74 - 126				
Dibromomethane	16.12	1.0	20	0	80.6	79 - 123				
Dichlorodifluoromethane	9.08	1.0	20	0	45.4	32 - 152				
Ethylbenzene	17.91	1.0	20	0	89.5	79 - 121				
Hexachlorobutadiene	21.3	1.0	20	0	107	66 - 134				
Isopropylbenzene	18.6	1.0	20	0	93.0	72 - 131				
m,p-Xylene	36.08	2.0	40	0	90.2	80 - 121				
Methylene chloride	13.05	2.0	20	0	65.3	74 - 124				S
Naphthalene	15.24	1.0	20	0	76.2	61 - 128				
n-Butylbenzene	16.46	1.0	20	0	82.3	75 - 128				
n-Propylbenzene	16.52	1.0	20	0	82.6	76 - 126				
o-Xylene	17.88	1.0	20	0	89.4	78 - 122				
sec-Butylbenzene	17.45	1.0	20	0	87.3	77 - 126				
Styrene	17.72	1.0	20	0	88.6	78 - 123				
tert-Butylbenzene	18.03	1.0	20	0	90.2	78 - 124				
Tetrachloroethene	21.8	1.0	20	0	109	74 - 129				
Toluene	17.68	1.0	20	0	88.4	80 - 121				
trans-1,2-Dichloroethene	14.47	1.0	20	0	72.4	75 - 124				S
trans-1,3-Dichloropropene	16.53	1.0	20	0	82.6	73 - 127				
Trichloroethene	18.55	1.0	20	0	92.8	79 - 123				
Trichlorofluoromethane	14.61	1.0	20	0	73.1	65 - 141				
Vinyl chloride	8.739	1.0	20	0	43.7	58 - 137				S
Surr: 1,2-Dichloroethane-d4	*39.96*	*1.0*	*50*	*0*	*79.9*	*81 - 118*				S
Surr: 4-Bromofluorobenzene	*49.12*	*1.0*	*50*	*0*	*98.2*	*85 - 114*				
Surr: Dibromofluoromethane	*41.79*	*1.0*	*50*	*0*	*83.6*	*80 - 119*				
Surr: Toluene-d8	*47.84*	*1.0*	*50*	*0*	*95.7*	*89 - 112*				

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19060573-06MSD** Units: **UG/L** Analysis Date: **20-Jun-2019 15:09**
Client ID: **35AWW01_061019** Run ID: **VOA6_340996** SeqNo: **5133853** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.02	1.0	20	0	95.1	78 - 124	19.14	0.67	20	
1,1,1-Trichloroethane	16.69	1.0	20	0	83.4	74 - 131	16.29	2.39	20	
1,1,2,2-Tetrachloroethane	14.23	1.0	20	0	71.2	71 - 121	14.02	1.49	20	
1,1,2-Trichloroethane	16.38	1.0	20	0	81.9	80 - 119	16.27	0.694	20	
1,1-Dichloroethane	12.21	1.0	20	0	61.0	77 - 125	12.32	0.912	20	S
1,1-Dichloroethene	12.05	1.0	20	0	60.2	71 - 131	11.95	0.812	20	S
1,1-Dichloropropene	15.92	1.0	20	0	79.6	78 - 125	16.12	1.21	20	
1,2,3-Trichlorobenzene	19.48	1.0	20	0	97.4	69 - 129	17.48	10.8	20	
1,2,3-Trichloropropane	14.49	1.0	20	0	72.4	73 - 122	13.99	3.48	20	S
1,2,4-Trichlorobenzene	18.78	1.0	20	0	93.9	69 - 130	17.74	5.72	20	
1,2,4-Trimethylbenzene	17.4	1.0	20	0	87.0	76 - 124	17.74	1.97	20	
1,2-Dibromo-3-chloropropane	17.38	1.0	20	0	86.9	62 - 128	17.1	1.65	20	
1,2-Dibromoethane	17.04	1.0	20	0	85.2	77 - 121	17	0.262	20	
1,2-Dichlorobenzene	17.59	1.0	20	0	87.9	80 - 119	17.49	0.591	20	
1,2-Dichloroethane	17.56	1.0	20	0	87.8	73 - 128	16.61	5.55	20	
1,2-Dichloropropane	13.51	1.0	20	0	67.5	78 - 122	13.4	0.779	20	S
1,3,5-Trimethylbenzene	17.5	1.0	20	0	87.5	75 - 124	17.63	0.728	20	
1,3-Dichlorobenzene	17.85	1.0	20	0	89.3	80 - 119	17.93	0.445	20	
1,3-Dichloropropane	15.93	1.0	20	0	79.6	80 - 119	16.31	2.41	20	S
1,4-Dichlorobenzene	17.72	1.0	20	0	88.6	79 - 118	17.69	0.159	20	
2,2-Dichloropropane	15.18	1.0	20	0	75.9	60 - 139	15.34	1.01	20	
2-Butanone	23.29	2.0	40	0	58.2	56 - 143	21.9	6.17	20	
2-Chlorotoluene	16.34	1.0	20	0	81.7	79 - 122	15.98	2.2	20	
2-Hexanone	24.65	2.0	40	0	61.6	57 - 139	24.3	1.42	20	
4-Chlorotoluene	16.43	1.0	20	0	82.2	78 - 122	16.45	0.0842	20	
4-Isopropyltoluene	18	1.0	20	0	90.0	77 - 127	18.36	2	20	
4-Methyl-2-pentanone	27.03	2.0	40	0	67.6	67 - 130	25.94	4.12	20	
Acetone	16.9	2.0	40	0	42.2	39 - 160	16.25	3.94	20	
Benzene	15.45	1.0	20	0	77.2	79 - 120	15.43	0.137	20	S
Bromobenzene	17.69	1.0	20	0	88.5	80 - 120	17.81	0.662	20	
Bromochloromethane	15.57	1.0	20	0	77.9	78 - 123	15.29	1.81	20	S
Bromodichloromethane	17.79	1.0	20	0	89.0	79 - 125	17.08	4.06	20	
Bromoform	19.88	1.0	20	0	99.4	66 - 130	20	0.609	20	
Bromomethane	11.79	1.0	20	0	58.9	53 - 141	12.31	4.33	20	

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19060573-06MSD** Units: **UG/L** Analysis Date: **20-Jun-2019 15:09**
Client ID: **35AWW01_061019** Run ID: **VOA6_340996** SeqNo: **5133853** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	26.12	2.0	40	0	65.3	64 - 133	26.53	1.56	20	
Carbon tetrachloride	18.97	1.0	20	0	94.8	72 - 136	18.92	0.242	20	
Chlorobenzene	17.76	1.0	20	0	88.8	82 - 118	17.92	0.883	20	
Chloroethane	9.486	1.0	20	0	47.4	60 - 138	9.39	1.01	20	S
Chloroform	14.71	1.0	20	0	73.6	79 - 124	14.53	1.27	20	S
Chloromethane	7.652	1.0	20	0	38.3	50 - 139	8.228	7.25	20	S
cis-1,2-Dichloroethene	14.28	1.0	20	0	71.4	78 - 123	14.15	0.947	20	S
cis-1,3-Dichloropropene	17.45	1.0	20	0	87.3	75 - 124	15.92	9.18	20	
Dibromochloromethane	18.02	1.0	20	0	90.1	74 - 126	18.35	1.79	20	
Dibromomethane	16.88	1.0	20	0	84.4	79 - 123	16.12	4.59	20	
Dichlorodifluoromethane	8.701	1.0	20	0	43.5	32 - 152	9.08	4.26	20	
Ethylbenzene	18.02	1.0	20	0	90.1	79 - 121	17.91	0.604	20	
Hexachlorobutadiene	21.97	1.0	20	0	110	66 - 134	21.3	3.09	20	
Isopropylbenzene	18.52	1.0	20	0	92.6	72 - 131	18.6	0.425	20	
m,p-Xylene	36.13	2.0	40	0	90.3	80 - 121	36.08	0.119	20	
Methylene chloride	13.28	2.0	20	0	66.4	74 - 124	13.05	1.74	20	S
Naphthalene	16.43	1.0	20	0	82.1	61 - 128	15.24	7.5	20	
n-Butylbenzene	16.76	1.0	20	0	83.8	75 - 128	16.46	1.81	20	
n-Propylbenzene	16.46	1.0	20	0	82.3	76 - 126	16.52	0.347	20	
o-Xylene	17.44	1.0	20	0	87.2	78 - 122	17.88	2.47	20	
sec-Butylbenzene	17.14	1.0	20	0	85.7	77 - 126	17.45	1.82	20	
Styrene	17.86	1.0	20	0	89.3	78 - 123	17.72	0.784	20	
tert-Butylbenzene	17.67	1.0	20	0	88.3	78 - 124	18.03	2.02	20	
Tetrachloroethene	20.78	1.0	20	0	104	74 - 129	21.8	4.79	20	
Toluene	17.53	1.0	20	0	87.7	80 - 121	17.68	0.822	20	
trans-1,2-Dichloroethene	14.43	1.0	20	0	72.2	75 - 124	14.47	0.299	20	S
trans-1,3-Dichloropropene	17.97	1.0	20	0	89.8	73 - 127	16.53	8.35	20	
Trichloroethene	18.68	1.0	20	0	93.4	79 - 123	18.55	0.667	20	
Trichlorofluoromethane	14.47	1.0	20	0	72.3	65 - 141	14.61	1.01	20	
Vinyl chloride	8.412	1.0	20	0	42.1	58 - 137	8.739	3.81	20	S
Surr: 1,2-Dichloroethane-d4	*40.73*	*1.0*	*50*	*0*	*81.5*	*81 - 118*	*39.96*	*1.91*	*20*	
Surr: 4-Bromofluorobenzene	*49.19*	*1.0*	*50*	*0*	*98.4*	*85 - 114*	*49.12*	*0.145*	*20*	
Surr: Dibromofluoromethane	*42.34*	*1.0*	*50*	*0*	*84.7*	*80 - 119*	*41.79*	*1.32*	*20*	
Surr: Toluene-d8	*46.95*	*1.0*	*50*	*0*	*93.9*	*89 - 112*	*47.84*	*1.88*	*20*	

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19060573

QC BATCH REPORT

Batch ID: R340996 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch:

HS19060573-01	HS19060573-02	HS19060573-03	HS19060573-04
HS19060573-05	HS19060573-06	HS19060573-07	HS19060573-08
HS19060573-09	HS19060573-10		

ALS Houston, US Date: 21-Jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19060573**

QUALIFIERS, ACRONYMS, UNITS

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

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

ALS Houston, US Date: 21-Jun-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Illinois	004438	29-Jun-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Louisiana	03087	30-Jun-2019
Maryland	343, 2018-2019	30-Jun-2019
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 21-jun-19

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19060573

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	MET086
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	WET280
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	VOA161
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	Sub
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	Sub
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	Sub
HS19060573-01	35AWW22_061019	Login	12/06/2019 12:49:33	NDR	Sub

00949874

ALS Houston, US Date: 21-Jun-19

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19060573
Date/Time Received: **11-Jun-2019 11:11**
Received by: **RPG**

Checklist completed by: *Nilesh D. Ranchod* eSignature 12-Jun-2019 Date
Reviewed by: *RJ Modashia* eSignature 12-Jun-2019 Date

Matrices: **Groundwater/Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1c U/C	IR11	
Cooler(s)/Kit(s):	44892		
Date/Time sample(s) sent to storage:	06/11/2019 18:00		
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:

bhate

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 / Site 58

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 (1)	Sample Number (1)	Sample Matrix (4)	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions						Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW22_061019		10JUN2019	0750	-	N		WG	3	X													
35AWW12_061019		10JUN2019	0840	-	N		WG	3	X													
35AWW12_061019_a		10JUN2019	0840	-	FD		WG	3	X													
35AWW21_061019		10JUN2019	0930		N		WG	3	X													
35AWW21_061019_a		10JUN2019	0930		FD		WG	3	X													
35AWW01_061019		10JUN2019	1020	-	N		WG	3	X													
35AWW01_061019_MS		10JUN2019	1020	-	MS		WG	3	X													
35AWW01_061019_MSD		10JUN2019	1020	-	SD		WG	3	X													
35AWW05_061019		10JUN2019	1110	-	N		WG	3	X													
35AWW16_061019		10JUN2019	1155	-	N		WG	3	X													
35AWW17_061019		10JUN2019	1250	-	N		WG	3	X													
TRIP BLANK		10 JAN 2019			TB		W	2	X													

COMMENTS:

HS19060573

Bhate Environmental Associates, Inc.
LHAAP-58

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
Scott Beesinger	6/10/19	1430	1. Nelson	06/11/19	11:11
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped

Method of Shipment: UPS

____ 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

IR11 2.1°C Cooler # 448472

00949875

APPENDIX F
MANN-KENDALL TREND TEST RESULTS

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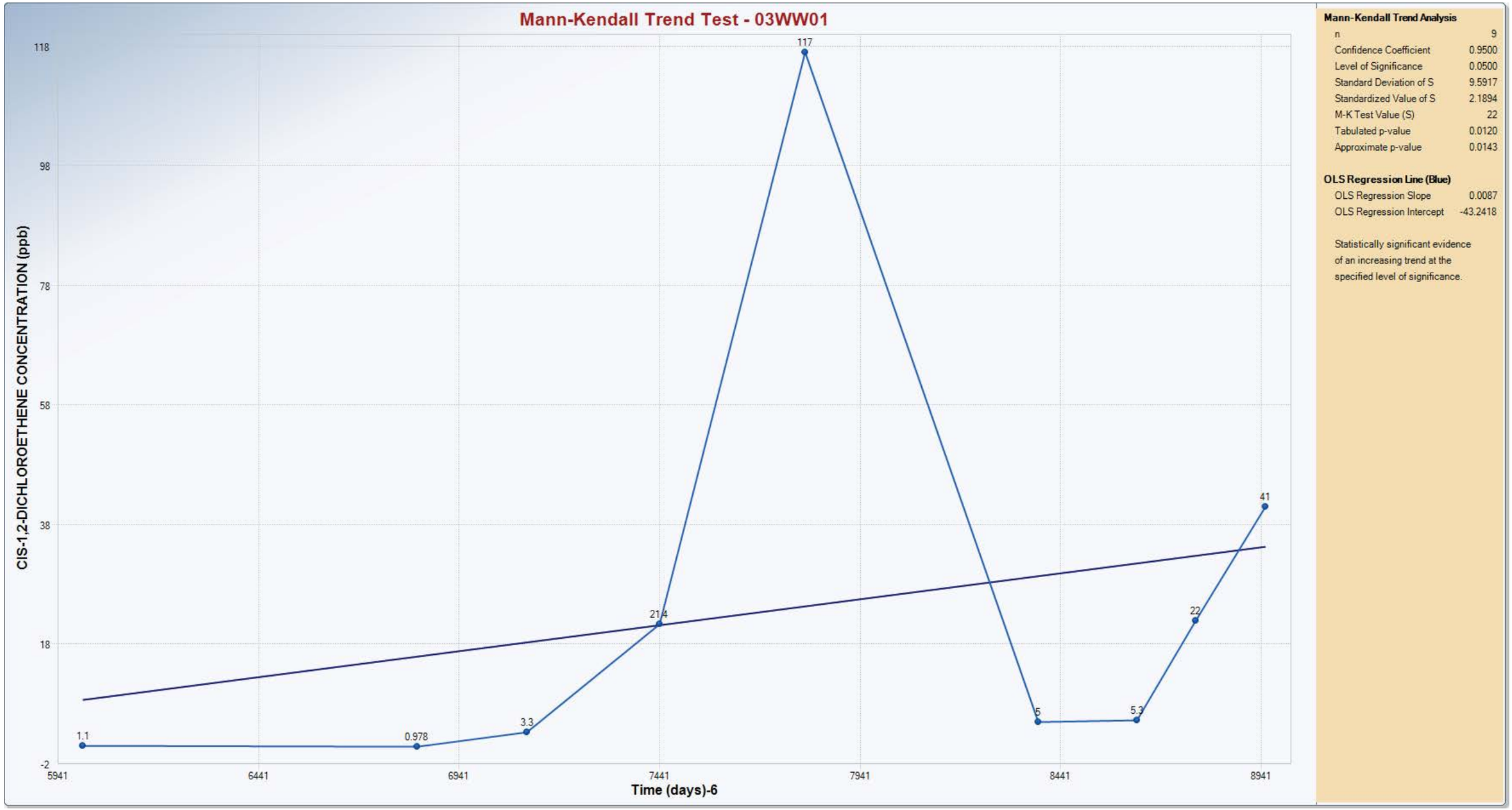
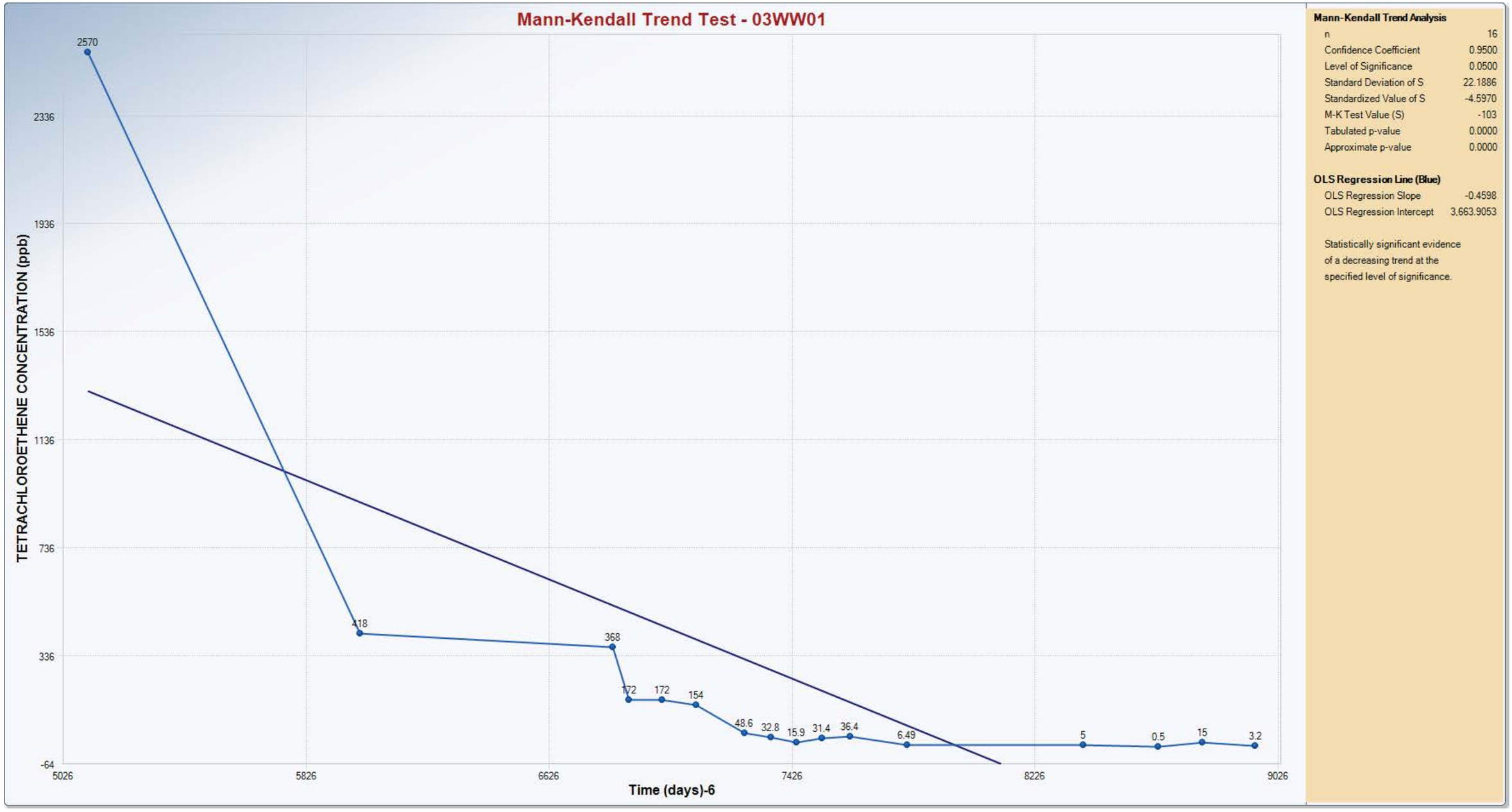
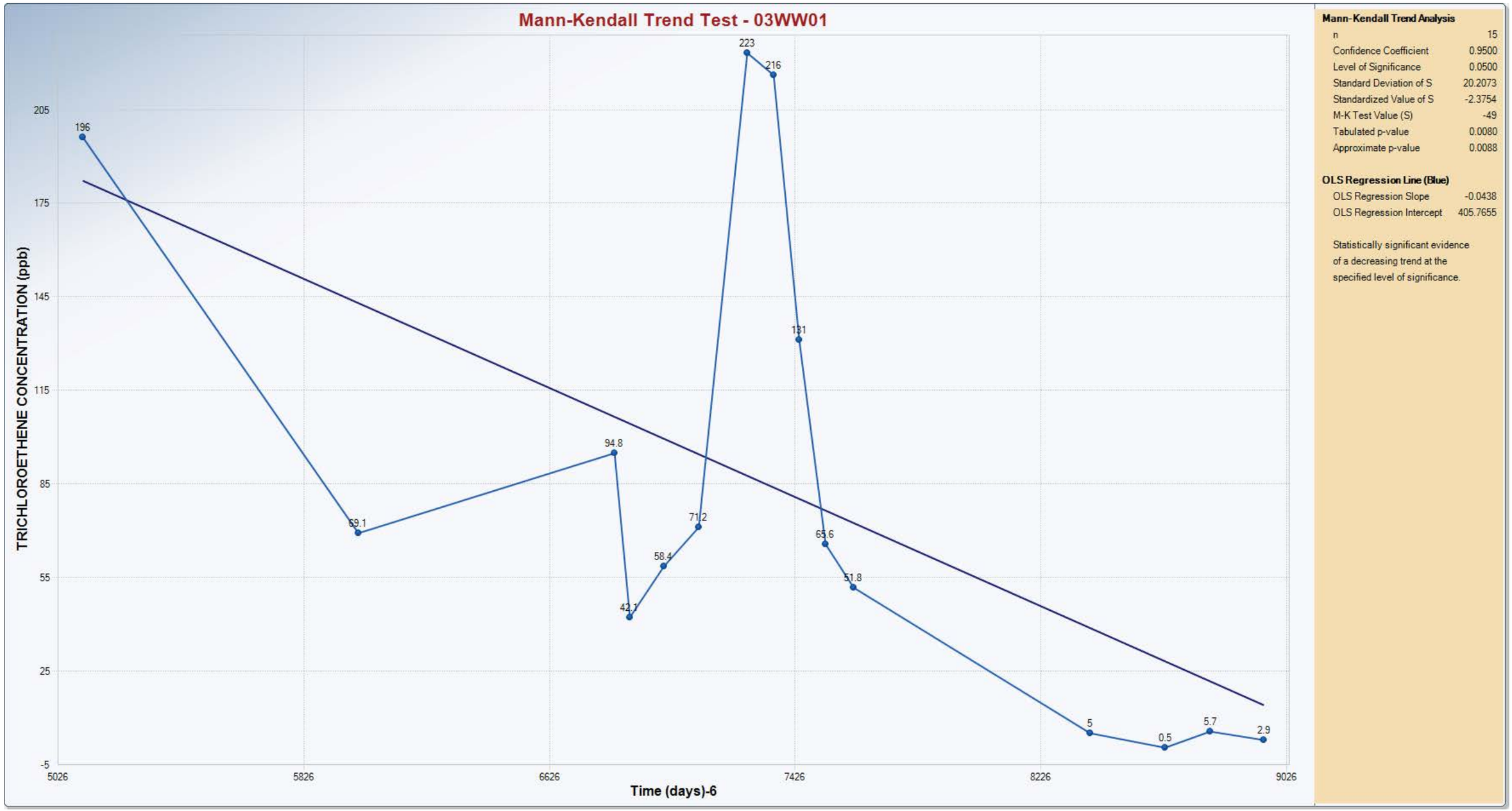
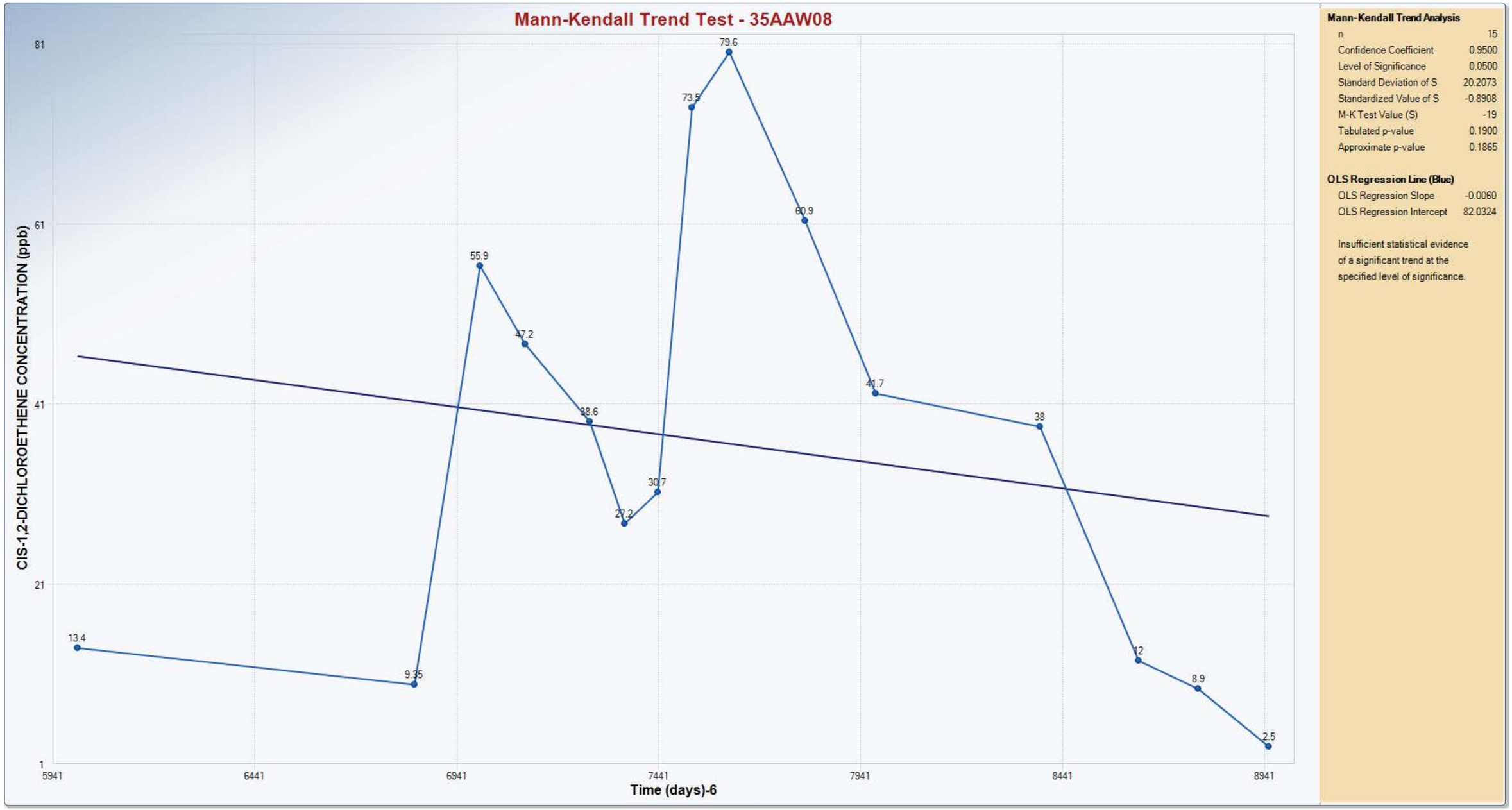

Mann-Kendall Trend Test - 03WW01
CIS-1,2-DICHLOROETHENE CONCENTRATION (ppb)
118
98
78
58
38
18
-2
5941
6441
6941
7441
7941
8441
8941
Time (days)-6
117
1.1
0.978
3.3
21.4
5
5.3
22
41
Mann-Kendall Trend Analysis
n 9
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 9.5917
Standardized Value of S 2.1894
M-K Test Value (S) 22
Tabulated p-value 0.0120
Approximate p-value 0.0143
OLS Regression Line (Blue)
OLS Regression Slope 0.0087
OLS Regression Intercept -43.2418
Statistically significant evidence of an increasing trend at the specified level of significance.


Mann-Kendall Trend Test - 03WW01
TETRACHLOROETHENE CONCENTRATION (ppb)
2336
1936
1536
1136
736
336
-64
5026
5826
6626
7426
8226
9026
Time (days)-6
2570
418
368
172
172
154
48.6
32.8
15.9
31.4
36.4
6.49
5
0.5
15
3.2
Mann-Kendall Trend Analysis
n 16
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 22.1886
Standardized Value of S -4.5970
M-K Test Value (S) -103
Tabulated p-value 0.0000
Approximate p-value 0.0000
OLS Regression Line (Blue)
OLS Regression Slope -0.4598
OLS Regression Intercept 3,663.9053
Statistically significant evidence of a decreasing trend at the specified level of significance.

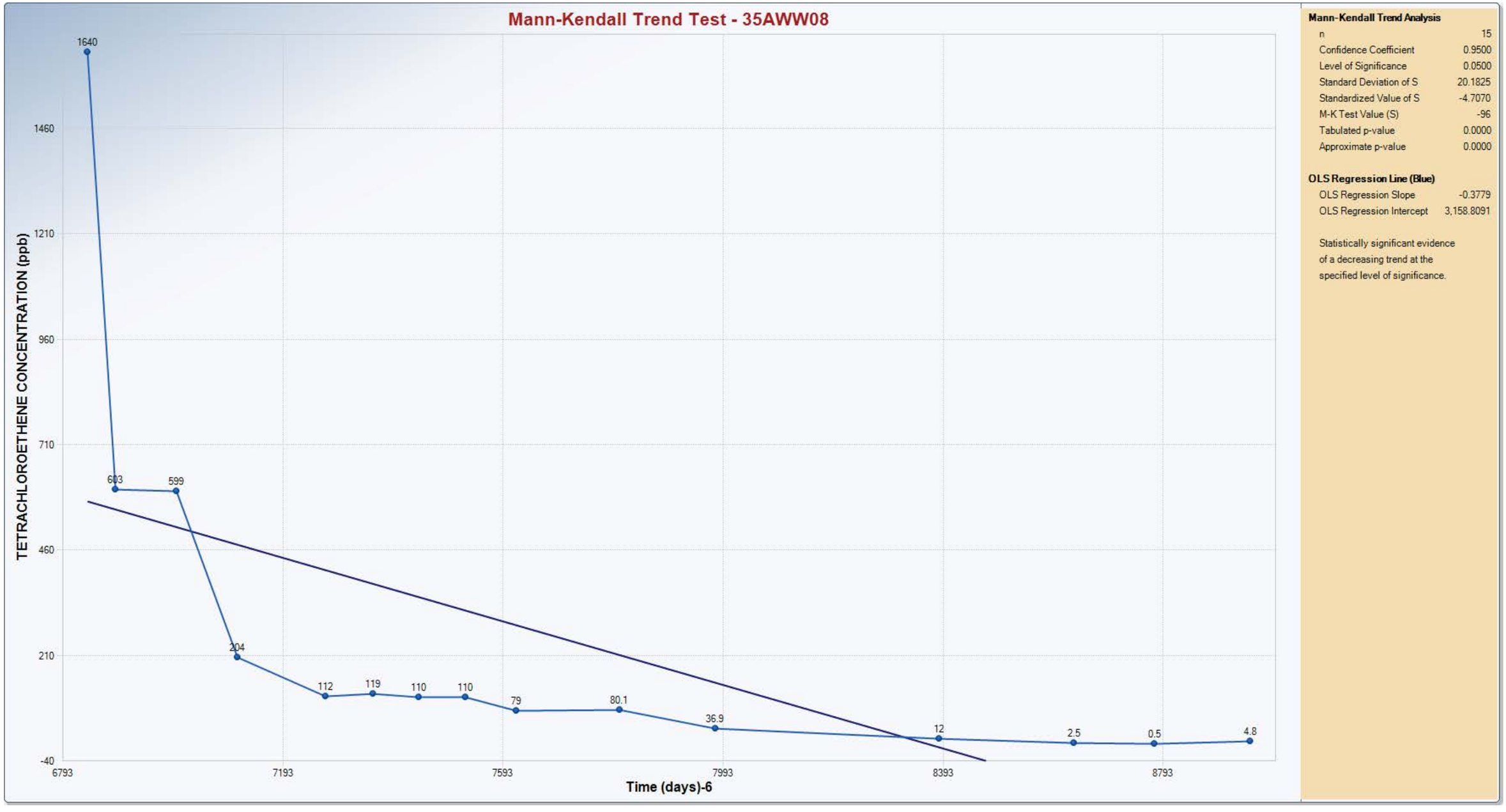
bhate


Mann-Kendall Trend Test - 03WW01
TRICHLOROETHENE CONCENTRATION (ppb)
205
175
145
115
85
55
25
-5
5026
5826
6626
7426
8226
9026
Time (days)-6
196
69.1
94.8
42.1
58.4
71.2
223
216
131
65.6
51.8
5
0.5
5.7
2.9
Mann-Kendall Trend Analysis
n 15
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 20.2073
Standardized Value of S -2.3754
M-K Test Value (S) -49
Tabulated p-value 0.0080
Approximate p-value 0.0088
OLS Regression Line (Blue)
OLS Regression Slope -0.0438
OLS Regression Intercept 405.7655
Statistically significant evidence of a decreasing trend at the specified level of significance.

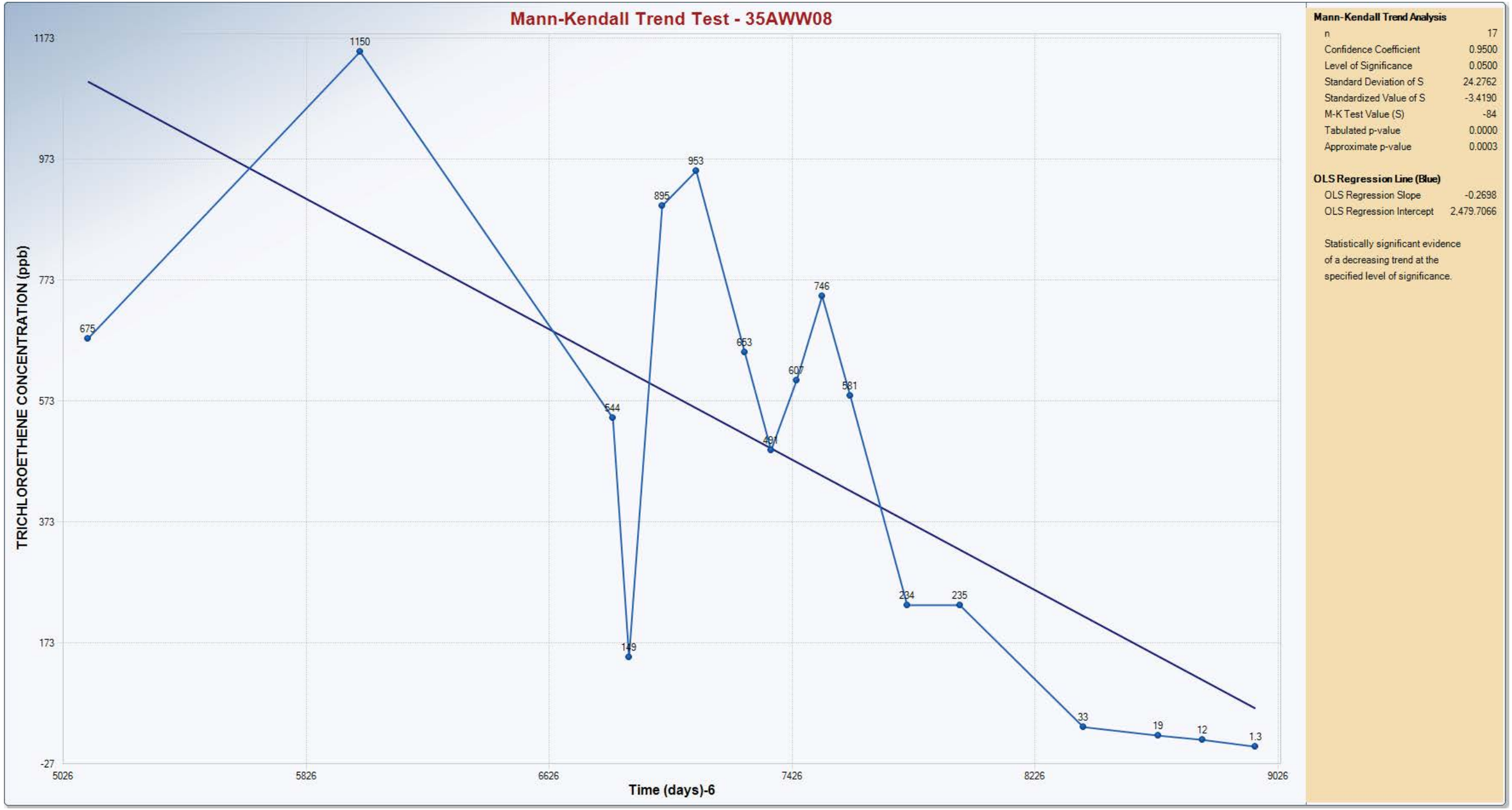
bhate


Mann-Kendall Trend Test - 35AAW08
CIS-1,2-DICHLOROETHENE CONCENTRATION (ppb)
81
61
41
21
1
5941
6441
6941
7441
7941
8441
8941
Time (days)-6
13.4
55.9
47.2
38.6
27.2
30.7
73.5
79.6
60.9
41.7
38
9.35
12
8.9
2.5
Mann-Kendall Trend Analysis
n 15
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 20.2073
Standardized Value of S -0.8908
M-K Test Value (S) -19
Tabulated p-value 0.1900
Approximate p-value 0.1865
OLS Regression Line (Blue)
OLS Regression Slope -0.0060
OLS Regression Intercept 82.0324
Insufficient statistical evidence of a significant trend at the specified level of significance.

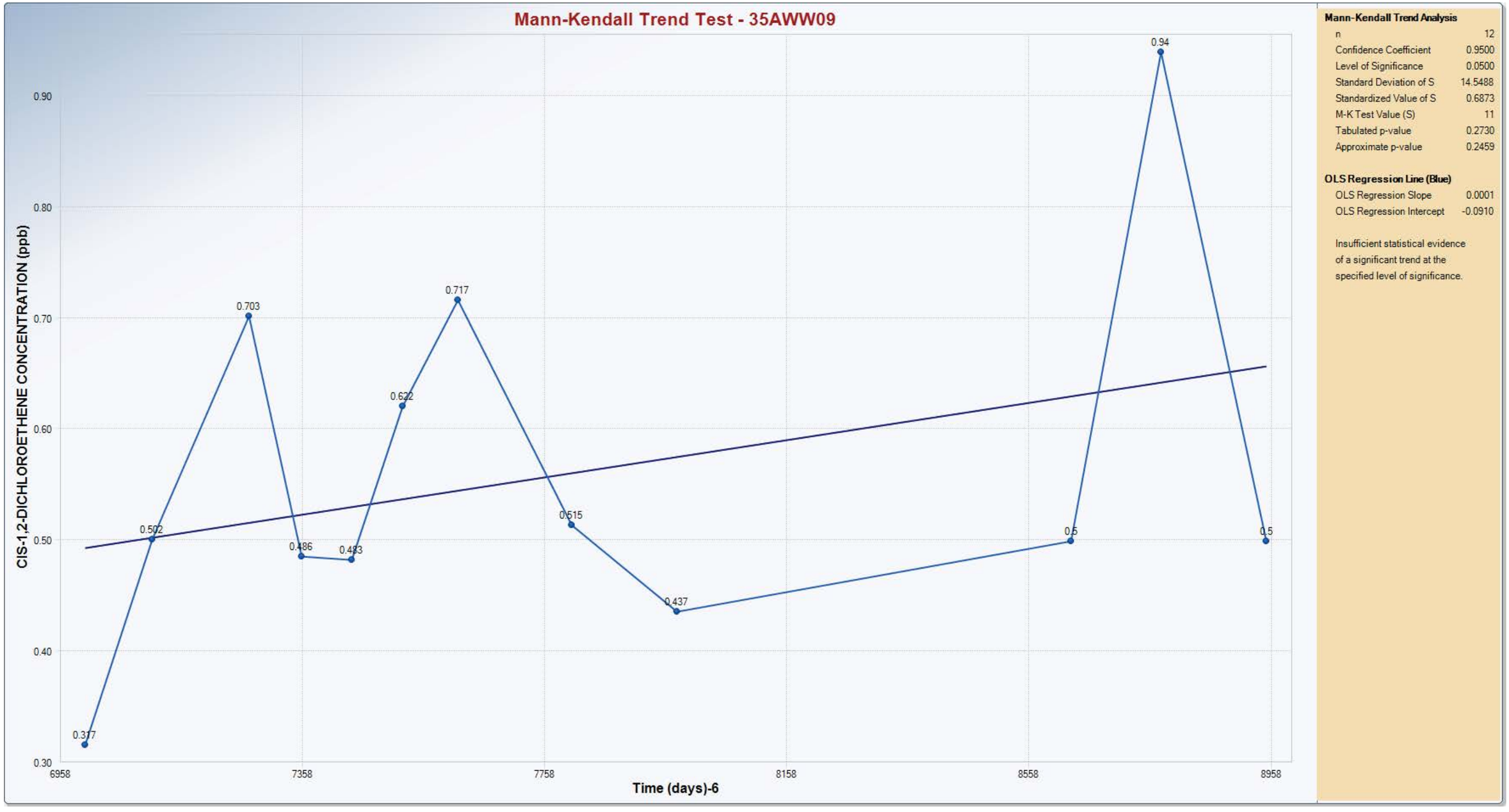
bhate


Mann-Kendall Trend Test - 35AWW08
TETRACHLOROETHENE CONCENTRATION (ppb)
1640
1460
1210
960
710
460
210
-40
603
599
204
112
119
110
110
79
80.1
36.9
12
2.5
0.5
4.8
6793
7193
7593
7993
8393
8793
Time (days)-6
Mann-Kendall Trend Analysis
n 15
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 20.1825
Standardized Value of S -4.7070
M-K Test Value (S) -96
Tabulated p-value 0.0000
Approximate p-value 0.0000
OLS Regression Line (Blue)
OLS Regression Slope -0.3779
OLS Regression Intercept 3,158.8091
Statistically significant evidence of a decreasing trend at the specified level of significance.

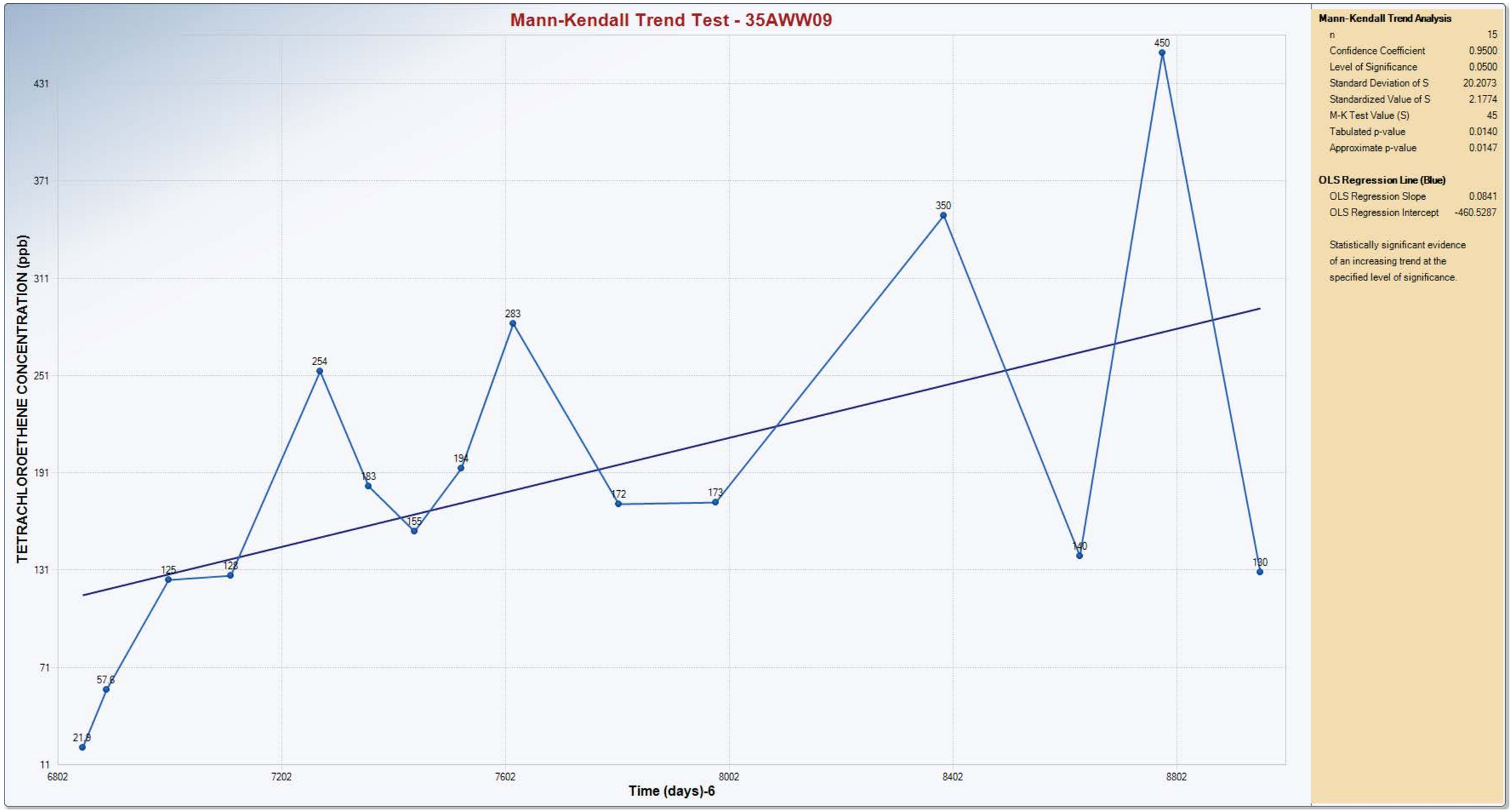
bhate


Mann-Kendall Trend Test - 35AWW08
TRICHLOROETHENE CONCENTRATION (ppb)
1173
973
773
573
373
173
-27
5026
5826
6626
7426
8226
9026
Time (days)-6
675
1150
544
149
895
953
653
491
607
746
581
234
235
33
19
12
1.3
Mann-Kendall Trend Analysis
n 17
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 24.2762
Standardized Value of S -3.4190
M-K Test Value (S) -84
Tabulated p-value 0.0000
Approximate p-value 0.0003
OLS Regression Line (Blue)
OLS Regression Slope -0.2698
OLS Regression Intercept 2,479.7066
Statistically significant evidence of a decreasing trend at the specified level of significance.

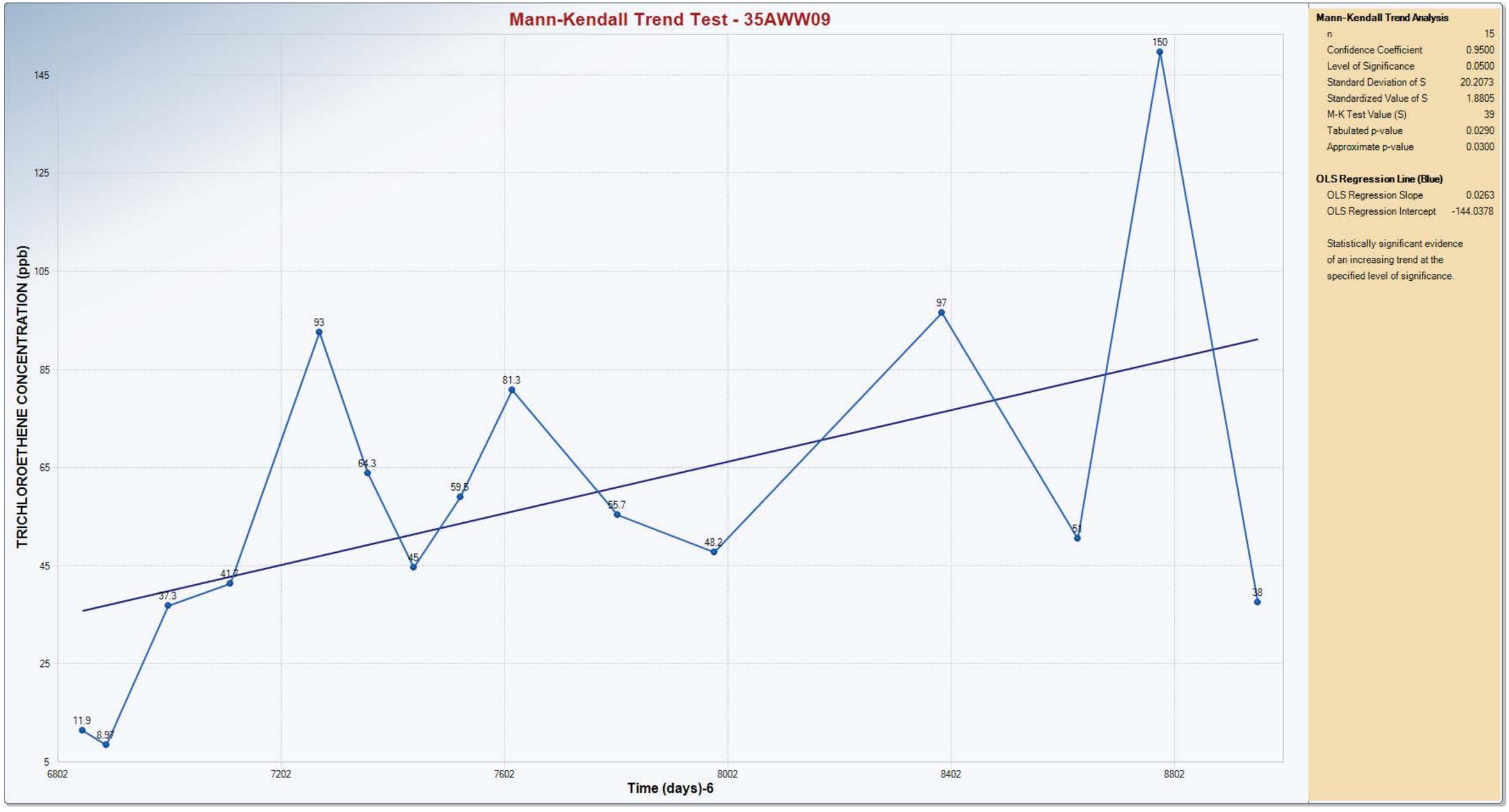
bhate


Mann-Kendall Trend Test - 35AWW09
CIS-1,2-DICHLOROETHENE CONCENTRATION (ppb)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.703
0.717
0.622
0.94
0.502
0.486
0.483
0.515
0.5
0.5
0.437
0.317
6958
7358
7758
8158
8558
8958
Time (days)-6
Mann-Kendall Trend Analysis
n 12
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 14.5488
Standardized Value of S 0.6873
M-K Test Value (S) 11
Tabulated p-value 0.2730
Approximate p-value 0.2459
OLS Regression Line (Blue)
OLS Regression Slope 0.0001
OLS Regression Intercept -0.0910
Insufficient statistical evidence of a significant trend at the specified level of significance.

bhate


Mann-Kendall Trend Test - 35AWW09
TETRACHLOROETHENE CONCENTRATION (ppb)
431
371
311
251
191
131
71
11
6802
7202
7602
8002
8402
8802
Time (days)-6
254
283
350
450
183
194
155
172
173
140
130
125
128
57.8
21.9
Mann-Kendall Trend Analysis
n 15
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 20.2073
Standardized Value of S 2.1774
M-K Test Value (S) 45
Tabulated p-value 0.0140
Approximate p-value 0.0147
OLS Regression Line (Blue)
OLS Regression Slope 0.0841
OLS Regression Intercept -460.5287
Statistically significant evidence of an increasing trend at the specified level of significance.

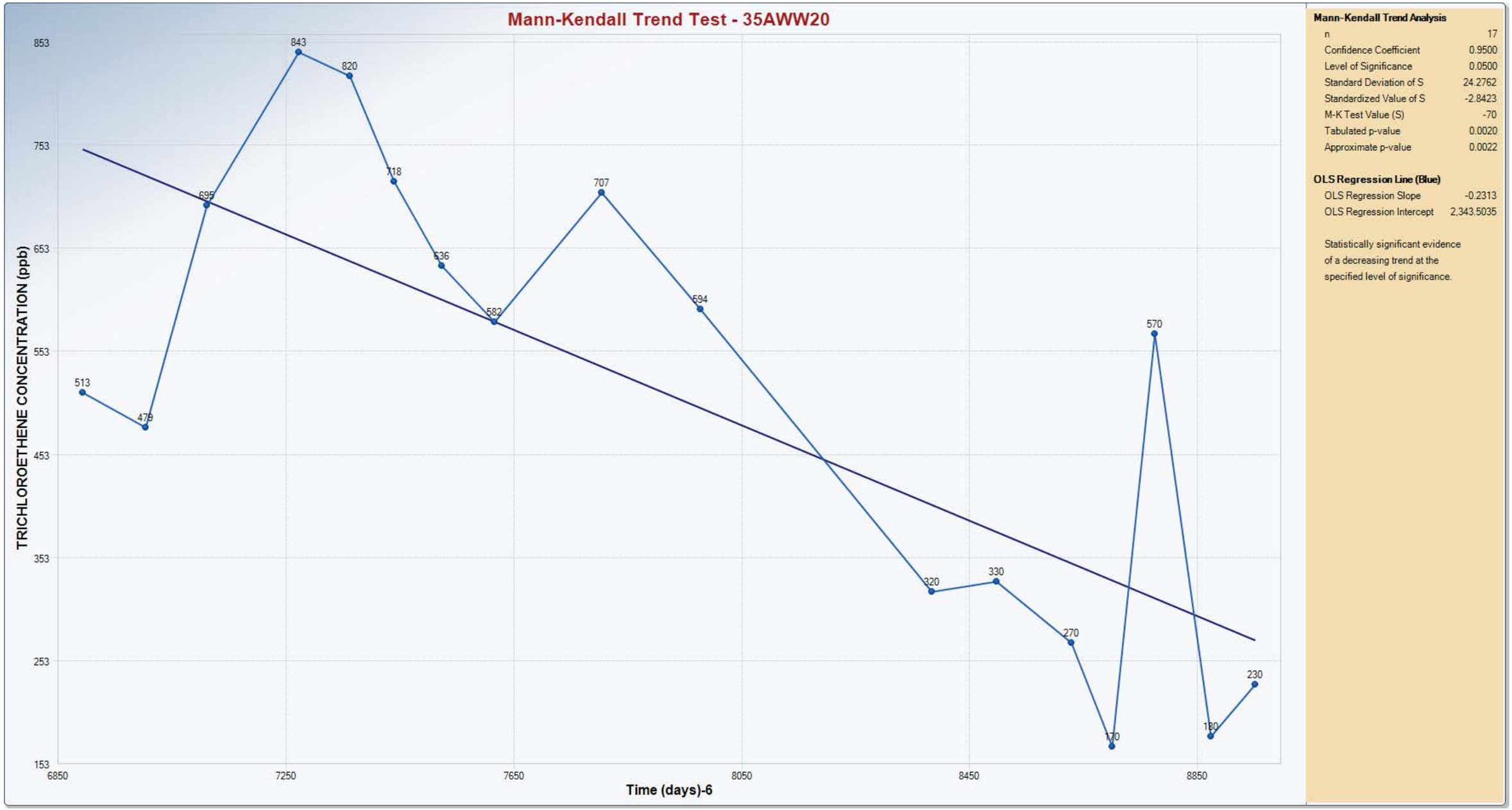
bhate


Mann-Kendall Trend Test - 35AWW09
TRICHLOROETHENE CONCENTRATION (ppb)
145
125
105
85
65
45
25
5
6802
7202
7602
8002
8402
8802
Time (days)-6
11.9
8.97
37.3
41.7
93
64.3
45
59.5
81.3
55.7
48.2
97
150
51
38
Mann-Kendall Trend Analysis
n 15
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 20.2073
Standardized Value of S 1.8805
M-K Test Value (S) 39
Tabulated p-value 0.0290
Approximate p-value 0.0300
OLS Regression Line (Blue)
OLS Regression Slope 0.0263
OLS Regression Intercept -144.0378
Statistically significant evidence of an increasing trend at the specified level of significance.

bhate


Mann-Kendall Trend Test - 35AWW20
CIS-1,2-DICHLOROETHENE CONCENTRATION (ppb)
123
103
83
63
43
6850
7250
7650
8050
8450
8850
Time (days)-6
110
87.7
110
119
123
120
118
105
126
115
53
76
69
45
120
49
79
Mann-Kendall Trend Analysis
n 17
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 24.2350
Standardized Value of S -1.6092
M-K Test Value (S) -40
Tabulated p-value 0.0540
Approximate p-value 0.0538
OLS Regression Line (Blue)
OLS Regression Slope -0.0253
OLS Regression Intercept 295.9405
Insufficient statistical evidence of a significant trend at the specified level of significance.

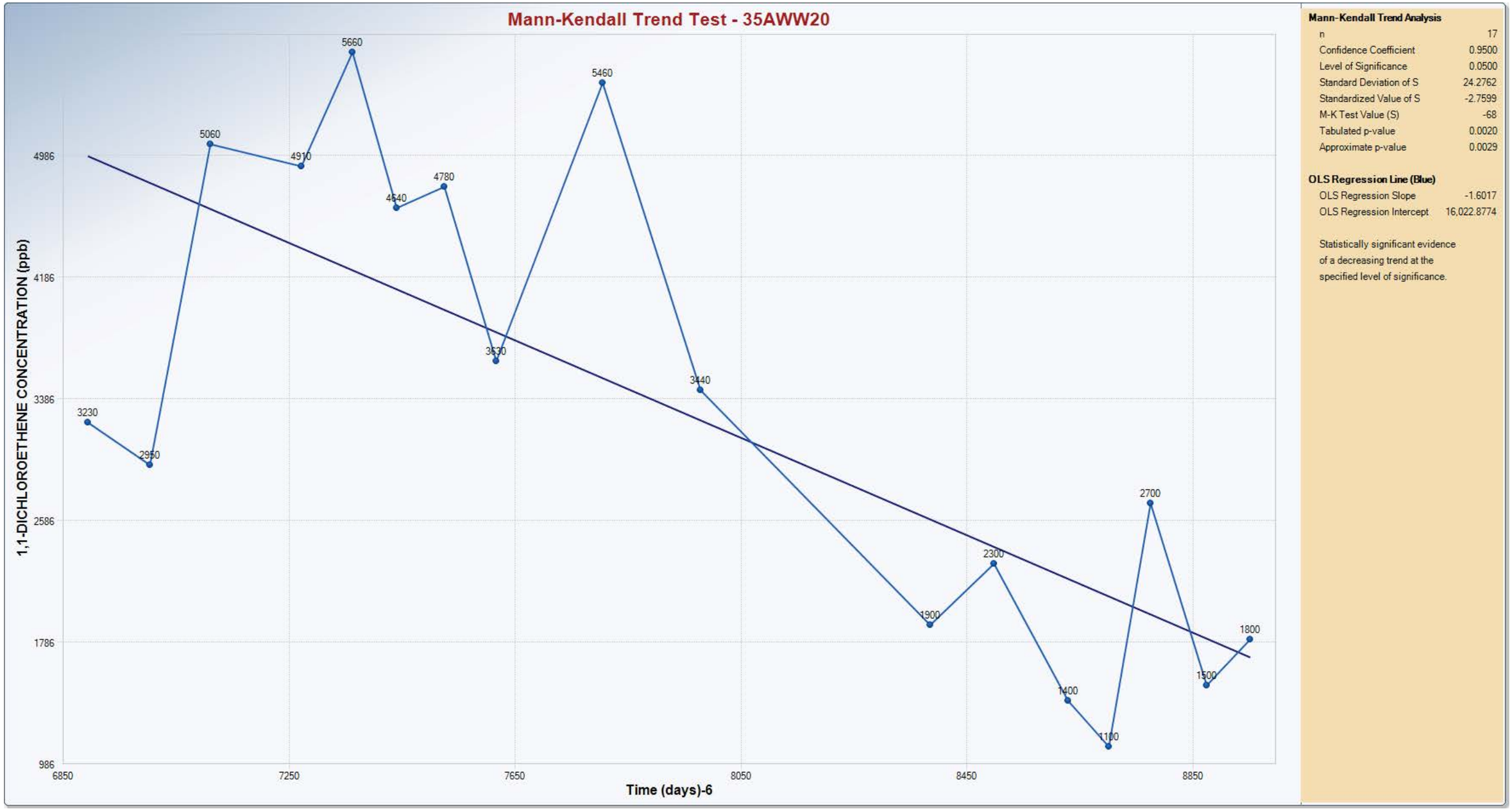
bhate


Mann-Kendall Trend Test - 35AWW20
TRICHLOROETHENE CONCENTRATION (ppb)
853
753
653
553
453
353
253
153
6850
7250
7650
8050
8450
8850
Time (days)-6
513
479
695
843
820
718
536
582
707
594
320
330
270
170
570
180
230
Mann-Kendall Trend Analysis
n 17
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 24.2762
Standardized Value of S -2.8423
M-K Test Value (S) -70
Tabulated p-value 0.0020
Approximate p-value 0.0022
OLS Regression Line (Blue)
OLS Regression Slope -0.2313
OLS Regression Intercept 2,343.5035
Statistically significant evidence of a decreasing trend at the specified level of significance.

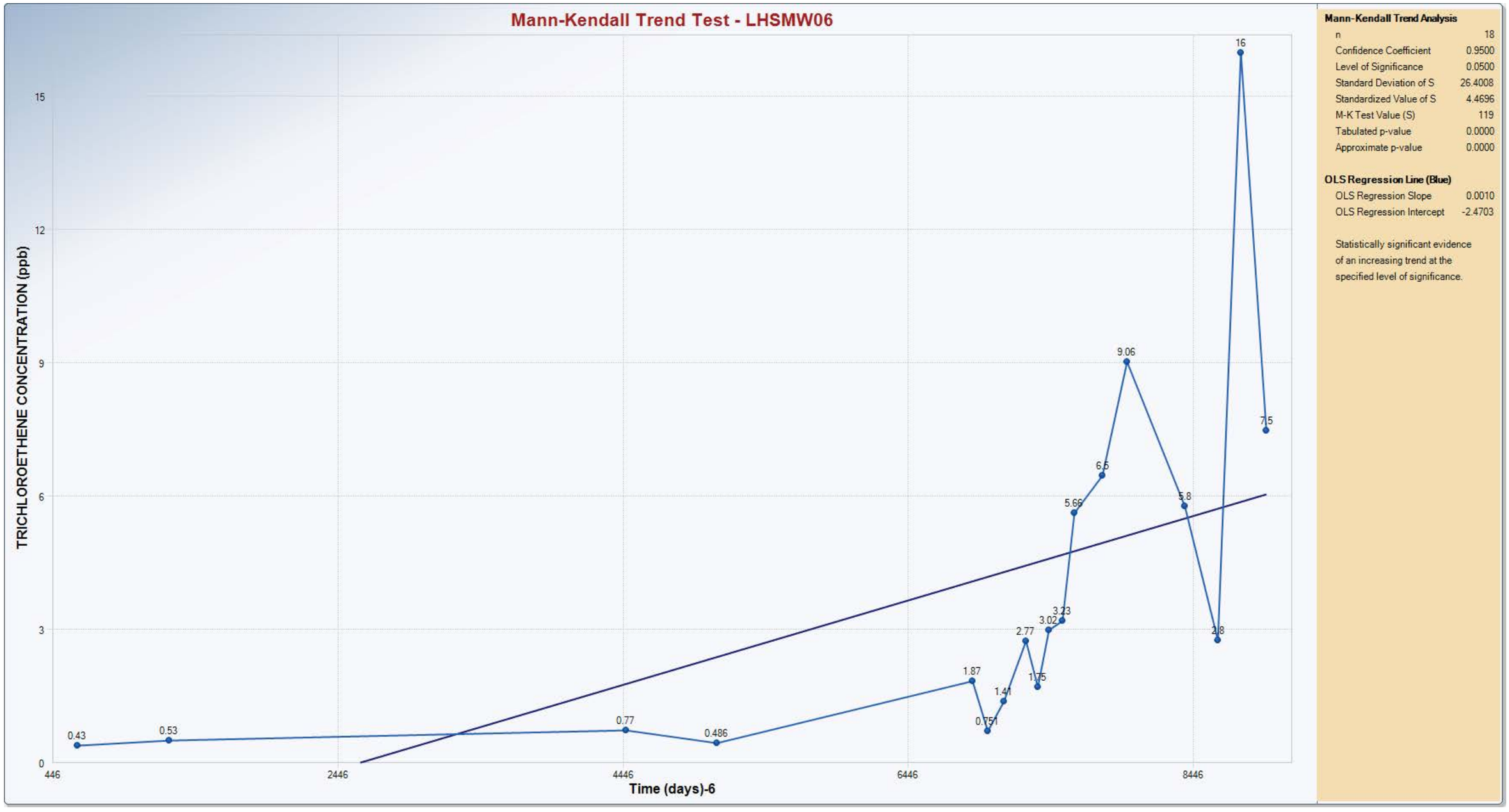
bhate


Mann-Kendall Trend Test - 35AWW20
VINYL CHLORIDE CONCENTRATION (ppb)
205
175
145
115
85
55
25
-5
105
62.4
65.7
102
122
90.6
151
126
216
166
78
110
71
0.5
110
54
140
6850
7250
7650
8050
8450
8850
Time (days)-6
Mann-Kendall Trend Analysis
n 17
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 24.2556
Standardized Value of S 0.0825
M-K Test Value (S) 3
Tabulated p-value 0.4840
Approximate p-value 0.4671
OLS Regression Line (Blue)
OLS Regression Slope -0.0107
OLS Regression Intercept 189.0443
Insufficient statistical evidence of a significant trend at the specified level of significance.

bhate


Mann-Kendall Trend Test - 35AWW20
1,1-DICHLOROETHENE CONCENTRATION (ppb)
4986
4186
3386
2586
1786
986
6850
7250
7650
8050
8450
8850
Time (days)-6
3230
2950
5060
4910
5660
4540
4780
3630
5460
3440
1900
2300
1400
1100
2700
1500
1800
Mann-Kendall Trend Analysis
n 17
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 24.2762
Standardized Value of S -2.7599
M-K Test Value (S) -68
Tabulated p-value 0.0020
Approximate p-value 0.0029
OLS Regression Line (Blue)
OLS Regression Slope -1.6017
OLS Regression Intercept 16,022.8774
Statistically significant evidence of a decreasing trend at the specified level of significance.

bhate


Mann-Kendall Trend Test - LHSMW06
TRICHLOROETHENE CONCENTRATION (ppb)
Time (days)-6
0
3
6
9
12
15
446
2446
4446
6446
8446
0.43
0.53
0.77
0.486
1.87
0.751
1.41
2.77
1.75
3.02
3.23
5.66
6.5
9.06
5.8
16
7.5
2.8
Mann-Kendall Trend Analysis
n 18
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 26.4008
Standardized Value of S 4.4696
M-K Test Value (S) 119
Tabulated p-value 0.0000
Approximate p-value 0.0000
OLS Regression Line (Blue)
OLS Regression Slope 0.0010
OLS Regression Intercept -2.4703
Statistically significant evidence of an increasing trend at the specified level of significance.

bhate



Mann-Kendall Trend Analysis

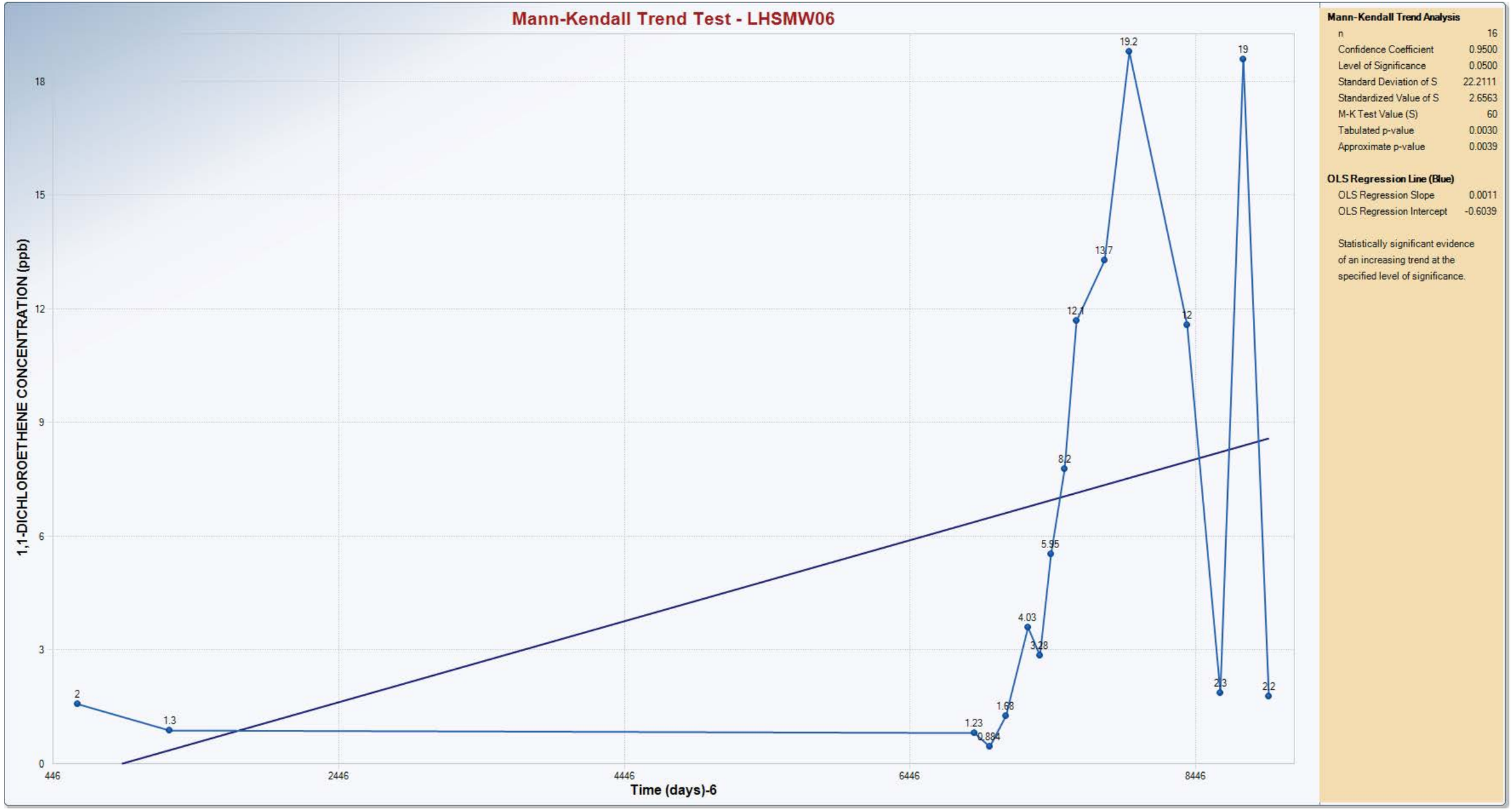
n	15
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	20.1825
Standardized Value of S	2.6260
M-K Test Value (S)	54
Tabulated p-value	0.0030
Approximate p-value	0.0043

OLS Regression Line (Blue)

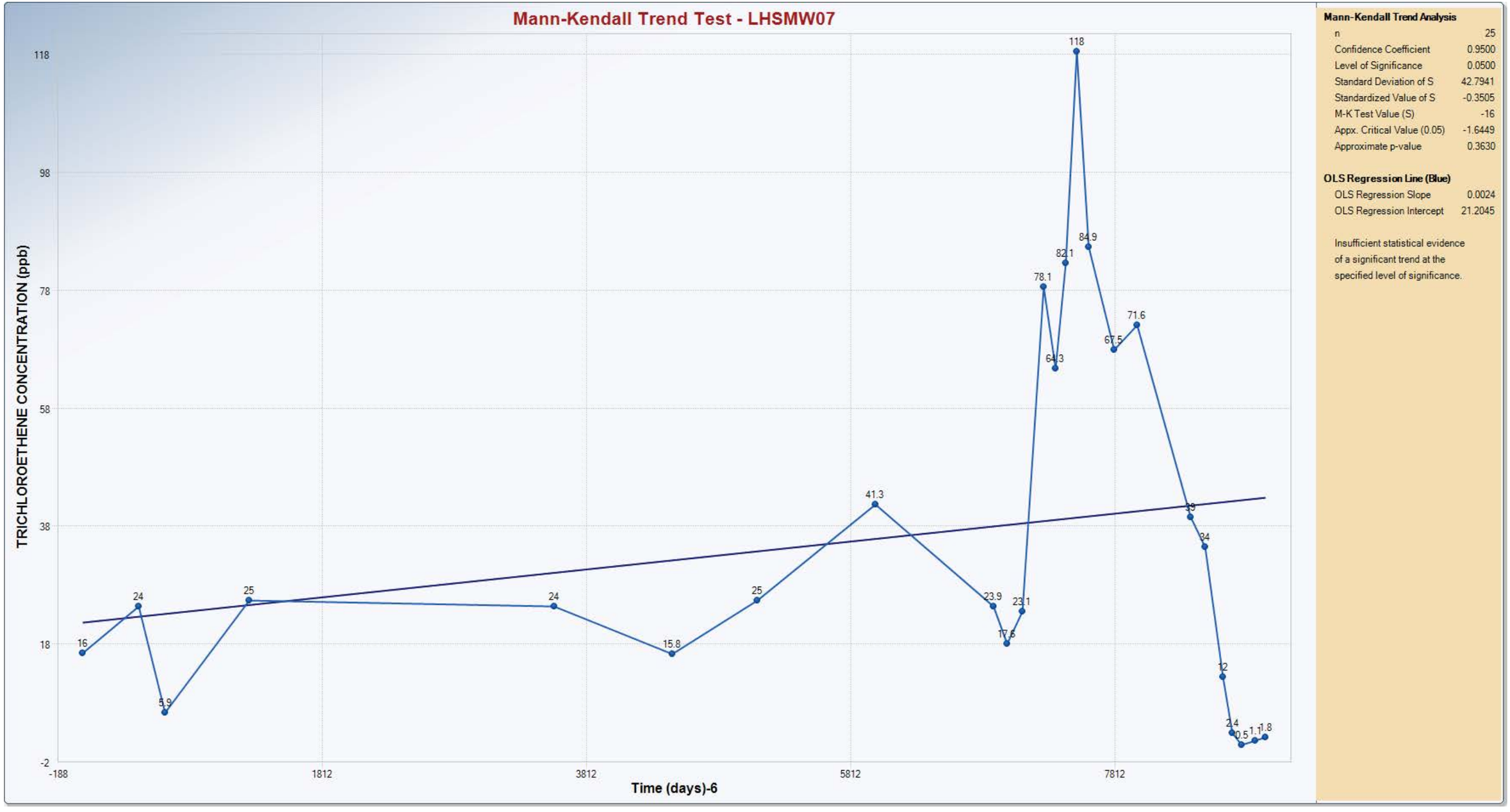
OLS Regression Slope	0.0002
OLS Regression Intercept	-0.1361

Statistically significant evidence of an increasing trend at the specified level of significance.

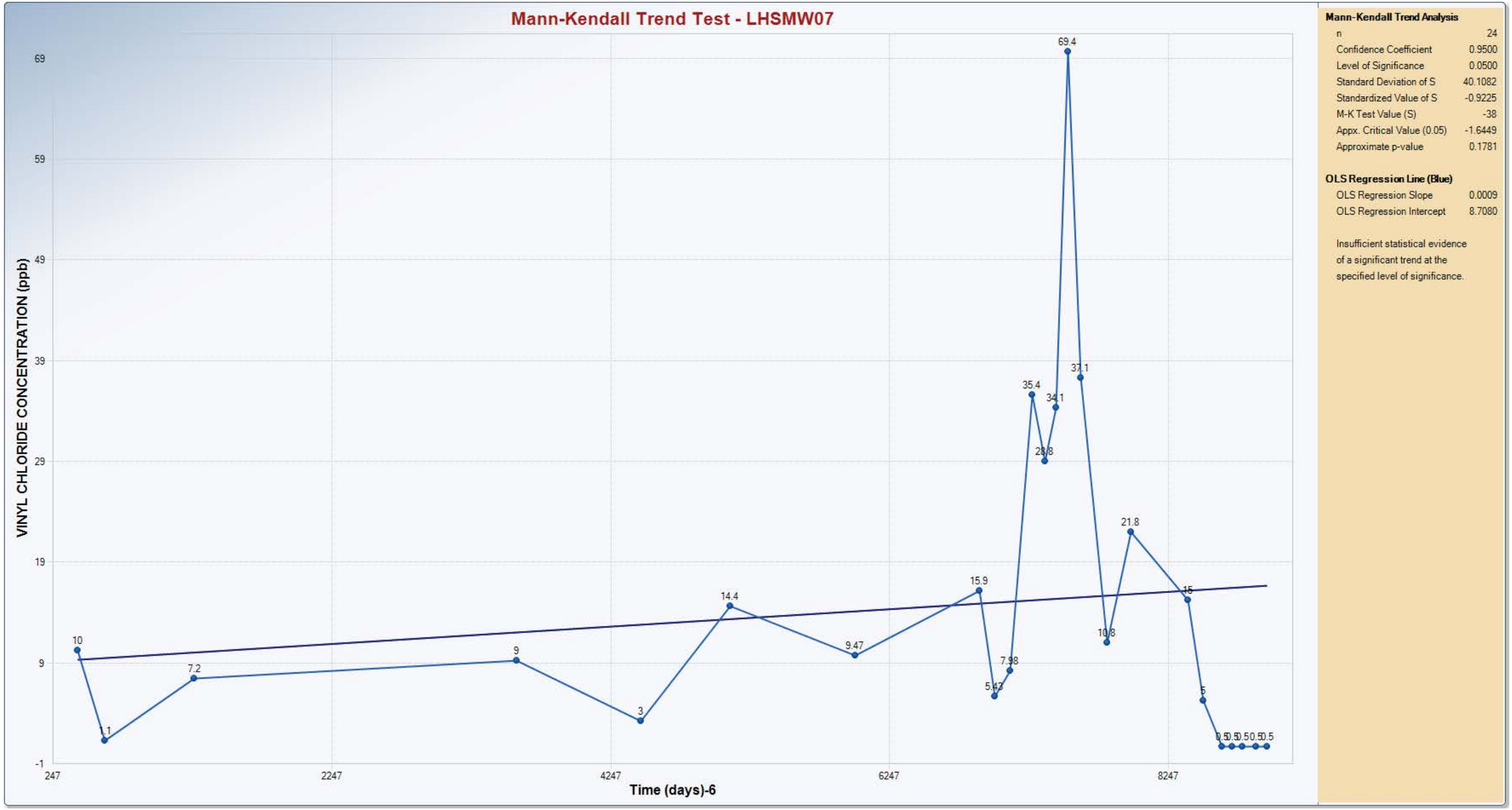
bhate


Mann-Kendall Trend Test - LHSMW06
1,1-DICHLOROETHENE CONCENTRATION (ppb)
Time (days)-6
0
3
6
9
12
15
18
446
2446
4446
6446
8446
2
1.3
1.23
0.894
1.68
4.03
3.28
5.95
8.2
12.1
13.7
19.2
12
19
2.3
2.2
Mann-Kendall Trend Analysis
n 16
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 22.2111
Standardized Value of S 2.6563
M-K Test Value (S) 60
Tabulated p-value 0.0030
Approximate p-value 0.0039
OLS Regression Line (Blue)
OLS Regression Slope 0.0011
OLS Regression Intercept -0.6039
Statistically significant evidence of an increasing trend at the specified level of significance.

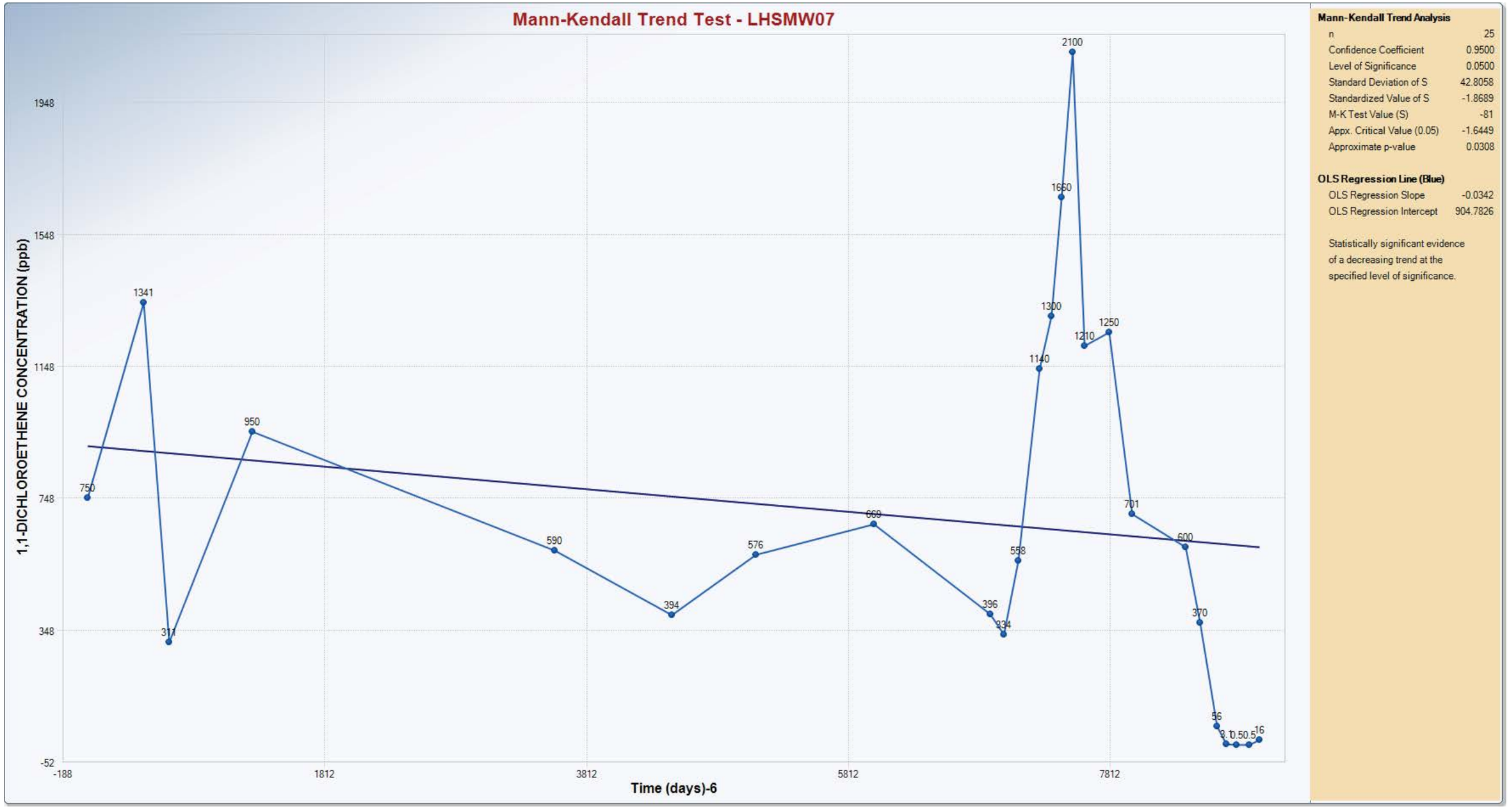
bhate


Mann-Kendall Trend Test - LHSMW07
TRICHLOROETHENE CONCENTRATION (ppb)
118
98
78
58
38
18
-2
-188
1812
3812
5812
7812
Time (days)-6
118
84.9
82.1
78.1
71.6
67.5
64.3
41.3
39
34
25
25
24
24
23.9
23.1
17.6
16
15.8
12
5.9
2.4
1.8
1.1
0.5
Mann-Kendall Trend Analysis
n 25
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 42.7941
Standardized Value of S -0.3505
M-K Test Value (S) -16
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.3630
OLS Regression Line (Blue)
OLS Regression Slope 0.0024
OLS Regression Intercept 21.2045
Insufficient statistical evidence of a significant trend at the specified level of significance.

bhate


Mann-Kendall Trend Test - LHSMW07
VINYL CHLORIDE CONCENTRATION (ppb)
69
59
49
39
29
19
9
-1
247
2247
4247
6247
8247
Time (days)-6
10
1.1
7.2
9
3
14.4
9.47
15.9
5.42
7.98
35.4
28.8
34.1
69.4
37.1
10.8
21.8
15
5
0.5
0.5
0.5
0.5
0.5
Mann-Kendall Trend Analysis
n 24
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 40.1082
Standardized Value of S -0.9225
M-K Test Value (S) -38
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.1781
OLS Regression Line (Blue)
OLS Regression Slope 0.0009
OLS Regression Intercept 8.7080
Insufficient statistical evidence of a significant trend at the specified level of significance.

bhate


Mann-Kendall Trend Test - LHSMW07
1,1-DICHLOROETHENE CONCENTRATION (ppb)
1948
1548
1148
748
348
-52
-188
1812
3812
5812
7812
Time (days)-6
2100
1660
1341
1300
1250
1210
1140
950
750
701
669
600
590
576
558
394
396
370
334
311
56
16
Mann-Kendall Trend Analysis
n 25
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 42.8058
Standardized Value of S -1.8689
M-K Test Value (S) -81
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0308
OLS Regression Line (Blue)
OLS Regression Slope -0.0342
OLS Regression Intercept 904.7826
Statistically significant evidence of a decreasing trend at the specified level of significance.

bhate

APPENDIX G
REGRESSION ANALYSIS

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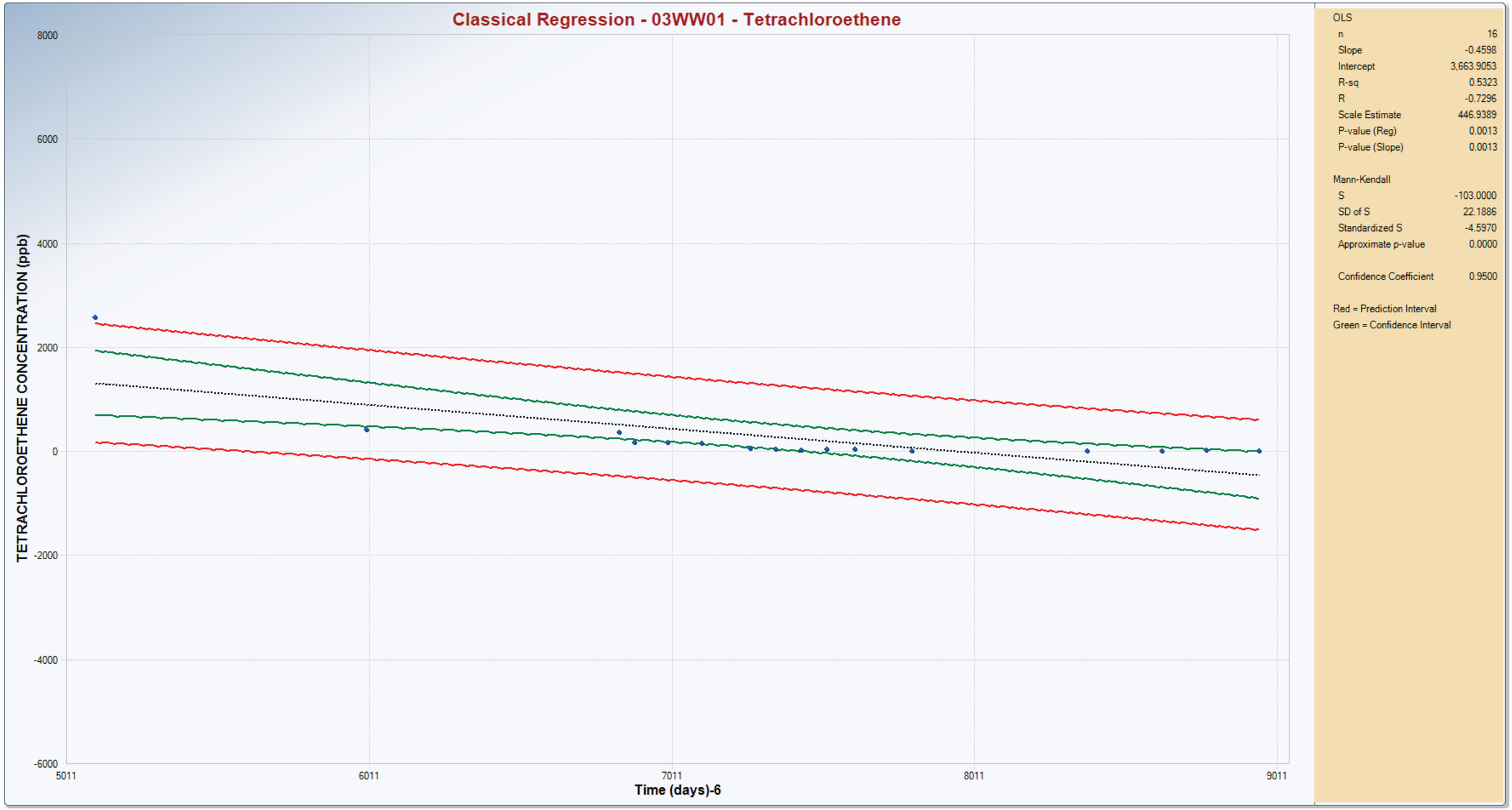
Classical Regression - 03WW01 - Tetrachloroethene
TETRACHLOROETHENE CONCENTRATION (ppb)
8000
6000
4000
2000
0
-2000
-4000
-6000
5011
6011
7011
8011
9011
Time (days)-6
OLS
n 16
Slope -0.4598
Intercept 3,663.9053
R-sq 0.5323
R -0.7296
Scale Estimate 446.9389
P-value (Reg) 0.0013
P-value (Slope) 0.0013
Mann-Kendall
S -103.0000
SD of S 22.1886
Standardized S -4.5970
Approximate p-value 0.0000
Confidence Coefficient 0.9500
Red = Prediction Interval
Green = Confidence Interval

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Classical Regression - 35AWW08 - Tetrachloroethene
TETRACHLOROETHENE CONCENTRATION (ppb)
4000
3000
2000
1000
0
-1000
-2000
-3000
6784
7784
8784
9004
Time (days)-6
OLS
n 15
Slope -0.3779
Intercept 3,158.8091
R-sq 0.3735
R -0.6111
Scale Estimate 353.9714
P-value (Reg) 0.0155
P-value (Slope) 0.0155
Mann-Kendall
S -96.0000
SD of S 20.1825
Standardized S -4.7070
Approximate p-value 0.0000
Confidence Coefficient 0.9500
Red = Prediction Interval
Green = Confidence Interval

bhate

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

December 26, 2019

DAIM-ODB-LO

Mr. Rich Mayer
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Draft Final Remedial Design/Remedial Action Work Plan, Contingency Remedy, LHAAP-50 Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, December 2019

Dear Mr. Mayer,

One hard copy and one compact disc (CD) of the above-referenced document are being transmitted to you for your records. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on November 27, 2019, and Texas Commission on Environmental Quality's (TCEQ) comments received on November 25, 2019. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Response to comments on the Draft version of the document are included with this Draft Final.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (1 hard copy and 1 CD)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)
R. Smith, USACE, Tulsa District, OK (Electronic only)
A. Williams, USACE, Tulsa District, OK (1 CD)

N. Smith, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 CD)
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

December 26, 2019

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg. D
Austin, TX 78753

Re: Draft Final Remedial Design/Remedial Action Work Plan, Contingency Remedy, LHAAP-50 Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, December 2019

Dear Ms. Palmie,

One hard copy and one compact disc (CD) of the above-referenced document are being transmitted to you for your records. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on November 27, 2019, and Texas Commission on Environmental Quality's (TCEQ) comments received on November 25, 2019. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Response to comments on the Draft version of the document are included with this Draft Final.

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P. Srivastav, APTIM, Houston, TX

Response to Comments on
Draft Remedial Design / Remedial Action Work Plan
LHAAP-50 Former Sump Water Tank,
Longhorn Army Ammunition Plant, Karnack, Texas

Document Date: 31 October 2019
Comment Date: 25 November 2019

Reviewer: April Palmie, TCEQ
Respondent: Dr. Rose Zeiler

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X)
2. Commenter Agrees (A) with response, or Does Not Agree (D) with response

Comment Ref. #	Section, Page Ref.	TCEQ Comment	C, D, E, or X	Response	A or D[2]
1.	2.2, 2-2	2nd paragraph has old language that should be removed or revised (regarding well already installed): Based on the regulatory comments received in the Final RAWP (AECOM 2013), an additional well is proposed for installation in Summer 2019 to evaluate how far plumes extend downgradient of 50WW12 as shown in Figure 2-1. Results from the new well will be used to refine the extent of the plumes in groundwater.	C	Text in Section 2.2, page 2-2 will be revised as follows: "Based on the regulatory comments received in the Final RAWP (AECOM 2013) and recommendations made in the 2018 Five Year Review (USACE 2019), an additional well, 50WW29, was installed in August 2019 to evaluate the extent of the plume downgradient of 50WW12 as shown in Figure 2-1."	

2.	4.2.2, 4-1	Notification - TCEQ needs 30-days for UIC coordination	C	Comment noted. UIC information will be provided to TCEQ 30 days prior to the commencement of field work.	
3.	Figure 2-1	Why does this figure show 50WW29 as a proposed well? Is this figure necessary?	C	Figure 2-1 will be revised to show 50WW29 as an installed well instead of “proposed well”.	

Response to Comments on
Draft Remedial Design / Remedial Action Work Plan
LHAAP-50 Former Sump Water Tank,
Longhorn Army Ammunition Plant, Karnack, Texas

Document Date: 31 October 2019
Comment Date: 27 November 2019

Reviewer: Mr. Richard Mayer, USEPA
Respondent: Dr. Rose Zeiler

Comment Ref. #	Section, Page Ref.	EPA Comment	C, D, E, or X	Response	A or D[2]
1.	2.1, 2-1, Last Paragraph	The Army's estimates of groundwater flow rates (.11 ft/year to .39 ft/year) are inconsistent with the field data. At Site 50, contaminants have travelled at least 375 feet from their source, an old AST, which was installed in 1955. The groundwater flow rate must be around six ft/yr. Did the Army use the correct groundwater flow rate formula? The correct groundwater flow rate formula is found in Appendix A.	C	Using a gradient of 0.00427 based on the May 2018 potentiometric surface, we recalculated the values using a hydraulic conductivity range of 5.5x10-5 cm/sec to 1.9x10-4 cm/sec and an estimated effective porosity of 0.35, which resulted in a range of flow rates from 0.73 to 2.19 ft per year. The flow rates estimated by the Army are based on calculations using the current hydraulic gradient information, hydraulic conductivity values from past testing, and estimated values for effective porosity. The calculation yields a snapshot of the current conditions, but is not reflective of past conditions. It is likely that there were other factors influencing the hydraulic gradient when the site was active that may have resulted in much higher flow rates.	

				The last sentence of Section 2.1 has been revised with the recalculated values to read as follows: "Using an estimated hydraulic gradient in May 2018 of 0.00427 feet per foot (ft/ft), the calculated groundwater flow velocity in the shallow zone ranges from 0.73 feet per year (ft/year) to 2.19 ft/year.	
2.	Table 2-2 & 3-2	Please provide the analytical method used for VOCs and perchlorate in the parameter/analysis row (plus other parameters without a method).	C	The analytical methods for VOCs and perchlorate are SW8260 and SW6850 respectively. Tables 2-2 and 3-2 will be revised to include the analytical methods.	
3.	Figure 2-1	The line from the 50WW12 results table to monitoring well 50WW12 extends past the well location.	C	Figure 2-1 will be revised to remove the line extending past the well location.	
4.	Table 3-1	The method for analyzing for perchlorate in groundwater should be 6850. Method 314.0 does not require filtering of the groundwater samples to remove microbes (which can biodegrade the perchlorate). Also, this method historically tends to have more false positive and negative analytical results. In addition, please include the analytical method for VOCs. EPA assumes method 8260 will be used.	C	Table 3-1 will be revised to include analytical method SW6850 used for perchlorate.	

5.	Table 4-1	Why are DPTs 07-12 stopping at 35 feet, instead of 60 feet, as is the case for DPTs 01-06? Please explain.	C	Upon review of extent of contamination and drill logs in the proposed treatment area, high perchlorate and/or TCE concentrations are known to exist in the upper and lower shallow zone in the vicinity of wells 50WW11, 50WW13 and 50WW14, and in the upper shallow zone in the vicinity of 50WW12. ISB is proposed in the known areas of contamination. DPTs 01 – 06 are proposed to treat both upper shallow and lower shallow zones because contamination is known to be present in both zones. At the upper shallow well 50WW13, perchlorate was detected at 640 µg/L in May 2018 and 130 µg/L in May 2019. At the lower shallow well 50WW14, TCE was detected 33 µg/L in 2018 although TCE or perchlorate were not detected in May 2019. At the upper shallow well 50WW11, perchlorate was detected at 1,000 µg/L in May 2018 and at 450 µg/L in May 2019. Since contamination exists in the upper shallow zone as of 2019, and existed in the lower shallow zone near 50WW14 as of 2018, it is proposed to treat both the upper and lower shallow zones in the vicinity of 50WW11, 50WW13 and 50WW14. Injections conducted in the lower shallow zone in this area will also help remediate lower levels of perchlorate and TCE observed in the downgradient lower shallow zone well 50WW06.	

				At the upper shallow well 50WW12, perchlorate was detected at 91,000 µg/L in May 2018 and at 65,000 µg/L in May 2019. ISB treatment is proposed in the upper shallow zone in the vicinity of 50WW12 where contamination is known to exist.	
6.	Page 4-5	There should be a statement indicating that Goose Prairie Creek will be inspected periodically during the day to ensure daylighting from the injections are not occurring in the creek.	C	Following text will be added to the paragraph: "Goose Prairie Creek will be monitored during and after injections for decrease in DO and visual changes in water color along the creek. Additional monitoring and visual observations will be conducted to determine if any decrease in DO is from injection materials or changes in environmental conditions."	
7.	Figure 1-5, Figure 2-1 and Figure 3-1	Please locate the intermediate well on these figures	C	Figure 1-5, Figure 2-1 and Figure 3-1 will be revised to include intermediate wells.	
8.	General Comment	What are the last monitoring results for monitoring 50WW02?	C	The last sampling event for monitoring well 50WW02 was 4/3/2009. Perchlorate was detected at 110 ppb, TCE at 8,050 ppb, cis-1,2-DCE at 978 ppb and 1,2-DCA at 18 ppb in May 2009.	
9.	General Comment	Although this comment does not directly apply to this document, as a reminder for the future, there will be a need for a lower shallow	C	Comment noted.	

		monitoring well near upper shallow monitoring well 50WW12 (91,000 ug/L). Currently, lower shallow monitoring well 50WW09, which is near the source, contains no perchlorate. However, another lower shallow monitoring well, 50WW06, approximately 200 feet farther from the source contains perchlorate at 220 ug/l (2018). Thus, the fact that perchlorate is not present near the source in the lower shallow zone does not mean that it is not present farther from the source in the lower shallow zone. Also, there may be a need for an additional intermediate well in the future. If you look at the current plume shape/geometry, the only intermediate well is located near the source at the very western edge. The plume extends northeasterly for approximately 375 feet. The most contaminated well for perchlorate is 50WW12 and it is the most eastern well within the plume. So according to future groundwater results (if a lower shallow well is installed), an intermediate well may be needed.			

Draft Final
Remedial Design/Remedial Action Work Plan, Contingency Remedy, LHAAP-50 Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for
U.S. Army Corps of Engineers, Tulsa District
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Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
December 2019

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Acronyms and Abbreviations

µg/L	micrograms per liter
AECOM	AECOM Technical Services, Inc.
APTIM	Aptim Federal Services, LLC
AST	aboveground storage tank
bgs	below ground surface
Bhate	Bhate Environmental, Inc.
cm/s	centimeters per second
COC	chemical of concern
DAP	diammonium phosphate
DO	dissolved oxygen
DPT	direct-push technology
EDS–ER™	electron donor solution–extended release
ESD	explanation of significant differences
EVO	emulsified vegetable oil
ft/ft	feet per foot
ft/year	feet per year
GPS	global positioning system
ISB	in-situ bioremediation
IWWP	Installation-Wide Work Plan
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUC(s)	land use control(s)
MATOC	Multiple Award Task Order Contract
MCL	maximum contaminant level
MNA	monitored natural attenuation
ORP	oxidation-reduction potential
PCL	protective concentration level
psi	pounds per square inch
RACR	Response Action Completion Report
RAO	remedial action objectives
RA-O	remedial action operation
RAWP	Remedial Action Work Plan
RD	Remedial Design

Acronyms and Abbreviations *(continued)*

ROD	Record of Decision
ROI	radius of influence
SDC-9™	APTIM's dechlorinating culture
Shaw	Shaw Environmental & Infrastructure, Inc.
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TO	Task Order
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted Bhate Environmental, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract (MATOC), Environmental Remediation Services with Military Munitions Response Program, Task Order (TO) Number (No.) W9128BV17F0150, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP). The Bhate Team is comprised of Bhate and Aptim Federal Services, LLC (APTIM). LHAAP is a closed government owned, formerly contractor operated and maintained, Department of Defense facility located central east Texas (**Figure 1-1**).

A *Final Record of Decision* (ROD) was executed for LHAAP-50 in September 2010 (USACE 2010). Groundwater monitoring at LHAAP-50 is ongoing as described in the *Final Remedial Action Completion Report* (AECOM 2016). The Remedial Action Work Plan (RAWP) for the entire site was prepared in June 2013 in accordance with the ROD and implemented in July 2013. The monitored natural attenuation (MNA) remedy for the comingled trichloroethene (TCE) and perchlorate plume at this site, as presented in the ROD calls for an evaluation of the remedy after two years of MNA remedial action operation (RA-O) and implementation. The ROD also states that the long-term monitoring (LTM) associated with this remedy will be used to track the continued effectiveness of MNA and will continue once every five years until cleanup levels are achieved. The ROD also provides for the implementation of a contingency remedy to enhance MNA if MNA is found to be ineffective. The *Draft Final Third Annual Remedial Action Operation Report* (Bhate 2018a) concluded that MNA is ineffective and implementation of a contingency remedy would be appropriate. A *Draft Explanation of Significant Differences* (Bhate 2019) was submitted to the U.S. Environmental Protection Agency (USEPA) and the Texas Commission on Environmental Quality (TCEQ) in April 2019 for changes to the ROD to implement the contingency remedy consisting of in-situ bioremediation (ISB). Therefore, this RAWP for the contingency remedy addresses ISB implementation for the groundwater plume at this site, based on the Remedial Design (RD) for the LHAAP-50 site, which was approved by regulatory agencies in September 2011 (Shaw 2011).

1.1 Organization of Work Plan

This work plan is composed of the following sections:

- **Section 1.0:** "Introduction" summarizes the site background, proposed remedy including the chemicals of concern (COCs) and their respective cleanup levels, the nature and extent of contamination and remedial action objectives (RAOs).
- **Section 2.0:** "Site Characteristics" summarizes the hydrogeology of the site, as well as the nature and extent of contamination and the proposed contingency remedy.
- **Section 3.0:** "Land Use Control Remedial Design/Plan" references the Final RAWP for LHAAP-50 (AECOM 2013) wherein the Land Use Control Plan is presented.
- **Section 4.0:** "In Situ Bioremediation Work Plan" describes the injection activities and methodologies to be implemented for the ISB component of the remedy.
- **Section 5.0:** "Post-Remedial Monitoring and Reporting" describes the remedial performance monitoring and reporting that will be performed after ISB injections.
- **Section 6.0:** "Schedule" describes the proposed implementation schedule for the remedial action activities.
- **Section 7.0:** "References" provides a list of references cited in the document.

This work plan also includes the following appendices supporting the main text:

- **Appendix A** includes the calculation sheets and proposed injection volume worksheets for the ISB component of the remedy.
- **Appendix B** includes the safety data sheets for the proposed injection amendments, Electron Donor Solution–Extended Release (EDS–ER™) and APTIM's dechlorinating culture, SDC-9™.
- **Appendix C** includes a blank injection log that will be used in the field to track injection volumes, flow rates and pressures.

1.2 Site Description

LHAAP-50 (former sump water tank) is in the north-central portion of LHAAP and covers an area of approximately 1 acre (**Figure 1-2**). The site is an open area of grass and brush that is bounded by South Crocket Avenue to the northeast, a drainage ditch to the west, a railroad spur to the south, and Goose Prairie Creek to the north. Runoff from the northeastern portion of the site is generally toward the northeast. Runoff is collected by a drainage ditch to the northeast that runs parallel to South Crockett Avenue and eventually joins Goose Prairie Creek. Runoff from the southwestern portion of the site is collected to the west by a drainage ditch

that carries the runoff north into Goose Prairie Creek. Goose Prairie Creek eventually empties into Caddo Lake.

When operational, LHAAP-50 contained a 47,000-gallon capacity aboveground storage tank (AST) which received industrial wastewater from various industrial waste production sumps throughout LHAAP between 1955 and 1988. After the solids were filtered, the storage tank contents were discharged into Goose Prairie Creek upstream of the Goose Prairie Creek bridge on South Crockett Avenue, south of 51st Street. The flow in the creek was sufficient to dilute the water to safe levels (Jacobs 2002). If natural flow in the creek was considered insufficient, clean water was reportedly pumped into the creek to dilute the contents. The AST is no longer present.

The land use control (LUC) area associated with the groundwater use restriction at LHAAP-50 extends beyond the northern, southern, eastern, and western historical site boundaries and encompasses a total of approximately 77.19 acres (see **Figure 1-3**). The nearest significant surface water body to LHAAP-50 is Goose Prairie Creek, located approximately 80 feet north of the site, which eventually flows into Caddo Lake. LHAAP-50 has no known areas of archaeological or historical importance.

1.2.1 Contingency Remedy

The description of the proposed groundwater remedy at LHAAP-50 in Section 2.9.1 of the ROD was Excavation, MNA and LUC (USACE 2010). The ROD stated that a contingency remedy to enhance MNA would be implemented to reach the RAOs if MNA was found to be ineffective and would be documented in the Explanation of Significant Difference (ESD).

Soil excavation of perchlorate contaminated soil was conducted in July 2013 followed by MNA of the commingled plume in groundwater. The most recent potentiometric surface information for the site (May 2018) is shown on **Figure 1-4** and **Figure 1-5** presents the analytical results from the monitoring wells during the May 2018 RA-O sampling event (Bhate 2018b). As discussed in the ROD (USACE 2010) and Fourth Annual RA-O Report (Bhate 2018b), the COCs at LHAAP-50 include dissolved phase perchlorate and volatile organic compounds (VOCs), tetrachloroethene, TCE, 1,1-dichloroethene, 1,2-dichloroethane, cis-1,2-dichloroethene and vinyl chloride in groundwater, and perchlorate in soil. The groundwater cleanup levels for LHAAP-50 are presented on **Table 1-1**.

Overall, the TCE and perchlorate plumes in groundwater appear to be relatively stable. At monitoring wells 50WW05, 50WW08, and 50WW14, significant decreasing trends were observed over four years, indicating that natural attenuation is occurring. However, an increasing trend was observed at monitoring well 50WW12 and no trends were observed at monitoring wells 50WW09, 50WW11, and 50WW13. The highest perchlorate concentration

in May 2018 was detected at 50WW12 at 91,000 micrograms per liter (µg/L) while the highest TCE concentration in May 2018 was detected at 50WW13 at 620 µg/L (Bhate 2018b). Therefore, the proposed ISB contingency remedy will include ISB in areas of historical hotspots in the vicinity of wells 50WW12, 50WW11, and 50WW13.

The remedy at LHAAP-50 is intended to protect human health and the environment by preventing human exposure to the contaminated groundwater and preventing contaminated groundwater from migrating into nearby surface water. The final remedy will consist of LUC (already implemented), ISB, MNA, and LTM/Five Year Reviews.

The specific remedy components are discussed below:

- LUCs have been implemented for the impacted area as described in the Response Action Completion Report (RACR) (AECOM 2016) to ensure the protection of human health by restricting the use of groundwater. The LUC will remain in place until the cleanup levels are met.
- ISB will be implemented in the area where the highest concentrations are observed in the upper and lower shallow groundwater in the vicinity of wells 50WW11 and 50WW13, and in the shallow groundwater in the vicinity of well 50WW12. ISB is the process of removing contaminant mass by enhancing microbial populations that will utilize the contaminants in groundwater during respiratory or metabolic activities. The treatment involves injecting amendments which may include microbial cultures, electron donor sources, and nutrients into the subsurface.
- MNA constitutes a passive treatment where the contaminant concentrations decrease through natural attenuation processes such as biodegradation, dispersion, dilution, sorption, and volatilization (USEPA 1998).
- Data from performance monitoring is used to evaluate whether natural attenuation is occurring and reducing COCs. MNA will be implemented to verify that the TCE and perchlorate plumes are stable and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health and the environment. MNA will return groundwater to its potential beneficial use, wherever practicable, after successful implementation of the ISB. MNA will be evaluated annually, with groundwater monitoring performed on a quarterly basis for the first two years after implementation of ISB as described in **Section 5.1.2**.
- LTM: LTM will be conducted annually until the next Five Year Review. However, LTM will continue at least once in five years until cleanup levels are achieved. A cleanup time has not been estimated and will be evaluated following the implementation of ISB.

1.2.2 Remedial Action Objectives

The RAOs for LHAAP-50, consistent with the reasonably anticipated future use as a national wildlife refuge, are:

- Protection of human health by preventing human exposure to the contaminated groundwater
- Protection of human health and environment by preventing contaminated groundwater from migrating into nearby surface water
- Protection of human health by preventing further potential degradation of groundwater and surface water from contaminated soil
- Return of groundwater to its potential beneficial uses as drinking water, wherever practicable

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2.0 SITE CHARACTERISTICS

2.1 Site Hydrogeology

The shallow unconfined aquifer extends from the ground surface to 60 feet below ground surface (bgs) across the site. While intermittent clay layers are present, no true aquiclude exists to prevent vertical communication between ground surface and approximately 60 feet bgs. Because the shallow zone is approximately 60 feet in thickness, the potential for differences in nature and extent of contaminant impacts between upper and lower portions of the shallow zone was recognized. To evaluate this concept, 27 new wells were installed in configurations to separately monitor the upper portion of the shallow zone (18 wells) and the lower portion of the shallow zone (six wells). Additionally, three fully penetrating wells (50WW17, 50WW19, and 50WW20) were installed with screened intervals across the entire saturated shallow zone (Bhate 2018b). Monitoring well locations are shown on **Figure 1-3**. Well Construction information is included in **Table 2-1**.

The 'upper shallow' zone refers to the zone from ground surface to 30 feet bgs, the 'lower shallow' zone refers to the zone from 30 to 60 feet bgs, the intermediate zone is the zone greater than 100 feet bgs. The intermediate water bearing zone underlies the shallow zone at approximately 100 feet bgs (Bhate 2018b).

Hydraulic conductivities in the shallow zone wells varied from 5.5×10^{-5} to 1.9×10^{-4} centimeters per second (cm/s) (Jacobs 2002) and groundwater flow in the shallow and intermediate zones is generally to the east and northeast. Using an estimated hydraulic gradient in May 2018 of 0.00427 feet per foot (ft/ft), the calculated groundwater flow velocity in the shallow zone ranges from 0.73 feet per year (ft/year) to 2.19 ft/year.

2.2 Nature and Extent of Contamination

The nature and extent of contamination a LHAAP-50 was evaluated during field investigations conducted between 1992 and 2010. The AST was the most likely source of contaminants released into the environment. Since the AST has been removed, there is no longer a potential release mechanism for leaks or spills. Perchlorate and VOCs were released via overland spills, and discharges to the soil and adjacent surface water.

The area of perchlorate contamination in soil was small and the concentration of perchlorate did not pose an unacceptable risk to human health or ecological receptors. The perchlorate in soil is no longer present after removal and offsite disposal of approximately 183 cubic yards of perchlorate contaminated soil in September 2013 as described in the Final RACR (AECOM 2016). An area of groundwater contamination is present in the shallow groundwater (upper and lower zones) which poses an unacceptable carcinogenic risk and non-carcinogenic

hazard. There is no groundwater contamination in the intermediate zone. The potential exposure pathways are via use of groundwater as drinking water and migration of impacted groundwater into surface water. Shallow groundwater is not used as drinking water at the refuge and this potential exposure pathway is eliminated from any hypothetical receptor because LUCs are in place that prohibit the use of groundwater, other than environmental monitoring and testing. The nearest significant surface water body to LHAAP-50 is Goose Prairie Creek, approximately 80 feet to the north of the site.

Figure 1-5 presents the estimated VOC and perchlorate plumes as of May 2018. The TCE plume is slightly larger than the perchlorate plume. The TCE and perchlorate plume start in the vicinity of 50WW09 and extend to downgradient well 50WW12 (Bhate 2018b). Based on the regulatory comments received in the Final RAWP (AECOM 2013) and recommendation made in the 2018 Five Year Review (USACE 2019), an additional well, 50WW29, was installed in August 2019 to evaluate the extent of the plume downgradient of 50WW12 as shown in **Figure 2-1**. Results from the new well will be used to refine the extent of the plumes in groundwater.

2.3 Monitoring Well Installation and Sampling

Based on recommendations made in the 2018 Five Year Review (USACE 2019), a new monitoring well, 50WW29, was installed to the northeast of 50WW12 in August 2019 in the upper shallow zone with the same screened interval as monitoring well 50WW12 from 20 to 35 feet bgs. The monitoring well was installed in accordance with the Installation Wide Work Plan (Bhate 2018c) and was developed and sampled following the installation. The COCs were detected at concentrations below the maximum contaminant level/protective concentration level (MCL/PCL). Groundwater sampling results for 50WW29 are included in **Table 2-2**. The boring log and Well Construction information are included in **Appendix A**.

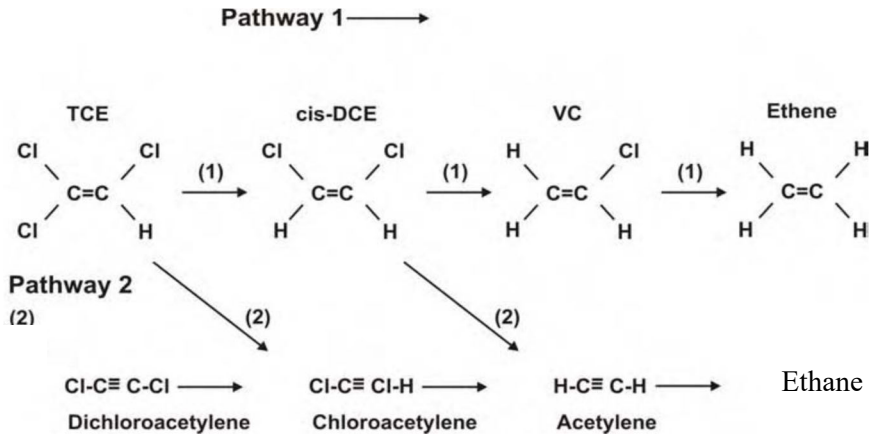
3.0 IN-SITU BIOREMEDIATION REMEDIAL DESIGN

In general, implementation of ISB will include injection of an electron donor/substrate, microbial culture and nutrients in the subsurface. The indigenous microorganisms will grow and multiply using injected substrate as a carbon and energy source, thereby degrading perchlorate. The schematic showing the degradation pathway for perchlorate and chlorinated VOCs is provided below:

Perchlorate Degradation Pathway

ClO_4^- (Perchlorate) $\longrightarrow$ ClO_3^- (Chlorate) $\longrightarrow$ ClO_2^- (Chlorite) $\longrightarrow$ $Cl^- + O_2$ (Chloride + Oxygen)

Biotic and Abiotic Degradation Pathways – Chlorinated VOCs



ISB will be implemented at LHAAP-50 to remediate groundwater impacted with high levels of perchlorate and VOCs, where MNA has proven to be ineffective. The 2018 data discussed in **Section 1.2.1** indicates an increasing trend at monitoring well 50WW12 and no trends at monitoring wells.50WW09, 50WW11, and 50WW13 (Bhate 2018b). The highest perchlorate concentration in May 2018 was detected at 50WW12 at 91,000 µg/L while the highest TCE concentration in May 2018 was detected at 50WW13 at 620 µg/L. Therefore, the proposed ISB contingency remedy will include ISB in areas of historical hotspots in the vicinity of wells 50WW12, 50WW11, and 50WW13. The ISB system has been designed and implemented to remediate perchlorate and VOCs in the groundwater down to the MCL/PCL using emulsified vegetable oil (EVO), microbial culture (SDC-9™) and nutrients. The EVO and nutrients will be mixed with water and injected using temporary direct-push technology (DPT) injection points within the plume area. The specific basis for the various design parameters selected is described in the following sections. Field implementation procedures for the ISB remedy are

described in **Section 5.0**. ISB calculation sheets used to develop the design parameters described below are provided in **Appendix A**.

3.1 Substrate Injection Strategies

The ISB substrate will be injected at 12 temporary DPT locations spaced approximately 20 to 25 feet apart as shown on **Figure 3-1**. A DPT injection system will be used to inject substrate over an interval coinciding with the saturated water bearing interval at each proposed injection point. The treatment interval depth will vary depending on the lithologic information from the wells and borings nearest to each injection location.

Several direct push injection points may be manifolded for simultaneous injection to maximize delivery efficiency. The substrate will normally be injected at relatively low pressures (generally less than 40 pounds per square inch [psi]) to avoid development of preferential flow pathways within the formation and/or surfacing of injection fluids, although higher pressures may be needed in tight formations. The injection pressure at each injection location will be dictated by the formation back pressure on the pumping system but will be controlled by use of pressure relief valves.

The substrate solution will be injected using a top down or bottom up approach at each proposed injection point depending on the lithology and field conditions. Amendments will be pumped down through the DPT drill rod to the injection interval and amendment will be forced through the stainless steel screen into the surrounding formation. The tools will then be moved to the next injection depth and the amendment will again be pumped through the rods. This cycle will be repeated to provide coverage across the entire vertical treatment interval.

If the amendment delivery is not successful at a selected depth interval, the remaining volume may be injected into the same injection point at a different depth interval or into an adjacent injection point at the same or different depth interval.

3.2 Radius of Influence and Injection Point Spacing

The low hydraulic conductivity of the shallow groundwater zone suggests that the radius of influence (ROI) for each DPT injection location will be low. Based on our experience at other locations on LHAAP and knowledge of the hydrogeologic conditions described in **Section 2.1.1**, the ROI used to calculate the number of points needed was 10 feet, and the DPT injection point spacing will be 20 to 25 feet.

3.3 Substrate Selection

EVO was selected as the substrate for ISB because of the relative ease of injection and the long lifespan of the substrate. The specific formulation of EVO used to develop the injection

volumes for this project is EDS–ER™ available from Tersus Environmental (**Appendix B**). EDS–ER™ is a water-mixable oil formulated with 100% EVO content (no water in the emulsion). EDS–ER™ is a food-grade carbon and is made from renewable crop-based oils. The use of EDS–ER™ or equivalent is expected to be cost-effective since it would eliminate the need for continuous or more frequent injection of substrate into the subsurface.

EDS–ER™ is provided by the vendor as water-mixable oil that contains no water as shipped; therefore, it will be mixed with water in the field. Use of EDS–ER™ or an equivalent volume of a similar product will reduce the cost and environmental footprint associated with transportation of higher volumes of more dilute substrate to the site. The product mixes easily with water and does not require high energy mixers. It formulates a completely miscible product when mixed with water (it does not create emulsions or particles in water), thus preventing clogging effects when injected in groundwater. A mixing tank will be used to mix the product with water. The product will be added to the tank in the volume desired, followed by pumping clean potable water into the tank to produce the mixture with the design concentration for injection. No mixers will be required due to the nature of the EDS–ER™ oil. The manufacturer's product information sheet is provided in **Appendix B**.

Bioaugmentation will be conducted by injecting SDC-9™. Nutrients in the form of diammonium phosphate (DAP) will provide essential levels of nitrogen and phosphate required for microbial activity. The nutrients will be added to each mixed batch following addition of the mix water, prior to injection. Additionally, a buffer, sodium bicarbonate will also be added to the mixture in order to maintain neutral pH levels in the aquifer. A buffer capacity test was conducted to determine the appropriate quantity of buffer to be added to the treatment area. The test was conducted using soil and groundwater samples collected during the installation of monitoring well 50WW29 (**Section 2.1.3**). Results of the buffer capacity test were used to determine the quantity of buffer and added to **Table 4-1**.

3.4 Substrate Loading and Injection

The mass of EVO required for the shallow treatment zone shown on **Figure 3-1** was estimated based on comparison of: 1) the stoichiometric demand exerted by the native (e.g., dissolved oxygen [DO], nitrate, and sulfate) and anthropogenic electron acceptors, and 2) the quantity of EVO necessary to treat the entire treatment zone when accounting for adsorption to the aquifer material. These calculations were performed using the EOS® Remediation Source Area and dense non-aqueous phase liquid Design Worksheet version 2.1f dated June 18, 2008. **Appendix A** provides the input and output calculations spreadsheets. The higher of the two values is used for the planned injection quantities.

The aquifer treatment demand in the vicinity of 50WW12 based on EOS's 60% carbon product is 2,606 pounds (**Appendix A**). That is equivalent to 1,564 pounds of 100% carbon EDS-ER™.

The gallons concentrated solution of EDS–ER™ will be diluted by mixing 51 gallons of EDS-ER™, 5 liters of SDC-9™ and 143 pounds of nutrients with approximately 2,304 gallons of water to achieve the desired treatment volume for each injection point as shown on the treatment area calculation sheet in **Appendix A**. Approximately 9,420 gallons of dilute EDS-ER™ mixture will be injected into 6 injection points in the vicinity of 50WW12 shown on **Figure 3-1**. The exact quantity of buffer (sodium bicarbonate) will be based on results of the buffer capacity test.

The aquifer treatment demand in the vicinity of 50WW13 based on EOS's 60% carbon product is 8,465 pounds (**Appendix A**). That is equivalent to 5,079 pounds of 100% carbon EDS-ER™. The gallons concentrated solution of EDS-ER™ will be diluted by mixing 110 gallons of EDS-ER™, 12 liters of SDC-9™ and 308 pounds of nutrients with approximately 4,990 gallons of water to achieve the desired treatment volume for each injection point as shown on the treatment area calculation sheet in **Appendix A**. Approximately 30,618 gallons of dilute EDS–ER™ mixture will be injected into 6 injection points in the vicinity of 50WW13 shown on **Figure 3-1**. The exact quantity of buffer (sodium bicarbonate) will be based on results of the buffer capacity test.

3.5 Bioaugmentation Culture Loading

Bioaugmentation will involve adding SDC-9™ to the amendment solution containing EDS-ER™. The EDS–ER™ will provide sufficient "food source" as the dechlorinating culture (SDC-9™) enters the subsurface environment.

An additional nutrient (DAP) and buffer (sodium bicarbonate) will be added to maintain a neutral pH in the injection area which is essential for the dechlorinating culture to thrive.

3.6 Performance Monitoring

Performance monitoring at eight locations will be used to evaluate the effectiveness of the ISB treatment. Following the injection event, groundwater will be monitored quarterly for two years.

3.6.1 Baseline Groundwater Monitoring

A separate baseline sampling event will not be conducted prior to implementing the contingency remedy. Sampling results from the November 2019 RA-O event will be used as baseline data. The RA-O samples will be analyzed for perchlorate, VOCs, total organic carbon, dissolved gases (ethene, ethane and methane), carbon dioxide, and ferrous iron (field only). Additionally, field parameters like DO, oxidation-reduction potential (ORP), specific conductance, temperature and pH will also be collected. The baseline sampling results will be

compared to sample results from post-ISB performance monitoring for remedy effectiveness evaluation.

3.6.2 In-Situ Bioremediation Performance Monitoring

Groundwater monitoring will be performed for eight quarterly events following implementation of ISB to demonstrate effectiveness of the ISB remedy. A total of eight wells will be included in the performance monitoring program. Wells included in the ISB performance monitoring program and analytical parameters are shown in **Table 3-1**. These wells were selected for their placement relative to the treatment area to monitor effectiveness of ISB. Other monitoring wells will continue to be sampled on an annual basis as part of the RA-O/LTM network included in **Table 3-2**.

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4.0 IN-SITU BIOREMEDIATION WORK PLAN

ISB will be conducted at LHAAP-50 to remediate groundwater impacted with perchlorate and VOCs. The plume geometry and proposed injections have been developed using the basis and details of the RD in **Section 3.0**. The specific formulation of EVO used to develop the RAWP is EDS–ER™ (**Appendix B**). If EDS–ER™ is not available at the time the injections are ready to proceed, equivalent EVO product will be used, and the volumes of EVO will be adjusted if the EVO content is less than the 100% in EDS–ER™. Details of the pre-mobilization, mobilization, injection, and demobilization field activities are provided in the following sections.

4.1 In-Situ Bioremediation Injection Plan

To treat the perchlorate and VOCs impacted groundwater in the shallow groundwater aquifer, a biogrid will be installed by injecting EDS–ER™ or an equivalent EVO product, SDC-9™, and nutrients, into 12 DPT points as shown in **Figure 3-1**. **Table 4-1** specifies the volume of amendment mixture to be injected and the proposed injection interval for each injection point.

4.2 Pre-Mobilization Activities

4.2.1 Permitting

No permitting is required prior to the commencement of field work.

4.2.2 Notification

TCEQ and USEPA will be notified two weeks in advance of commencement of fieldwork activities.

4.2.3 Utility Clearance

Utility location and clearance for intrusive activities will be conducted prior to drilling as follows:

The site health and safety officer will:

- Prepare a map indicating the area(s) where intrusive activity is planned to occur.
- Perform the necessary reviews.
- Contact the Texas Excavation Safety System, Inc. utility notification service by calling 811 or 800 892 0123 or using their online submittal system. This notification is to be made a minimum of three working days prior to the initiation of intrusive activity (excluding Saturdays, Sundays, and holidays), but not greater than 14 days.

- Verify that all underground installations have been located, physically marked, and then noted on the map. If needed, a third-party location service will be used.
- Mark all overhead utilities with kilovolts rating on the map. It is not anticipated that the existing overhead lines will impact the proposed injection location layout.
- Notify the appropriate agencies, contracting officer's representative, and property owners (when applicable).
- Confirm that utility clearance is complete and documented.

A safety meeting shall be held, and a job safety analysis shall be completed by all personnel who are involved in the intrusive activities prior to initiating work.

4.3 Site Activities

Once the premobilization activities are completed, the field crew, DPT crew, and injection equipment will mobilize to the site to perform the following activities.

4.3.1 Baseline Sampling

A separate baseline sampling event will not be conducted prior to implementing the contingency remedy. Sampling results from the RA-O event conducted in November 2019 will be used for baseline sampling. The baseline sampling results will be compared to sample results collected post ISB injections. The newly installed well 50WW29 was sampled in August 2019, and the results are included in **Table 2-2**. 50WW29 has been added to the ISB performance monitoring network in **Table 3-1** and to the LTM network as shown **Table 3-2**.

4.3.2 Injection Activities

1. Mobilize materials, equipment, mixing tanks, and labor for injections
2. Set up traffic signage and controls as needed
3. Layout injection locations and clear DPT injection points (**Section 4.3.6.1**)
4. Core concrete/asphalt at injection points, if needed, and adjust any points if obstructions are found and push rods to the desired injection interval (**Section 4.3.4**)
5. Setup amendment, equipment, and materials onsite
6. Begin preparing amendment solution for injection a day before planned injections. Preparation of amendment solution will be a continual activity (**Section 4.3.6.2**)
7. Record injection intervals and volumes during injections (**Appendix C**)

8. Once injection is complete at a DPT injection point, abandon point (**Section 4.3.4**)
9. Record DPT injection point locations with global positioning system (GPS)

4.3.3 Post-Injection Activities

After injections, the site will be restored as needed and the injection personnel and equipment will be demobilized. Groundwater sampling and reporting will be conducted as described in **Section 5.0**.

4.3.4 Direct-Push Technology Drilling

Drilling will utilize DPT rigs for in situ injections through a probe with a 4-foot injection screen interval. The injections will be performed in two areas in the vicinity of wells 50WW12 and 50WW11/50WW13 over a treatment thickness of 18-feet and 42-feet, respectively. Injections will be conducted using a top down or bottom up approach, depending on lithology and field conditions. The injection depth intervals will be adjusted to best treat the saturated zone identified in the nearest monitoring wells or soil boring where lithology was recorded (**Table 4-1**). A total of 12 points will be installed using a DPT rig in accordance with the procedures presented in the Installation-Wide Work Plan (IWWP) (Bhate 2018c). Each DPT point will be abandoned by filling with grout after injections are completed.

4.3.5 In-Situ Bioremediation Injection

Placement of DPT points is shown on **Figure 3-1**. **Table 4-1** provides the number of injection points, target depths, volumes of each amendment to be prepared, and target volumes to be injected. The calculations to determine the required volumes are based on the calculation sheets provided in **Appendix A**.

4.3.6 Preparation

4.3.6.1 Location Preparation

Prior to the ISB injection, the site will be cleared of aboveground hazards. A GPS device or linear measurements from monitoring wells and other site features will be used to locate each injection point. The locations will be reviewed to confirm that there are no injection points that will impact any underground or above ground utilities. Additionally, the locations will be reviewed to determine if concrete coring is needed at a location. If the concrete is too thick to core at a location, the location will be adjusted as needed. If there are points that are affected by utility locations, the plan will be altered to relocate those points to avoid the utility, while still meeting the injection objectives. The final DPT injection point locations will be recorded with the GPS. Prior to drilling with the DPT at each point, the location will be excavated with a hand auger or post-hole digger to 5 feet to check for underground obstructions/utilities unless the location has been cleared by other means and an exemption authorized.

4.3.6.2 Amendment Preparation

There are various EVO formulations commercially available in the market. EDS–ER™ or an equivalent product will be used for injections. The ISB amendments will be prepared in mixing tanks. The tanks will be located at LHAAP-50 adjacent to the injection area or at another convenient location. The amendment solution will be mixed prior to the day of injection. The potable water required for mixing will be obtained from water supply well near the fire station or from an off-base fire hydrant, and transported to the mixing tank in a water truck.

Steps required for preparation of ISB amendments are as follows:

- Approximately 24 hours prior to injection, the anaerobic solution will be prepared by adding the required volume of EVO, dilution water, and nutrients into the mixing tank. The same EVO amendment mixture is used for all injection locations. Microbes in the water will grow on a small amount of the carbon, and during respiration, they will use the available oxygen in the mixing tank, creating an anaerobic medium.
- When the solution has become anaerobic, based upon a DO meter reading of less than 1.0 milligrams per liter, SDC-9™ will be added and the amendments will be injected. The amendment solution will be injected into the subsurface using an injection system, as shown on **Figure 4-1**.
- The injection volume for each point at an injection area along with the associated mass and volume of amendment are provided in **Table 4-1** and are based on 100% EVO oil by weight.

4.3.7 In-Situ Injections

4.3.7.1 Injection System

An injection system will be used to allow for multiple DPT injections at a single time under low pressure (i.e., less than 40 psi). The injection system will include volume and pressure gauges, so amendment volume can be recorded for each injection location. The total volumes per well, injection pressures and gallon per minute will be tracked on paper and electronically using the Injection Log in **Appendix C**. The injection system will be connected to each DPT probe using hoses as shown in the schematic on **Figure 4-1**.

4.3.7.2 Monitoring During Injections

During the ISB injections, possible amendment surfacing (also called daylighting) may occur at the ground surface and will be monitored visually. Injection pressures will also be monitored since sudden reductions may be an indication of amendment loss into subsurface, possibly from fracturing induced by the injection or from a high-permeability zone. If daylighting on the surface is observed, injection rates will be reduced. If the reduction in pressure does not eliminate the daylighting, injections will be shut down and the remaining injection volume will

be divided among the nearest injection locations to ensure the full design volume is injected in the area. Goose Prairie Creek will be monitored during and after injections for decrease in DO and visual changes in water color along the creek. Additional monitoring and visual observations will be conducted to determine if any decrease in DO is from injection materials or changes in environmental conditions. If daylighting into a surface water feature is observed, the injection at that location will cease and necessary measures to capture the fluid released and to maintain the DO levels in the surface water will be implemented, if necessary. The remaining volume will be distributed to the other nearby injection locations.

4.3.8 Remediation Derived Waste Management

Remediation derived waste includes the following:

- Groundwater generated from purging of wells prior to sampling
- Decontamination fluids
- Disposable protective clothing and supplies

Wastewater generated from equipment decontamination, well development, groundwater sampling, or other investigative and remedial activities will be stored in 55-gallon drums and transported to the groundwater treatment plant at LHAAP-18/24 as specified in Section 3.8.2 of the IWWP (Bhate 2018c).

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5.0 POST-REMEDIAL MONITORING AND REPORTING

5.1 Groundwater Sampling

Groundwater sampling events will consist of:

- Baseline sampling: November 2019 RA-O event will be considered the baseline sampling event.
- Quarterly performance monitoring for two years used to evaluate the performance of the contingency remedy (**Table 3-1**).
- LTM to be conducted annually until the groundwater perchlorate and VOC concentrations are below the MCL/PCL or the regulators agree that a less frequent sampling schedule is more appropriate (**Table 3-2**).

5.1.1 Baseline Sampling

The RA-O sampling event conducted in November 2019 will be considered the baseline sampling event. The baseline sampling event will help establish baseline conditions against which the remedial performance will be evaluated.

5.1.2 Performance Monitoring Year 1 and Year 2

Wells included in **Table 3-1** will be used to monitor the performance of ISB injections as shown in **Figure 5-1**. The process of biodegradation results in depletion of DO and ORP. Performance monitoring will be conducted to evaluate change in geochemical conditions and perchlorate/VOCs concentrations. For the first two years post-injection, the ISB performance monitoring wells will be sampled quarterly, with results provided at the monthly manager's meetings and summarized more fully in the Annual RA-O reports described in **Section 5.3**.

5.1.3 Long-Term Monitoring

The annual LTM will continue for wells and analytical parameters shown in **Table 3-2**. The number of LTM wells and analytical parameters may be reduced based on the performance monitoring results and recommendations made in RA-O Reports. Monitoring will be discontinued with regulator concurrence after perchlorate/VOCs concentrations in the wells in the treatment area drop below the MCL/PCL. The need for any additional LTM will be discussed in the next Five-Year Review.

5.2 Response Action Completion Report Addendum

A RACR Addendum will be submitted upon implementation of the contingency remedy. ISB performance monitoring and LTM results will be included in Annual RA-O Reports.

5.3 Annual Remedial Action Operation Reports

RA-O Reports will continue to be submitted on an annual basis based on the current schedule. The RA-O report will include results from the RA-O/LTM and performance monitoring events. The reports will include an evaluation of the effectiveness of the contingency remedy for LHAAP-50. Wells within the plume areas will be evaluated for effectiveness of treatment and wells surrounding the plume will be used to evaluate plume stability. The report will provide recommendations if possible for reducing the number of monitoring wells to be included in the monitoring program and/or frequency of monitoring events. The Annual RA-O Report will also include the annual LUC inspection, and monitoring system operation and maintenance discussion.

5.3.1 Remedy Evaluation

Remedial performance will be evaluated using two primary lines of evidence to determine if the remedy is operating properly:

- Plume stability (i.e., plume concentrations are declining in the performance wells, and the plume is not expanding in area as demonstrated by downgradient monitoring wells)
- Reducing conditions conducive for the degradation of perchlorate/VOCs are present within the treatment area

Follow-up injections may be needed if the remedy is determined to not be performing, although reinjections are not expected to be needed within the 3- to 5-year lifespan of the EVO mixture selected. Nonetheless, the decision for reapplication of organic carbon will be made based on performance monitoring results. Proposed performance monitoring network locations and analyses are shown in **Table 3-1**.

6.0 SCHEDULE

Table 6-1 shows the estimated duration for each major site activity and timeline. Weather and unknown site conditions could affect this schedule.

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Tables

Table 1-1
Groundwater Cleanup Levels, LHAAP-50

Chemical	Concentration (µg/L)	Basis
Perchlorate	17	PCL
Trichloroethene	5	MCL
cis-1,2-Dichloroethene	70	MCL
Vinyl chloride	2	MCL
1,1-Dichloroethene	7	MCL
1,2-Dichloroethane	5	MCL
Tetrachloroethene	5	MCL

Notes:

µg/L - micrograms per liter

MCL - maximum contaminant level

PCL - Texas residential groundwater protective concentration level

Table 2-1
Monitoring Well Construction Summary, LHAAP-50

Well ID	Aquifer	Northing [a]	Easting [a]	Ground Surface Elevation [b,c]	Top of Casing Elevation [b]	Well Depth (ft bgs) [c]	Screen Interval (ft bgs) [c]	
							Top	Bottom
50WW01	Upper Shallow	6957599.96	3309311.00	195.29	198.5	20	10	20
50WW02	Upper Shallow	6957436.64	3309569.44	197.4	200.74	19	9	19
50WW03	Upper Shallow	6957162.82	3309376.10	199.88	202.94	20	10	20
50WW04	Upper Shallow	6957156.94	3309947.41	201.64	204.51	20	10	20
50WW05	Upper Shallow	6957581.45	3309709.69	195.34	197.6758	23	15	25
50WW06	Lower Shallow	6957553.93	3309790.22	192.99	195.3462	58	45	55
50WW07	Upper Shallow	6957484.78	3310408.51	199.88	202.55	29	19	29
50WW08	Upper Shallow	6957434.02	3309606.40	197.16	199.67	29.75	15	29
50WW09	Lower Shallow	6957437.22	3309602.73	197.06	199.41	59.5	44	59
50WW10	Intermediate	6957441.16	3309598.97	196.72	199.25	109	99	108
50WW11	Upper Shallow	6957527.87	3309743.98	194.72	197.07	35.3	20	35
50WW12	Upper Shallow	6957569.82	3309877.05	193.26	195.66	35.2	20	35
50WW13	Upper Shallow	6957493.69	3309707.59	195.01	197.45	35.1	20	35
50WW14	Lower Shallow	6957496.69	3309711.32	195.14	197.52	58.5	43	58
50WW15	Upper Shallow	6957551.18	3309588.29	193.95	196.3	35	20	34
50WW16	Upper Shallow	6957700.27	3309748.81	194.1	196.66	35.2	20	35
50WW17	Fully Screened Shallow	6957793.28	3310264.87	192.73	195.13	65	20	64
50WW18	Upper Shallow	6957788.94	3310128.27	192.57	194.84	35.2	20	35
50WW19	Fully Screened Shallow	6957748.65	3310322.10	193.71	195.96	64.2	19	64
50WW20	Fully Screened Shallow	6957347.68	3310050.11	200.3	202.54	53.3	18	53
50WW21	Upper Shallow	6957364.34	3309866.89	197.68	200.14	35	20	34
50WW22	Upper Shallow	6957340.07	3309634.58	199.93	202.1	35	20	34
50WW23	Upper Shallow	6957444.94	3309984.90	198.33	200.75	35.1	20	35
50WW24	Upper Shallow	6957469.14	3310101.17	199.37	201.63	35.5	20	35
50WW25	Lower Shallow	6957715.54	3309528.56	193.48	196	55	NA	NA
50WW26	Lower Shallow	6957367.75	3309864.01	197.68	200.07	60.2	45	60
50WW27	Lower Shallow	6957556.13	3309590.81	193.84	196.22	58	43	57
50WW28	Upper Shallow	6963745.19	3306303.59	205.57	194.71	24.3	27	37

Notes:

[a] Northing and Easting Coordinates are Texas State Plane Coordinate System, North Central Zone (4202), 1983 North American Datum (NAD 83).

[b] Survey elevations are North American Vertical Datum of 1988 (NAVD 88).

[c] The ground surface elevation is measured at the soil surface adjacent to the well pad.

ft - feet

ID - identification

TOC - top of casing

Table 2-2
LHAAP-50 Sampling Results for Newly-Installed Well 50WW29

		Location Code	50WW29	
		Sample ID	50WW29-190815	
		Sample Date	8/15/2019	
		Sample Purpose	REG	
Parameter	Units	MCL / GW-Ind / PCL	Result	Val Qual
Perchlorate (Method SW6850)				
Perchlorate	µg/L	17	< 2	U
Volatiles (Method SW8260)				
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5	U
1,1,1-Trichloroethane	µg/L	200	< 0.5	U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	3,100,000	< 0.5	U
1,1,2-Trichloroethane	µg/L	5	< 0.5	U
1,1-Dichloroethane	µg/L	10,000	< 0.5	U
1,1-Dichloroethene	µg/L	7	< 0.5	U
1,1-Dichloropropene	µg/L	2.9	< 0.5	U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5	U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5	U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5	U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5	U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5	U
1,2-Dibromoethane	µg/L	0.05	< 0.5	U
1,2-Dichlorobenzene	µg/L	600	< 0.5	U
1,2-Dichloroethane	µg/L	5	< 0.5	U
1,2-Dichloropropane	µg/L	5	< 0.5	U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5	U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5	U
1,3-Dichloropropane	µg/L	29	< 0.5	U
1,4-Dichlorobenzene	µg/L	75	< 0.5	U
2,2-Dichloropropane	µg/L	42	< 0.5	U
2-Butanone	µg/L	61,000	< 1	U
2-Chlorotoluene	µg/L	2,000	< 0.5	U
2-Hexanone	µg/L	6,100	< 1	U
4-Chlorotoluene	µg/L	2,000	< 0.5	U
Acetone	µg/L	92,000	< 1	U
Benzene	µg/L	5	< 0.5	U
Bromobenzene	µg/L	2,000	< 0.5	U
Bromochloromethane	µg/L	4,100	< 0.5	U
Bromodichloromethane	µg/L	4.6	< 0.5	U
Bromoform	µg/L	36	< 0.5	U
Bromomethane	µg/L	140	< 0.5	U
Carbon disulfide	µg/L	10,000	< 1	U
Carbon tetrachloride	µg/L	5	< 0.5	U
Chlorobenzene	µg/L	100	< 0.5	U
Chloroethane	µg/L	41,000	< 0.5	U
Chloroform	µg/L	1,000	< 0.5	U

Table 2-2
LHAAP-50 Sampling Results for Newly-Installed Well 50WW29

		Location Code	50WW29	
		Sample ID	50WW29-190815	
		Sample Date	8/15/2019	
		Sample Purpose	REG	
Parameter	Units	MCL / GW-Ind / PCL	Result	Val Qual
Chloromethane	µg/L	220	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5	U
Dibromochloromethane	µg/L	34	< 0.5	U
Dibromomethane	µg/L	380	< 0.5	U
Dichlorodifluoromethane	µg/L	20,000	< 0.5	U
Ethylbenzene	µg/L	700	< 0.5	U
Hexachlorobutadiene	µg/L	20	< 1	U
Isopropylbenzene	µg/L	10,000	< 0.5	U
m,p-Xylenes	µg/L	10,000	< 1	U
Methyl isobutyl ketone	µg/L	8,200	< 1	U
Methylene chloride	µg/L	5	< 1	U
Naphthalene	µg/L	2,000	< 0.5	U
n-Butylbenzene	µg/L	4,100	< 0.5	U
n-Propylbenzene	µg/L	4,100	< 0.5	U
o-Xylene	µg/L	10,000	< 0.5	U
p-Isopropyltoluene	µg/L	10,000	< 0.5	U
sec-Butylbenzene	µg/L	4,100	< 0.5	U
Styrene	µg/L	100	< 0.5	U
tert-Butylbenzene	µg/L	4,100	< 0.5	U
Tetrachloroethene	µg/L	5	< 0.5	U
Toluene	µg/L	1,000	< 0.5	U
trans-1,2-Dichloroethene	µg/L	100	< 0.5	U
trans-1,3-Dichloropropene	µg/L	29	< 0.5	U
Trichloroethene	µg/L	5	0.65	J
Trichlorofluoromethane	µg/L	31,000	< 0.5	U
Vinyl chloride	µg/L	2	< 0.5	U

Notes:

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification

U - analyte was not detected

COC - contaminants of concern

GW-Ind - groundwater medium-specific concentration for industrial use

MCL - maximum contaminant level

MSC - medium-specific concentrations

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

REG - regular sample

Val Qual - validation qualifier

Table 3-1
ISB Performance Monitoring Network Locations and Analyses

Monitoring Location	Primary Rationale for Well Selection	Proposed Analyses: Performance – Years 1 and 2 (Quarterly)								
		Perchlorate (SW6850)	VOCs (SW8260)	DO (field reading)	ORP (field reading)	pH (field reading)	Ferrous Iron (field reading)	Anions (SW9056)	Diss Gases (ethene, ethane, methane & carbon dioxide) (RSK175)	TOC (SM5310C)
50WW08	Upgradient well	✓	✓	✓	✓	✓				
50WW05	Crossgradient well	✓	✓	✓	✓	✓				
50WW06	Performance data within the plume	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW11	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW12	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW13	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW14	Performance data within the treatment zone	✓	✓	✓	✓	✓	✓	✓	✓	✓
50WW29	Downgradient well	✓	✓	✓	✓	✓				

Notes:

Anions include chloride, nitrate, and sulfate.

✓ Indicates that sample will be collected and analyzed for the listed analyte.

Table 3-2
RA-O / Long-Term Monitoring Network, LHAAP-50

Well ID	VOCs (Method SW 8260)	Perchlorate (Method SW6850)	Field Parameters	TOC (Method SM5310C)	Anions (chloride, nitrate, sulfate) (Method SW9056)	Dissolved Gases (ethene, ethane, methane) (Method RSK175)	Carbon dioxide (Method RSK175)	Ferrous Iron (only field)
Groundwater Sample Locations								
50WW08	X	X	X					
50WW11	X	X	X	X	X	X	X	X
50WW12	X	X	X	X	X	X	X	X
50WW13	X	X	X	X	X	X	X	X
50WW15	X	X	X					
50WW16	X	X	X					
50WW18	X	X	X					
50WW22	X	X	X					
50WW23	X	X	X					
50WW05	X	X	X					
50WW06	X	X	X	X	X	X	X	X
50WW09	X	X	X					
50WW14	X	X	X	X	X	X	X	X
50WW29	X	X	X					

Notes:

The RA-O results from the Nov 2019 sampling event will be used for baseline sampling event.

Field Parameters: DO, ORP, pH, specific conductivity, temperature

ID - identification

DO - dissolved oxygen

ORP - oxidation reduction potential

RA-O - remedial action operation

TOC - total organic carbon

VOCs - volatile organic compounds

Table 4-1
Injection Locations and Amendment Volumes

DPT Location	Amendment Volume per Location						DPT Injection Depths (ft bgs) [a]	Nearest Monitoring Well	Lithology (ft bgs)
	Gallons of EVO (EDS-ER™ or Equivalent)	Liters of SDC-9™ (1.0E11)	Pounds of Nutrients (DAP)	Pounds of Buffer (sodium bicarbonate)	Gallons of Water	Total Injection Volume (gallons)			
50DPT01	110	12	308	37	4,990	5,103	18 - 60	50WW14	0 - 2 ft bgs: Silty fine sand 2 - 15 ft bgs: Silty clay 15 - 30 ft bgs: Silty fine sand 30 - 61.5 ft bgs: Poorly graded sand with silt 58.5 ft bgs: Bottom of well casing
50DPT02	110	12	308	37	4,990	5,103	18 - 60		
50DPT03	110	12	308	37	4,990	5,103	18 - 60		
50DPT04	110	12	308	37	4,990	5,103	18 - 60		
50DPT05	110	12	308	37	4,990	5,103	18 - 60		
50DPT06	110	12	308	37	4,990	5,103	18 - 60		
50DPT07	48	5	132	16	2,139	2,188	17 - 35	50WW12	0 - 2 ft bgs: Silt 2 - 10 ft bgs: Lean clay with sand 10 - 35 ft bgs: Poorly graded sand
50DPT08	48	5	132	16	2,139	2,188	17 - 35		
50DPT09	48	5	132	16	2,139	2,188	17 - 35		
50DPT10	48	5	132	16	2,139	2,188	17 - 35		
50DPT11	48	5	132	16	2,139	2,188	17 - 35		
50DPT12	48	5	132	16	2,139	2,188	17 - 35		

Notes:

Table will be updated with quantities of buffer (Sodium Bicarbonate) which will be determined based on buffer capacity tests.

[a] The DPT injection depths may be altered in the field depending on lithology.

DAP - Diammonium Phosphate

DPT - direct-push technology

EDS-ER™ - electron donor solution-extended release

EVO - emulsified vegetable oil

ft bgs - feet below ground surface

SDC-9™ - APTIM's dechlorinating culture

Table 6-1
Schedule of Major Site Activities

Activities	Duration
Provide Injection Information to State	30
Utility Clearance	1
Mobilization / Site Set-up for Injections	1
Clear Injection Locations	2
Conduct Injection	15
Demobilization	1
Total Number of Days	**50**

Figures

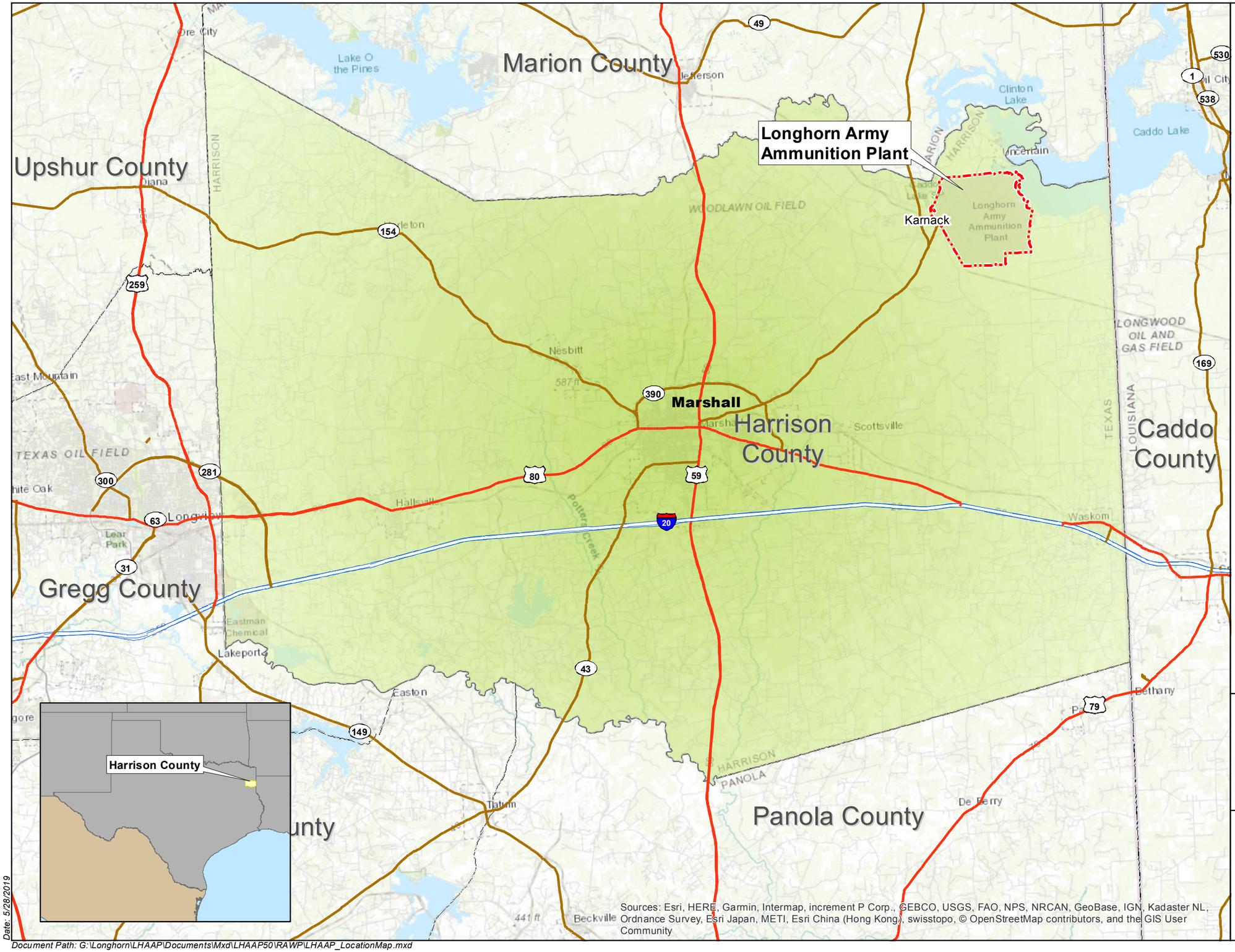

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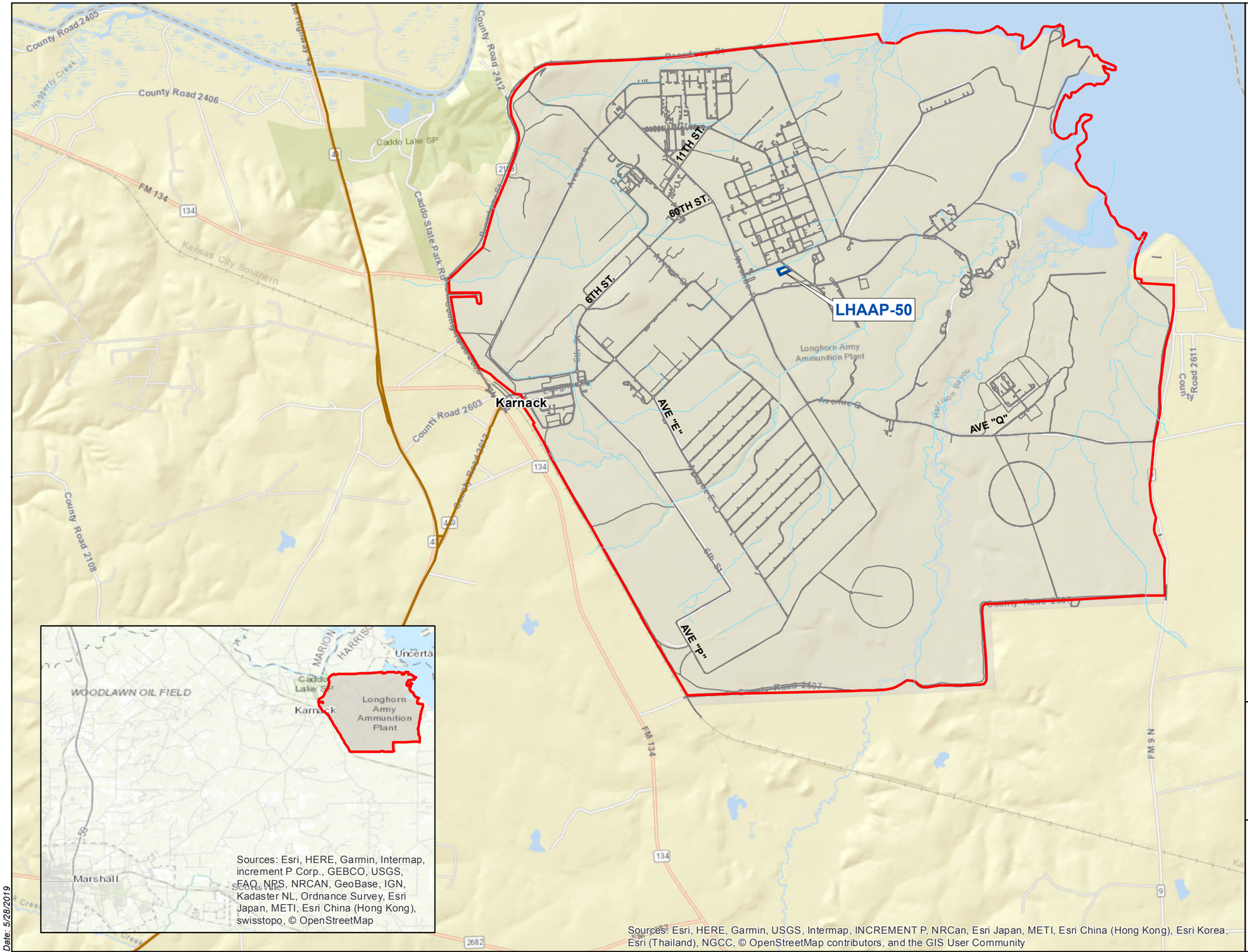
Figure 1-1

LHAAP Location Map

Remedial Action Work Plan,
Contingency Remedy, LHAAP-50
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/28/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAWP\LHAAP_LocationMap.mxd



Stream
Road
LHAAP Boundary
LHAAP-16 Site Boundary

N

0 1,500 3,000 Feet

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Figure 1-2

LHAAP Site Location Map

Remedial Action Work Plan,
Contingency Remedy, LHAAP-50
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/28/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAWP\LHAAP50_SiteLocationMap.mxd

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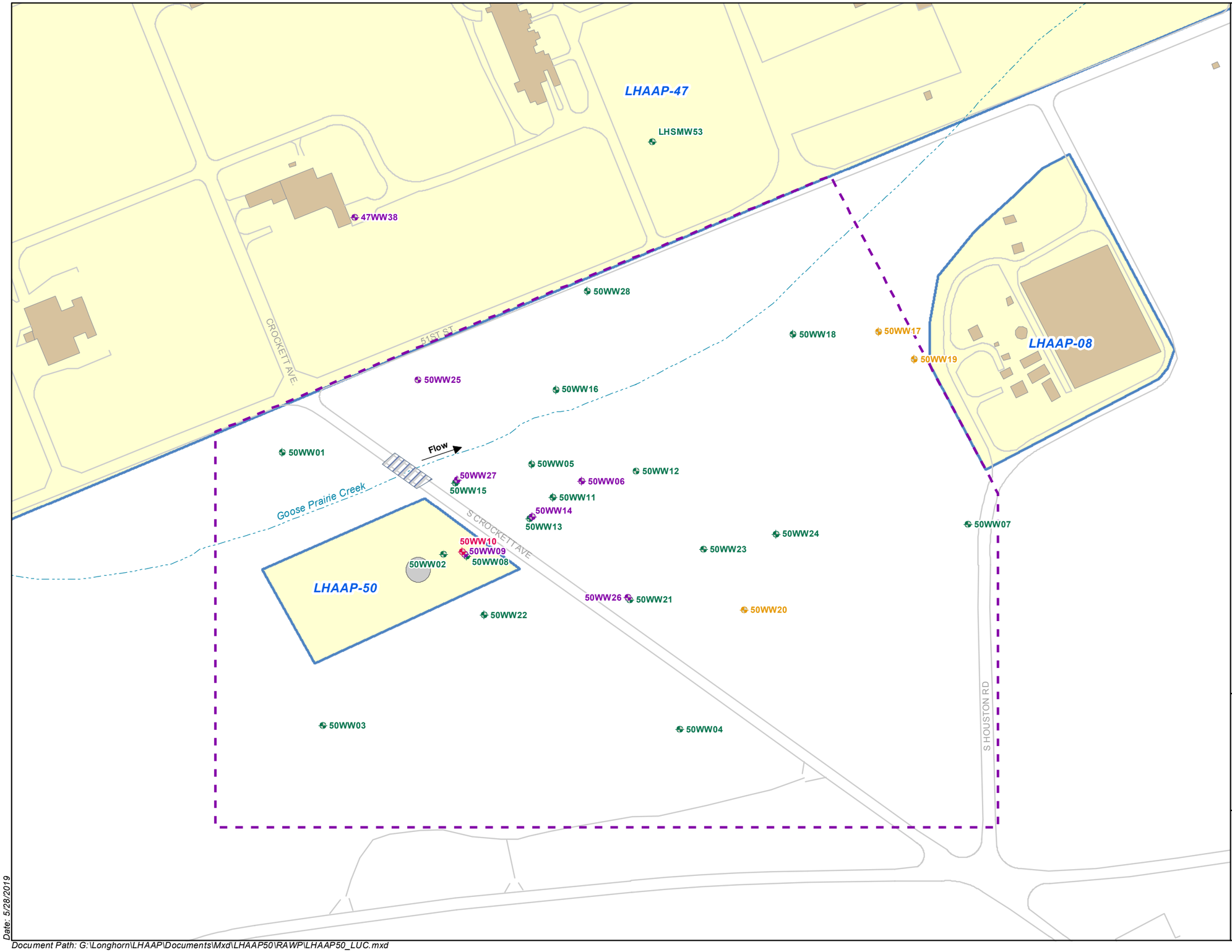

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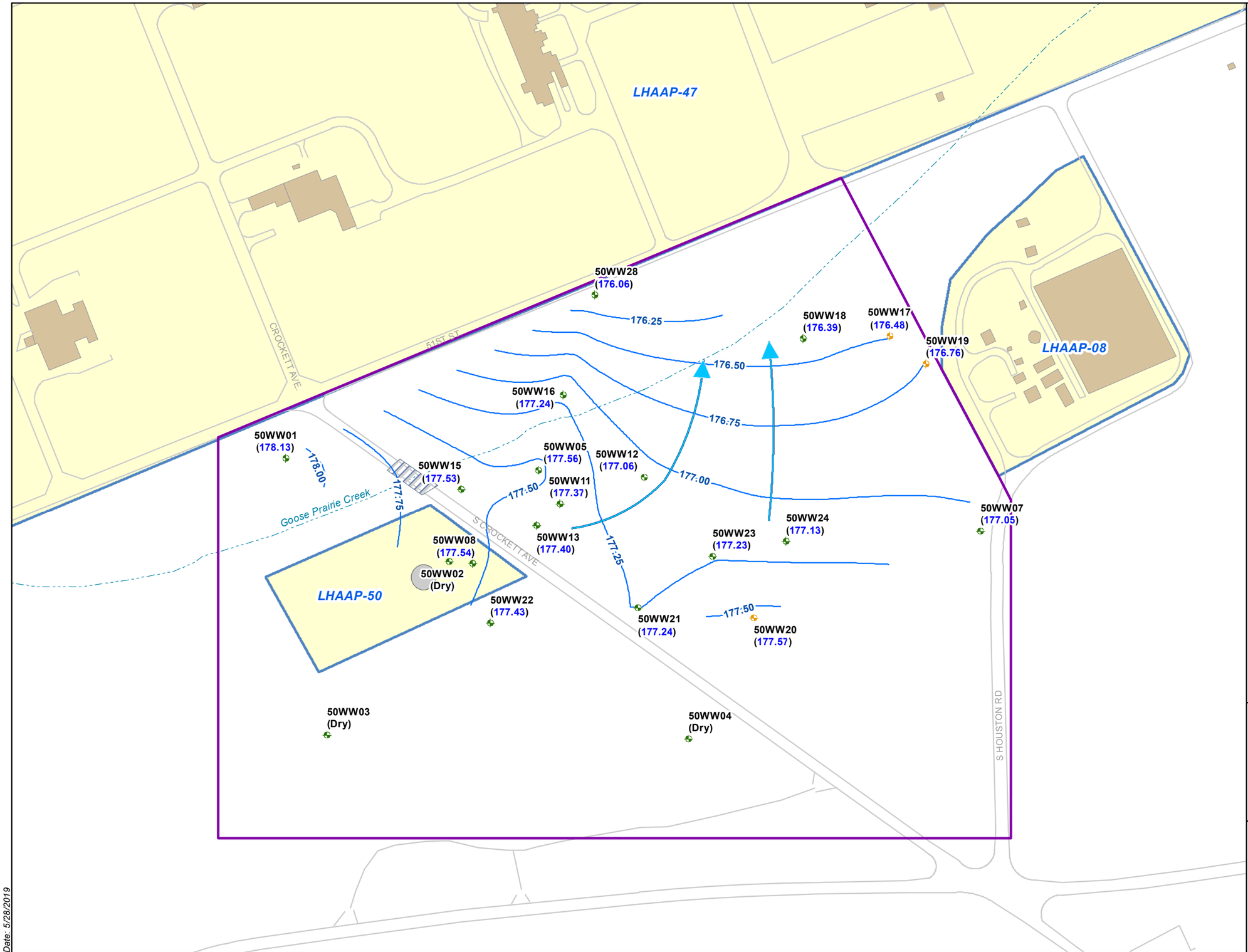
Figure 1-3
Land Use Control Boundary

Remedial Action Work Plan,
Contingency Remedy, LHAAP-50

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/28/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAWP\LHAAP50_LUC.mxd



- Upper Shallow Monitoring Well
- Fully Screened Shallow Monitor Well
- Groundwater Flow Direction
- Groundwater Contour
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Goose Prairie Creek
- Roads
- Buildings
- Site Boundaries

Note:
1. Monitor wells 50WW02, 50WW03, and 50WW04 were dry during Nov 2017 sampling.
2. Groundwater levels (175.2) are in feet above mean sea level (ft amsl).

N

0 75 150 Feet

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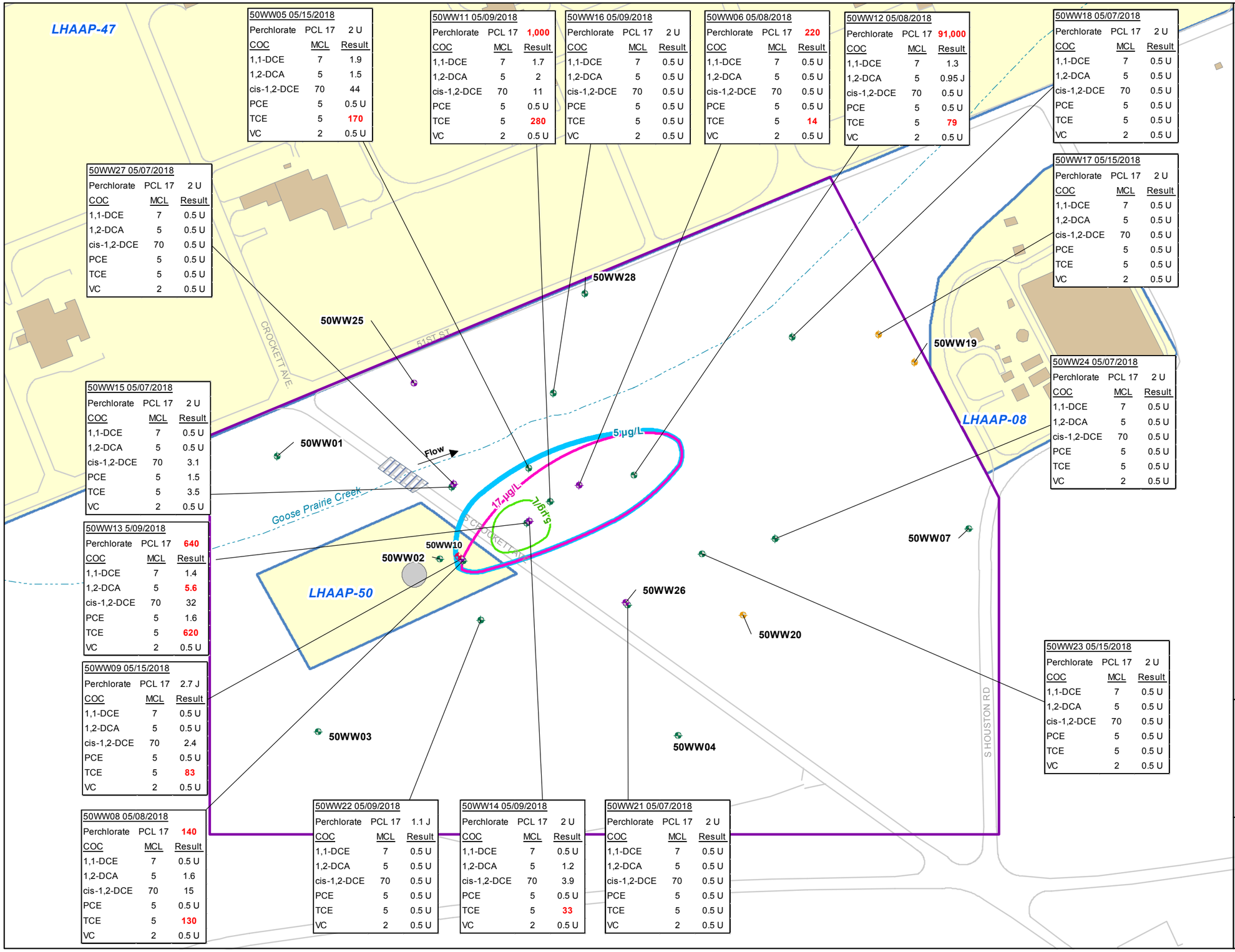
Figure 1-4
Potentiometric Surface Map for the Shallow Zone, May 2018

Remedial Action Work Plan,
Contingency Remedy, LHAAP-50
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/28/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAWP\LHAAP50_ShallowZoneMay2018_GW.mxd



- Lower Shallow Monitoring Well
- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Intermediate Monitoring Well
- 1,2-DCA Contour
- Perchlorate Contour (*Dashed where inferred*)
- TCE Contour
- Goose Prairie Creek
- Roads
- Land Use Control Boundary
- Bridges
- Former Storage Tank Location
- Buildings
- Site Boundaries

Notes:
1. All concentrations are shown in micrograms per liter (µg/L).
2. 1,1-DCE = 1,1-dichlorothene
   1,2-DCA = 1,2-dichlorethane
   cis-1,2-DCE = cis-1,2-dichloroethene
   PCE = tetrachloroethene
   TCE = trichloroethene
   VC = vinyl chloride
   MCL = maximum concentration level
   PCL = protective concentration level
   U = below detection limit
   J = estimated value
   COC = contaminant of concern
3. Results in red are above the MCL or PCL.

0 75 150 Feet

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Figure 1-5
COC Concentrations in Shallow Zone, May 2018

Remedial Action Work Plan, Contingency Remedy, LHAAP-50

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

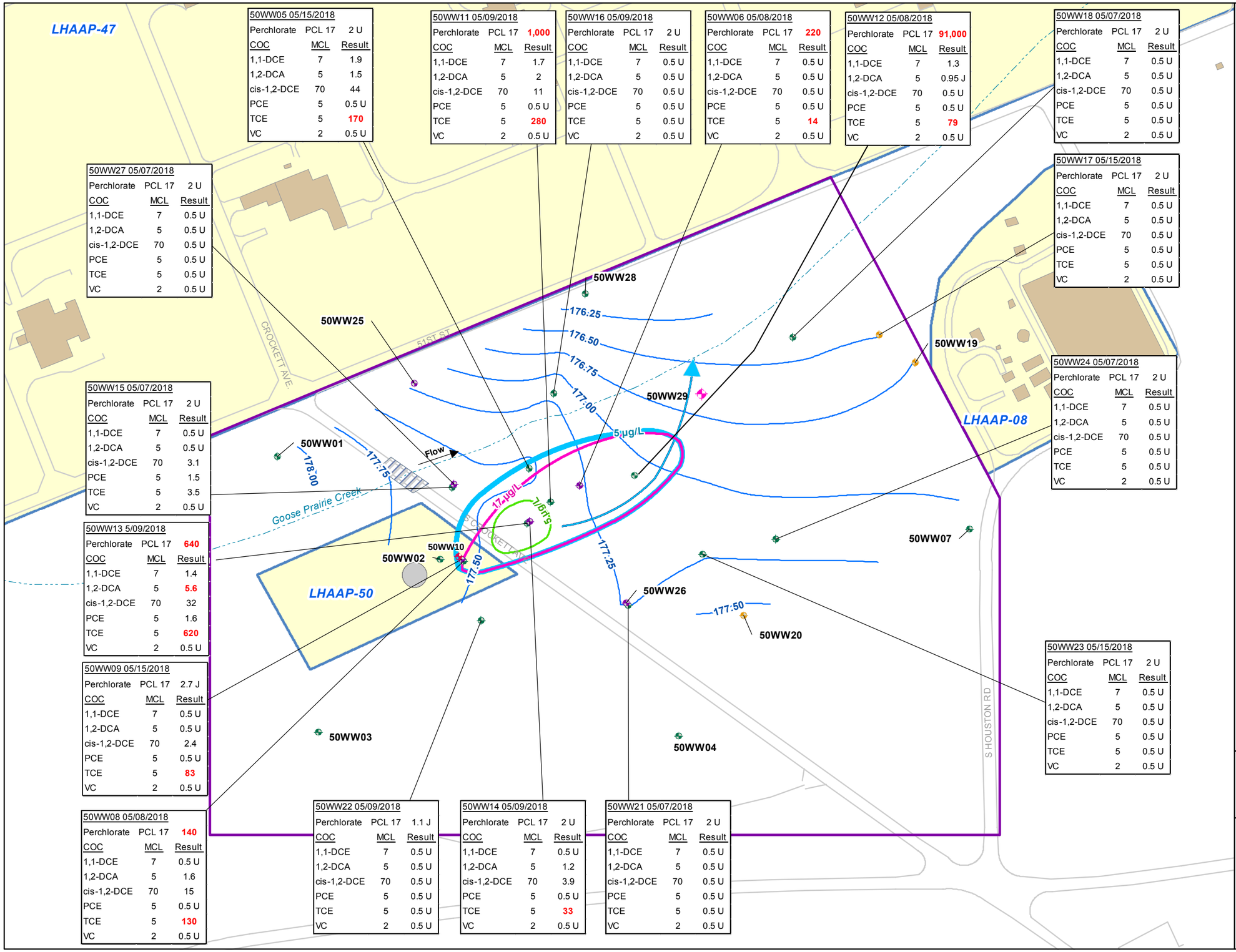
LHAAP-47
LHAAP-50
LHAAP-08
50WW05 05/15/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 1.9
1,2-DCA 5 1.5
cis-1,2-DCE 70 44
PCE 5 0.5 U
TCE 5 170
VC 2 0.5 U
50WW11 05/09/2018
Perchlorate PCL 17 1,000
COC MCL Result
1,1-DCE 7 1.7
1,2-DCA 5 2
cis-1,2-DCE 70 11
PCE 5 0.5 U
TCE 5 280
VC 2 0.5 U
50WW16 05/09/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW06 05/08/2018
Perchlorate PCL 17 220
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 14
VC 2 0.5 U
50WW12 05/08/2018
Perchlorate PCL 17 91,000
COC MCL Result
1,1-DCE 7 1.3
1,2-DCA 5 0.95 J
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 79
VC 2 0.5 U
50WW18 05/07/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW17 05/15/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW27 05/07/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW24 05/07/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW15 05/07/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 3.1
PCE 5 1.5
TCE 5 3.5
VC 2 0.5 U
50WW13 5/09/2018
Perchlorate PCL 17 640
COC MCL Result
1,1-DCE 7 1.4
1,2-DCA 5 5.6
cis-1,2-DCE 70 32
PCE 5 1.6
TCE 5 620
VC 2 0.5 U
50WW09 05/15/2018
Perchlorate PCL 17 2.7 J
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 2.4
PCE 5 0.5 U
TCE 5 83
VC 2 0.5 U
50WW08 05/08/2018
Perchlorate PCL 17 140
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 1.6
cis-1,2-DCE 70 15
PCE 5 0.5 U
TCE 5 130
VC 2 0.5 U
50WW22 05/09/2018
Perchlorate PCL 17 1.1 J
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW14 05/09/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 1.2
cis-1,2-DCE 70 3.9
PCE 5 0.5 U
TCE 5 33
VC 2 0.5 U
50WW21 05/07/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW23 05/15/2018
Perchlorate PCL 17 2 U
COC MCL Result
1,1-DCE 7 0.5 U
1,2-DCA 5 0.5 U
cis-1,2-DCE 70 0.5 U
PCE 5 0.5 U
TCE 5 0.5 U
VC 2 0.5 U
50WW01
50WW02
50WW03
50WW04
50WW07
50WW10
50WW19
50WW20
50WW25
50WW26
50WW28
50WW29
176.25
176.50
176.75
177.00
177.25
177.50
178.00
5µg/L
17µg/L
1µg/L
Flow
Goose Prairie Creek
51ST ST
CROCKETT AVE
S CROCKETT AVE
S HOUSTON RD
New Installed Monitoring Well Location
Lower Shallow Monitoring Well
Upper Shallow Monitoring Well
Fully Penetrating Shallow Monitoring Well
Intermediate Monitoring Well
1,2-DCA Contour
Perchlorate Contour
(Dashed where inferred)
TCE Contour
Groundwater Flow Direction
Groundwater Contour
Goose Prairie Creek
Roads
Land Use Control Boundary
Bridges
Former Storage Tank Location
Buildings
Site Boundaries
Notes:
1. All concentrations are shown in micrograms per liter (µg/L).
2. 1,1-DCE = 1,1-dichlorothene
1,2-DCA = 1,2-dichlorethane
cis-1,2-DCE = cis-1,2-dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride
MCL = maximum concentration level
PCL = protective concentration level
U = below detection limit
J = estimated value
COC = contaminant of concern
3. Results in red are above the MCL or PCL.
4. Groundwater Contours are based on May 2018 data.
0 75 150
Feet
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Figure 2-1
New Well Location
Remedial Action Work Plan,
Contingency Remedy, LHAAP-50
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

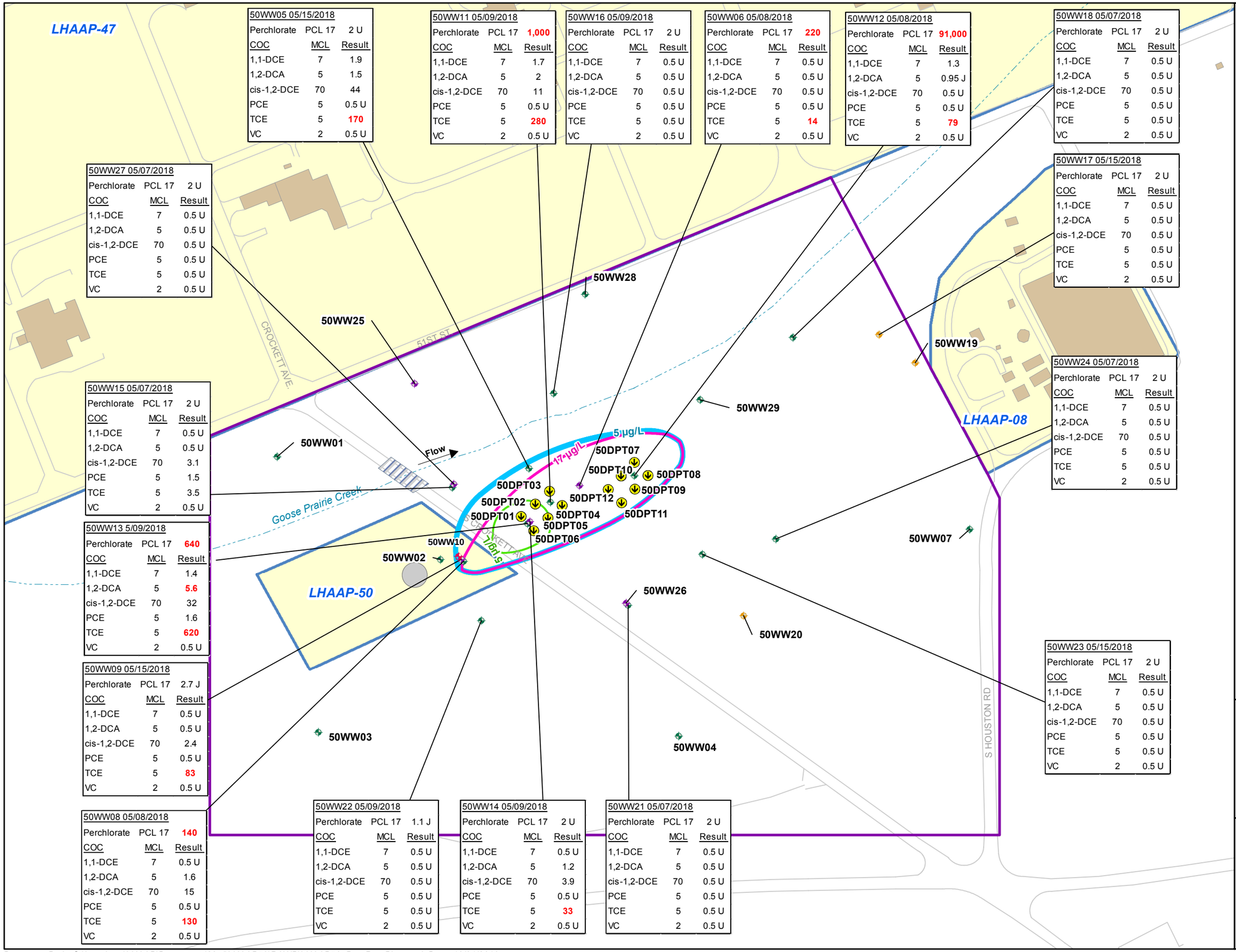

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Figure 3-1

Proposed Remediation Plan
Remedial Action Work Plan,
Contigency Remedy,
LHAAP-50
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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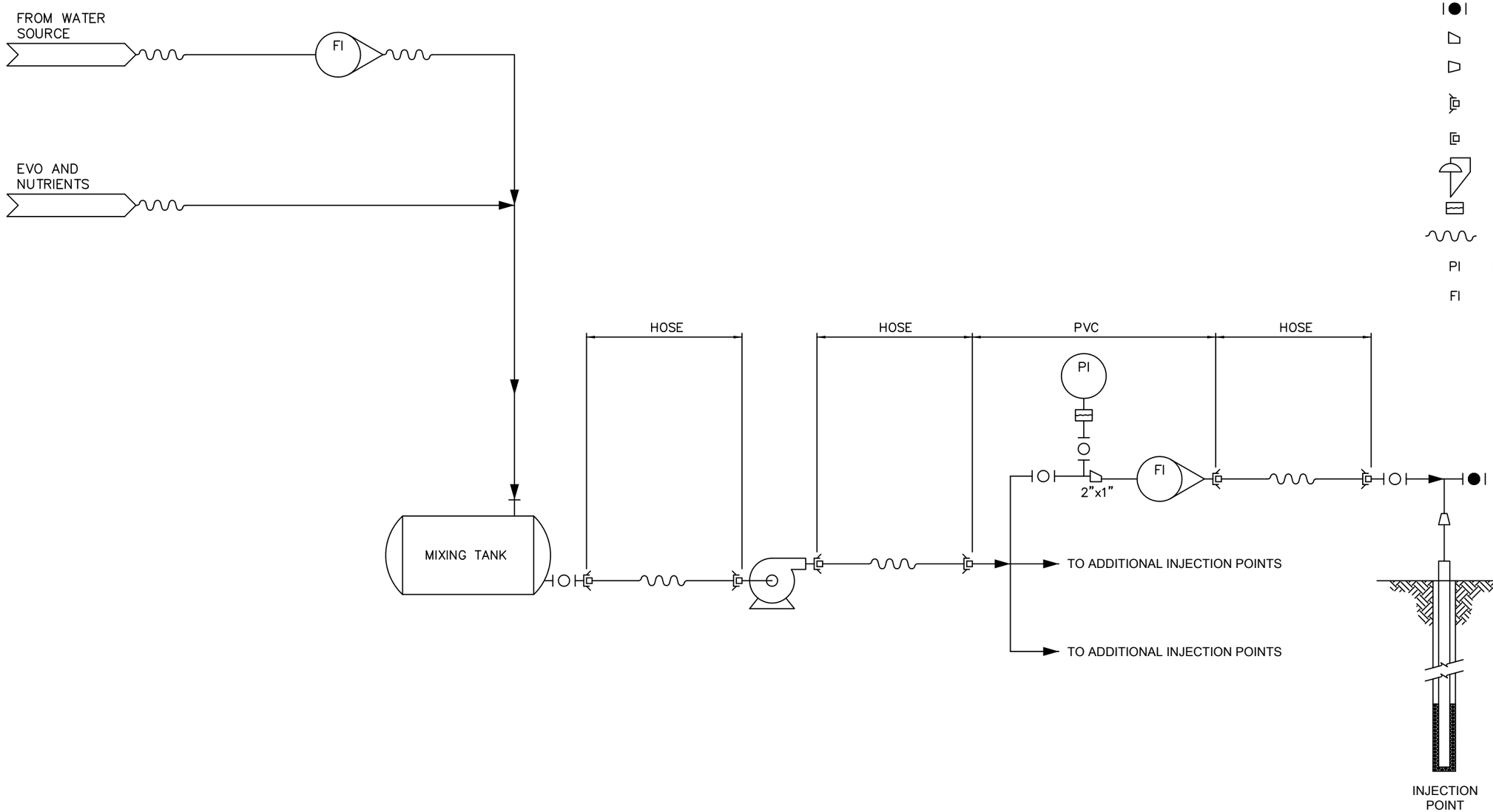
NOTE:

1. EVO – EMULSIFIED VEGETABLE OIL.

LEGEND:

- BALL VALVE (OPEN)
- BALL VALVE (CLOSED)
- ECCENTRIC REDUCER
- CONCENTRIC REDUCER
- CAMLOCK QUICK DISCONNECT
- BALL LOCK QUICK DISCONNECT
- PNEUMATIC ACTUATOR
- SEAL
- FLEXHOSE
- PI PRESSURE INDICATOR
- FI FLOW INDICATOR



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TULSA, OKLAHOMA

bhate ENVIRONMENT & INFRASTRUCTURE

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Figure 4-1
ISB DPT Injection System

Remedial Action Work Plan,
Contingency Remedy, LHAAP-50
Longhorn Army Ammunition Plant
Karnack, Texas

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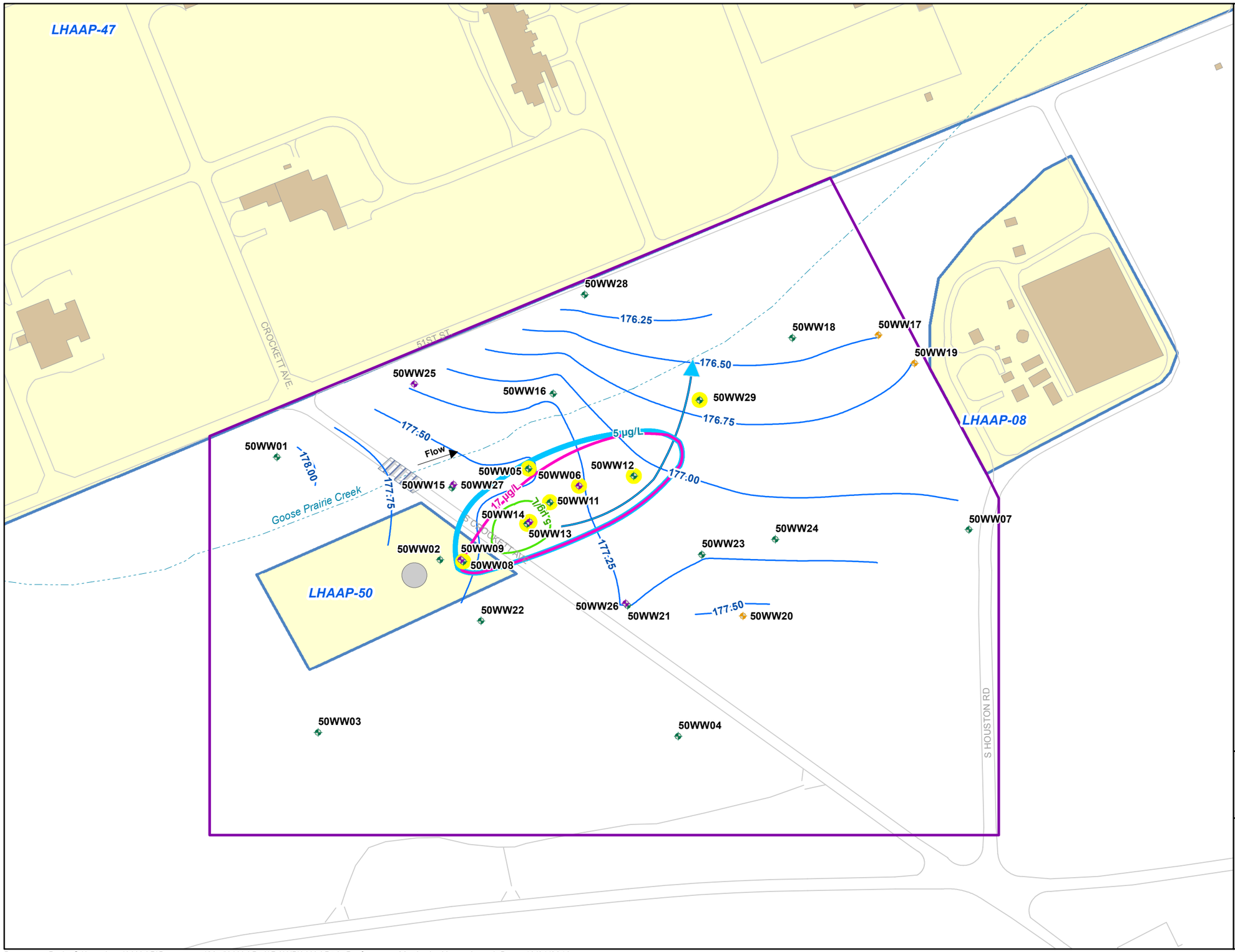

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TULSA DISTRICT
TULSA, OKLAHOMA

Figure 5-1

Performance Monitoring Network
Remedial Action Work Plan,
Contigency Remedy,
LHAAP-50

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP50\RAWP\LHAAP50_PerformanceMonitoringNetwork.mxd Date: 10/31/2019

Appendix A

ISB Design Calculation Sheets

LHAAP-50: 50WW12 Treatment Area Calculation Worksheet

Site Parameters	units	LHAAP 50
Target Width	feet	59
Target Length	feet	59
Treatment Interval	feet	18
Target Area Volume	cubic feet	62,658
Effective Porosity		0.28
Target Area Water Volume	cubic feet	17,544
Target Area Water Volume	gallons	131,231
Target Injection Volume (10%)	gallons	13,123
Amendment Volume Requirements		
Emulsified Vegetable Oil: 60%	pounds	3,628
Emulsified Vegetable Oil: EDS-ER™ (100%)	pounds	2,177
Emulsified Vegetable Oil: EDS-ER™	gallons	283
Emulsified Vegetable Oil: EDS-ER™	drums	5
Dechlorinating culture:SDC-9™	liter	30
Dechlorinating culture:SDC-9™	gallon	8
Nutrients (DAP)	pounds	793
Water	gallons	12,832
Sodium Bicarbonate Buffer (0.87 g/L)	pounds	95
Volumes per Point		
Emulsified Vegetable Oil: EDS-ER™	gallons	48
SDC-9™	gallons	1.32
SDC-9™	liters	5.00
Nutrients (DAP)	pounds	132
Water	gallons	2,139
Sodium Bicarbonate Buffer	pounds	16
Injection Parameters		
Injection Spacing	feet	20
Target Depth	ft bgs	35
Thickness	feet	18
Total Volume per Point	gallons	2,188
Volume per foot		122
Injection Rate	gpm	3
Injection Pressure (not to exceed)	psi	40
Time per Point	hours	13
Simultaneous Points	points	4
Hours of Injection per day	hours	8
Gallons per day	gallons	5,760
Points to be Completed	points	6
Days of Injection	days	2

Notes:

ft bgs - feet below ground surface

psi - pounds per square inch

gpm - gallons per minute

Nutrient Dosing Calculation Sheet

Site Name: Longhorn AAP
Location: LHAAP-50 50WW12
Project No.:

Carbon content of soybean oil

Major component is linoleic acid				
CH3(CH2)4CH=CHCH2CH=CH(CH2)7 CO2CH3, or C19H34O2				
Formula weight:	294.48	grams per mole		
Carbon content:	77.42%			

Carbon content of 100% soybean oil EVO

Density of EVO	7.70	pounds/gallon		
Mass of EVO	2,177	pounds		
Mass of EVO	987	kilograms		
Volume of EVO	283	gallons		
55 gal drum of EVO	5.14	gallons		
Grade of EVO	100%			
Mass of carbon	764.56	kilograms		
Mass of carbon	1,682.03	pounds		

Nutrient demand based on 100C:10N:1P ratio

Carbon	1,682	pounds		
Nitrogen	168	pounds		
Phosphate	17	pounds		

Nutrient source required

DAP	**793**	lbs		

N & P content of nutrient sources

Diammonium Phosphate (DAP) solid (16-46-10)

	molecular wt.	atoms	total wt.	%
Nitrogen	14.0067	2	28.0134	21.21328922
Hydrogen	1.0079	9	9.0711	6.869136479
Phosphate	30.9738	1	30.9738	23.45506713
Oxygen	15.9994	4	63.9976	48.46250717
		Total	**132.1**	**100**

100 lbs of DAP =21.2 lbs of N

4.71 lbs DAP for 1 lb N

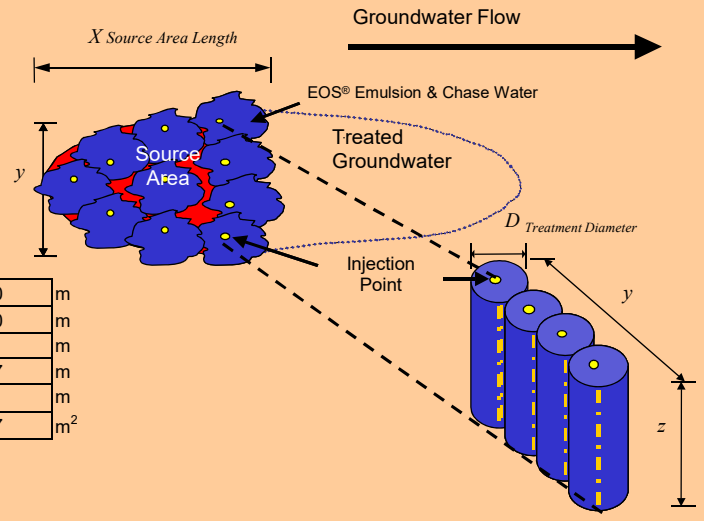
EOS Remediation, LLC

EOS® SOURCE AREA & DNAPL DESIGN WORKSHEET

U.S. Version 2.1f, Rev. Date: June 18, 2008
www.EOSRemediation.com

Help

Site Name:	Longhorn AAP	LHAAP 50
Location:	Karnack, TX	50WW12
Project No.:	501307071	



Step 1: Select a Substrate from the EOS® Family of Bioremediation Products

Substrate Selected (pick from drop down list): EOS® 598B42 (Preferred for Chlorinateds)
For Product Literature Click Here

Step 2: EOS® Consumption During Contaminant Biodegradation / Biotransformation

Section A: Source Area Dimensions

Length of treatment area parallel to groundwater flow, "x"	59	ft	18.0	m
Width of treatment area perpendicular to groundwater flow, "y"	59	ft	18.0	m
Minimum depth to contamination	17	ft	5.2	m
Maximum depth of contamination	35	ft	10.7	m
Treatment thickness, "z"	18	ft	5.5	m
Treatment zone cross-sectional area, A = y * z	1,062	ft^2	98.7	m^2

Section B: Groundwater Flow Rate / Site Data

Soil Characteristics

Nominal Soil Type (pick from drop down list)	Sand			
Total Porosity (accept default or enter *n*)	0.30	(decimal)		
Effective Porosity (accept default or enter n_e)	0.28	(decimal)		
Soil bulk density; (1-n)*2.65 g/cc (accept calculated or enter dry bulk density)	1.86	g/cc	116	lbs / ft^3
Fraction of organic carbon: foc	0.0050	range: 0.0001 to 0.01		

Hydraulic Characteristics

Hydraulic Conductivity (accept default or enter *K*)	0.4	ft/day	1.4E-04	cm/sec
Hydraulic Gradient (accept default or enter *i*)	0.004	ft/ft		

Note: Since the hydraulic gradient ($i = dh/dx$) is negative, we ask you to enter $-i$ in the EOS® Design Tool so that you can enter a positive number for convenience.

Non-reactive Transport Velocity, $V_x = -(K \times i) / n_e$	LESS THAN	0.01	ft/day	LESS THAN	0.003 m/day
Groundwater flow rate through treatment zone, $Q = -KiA$		12.71	gallons/day	LESS THAN	84.20 L/day

Section C: Calculated Contact Length

Contact time (τ) between oil and contaminants (accept default or enter τ)		60	typical values 60 to 180 days, see comment	
Calculated Contact Length (x) $= \tau * V_x$	Suggested Minimum	5.0	ft	1.5 m

Treatment zone volume	62,658	ft^3	1,774	m^3
Treatment zone groundwater volume (volume * porosity)	140,605	gallons	532,283	L

Section D: Design Lifespan For One Application

	5	year(s)	typical values 5 to 10 years	
Estimated total groundwater volume treated over design life	163,800	gallons	685,954	L

Section E: Electron Acceptors

Dissolved Phase Electron Donor Demand

Inputs	Typical Value	GW Conc. (mg/L)	MW (g/mole)	e^- equiv./ mole	Stoichiometry *Contaminant/H2 (wt/wt H_2)*	Hydrogen Demand (g H_2)
Dissolved Oxygen (DO)	0 to 8	0.69	32.0	4	7.94	59.63311906
Nitrate Nitrogen (NO_3^- - N)	1 to 10	0.483	62.0	5	12.30	26.92794793
Sulfate (SO_4^{2-})	10 to 500	432	96.1	8	11.91	24874.48727
Tetrachloroethene (PCE), C_2Cl_4			165.8	8	20.57	
Trichloroethene (TCE), C_2HCl_3		0.079	131.4	6	21.73	2.494203017
cis-1,2-dichloroethene (c-DCE), $C_2H_2Cl_2$		0.0005	96.9	4	24.05	0.014263368
Vinyl Chloride (VC), C_2H_3Cl			62.5	2	31.00	
Carbon tetrachloride, CCl_4			153.8	8	19.08	
Chloroform, $CHCl_3$			119.4	6	19.74	
sym-tetrachloroethane, $C_2H_2Cl_4$			167.8	8	20.82	
1,1,1-Trichloroethane (TCA), CH_3CCl_3			133.4	6	22.06	
1,1-Dichloroethane (DCA), CH_2CHCl_2			99.0	4	24.55	
Chloroethane, C_2H_5Cl			64.9	2	32.18	
Perchlorate, ClO_4^-		91	99.4	8	12.33	5062.096768
Hexavalent Chromium, Cr[VI]			52.0	3	17.20	
User added						
User added						
User added						

Sorbed Phase Electron Donor Demand

The concentration of the sorbed contaminant can be estimated by: $C_{SOIL} = K_{OC} \times f_{oc} \times C_{WATER}$

Where:
K_{oc} is partition coefficient with respect to organic carbon.
f_{oc} (fraction organic carbon) is the mass of organic matter in soil divided by the total mass of soil
C_{WATER} is the concentration of the contaminant in the groundwater

Default values for Koc taken from: US EPA, Superfund Section, APPENDIX K, Soil Organic Carbon (Koc) / Water (Kow) Partition Coefficients (Average Value Used)

Inputs Adjust *Koc* as necessary to provide site specific estimates or enter sediment concentration (C_{SOIL})	K_{oc} (L/kg)	C_{SOIL} (mg/Kg)	Mass (g)	Hydrogen Demand (g H_2)
Tetrachloroethene (PCE), C_2Cl_4	272			
Trichloroethene (TCE), C_2HCl_3	97	0.04	126.11	5.80
cis-1,2-dichloroethene (c-DCE), $C_2H_2Cl_2$	38	0.00	0.31	0.01
Vinyl Chloride (VC), C_2H_3Cl	241			
Carbon tetrachloride, CCl_4	158			
Chloroform, $CHCl_3$	53			
sym-tetrachloroethane, $C_2H_2Cl_4$	79			
1,1,1-Trichloroethane (TCA), CH_3CCl_3	139			
1,1-Dichloroethane (DCA), CH_2CHCl_2	54			
User added				
User added				
User added				

Section F: Additional Hydrogen Demand and Carbon Losses

Generation (Potential Amount Formed)	Typical Value	GW Conc. (mg/L)	MW (g/mole)	e^- equiv./ mole	Stoichiometry *Contaminant / H_2*	Hydrogen Demand *(g H_2)*	DOC Released *(moles)*
Estimated Amount of $Fe2^+$ Formed	10 to 100	50	55.8	1	55.41	619.0102555	
Estimated Amount of Manganese (Mn^{2+}) Formed		5	54.9	2	27.25	125.8459635	
Estimated Amount of CH_4 Formed	5 to 20	10	16.0	8	1.99	3447.683315	
Target Amount of DOC to Release	60 to 100	100	12.0				5711.04

Design Safety Factor: 2.0 typical values 1 to 3

Calculations assume:

1.) all reactions go to completion during passage through emulsified edible oil treated zone; and,
2.) perfect reaction stoichiometry.

EOS® Requirement Calculations Based on Hydrogen Demand and Carbon Losses

Stoichiometric Hydrogen Demand	150.8	pounds
DOC Released	652.1	pounds

EOS® Requirement Based on Hydrogen Demand and Carbon Loss

1,339 lbs

Step 3: EOS® Requirement Based on Attachment by Aquifer Material

Soil Characteristics

Effective treatment thickness, "z_e" (typically less than 40%) 0.25

For Additional Information on Effective Thickness, Click Here

Weight of sediment to be treated 1,814,010 lbs

Adsorptive Capacity of Soil (accept default or enter site specific value) 0.0020 lbs EOS® / lbs sediment

EOS® Attachment by Aquifer Material[1]

- Fine sand with some clay 0.001 to 0.002 lbs EOS® / lbs soil
- Sand with higher silt/clay content 0.002 to 0.004 lbs EOS® / lbs soil

[1]Default values provided based on laboratory studies completed by NCSU

For Additional Data, Click Here

EOS® Requirement Based on Oil Entrapment by Aquifer Material

3,628 lbs

Summary – How much EOS® do you need?

Suggested Quantity of EOS® for Your Project 9 drums

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††EOS® is a registered trademark of EOS Remediation, LLC

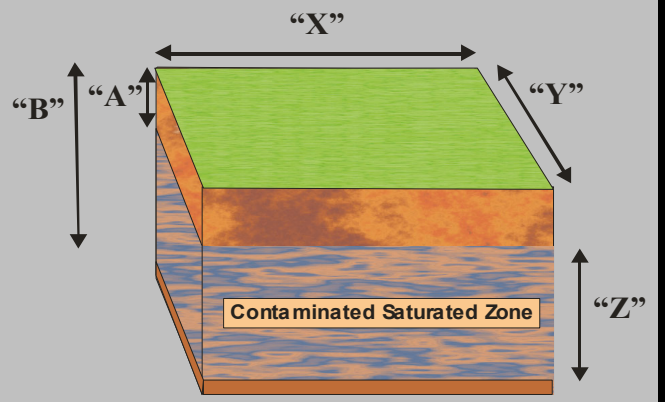
SDC-9 Dosage Estimating Software

APTIM

Site Name:	Longhorn AAP 50
Location:	LHAAP 50 50WW12
Project No.:	

Treatment Area Dimensions

Length of treatment area parallel to groundwater flow, "X"	59	ft	18.0	m
Width of treatment area perpendicular to groundwater flow, "Y"	59	ft	18.0	m
Minimum depth to contamination, "A"	17	ft	5.2	m
Maximum depth of contamination, "B"	35	ft	10.7	m
Treatment thickness, "Z"	18	ft	5.5	m



Site Data

Soil Characteristics

Nominal Soil Type (enter clay, silt, silty sand, or sand)	sand			
Hydraulic Characteristics				
Effective Porosity (accept default or enter n_e)	0.28	(decimal)		
Treatment zone volume	62,658			
Treatment zone water volume	17,544	ft^3	496,798	L

Dechlorinating Consortium Concentration

Dehalococcoides like organisms/L as determined by qPCR	>	1.0E+11
Design Final Concentration (DHC/L) (accept default or enter concentration)	6.00E+06	typical values 5 x 10^6 to 1 x 10^7

Suggested Quantity of Dechlorinating Consortium	30	Liters

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LHAAP-50: 50WW14 Treatment Area Calculation Worksheet

Site Parameters	units	LHAAP 50
Target Width	feet	59
Target Length	feet	59
Treatment Interval	feet	42
Target Area Volume	cubic feet	146,202
Effective Porosity		0.28
Target Area Water Volume	cubic feet	40,937
Target Area Water Volume	gallons	306,205
Target Injection Volume (10%)	gallons	30,621
Amendment Volume Requirements		
Emulsified Vegetable Oil: EOS (60%)	pounds	8,465
Emulsified Vegetable Oil: EDS-ER™ (100%)	pounds	5,079
Emulsified Vegetable Oil: EDS-ER™	gallons	660
Emulsified Vegetable Oil: EDS-ER™	drums	12
Dechlorinating Culture SDC-9™	liter	70
Dechlorinating Culture SDC-9™	gallon	18
Nutrients (DAP)	pounds	1,850
Water	gallons	29,942
Sodium Bicarbonate Buffer (0.87g/L)	pounds	222
Volumes per Point		
Emulsified Vegetable Oil (EDS-ER™)	gallons	110
SDC-9™	gallons	3.08
SDC-9™	liters	12
Nutrients (DAP)	pounds	308
Water	gallons	4,990
Sodium Bicarbonate Buffer	Pounds	37
Injection Parameters		
Injection Spacing	feet	20
Target Depth	ft bgs	60
Thickness	feet	42
Total Volume per Point	gallons	5,103
Volume per foot		122
Injection Rate	gpm	3
Injection Pressure (not to exceed)	psi	40
Time per Point	hours	29
Simultaneous Points	points	4
Hours of Injection per day	hours	8
Gallons per day	gallons	5,760
Points to be Completed	points	6
Days of Injection	days	5

Notes:

Table will be updated with buffer amount based on buffer capacity test results.

ft bgs - feet below ground surface

psi - pounds per square inch

gpm - gallons per minute

Nutrient Dosing Calculation Sheet

Site Name: Longhorn AAP
Location: LHAAP-50 50WW14
Project No.:

Carbon content of soybean oil

Major component is linoleic acid				
CH3(CH2)4CH=CHCH2CH=CH(CH2)7 CO2CH3, or C19H34O2				
Formula weight:	294.48	grams per mole		
Carbon content:	77.42%			

Carbon content of 100% soybean oil EVO

Density of EVO	7.70	pounds/gallon		
Mass of EVO	5,079	pounds		
Mass of EVO	2,304	kilograms		
Volume of EVO	660	gallons		
55 gal drum of EVO	11.99	gallons		
Grade of EVO	100%			
Mass of carbon	1,783.73	kilograms		
Mass of carbon	3,924.22	pounds		

Nutrient demand based on 100C:10N:1P ratio

Carbon	3,924	pounds		
Nitrogen	392	pounds		
Phosphate	39	pounds		

Nutrient source required

DAP	**1,850**	lbs		

N & P content of nutrient sources

Diammonium Phosphate (DAP) solid (16-46-10)

	molecular wt.	atoms	total wt.	%
Nitrogen	14.0067	2	28.0134	21.21328922
Hydrogen	1.0079	9	9.0711	6.869136479
Phosphate	30.9738	1	30.9738	23.45506713
Oxygen	15.9994	4	63.9976	48.46250717
		Total	**132.1**	**100**

100 lbs of DAP =21.2 lbs of N

4.71 lbs DAP for 1 lb N

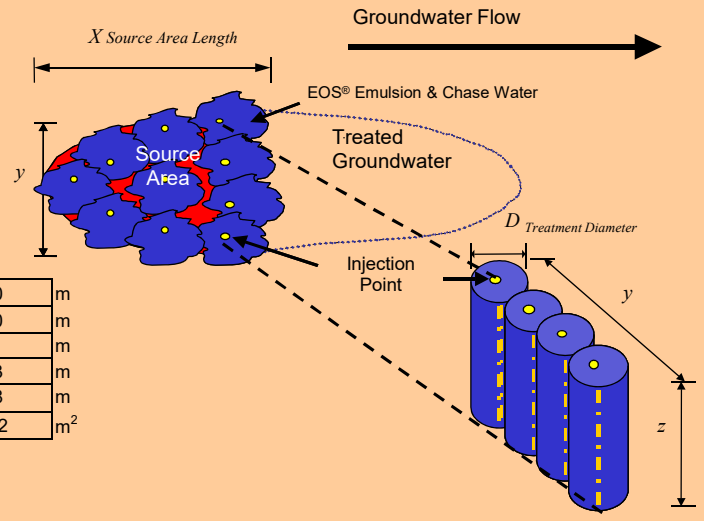
EOS Remediation, LLC

EOS® SOURCE AREA & DNAPL DESIGN WORKSHEET

U.S. Version 2.1f, Rev. Date: June 18, 2008
www.EOSRemediation.com

Help

Site Name:	Longhorn AAP	LHAAP 50
Location:	Karnack, TX	50WW14, 50WW11
Project No.:	501307071	



Step 1: Select a Substrate from the EOS® Family of Bioremediation Products

Substrate Selected (pick from drop down list): EOS® 598B42 (Preferred for Chlorinateds)
For Product Literature Click Here

Step 2: EOS® Consumption During Contaminant Biodegradation / Biotransformation

Section A: Source Area Dimensions

Length of treatment area parallel to groundwater flow, "x"	59	ft	18.0	m
Width of treatment area perpendicular to groundwater flow, "y"	59	ft	18.0	m
Minimum depth to contamination	18	ft	5.5	m
Maximum depth of contamination	60	ft	18.3	m
Treatment thickness, "z"	42	ft	12.8	m
Treatment zone cross-sectional area, A = y * z	2,478	ft^2	230.2	m^2

Section B: Groundwater Flow Rate / Site Data

Soil Characteristics

Nominal Soil Type (pick from drop down list)	Silty Sand			
Total Porosity (accept default or enter *n*)	0.30	(decimal)		
Effective Porosity (accept default or enter n_e)	0.28	(decimal)		
Soil bulk density; (1-n)*2.65 g/cc (accept calculated or enter dry bulk density)	1.86	g/cc	116	lbs / ft^3
Fraction of organic carbon: foc	0.0050	range: 0.0001 to 0.01		

Hydraulic Characteristics

Hydraulic Conductivity (accept default or enter *K*)	0.4	ft/day	1.4E-04	cm/sec
Hydraulic Gradient (accept default or enter *i*)	0.004	ft/ft		

Note: Since the hydraulic gradient ($i = dh/dx$) is negative, we ask you to enter $-i$ in the EOS® Design Tool so that you can enter a positive number for convenience.

Non-reactive Transport Velocity, $V_x = -(K \times i) / n_e$	LESS THAN	0.01	ft/day	LESS THAN	0.003 m/day
Groundwater flow rate through treatment zone, $Q = -KiA$		29.66	gallons/day	LESS THAN	196.47 L/day

Section C: Calculated Contact Length

Contact time (τ) between oil and contaminants (accept default or enter τ)		60	typical values 60 to 180 days, see comment	
Calculated Contact Length (x) $= \tau * V_x$	Suggested Minimum	5.0	ft	1.5 m

Treatment zone volume	146,202	ft^3	4,140	m^3
Treatment zone groundwater volume (volume * porosity)	328,077	gallons	1,241,994	L

Section D: Design Lifespan For One Application

	5	year(s)	typical values 5 to 10 years	
Estimated total groundwater volume treated over design life	382,201	gallons	1,600,558	L

Section E: Electron Acceptors

Dissolved Phase Electron Donor Demand

Inputs	Typical Value	GW Conc. (mg/L)	MW (g/mole)	e^- equiv./ mole	Stoichiometry *Contaminant/H2 (wt/wt H_2)*	Hydrogen Demand ($g\ H_2$)
Dissolved Oxygen (DO)	0 to 8	0.69	32.0	4	7.94	139.1439445
Nitrate Nitrogen (NO_3^- - N)	1 to 10	0.434	62.0	5	12.30	56.45762997
Sulfate (SO_4^{2-})	10 to 500	432	96.1	8	11.91	58040.47029
Tetrachloroethene (PCE), C_2Cl_4			165.8	8	20.57	
Trichloroethene (TCE), C_2HCl_3		0.28	131.4	6	21.73	20.62716419
cis-1,2-dichloroethene (c-DCE), $C_2H_2Cl_2$		0.011	96.9	4	24.05	0.732186231
Vinyl Chloride (VC), C_2H_3Cl			62.5	2	31.00	
Carbon tetrachloride, CCl_4			153.8	8	19.08	
Chloroform, $CHCl_3$			119.4	6	19.74	
sym-tetrachloroethane, $C_2H_2Cl_4$			167.8	8	20.82	
1,1,1-Trichloroethane (TCA), CH_3CCl_3			133.4	6	22.06	
1,1-Dichloroethane (DCA), CH_2CHCl_2			99.0	4	24.55	
Chloroethane, C_2H_5Cl			64.9	2	32.18	
Perchlorate, ClO_4^-		1	99.4	8	12.33	129.797353
Hexavalent Chromium, Cr[VI]			52.0	3	17.20	
User added						
User added						
User added						

Sorbed Phase Electron Donor Demand

The concentration of the sorbed contaminant can be estimated by: $C_{SOIL} = K_{OC} \times f_{oc} \times C_{WATER}$

Where:
K_{oc} is partition coefficient with respect to organic carbon.
f_{oc} (fraction organic carbon) is the mass of organic matter in soil divided by the total mass of soil
C_{WATER} is the concentration of the contaminant in the groundwater

Default values for Koc taken from: US EPA, Superfund Section, APPENDIX K, Soil Organic Carbon (Koc) / Water (Kow) Partition Coefficients (Average Value Used)

Inputs Adjust *Koc* as necessary to provide site specific estimates or enter sediment concentration (C_{SOIL})	K_{oc} (L/kg)	C_{SOIL} (mg/Kg)	Mass (g)	Hydrogen Demand ($g\ H_2$)
Tetrachloroethene (PCE), C_2Cl_4	272			
Trichloroethene (TCE), C_2HCl_3	97	0.14	1042.90	48.00
cis-1,2-dichloroethene (c-DCE), $C_2H_2Cl_2$	38	0.00	16.05	0.67
Vinyl Chloride (VC), C_2H_3Cl	241			
Carbon tetrachloride, CCl_4	158			
Chloroform, $CHCl_3$	53			
sym-tetrachloroethane, $C_2H_2Cl_4$	79			
1,1,1-Trichloroethane (TCA), CH_3CCl_3	139			
1,1-Dichloroethane (DCA), CH_2CHCl_2	54			
User added				
User added				
User added				

Section F: Additional Hydrogen Demand and Carbon Losses

Generation (Potential Amount Formed)	Typical Value	GW Conc. (mg/L)	MW (g/mole)	e^- equiv./ mole	Stoichiometry *Contaminant / H_2*	Hydrogen Demand *(g H_2)*	DOC Released *(moles)*
Estimated Amount of $Fe2^+$ Formed	10 to 100	50	55.8	1	55.41	1444.357263	
Estimated Amount of Manganese (Mn^{2+}) Formed		5	54.9	2	27.25	293.6405815	
Estimated Amount of CH_4 Formed	5 to 20	10	16.0	8	1.99	8044.594402	
Target Amount of DOC to Release	60 to 100	100	12.0				13325.77

Design Safety Factor: 2.0 typical values 1 to 3

Calculations assume:

1.) all reactions go to completion during passage through emulsified edible oil treated zone; and,
2.) perfect reaction stoichiometry.

EOS® Requirement Calculations Based on Hydrogen Demand and Carbon Losses

Stoichiometric Hydrogen Demand	300.5	pounds
DOC Released	1,521.6	pounds

EOS® Requirement Based on Hydrogen Demand and Carbon Loss

2,891 lbs

Step 3: EOS® Requirement Based on Attachment by Aquifer Material

Soil Characteristics

Effective treatment thickness, "z_e" (typically less than 40%) 0.25

For Additional Information on Effective Thickness, Click Here

Weight of sediment to be treated 4,232,689 lbs

Adsorptive Capacity of Soil (accept default or enter site specific value) 0.0020 lbs EOS® / lbs sediment

EOS® Attachment by Aquifer Material[1]

- Fine sand with some clay 0.001 to 0.002 lbs EOS® / lbs soil
- Sand with higher silt/clay content 0.002 to 0.004 lbs EOS® / lbs soil

[1]Default values provided based on laboratory studies completed by NCSU

For Additional Data, Click Here

EOS® Requirement Based on Oil Entrapment by Aquifer Material

8,465 lbs

Summary – How much EOS® do you need?

Suggested Quantity of EOS® for Your Project 21 drums

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†Exclusive license agreement with Solutions-IES under U.S. Patent # 6,398,960, E.U. Patent # EP 1 315 675 and several other pending international patents.
††EOS® is a registered trademark of EOS Remediation, LLC

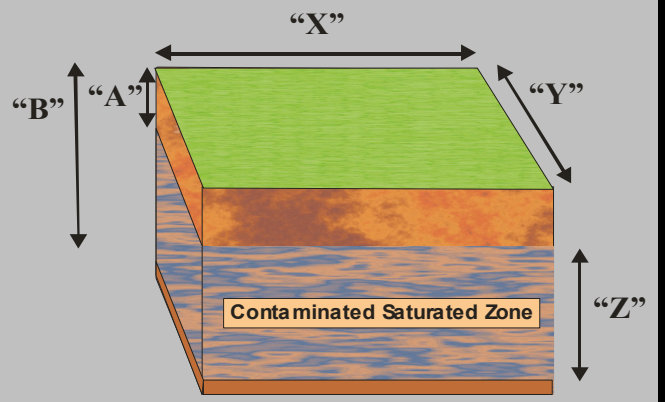
SDC-9 Dosage Estimating Software

APTIM

Site Name:	Longhorn AAP 50
Location:	LHAAP 50
Project No.:	

Treatment Area Dimensions

Length of treatment area parallel to groundwater flow, "X"	59	ft	18.0	m
Width of treatment area perpendicular to groundwater flow, "Y"	59	ft	18.0	m
Minimum depth to contamination, "A"	18	ft	5.5	m
Maximum depth of contamination, "B"	60	ft	18.3	m
Treatment thickness, "Z"	42	ft	12.8	m



Site Data

Soil Characteristics

Nominal Soil Type (enter clay, silt, silty sand, or sand)	silt			
Hydraulic Characteristics				
Effective Porosity (accept default or enter n_e)	0.28	(decimal)		
Treatment zone volume	146,202			
Treatment zone water volume	40,937	ft^3	1,159,194	L

Dechlorinating Consortium Concentration

Dehalococcoides like organisms/L as determined by qPCR	>	1.0E+11
Design Final Concentration (DHC/L) (accept default or enter concentration)	6.00E+06	typical values 5 x 10^6 to 1 x 10^7

Suggested Quantity of Dechlorinating Consortium	70	Liters

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Appendix B

Product Specification and Safety Data Sheets

Tech Brief

Enhanced Anaerobic Bioremediation

Tersus Environmental
For every zone of your plume, we ve got you covered!

EDS-ER™

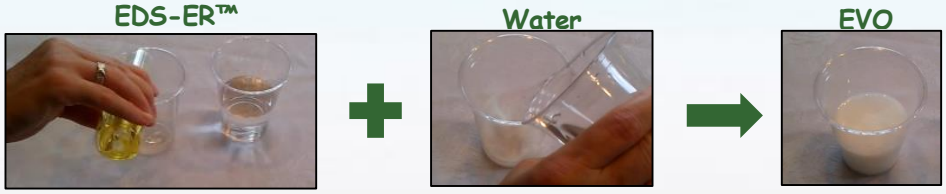
Electron Donor Solution – Extended Release



As delivered, the physical state of *EDS-ER*™ (electron donor solution extended release) by Tersus Environmental is significantly different than standard emulsified vegetable oil (EVO) products. Whereas other EVO products are concentrated emulsions containing water, *EDS-ER*™ is a water-mixable oil; it contains no water. Thus, the costs for shipping EDS-ER are about 50% less than conventional products.

At room temperature, *EDS-ER*™ is a liquid material with an appearance and viscosity roughly equivalent to vegetable oil. Unlike common EVO products, *EDS-ER*™ will not separate, will not freeze, and has a shelf life of 2 years without spoilage.

Tersus Environmental is proud to announce that *EDS-ER*™ does NOT contain ethoxylated surfactants. As you may know, many environmental remediation injectates, such as emulsified vegetable oils use biodegradable non-ionic surfactants. Unfortunately, ethoxylation, the manufacturing process that creates these surfactants (e.g., polysorbates) often results in these products containing 1,4-dioxane.



Purpose

EDS-ER™ is a simple, safe, low-cost solution for the bioremediation of halogenated compounds (e.g., PCE, TCE, DCE, VC, TCA, CT, etc.), perchlorate, explosives such as aromatic nitrates, energetic munitions residuals, nitrates, acids, radionuclides, select oxidized heavy metals, and other contaminants.

Benefits

- 100% fermentable and contains no water
- Because the product is completely water mixable, the number of necessary injection points for low permeability structures decreases
- Easily mixes with water, simplifying field operations
- Controlled release of electron donors for up to five years
- Food-grade carbon source
- Low total dissolved solids to comply with secondary water quality requirements for amendments with low salt content
- Conforms to EPA's EPP (Environmentally Preferable Purchasing) and USDA biobased criteria
- Neutral pH when mixed with water
- Clean, low-cost, non-disruptive application (e.g., direct-push, wells and excavations)
- Lowers transportation costs when compared to other electron donors
- Over two years shelf life
- Freezing Point is -4 °F (-20 °C)

Field Application Design

EDS-ER™ applications are easily tailored to meet site-specific conditions. Typical configurations consist of grid and barrier patterns and application in excavations or trenches. The product s low viscosity allows subsurface distribution through direct-push injection points, hollow-stem augers or pumped through existing wells.

Packaging Options

- 55-gallon poly drums
- 275-gallon IBC containers
- 3,000 - 5,000 gallon tankers



tersus environmental

tersusenv.com • tersusenv.fr • tersusenv.es
919.453.5577 • info@tersusenv.com

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Rev: 2/11/2015

Material Safety Data Sheet

Electron Donor Solution

Section 1: Chemical Product and Company Identification

Product Name: Electron Donor Solution Extended Release
Catalog Codes: EDS-ER
CAS#: 8001-22-7
TSCA: TSCA 8(b) inventory: Soybean oil
HMIS Code: H F R P: 10 0 A
Trade Name and Synonyms: EDS-ER
Chemical Family: Glyceride Oils

Contact Information:
Tersus Environmental, LLC
109 E. 17th Street, Suite #3880
Cheyenne, WY 82001
Ph: 307.638.2822 • info@tersusenv.com
www.tersusenv.com
For emergency assistance, call: 919.638.7892

Section 2: Composition and Information on Ingredients

COMPONANT	CAS #	OSHA TWA	OSHA STEL	ACGIH TWA	ACGIH STEL
Soybean Oil	8001-22-7	---	10 mg/m^3	---	---
Vegetable Oil Derived Fatty Acid Esters	Confidential	---	---	---	---

HAZARDOUS INGREDIENTS: NONE AS DEFINED UNDER THE U.S. OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) OR THE CANADIAN HAZARDOUS PRODUCTS. ACT S.C. 1987, C.30 (PART 1).

THE PRECISE COMPOSITION OF THIS PRODUCT IS PROPRIETARY INFORMATION. A MORE COMPLETE DISCLOSURE WILL BE PROVIDED TO A PHYSICIAN IN THE EVENT OF A MEDICAL EMERGENCY.

SARA HAZARD: NONE NOTED (SECTION 311/312) TITLE III SECTION 313 - NOT LISTED
All components of this product are listed on the TSCA registry.

Section 3: Physical/Chemical Characteristics

BOILING RANGE: Not applicable VAPOR DENSITY: Exceeds 1.0

SPECIFIC GRAVITY (H20=1.0): 0.92 - 0.925 VAPOR PRESSURE: Not applicable

PERCENT VOLATILE BY VOLUME: 0% SOLUBILITY IN WATER: Miscible

EVAPORATION RATE: Not applicable
APPEARANCE AND ODOR: A pale yellow, oily liquid - only a faint odor.
WEIGHT PER GALLON: 7.7 lbs. at 60F.

Section 4: Fire and Explosion Data

FLAMMABILITY CLASSIFICATION: Combustible Liquid - Class IIIB.
FLASHPOINT: Greater than 550 F (288 C).
METHOD USED: Tag Closed Cup.
EXTINGUISHING MEDIA: CO2, dry chemical, foam, sand.
SPECIAL FIREFIGHTING PROCEDURES: Avoid use of water as it may spread fire by dispersing oil. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Rags soaked with any oil or solvent can present a fire hazard and should always be stored in UL Listed or Factory Mutual approved, covered containers. Improperly stored rags can create conditions that lead to oxidation. Oxidation, under certain conditions can lead to spontaneous combustion.

Section 5: Reactivity Data

STABILITY: Generally stable. Spontaneous combustion can occur. See Unusual Fire and Explosion Procedures, Section IV.

CONDITIONS TO AVOID: High surface area exposure to oxygen can result in polymerization and release of heat.

INCOMPATABILITY (MATERIALS TO AVOID): Avoid contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITIONS OR BY-PRODUCTS: Decomposition may produce carbon dioxide and carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

Section 6: Health Hazard Data

THRESHHOLD LIMIT VALUE: As a liquid - none. As oil mist - 10 mg/m3 total particulate.

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: Excessive inhalation of oil mist may affect the respiratory system. Oil mist is classified as a nuisance particulate by ACGIH.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE: Not classified as a primary skin irritant or corrosive material. Sensitive individuals may experience dermatitis after long exposure of oil on skin.

HEALTH HAZARDS (ACUTE AND CHRONIC): Acute: none observed by inhalation. Chronic: none reported.

EMERGENCY AND FIRST AID PROCEDURES FOR:

SKIN CONTACT: May be removed from skin by washing with soap and warm water.

EYE CONTACT: Immediately flush eyes with plenty of cool water for at least 15 minutes. Do NOT let victim rub eyes.

INHALATION: Immediately remove exposed individual to fresh air source. If victim has stopped breathing give artificial respiration, get medical attention immediately.

Section 7: Precautions for Safe Handling and Use

ENVIRONMENTAL PRECAUTIONS: Where large spills are possible, a comprehensive spill response plan should be developed and implemented.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear appropriate respiratory protection and protective clothing as described in section VIII. Depending on quantity of spill: (a) Small spill - add solid adsorbent, shovel into disposable container and wash the area. Clean area with detergent. (b) Large spill - Squeegee or pump into holding container. Clean area with detergent. In the event of an uncontrolled release of this material, the user should determine if this release is reportable under applicable laws and regulations.

WASTE DISPOSAL METHOD: All recovered material should be packaged, labeled, transported, and disposed or reclaimed in accordance with local, state, and federal regulations and good engineering practices.

Section 8: Control Measures

RESPIRATORY PROTECTION: Not normally needed. A qualified health specialist should evaluate whether there is a need for respiratory protection under specific conditions.

VENTILATION: Handle in the presence of adequate ventilation. Intermittent clean air exchanges recommended, but not required.

PROTECTIVE GLOVES: Not normally needed. However, protective clothing is always recommended when handling chemicals.

EYE PROTECTION: Eye protection is always recommended when handling chemicals. Wear safety glasses meeting the specifications established in ANSI Standard Z87.1.

Section 9: Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store away from flame, fire, and excessive heat.

Section 10: Disposal Considerations

General Information: Do not discharge into drains, watercourses or onto the ground. Discharge, treatment, or disposal may be subject to national, state, or local laws. Empty containers may contain product residues.

Disposal Methods: No specific disposal method required.

Container: Since emptied containers retain product residue, follow label warnings even after container is emptied.

Section 11: Transportation Information

DOT Not regulated.
TDG Not regulated.
IATA Not regulated.
IMDG Not regulated.

Section 12: Other Information

Hazard Ratings

	Health Hazard	Fire Hazard	Instability	Special Hazard
NFPA	1	1	0	NONE

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe
NFPA Label colored diamond code: Blue - Health; Red - Flammability; Yellow - Instability; White - Special Hazards

	Health Hazard	Flammability	Physical Hazard	Personal Protection
HMIS	1	1	0	--

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe
HMIS Label colored bar code: Blue - Health; Red - Flammability; Orange - Physical Hazards; White - Special

Section 13: Disclaimer and/or Comments

We suggest that containers be either professionally reconditioned for re-use by certified firms or properly disposed of by certified firms to help reduce the possibility of an accident. Disposal of containers should be in accordance with applicable federal, state and local laws and regulations. "Empty" drums should not be given to individuals.

The conditions of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Tersus Environmental be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Tersus Environmental has been advised of the possibility of such damages.

Material Safety Data Sheet

Shaw Environmental, Inc.

17 PRINCESS ROAD
LAWRENCEVILLE, N.J. 08648
(609) 895-5340

SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

Material Name: DHC microbial consortium (SDC-9) MSDS #: ENV 1033

Date Prepared: 10/06/2003 CAS #: N/A (Not Applicable)

Prepared By: Simon Vainberg Formula #: N/A

Material Description: Non-hazardous, naturally occurring non-altered anaerobic microbes and enzymes in a water-based medium.

SECTION 2 - INGREDIENTS

Components	%	OSHA PEL	ACGIH TLV	OTHER LIMITS
Non-Hazardous Ingredients	100	N/A	N/A	N/A

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: 100°C (water) Specific Gravity (H_2O = 1): 0.9 - 1.1

Vapor Pressure @ 25°C: 24 mm Hg (water) Melting Point: 0°C (water)

Vapor Density: N/A Evaporation Rate (H_2O = 1): 0.9 - 1.1

Solubility in Water: Soluble Water Reactive: No

pH: 6.0 - 8.0

Appearance and Odor: Murky, yellow water. Musty odor.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A

Flammable Limits: N/A

Extinguishing Media: Foam, carbon dioxide, water

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION 5 - REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None

Incompatibility (Materials to Avoid): Water-reactive materials

Hazardous Decomposition Byproducts: None

SECTION 6 - HEALTH HAZARD DATA

HEALTH EFFECTS

The effects of exposure to this material have not been determined. Safe handling of this material on a long-term basis will avoid any possible effect from repetitive acute exposures. Below are possible health effects based on information from similar materials. Individuals hyper allergic to enzymes or other related proteins should not handle.

Ingestion: Ingestion of large quantities may result in abdominal discomfort including nausea, vomiting, cramps, diarrhea, and fever.

Inhalation: Hypersensitive individuals may experience breathing difficulties after inhalation of aerosols.

Skin Absorption: N/A

Skin Contact: May cause skin irritation. Hypersensitive individuals may experience allergic reactions to enzymes.

Eye Contact: May cause eye irritation.

FIRST AID

Ingestion: Get medical attention if allergic symptoms develop (observe for 48 hours). Never give anything by mouth to an unconscious or convulsing person.

Inhalation: Get medical attention if allergic symptoms develop.

Skin Absorption: N/A

Skin Contact: Wash affected area with soap and water. Get medical attention if allergic symptoms develop.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes using an eyewash fountain, if available. Get medical attention if irritation occurs.

NOTE TO PHYSICIANS: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this material may have occurred.

SECTION 7 - SPILL AND LEAK PROCEDURES

Reportable quantities (in lbs of EPA Hazardous Substances): N/A

Steps to be taken in case of spill or release: No emergency results from spillage. However, spills should be cleaned up promptly. All personnel involved in the cleanup must wear protective clothing and avoid skin contact. Absorb spilled material or vacuum into a container. After clean-up, disinfect all cleaning materials and storage containers that come in contact with the spilled liquid.

Waste Disposal Method: No special disposal methods are required. The material may be sewered, and is compatible with all known biological treatment methods. To reduce odors and permanently inactivate microorganisms, mix 100 parts (by volume) of DHC consortium with 1 part (by volume) of bleach. Dispose of in accordance with local, state and federal regulations.

SECTION 8 - HANDLING AND STORAGE

Hand Protection: Rubber gloves.

Eye Protection: Safety goggles with side splash shields.

Protective Clothing: Use adequate clothing to prevent skin contact.

Respiratory Protection: Surgical mask.

Ventilation: Provide adequate ventilation to remove odors.

Storage & Handling:
Material may be stored for up to 3 weeks at 2-4°C without aeration.

Other Precautions: An eyewash station in the work area is recommended.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, Shaw Environmental, Inc. MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

Appendix C

Daily ISB Injection Log

Drilling Company: _____ Area: _____ Injection Oversight: _____

Oversight Company: Aptim Federal Services, LLC Injection Operator: _____

Injection Point	Date	Pressure (psi)	Total Volume (gal)	Flow Rate (gpm)	Start	End	Comments
LHAAP-04							